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Chrono number: 14-0068

April 15, 2014

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Subject: CB&I Responses to Request for Additional Information Regarding Topical Report, CMS-720-03-PL-00020, Revision 0, Quality Assurance Program Description

Reference:

1. Letter from David Jantosik (CB&I) to U.S. Nuclear Regulatory Commission, "CB&I Nuclear Topical Report CMS-720-03-PL-00020, Revision 0, Quality Assurance Program Description," dated May 14, 2013
2. Letter from Joseph J. Holonich, Sr. (U.S. NRC) to Curtis A. Castell (CB&I), "Request for the Review of CB&I Nuclear Topical Report CMS-720-03-PL-00020, Revision 0, Quality Assurance Program Description (TAC No. MF1798)," dated January 27, 2014

Reference 1 submitted CB&I Topical Report CMS-720-03-PL-00020, Revision 0, for NRC staff review. The NRC transmitted NRC request for additional information (RAI) regarding the CB&I Topical Report by letter under Reference 2.

Enclosure 1 to this letter contains CB&I responses to RAI questions. Enclosure 2 contains change pages (reline/markup) to the CB&I Topical Report incorporating RAI responses and changes identified as "Additional Changes and Clarifications" in Enclosure 1.

It is our intent that the planned fully effective date for the CB&I Topical Report is expected to be 90 days subsequent to NRC approval or not later than December 08, 2014.

Please direct any questions or correspondence regarding this submittal to:

David Jantosik
Senior Director, Nuclear Quality
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Q004
NRO

Sincerely,

David Jantosik
Senior Director, Nuclear Quality

Enclosure:

1. CB&I Response to NRC Request for Additional Information
2. CB&I Topical Report, CMS-720-03-PL-00020, Revision 0 Proposed Changes

ENCLOSURE 1
CB&I RESPONSE TO NUCLEAR REGULATORY COMMISSION (NRC)
REQUEST FOR ADDITIONAL INFORMATION (RAI)

1.0 Provide a list of office locations, whose activities are performed in accordance with this quality program. Include entity names (Shaw, CB&I, Stone & Webster as appropriate).

CB&I RESPONSE

CB&I Topical Report, CMS-720-03-PL-00020, Revision 0, Quality Assurance Program Description (QAPD) was revised to add a list of CB&I Nuclear Office Locations and CB&I Nuclear Legal Entities in Part I, Introduction, Page 3.

NOTE: A follow-up question with regard to the identified CB&I legal entities have been asked. "The staff would like a call or clarification on the changes made to page 3 of the QAPD. The page 3 markup includes three CB&I Nuclear office locations and then lists 7 CB&I Nuclear Legal Entities. Are these legal entities located within the three addresses for office locations?"

As discussed in the phone call of 04/11/2014, the following details regarding CB&I legal entities, locations and ownership relationships is provided:

CB&I Stone & Webster, Inc.
- Principal place of business – 4171 Essen Lane, Baton Rouge, LA
- Other office - Stoughton, MA (now Canton, MA)
- Owned by S&W Holding One, Inc. and Holding Two, Inc. 50% each
- Owner of CB&I Stone & Webster Construction, Inc.

CB&I Stone & Webster Construction, Inc.
- Principal place of business – 4171 Essen Lane, Baton Rouge, LA
- Other location – Vogtle Project, Waynesboro GA
- Owned by CB&I Stone & Webster, Inc.

CB&I Shaw Constructors, Inc.
- Principal place of business – 36445 Perkins Road, Prairieville, LA
- Other offices - 4171 Essen Lane, Baton Rouge, LA
- VC Summer Project, Jenkinsville, SC
- Owned by The Shaw Group, Inc. – a holding company

CB&I Power, Inc. (f/k/a Shaw Power, Inc.)
- Principal place of business - 4171 Essen Lane, Baton Rouge, LA
- Owned by The Shaw Group, Inc. – a holding company
- Owner of Shaw Nuclear Services, Inc.

CB&I Stone & Webster Michigan, Inc. - Engineering Firm – required by local engineering licensing
- Owned by CB&I Stone & Webster, Inc.

CB&I Stone & Webster Massachusetts, Inc. - Engineering Firm – required by local engineering licensing
- Owned by CB&I Stone & Webster, Inc.

CB&I North Carolina, Inc. - Engineering Firm – required by local engineering licensing
- Owned by CB&I Stone & Webster, Inc.

2.0 Title 10 of the Code Federal Regulation, Appendix B of Part 50 states in part that the authority and duties of persons and organizations performing activities affecting safety-related functions of structures, systems and components shall be clearly established and delineated in writing. These activities include both the performing functions of attaining quality objectives and the quality assurance functions. The persons and organizations performing the quality assurance functions shall have sufficient authority.

2.0a Part II, Section 1 of the CB&I QAPD assigns duties to the Director, Nuclear Quality. Clarify this position and provide a discussion on how this position reports to management and fits into the CB&I organizational chart provided in Figure 1

CB&I RESPONSE

CB&I position "Director Nuclear Quality" was clarified by adding new Figure 2 in Part II, Section 1, CB&I Nuclear Quality Organization, Page 11. Figure 2 depicts reporting relationships for the Nuclear Quality Organization, including the Director Nuclear Quality.

2.0b Part II, Section 1 of the CB&I QAPD references the term Director, Nuclear Quality. How is this position represented in the organizational chart?

CB&I RESPONSE

CB&I position Director Nuclear Quality was clarified by adding new Figure 2 in Part II, Section 1, CB&I Nuclear Quality Organization, Page 11. Figure 2 depicts reporting relationships for the Nuclear Quality Organization, including the Director Nuclear Quality.

2.0c Provide a description of the EH&S group in Part II, Section 1 of the CB&I QAPD.

CB&I RESPONSE

Reference to EH&S was deleted from the CB&I QAPD in Part II, Section 1.5, and Figure 1, Page 10.

2.0d In Figure 1, the CB&I organizational chart has a dashed line from SVP Functional Operations to both President, Plant Services and President, Nuclear (business line). Please provide a discussion for the interactions for these links.

CB&I RESPONSE

The dashed lines in CB&I QAPD, Figure 1, Page 10, from the SVP (Senior Vice President) Functional Operations to the President, Plant Services and President, Nuclear were removed. A new dashed line was added between the President, Power and President, Plant Services to depict nuclear policy, as stated in Part II, Section 1.2.3, Page 5, "When the scope of work implements this document then the managing executive and plant service staff will fall under the nuclear policy direction of the President, Power." In Part II, Section 1.2.3, the statement, "(the dotted line on the CB&I Nuclear organizations chart shows that relationship)" was removed.

2.0e For description 1.4.4, "Contracts/Subcontracts" there is a typographical error: contact/subcontracted should be contracted/subcontracted.

CB&I RESPONSE

CB&I QAPD, Part II, Section 1.3.4, last sentence, "contract/subcontract" revised to "subcontracted." The organization title in Section 1.3.4 has been changed to "Subcontracts."

3.0 In Part II, Section 7, Item 7.2.4 states that holders of American Society of Mechanical Engineers (ASME) Authorized Inspection Agency (AIA) Certificates of Accreditation are considered qualified to perform AIA services within the scope of the certificate in accordance with the ASME Code. "The ASME AIA Certificate is considered sufficient evidence of an acceptable AIA quality assurance program. Pre and Post Award audits are not required." Clarify how this meets the intent of the staffs' position describe in Information Notice (IN) 86-21, "Recognition of American Society of Mechanical Engineering Accreditation Program for N Stamp Holders." IN 86-21 allows taking credit for the quality assurance program; however, verification of the implementation of the program is required.

CB&I RESPONSE

CB&I QAPD, Part II, Section 7, Item 7.2.4 has been deleted.

4.0 Describe the oversight of contracted/delegated activities and how the work is formally evaluated.

CB&I RESPONSE

The proposed CB&I QAPD documents our commitment to comply with Appendix B to Part 50 of Title 10 of the Code of Federal Regulations, and ASME NQA-1-2008 and ASME NQA-1a-2009. The QAPD has been prepared using the guidance in NEI 11-04, "Nuclear Generation Quality Assurance Program Description (QAPD)" template. A review of the proposed QAPD has been performed to determine if the proposed QAPD includes appropriate descriptions of controls for contracted/delegated activities. Results of the evaluation are provided as follows:

Appendix B to Part 50, I Organization

"The applicant may delegate to others, such as contractors, agents, or consultants, the work of establishing and executing the quality assurance program, or any part thereof, but shall retain responsibility for the quality assurance program."

"Because of the many variables involved, such as the number of personnel, the type of activity being performed, and the location or locations where activities are performed, the organizational structure for executing the quality assurance program may take various forms provided that the persons and organizations assigned the quality assurance functions have this required authority and organizational freedom."

CB&I Nuclear commitment to comply with Appendix B to Part 50 for subcontracted/delegated activities is addressed in the QAPD and NQA-1-2008, as follows:

QAPD, Part II, Section 1, 3rd Paragraph
"Design, engineering, testing, modifications, repairs and environmental services may be provided to CB&I Nuclear by qualified contractors in accordance with their Quality

Assurance Programs, or by contractors working under the CB&I Nuclear QAPD. These contractors are approved prior to performing safety-related work."

QAPD, Part II, Section 2, 1st Paragraph
"Further, CB&I Nuclear ensures through the systematic process described herein that its suppliers of safety-related equipment or services meet the applicable requirements of 10 CFR 50, Appendix B."

QAPD, Part II, Section 2, 5th Paragraph
"Delegated responsibilities may be performed under a supplier's or principal contractor's QAP [Quality Assurance Plan], provided that the supplier or principal contractor has been approved as a supplier in accordance with the CB&I Nuclear QAP. Periodic audits and assessments of supplier QA programs are performed to assure compliance with the supplier's or principal contractor's QAPD and implementing procedures. In addition, routine interfaces with the supplier's personnel provide added assurance that quality expectations are met."

NQA-1-2008, Requirement 1, 202
"The individual(s) or organization(s) responsible for establishing and executing a quality assurance program under this Standard may delegate any or all of the work to others but shall retain responsibility therefor."

Based on this review, it is concluded that the Appendix B to 10 CFR 50 requirements for contracted/delegated activities as stated above are addressed in the proposed QAPD. Additionally, implementing documents address responsibility for CB&I Nuclear to perform oversight activities and to retain overall responsibility for performance and quality of work performed by subcontractors.

5.0 In Part IV, "Regulatory Commitments," Section S, "Operations Phase Only," the vendor commits to Regulatory Guide (RG) 1.58, "Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel," Revision 1. RG 1.58 has been withdrawn. The ANSI standard endorsed by this RG has been incorporated into NQA-1 starting with the 1983 Edition of NQA-1. Clarify which version of SNT-TC-1A will be used or how it will be determined (see Part II, Section 2). Also, discuss the use of SNT-TC-1 A-1992 in the Part IV, Section S discussion on RG 1.58. Address any deviations to NQA-1 2008 Edition through 2009 Addenda.

CB&I RESPONSE TO 5.0

The "Regulatory Commitments," identified in QAPD Part IV, Section B typically are addressing withdrawn Regulatory Guides that provided the NRC position relative to an ANSI N45.2 series standard whose requirements have since been incorporated into NQA-1. These commitments are listed in Part IV, Section B since they are imposed by operating Nuclear Power Plants on our Nuclear Services work to the extent that they are passed on to CB&I Nuclear for the scope of services identified in the contract. Not all operating plants have migrated their QA Program licensing commitments in their FSAR/USAR from ANSI N45.2 series standards used during construction to those addressed in NQA-1. Accordingly, Part IV, Section B is meant to respond to our operating utility clients who want to know whether our QA Program will satisfy their QA Program licensing commitments. The following is offered in response to each of the specific questions in 5.0.

5.0a Clarify which version of SNT-TC-1A will be used or how it will be determined (see Part II, Section 2).

CB&I RESPONSE

As stated in Part II, Section 2.7.2, "Section 301," "CB&I Nuclear follows Section 301 for qualification of nondestructive examination personnel, except that CB&I Nuclear will follow the applicable standard cited in the version(s) of Section III and Section XI of the ASME Boiler and Pressure Vessel Code approved by the NRC for use at CB&I Nuclear sites for the scope of activities governed by these cited standards." Accordingly, the version of SNT-TC-1A that will be used for construction of a new Section III Component is the version required by the ASME Section III Code Edition and Addenda invoked by the ASME Section III Design Specification. The version of SNT-TC-1A that will be used for ASME Section XI PSI/ISI is the version invoked by the ASME Section XI Edition and Addenda that is applicable to the ASME Section XI PSI/ISI examination to be performed.

5.0b Discuss the use of SNT-TC-1A-1992 in the Part IV, Section B discussion on RG 1.58.

CB&I RESPONSE

The alternative cited in the second bullet of Part IV, Section B discussion on RG 1.58 is addressing paragraph 2.4 of ANSI N45.2.6-1978 "*Written Certification of Qualification*" and identifies the CB&I Nuclear disciplines that are used on certificates of qualification to identify the activities an inspector is certified to perform. For NDE disciplines, rather than listing those disciplines, a parenthetical reference that reads (as delineated in SNT-TC-1A 1992) is used for the purpose of identifying the NDE disciplines that will be used on certificates of qualification to identify the activities an NDE inspector is certified to perform, For clarity the NDE line will be revised to read as follows:

"NDE disciplines as delineated in the version of SNT-TC-1A that is invoked for the work."

5.0c Address any deviations to NQA-1 2008 Edition through 2009 Addenda.

CB&I RESPONSE

Deviations to NQA-1-2008 and/or NQA-1a-2009 are discussed in Part II, Sections 1-18, under "NQA-1 Commitment / Exceptions" and Part IV, Section A.

6.0 In Part IV, Section S, the vendor commits to the following RGs:

- RG 1.38, Revision 2, "Quality Assurance Requirements for Packaging, Shipping, Receiving and Handling of Items for Water-Cooled Nuclear Power Plants," (Withdrawn - See 75 FR 54921,09/09/2010)
- RG 1.39, Revision 2, "Housekeeping Requirements for Water-Cooled Nuclear Power Plants," (Withdrawn - See 75 FR 70044,11/16/2010)
- RG 1.64, Revision 2, "Quality Assurance Requirements for the Design of Nuclear Power Plants," (Withdrawn - See 56 FR 36175,07/31/1991)
- RG 1.74, Revision 0, "Quality Assurance Terms and Definitions," (Withdrawn – See 54 FR 38919,09/21/1989)
- RG 1.88, Revision 2. "Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records," (Withdrawn - See 56 FR 36175,07/31/1991)
- RG 1.94, Revision 1, "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel during the Construction Phase of Nuclear Power Plants," (Withdrawn - See 75 FR 54921, 09/09/2010)

- RG 1.116, Revision O-R, "Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems," (Withdrawn - See 75 FR 54921, 09/09/2010)
- RG 1.123, Revision 1, "Quality Assurance Requirements for Control of Procurement of Items Services for Nuclear Power Plants," (Withdrawn - See 56 FR 36175, 07/31/1991)
- RG1.144, Revision 1, "Auditing of Quality Assurance Programs for Nuclear Power Plants," (Withdrawn - See 56 FR 36175, 07/31/1991)
- RG 1.146, Revision 0, "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants," (Withdrawn - See 56 FR 36175, 07/31/1991)

These RGs have been withdrawn. The guidance endorsed in these RGs has been incorporated into NQA-1. Clarify these deviations related to your commitment to NQA-1 2008 Edition through 2009 Addenda. Additionally, provide a discussion on how these RGs are relevant to only the operation phase for nuclear power plants that you may have contracts to perform safety related activities.

CB&I RESPONSE

The "Regulatory Commitments," identified in QAPD Part IV, Section B typically are addressing withdrawn Regulatory Guides that provided the NRC position relative to an ANSI N45.2 series standard whose requirements have since been incorporated into NQA-1. They are listed in Part IV, Section B since they are imposed by operating Nuclear Power Plants on our Nuclear Services work to the extent that they are passed on to CB&I Nuclear for the scope of services identified in the contract. Not all operating plants have migrated their QA Program licensing commitments in their FSAR/USAR from ANSI N45.2 series standards used during construction to those now addressed in NQA-1. Accordingly, Part IV, Section B is meant to respond to our operating utility clients who want to know whether our QA Program will satisfy their QA Program licensing commitments. The following is offered in response to each of the specific questions in 6.0.

6.0a These RGs have been withdrawn. The guidance endorsed in these RGs has been incorporated into NQA-1. Clarify these deviations related to your commitment to NQA-1 2008 Edition through 2009 Addenda.

CB&I RESPONSE

QAPD Part IV, Section B is meant to respond to our operating utility clients who want to know whether our QA Program will satisfy their QA Program licensing commitments when the licensing commitments in their FSAR/USAR continue to commit to ANSI N45.2 series standards that were used during plant construction. Part IV, Section B is not considered to be a deviation to NQA-1 2008 Edition through 2009 Addenda since compliance with NQA-1 was not the operating utility QA Program licensing commitment.

6.0b Additionally, provide a discussion on how these RGs are relevant to only the operation phase for nuclear power plants that you may have contracts to perform safety related activities.

CB&I RESPONSE

Part IV, Section B is applicable to the current fleet of operating plants who continue to have QA Program licensing commitments in their FSAR/USAR that commit to those ANSI

N45.2 series standards that were used during plant construction. Part IV, Section B is not applicable to our existing AP1000 plants currently under construction.

7.0 In Part IV, Section B, the vendor commits to RG 1.30/ Safety Guide 30, "Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation of Electronic Equipment." The guidance in this document has been incorporated into NQA-1. Clarify these deviations related to your commitment to NQA-1 2008 Edition through 2009 Addenda. Additionally, provide a discussion on how this RG is relevant to only the operation phase for nuclear power plants that you may have contracts to perform safety related activities.

7.0a In Part IV, Section B, the vendor commits to RG 1.30/ Safety Guide 30, "Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation of Electronic Equipment." The guidance in this document has been incorporated into NQA-1. Clarify these deviations related to your commitment to NQA-1 2008 Edition through 2009 Addenda

CB&I RESPONSE

In QAPD Part IV, Section B, the commitment to RG 1.30/ Safety Guide 30, "Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation of Electronic Equipment," is applicable only to the current fleet of operating plants who continue to have QA Program licensing commitments in their FSAR/USAR that commit to RG 1.30/ Safety Guide 30.

7.0b Additionally, provide a discussion on how this RG is relevant to only the operation phase for nuclear power plants that you may have contracts to perform safety related activities.

CB&I RESPONSE

QAPD Part IV, Section B is applicable only to the current fleet of operating plants who continue to have QA Program licensing commitments in their FSAR/USAR that commit to RG 1.30/ Safety Guide 30. Part IV, Section B is not applicable to our existing AP1000 plants currently under construction.

The header of Part IV, Section B will be changed to "OPERATING PLANTS (Plants with licensing commitments to ANSI N45.2 series standards or earlier versions of Regulatory Guides)" to clarify the intent of this section.

8.0 In Part IV, Section B, the vendor commits to RG 1.70, Revision 3, "Standard Format and Content of Safety Analysis Report for Nuclear Power Plants," RG 1.136, Revision 3, "Design Limits, Loading Combinations, Materials, Construction, and Testing of Concrete

Containments," RG 1.142, Revision 2, "Safety-Related Concrete Structures for Nuclear Power Plants (Other than Reactors Vessels and Containment," and "Additional Guidance". Provide a discussion why these RGs and "Additional Guidance" are applicable to "Operations Phase Only."

CB&I RESPONSE

RG 1.70, Revision 3, "Standard Format and Content of Safety Analysis Report for Nuclear Power Plants," RG 1.136, Revision 3, "Design Limits, Loading Combinations, Materials, Construction, and Testing of Concrete Containments," and RG 1.142, Revision

2, "Safety-Related Concrete Structures for Nuclear Power Plants (Other than Reactors Vessels and Containment)" are deleted from this section.

The "Additional Guidance" in QAPD Part IV, Section B addresses Branch Technical Position ASB 9.5-1, "Fire Protection Guidelines for Nuclear Power Plants", would be a licensing commitment passed down to CB&I Nuclear from a Licensee/Clients SAR for an Operating Plant.

9.0 Clarify if CB&I will commit to RG 1.206, Rev. 0, "Combined License [COL] Applications for Nuclear Power Plants, (LWR Edition)," for the potential development of a combined license application.

CB&I RESPONSE

CB&I Nuclear does not currently perform, or have plans to perform, activities related to the development of applications for any COLs for nuclear power plants. If such activities were to be performed, they would be conducted under specific contractual requirements for a COL applicant. Therefore, this regulatory guide is not needed as a committed reference under this QAPD.

10.0 In Part IV, Section B, the vendor commits to RG 1.28, Revision 2, "Quality Assurance Program Criteria (Design and Construction)," for the "Operations Phase Only." For "Construction and Post Construction Phase" the QAPD commits to RG 1.28, Revision 4.

Please discuss how the older versions of RG 1.28 (Revisions 2 and 3) are relevant when the QAPD is based on NQA-1, 2008 Edition through the 2009 Addenda.

CB&I RESPONSE

Regulatory Guide 1.28 Revision 2 Dated February 1979 provides the NRC's position relative to the ANSI N45.2 series standards for Quality Assurance Program requirements It is listed in QAPD Part IV, Section B since they are imposed by operating Nuclear Power Plants on our Nuclear Services work to the extent that they are passed on to CB&I Nuclear for the scope of services identified in the contract. Not all operating plants have migrated their QA Program licensing commitments in their FSAR/USAR from those ANSI N45.2 series standards used during design and construction to those addressed in NQA-1. Accordingly, Part IV, Section B is meant to respond to our operating utility clients who want to know whether our QA Program will satisfy their QA Program licensing commitments.

ADDITIONAL CHANGES AND CLARIFICATIONS

The following changes and clarifications are not related to the response to the NRC RAI. This is included to assist the review by providing information pertaining to additional changes and clarifications that have been made to the proposed CB&I Nuclear QAPD.

1.0 Title page, revised "Stone & Webster, Inc., (a CB&I Company)" to "CB&I Stone & Webster, Inc."
2.0 Approval page, added an approval by "Don DePierro President, Nuclear"
Revised approval from "Clarence Ray" to "Jeff Lyash"
3.0 Copyright Notice, 1st paragraph, added "CB&I" in front of "Stone & Webster, Inc." and deleted "a CB&I Company."
4.0 Revised "Revision History"
5.0 Policy Statement, 3rd paragraph, revised "President, Nuclear" to "President, Power."

Revised approval from "David P. Berry President, Nuclear" to "Jeff Lyash President, Power."

6.0 Part I, Page1, General, revised 2nd paragraph and added 3rd paragraph to clarify the use of Regulatory Commitments in Part IV, Sections A and B, to read:

"For licensed facilities that are in the construction phase and which are committed to an earlier edition of NQA-1 or to an earlier edition of a specified Regulatory Guide; as described in Regulatory Commitments, Part IV, Section A, "Construction and Post-Construction (Plants with licensing commitments to NQA-1)," CB&I Nuclear commits to comply with the requirements contained in either the specific endorsed NQA-1 version or Regulatory Guide. These specific requirements would be implemented via a licensee/client commitment documented in the applicable contract and project quality assurance plan."

"For licensed facilities that are in the operations phase and which are committed to ANSI/ASME N45.2 Standards, to an earlier edition of a specified Regulatory Guide, or where reference standards are specifically cited in NQA-1 but are withdrawn or superseded; as described in Regulatory Commitments, Part IV, Section B, "Operating Plants (Plants with licensing commitments to ANSI N45.2 series standards or earlier versions of Regulatory Guides," CB&I Nuclear commits to comply with the requirements contained in either the ANSI/ASME N45.2 and applicable daughter standards, or in the specific endorsed Regulatory Guide. These specific requirements would be implemented via a licensee/client commitment documented in the applicable contract and project quality assurance plan."

7.0 Part I, Page 2, deleted 2nd to last paragraph. The detail in this paragraph is addressed in Page 3.

8.0 Part I, Page 2, last paragraph, first sentence, revised to read, "Any CB&I Nuclear affiliated company, other than those listed on the following page, that intend to..."

9.0 Part II, Section 1, Page 4, last paragraph, added "CB&I" in front of "Stone & Webster, Inc." and "Shaw Constructors, Inc." and deleted "The Shaw Group, Inc."

10.0 Part II, Section 1.1, revised last sentence to read, "The President, Power reports to the Executive Vice President (EVP) & Chief Operating Officer (COO) of Engineering, Construction and Maintenance (EC&M)."

11.0 Part II, Section 1.2.3, revised first sentence to read "The managing executive of plant services reports to the EVP & COO of EC&M..."

12.0 Part II, Section 1.3, Project Controls & System Integration, deleted entire paragraph.

13.0 Part II, Section 1.3.4, revised organization title to "Subcontracts."

14.0 Part II, Section 1.4, added new sentence at end of paragraph to read "The CB&I Nuclear Quality Organization chart is shown in Figure 2, Page 11."

15.0 Part II, Section 1.4.1, 2nd paragraph, revised title of "Vice President Quality" to Director Power Quality."

16.0 Part II, Section 1.5, added new position and paragraph for the "Nuclear Safety Officer."

17.0 Part II, Section 1.7, deleted "This provision is not applicable to design review/verification."

18.0 Part II, Section 1.8, added an exception which states, "CB&I Nuclear takes exception to NEI 11-04, Revision 0, Part II QAPD Details, Section 1 Organization, 1.9 Quality Assurance Organizational Independence, "This provision is not applicable to design review/verification." This requirement does not apply to early site permit (ESP) or construction."

19.0 Part II, Section 2, 3rd paragraph, Page 12, revised "Shaw Nuclear Services" to read "CB&I Stone & Webster."

20.0 Part II, Section 13.2.4, deleted the paragraph taking an exception to NQA-1-2008, Subpart 2.3, Section 202.

21.0 Part IV, Page 46, 3rd paragraph was revised to read, "In cases where referenced standards are specifically cited in NQA-1 but are withdrawn or superseded or an alternative standard is required by project specifications, CB&I Nuclear may adopt a later version, develop a similar specification or substitute an alternative standard/specification provided the decision is supported via a documented evaluation by Engineering or other appropriate authority and the intent of the originally cited standard is met."

22.0 Part IV, Section A, Page 46, revised header to read, CONSTRUCTION AND POST-CONSTRUCTION (Plants with licensing commitments to NQA-1)"

23.0 Part IV, Section A, Page 47, Regulatory Guide 1.33, deleted 1st paragraph and added a sentence to end of 2nd paragraph to read, "These specific requirements would be implemented via a licensee/client commitment documented in the applicable contract and project quality assurance plan."

ENCLOSURE 2

CB&I Topical Report, CMS-720-03-PL-00020, Revision 0 Proposed Changes

CB&I NUCLEAR

QUALITY ASSURANCE PROGRAM DESCRIPTION

CMS-720-03-PL-00020 REVISION 0

(Final Pending SER 04-11-2014)

CB&I Stone & Webster, Inc.,
~~(a CB&I Company)~~
128 S. Tryon St., Suite 1000
Charlotte, NC 28202

QUALITY ASSURANCE PROGRAM DESCRIPTION

APPROVALS

Reviewed by / Date: _____

David Jantosik

~~Senior~~ Director~~,~~ Nuclear Quality

Approved by / Date: _____

Dennis K. Dreyfus

~~Vice President~~Director~~,~~ Power~~,~~ Quality

Approved by / Date: _____

Don DePierro

President, Nuclear

Approved by / Date: _____

Ron McCall

President, Plant Services

Approved by / Date: _____

~~Clarence Ray~~Jeff Lyash

President, Power

ABSTRACT

This topical report provides CB&I's Engineering, Construction, and Maintenance (EC&M) operating group, Power business unit, Nuclear business line (CB&I Nuclear) Quality Assurance Program Description (QAPD) for engineering, design, procurement, construction, modification, repair and decommissioning of nuclear facilities. The QAPD has been prepared in accordance with the requirements of Title 10, Part 50 of the Code of Federal Regulations (10 CFR 50), "Domestic Licensing of Production and Utilization Facilities," Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" and ASME NQA-1-2008, and NQA-1a-2009 addenda, "Quality Assurance Program Requirements for Nuclear Facilities" as endorsed by Regulatory Guide 1.28, Revision 4, "Quality Assurance Program Criteria (Design and Construction)." This report was prepared using the guidance in Nuclear Energy Institute (NEI), NEI 11-04, "Nuclear Generation Quality Assurance Program Description (QAPD)" template.

Adaptations from the NEI reference were necessary to conform to the most recent Nuclear Regulatory Commission endorsed version of NQA-1-2008 and NQA-1a-2009 addenda.

The topical report is divided into four parts: I) Introduction; II) Quality Assurance Program Description (QAPD); III) Nonsafety-Related SSC Quality Control; and IV) Regulatory Commitments.

Consistent with common licensing practice, most of the application text is written in the present tense, active voice. It should be understood, however, that statements regarding these processes typically address activities that may have not yet been performed and will not be performed until it is reasonable and appropriate to do so.

NOTE: This Topical Report, CMS-720-03-PL-00020, supersedes a prior document which was issued as the "*Shaw Standard Nuclear Quality Assurance Program*," SWSQAP 1-74A, Revision B. Revision B was submitted to the Nuclear Regulatory Commission (NRC) on November 4, 2009 and approved on March 22, 2011.

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REVISION HISTORY

REVISION #	DESCRIPTION OF CHANGES	AFFECTED PAGES
0	New Topical Report developed using the NEI 11-04 template as noted in the Abstract text. To address NRC letter, Joseph J. Holonich, Sr. to Curtis A.Castell, dated January 27, 2014, "Request for the Review of CB&I Nuclear Topical Report CMS-720-03-PL-00020, Revision 0, "Quality Assurance Program Description" (TAC No. MF1798)" *Supersedes the former Shaw Standard Nuclear Quality Assurance Program, SWSQAP 1-74A, Rev B.*	All

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POLICY STATEMENT

This topical report provides a description of CB&I's Engineering, Construction, and Maintenance (EC&M) operating group, Power business unit, Nuclear business line (CB&I Nuclear) Quality Assurance Program Description (QAPD).

CB&I Nuclear shall engineer, design, procure, construct, modify, repair, replace, and decommission nuclear facilities in a manner that will ensure the health and safety of the public and workers. These activities shall be performed in compliance with the requirements of the Code of Federal Regulations (CFR) and applicable laws and regulations of the state and local governments.

The Quality Assurance Program consists of the QAPD provided in this document and the associated implementing documents. Together they provide for control of CB&I Nuclear activities that affect the quality of safety-related nuclear plant structures, systems, and components (SSC) and include all planned and systematic activities necessary to provide adequate confidence that such SSCs will perform satisfactorily in service. This QAPD may also be applied to certain equipment and activities that are not safety-related, but support safe plant operations, personnel health and safety or where other NRC guidance establishes program requirements.

This QAPD is the top-level policy document that establishes the manner in which quality is to be achieved and presents CB&I Nuclear's overall philosophy regarding achievement and assurance of quality. Implementing documents assign more detailed responsibilities and requirements and define the organizational interfaces involved in conducting activities within the scope of the quality assurance program. The President, PowerNuclear establishes overall expectations for effective implementation of the quality assurance program and is responsible for obtaining the desired end result. Compliance with this QAPD and implementing documents is mandatory for personnel directly or indirectly associated with implementation of this Quality Assurance Program.

Signed / Date

David P. BarryJeff Lyash

President, PowerNuclear

PART I – INTRODUCTION

GENERAL

This Quality Assurance Program Description (QAPD) is the top-level policy document that establishes the quality assurance policy and assigns major functional responsibilities for engineering, design, procurement, construction, maintenance, modification, repair, replacement, operations and decommissioning activities conducted by or for CB&I Nuclear. This QAPD describes the methods and establishes quality assurance (QA) and administrative control requirements that meet 10 CFR 50, Appendix B, ANSI and 10 CFR 52. This QAPD is based on the requirements and guidance of ASME NQA-1-2008 and NQA-1a-2009 Addenda, "Quality Assurance Requirements for Nuclear Facility Applications," Parts I and II, with specific reference to selected Part III sections, as identified in this document and ANSI/ANS 3.1. This QAPD also includes those NQA-1-1994 requirements determined to be more stringent as identified in the applicable sections of Part II, for those projects committed to this version by contract.

For licensed facilities that are in the ~~operations and/or~~ construction phase and which are committed to an earlier edition of NQA-1~~, to the ANSI/ASME N45.2 Standards~~ or to an earlier edition of a specified Regulatory Guide~~;~~, as described in Regulatory Commitments, Part IV, Section A, "Construction and Post-Construction Phase," CB&I Nuclear commits to comply with the requirements contained in either the ~~ANSI/ASME N45.2 and the applicable daughter standards, or in the~~ specific endorsed NQA-1 version or Regulatory Guide. These specific requirements would be implemented via a licensee/client commitment documented in the applicable contract and project quality assurance plan. ~~Regulatory commitments are described in Part IV of this QAPD.~~

For licensed facilities that are in the operations phase and which are committed to ANSI/ASME N45.2 Standards, to an earlier edition of a specified Regulatory Guide, or where reference standards are specifically cited in NQA-1 but are withdrawn or superseded; as described in Regulatory Commitments, Part IV, Section B, "Operations Phase Only," CB&I Nuclear commits to comply with the requirements contained in either the ANSI/ASME N45.2 and applicable daughter standards, or in the specific endorsed Regulatory Guide. These specific requirements would be implemented via a licensee/client commitment documented in the applicable contract and project quality assurance plan.

This QAPD meets or supersedes any previous programs or internal commitments. Specifically, this document supersedes the former *Shaw Standard Nuclear Quality Assurance Program, SWSQAP 1-74A, Rev B.*

The QA Program (QAP) is defined by the NRC-approved regulatory document that describes the QA elements (i.e., this QAPD), along with the associated implementing documents. Procedures and instructions that control nuclear activities will be developed prior to commencement of those activities. Policies will be established for high-level responsibilities and authority for carrying out important administrative functions which are outside the scope of this QAPD. Procedures will be established for practices for certain activities which are common to all CB&I Nuclear organizations performing those activities so that the activity is controlled and carried out in a manner that meets QAPD requirements. Procedures specific to a site, organization or group establish detailed implementation requirements and methods, and may be used to implement policies or be unique to particular functions or work activities.

SCOPE/APPLICABILITY

This QAPD applies to Engineering, Procurement and Construction activities affecting the quality and performance of safety-related structures, systems, and components, including, but not limited to:

- Designing
- Constructing
- Maintaining
- Procuring
- Erecting
- Repairing
- Inspecting
- Installing
- Modifying
- Testing
- Startup
- Decommissioning
- ASME III
- ASME XI
- Pre-operational activities (including ITAAC, if applicable)

[ITAAC are those Inspections, Tests, Analyses, and Acceptance Criteria the applicant must satisfy as determined by the commission in accordance with 10 CFR Part 52.]

Safety-related SSCs, under the control of this QAPD, are identified by design documents. The technical aspects of these items are considered when determining program applicability, including, as appropriate, the item's design safety function. This QAPD may be applied to certain activities where regulations other than 10 CFR 50 and 10 CFR 52 establish QA requirements for activities within their scope.

The engineering, design, commercial services, construction, testing, maintenance, repair, replacement and decommissioning of structures, components and systems shall meet applicable codes and standards and good engineering, design, construction and quality assurance practices appropriate to the function of the item. The policy of CB&I Nuclear is to assure a high degree of availability and reliability of the nuclear facilities while ensuring the health and safety of its workers and the public. To this end, selected elements of this QAPD are also applied to certain equipment and activities that are not safety-related, but support safe, economic and reliable plant operations, or where other NRC guidance establishes quality assurance requirements. Implementing documents establish program element applicability.

The definitions provided in ASME NQA-1–2008 and NQA-1a-2009 Addenda, Part I, Section 400, apply to select terms as used in this document.

~~Activities performed in accordance with this QAPD are implemented by, but not limited to the following CB&I companies: Stone & Webster Construction, Inc., Shaw Constructors, Inc., The Shaw Group, Inc., Stone & Webster, Inc., and Shaw Nuclear Services, Inc.~~

Any ~~other~~ CB&I Nuclear affiliated company, other than those listed on the following page, that intend~~s~~ to implement this QAPD for an Engineering, Procurement, or Construction contract shall endorse this QAPD by separate letter on their company letterhead provided to the President, Nuclear with a copy to the Director, Nuclear Quality. The letter shall provide a description of the requestor's organization implementing the QAPD requirements, their contract scope of work, an endorsement of and agreement to be bound by the applicable QAPD provisions described in this program.

CB&I NUCLEAR OFFICE LOCATIONS

Activities performed in accordance with this QAPD are implemented at, but not limited to, the following office locations:

CB&I
128 S. Tryon St Suite 1000
Charlotte, NC 28202

CB&I
150 Royal St.
Canton, MA 02021

CB&I
4171 Essen Lane
Baton Rouge, LA 70809

CB&I NUCLEAR LEGAL ENTITIES

Activities performed in accordance with this QAPD are implemented by, but not limited to, the following CB&I companies:

CB&I Stone & Webster, Inc.

CB&I Stone & Webster Construction, Inc.

CB&I Shaw Constructors, Inc.

CB&I Power, Inc.

PART II - QUALITY ASSURANCE PROGRAM DESCRIPTION

SECTION 1 ORGANIZATION

This section describes the CB&I Nuclear organizational structure, functional responsibilities, levels of authority and interfaces for establishing, executing and verifying QAPD implementation. The organizational structure includes corporate/support/off-site and on-site functions for CB&I Nuclear including interface responsibilities for multiple organizations that perform quality-related functions. Implementing documents assign more specific responsibilities and duties, and define the organizational interfaces involved in conducting activities and duties within the scope of this QAPD. Management gives careful consideration to the timing, extent and effects of organizational structure changes.

The Director, Nuclear Quality is responsible to size the Quality Assurance staff commensurate with the duties and responsibilities assigned.

CB&I Nuclear is responsible for preparing, reviewing, approving and verifying designs; engineering; qualifying suppliers; preparing, reviewing, approving and issuing instructions, procedures and procurement documents; purchasing; verifying supplier activities; identifying and controlling acceptable and nonconforming hardware and software; manufacturing; calibrating and controlling measuring and test equipment; qualifying and controlling special processes; constructing; inspecting; testing; startup; performing the audit function; controlling records and decommissioning. Design, engineering, testing, modifications, repairs and environmental services may be provided to CB&I Nuclear by qualified contractors in accordance with their Quality Assurance Programs, or by contractors working under the CB&I Nuclear QAPD. These contractors are approved prior to performing safety-related work.

The CB&I Nuclear QA Program is implemented during the design and construction/pre-operation phases of contract performance. It is anticipated that even after fuel load, construction activities will be ongoing. Those positions required to support these activities will retain their applicable construction/pre-operation responsibilities until it is deemed that they are no longer necessary. As the construction of systems (or portions thereof) is completed, control and authority (including oversight, configuration and operations) is transferred from CB&I Nuclear to the cognizant owner or operator in the operational phase. During the transition, responsibilities will be clearly defined in instructions and procedures to ensure appropriate authority is maintained for each System, Structure and Component (SSC).

As detailed in specific contracts with its customers, CB&I Nuclear provides engineering and design, procurement, project management, construction, source inspection, quality assurance and quality control services for nuclear projects associated with commercial nuclear facilities regulated by the United States Nuclear Regulatory Commission (NRC) or a regulatory authority in another country for projects outside of the United States. For CB&I Nuclear controlled projects that have a scope of work that involves site labor activities for physically performing construction and decommissioning services, CB&I Nuclear typically arranges for Plant Services (business unit), CB&I Stone & Webster Construction, Inc., CB&I Shaw Constructors, Inc., ~~The Shaw Group, Inc.,~~ or another CB&I company who endorses this program, to perform these site services.

The following section describes the reporting relationships and functional responsibilities of the organizations responsible to oversee, manage, implement and support the described QA Program. The CB&I Nuclear relevant organization chart is shown in Figure 1 on Page 109.

1.1. President, Power

The President Power is responsible for all aspects of design, construction, technical and administrative support activities provided by CB&I Nuclear and its contractors. The President, Power reports to the Executive Vice President (EVP) & Chief Operating Officer (COO) of Engineering, Construction and Maintenance (EC&M) ~~Chief Operating Officer (COO)~~.

1.2. President, Nuclear

The President, Nuclear is responsible for implementing the requirements of this QAPD as they relate to the services or projects within the Nuclear business line. The President, ~~of~~ Nuclear reports to the President, Power.

1.2.1. Nuclear Services

The managing executive of the Nuclear Services organization reports to the President, Nuclear and is responsible to provide engineering and design, procurement, project management, source inspection, and quality assurance and quality control services. Additionally, the managing executive ensures controls are provided for interfaces between any preconstruction or construction activities and any activities controlled under the approved quality program of the cognizant owner associated with commercial nuclear facilities regulated by the United States Nuclear Regulatory Commission (NRC) or a regulatory authority in another country for projects outside of the United States.

1.2.2. Nuclear Projects

The managing executive of nuclear projects reports to the President, Nuclear and is responsible for the Engineering, Procurement, and Construction (EPC) scope of work. That position is responsible for the project activities at the project sites, including quality inspection activities of on-site work, engineering, procurement, construction as well as controlling interfaces between any preconstruction or construction activities. Additionally, the managing executive ensures controls are provided for any activities controlled under the approved quality program of the cognizant owner.

1.2.3. Plant Services

The managing executive of plant services reports to the EVP & COO of EC&M ~~COO~~ for work that falls under the owners quality assurance program (e.g., operating reactors) except when plant services work implements this document. When that scope of work implements this document then the managing executive and plant service staff will fall under the nuclear policy direction of the President, Power ~~Nuclear (the dotted line on the CB&I Nuclear organization chart shows that relationship)~~.

~~1.3. Project Controls & System Integration~~

~~The managing executive of the project controls & system integration organization reports to the President, Power and is responsible to develop and deliver supporting programs and services that are necessary to effectively and efficiently execute projects across the company in a consistent manner. This includes the development of project plans, scope, budgets and schedules by working in coordination with internal services and support organizations; problem anticipation, identification and resolution; and defining and delivering regular reports on project/program performance against budgets, schedules, and milestones and quality, along with records management and IT services.~~

~~1.4.~~1.3. Functional Operations

The managing executive of Functional Operations reports to the President, Power and is responsible to develop and deliver supporting programs and services that are necessary to effectively and efficiently execute projects across the company in a consistent manner.

~~1.4.1.~~1.3.1. Engineering

The managing executive of the engineering organization reports to the managing executive of Functional Operations and is responsible to issue and control drawings, specifications, calculations and other documents which define the CB&I Nuclear design, accept such documents from others for incorporation into the CB&I Nuclear design and delegate such authority to others. In this capacity, Nuclear Engineering provides the fully integrated suite of engineering, design, safety analysis products and processes necessary to define the design and to manufacture, procure, install and test to the requisite technical, safety, performance and quality standards. This position is responsible to develop and implement controls that include the management systems, methods and training requirements that are necessary to implement the control of technical work.

~~1.4.2.~~1.3.2. Construction

The managing executive of the construction organization reports to the managing executive of Functional Operations and is responsible to develop and implement controls that include the management systems, methods and training requirements that are necessary to implement this Program for nuclear construction activities. Responsibilities include interfacing with nuclear engineering and nuclear quality assurance functions to ensure that systems, structures and components are constructed in accordance with engineering design documents and applicable codes, standards and procedures.

~~1.4.3.~~1.3.3. Procurement

The managing executive of the procurement organization reports to the managing executive of Functional Operations and is responsible to develop and implement controls that include the management systems, methods and training requirements that are necessary to implement this Program for nuclear procurement activities. Responsibilities include interfacing with nuclear engineering and nuclear quality assurance functions to ensure that suppliers of

safety-related services are evaluated prior to award, all applicable technical and quality requirements are effectively communicated through procurement documents, and appropriate source inspection is accomplished.

~~1.4.4.~~1.3.4. ~~Contracts/~~Subcontracts

The managing executive of the ~~contracts/~~subcontracts organization reports to the managing executive of Functional Operations and is responsible to develop and implement controls that include the management systems, methods and training requirements that are necessary to implement this program for nuclear ~~contact/~~subcontract activities. Responsibilities include interfacing with nuclear engineering and nuclear quality assurance functions to ensure that suppliers of safety-related services are evaluated prior to award and all applicable technical and quality requirements are effectively communicated through ~~contact/~~subcontracted documents.

~~1.4.5.~~1.3.5. Startup and Commissioning

The managing executive of the startup and commissioning organization reports to the managing executive of Functional Operations and is responsible to develop and implement controls that include management systems, methods and training requirements that are necessary to implement this program for nuclear startup and commissioning activities. Responsibilities include verification and testing to assure that systems, structures and components constructed by CB&I Nuclear operate in accordance with design criteria and design specifications.

~~1.5.~~1.4. Quality, ~~EH&S,~~ Regulatory Compliance & Performance Improvement

The managing executive of the Quality, ~~, Environment, Health & Safety (EH&S),~~ Regulatory Compliance & Performance Improvement organizations reports to the President, Power and is responsible to develop and deliver supporting programs and services that are necessary to effectively and efficiently execute projects across the company in a consistent manner. This includes the development of quality assurance, ~~environmental health & safety,~~ regulatory compliance and the performance improvement organizations. The CB&I Nuclear Quality Organization chart is shown in Figure 2, page 11.

1.4.1 Quality

The Quality organization is responsible for independently planning and performing activities to verify the development and effective implementation of the QAPD including but not limited to construction, engineering, regulatory compliance, document control, contracts/subcontracts and procurement that support nuclear projects.

The managing executive of the ~~q~~Quality organization serves in the capacity of ~~Vice President~~Director Power Quality and the Director~~,~~ Nuclear Quality. The Director~~,~~ Nuclear Quality is responsible for the following either directly or through functional delegation:

- Development, implementation and maintenance of the Quality Assurance and Quality Control activities as described in this document
- Verifying that activities are in compliance with applicable regulatory, code and industry standard requirements
- Audits, surveys, surveillances and technical reviews
- Monitoring organization processes to ensure conformance to commitments and licensing document requirements
- Ensuring that vendors providing quality services, parts and materials to CB&I Nuclear are meeting the requirements of 10 CFR 50, Appendix B, through CB&I Nuclear vendor evaluations, surveillances and audits
- Establishing and implementing systems that control qualification and certification in inspection and Nondestructive Examination (NDE) methods for inspection and test personnel
- Performance of quality control activities for construction work that includes inspections, verifications, examinations, tests and other quality control tasks to ensure that the quality of safety-related materials, components and equipment meet the requirements of the drawings, specifications, instructions, procedures and procurement documents

1.4.2 Regulatory Compliance

The managing executive of the regulatory compliance organization is responsible for regulatory activities associated with CB&I Nuclear projects. The regulatory compliance organization develops, implements, and monitors the CB&I Nuclear organization and provides regulatory recommendations to senior management. This position is the single-point-of-contact with regulatory agencies for effective communications and ensures that licensing-related requirements and commitments are addressed and effectively controlled.

1.4.3 Performance Improvement

The managing executive of the performance improvement organization is responsible for performance improvement activities associated with CB&I Nuclear projects. The performance improvement organization develops, implements and provides oversight for the organization's corrective action and operating experience/lessons learned programs.

~~1.6.~~1.5. **Nuclear Safety Officer**

The Nuclear Safety Officer (NSO) reports to the President, Power and is responsible for developing the company's strategies for establishing and maintaining a positive nuclear safety culture for projects and activities performed under Nuclear Regulatory Commission (NRC) regulations.

1.6 Authority to Stop Work

Quality Assurance and Quality Control Inspection personnel have the authority and the responsibility to stop work in progress which is not being done in accordance with approved procedures, or where safety or SSC integrity may be jeopardized. This authority extends to off-site work performed by suppliers that furnish safety-related materials and services to CB&I Nuclear.

1.7 Quality Assurance Organizational Independence

For all tasks, independence shall be maintained between the organization(s) performing the checking (quality assurance and control) functions and the organizations performing the functions. ~~This provision is not applicable to design review/verification.~~

1.8 NQA-1 Commitment / Exception

In establishing its organizational structure, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 1.

CB&I Nuclear takes exception to NEI 11-04, Revision 0, Part II QAPD Details, Section 1 Organization, 1.9 Quality Assurance Organizational Independence, "This provision is not applicable to design review/verification." This requirement does not apply to early site permit (ESP) or construction.

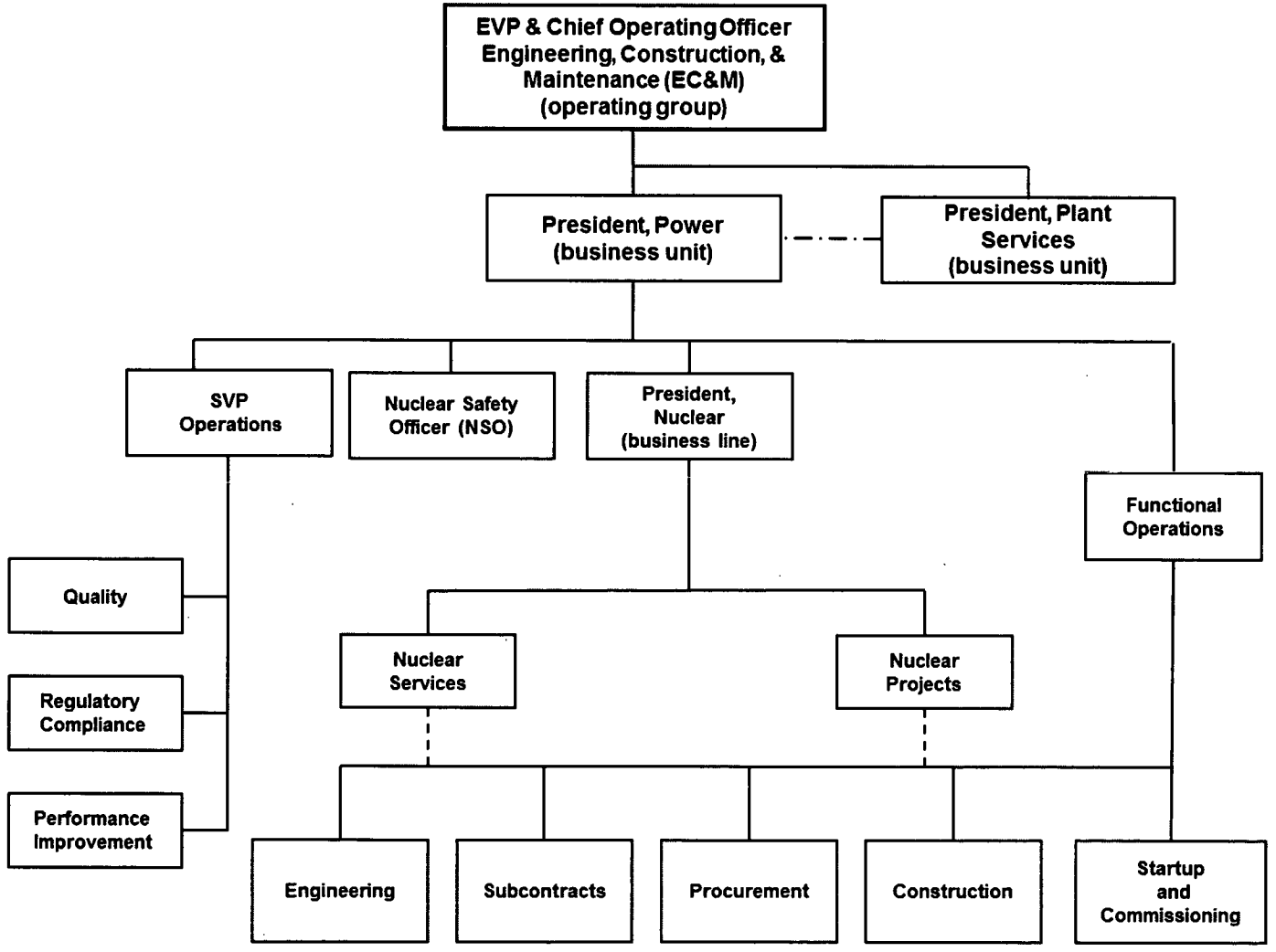

Figure 1 – CB&I Nuclear Organization

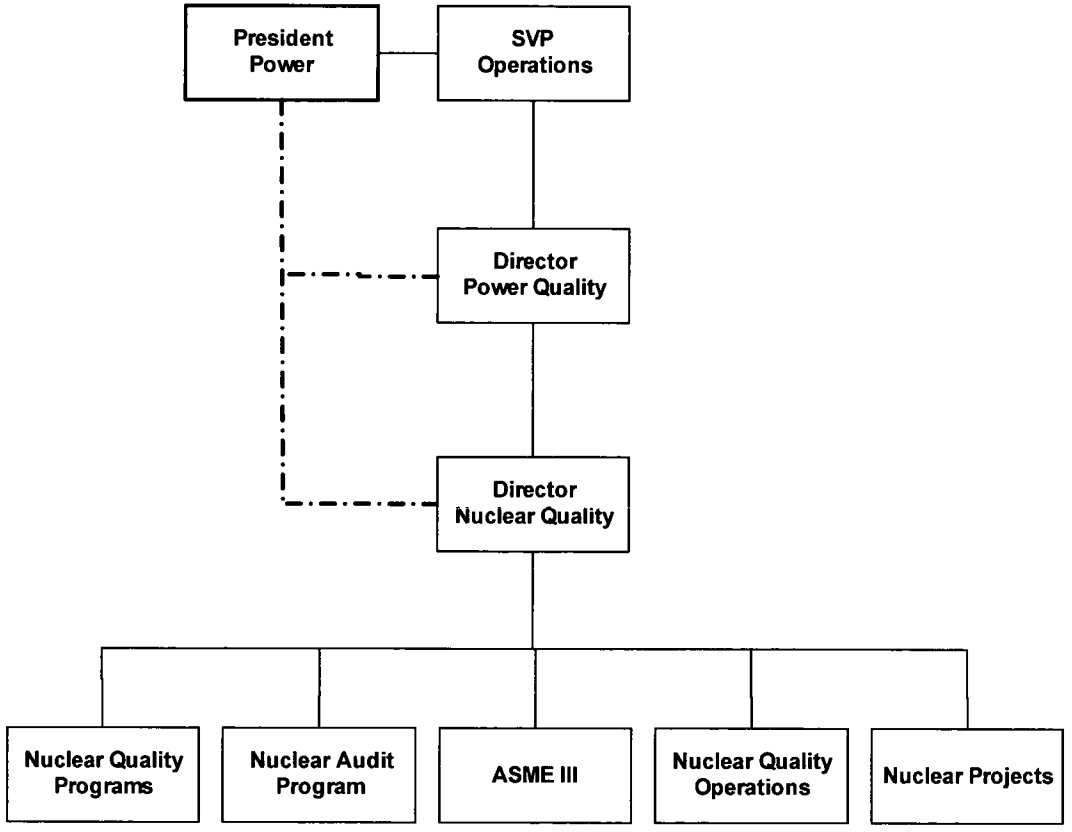

Figure 2 - CB&I Nuclear Quality Organization

SECTION 2 QUALITY ASSURANCE PROGRAM

CB&I Nuclear has established the necessary measures and governing procedures to implement the QAP as described in this QAPD. CB&I Nuclear is committed to implementing the QAP in all aspects of work that are important to the safety of the nuclear projects as described and to the extent delineated in this QAPD. The QAP shall include monitoring activities against acceptance criteria in a manner sufficient to provide assurance that the activities important to safety are performed satisfactorily. Further, CB&I Nuclear ensures through the systematic process described herein that its suppliers of safety-related equipment or services meet the applicable requirements of 10 CFR 50, Appendix B. Senior management is regularly apprised of the adequacy of implementation of the QAP through the audit functions described in Part II, Section 18.

The objective of the QAP is to assure that CB&I Nuclear projects are designed, constructed, modified and repaired in accordance with governing regulations and license requirements. The program is based on the requirements of ASME NQA-1-2008 and NQA-1a-2009 Addenda, "Quality Assurance Requirements for Nuclear Facility Applications," as further described in this document. In addition, this QAPD also includes those NQA-1-1994 requirements determined to be more stringent as identified in the applicable sections of this Part, for those projects committed to this version by contract. The QAP applies to those quality-related activities that involve the functions of safety-related structures, systems and components (SSC) associated with the engineering, design, fabrication, commercial services, construction, testing, maintenance, repair, replacement and decommissioning activities for nuclear projects executed by CB&I Nuclear. A list or system that identifies SSCs and activities to which this program applies is maintained at the appropriate facility. The Design Certification Document or equivalent document is issued as the basis for this list. Cost and scheduling challenges must be addressed; however, they do not prevent proper implementation of the QAP.

Work that falls within the scope of Sections III and XI of the ASME Boiler and Pressure Vessel Code shall be controlled by CB&I Nuclear in compliance with the CB&I Stone & Webster~~Shaw Nuclear Services~~, Inc. ASME III Program. Quality Assurance/Quality Control shall develop and maintain the quality assurance program for implementing the requirements of the ASME Boiler and Pressure Vessel Code, Sections III and XI.

As described in Part III of this QAPD, specific program controls are applied to nonsafety-related SSCs that are significant contributors to plant safety, for which 10 CFR 50, Appendix B, is not applicable. The specific program controls, consistent with applicable sections of this QAPD, are applied to those items in a select manner, targeted at those characteristics or critical attributes that qualifies the SSC as a significant contributor to plant safety.

Delegated responsibilities may be performed under a supplier's or principal contractor's QAP, provided that the supplier or principal contractor has been approved as a supplier in accordance with the CB&I Nuclear QAP. Periodic audits and assessments of supplier QA programs are performed to assure compliance with the supplier's or principal contractor's QAPD and implementing procedures. In addition, routine interfaces with the supplier's personnel provide added assurance that quality expectations are met.

This QAPD applies to those CB&I Nuclear activities that can affect either directly or indirectly the safety-related site characteristics or analysis of those characteristics. In addition, this QAPD applies to engineering activities that are used to characterize the site or analyze that characterization.

New nuclear plant construction and Nuclear Services work will be the responsibility of CB&I Nuclear. Detailed engineering specifications and construction procedures will be developed to implement this QAPD and Nuclear Steam Supply System (NSSS) QA programs prior to commencement of preconstruction and/or construction activities. Examples of Limited Work Authorization (LWA) activities that could impact safety-related SSCs include impacts of construction to existing facilities and, for construction of new plants, the interface between non-safety-related and safety-related SSCs and the placement of seismically designed backfill.

In general, the program requirements specified herein are detailed in implementing procedures that are either CB&I Nuclear implementing procedures or supplier implementing procedures governed by a supplier quality assurance program.

A grace period of 90 days may be applied to provisions that are required to be performed on a periodic basis, unless otherwise noted. Annual evaluations and audits that must be performed on a triennial basis are examples where the 90 day general period could be applied. The grace period does not allow the "clock" for a particular activity to be reset forward. The "clock" for an activity is reset backwards by performing the activity early. Audit schedules are based on the month in which the audit starts.

2.1. Responsibilities

Personnel who work directly or indirectly for CB&I Nuclear are responsible for achieving acceptable quality in the work covered by this QAPD. This includes the activities delineated in Part I, Section 1, Scope/Applicability. CB&I Nuclear personnel performing verification activities are responsible for verifying the achievement of acceptable quality. Activities governed by this QAPD are performed as directed by documented instructions, procedures and drawings that are of a detail appropriate for the activity's complexity and effect on safety. Instructions, procedures and drawings specify quantitative or qualitative acceptance criteria as applicable or appropriate for the activity, and verification is against these criteria. Provisions are established to designate or identify the proper documents to be used in an activity, and to ascertain that such documents are being used. The Director, Nuclear Quality is responsible to verify that processes and procedures comply with QAPD and other applicable requirements, that such processes or procedures are implemented, and that management appropriately ensures compliance.

2.2. Delegation of Work

CB&I Nuclear retains and exercises the responsibility for the scope and implementation of an effective QAP. Positions identified in Part II, Section 1, may delegate all or part of the activities of planning, establishing and implementing the program for which they are responsible to others, but retain the responsibility for the program's effectiveness.

Decisions affecting safety are made at the level appropriate based upon their nature and effect, with technical advice or review as appropriate.

2.3. Site-specific Safety-Related Design Basis Activities

Site-specific safety-related design basis activities are defined as those activities, including sampling, testing, data collection, and supporting engineering calculations and reports,

that will be used to determine the bounding physical parameters of the site. Appropriate quality assurance measures are applied.

2.4. Periodic Review of the Quality Assurance Program

Management of those organizations implementing the QA program, or portions thereof, shall assess the adequacy of that part of the program for which they are responsible to assure its effective implementation at least once each year or at least once during the life of the activity, whichever is shorter.

2.5. Issuance and Revision to Quality Assurance Program

Administrative control of this QAPD will be in accordance with 10 CFR 50.55(f). Changes to this QAPD are evaluated by the Director, Nuclear Quality to ensure that such changes do not degrade safety for previously approved quality assurance controls specified in this QAPD. This document shall be revised as appropriate to incorporate additional QA commitments that may be established. New revisions to the document will be reviewed, at a minimum, by the Director, Nuclear Quality and approved by the President, Power.

2.6. Personnel Training and Qualifications

Personnel assigned to implement elements of this QAPD shall be capable of performing their assigned tasks. To this end, CB&I Nuclear establishes and maintains formal indoctrination, training, and qualification as necessary for personnel performing, verifying, or managing activities within the scope of this QAPD to achieve initial proficiency, maintain proficiency, and adapt to technology changes, method, or job responsibilities. The indoctrination, training, and qualification programs are commensurate with scope, complexity, and importance of the activities; and include or address the following, as appropriate:

- Education, experience and proficiency of the personnel receiving training;
- General criteria, technical objectives, requirements of applicable codes and standards, regulatory commitments, company procedures and quality assurance program requirements;
- On-the-job training, if direct hands-on applications or experience is needed to achieve and maintain proficiency.

Sufficient managerial depth is provided to cover absences of incumbents. When required by code, regulation, or standard, specific qualification and selection of personnel is conducted in accordance with those requirements as established in the applicable CB&I Nuclear procedures. Indoctrination includes the administrative and technical objectives, requirements of the applicable codes and standards, and the QAPD elements to be employed. Records of personnel training and qualification are maintained.

The minimum qualifications of the Director, Nuclear Quality are that he/she holds an engineering or related science degree and a minimum of four (4) years of related experience including two (2) years of nuclear power plant experience, one (1) year of supervisory or management experience, and one (1) year of the experience is in performing quality verification activities.

Special requirements shall include management and supervisory skills and experience or training in leadership, interpersonal communication, management responsibilities, motivation of personnel, problem analysis and decision making, and administrative policies and procedures. Individuals who do not possess these formal education and minimum experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

The minimum qualifications for the individuals responsible for supervising QA or QC personnel is that each has a high school diploma or equivalent and has a minimum of one (1) year of experience performing quality verification activities. Individuals who do not possess these formal education and experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

The minimum qualifications of individuals that are part of the Quality Assurance Group responsible for planning, implementing and maintaining the programs for this QAPD are that each has a high school diploma or equivalent and has a minimum of one (1) year of related experience. Individuals who do not possess these formal education and minimum experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by case basis and approved and documented by senior management.

2.7. NQA-1 Commitment / Exceptions

In establishing qualification and training programs, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 2 with the following clarifications and exceptions:

2.7.1. Section 302, Inspection and Test

(1) In lieu of being certified as Level I, II, or III in accordance with NQA-1-2008, personnel that perform independent quality verification inspections, examinations, measurements, or tests of material, products, or activities will be required to possess qualifications equal to or better than those required for performing the task being verified; and the verification is within the skills of these personnel and/or is addressed by procedures. These individuals will not be responsible for the planning of quality verification inspections and tests (i.e., establishing hold points and acceptance criteria in procedures and determining who will be responsible for performing the inspections), evaluating inspection training programs, nor certifying inspection personnel.

(2) A qualified engineer may be used to plan inspections, evaluate the capabilities of an inspector or evaluate the training program for inspectors. For the purpose of these functions, a qualified engineer is one who has a baccalaureate in engineering in a discipline related to the inspection activity (such as electrical, mechanical, civil) and has a minimum of five (5) years engineering work experience with at least two (2) years of this experience related to nuclear facilities.

2.7.2. Section 301: CB&I Nuclear follows Section 301 for qualification of nondestructive examination personnel, except that CB&I Nuclear will follow the applicable standard cited in the version(s) of Section III and Section XI of the ASME Boiler and Pressure Vessel Code approved by the NRC for use at CB&I Nuclear sites for the scope of activities governed by these cited standards.

2.7.3. Section 400 (a) (8) requires the date of certification expiration be included on the qualification record. CB&I Nuclear considers the certification expiration date to be the date from the certification or recertification date plus the certification interval time and its inclusion on the qualification record is optional.

For those projects which specifically commit to NQA-1-1994 by contract, CB&I Nuclear commits to the following NQA-1-1994 requirement related to the updating of Lead Auditors' records (Supplement 2S-3, Section 6.3):

- Records for each Lead Auditor shall be maintained and updated annually.

SECTION 3 DESIGN CONTROL

CB&I Nuclear has established and implements a process to control the design, design changes and temporary modifications of items that are subject to the provisions of this Quality Assurance Program Description (QAPD). The design process includes provisions to control design inputs, outputs, changes, interfaces, records and organizational interfaces within CB&I Nuclear and with suppliers. These provisions assure that design inputs (such as design bases and the performance, regulatory, quality, and quality verification requirements) are correctly translated into design outputs (such as analyses, specifications, drawings, procedures and instructions) so that the final design output contains or references appropriate acceptance criteria that can be related to the design input in sufficient detail to permit verification by inspection and test, as required. Design change processes and the division of responsibilities for design-related activities are detailed in CB&I Nuclear, client and supplier procedures. Changes to design inputs, final designs, field changes and temporary and permanent modifications to operating facilities are justified and subject to design control measures commensurate with those applied to the original design. The design control program includes interface controls necessary to control the development, verification, approval, release, status, distribution and revision of design inputs and outputs. Design changes and disposition of nonconforming items as "use as is" or "repair" are reviewed and approved by the CB&I Nuclear design organization or by other organizations so authorized by CB&I Nuclear.

Design documents are reviewed by individuals knowledgeable in QA principles to ensure the documents contain the necessary QA requirements.

3.1. Design Verification

CB&I Nuclear design processes provide for design verification to ensure that items, computer programs and activities subject to the provisions of this QAPD are suitable for their intended application, consistent with their effect on safety. Design changes are subjected to these controls, which include verification measures commensurate with those applied to original plant design.

Design verifications are performed by competent individuals or groups other than those who performed the original design, but who may be from the same organization. The verifier shall not have taken part in the selection of design inputs, the selection of design considerations or the selection of a singular design approach, as applicable. This verification may be performed by the originator's supervisor provided the supervisor did not specify a singular design approach, rule out certain design considerations, and did not establish the design inputs used in the design, or if the supervisor is the only individual in the organization competent to perform the verification. If the verification is performed by the originator's supervisor, the justification of the need is documented and approved in advance by management.

The extent of the design verification required is a function of the importance to safety of the item or computer program under consideration, the complexity of the design, the degree of standardization, the state-of-the-art and the similarity with previously proven designs. This includes design inputs, design outputs and design changes. Design verification procedures are established and implemented to assure that an appropriate verification method is used, the appropriate design parameters to be verified are chosen, the acceptance criteria are identified, and the verification is satisfactorily accomplished and documented. Verification methods may include, but are not limited to: design

reviews; alternative calculations; and qualification testing. Testing used to verify the acceptability of a specific design feature demonstrates acceptable performance under conditions that simulate the most adverse design conditions expected for the item's intended use.

CB&I Nuclear normally completes design verification activities before the design outputs are used by other organizations for design work, and before they are used to support other activities such as procurement, manufacture, or construction. When such timing cannot be achieved, the design verification is completed before relying on the item to perform its intended design or safety function.

3.2. Design Records

CB&I Nuclear maintains records sufficient to provide evidence that the design was properly accomplished. These records include the final design output and any revisions thereto, as well as record of the important design steps (e.g., calculations, analyses and computer programs) and the sources of input that support the final output.

Plant design drawings reflect the properly reviewed and approved configuration of the plant.

3.3. Computer Application and Digital Equipment Software

This QAPD governs the development, procurement, testing, maintenance, control, and use of computer applications and digital equipment software when used in safety-related applications and designated non safety-related applications. Computer program acceptability is pre-verified or the results verified with the design analysis for each application. Pre-verified computer programs are controlled using a software configuration management process. CB&I Nuclear and suppliers are responsible for developing, approving and issuing procedures, as necessary, to control the use of such computer application and digital equipment software. The procedures require that the application software be assigned a proper quality classification and that the associated quality requirements be consistent with this classification. Each application software and revision thereto is documented and approved by authorized personnel as designated in CB&I Nuclear procedures. This QAPD is also applicable to the administrative functions associated with the maintenance and security of computer hardware where such functions are considered essential in order to comply with other QAPD requirements, such as QA records.

3.4. Setpoint Control

Instrument and equipment setpoints that could affect nuclear safety shall be controlled as part of CB&I Nuclear's design process.

3.5. NQA-1 Commitment

In establishing its program for design control and verification, CB&I Nuclear commits to compliance with NQA-1-2008 and NQA-1a-2009 Addenda, Requirement 3, Subpart 2.7 for computer software, NQA-1-2008 and NQA-1 a-2009 Addenda, Requirement 3, Subpart 2.14 for Quality Assurance requirements for commercial grade items and services, and Subpart 2.20 for subsurface investigation requirements.

SECTION 4 PROCUREMENT DOCUMENT CONTROL

CB&I Nuclear has established the necessary measures and governing procedures to assure that purchased items, computer programs, and services are subject to appropriate quality and technical requirements. Procurement document changes affecting the technical or quality assurance program requirements shall be subject to the same degree of control as utilized in the preparation of the original documents. These controls include provisions such that:

- Where original technical or quality assurance requirements cannot be determined, an engineering evaluation is conducted and documented by qualified staff to establish appropriate requirements and controls to assure that interfaces, interchangeability, safety, form, fit, and function, as applicable, are not adversely affected or contrary to applicable regulatory requirements.
- Applicable technical, regulatory, administrative, quality, and reporting requirements (such as specifications, codes, standards, tests, inspections, special processes, and 10 CFR 21) are invoked for procurement of items and services. 10 CFR 21 requirements for posting, evaluating, and reporting will be followed and imposed on suppliers when applicable. Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents for procurement of items and services. To the extent necessary, procurement documents shall require suppliers to have a documented QA program that is determined to meet the applicable requirements of 10 CFR 50, Appendix B, as appropriate to the circumstances of procurements (or the supplier may work under CB&I Nuclear's approved QA program).

Reviews of procurement documents shall be performed by personnel who have access to pertinent information and who have an adequate understanding of the requirements and intent of the procurement documents.

4.1. NQA-1 Commitment / Exceptions

In establishing controls for procurement, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 4, with the following clarifications and exceptions:

4.1.1. With regard to service performed by a supplier, CB&I procurement documents may allow the supplier to work under the CB&I Nuclear QAP, including implementing procedures, in lieu of the supplier having its own QAP.

4.1.2. Section 300 and 400 of Requirement 4 require the review of technical and Quality Assurance Program requirements of procurement documents prior to award of a contract and for procurement document changes. CB&I Nuclear may satisfy this requirement through the review of the procurement specification, when the specification contains the technical and quality assurance requirements of the procurement.

4.1.3. Procurement documents for Commercial Grade Items that will be procured by CB&I Nuclear for use as safety-related items shall contain technical and quality requirements such that the procured item can be appropriately dedicated in accordance with the CB&I Nuclear QAPD, Section 7, "Control of Purchased Material, Equipment and Services."

For those projects which specifically commit to NQA-1-1994 by contract, CB&I Nuclear commits to the following NQA-1-1994 requirement related to Procurement Document Review (Supplement 4S-1, Section 3):

- The review of such changes and their effects shall be completed prior to contract award. This review shall include the following considerations:
    - (a) appropriate requirements specified in Section 2 (Content of the Procurement Documents) of this Supplement;
    - (b) determination of any additional or modified design criteria;
    - (c) analysis of exceptions or changes requested or specified by the Supplier and determination of the effects such changes may have on the intent of the procurement documents or quality of the item or service to be furnished.

SECTION 5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

CB&I Nuclear has established the necessary measures and governing procedures to ensure that activities affecting quality are prescribed by and performed in accordance with instructions, procedures, or drawings of a type appropriate to the circumstances and which, where applicable, include quantitative or qualitative acceptance criteria to implement the QAP as described in this QAPD. Such documents are prepared and controlled according to Part II, Section 6. In addition, means are provided to disseminate to the staff instructions of both general and continuing applicability, as well as those of short-term applicability. Provisions are included for reviewing, updating and canceling such procedures.

5.1. Procedure Adherence

CB&I Nuclear policy is that procedures are followed, and the requirements for use of procedures have been established in administrative procedures. Where procedures cannot be followed as written, provisions are established for making changes in accordance with Part II, Section 6. Requirements are established to identify the manner in which procedures are to be implemented, including identification of those tasks that require: (1) the written procedure to be present and followed step-by-step while the task is being performed, (2) the user to have committed the procedure steps to memory, (3) verification of completion of significant steps, by initials or signatures or use of check-off lists. Procedures that are required to be present and referred to directly are those developed for extensive or complex jobs where reliance on memory cannot be trusted, tasks that are infrequently performed, and tasks where steps must be performed in a specified sequence.

In cases of emergency, personnel are authorized to depart from approved procedures when necessary to prevent injury to personnel or damage to the plant. Such departures are recorded describing the prevailing conditions and reasons for the action taken.

5.2. Procedure Content

The established measures address the applicable content of procedures as described in the Introduction to Part II of NQA-1-2008. In addition, procedures governing tests, inspections, operational activities and maintenance will include as applicable, initial conditions and prerequisites for the performance of the activity.

5.3. NQA-1 Commitment

In establishing procedural controls, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 5.

SECTION 6 DOCUMENT CONTROL

CB&I Nuclear has established the necessary measures and governing procedures to control the preparation, issuance, and revision of documents that specify quality requirements or prescribe how activities affecting quality, including organizational interfaces, to ensure that correct documents are employed. The following controls, including electronic systems used to make documents available, are applied to documents and changes thereto:

- Identification of controlled documents.
- Specified distribution of controlled documents for use at the appropriate location.
- A method to identify the correct document (including revision) to be used and control of superseded documents.
- Identification of individuals responsible for controlled document preparation, review, approval, and distribution.
- Review of controlled documents for adequacy, completeness, and approval prior to distribution.
- A method to ensure the correct documents are being used.
- A method to provide feedback from users to improve procedures and work instructions.
- Coordinating and controlling interface documents and procedures.

The types of documents to be controlled include:

- Audit, surveillance, and quality verification/inspection procedures.
- Instructions and procedures for activities covered by this QAPD including design, construction, installation, maintenance, calibration and routine testing.
- Drawings such as design, construction, installation, and as-built drawings.
- Engineering calculations.
- Design specifications.
- Purchase orders and related documents.
- Vendor-supplied documents.
- Inspection and test reports.
- Nonconformance reports and corrective action reports.

6.1. Review and Approval of Documents

Documents are reviewed for adequacy by qualified persons other than the preparer. During the Early Site Permit (ESP) or construction phase, procedures for design, construction, and installation are also reviewed by Quality Assurance to ensure quality assurance measures have been appropriately applied. The documented review signifies concurrence.

Prior to issuance or use, documents including revisions thereto, are approved by the designated authority. A listing of all controlled documents identifying the current approved

revision or date, is maintained so personnel can readily determine the appropriate document for use.

6.2. Changes to Documents

Changes to documents, other than those defined in implementing procedures as minor changes, are reviewed and approved by the same organizations that performed the original review and approval unless other organizations are specifically designated. The reviewing organization has access to pertinent background data or information upon which to base their approval.

Minor changes to documents, such as inconsequential editorial corrections, do not require that the revised documents receive the same review and approval as the original documents. To avoid a possible omission of a required review, the type of minor changes that do not require such a review and approval and the persons who can authorize such a classification shall be clearly delineated in implementing procedures.

6.3. NQA-1 Commitment

In establishing provisions for document control, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 6.

SECTION 7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

CB&I Nuclear has established the necessary measures and governing procedures to control purchased items and services to assure conformance with specified requirements. Such control provides for the following as appropriate: source evaluation and selection, evaluation of objective evidence of quality furnished by the supplier, source inspection, audit, and examination of items or services.

7.1. Acceptance of Item or Service

CB&I Nuclear establishes and implements measures to assess the quality of purchased items and services, whether purchased directly or through contractors, at intervals and to a depth consistent with the item or service importance to safety, complexity, quantity, and the frequency of procurement. Verification actions include testing, as appropriate, during design, fabrication, construction, startup, modification and repair activities. Verifications occur at the appropriate phases of the procurement process, including, as necessary, verification of activities of suppliers below the first tier.

Measures to assure the quality of purchased items and services include the following, as applicable:

- Items are inspected, identified, and stored to protect against damage, deterioration, or misuse.
- Prospective safety-related items and service suppliers are evaluated to assure only qualified suppliers are used. Qualified suppliers are audited on a triennial basis. In addition, if a subsequent contract or a contract modification significantly changes the scope, methods, or controls performed by a supplier, an audit of the changes is performed, thus starting a new triennial period.
- CB&I Nuclear may utilize audits conducted by outside organizations for supplier qualification provided that the scope and adequacy of the audits meet CB&I Nuclear requirements. Documented annual evaluations, with exceptions documented in Regulatory Guide 1.28 and as described in Part IV of this QAPD, are performed for qualified suppliers to assure they continue to provide acceptable products and services. Industry programs such as those applied by ASME or Nuclear Industry Assessment Committee (NIAC) are used as input or the basis for supplier qualification whenever appropriate. The results of the reviews are promptly considered for effect on a supplier's continued qualification and adjustments made as necessary (including corrective actions, adjustments of supplier audit plans and input to third party auditing entities, as warranted). In addition, results are reviewed periodically to determine if, as a whole, they constitute a significant condition adverse to quality requiring additional action.
- Provisions are made for accepting purchased items and services, such as source verification, receipt inspection, pre and post-installation tests, certificates of conformance, and document reviews (including Certified Material Test Report/Certificate). Acceptance actions/documents should be established by the Purchaser with appropriate input from the Supplier and be completed to ensure

that procurement, inspection, and test requirements, as applicable, have been satisfied before relying on the item to perform its intended safety function.

- Controls are imposed for the selection, determination of suitability for intended use (critical characteristics), evaluation, receipt, and acceptance of commercial - grade services or items to assure they will perform satisfactorily in service in safety-related applications.
- If there is insufficient evidence of implementation of a QA program, the initial evaluation is of the existence of a QA program addressing the scope of services to be provided. The initial audit is performed after the supplier has completed sufficient work to demonstrate that its organization is implementing a QA program.

7.2. NQA-1 Commitment / Exceptions

In establishing controls for purchased items and services, CB&I Nuclear commits to compliance with NQA-1-2008 and NQA-1a-2009, Requirement 7, with the following clarifications and exceptions:

7.2.1. CB&I Nuclear considers that other 10 CFR Parts 50 and 52 licensees, Authorized Nuclear Inspection Agencies, National Institute of Standards and Technology, or other State and Federal agencies which may provide items or services to the CB&I Nuclear projects are not required to be evaluated or audited.

7.2.2. When purchasing commercial grade calibration services from a calibration laboratory accredited by US Accreditation Bodies, a Commercial Grade Survey need not be performed provided each of the following conditions are met:

A. The CB&I Nuclear Commercial Grade dedication process shall be followed.

B. The performance of an evaluation to identify additional technical requirements and critical characteristics for the specific M&TE being calibrated.

C. The purchase documents impose any additional technical and administrative requirements, as necessary, to comply with the CB&I Nuclear QA program and technical provisions. At a minimum, the purchase documents shall require that the calibration certificate/report include identification of the laboratory equipment/standard used.

D. The purchase documents require reporting as-found calibration data and as-left data when calibrated items are found to be out-of-tolerance.

E. A documented review of the supplier's accreditation will be performed and will include a verification of the following:

- The calibration laboratory holds a domestic (United States) accreditation by an NRC approved accrediting body recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA).
- The accreditation encompasses ANSI/ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories."
- The published scope of accreditation for the calibration laboratory covers the necessary measurement parameters, range, and uncertainties.

F. The review of the calibration records (e.g., as part of receipt inspection) to verify that the critical characteristics had been met.

7.2.3. Holders of ASME Nuclear Certificates of Accreditation/Authorization shall be considered qualified as suppliers to perform or have performed, under their control, ASME III code work. The ASME Certificate is considered sufficient evidence of an acceptable quality assurance program and of the Supplier's capability to perform work within the scope of the Certificate. Post award QA implementation audits of the Certificate Holder are required.

~~7.2.4. Holders of ASME Authorized Inspection Agency (AIA) Certificates of Accreditation are considered qualified to perform AIA services within the scope of the Certificate in accordance with the ASME Code. "The ASME AIA Certificate is considered sufficient evidence of an acceptable AIA quality assurance program. Pre and Post Award audits are not required."~~

~~7.2.5.~~7.2.4. For Section 501, CB&I Nuclear considers documents that may be stored in approved electronic media under CB&I Nuclear or vendor control, not physically located on the project site, but accessible from the respective nuclear facility site as meeting the NQA-1 requirement for documents to be available at the site. Following completion of the construction period, sufficient as-built documentation will be turned over from CB&I Nuclear to the client. The CB&I Nuclear records management system(s) will provide for timely retrieval of necessary records.

~~7.2.6.~~7.2.5. In establishing commercial grade items and services requirements, CB&I Nuclear commits to compliance with NQA-1a-2009, Section 700 and Subpart 2.14, with the following clarifications:

- For commercial grade items, quality verification requirements are established and described in CB&I Nuclear documents to provide the necessary assurance an item will perform satisfactorily in service. The CB&I Nuclear documents address determining the critical characteristics that ensure an item is suitable for its intended use, technical evaluation of the item, receipt requirements, and quality evaluation of the item.

- CB&I Nuclear will assume 10 CFR 21 reporting responsibility for all items and services that CB&I Nuclear dedicates as safety-related.

For those projects which specifically commit to NQA-1-1994 by contract, CB&I Nuclear commits to the following NQA-1-1994 requirement related to Procurement Planning (Supplement 7S-1, Section 2):

- Procurement activities shall be planned and documented to assure a systematic approach to the procurement process. Procurement planning shall result in the documented identification of procurement methods and organizational responsibilities.
- Planning shall determine the following:
  - (a) what is to be accomplished;
  - (b) who is to accomplish it;
  - (c) how it is to be accomplished;
  - (d) when it is to be accomplished.
- Planning shall be accomplished as early as practicable, and no later than at the start of those procurement activities which are required to be controlled, to assure interface compatibility and a uniform approach to the procurement process.
- Planning shall result in the documented identification of methods to be used in procurement activities, sequence of actions and milestones indicating the completion of these activities, and the preparation of applicable procedures prior to the initiation of each individual activity listed below.
- Planning shall provide for the integration of (a) through (i) below:
  - (a) procurement document preparation, review, and change control;
  - (b) selection of procurement sources;
  - (c) bid evaluation and award;
  - (d) Purchaser control of Supplier performance;
  - (e) verification (surveillance, inspection, or audit) activities by Purchaser, including notification for hold and witness points;
  - (f) control of nonconformances;
  - (g) corrective action;
  - (h) acceptance of item or service;
  - (i) quality assurance records.

For those projects which specifically commit to NQA-1-1994 by contract, CB&I Nuclear commits to the following NQA-1-1994 requirement related to Bid Evaluation (Supplement 7S-1, Section 4):

- This evaluation shall be performed by individuals or organizations designated to evaluate the following subjects, as applicable to the type of procurement:
    - (c) Supplier's personnel
    - (d) Supplier's production capability
    - (e) Supplier's past performance
    - (f) alternates
    - (g) exceptions

For those projects which specifically commit to NQA-1-1994 by contract, CB&I Nuclear commits to the following NQA-1-1994 requirement related to Supplier Performance Evaluation (Supplement 7S-1, Section 5):

- The Purchaser of items and services shall establish measures to interface with the supplier and to verify Supplier's performance as deemed necessary by the Purchaser.
- The measures shall include (a) through (f) below:
    - (a) establishing an understanding between Purchaser and Supplier of the provisions and specifications of the procurement documents;
    - (b) requiring the Supplier to identify planning techniques and processes to be utilized in fulfilling procurement document requirements;
    - (c) reviewing Supplier documents which are generated or processed during activities fulfilling procurement requirements;
    - (d) identifying and processing necessary change information;
    - (e) establishing method of document information exchange between Purchaser and Supplier;
    - (f) establishing the extent of source surveillance and inspection activities.
- These verification activities shall be conducted as early as practicable. The Purchaser's verification activities, however, shall not relieve the Supplier of his responsibilities for verification of quality achievement.

For those projects which specifically commit to NQA-1-1994 by contract, CB&I Nuclear commits to the following NQA-1-1994 requirement related to Extent of Activities (Supplement 7S-1, Section 5.1):

- The extent of verification activities, including planning, shall be a function of the relative importance, complexity, and quantity of the item or services procured and the Supplier's quality performance. Verification activities shall be accomplished by qualified personnel assigned to check, inspect, audit, or witness the activities of Suppliers

SECTION 8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

CB&I Nuclear has established the necessary measures and governing procedures to identify and control items to prevent the use of incorrect or defective items. This includes controls for consumable materials and items with limited shelf life. The identification of items is maintained throughout fabrication, erection, installation, and use so that the item can be traced to its documentation, consistent with the item's effect on safety. Identification locations and methods are selected so as not to affect the function or quality of the item.

8.1. NQA-1 Commitment

In establishing provisions for identification and control of items, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 8.

SECTION 9 CONTROL OF SPECIAL PROCESSES

CB&I Nuclear has established the necessary measures and governing procedures to assure that special processes that require interim process controls to assure quality, such as welding, heat treating, and nondestructive examination, are controlled. These provisions include assuring that special processes are accomplished by qualified personnel using qualified procedures and equipment. Personnel are qualified and special processes are performed in accordance with applicable codes, standards, specifications, criteria or other specially established requirements. Special processes are those where the results are highly dependent on the control of the process or the skill of the operator, or both, and for which the specified quality cannot be fully and readily determined by inspection or test of the final product.

9.1. NQA-1 Commitment

In establishing measures for the control of special processes, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 9.

SECTION 10 INSPECTION

CB&I Nuclear has established the necessary measures and governing procedures to implement inspections that assure items, services, and activities affecting safety meet established requirements and conform to applicable documented specifications, instructions, procedures, and design documents. Inspection may also be applied to items, services, and activities affecting plant reliability and integrity. Types of inspections may include those verifications related to procurement, such as source, in-process, final, and receipt inspection, as well as construction, installation, modification, repair, in-service, and startup activities. Inspections are carried out by properly qualified persons independent of those who performed or directly supervised the work. Inspection results are documented.

10.1. Inspection Program

The inspection program establishes inspections (including surveillance of processes), as necessary to verify quality: (1) at the source of supplied items or services, (2) in-process during fabrication at a supplier's facility or at a CB&I Nuclear project, (3) for final acceptance of fabricated and/or installed items during construction, and (4) upon receipt of items for a project, as well as (5) during modification, repair, in-service, and startup activities.

The inspection program establishes requirements for planning inspections, such as the group or discipline responsible for performing the inspection, where inspection hold points are to be applied, determining applicable acceptance criteria, the frequency of inspection to be applied, and identification of special tools needed to perform the inspection. Inspection planning is performed by personnel qualified in the discipline related to the inspection and includes qualified inspectors or engineers. Inspection plans are based on, as a minimum, the importance of the item to the safety of the facility, the complexity of the item, technical requirements to be met, and design specifications. Where significant changes in inspection activities for the facilities are to occur, management responsible for the inspection programs evaluate the resource and planning requirements to ensure effective implementation of the inspection program.

Inspection program documents establish requirements for performing the planned inspections, and documenting required inspection information such as rejection, acceptance, and re-inspection results, and the person(s) performing the inspection.

Inspection results are documented by the inspector, reviewed by authorized personnel qualified to evaluate the technical adequacy of the inspection results, and controlled by instructions, procedures, and drawings.

10.2. Inspector Qualification

CB&I Nuclear has established qualification programs for personnel performing quality inspections. The qualification program requirements are described in Part II, Section 2. These qualification programs are applied to individuals performing quality inspections regardless of the functional group where they are assigned.

10.3. NQA-1 Commitment / Exceptions

In establishing inspection requirements, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 10 and Subparts 2.4, 2.5 and 2.8 for establishing appropriate inspection requirements with the following clarifications and exceptions:

10.3.1. Subpart 2.4 commits CB&I Nuclear to ANSI/IEEE Std.336-1985 or later edition. CB&I Nuclear commits to the following definition of Safety System, as stated in IEEE 603-2009:

- Safety System: A system that is relied upon to remain functional during and following design basis events to ensure:

a) The integrity of the reactor coolant pressure boundary;

b) The capability to shutdown the reactor and maintain it in a safe shutdown condition; or

c) The capability to prevent or mitigate the consequences of accidents that could result in potential off-site exposures comparable to the 10CFR100 guidelines.

- Note 1: The electrical portion of the safety systems, that perform safety functions, is classified as Class 1E.
- Note 2: This definition of *safety system* agrees with the definition of *safety-related systems* used by the American Nuclear Society (ANS) and IEC 60231A (1969-01).

10.3.2. An additional exception to Subpart 2.4 is addressed in Part II, Section 12 of this QAPD.

For those projects which specifically commit to NQA-1-1994 by contract, CB&I Nuclear commits to the following NQA-1-1994 requirement related to Combined Inspection and Monitoring (Supplement 10S-1, Section 6.2):

- 6.2.1 A combination of inspection and process monitoring methods, when used, shall be performed in a systematic manner to assure that the specified requirements for control of the process and quality of the item are being achieved throughout the duration of the process.
- 6.2.2 Controls, where required, shall be established and documented for the coordination and sequencing of these activities at established inspection points during successive stages of the conducted process or construction.

SECTION 11 TEST CONTROL

CB&I Nuclear has established the necessary measures and governing procedures to demonstrate that items subject to the provisions of this QAPD will perform satisfactorily in service, that the plant can be operated safely and as designed, and that the coordinated operation of the plant as a whole is satisfactory. These programs include criteria for determining when testing is required, such as proof tests before installation, pre-operational tests, post-maintenance tests, post-modification tests, in-service tests, and operational tests, to demonstrate that performance of plant systems is in accordance with design. Programs also include provisions to establish and adjust test schedules, and to maintain status for periodic or recurring tests. Tests are performed according to applicable procedures that include, consistent with the effect on safety: (1) instructions and prerequisites to perform the tests (2) use of proper test equipment, (3) acceptance criteria, and (4) mandatory verification points as necessary to confirm satisfactory test completion. Test results are documented and evaluated by the organization performing the test and reviewed by a responsible authority to assure that the test requirements have been satisfied. If acceptance criteria are not met, re-testing is performed as needed to confirm acceptability following correction of the system or equipment deficiencies that caused the failure.

The initial start-up test program is planned and scheduled to permit safe fuel loading. If tests require the variation of operating parameters outside of their normal range, the limits within which such variation is permitted will be prescribed. The scope of the testing demonstrates, insofar as practicable, that the plant is capable of withstanding the design transients and accidents. For new facility construction, the suitability of facility operating procedures is supported to the maximum extent possible during the pre-operational and initial start-up test programs.

Except for computer program testing, which is addressed in Section 11.1, tests are performed and results documented in accordance with applicable technical and regulatory requirements, including those described in the Technical Specifications and Safety Analysis Report (SAR). Test programs ensure appropriate retention of test data in accordance with the records requirements of this QAPD. Personnel that perform or evaluate tests are qualified in accordance with the requirements established in Part II, Section 2.

11.1. Commitment for Computer Program Testing

CB&I Nuclear establishes and implements provisions to assure that computer software used in applications affecting safety is prepared, documented, verified and tested, and used such that the expected output is obtained and configuration control maintained. To this end CB&I Nuclear commits to compliance with the requirements of NQA-1a-2009, Requirement 11 and Subpart 2.7 to establish the appropriate provisions in addition to the commitment to NQA-1-2008, Requirement 3.

11.2. NQA-1 Commitment

In establishing provisions for testing, CB&I Nuclear commits to compliance with NQA-1a-2009, Requirement 11.

SECTION 12 CONTROL OF MEASURING AND TEST EQUIPMENT

CB&I Nuclear has established the necessary measures and governing procedures to control the calibration, maintenance, and use of measuring and test equipment (M&TE) that provides data to verify acceptance criteria are met or information important to safe plant operation. The provisions of such procedures cover equipment such as indicating and actuating instruments and gages, tools, reference and transfer standards, and nondestructive examination equipment. The suppliers of commercial-grade calibration services are controlled as described in Part II, Section 7.

12.1. NQA-1 Commitment / Exceptions

In establishing provisions for control of measuring and test equipment, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 12 with the following clarification and exception:

- NQA-1-2008, Subpart 2.4 refers to ANSI/IEEE Std. 336-1985 for the installation, inspection, and testing requirements for power, instrumentation and control equipment at nuclear facilities. Where ANSI/IEEE Std. 336-1985 makes reference to the use of ANSI/IEEE Std. 498-1985 for measuring and test equipment control, CB&I Nuclear will implement the QA requirements of NQA-1-2008, Requirement 12.

For those projects which specifically commit to NQA-1-1994 by contract, CB&I Nuclear commits to the following NQA-1-1994 requirement related to the control of measuring and test equipment (Supplement 12S-1, Section 3.2):

- A calibration shall be performed when the accuracy of the equipment is suspect

SECTION 13 HANDLING, STORAGE, AND SHIPPING

CB&I Nuclear has established the necessary measures and governing procedures to control the handling, storage, packaging, shipping, cleaning, and preservation of items to prevent inadvertent damage or loss, and to minimize deterioration. These provisions include specific procedures, when required to maintain acceptable quality of the items important to the safe operations of the plant. Items are appropriately marked and labeled during packaging, shipping, handling, and storage to identify, maintain, and preserve the item's integrity and indicate the need for special controls. Special controls (such as containers, shock absorbers, accelerometers, inert gas atmospheres, specific moisture content levels, and temperature levels) are provided when required to maintain acceptable quality.

Special or additional handling, storage, shipping, cleaning, and preservation requirements are identified and implemented as specified in procurement documents and applicable procedures. Where special requirements are specified, the items and containers (where used) are suitably marked.

Special handling tools and equipment are used and controlled as necessary to ensure safe and adequate handling. Special handling tools and equipment are inspected and tested in accordance with procedures at specified time intervals or prior to use.

Operators of special handling and lifting equipment are experienced or trained in the use of the equipment. Where required, CB&I Nuclear complies with applicable hoisting, rigging and transportation regulations and codes.

13.1. Housekeeping

Housekeeping practices are established to account for conditions or environments that could affect the quality of structures, systems, and components within the project site. This includes control of cleanliness of facilities and materials, fire prevention and protection, disposal of combustible material and debris, control of access to work areas, and protection of equipment. Housekeeping practices help assure that only proper materials, equipment, processes, and procedures are used and that the quality of items is not degraded. Necessary procedures or work instructions, such as for electrical bus and control center cleaning, and cleaning of control consoles are developed and used.

13.2. NQA-1 Commitment / Exceptions

In establishing provisions for handling, storage, and shipping, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 13. CB&I Nuclear also commits to compliance with the requirements of NQA-1-2008 and NQA-1a-2009, Subpart 2.1, Subpart 2.2, Subpart 2.3, Subpart 2.15, and Subpart 3.2 - Appendix 2.1, with the following clarifications and exceptions:

13.2.1. NQA-1a-2009, Subpart 2.1, Section 301 and 302 establish criteria for classifying items into cleanness classes and requirements for each class. Instead of using the cleanness level system of Subpart 2.1, CB&I Nuclear may establish cleanness requirements on a case-by-case basis, consistent with the other provisions of Subpart 2.1. CB&I Nuclear establishes appropriate cleanliness controls for work on safety-related equipment to minimize introduction of foreign

material and maintain system/component cleanliness throughout maintenance or modification activities, including documented verification of absence of foreign material prior to system closure.

13.2.2. NQA-1a-2009, Subpart 2.2, Section 201 establishes criteria for classifying items into protection levels. Instead of classifying items into protection levels during the operational phase, CB&I Nuclear may establish controls for the packaging, shipping, handling, and storage of such items on a case-by-case basis with due regard for the item's complexity, use, and sensitivity to damage. Prior to installation or use, the items are inspected and serviced as necessary to assure that no damage or deterioration exists which could affect their function.

13.2.3. NQA-1a-2009, Subpart 2.2, Section 606, "Storage Records." This section requires written records be prepared containing information on personnel access. As an alternative to this requirement, CB&I Nuclear documents establish controls for storage areas that describe those authorized to access areas and the requirements for recording access of personnel. However, these records of access are not considered quality records and will be retained in accordance with the administrative controls of the applicable project.

~~13.2.4. NQA-1-2008, Subpart 2.3, Section 202 requires the establishment of five zone designations for housekeeping cleanliness controls. Instead of the five-level zone designation, CB&I Nuclear bases its control over housekeeping activities on a consideration of what is necessary and appropriate for the activity involved. The controls are implemented through procedures or instructions which, in the case of maintenance or modification work, are developed on a case-by-case basis. Factors considered in developing the procedures and instructions include cleanliness control, personnel safety, fire prevention and protection, radiation control, and security. The procedures and instructions make use of standard janitorial and work practices to the extent possible.~~

~~13.2.5.~~13.2.4. NQA-1-2008, Part III, Subpart 3.2, Appendix 2.1: Only Section 300, "Cleaning Recommendations and Precautions" are being committed to in accordance with RG 1.37. In addition, a suitable chloride stress-cracking inhibitor should be added to the fresh water used to flush systems containing austenitic stainless steels.

SECTION 14 INSPECTION, TEST, AND OPERATING STATUS

CB&I Nuclear has established the necessary measures and governing procedures to identify the inspection, test, and operating status of items and components subject to the provisions of this QAPD in order to maintain personnel and reactor safety and avoid inadvertent operation of equipment. Where necessary to preclude inadvertent bypassing of inspections or tests, or to preclude inadvertent operation, these measures require the inspection, test, or operating status be verified before release, fabrication, receipt, installation, test or use. These measures also establish the necessary authorities and controls for the application and removal of status indicators or labels.

In addition, temporary design changes (temporary modifications), such as temporary bypass lines, electrical jumpers and lifted wires, and temporary trip-point settings, are controlled by procedures that include requirements for appropriate installation and removal, independent/concurrent verifications, and status tracking.

Administrative procedures also describe the measures taken to control altering the sequence of required tests, inspections, and other operations. Review and approval for these actions is subject to the same control as taken during the original review and approval of tests, inspections, and other operations.

14.1. NQA-1 Commitment

In establishing measures for control of inspection, test and operating status, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 14.

SECTION 15 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

CB&I Nuclear has established the necessary measures and governing procedures to control items, including services that do not conform to specified requirements to prevent inadvertent installation or use. Instructions require that the individual discovering a nonconformance identify, describe, and document the nonconformance in accordance with the requirements of Part II, Section 16. Controls provide for identification, documentation, evaluation, segregation when practical, and disposition of nonconforming items, and for notification to affected organizations. Controls are provided to address conditional release of nonconforming items for use on an at-risk basis prior to resolution and disposition of the nonconformance, including maintaining identification of the item and documenting the basis for such release. Conditional release of nonconforming items for installation requires the approval of the designated management. Nonconformances are corrected or resolved prior to depending on the item to perform its intended safety function. Nonconformances are evaluated for impact on operability of quality structures, systems, and components to assure that the final condition does not adversely affect safety, operation, or maintenance of the item or service. Nonconformances to design requirements dispositioned repair or use-as is are subject to design control measures commensurate with those applied to the original design. Nonconformance dispositions are reviewed for adequacy, analysis of quality trends, and reports provided to the designated management. Significant trends are reported to management in accordance with CB&I Nuclear procedures, regulatory requirements, and industry standards.

15.1. Interface with the Reporting Program

CB&I Nuclear has appropriate interfaces between the QAP for identification and control of nonconforming materials, parts, or components and the non-QA Reporting Program to satisfy the requirements of 10 CFR 52, 10 CFR 50.55 and/or 10 CFR 21 during ESP/COL design and construction.

15.2. NQA-1 Commitment

In establishing measures for nonconforming materials, parts, or components, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 15.

SECTION 16 CORRECTIVE ACTION

CB&I Nuclear has established the necessary measures and governing procedures to promptly identify, control, document, classify, and correct conditions adverse to quality. CB&I Nuclear procedures assure that corrective actions are documented and initiated following the determination of conditions adverse to quality in accordance with regulatory requirements and applicable quality standards. CB&I Nuclear procedures require personnel to identify known conditions adverse to quality. When complex issues arise where it cannot be readily determined if a condition adverse to quality exists, CB&I Nuclear documents establish the requirements for documentation and timely evaluation of the issue. Reports of conditions adverse to quality are analyzed to identify trends. Significant conditions adverse to quality and significant adverse trends are documented and reported to responsible management.

In the case of a significant condition adverse to quality, the cause is determined and actions to preclude recurrence are taken. In the case of suppliers working on safety-related activities, or other similar situations, CB&I Nuclear may delegate specific responsibilities for corrective actions but CB&I Nuclear maintains responsibility for the effectiveness of corrective action measures.

16.1. Interface with the Reporting Program

CB&I Nuclear has appropriate interfaces between the QAP for corrective actions and the non-QA Reporting Program to satisfy the requirements of 10 CFR 50.55 and 10 CFR 21.

16.2. NQA-1 Commitment

In establishing provisions for corrective action, CB&I Nuclear commits to compliance with NQA-1- 2008, Requirement 16.

SECTION 17 QUALITY ASSURANCE RECORDS

CB&I Nuclear has the necessary measures and governing procedures to ensure that sufficient records of items and activities affecting quality are developed, reviewed, approved, issued, used, and revised to reflect completed work. The provisions of such procedures establish the scope of the records retention program for CB&I Nuclear and include requirements for records administration, including receipt, preservation, retention, storage, safekeeping, retrieval, access controls, user privileges, and final disposition.

17.1. Record Retention

Measures are established that ensure that sufficient records of completed items and activities affecting quality are appropriately stored. Records of activities for design, engineering, procurement, construction, inspection and test, installation, pre-operation, startup, repair, modification, decommissioning, and audits and their retention times are defined in appropriate procedures. The records and retention times are based on Regulatory Position C.1.a. (3) of Regulatory Guide 1.28, Revision 4 for design, construction, and initial start-up. In all cases where state, local, or other agencies have more restrictive requirements for record retention, those requirements will be met.

17.2. Electronic Records

When using optical disks for electronic records storage and retrieval systems, CB&I Nuclear complies with the NRC guidance in Generic Letter 88-18, "Plant Record Storage on Optical Disks." CB&I Nuclear will manage the storage of QA Records in electronic media consistent with the intent of RIS 2000-18 and associated NIRMA Guidelines TG 11-1998, TG15-1998, TG16-1998, and TG21-1998, or later NRC endorsed editions with specific applicability depending upon Licensee/Client commitments.

17.3. NQA-1 Commitment / Exceptions

In establishing provisions for records, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 17, and regulatory positions stated in Regulatory Guide 1.28, Rev 4.

For those projects which specifically commit to NQA-1-1994 by contract, NQA-1-1994, Part I, Supplement 17S-1, requirements that were moved in a later edition to Part III, Subpart 3.1, Appendix 17A-1, were determined not to be more stringent due to the transition of paper records to electronic records (refer to Section 17.2, Electronic Records). For these requirements, NQA-1-2008, Part I, Requirement 17 will govern.

SECTION 18 AUDITS

CB&I Nuclear has established the necessary measures and governing procedures to implement audits to verify that activities covered by this QAPD are performed in conformance with the established requirements and performance criteria are met. The audit programs are themselves reviewed for effectiveness as a part of the overall audit process.

18.1. Performance of Audits

Internal audits of activities are performed with a frequency commensurate with safety significance and in a manner which assures that audits of safety-related activities are completed. During the early portions of Nuclear Project Development activities, audits will focus on areas including, but not limited to, site investigation, procurement, and corrective action. Functional areas of an organization's QA program for auditing include, at a minimum, verification of compliance and effectiveness of implementation of internal rules, procedures (e.g., project operations, design, procurement, and testing), regulations and license conditions, programs for training, retraining, qualification and performance of staff, and corrective actions including associated record keeping.

The audits are scheduled on a formal preplanned audit schedule and in a manner to provide coverage and coordination with ongoing activities, based on the status and importance of the activity. Additional audits may be performed as deemed necessary by management. The scope of the audit is determined by the quality status and safety importance of the activities being performed. These audits are conducted by trained personnel not having direct responsibilities in the area being audited and in accordance with preplanned and approved audit plans or checklists, under the direction of a qualified lead auditor and the cognizance of the Audit Manager.

CB&I Nuclear is responsible for conducting periodic internal audits to determine the adequacy of programs and procedures (by representative sampling), and to determine if they are meaningful and comply with the overall QAPD. The results of each audit are reported in writing to the responsible Quality Assurance Vice President or designee, as appropriate. Additional internal distribution is made to other concerned management levels and to management of the internal audited organizations or activities in accordance with approved procedures.

Management responds to all audit findings and initiates corrective action where indicated. Where corrective action measures are indicated, documented follow-up of applicable areas through inspections, review, re-audits, or other appropriate means, is conducted to verify Implementation of assigned corrective action.

Audits of suppliers of safety-related components and/or services are conducted as described in Section 7.1.

18.2. Internal Audits

Internal audits should be performed in such a manner as to assure that an audit of all applicable QA program elements is completed for each functional area at least once each year or at least once during the life of the activity, whichever is shorter.

Internal audits include verification of compliance and effectiveness of the administrative controls established for implementing the requirements of this QAPD; and regulations; provisions for training, retraining, qualification, and performance of personnel performing activities covered by this QAPD; and, observation of the performance of construction, and fabrication, activities including associated record keeping.

18.3. NQA-1 Commitment

In establishing the independent audit program, CB&I Nuclear commits to compliance with NQA-1-2008, Requirement 18 and the regulatory positions stated in Regulatory Guide 1.28, Rev 4.

For those projects which specifically commit to NQA-1-1994 by contract, CB&I Nuclear commits to the following NQA-1-1994 requirement related to audits (Supplement 18S-1, Section 3.2, Section 4 and Section 5 respectively):

- In the case of internal audits, personnel having direct responsibility for performing the activities being audited shall not be involved in the selection of the audit team.
- Audit results shall be documented by auditing personnel and shall be reviewed by management having responsibility for the area audited.
- The audit report shall be signed by the audit team leader and issued.
- The audit report shall include description of each reported adverse audit finding in sufficient detail to enable corrective action to be taken by the audited organization.

PART III – NONSAFETY-RELATED SSC QUALITY CONTROL

SECTION 1 NONSAFETY-RELATED SSC - SIGNIFICANT CONTRIBUTORS TO PLANT SAFETY

Specific program controls are applied to nonsafety-related SSCs, for which 10 CFR 50, Appendix B is not applicable, that are significant contributors to plant safety. The specific program controls consistent with applicable sections of this QAPD are applied to those items in a selected manner, using a graded approach, targeted at those characteristics or critical attributes that render the SSC a significant contributor to plant safety.

The following clarify the applicability of the QA Program to the nonsafety-related SSCs and related activities, including the identification of exceptions to the QA Program described in Part II, Sections 1 through 18 taken for nonsafety-related SSCs.

1.1 Organization

The verification activities described in this part may be performed by the CB&I Nuclear line organization. The QA organization described in Part II is not required to perform these functions.

1.2 QA Program

CB&I Nuclear QA requirements for nonsafety-related SSCs are established in this QAPD and appropriate procedures. Suppliers of these SSCs or related services describe the quality controls applied in appropriate procedures. A new or separate QA program is not required.

1.3 Design Control

CB&I Nuclear has design control measures to ensure that the contractually established design requirements are included in the design. These measures ensure that applicable design inputs are included or correctly translated into the design documents, and deviations from those requirements are controlled. Design verification is provided through the normal supervisory review of the designer's work.

1.4 Procurement Document Control

Procurement documents for items and services obtained by or for CB&I Nuclear include or reference documents describing applicable design bases, design requirements, and other requirements necessary to ensure component performance. The procurement documents are controlled to address deviations from the specified requirements.

1.5 Instructions, Procedures, and Drawings

CB&I Nuclear provides documents such as, but not limited to, written instructions, procedures, drawings, vendor technical manuals, and special instructions in work packages, to direct the performance of activities affecting quality. The method of instruction employed provides an appropriate degree of guidance to the personnel performing the activity to achieve acceptable functional performance of the SSC.

1.6 Document Control

CB&I Nuclear controls the issuance and change of documents that specify quality requirements or prescribe activities affecting quality to ensure that correct documents are used. These controls include review and approval of documents, identification of the appropriate revision for use, and

measures to preclude the use of superseded or obsolete documents.

1.7 Control of Purchased Items and Services

CB&I Nuclear employs measures, such as inspection of items or documents upon receipt or acceptance testing, to ensure that all purchased items and services conform to appropriate procurement documents.

1.8 Identification and Control of Purchased Items

CB&I Nuclear employs measures where necessary, to identify purchased items and preserve their functional performance capability. Storage controls take into account appropriate environmental, maintenance, or shelf life restrictions for the items.

1.9 Control of Special Processes

CB&I Nuclear employs process and procedure controls for special processes, including welding, heat treating, and nondestructive testing. These controls are based on applicable codes, standards, specifications, criteria, or other special requirements for the special process.

1.10 Inspection

CB&I Nuclear uses documented instructions to ensure necessary inspections are performed to verify conformance of an item or activity to specified requirements or to verify that activities are satisfactorily accomplished. These inspections may be performed by knowledgeable personnel in the line organization. Knowledgeable personnel are from the same discipline and have experience related to the work being inspected.

1.11 Test Control

CB&I Nuclear employs measures to identify required testing that demonstrates that equipment conforms to design requirements. These tests are performed in accordance with test instructions or procedures. The test results are recorded, and authorized individuals evaluate the results to ensure that test requirements are met.

1.12 Control of Measuring and Test Equipment (M&TE)

CB&I Nuclear employs measures to control M&TE use, and calibration and adjustment at specific intervals or prior to use.

1.13 Handling, Storage, and Shipping

CB&I Nuclear employs measures to control the handling, storage, cleaning, packaging, shipping, and preservation of items to prevent damage or loss and to minimize deterioration. These measures include appropriate marking or labels, and identification of any special storage or handling requirements.

1.14 Inspection, Test, and Operating Status

CB&I Nuclear employs measures to identify items that have satisfactorily passed required tests and inspections and to indicate the status of inspection, test, and operability as appropriate.

1.15 Control of Nonconforming Items

CB&I Nuclear employs measures to identify and control items that do not conform to specified requirements to prevent their inadvertent installation or use.

1.16 Corrective Action

CB&I Nuclear employs measures to ensure that failures, malfunctions, deficiencies, deviations, defective components, and non-conformances are properly identified, reported, and corrected.

1.17 Records

CB&I Nuclear employs measures to ensure records are prepared and maintained to furnish evidence that the above requirements for design, procurement, document control, inspection, and test activities have been met.

1.18 Audits

CB&I Nuclear employs measures for line management to periodically review and document the adequacy of the process, including taking any necessary corrective action. Audits independent of line management are not required. Line management is responsible for determining whether reviews conducted by line management or audits conducted by any organization independent of line management are appropriate. If performed, audits are conducted and documented to verify compliance with design and procurement documents, instructions, procedures, drawings, and inspection and test activities. Where the measures of this part (Part III) are implemented by the same programs, processes, or procedures as the comparable activities of Part II, the audits performed under the provisions of Part II may be used to satisfy the review requirements of this Section (Part III, Section 1.18).

SECTION 2 NONSAFETY-RELATED SSCS CREDITED FOR REGULATORY EVENTS

The following criteria apply to Fire Protection (10 CFR 50.48), anticipated transients without scram (ATWS) (10 CFR 50.62), the Station Blackout (SBO) (10 CFR 50.63) SSCs that are not safety-related:

CB&I Nuclear implements quality requirements for the fire protection system in accordance with Regulatory Position 1.7, "Quality Assurance," in Regulatory Guide 1.189, "Fire Protection for Nuclear Power Plants."

- CB&I Nuclear implements the quality requirements for ATWS equipment in accordance with Generic Letter 85-06, "Quality Assurance Guidance for ATWS Equipment That Is Not Safety Related"
- CB&I Nuclear implements quality requirements for SBO equipment in accordance with Regulatory Position 3.5, "Quality Assurance and Specific Guidance for SBO Equipment That Is Not Safety Related" and Appendix A, "Quality Assurance Guidance for Non-safety Systems and Equipment" in Regulatory Guide 1.155, "Station Blackout"

PART IV – REGULATORY COMMITMENTS

NRC Regulatory Commission Regulatory Guides and Quality Assurance Standards

This part identifies the NRC Regulatory Guides (RG) and the other quality assurance standards that have been selected to supplement and support the CB&I Nuclear QAPD. CB&I Nuclear complies with these standards to the extent described or referenced. Commitment to a particular RG or standard does not constitute a commitment to other RGs or standards that may be referenced therein.

CB&I Nuclear takes no exceptions to the Regulatory Guides stated below. However, exceptions to Regulatory Guides may be required as defined in specific licensing documents (e.g., Design Control Documents) or through contractual requirements. Specific applicability will depend on Licensee/Client commitments.

In cases where referenced standards are specifically cited in NQA-1 but are withdrawn or superseded or an alternative standard is required by project specifications, CB&I Nuclear may adopt a later version, ~~or~~ develop a similar specification or substitute an alternative standard/specification provided the decision is supported via a documented ~~Engineering~~ evaluation by Engineering or other appropriate authority and the intent of the originally cited standard is met.

Due to the diversity of CB&I Nuclear's work, applicability of this part has been subdivided into two distinct phases: one governing work during the performance of Construction and Post-Construction activities and the other applicable to Operations activities.

A. CONSTRUCTION AND POST-CONSTRUCTION ~~PHASE~~ (Plants with licensing commitments to NQA-1)

Regulatory Guides:

Regulatory Guide 1.26, *Quality Group Classifications and Standards for Water-, Steam- and Radioactive-Waste-Containing Components of Nuclear Power Plants*, Revision 4

Regulatory Guide 1.26 defines classification of systems and components.

CB&I Nuclear commits to comply with Regulatory Guide 1.26.

Regulatory Guide 1.28, *Quality Assurance Program Criteria (Design and Construction)*, Revision 4

Regulatory Guide 1.28 describes a method acceptable to the NRC staff for complying with the provisions of Appendix B with regard to establishing and implementing the requisite quality assurance program for the design and construction of nuclear power plants.

CB&I Nuclear commits to comply with Regulatory Guide 1.28 with the exception that for position C.2.b(4), the information described therein is reviewed as it becomes available through its ongoing receipt inspection, operating experience, and supplier evaluation programs, in lieu of performing a specific evaluation on an annual basis. The results of the reviews are considered for effect on a supplier's continued qualification and adjustments made as necessary.

Regulatory Guide 1.28, *Quality Assurance Program Requirements (Design and Construction)*, Rev. 3, dated August 1985

CB&I Nuclear commits to comply with Regulatory Guide 1.28, Rev. 3 to the extent that the requirements are passed on to CB&I Nuclear for their scope of services and with the exception that for position C.3.2.2, the information described therein is reviewed as it becomes available through

its ongoing receipt inspection, operating experience, and supplier evaluation programs, in lieu of performing a specific evaluation on an annual basis. The results of the reviews are considered for effect on a supplier's continued qualification and adjustments made as necessary.

Regulatory Guide 1.29, *Seismic Design Classification*, Revision 4

Regulatory Guide 1.29 defines systems required to withstand a safe shutdown earthquake (SSE).

CB&I Nuclear commits to comply with Regulatory Guide 1.29.

Regulatory Guide 1.33, *Quality Assurance Program Requirements (Operations)*, Revision 2

~~Regulatory Guide 1.33 describes a method acceptable to the NRC staff for complying with the Commission's regulations with regard to overall quality assurance program requirements for the operation phase of nuclear power plants.~~

CB&I Nuclear commits to comply with Regulatory Guide 1.33 to the extent that the requirements are passed on to CB&I Nuclear for their scope of services. These specific requirements would be implemented via a licensee/client commitment documented in the applicable contract and project quality assurance plan.

Regulatory Guide 1.37, *Quality Assurance Requirements for Cleaning of fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants*, Revision 1

Regulatory Guide 1.37 provides guidance on specifying water quality and precautions related to the use of alkaline cleaning solutions and chelating agents.

CB&I Nuclear commits to comply with Regulatory Guide 1.37.

Regulatory Guide 1.54, *Service Level I, II, and III Protective Coatings*, Revision 2

Regulatory Guide 1.54 provides guidance for the application of protective coatings within nuclear power plants to protect surfaces from corrosion, contamination from radionuclides, and for wear protection.

CB&I Nuclear commits to comply with Regulatory Guide 1.54.

Regulatory Guide 1.71, *Welder Qualification for Areas of Limited Accessibility*, Revision 1

CB&I Nuclear commits to comply with Regulatory Guide 1.71

Standards:

ASME NQA-1-2008 Edition with NQA-1a-2009 Addenda, *Quality Assurance Requirements for Nuclear Facility Applications*

CB&I Nuclear commits to NQA-1-2008 with NQA-1a-2009 Addenda Parts I and II, as described in Part II of this document with specific identification of exceptions and clarification. CB&I Nuclear commits to NQA-1-2008 with NQA-1a-2009 Addenda, Part III only as specifically noted in Part II of this document.

ASME NQA-1-1994 Edition, Quality Assurance Requirements for Nuclear Facility Applications

For those projects which specifically commit to NQA-1-1994 by contract, CB&I Nuclear commits to those requirements identified in NQA-1-1994 as more stringent than ASME NQA-1-2008 with NQA-1a-2009 addenda. Refer to Part II, specific sections, for those requirements identified as more stringent.

Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guides (TGs)

CB&I Nuclear commits to NIRMA TGs as described in Part II, Section 17.

B. OPERATING PLANTS~~IONS PHASE ONLY~~ (Plants with licensing commitments to ANSI N45.2 series standards or earlier versions of Regulatory Guides)

Regulatory Guides:

Regulatory Guide 1.28, Rev. 2, dated February 1979 (ANSI N45.2 - 1977) -"*Quality Assurance Program Requirements*"

CB&I Nuclear commits to comply with Regulatory Guide 1.28, Rev 2 to the extent that the requirements are passed on to CB&I Nuclear for their scope of services.

Regulatory Guide 1.28, *Assurance Program Requirements (Design and Construction),* Rev. 3, dated August 1985

CB&I Nuclear commits to comply with Regulatory Guide 1.28, Rev. 3 to the extent that the requirements are passed on to CB&I Nuclear for their scope of services.

Regulatory Guide 1.30, dated August 11, 1972 (ANSI N45.2.4 – 1972), *Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electrical Equipment*

CB&I Nuclear commits to comply with Regulatory Guide 1.30

Regulatory Guide 1.38, Revision 2, dated May 1977 (ANSI N45.2.2 – 1972), *Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants*

CB&I Nuclear commits to comply with Regulatory Guide 1.38 with the following alternatives:

- ANSI N45.2.2, paragraph 7.3 and, specifically, Subparagraph 7.3.3, shall be interpreted to apply to and shall be complied with for only the use and maintenance of hoisting equipment and not the qualification of personnel engaged in operating material handling equipment as implied by reference to ANSI B30.2, B30.5, and B30.6.
- Qualification of personnel engaged in operating material handling equipment shall be by successfully passing a practical operating examination demonstrating satisfactory ability in operating equipment similar to the type to be operated during productions activities, as specified in ANSI N45.2.2, Paragraph 7.5.

Regulatory Guide 1.39, Revision 2, dated September 1977 (ANSI N45.2.3 – 1973), *Housekeeping Requirements for Water-Cooled Nuclear Power Plants*

CB&I Nuclear commits to comply with Regulatory Guide 1.39

Regulatory Guide 1.58, Revision 1, dated September 1980 (ANSI N45.2.6 – 1978), *Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel*, Regulatory Guide withdrawn (56 FR 36175, July 31, 1991)

CB&I Nuclear commits to comply with Regulatory Guide 1.58 with the following alternatives:

- ANSI N454.2.6 – 1978, Paragraph 2.2, Determination of Initial Capability

  Initial capability will be determined by an evaluation of the candidate's education and experience or by testing. If the candidate fails to meet the criteria established in paragraph

3.5, subject to our alternatives stated below the third bullet, CB&I Nuclear will evaluate the candidate by testing. Testing to demonstrate proficiency will be accomplished by a practical demonstration, oral or written examination, or by any suitable combination of the three. In all cases, the results will be documented and retained in the candidate's qualification file. Evaluation by testing may be optionally exercised at anytime in lieu of verified education and experience.

- ANSI N45.2.6 – 1978, Paragraph 2.4, Written Certification of Qualification

  For purposes of certification, CB&I Nuclear will use the following disciplines on certificates of qualification to identify activities certified to perform:

  - ✓ Mechanical (includes equipment, piping, mechanical instrumentation, and control)
  - ✓ Electrical (includes equipment, wiring, and electrical instrumentation, and controls)
  - ✓ Civil (includes concrete, structural, and soils)
  - ✓ Special Processes, except NDE – see below (includes welding, painting, chemical, and thermite welding)
  - ✓ Quality (includes first line supervisory personnel who review or administer inspections, examinations, or tests over one or several disciplines, as well as, multi-disciplines, such as, receiving, shop inspection, documentation, calibration, and contract monitoring)
  - ✓ NDE disciplines as delineated in the version of SNT-TC-1A that is invoked for the work~~(as delineated in SNT-TC-1A-1992)~~

  Certification will be accomplished either by education, experience and training, or testing. The method used will be shown on the certificates. Results of testing and records of education, experience, and training will be maintained in the candidate's qualification file.

- ANSI N45.2.6 – 1978, Paragraph 3.5, Education and Experience Recommendation

  Note: Alternatives to ANSI N45.2.6 – 1978 are identified in ***bold italics***.

  3.1 – Level I

  1) Two (2) years of related experience in equivalent inspection, examination, or testing activities or, ***within a discipline, specific task certification is allowed after six (6) months experience and successful completion of proficiency test for the task*** or,

  2) High school graduation/***general education development equivalent*** plus six (6) months of related experience in equivalent inspection, examination, or testing activities or, ***within a discipline, specific task certification is allowed after one (1) month experience and successful completion of proficiency test for the task*** or,

  3) Completion of college level work leading to an associate degree in a related discipline plus three (3) months of related experience in equivalent inspection, examination, or testing activities, or, ***within a discipline specific task certification is allowed after one (1) month experience and successful completion of proficiency test for the task*** or,

4) ***Four (4) year college graduation plus one (1) month of related experience in the corresponding inspection, examination, or testing activities*** or,

5) ***Graduate degree plus one (1) month of related experience in equivalent inspection, examination, or testing activities***.

3.2 – Level II

1) One (1) year of satisfactory performance as level I ***or five (5) years related experience*** in the corresponding inspection, examination or test category or class, or ***within a discipline, specific task certification is allowed after three (3) years experience and successful completion of proficiency test for the task*** or,

2) High school graduation/***general education development equivalent*** plus three (3) years of related experience in equivalent inspection, examination, or testing activities or, ***within a discipline, specific task certification is allowed after two (2) years experience and successful completion of proficiency test for the task*** or,

3) Completion of college level work leading to an associate degree in a related discipline plus one (1) year of related experience in equivalent inspection, examination, or testing activities, or ***within a discipline, specific task certification is allowed after one (1) month experience and successful completion of proficiency test for the task*** or,

4) Four (4) year college graduation plus six (6) months of related experience in the equivalent inspection, examination, or testing activities or, ***within a discipline, specific task certification is allowed after one (1) month experience and successful completion of proficiency test for the task*** or,

5) ***Graduate degree plus six (6) months of related experience in equivalent inspection, examination or testing activities or, within a discipline, specific task certification is allowed after one (1) month experience and successful completion of proficiency test for the task.***

3.3 – Level III

1) Six (6) years of satisfactory performance as a level II or ***15 years of related experience***. Both must have related experience in corresponding inspection, examination, or test category or class or,

2) High school graduation/***general education development equivalent*** plus ten (10) years of related experience in equivalent inspection, examination, or testing activities; or high school graduation/***general education development equivalent*** plus eight (8) years experience in equivalent inspection, examination, or testing activities, with at least two (2) years as level II, and with at least two (2) years associated with nuclear facilities – or – if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility or,

3) Completion of college level work leading to an associate degree and seven (7) years of related experience in equivalent inspection, examination, or testing activities, with at least two (2) years of this experience associated with nuclear facilities - or – if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility or,

4) Four (4) year college graduation plus five (5) years of related experience in equivalent inspection, examination, or testing activities, with at least two (2) years of this experience associated with nuclear facilities - or – if not, at least sufficient training to be acquainted with the relevant quality assurance aspect of a nuclear facility or,

5) ***Graduate degree plus three (3) years of related experience in equivalent inspection, examination, or testing activities with at least two (2) years of this experience associated with nuclear facilities - or – if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility***.

Regulatory Guide 1.64, Revision 2, dated June 1976 (ANSI N45.2.11 – 1974), *Quality Assurance Requirements for the Design of Nuclear Power Plants*, Regulatory Guide withdrawn (56 FR 3176, July 31, 1991)

CB&I Nuclear commits to comply with Regulatory Guide 1.64 with the following alternatives:

If in an exceptional circumstance the engineer's immediate supervisor is the only technically qualified individual available, this review will be conducted by the supervisor, provided that:

- The other provisions of the Regulatory Guide are satisfied and,
- The justification is individually documented and approved in advance by the supervisor's management and,
- Quality assurance audits cover frequency and effectiveness of use of supervisor as designed verifiers to guard against abuse.

~~Regulatory Guide 1.70, Revision 3, dated November 1978, *Standard Format and Content of Safety Analysis Report for Nuclear Power Plants*~~

~~CB&I Nuclear commits to comply with Regulatory Guide 1.70~~

Regulatory Guide 1.74, dated February 1974 (ANSI N45.2.10 – 1973), *Quality Assurance Terms and Definitions*, Regulatory Guide withdrawn (54 FR 38919, September 21, 1989)

CB&I Nuclear commits to comply with Regulatory Guide 1.74

Regulatory Guide 1.88, Revision 2, dated October 1976 (ANSI N45.2.9 – 1974), *Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records*, Regulatory Guide withdrawn (56 FR 36175, July 31, 1991)

CB&I Nuclear commits to comply with Regulatory Guide 1.88

Regulatory Guide 1.94, Revision 1, dated April 1976 (ANSI N45.2.5 – 1974), *Quality Assurance Requirements for Installation, Inspection and testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants*, Regulatory Guide withdrawn (75 FR 54921)

CB&I Nuclear commits to comply with Regulatory Guide 1.94 with the following alternatives which address high strength bolting of structural steel and evaluation of mechanical (cadweld) splice test results:

Section 5.4 High Strength Bolting

No mention is made of direct tension indicators for controlling bolt tightening and inspection for

adequate tension. However, the reference document "Specification for Structural joints Using ASTM A325 or A490 Bolts" of the AISC as approved by the Research Council on Riveted and Bolted Structural Joints (RCRBSJ) dated May 8, 1974, includes these devices as a control measure for indicating bolt tension. CB&I Nuclear is presently using these devices and plans to continue their use.

CB&I Nuclear will provide quality control measures on direct tension indicators in accordance with applicable AISC documents, as follows:

- Use only CB&I Nuclear qualified manufacturers.
- Evaluate and concur with the manufacturer's test procedure to assure the procedure provides an adequate measure of direct tension indicator performance.
- Require the manufacturer to test at least three (3) direct tension indicators from each keg, prior to shipment, to verify the load indicating qualities of the devices. Each verification test shall show not less than the specified tension when the average gap on the indicator is equal to that specified by the manufacturer.
- Require test reports, documenting test results and material traceability, to accompany each shipment of indicators and conduct periodic confirmatory inspections and tests to ensure continuous manufacturer's compliance.
- Install direct tension indicators in accordance with the manufacturer's instructions.
- Visually inspect bolted joints made with direct tension indicators to ensure that all bolts have the devices properly installed and to the proper average gap. At least 20 percent of the bolts on each connection, but not less than two bolts, shall be checked with a feeler gauge to verify the bolts are properly tightened.
- Direct tension indicators used with bolts that have been tightened to the full extent specified in Table 3 of AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts" shall not be reused.

Section 5.4, second paragraph, Item 1of the standard requires that "Bolts are the correct length as indicated by at least two (2) threads extending beyond the not." This provision exceeds the requirements contained in present and past issues of the RCRBSJ Specification, which requires "full thread engagement." This term is then defined: "Full thread engagement is deemed to have been met when the end of the bolt is flush with the face of the nut." CB&I Nuclear proposes the alternative to the requirement for "at least two (2) threads extending beyond the nut" by use of the industry practice of bolts flush with the face of the nut.

Section 6.2.2 Evaluation of Mechanical (Cadweld) Splice Test Results

Cadweld splices are conducted over long periods of time by single crews when considered on the basis of bar size, position, and crew makeup. Since problems discovered are potentially generic, we will examine output on the following basis.

For tests failing the second criteria in 2 of 6, CB&I Nuclear will consider that the failure rate pertains to the total output of all splices and evaluate the previous 100 splices accordingly. Our specifications will be reworded to reflect this clarification.

Regulatory Guide 1.116, Revision O-R, dated May 1977 (ANSI N45.2.8 – 1975), *Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and sSystems*, Regulatory Guide has been withdrawn (75 FR 54921)

CB&I Nuclear commits to comply with Regulatory Guide 1.116

Regulatory Guide 1.123, Revision 1, dated July 1977 (ANSI N45.2.13 – 1976), *Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants*, Regulatory Guide withdrawn (56 FR 36175, July 31, 1991)

CB&I Nuclear commits to comply with Regulatory Guide 1.123

~~Regulatory Guide 1.136, Revision 3, dated March 2007, *Design Limits, Loading Combinations, Materials, Construction, and Testing of Concrete Containment*~~

~~CB&I Nuclear commits to comply with Regulatory Guide 1.136 and section 3.8.1 of NUREG 0800, "Concrete Containment" ASME III Division 2~~

~~Regulatory Guide 1.142, Revision 2, dated November 2001 (ACI 349 dated November 7, 2006), *Safety-Related Concrete Structures for Nuclear Power Plants (Other than Reactor Vessels and Containments*~~

~~CB&I Nuclear commits to comply with Regulatory Guide 1.142~~

Regulatory Guide 1.144, Revision 1, dated September 1980 (ANSI N45.2.12, - 1977), *Auditing of Quality Assurance Programs for Nuclear Power Plants,* Regulatory Guide withdrawn (56 FR 36175, July 31, 1991)

CB&I Nuclear commits to comply with Regulatory Guide 1.144 with the following alternative:

The pre-audit and post-audit conferences required by Sections 4.3.1 and 4.3.3 of ANSI N45.2.12 – 1977 may be fulfilled by a variety of documented communications such as telephone conversations.

Regulatory Guide 1.146, dated August 1980, (ANSI N45.2.23 – 1978), *Qualification of Quality Assurance Program Audit personnel for Nuclear Power Plants*, Regulatory Guide withdrawn (56 FR 36175, July 31, 1991)

CB&I Nuclear commits to comply with Regulatory Guide 1.146 with the following alternative:

As an alternative to the provisions of section 2.3.4, which requires prospective lead auditors to participate in a minimum of five (5) quality assurance audits within a period of time not to exceed three (3) years prior to the date of qualification, one of which shall be a nuclear quality assurance audit within the last year prior to qualification, the following may be performed:

"Perspective lead auditors shall demonstrate their ability to effectively implement the audit process and effectively lead an audit team. Upon successful demonstration of the ability to effectively lead audits, CB&I Nuclear Quality Management may certify the individual as a lead auditor."

Additional Guidance:

CB&I Nuclear commits to comply with the quality assurance provisions of Branch Technical Position ASB 9.5-1, Fire Protection Guidelines for Nuclear Power Plants. Appropriate quality measures contained in this program document shall be applied. CB&I Nuclear's response to the technical (engineering, design, and construction) provisions is provided in this Part IV or the comparable section of a Licensee/Client's SAR.