NRC-99-078

Wisconsin Public Service Corporation
(a subsidiary of WPS Resources Corporation)
Kewaunee Nuclear Power Plant
North 490, Highway 42
Kewaunee, WI 54216-9511
920-388-2560

October 22, 1999

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Reactor Protection and Engineered Safety Features Upgrade Project

Reference: Letter from M. L. Marchi (WPSC) to U.S. Nuclear Regulatory Commission dated July 30, 1999, "Reactor Protection and Engineered Safety Features Upgrade Project–Design, Verification and Validation Plan"

Wisconsin Public Service Corporation (WPSC) is proposing changes to the Reactor Protection System (RPS) and Engineered Safety Feature (ESF) process protection and relay cabinets at the Kewaunee Nuclear Power Plant. The purpose of this letter is to provide an updated description of our design, verification and validation plan and to submit a Westinghouse Electric Company Nuclear Projects Business Unit Project Quality Plan for the replacement system to be installed at the Kewaunee plant. A license amendment request for KNPP is planned for submittal to the NRC by the end of 2000 with NRC approval requested by mid-year 2001.

Enclosed are:

1. Two copies of the Proprietary Class 2C report "Kewaunee Nuclear Power Plant RPS Upgrade E3 Design, Verification and Validation Plan for Class 1E and Category A Systems," Revision 1, dated 12 October 1999.
2. Two copies of the Non-proprietary Class 3 report" Kewaunee Nuclear Power Plant RPS Upgrade E3 Design, Verification and Validation Plan for Class 1E and Category A Systems," Revision 1, dated 12 October 1999.
3. Two Copies of the Proprietary Class 2C report, "Kewaunee Nuclear Power Plant Reactor Protection System Upgrade Project, Project Quality Plan," Revision 2, dated October 1999.

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4. Two Copies of the Non-Proprietary Class 3 report, "Kewaunee Nuclear Power Plant Reactor Protection System Upgrade Project, Project Quality Plan," Revision 2, dated October 1999.

Also enclosed are a Westinghouse authorization letter, CAW-99-1366, accompanying affidavit, Proprietary Information Notice, and Copyright Notice.

As items 1 and 3 contain information proprietary to Westinghouse Electric Company LLC ("Westinghouse"), it is accompanied by an affidavit signed by Westinghouse, the owner of the information. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of Section 2.790 of the Commission's regulations.

Accordingly, it is respectfully requested that the information, which is proprietary to Westinghouse, be withheld from public disclosure in accordance with 10 CFR Section 2.790 of the Commission's regulations.

Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting Westinghouse Affidavit should reference CAW-99-1366 and should be addressed to S. D. Rupprecht, Manager of Equipment Design and Regulatory Engineering, Westinghouse Electric Company LLC, P. O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Please contact Mr. David Ozarowicz, PE (920-388-8640) or Mr. Gerald Riste (920-388-8424) of my staff should you have any other questions.

Sincerely,

M Marchi

Mark L. Marchi
Vice President-Nuclear

GOR

Attachments

cc - US NRC Region III
US NRC Senior Resident Inspector

ATTACHMENT 5

Letter from Mark L. Marchi (WPSC)

To

Document Control Desk (NRC)

Dated

October 22, 1999

Reactor Protection and Engineered Safety Features Upgrade

Westinghouse authorization letter, CAW-99-1366, accompanying affidavit, Proprietary Information Notice, and Copyright Notice.

Westinghouse Electric Company LLC

Box 355
Pittsburgh Pennsylvania 15230-0355

October 13, 1999

CAW-99-1366

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Mr. Samuel J. Collins

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: E3 Design, Verification and Validation Plan for Class 1E and Category A Systems, Revision 1 [Proprietary Class 2C]
E3 Design, Verification and Validation Plan for Class 1E and Category A Systems, Revision 1 [Non-Proprietary Class 3]
Kewaunee Nuclear Power Plant Reactor Protection System Upgrade Project, Project Quality Plan, Revision 2 [Proprietary Class 2C]
Kewaunee Nuclear Power Plant Reactor Protection System Upgrade Project, Project Quality Plan, Revision 2 [Non-Proprietary Class 3]

Dear Mr. Collins:

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-99-1366 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The affidavit which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b) (4) of 10 CFR Section 2.790 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying Affidavit by Wisconsin Public Service Corporation.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-99-1366 and should be addressed to the undersigned.

Very truly yours,

H. A. Sepp, Manager
Regulatory and Licensing Engineering

0334s.doc

CAW-99-1366

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared H. A. Sepp, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC ("Westinghouse"), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

H. A. Sepp, Manager
Regulatory and Licensing Engineering

Sworn to and subscribed
before me this 14th day
of October, 1999

Notary Public

Notarial Seal
Janet A. Schwab, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires May 22, 2000
Member, Pennsylvania Association of Notaries

0334s.doc

(1) I am Manager, Regulatory and Licensing Engineering, in the Nuclear Services Division, of the Westinghouse Electric Company LLC ("Westinghouse"), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rulemaking proceedings, and am authorized to apply for its withholding on behalf of the Westinghouse Electric Company LLC.

(2) I am making this Affidavit in conformance with the provisions of 10CFR Section 2.790 of the Commission's regulations and in conjunction with the Westinghouse application for withholding accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by the Westinghouse Electric Company LLC in designating information as a trade secret, privileged or as confidential commercial or financial information.

(4) Pursuant to the provisions of paragraph (b)(4) of Section 2.790 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.

(ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information which is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10CFR Section 2.790, it is to be received in confidence by the Commission.

(iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.

(v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in the E3 Design, Verification and Validation Plan for Class 1E and Category A Systems, Revision 1 [Proprietary], and Kewaunee Nuclear Power Plant Reactor Protection System Upgrade Project, Project Quality Plan, Revision 2 [Proprietary], being transmitted by Wisconsin Public Service Corporation letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk, Attention Mr. S. J. Collins. The proprietary information as submitted for use by Wisconsin Public Service Corporation for the Kewaunee Nuclear Power Plant is expected to be applicable in other licensee submittals for upgrading plant protection systems.

This information is part of that which will enable Westinghouse to:

(a) Provide a plan for verifying and validating Class 1E software.

(b) Describe the review techniques that will be used for verification and validation.

(c) Assist the customer in licensing of software used in Class 1E applications.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of similar information to its customers for purposes of verifying and validating Class 1E software.

(b) Westinghouse can sell licensing support and defense of a similar proposed Class 1E software design, verification and validation plan.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar qualification test plans and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended for the design of the proposed protection system upgrade.

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.790 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) contained within parentheses located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.790(b)(1).

COPYRIGHT NOTICE

The reports transmitted herewith each bear a Westinghouse copyright notice. The NRC is permitted to make the number of copies of the information contained in these reports which are necessary for its internal use in connection with generic and plant-specific reviews and approvals as well as the issuance, denial, amendment, transfer, renewal, modification, suspension, revocation, or violation of a license, permit, order, or regulation subject to the requirements of 10 CFR 2.790 regarding restrictions on public disclosure to the extent such information has been identified as proprietary by Westinghouse, copyright protection notwithstanding. With respect to the non-proprietary versions of these reports, the NRC is permitted to make the number of copies beyond those necessary for its internal use which are necessary in order to have one copy available for public viewing in the appropriate docket files in the public document room in Washington, DC and in local public document rooms as may be required by NRC regulations if the number of copies submitted is insufficient for this purpose. Copies made by the NRC must include the copyright notice in all instances and the proprietary notice if the original was identified as proprietary.

ATTACHMENT 2

Letter from Mark L. Marchi (WPSC)

To

Document Control Desk (NRC)

Dated

October 22, 1999

Reactor Protection and Engineered Safety Features Upgrade

"Kewaunee Nuclear Power Plant RPS Upgrade E3 Design, Verification and Validation Plan for Class 1E and Category A Systems"
Revision 1

– Non-Proprietary Class 3

E3
Design, Verification and Validation Plan for Class 1E and Category A Systems

Revision 1

12 October 1999

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All Rights Reserved

RECORD OF CHANGES

Revision 0 27 July 1999

Changes: Initial revision (created from Revision 0 of NPD-PD-00003-GEN).

Revision 1 12 October 1999

1. **Minor typographical and grammatical changes**
2. **Changed Section 8.1.2 to eliminate the collaborative aspects of the engineering review.**
3. **Modified Figure 3 of Section 9.1. Previously, the process only required [ ]a,c. Since, in all likelihood, credit will be taken for this effort, the penultimate paragraph of Section 9.1 has been modified to require [ ]a,c. Additionally, the final paragraph was modified to require the swame level of review when credit id taken for previous tests. Figure 3 was updated to reflect the text in Section 9.1.**
4. **Modified Figure 3, Section 7.3.4, and Section 8.3. Previously, safety related software required only [ ]a,c. Section 7.3.4 was changed to require [ ]a,c. Figure 3 and Section 8.3 were updated to reflect the text in Section 7.3.4.**
5. **Updated references to IEC standards to use their new numbering scheme.**
6. **Added clarifying text in Section 9.2 stating that Equipment Qualification is a Second Party Review activity.**
7. **Modified Figure 5 and Section 12.2. Added the requirement to produce a [ ]a,c .**
8. **Modified the definition of Third Party Review in Section 2.2 and Section 8.1.4 to indicate that the group that conducts the [ ]a,c**
9. **Table 1 and Table 2 were modified to reflect the changes in the Second Party and Third Party Reviews.**
10. **The changes in the text of the document are indicated in bold.**

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1. INTRODUCTION AND SCOPE

This document was prepared in accordance to the [ ]a,c.

1.1. Purpose

The purpose of this document is to define, at a high level, the design, verification, and validation processes that are used to produce safety systems using the E3 [ ]a,c. The E3 [ ]a,c represents the integration of the commercially available Ovation™ hardware (with some enhancements) and the Eagle Series embedded safety software developed for the Eagle 21™ product line and the Sizewell primary protection system and subsequently used for the Temelin and Ignalina projects.

The intended uses of this document include: internal guidance and instruction, support of licensing submittals, and support of audits.

1.2. Scope

This document addresses the design, verification and validation processes for the standard E3 [ ]a,c and for projects using the [ ]a,c to implement Class 1E and Category A systems for specific applications and customers. [ ]a,c.

1.3. Relationship to Previous Processes

The processes defined in this document and the subordinate documents referred to herein, are based on the processes previously used by Westinghouse to develop microprocessor-based safety systems.
[ ]a,c:

- [ ]a,c.
- [ ]a,c.
- [ ]a,c.
- [ ]a,c.

[ ]a,c.

[

]a,c.

2. DEFINITIONS

2.1. Acronyms

E3	E3 is the temporary internal Westinghouse NPD name for a safety system product line based upon the Eagle series software and an Ovation™ compatible hardware platform.
EMI	Electromagnetic Interference
FAT	Factory Acceptance Test
HDS	Hardware Design Specification
HRS	Hardware Requirements Specification
I&C	Instrumentation and Control
I/O	Input/Output
PL/M	PL/M is a microprocessor programming language specified by Intel Corporation. It is based on the PL/1 programming language.
SAT	Site Acceptance Test
SDD	Software Design Description
SDR	System Design Requirements
SDS	System Design Specification
SRS	Software Requirements Specification

2.2. Terms

Analysis	A review technique that consists of a formally documented evaluation or calculation to confirm some aspect of a design. (See Section 8.2.2.)
[ ]a,c	[ ]a,c.
[ ]a,c	[ ]a,c.
Category A	A Function, and the associated Systems and Equipment (FSE) that implement it, which plays a principal role in the achievement or maintenance of Nuclear Power Plant safety. Category A FSE prevent Postulated Initiating Events (PIEs) from leading to a significant sequence of events, or mitigate the consequences of PIEs. [IEC 1226]
Class 1E	The safety classification of the electrical equipment and systems that are essential to emergency reactor shutdown, containment isolation, reactor core cooling, and containment and reactor heat removal, or are otherwise essential in preventing significant release of radioactive material to the environment. [IEEE 603]

[ ]a,c	[ ]a,c.
[ ]a,c	[ ]a,c.
Factory Acceptance Test	A formal test that provides validation of the system functionality as specified in the system functional requirements. (See Section 12.2.)
[ ]a,c	[ ]a,c.
Inspection	A review technique that consists of examining the entity being verified, either hardware or software. (See Section 8.2.1.)
Petri Net	A model of a concurrent system that is expressed in a specific graphical notation and can be used to explore certain properties of the system. [Dictionary of Computing]
[ ]a,c	[ ]a,c.
Qualification Testing	Testing conducted to determine whether a system or component is suitable for operational use. [IEEE 610.12]
Regression Testing	Selective retesting of a system or component to verify that modifications have not caused unintended effects, and that the system or component still complies with its specified requirements. [IEEE 610.12]
[ ]a,c	[ ]a,c.
[ ]a,c	[ ]a,c.
Site Acceptance Test	Site acceptance V&V accomplished through a testing activity in the nuclear power generating station. Site acceptance testing should be utilized to provide adequate confidence of the following: a) No damage has occurred due to shipment or installation b) Computer is compatible with the nuclear power generating station c) Correctness of interfaces to other plant systems that may have been simulated during the FAT. [IEEE 7-4.3.2]
Test	A review technique that consists of operating the system or component, either hardware or software, under specified conditions, observing or recording the results, and making an evaluation of some aspect of the system or component based upon the results. (See Section 8.2.3.)

[ ]a,c [ ]a,c.

Validation The test and evaluation of the integrated computer system (hardware and software) to ensure compliance with the functional, performance, and interface requirements. **[IEC 60880]**

Verification The process of determining whether or not the product of each phase of the computer system development process fulfills all the requirements imposed by the previous design phase. **[IEC 60880]**

3. REFERENCES

[ ]a,c

[ ]a,c

[ ]a,c

Dictionary of Computing, Dictionary of Computing, Oxford University Press, 1983.

[ ]a,c

[ ]a,c

4. REGULATORY GUIDANCE

The following documents provide regulatory guidance from the United States Nuclear Regulatory Commission:

USNRC Regulatory Guide 1.152. "Criteria for Digital Computers in Safety Systems of Nuclear Power Plants."

USNRC Regulatory Guide 1.168. "Verification, Validation, Reviews, and Audits for Digital Computer Software Used in Safety Systems of Nuclear Power Plants."

USNRC Regulatory Guide 1.169. "Configuration Management Plans for Digital Computer Software Used in Safety Systems of Nuclear Power Plants."

USNRC Regulatory Guide 1.170. "Software Test Documentation for Digital Computer Software Used in Safety Systems of Nuclear Power Plants."

USNRC Regulatory Guide 1.171. "Software Unit Testing for Digital Computer Software Used in Safety Systems of Nuclear Power Plants."

USNRC Regulatory Guide 1.172. "Software Requirements Specifications for Digital Computer Software Used in Safety Systems of Nuclear Power Plants."

USNRC Regulatory Guide 1.173. "Developing Software Life Cycle Processes for Digital Computer Software Used in Safety Systems of Nuclear Power Plants."

5. APPLICABLE STANDARDS

The following standards are used for [ ][a,c]:

ASME Std NQA-1-1994. "Quality Assurance Requirements for Nuclear Facility Applications."

CEI/IEC 1226-1993-05. "Nuclear power plants - Instrumentation and control systems important for safety - Classification."

IEC 60880-1986. "Software for Computers in the Safety Systems of Nuclear Power Stations."

IEEE Std 7-4.3.2-1993. "IEEE Standard for Digital Computers in Safety Systems of Nuclear Power Generating Stations" as endorsed by Reg. Guide 1.152.

IEEE Std 603-1991, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations."

IEEE Std 610.12-1990, "IEEE Standard Glossary of Software Engineering Terminology."

IEEE Std 828-1990. "IEEE Standard for Software Configuration Management Plans" as endorsed by Reg. Guide 1.169.

IEEE Std 829-1983. "IEEE Standard for Software Test Documentation" as endorsed by Reg. Guide 1.170.

IEEE Std 830-1993. "IEEE Recommended Practice for Software Requirements Specifications" as endorsed by Reg. Guide 1.172.

IEEE Std 1008-1987. "IEEE Standard for Software Unit Testing" as endorsed by Reg. Guide 1.171.

IEEE Std 1012-1986. "IEEE Standard for Software Verification and Validation Plans" as endorsed by Reg. Guide 1.168.

IEEE Std 1028-1988. "IEEE Standard for Software Reviews and Audits" as endorsed by Reg. Guide 1.168.

IEEE Std 1042-1987. "IEEE Guide to Software Configuration Management" as endorsed by Reg. Guide 1.169.

IEEE Std 1074-1995. "IEEE Standard for Developing Software Life Cycle Processes" as endorsed by Reg. Guide 1.173.

IEEE/EIA Std 12207.0-1996. "Industry Implementation of International Standard ISO/IEC 12207." This standard shall be used in preference to IEEE 1074 as the primary guidance for Software Life Cycle Processes.

IEEE Std 12207.1. "IEEE Guide for Information Technology - Software Life Cycle Processes - Life Cycle Data" used as guidance in the application of ISO/IEC 12207.

IEEE Std 12207.2. "IEEE Guide for Information Technology - Software Life Cycle Processes - Implementation" used as guidance in the application of ISO/IEC 12207.

6. OVERVIEW OF THE DESIGN, VERIFICATION AND VALIDATION PROCESSES

Figure 1 and Figure 2 show overviews of the design, verification, and validation processes. [

]a,c.

The Eagle Series embedded safety system software architecture recognizes [

]a,c.

[

]a,c.

6.1. [ ]a,c Design, Verification and Validation Process Overview

[

]a,c.

a,c

Figure 1: [ ]a,c Design Verification and Validation Overview
(Detailed process is shown in Figure 3 and Figure 4)

[

]a,c.

6.2. [ ]a,c Design, Verification and Validation Process Overview

Figure 2 graphically shows an overview of the [ ]a,c Design, Verification and Validation Process. [

]a,c.

a,c

Figure 2: [ ]a,c Design Verification and Validation Overview
(Detailed process is shown in Figure 5)

[

]a,c.

6.3. Supporting Processes

Processes that support both the [ ]a,c Design, Verification and Validation Process and the [ ]a,c Design, Verification and Validation Process include the [

]a,c.

7. [ ]a,c DESIGN ACTIVITIES

The [ ]a,c Design, Verification, and Validation Process is detailed in Figure 3. The figure emphasizes system and software activities. Hardware activities are presented in Figure 4. The figures show the activities as purely sequential (similar to the classic "Waterfall" methodology). [

]a,c.

7.1. [ ]a,c Definition Activity

The [ ]a,c Definition Activity produces the following types of items:

1. Identification of the intended application(s) of the [ ]a,c.
2. Identification of the licensing requirements for the intended applications.
3. Documentation of the objectives and/or goals of the [ ]a,c.
4. An early evaluation of potential problems.
5. Identification of external system interfaces.
6. Definition of particular options and features.
7. Identification of design constraints.

This information shall become part of the [
]a,c.

a,c

Figure 3: [ ]a,c Design Verification and Validation Detail
(Overview is shown in Figure 1)

7.2. [ ][a,c] System Design Activities

The Platform System Design Activities include two major efforts: [ ][a,c] System Requirements Analysis and [ ][a,c] System Architectural Design.

7.2.1. System Requirements Analysis

The System Requirements Analysis activity determines the system requirements based on the intended applications (and other information) as identified in the [ ][a,c]. Items to be considered include:

1. Regulatory Requirements
2. Safety Requirements
3. Reliability and Availability Requirements
4. Qualification Requirements
5. Power and Grounding Requirements
6. Human System Interface Requirements
7. External Interface Requirements
8. Test Requirements
9. Development Tools
10. Maintenance Tools
11. Design Constraints
12. Typical Installation Constraints
13. Abnormal Conditions and Events
14. Verification and Validation Requirements
15. Quality Assurance Requirements
16. Time Response
17. Accuracy

This information is documented in the System Design Requirements. [ ][a,c].

7.2.2. System Architectural Design

The System Architectural Design activity consists of defining the architectural elements that will be supported by the platform and establishing typical top-level [ ][a,c]. The architectures shall identify [ ][a,c]. It shall ensure that all system requirements are allocated among the items.

Items to be considered include:

1. Consistency with the System Design Requirements.
2. Appropriateness of reusing previously developed software items and previously developed hardware items.
3. Feasibility of developing the missing software items.

4. Feasibility of developing or purchasing the missing hardware items.
5. Ease of operation and maintenance.
6. Implementation constraints

[

]a,c.

7.3. [ ]a,c Software Design Activities

The [ ]a,c Software Design Activities include Software Requirements Analysis, Software Architectural Design, Software Detailed Design, and Software Coding and Engineering Testing.

7.3.1. Software Requirements Analysis

The [ ]a,c Software Requirements Analysis activity establishes and documents the software requirements for each software item identified in the System Design Specification.

Items to be considered include:

1. Functionality and capability requirements
2. Interfaces to other software items
3. Interfaces to hardware items
4. Safety requirements
5. Human factors requirements
6. Database requirements
7. Operation and maintenance requirements
8. Design standards
9. Verification requirements

[

]a,c.

7.3.2. Software Architectural Design

The Software Architectural Design activity establishes an architecture for each software item based on its Software Requirements Specification. The architecture describes the top-level structure of the software items and identifies the software components required to implement the item. Each of the software item's requirements are refined and assigned to a software component. The top-level interface between software components is defined.

If the software components identified in this activity require further decomposition, the Software Requirements Analysis activity and the Software Architectural Design Activity should be applied recursively.

[

]a,c.

[

]a,c

7.3.3. Software Detailed Design

The developer shall establish a detailed design for each software component. The components shall be refined into lower level software units that can later be coded, compiled, and tested. Software requirements shall be allocated from the components to the units. Detailed interfaces shall be defined to external software, other software items, other software components, and other software units, as necessary.

[

]a,c.

[

]a,c

7.3.4. Software Coding and Engineering Testing

The developer shall write the code and otherwise complete the [ ]a,c modules in accordance with the appropriate language specific design and coding standards. [ ]a,c The developer shall compile the modules and test the software. [The testing performed at this stage also includes software integration testing]a,c. The developer shall combine the modules with other platform modules, application modules, and test modules. The test modules shall be designed to exercise the software in a configuration that is typical of its intended use.

[

]a,c.

[

]a,c.

7.4. [ ]a,c Hardware Design Activities

[

]a,c.

a,c

Figure 4: [ ]a,c Hardware Design Process

7.4.1. Hardware Requirements Analysis

The Hardware Requirements Analysis activity establishes and documents the hardware requirements for each hardware item identified in the System Design Specification.

Items to be considered include:

1. Functional requirements
2. Interfaces to other hardware items
3. Interfaces to software items
4. Safety requirements
5. Human factors requirements
6. Qualification requirements
7. Operation and maintenance requirements
8. Design standards
9. Verification requirements

This information is documented in the Hardware Requirements Specification. [ ]a,c.

Some hardware functions are sufficiently complex as to require additional decomposition into subordinate hardware items (not directly referenced by the System Design Specification). The Hardware Requirements Analysis Activity will produce individual hardware requirements for these subordinate hardware items.

7.4.2. Hardware Implementation Decision

The Hardware Implementation Decision activity determines the implementation path for each hardware item or component. Possible implementation paths include: Internal Design, Subcontract Design and Purchase of Commercial Product. This activity includes evaluation of Commercial Products against the hardware requirements.

7.4.3. Hardware Implementation

The Hardware Implementation activity takes one of three paths based on the Hardware Implementation Decision. The separate steps in each path are described below. The three design paths re-converge later in the process.

7.4.3.1. Internal Design Path

Items that have been identified to be designed in-house shall use the following steps.

7.4.3.1.1. Hardware Preliminary Design

The developer produces a preliminary design that establishes the basic functions, an explanation of operation, the performance characteristics, and the user operation or interface characteristics of the item. [ ]a,c.

7.4.3.1.2. Hardware Implementation and Engineering Testing

The developer produces a detailed design and tests the hardware. [

]a,c.

7.4.3.2. Subcontractor Design Path

Some items may be more effectively produced by an outside design organization. Typically, these items represent customization of a vendors' standard product. Items that have been identified to be designed by outside vendors shall use the following steps.

7.4.3.2.1. Vendor Selection

The Hardware Requirements Document for the item is transmitted to potential vendors. Additional vendor requirements may be identified and transmitted to the vendor. Supply Management and Quality Assurance are involved in the process of defining additional vendor requirements. A vendor is selected based on the [ ]a,c.

7.4.3.2.2. Design

The vendor produces a preliminary design that meets the basic functions defined in the Hardware Requirements Document. [

]a,c. The results of the technical review are documented and transmitted to the vendor, and tracked for resolution.

7.4.3.2.3. Quality Assurance Vendor Commercial Survey

Quality Assurance performs a survey of the vendor in accordance with]a,c. Engineering provides inputs to the requirements that are placed on the sub-contractor. At a minimum, the sub-contractor is evaluated for design control. Control of the design is necessary to form a [ ]a,c.

7.4.3.3. Commercial Product Path

Some functions may be provided by existing commercially available standard products. The specific activities for these items are described below.

7.4.3.3.1. Vendor Selection

Item requirements are identified and transmitted to the vendor. Supply Management and Quality Assurance are involved in the process of defining any additional vendor requirements. A vendor is selected based on the [ ]a,c.

7.4.3.3.2. Quality Assurance Vendor Commercial Survey

Quality assurance performs a survey of the vendor in accordance with[ ]a,c. Engineering provides inputs to the requirements that are placed on the vendor. At a minimum, the

vendor is evaluated for design control. Control of the design is necessary to form a [ ]a,c.

7.4.4. Commercial Dedication Instruction

A commercial dedication instruction is developed or an [ ]a,c.

7.4.5. Final Documentation Package

For each hardware item, whether internally designed, externally designed or purchased, a set of documentation will be produced. This may consist of [ ]a,c.

[ ]a,c.

7.5. [ ]a,c Integration Activity

The developers shall combine the software and hardware items with other product software and hardware and test equipment. The test setup shall be designed to exercise the system (or representative portions of the system) in configurations that are typical of its intended use. [ ]a,c.

8. [ ]a,c VERIFICATION ACTIVITIES

The following sections define the various review types, the review techniques that can be employed, and the required platform verification effort.

8.1. Review Types

Reviews are used to perform verification of the design. Documentation produced by these reviews, either review comments, responses to comments, or reports, will become part of the records. The reviews may consist of any of the following:

- [ ]a,c
- [ ]a,c
- [ ]a,c
- [ ]a,c

8.1.1. [ ]a,c

The [ ]a,c.

[ ]a,c.

[ ]a,c.

8.1.2. [ ]a,c

[ ]a,c.

[ ]a,c.

8.1.3. [ ]a,c

[

]a,c.

[

]a,c.

8.1.4. [ ]a,c

[

]a,c.

[

]a,c.

[

]a,c.

[ ]a,c

8.2. Review Techniques

8.2.1. Inspection

Inspections consist of examining the entity being verified, either hardware or software. Typically, the item is (1) compared to a defined set of acceptance criteria, (2) compared to its requirements, and (3) examined for correctness.

8.2.2. Analysis

Analysis consists of a formally documented evaluation or calculation to confirm some aspect of the design. Analysis includes, but is not limited to, formal proofs, Petri Net and other graphical analysis methods, and

related techniques. The analysis may be performed by the verifier, or the verifier may review an analysis performed by the designer.

8.2.3. Testing

Testing consists of operating the system or component, either hardware or software, under specified conditions, observing or recording the results, and making an evaluation of some aspect of the system or component based upon the results. Testing will be performed in a[ ]a,c.

8.2.4. Regression Analysis and Testing

Regression analysis and testing are V&V techniques that are applicable to modifications of a previously verified item.

8.2.4.1. Regression Analysis

Regression analysis evaluates the differences between different releases of a controlled configuration item (e.g., documentation, hardware, software, or system) to determine the V&V actions required. The regression analysis should take account of the following when specifying the V&V technique:

- Type of change (e.g., Function, Configuration, Connection, etc.)
- Complexity of change
- Independence or modularity of the modification from the other parts of the system
- Impacts on interfacing systems

[ ]a,c.

8.2.4.2. Regression Tests

Regression tests are a selective retest of the system or component to verify the correctness of the modification. The regression analysis focuses the V&V test on the change. For the areas of the design that have not been changed, credit is taken for previously completed V&V actions. The regression tests should make use of **the** existing test procedures when applicable.

8.3. [ ]a,c Verification Effort

As the [ ]a,c Design Activities proceed in a top-down fashion, the [ ]a,c Verification Activities are performed in a stepwise fashion. As shown in Figure 3 and Figure 4, the following design products are checked for consistency and correctness:

1. System Design Products
   a) System Design Requirements -- [ ]a,c.
   b) System Design Specification --[ ]a,c.
2. Software Design Products

a) Software Requirements Specifications -- [ ]a,c.

b) Software Design Descriptions -- [ ]a,c.

c) [ ]a,c.

d) Commented Source Code and Object Modules -- [ ]a,c.

3. Hardware Design Products

a) Hardware Requirements Specifications -- [ ]a,c.

b) Draft Hardware Design Specifications -- [ ]a,c.

c) Draft Documentation Package -- [ ]a,c.

d) Final Documentation Package -- [ ]a,c.

In addition to the reviews shown in these figures, one or more [ ]a,c.

[ ]a,c.

[ ]a,c.

9. [ ]a,c VALIDATION TEST AND EQUIPMENT QUALIFICATION TEST

9.1. [ ]a,c Validation Test

The [ ]a,c Validation Test confirms that the system meets the requirements specified in the platform System Design Requirements. The tests shall be conducted in accordance with a formal test plan and procedures. The required input signals, the anticipated output signals, and the acceptance criteria shall be stated in the procedures.

[ ]a,c software items, platform hardware items, representative application software, and test equipment shall be arranged in configurations which represent the intended uses of the [ ]a,c . The configurations may represent entire systems, portions of systems (overlapping validation testing), or "thread paths" through a system.

The test plan should include tests **that** stress the system beyond its intended uses.

The [ ]a,c. They shall prepare the test plan, prepare the test procedures, perform or supervise the tests, and document the test results. The test results will be recorded and retained. The system configuration (including hardware and software version information), the test procedures, and the results shall be documented at a level sufficient to allow the tests to be repeated. [ ]a,c

[ ]a,c.

9.2. Equipment Qualification

Modules must be shown to operate under the design basis for seismic, environmental and EMI conditions. Equipment may be qualified by type testing, analysis or some combination of the two. [ ]a,c.

This activity shall be **assigned to an individual or group that is responsible for the design (Second Party) and shall be conducted with a formal equipment qualification plan and shall be** documented by a qualification report that summarizes which testing or analysis covers the equipment.

10. [ ]a,c DESIGN ACTIVITIES

The [ ]a,c Design, Verification, and Validation Process is detailed in **Figure 5**. This section will focus on the design activities (with indication of where verification is required). The figure shows the activities as purely sequential (similar to the classic "Waterfall" methodology). In actuality, [

]a,c.

10.1. [ ]a,c Definition Activity

The [ ]a,c Definition Activity includes the following types of items:

1. Identification of the plant systems involved in the scope of the project.
2. Identification of the system design basis for the project.
3. Identification of the licensing basis for the project.
4. Documentation of the objective of the new system or modification.
5. An early evaluation of potential failure modes and impacts on the licensing evaluations.
6. Documentation of what other plant systems are affected.
7. Documentation of project specific methods and activities used in the design, development, documentation, verification, validation, etc.
8. Definition of particular options, features, and plant specific configurations.

This information shall become part of the [

]a,c[.

a,c

Figure 5: [ ]a,c Design, Verification, and Validation
(Overview is shown in Figure 2)

10.2. Functional Requirements Capture Activity

The Functional Requirements Capture Activity establishes and documents the design basis for the project. This includes:

- Transfer Function Requirements
- Time Response Requirements
- Accuracy Requirements
- Reliability Requirements
- Availability Requirements
- External Interface Requirements
- Setpoints and Tuning Constants
- Environmental and Seismic Requirements
- Human Factors Requirements
- Response to Failures

This information is documented in the Functional Requirements document. This document may be supplemented or replaced by [ ]a,c.

The effort associated with this activity varies with scope and format of information provided by the customer. The end result must be a complete set of functional requirements in a format usable for the remainder of the process.

[ ]a,c.

10.3. [ ]a,c System Design Activities

The [ ]a,c System Design Activities consist of two primary efforts: [ ]a,c.

10.3.1. [ ]a,c Requirements Analysis

The [ ]a,c Requirements Analysis determines and documents the system requirements based on the [ ]a,c. The [ ]a,c System Design Requirements are reviewed to determine the applicability of the platform requirements to the application requirements.

[ ]a,c.

10.3.2. [ ]a,c

[ ]a,c. [ ]a,c.

[

]a,c.

[ ]a,c.

10.4. [ ]a,c

[

]a,c.

[

]a,c.

10.5. [ ]a,c Hardware Design Activities

The [ ]a,c Hardware Design Activity consists largely of configuring the standard hardware [ ]a,c for a specific application. The following sections describe the steps involved.

10.5.1. Hardware System Configuration

The project personnel configure the system according to the [ ]a,c System Design Requirements and the architecture outlined in the [ ]a,c System Design Specification. This is documented by the creation of [

]a,c.

10.5.2. Hardware Cabinet Configuration

Detailed configurations of the hardware and locations of hardware within cabinets are produced. This activity is documented by the creation of cabinet level configuration drawings. Typical information includes placement of cards, specific jumpering or keying of modules, definition of cable connection information, labeling of specific modules or cables, and identification of external termination points for field wiring. These drawings would typically refer to [standard platform drawings and only specify application specific customization. The drawings may be augmented or replaced by a database. [ ]a,c.

10.5.3. Manufacturing

Manufacturing involves the production of hardware modules from components according to hardware assembly drawings. This activity may take place internally or at an external manufacturing site. It includes inspection processes that are defined in manufacturing procedures. Assembled modules typically go through module level testing as part of the manufacturing process. The results of this testing must be recorded for traceability to the module level. Items requiring commercial dedication are dedicated at the module level by the criteria described in the commercial dedication instruction. The

applicable instruction for each module must be identified by a drawing or other manufacturing tracking system. The dedication activity must be recorded for [ ]^{a,c}.

10.6. [ ]^{a,c} Integration Activity

The developers shall combine the application software and hardware items with [ ]^{a,c}, and test equipment. The test setup shall be designed to exercise the system (or portion of the system) in a configuration that is typical of its intended use. [ ]^{a,c}.

11. [ ]a,c VERIFICATION ACTIVITIES

As the [ ]a,c Design Activities proceed in a [ ]a,c.

The [ ]a,c Verification Activities use the same definitions for review types and techniques as presented in Section 8.1 and Section 8.2, respectively.

As shown in 5, the following design products are checked for consistency and correctness:

1. Functional Requirements Capture Products
   a) Functional Requirements -- [ ]a,c.
2. [ ]a,c
   a) [ ]a,c.
   b) [ ]a,c.
3. [ ]a,c
   a) [ ]a,c.
4. Hardware Design Products
   a) System Level Documentation Package -- [ ]a,c.
   b) Cabinet Level Documentation Package -- [ ]a,c.

In addition to the reviews shown in these figures, [ ]a,c.

[ ]a,c.

[ ]a,c.

The results of the software verification activities are documented in the Software Verification Report.

12. [ ]a,c VALIDATION AND QUALIFICATION TESTS

12.1. [ ]a,c Specific Qualification

An application specific qualification analysis is undertaken to show that the system will meet its design basis for seismic, environmental and EMI conditions. This analysis may confirm that the system has been qualified by previous analysis or testing. It may also indicate that further testing or analysis is needed. [ ]a,c. They shall prepare the qualification plan, prepare any required procedures, perform or supervise any required tests, and document the analysis and/or test results in the Equipment Qualification Report.

12.2. Factory Acceptance Test

The Factory Acceptance Test (FAT) provides the formal validation of the system functionality as specified in the functional requirements. Additionally, the [ ]a,c. The required input signals, the anticipated output signals and the acceptance criteria shall be stated in the procedures.

[ ]a,c:

- [ ]a,c
- [ ]a,c

  [ ]a,c
-]a,c
- [ ]a,c

[ ]a,c.

[ ]a,c.

[ ]a,c.

[

]a,c.

[ ]a,c.

12.3. Site Acceptance Test

The Site Acceptance Test (SAT) is performed in the plant. Its purpose is to provide adequate confidence of the following:

1. No damage has occurred due to shipment or installation
2. The system is compatible with the plant
3. The interfaces to other plant systems are correct (especially interfaces which were simulated during the FAT).

[

]a,c.

[

]a,c.

13. SUMMARY OF DESIGN, VERIFICATION AND VALIDATION DOCUMENTS

The tables in this section summarize the documents that are produced in accordance to the design, verification and validation plans contained in this document.

a,c

Table 1: [ ]a,c Design, Verification, and Validation Documents

a,c

a,c

Table 2: [ ]a,c Design, Verification, and Validation Documents

a,c

ATTACHMENT 4

Letter from Mark L. Marchi (WPSC)

To

Document Control Desk (NRC)

Dated

October 22, 1999

Reactor Protection and Engineered Safety Features Upgrade

"Kewaunee Nuclear Power Plant Reactor Protection System Upgrade Project, Project Quality Plan"
Revision 2

– Non-Proprietary Class 3

NUCLEAR PROJECTS BUSINESS UNIT

Kewaunee Nuclear Power Plant Reactor Protection System Upgrade Project

Project Quality Plan

Revision 2

October 1999

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Record Of Changes

REVISION	DATE	SUMMARY OF CHANGES
0	March 16, 1999	
1	August 23, 1999	Incorporated NPD procedures into Table 4.1 Clarified second party review in Procedure 4.5
2	October 12, 1999	General editorial comments, as noted

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5. REFERENCES..... 5-1

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1. INTRODUCTION

The Kewaunee Nuclear Power Plant Reactor Protection System (RPS) Upgrade will replace the existing Process Protection racks (manufactured by Foxboro) and the Reactor Protection Trip Logic and Safeguards Actuation System racks (manufactured by Westinghouse circa 1971) with a state-of-the-art digital system based on the Westinghouse E3 hardware platform, using Eagle Series software.

The Replacement RPS system will be engineered, assembled and licensed by the Westinghouse Nuclear Projects Business Unit (NPBU). Installation supervision will also be provided by (W)NPBU.

The Replacement RPS system is a one-to-one functional replacement of the existing process analog equipment and the relay systems which make up the Reactor Trip and Engineered Safeguard Feature (ESF) initiation logic.

The RPS Replacement Hardware will be received from
]^{a,c} to meet safety Class 1E requirements at the [ ]^{a,c}.

The purpose of this Project Quality Plan (PQP) is to describe the applicability of the Westinghouse Electric Company Quality Management System (QMS) to the Replacement Project.

Section 2 is a list of Terms and Abbreviations used in this Plan. Section 3 of this PQP provides the Quality Program requirements applicable to the Project. Section 4 of this PQP describes the implementation of the quality assurance program. The quality assurance procedures applicable to this project are identified. Section 5 of this PQP provides references for documents used in the preparation of this document.

The specific cabinet qualification tests (seismic, EMI, etc.) will be performed on a generic basis using the Division General Resources programs in place.

Similarly, the [ ]^{a,c} will be generated on generic programs.

2. TERMS & ABBREVIATIONS

The following terms, abbreviations, and acronyms are used within this document:

Class 1E Equipment	This equipment is that relied upon to remain functional during and following design basis events to ensure (1) the integrity of the reactor coolant pressure boundary; (2) the capability to shut down the reactor and maintain it in a safe shutdown condition and (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10CFR Part 100 guidelines.
Validation	The test and evaluation of the integrated computer system (hardware and software) to ensure compliance with the functional, performance and interface requirements.
Verification	The process of determining whether or not the product at each phase of the digital computer system development process fulfils all the requirements imposed by the previous phase.
A	When used within the Quality Policies and Procedures table, stands for "Applicable".
ASME	American Society of Mechanical Engineers
CDI	Commercial Dedication Instructions
CFR	Code of Federal Regulations
DPU	Distributed Processing Unit, referring to the microprocessor (controller)
EMI	Electro-Magnetic Interference
ESF	Engineered Safety Features
I&C	Instrumentation and Control
KNPP	Kewaunee Nuclear Power Plant
LAR	Licensee Amendment Request
N/A	Not Applicable
NPBU	Westinghouse Electric Company Nuclear Project Business Unit

NSBU	Westinghouse Electric Company Nuclear Services Business Unit
PCI	Process Control, Inc.
PQP	Project Quality Plan
QMS	Quality Management System, a Westinghouse quality assurance program designed to ensure that customer quality assurance requirements and related quality standards are met for the industries that Westinghouse serves. The QMS is contained in the Policy and Procedures Manual.
RPS	Reactor Protection System
WPSC	Wisconsin Public Service Corp

3. QUALITY PROGRAM REQUIREMENTS

The NPBU work activities associated with Class 1E portion of the System shall comply with the requirements of 10CFR 50, Appendix B and the applicable requirements of ASME NQA-1-1994.

4. IMPLEMENTATION OF ESBU POLICY/PROCEDURES

The Westinghouse Electric Company Quality Management System policies and procedures will be applied as described in Table 4-1. Table 4-1 is structured to follow the NSBU /NPBU Level II Policies/Procedures.

TABLE 4-1
LIST OF APPLICABLE QMS POLICIES AND PROCEDURES

Level I/Level II	Applicability	Implementation Remarks
Level 1		
QMS	A	
Level II		
1.0 MANAGEMENT RESPONSIBILITY		
[ ]a,c	N/A	NPBU organization is detailed in Appendix A.
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	
2.0 QUALITY SYSTEMS		
[ ]a,c	A	
[ ]a,c	A	
3.0 CONTRACT REVIEW		
[ ]a,c	A	

TABLE 4-1 (cont)
LIST OF APPLICABLE QMS POLICIES AND PROCEDURES

Level I/Level II	Applicability	Implementation Remarks
4.0 DESIGN CONTROL		
[ ]a,c	N/A	Input to WPSC Analysis
[ ]a,c	A	
[ ]a,c	N/A	Input to WPSC LAR
[ ]a,c N/A		
[ ]a,c	A	Clarify para 4.4 per the below. [ ]a,c.
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	N/A	
[ ]a,c	N/A	
[ ]a,c	N/A	
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c A		
[ ]a,c	A	
[ ]a,c	N/A	
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	

[NP 4.19 TABLE 4-1 (cont)
LIST OF APPLICABLE QMS POLICIES AND PROCEDURES

Level I/Level II	Applicability	Implementation Remarks
Computer Software Development Process	N/ A	Replaced by the E3 Design, Verification and Validation Plan for Class 1E and Category A Systems
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	N/A	
5.0 DOCUMENT AND DATA CONTROL		
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	N/A	
6.0 PURCHASING		
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	

Table 4-1 (cont)

LIST OF APPLICABLE QMS POLICIES AND PROCEDURES

Level I/Level II	Applicability	Implementation Remarks
7.0 CONTROL OF CUSTOMER-SUPPLIED PRODUCT		
[ ]a,c	N/A	
8.0 PRODUCT IDENTIFICATION AND TRACEABILITY		
[ ]a,c	A	
9.0 PROCESS CONTROL		
[ ]a,c	A	
10.0 INSPECTION AND TESTING		
[ ]a,c	A	
11.0 CONTROL OF INSPECTION, MEASURING AND TEST EQUIPMENT		
[ ]a,c	A	
12.0 INSPECTION AND TEST STATUS		
[ ]a,c	A	
13.0 CONTROL OF NONCONFORMING PRODUCT		
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	

TABLE 4-1 (cont)
LIST OF APPLICABLE QMS POLICIES AND PROCEDURES

Level I/Level II	Applicability	Implementation Remarks
14.0 CORRECTIVE AND PREVENTATIVE ACTION		
[ ]a,c	A	
[a,c	A	
[ ]a,c	A	
15.0 HANDLING, STORAGE, PACKAGING, PRESERVATION AND DELIVERY		
[ ]a,c	A	
16.0 CONTROL OF QUALITY RECORDS		
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	A	
17.0 INTERNAL QUALITY ASSESSMENTS		
[ ]a,c	A	
18.0 TRAINING		
[ ]a,c	A	

TABLE 4-1 (cont)
LIST OF APPLICABLE QMS POLICIES AND PROCEDURES

Level I/Level II	Applicability	Implementation Remarks
19.0 SERVICING (WP-19.11 through WP-19.13)	N/A	
20.0 STATISTICAL TECHNIQUES		
[ ]a,c	A	
21.0 NUCLEAR SAFETY		
[ ]a,c	A	
[ ]a,c	N/A	
22.0 SUPPLEMENTAL POLICIES		
[ ]a,c	N/A	
[ ]a,c	N/A	
[ ]a,c	N/A	
[ ]a,c	A	
[ ]a,c		
[ ]a,c	A	
[ ]a,c	A	
[ ]a,c	N/A	
[ ]a,c	N/A	

5. REFERENCES

The following documents were used in preparing this PQP:

1. [99]^{a,c}.

2. WPSC Purchase Order #247306 dated February 28, 1999.

3. OCS #9839005 R/O.

a,c

[ ]

Appendix A: Westinghouse NPBU Organization Chart