

Nuclear Development, LLC

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Bethesda, MD 20814

June 16, 2020

10 CFR 50.80
10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Subject: Supplemental Information Regarding Response to Request for Additional Information

Bellefonte Nuclear Plant, Unit 1 and 2
Construction Permits Nos. CPPR -122 and CPPR-123
NRC Docket Nos. 50-438 and 50-439

- References:
1. Application for Order Approving Construction Permit Transfers and Conforming Administrative Construction Permit Amendments, November 13, 2018
 2. Electronic Mail from O. Tabatabai, Nuclear Regulatory Commission, to W.R. McCullum, Nuclear Development, Inc., Request for Additional Information (CAC/DOCKET/EPID: 001554/05000438/L-2018-LLM-0155), February 13, 2020
 3. Letter from W. R. McCollum, Jr. to NRC Document Control Desk, "Response to Request for Additional Information," March 13, 2020
 4. Electronic Mail from O. Tabatabai, Nuclear Regulatory Commission, to W.R. McCullum, Nuclear Development, Inc., Response Requested – Follow up on ND's RAI Responses, March 25, 2020
 5. Memorandum from O. Tabatabai, NRC, to M. Dudek, Summary of April 16, 2020 Public Meeting with Nuclear Development, LLC Regarding Its Response to Staff's Request for Additional Information, April 29, 2020

By letter dated February 13, 2020 (Reference 2), the U.S. Nuclear Regulatory Commission ("NRC") requested that Nuclear Development, LLC ("ND") provide responses to requests for additional information ("RAIs") to enable the staff to make an independent assessment regarding the acceptability of the proposed construction permit transfer application (Reference 1). ND submitted its response on March 13, 2020 (Reference 3).

On March 29, 2020, the NRC Staff sent an email (Reference 4) to ND identifying certain clarifications relating to the scope of ND's Quality Assurance Program and requesting ND to participate in a public teleconference. On April 16, 2020, the NRC and representatives from ND participated in a meeting to

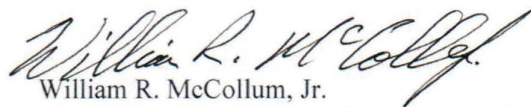
discuss ND's RAI responses. In its summary of the April 16, 2020 meeting (Reference 5), the NRC identified topics requiring follow-up by ND and requested that ND respond to these follow-up topics.

The requested information is provided in the attached Supplemental Response to Request for Additional Information ("Response").

Please let me know if you require additional information.

I declare under penalty of perjury that the foregoing and the attached are true and correct.
Executed on June 16, 2020.

Sincerely,



William R. McCollum, Jr.
Chief Executive Officer & Chief Nuclear Officer
Nuclear Development, LLC

cc: Omid Tabatabai, Senior Project Manager
U.S. Nuclear Regulatory Commission

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission

State Health Officer
Alabama Dept. of Public Health
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Encl: Response to NRC Information Request (w/ Attachments)
Attachment 1 – MPR Associates Qualifications & Experience
Attachment 2 – High Bridge & Associates Qualifications & Experience
Attachment 3 – Preliminary Conduct of Operations Plan
Attachment 4 – ND NQAP, Rev. 1 (June 11, 2020)

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NRC INFORMATION REQUESTS

The NRC summary of the April 16, 2020 meeting between Nuclear Development, LLC (ND) and NRC Staff identified topics requiring follow.

RAI 1.a

The staff explained that ND has indicated in its application, and its March 13, 2020, RAI response, that the engineering, procurement, and construction (EPC) element of the organization will be staffed from personnel from SNC-Lavalin Nuclear (SLN) and Framatome. The application further stated that the Project Oversight element of the organization will also be staffed by personnel from SLN and Framatome. The staff requested ND to clarify how ND intends to ensure that personnel employed in the EPC organization are sufficiently independent from Project Oversight, considering that some of them may work for the same employer (i.e., SLN or Framatome), and reporting relationships may exist between EPC and Project Oversight personnel.

ND Response to RAI 1.a

ND has revised its plans such that, to ensure independence, no personnel from either SNL or Framatome will participate as members of the Project Oversight organization. Personnel from the Operating Partner organization may participate in the Oversight organization activities so long as they are involved in Oversight of Construction and plant design activities, and not preoperational, startup or any other activities for which the Operating Partner has responsibility.

RAI 1.b

The staff explained that ND provided detailed information regarding technical qualifications, experience, and expertise of SLN and Framatome in its application. The staff pointed out that ND did not provide the same level of information for other contractors (e.g., MPR Associates and High Bridge Associates) that it intends to employ. In addition, ND has stated in its application that it intends to use “independent contractors” within the Project Oversight element of the organization but has not identified such entities. The staff explained that in order for the NRC staff to make a finding regarding the acceptability of ND’s organization, the staff needs sufficient information regarding the technical qualifications, experience, and expertise of all contractors that will play a major role in ND’s proposed organization. Thus, the staff is seeking additional information regarding the technical qualification, experience, and expertise of MPR Associates, High Bridge Associates, and other “independent contractors.”

ND Response to RAI 1.b

MPR

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MPR was founded in 1964 by the senior members of Admiral Rickover's management team at Naval Reactors. MPR's founders sought to bring the Naval Reactors culture of technical excellence, process discipline, and business integrity to the new commercial nuclear industry and to help that new industry address its most challenging technical problems and capture its opportunity to be a game-changer for society.

MPR is widely recognized as the premier specialty engineering firm delivering technical and risk management solutions to the most important challenges in the nuclear industry. MPR supports every domestic operating nuclear plant plus numerous others world-wide, as well as all major NSSS vendors and industry equipment suppliers, plus EPRI and DOE.

MPR engineers work in and across multiple disciplines, enabling them to achieve solutions that come with varied experience and skills. Rigorous application of proven processes consistently leads to effective solutions, first-of-a-kind technologies with broad applications, and discerning strategic insights that enable clients to capture a strong return on their investment. MPR engineers take a holistic systems approach to every effort, continually focusing on how actions in one area can affect other aspects of our clients' enterprises. MPR partners with clients, bringing a sense of urgency and dedication, keeping them informed and involved, anticipating their needs, and responding with the needed expertise.

MPR's skillset is wide-ranging, providing the ability to address challenges and capture opportunity from the detailed component engineering level to the enterprise level. This breadth of skills allows MPR to have a greater understanding of the challenges new nuclear projects face and provide solutions that balance technical and enterprise considerations. Deep technical skills are the foundation of MPR, enabling a first-principles approach that brings innovation and an understanding of the fundamentals. Key technical capabilities include:

- Component engineering and design
- Nuclear safety analysis
- Design and safety basis development
- Materials
- Reliability evaluations
- Analytical skills (structural, thermal-hydraulic, nuclear, electrical)
- Digital I&C and electrical engineering
- Alternatives analysis and gap assessments

MPR works within an organization as a risk advisor and solution provider, drawing on core technical capabilities and wide-ranging industry experience. Key programmatic capabilities include:

- Risk analysis and risk management
- Technical integration
- Business case development
- Project Management
- Strategic/Program planning
- Licensing (with knowledge of NRC and DOE regulations)

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- Scheduling, cost-estimating, and project controls

MPR has supported licensing, planning, technical integration, engineering, and leadership for a wide variety of new nuclear projects, including conventional large light water reactors and advanced nuclear projects. This wide spectrum of experience allows MPR to understand the landscape of new nuclear plant scope and needs and leverage the vast operating experience of the existing commercial nuclear fleet. MPR brings lessons learned from years of commercial experience to the deployment of new nuclear power plant projects. Examples of MPR's broad and deep experience in new nuclear plant deployment include:

Plant/Client	MPR Role/Mission
South Texas Project 3&4	• Project Director (and utility SVP) • Owner Advisor • EPC Team Leadership • EPC Specification Lead • Licensing Lead • PMO Lead • Technology Assessment • Evaluation of Toshiba ABWR Capabilities
Bellefonte/ Nuclear Development	• Independent Engineer Report • DOE Loan Program Office support • Project planning
ABWR	• Project Manager and technical leadership for Toshiba ABWR DCD • Lungmen OIVVT for digital I&C
APR1400	• Technical bases to address key NRC RAIs for DCD review (seismic, missiles) • Barakah construction & start-up support
VOGTLE 3&4	• DOE Independent Engineer (IE) • IE Report plus ongoing assessment & monitoring
NuScale	• NuScale Technical Advisory Board membership • Design/analysis of NSSS components • Overall Program Plan, work scope, schedule - PMO start-up
EPR/ UniStar, EdF UK	• Evaluation for Hinkley Point C Board of Directors • Calvert Cliffs 3 Constructability Evaluation/Owner Advisor
UAMPS	• Owner's Engineer • Strategic advisor for project development

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Plant/Client	MPR Role/Mission
EPRI	• Advanced Light Water Reactor Utility Requirements Document Lead Author, Program Director • Advanced Reactor Owner/Operator Requirements Guide • Targeted technology assessments
AP1000	• FOAK design and evaluation for critical NSSS components for Sanmen • Independent reviews and licensing expertise for Specialized Seismic Option • Risk Assessment for 1st Wave Owners
X-energy	• Leadership for Licensing Plan and activities, including NRC interactions • Program Plan and PMO • Design/analysis for steam generator • Technical support to adapt PBMR for SMR application
TerraPower	• Overall Program Plan, work scope, schedule, and cash flow • Specialty technical support (I&C, ASME, steam generator)

Further information regarding the qualifications of MPR is provided in Attachment 1.

High Bridge Associates

High Bridge Associates, Inc. (High Bridge) was formed in 2003 as a Women-Owned Small Business with the goal of establishing a unique and focused service line to aid Owners in the management and control of medium to large capital projects. High Bridge established a growth strategy that emphasized attracting and retaining highly talented project management professionals and developing best-in-class project management processes. Today, High Bridge Associates along with their affiliate company Work Management, Inc. is one of the premier project management services companies in the US.

High Bridge provides a unique breadth of services tailored to our clients' needs with our Senior Consulting Practice providing high level project analysis, assessments, or process improvement guidance, our Managed Task Services providing integrated teams to develop, implement, and manage project management and control support, and our Staff Augmentation Services providing our clients with highly qualified personnel to fill client organizational requirements. High Bridge also provides specialty Estimating, Engineering, and related project controls services from our Chattanooga Office. High Bridge Associates serves over 100 clients in 30 states. High Bridge customers include Power Generation Utilities, EPC contractors, Equipment Manufacturers, and Federal Government Agencies. Over 80% of their business derives from Commercial Power Generation; with 20% coming from Government, Industrial, and Petrochemical sectors.

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High Bridge Associates, Inc. provides the infrastructure to support the management of small to very large capital projects. With extensive experience on large complex projects and the benefit of years of experience on successful and failed management processes, High Bridge can be the difference in developing a successful project. High Bridge provides its expertise on a consulting level to help our clients develop or improve their current processes or on a defined scope/task basis where High Bridge would assume responsibility for performing these client-defined functions. Where beneficial, High Bridge can also provide highly experienced professionals to augment our clients' existing capabilities. The following outlines our areas of expertise.

The primary focus on all Highbridge projects is the establishment of good fundamental processes. These fundamentals processes are 1) Scope Development & Cost Estimating, 2) Planning & Scheduling, and 3) Cost Control & Change Management. After more than twenty years of providing services to numerous industries, Highbridge believes these three essential processes are critical to success.

High Bridge experts are intimate with and understand the technical design and regulatory licensing requirements that drive the parameters for program planning and project execution for complex nuclear and process facilities. It has supported many First of a Kind (FOAK) projects providing a broad cadre of project management and planning services.

Selected Owner & Agency Customers of High Bridge Associates include:

Ameren Energy, Amoco, American Electric Power, Arizona Public Service, British Energy/UK, BNFL, Chevron, Constellation Energy, Dominion Energy, Duke Energy, Entergy, Exelon, Exxon, Florida Power & Light/NextEra, Honeywell, International Atomic Energy Agency (IAEA), ITER International Fusion Project, Luminant Energy, Magnox Electric UK, Nebraska Public Power District, Nuclear Management Corp., Nuclear Management Partners/Sellafield, Ontario Power/Canada, Southern California Edison, STPNOC/NRG, Tennessee Valley Authority, Louisiana Energy Services/URENCO, & US DOE/National Nuclear Security Agency/National Labs at Albuquerque, Argonne, Fermi, Idaho, Kansas City Plant, Los Alamos, Oak Ridge, Princeton, Richland, Savannah River, & Stanford

Selected EPC Customers include:

Alberici, Altran Meditteranee, Bechtel, Burns and Roe, CH2MHill, Fluor, Graycor, Jacobs, Kiewit, Parsons, Sachs Electric, SAIC, Sargent & Lundy, Shaw Environmental, CB&I Shaw Nuclear, Tetra Tech, URS/Washington Group, Worley Parsons

Selected OEM Customers include:

Alstom, ORANO, Babcox & Wilcox, Cogema, Framatome, Foster Wheeler, GE Power, Holtec, Mitsubishi, NuScale, SPX Technologies, Toshiba, Voith Power, Westinghouse

Further information regarding the qualifications of High Bridge is provided in Attachment 2.

RAI 1.d

In order for the NRC staff to make a finding regarding the acceptability of ND's proposed Operating Element of the organization, the staff needs sufficient information regarding the technical qualifications, experience, and expertise of the Operating Contract partner. The NRC staff requested ND to supplement its RAI response and provide additional information regarding the identity of the Operating Contract partner and its technical qualifications, experience, and expertise.

RAI 1.e

The NRC staff explained that in accordance with Title 10 of the Code of Federal Regulations (10 CFR) 50.80(b), an applicant for a CP or operating license transfer shall include as much of the information described in 10 CFR 50.33 and 10 CFR 50.34 with respect to the identity, technical, and financial qualifications of the proposed transferee as would be required by those regulations if the application were for an initial CP. The staff further explained that in evaluating ND's response to RAI Question 1.e, the staff reviewed the information that the current operating reactor licensees had provided in their CP applications regarding the preliminary plans for operating organization, training of personnel, and conduct of operations, per 10 CFR 50.34(a)(6). The NRC staff stated that, as required by 10 CFR 50.80(b), the level of information that ND needs to provide in its CP transfer application regarding the operating organization, training of personnel, and conduct of operations should be commensurate with what would have been required of ND if it were submitting an initial CP application. The NRC staff requested ND to supplement its response to RAI Question 1.e accordingly.

ND Response to RAIs 1.d and 1.e.

RAIs 1.d and 1.e NRC relate to the roles, responsibilities, qualifications of the Owner-Operator organization during the completion of construction of the Bellefonte nuclear plant. This response provides additional details on the ND Owner-Operator organization:

- An overview of the Owner-Operator organization to provide context
- Technical Qualifications of the Owner-Operator organization, with particular focus on the Operations partner
- Attachment 3 is a preliminary Conduct of Operations Plan

Owner-Operator Organization Overview

The Bellefonte Unit 1 Project Execution Plan, which was included in the ND response to NRC Requests for Additional Information dated August 28, 2019, provides a description of the approach for implementation and oversight of the construction activities and the functions needed to support completing the plant. The ND approach is built around ND as the Owner, with partners providing industry-leading expertise to complement each other, focus on their areas of strength/experience, and provide a best-in-class integrated team. The key elements of the approach include:

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- ND as the owner of the Bellefonte plant will have final authority for the project design and execution.
- SNL is the primary construction partner, described as the Engineering, Procurement and Construction Manager (“EPCM”) and as such, SNL will have primary responsibility for carrying out the procurement, engineering and construction effort.
- Framatome is the nuclear steam supply system (“NSSS”) designer and supplier partner. Framatome was the NSSS designer and supplier for the Bellefonte Babcock and Wilcox 205 pressurized water reactors (“PWRs”) and will have the primary responsibility for NSSS design, engineering and analysis support.
- An Operations partner will be contracted to provide operations expertise and support, with primary responsibility for preparing for plant operations. The Operations partner will be an established nuclear power plant operator and current holder of a 10CFR50 Operating License.
- ND will staff a project oversight organization with primary responsibility to perform project, financial, technical, and quality oversight of SNL, Framatome, the Operations partner and their subcontractors. The project oversight organization will be staffed with direct ND employees, and experienced contractors, independent of the partner organizations being overseen.

The Bellefonte Project Organization from the Project Execution Plan is shown in Figure 1 below. The division of responsibilities for major functions is shown in Table 1. This table illustrates the relationships between the EPCM partner, Operations partner, and ND. Both Figure 1 and Table 1 are taken from the ND Project Execution Plan included in the ND response to NRC Requests for Additional Information dated August 28, 2019. Interfaces between project functions and organizations will be managed by site, ND, and EPCM procedures.

ND will implement a phased approach to staffing the Owner-Operator organization, with the staffing levels and capabilities commensurate with the corresponding needs.

- ND has established a project oversight organization sufficient to ensure it meets all regulatory obligations as the holder of Construction Permits for the scope of activities currently authorized under those permits, *i.e.*, while in deferred plant status.
- Prior to the initiation of any engineering or design activities beyond those authorized in deferred plant status, ND will enhance this organization with additional personnel appropriate to the planned activities.
- The project oversight organization will initially grow during construction to match the need for oversight of the EPCM, NSSS supplier, and other contractors, then change toward the end of construction as the ongoing construction scope decreases and focus on system testing, operations, and commissioning comes to the forefront.
- The Operations partner organization will continually increase in size during construction as the plant operations and maintenance staff is hired and trained, and begins participating in startup testing and system turnover.

Consistent with the NRC’s Deferred Plant Policy Statement, ND will provide the NRC significant advance notice of its plans and timing for transition from deferred plant status. A

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staffing plan, including the schedule for filling all plant positions (relative to fuel loading) will be provided with that notice.

The qualifications and performance of the Owner-Operator Organization are paramount to completing the construction of the Bellefonte plant in accordance with applicable NRC regulations and the requirements of the Construction Permit. In this regard, ND will meet:

1. The guidelines of Regulatory Guide 1.28, "Quality Assurance Program Criteria (Design and Construction)," for the design and construction operating organization
2. The guidelines of Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," for the operating organization
3. The guidelines of Regulatory Guide 1.33 for onsite review and rules of practice
4. The guidelines of Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants," for the operating organization

These requirements are included in the ND NQAP (Rev 1 included as Attachment 4).

In addition, ND will incorporate the following into its licensing basis:

1. Branch Technical Position (BTP) 9.5-1, "Fire Protection Program"
2. One of the options in the Commission Generic Letter (GL) 86-04 "Policy Statement on Engineering Expertise on Shift"
3. NUREG-0737 and Supplement 1, "Clarification of TMI Action Plan Requirements," Items I.A.1.1, "Shift Technical Advisor," and I.A.1.3, "Shift Manning"

Table 1. Bellefonte Responsibility Matrix

Function	Work Description	Prime Responsibility	Oversight
Project Oversight	ND will provide oversight of all EPCM and Operator Work to ensure project completed on time and on budget, and Operator ready to run and operate the plant safely	ND	N/A
Project Financing	ND is responsible for providing all finance on project	ND	External Finance Agencies
License Holder	ND will hold the Bellefonte Operating License	ND	NRC
Scope Control	ND will review and approve all major scope changes	ND	N/A

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Function	Work Description	Prime Responsibility	Oversight
Engineering	SNC-Lavalin will be design authority for completion of Bellefonte Unit 1, and will provide oversight of the multiple vendors who will perform the engineering design activities. SNC-Lavalin will provide all governing procedures and programs. Engineering completion will be in compliance with SNC-Lavalin approved QA Program.	EPCM	ND
Project Controls	SNC-Lavalin will be responsible for overall project schedule, project budget, project metrics and project risk management.	EPCM	ND
Licensing	SNC-Lavalin will complete all activities related to obtaining an Operating License for Bellefonte U1 and will coordinate with Operator as required	EPCM	ND
Construction	SNC-Lavalin will provide a Construction Management organization to provide oversight of the multiple vendors who will perform the construction completion activities at Bellefonte. Construction will include installation of plant modifications and major projects and equipment refurbishment/replacement.	EPCM	ND
Procurement	SNC-Lavalin will perform procurement of all engineered materials (with exception of major projects). Procurement will be in accordance with SNC-Lavalin's QA Program	EPCM	ND
Quality Assurance	SNC-Lavalin will provide the overall 10CFR50, Appendix B Quality Assurance Program for the project and will provide oversight for any work not performed directly under SNC-Lavalin's program, e.g. major projects	EPCM	ND

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Function	Work Description	Prime Responsibility	Oversight
Start Up	SNC-Lavalin will provide an organization responsible for coordinating all system and integrated tests, will ensure closeout of system design is completed, and complete the System Turnover process with the Operator. Start Up group will coordinate all start up tests; integrated functional tests, Reactor Coolant System Hydrostatic testing and power ascension tests with the Operator	EPCM	ND
Contract Management	SNC-Lavalin will act as Owner's Agent for all contracts and will prepare contracts; for services, equipment and major projects; select vendors, coordinate required change orders provide oversight of deliverables and pay invoices. ND will be signatory to the contracts	EPCM	ND
Training (Project)	SNC-Lavalin will perform training required to on-board project personnel to the site and provide oversight of the training qualifications required	EPCM	ND
Programs (Project Execution)	SNC-Lavalin will provide required programs, processes and procedures for project execution organization; Safety, QA Program, Human Performance, Fitness for Duty, Corrective Action Program, Employee Concerns, etc.	EPCM	ND
Operating Organization	Operator will hire all staff and provide an organizational structure required for Bellefonte plant operations	Operator	ND
Training (Operations)	Operator will provide and accredited training program and ensure all staff are trained to operate and maintain the plant	Operator	ND/INPO
Procedures	Operator will generate all operating procedures, maintenance procedures to operate and maintain the plant	Operator	ND
Programs (Operations)	Operator will develop all required programs to operate a nuclear plant	Operator	ND

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Function	Work Description	Prime Responsibility	Oversight
Turnover	Operator will accept the plant for operations for the Construction Start Up Group	Operator	ND
Site Control	Operator will provide Nuclear Site Security, ensure all required site permits are maintained and shall provide an environmental control organization to ensure site complies with all required regulations	Operator	ND

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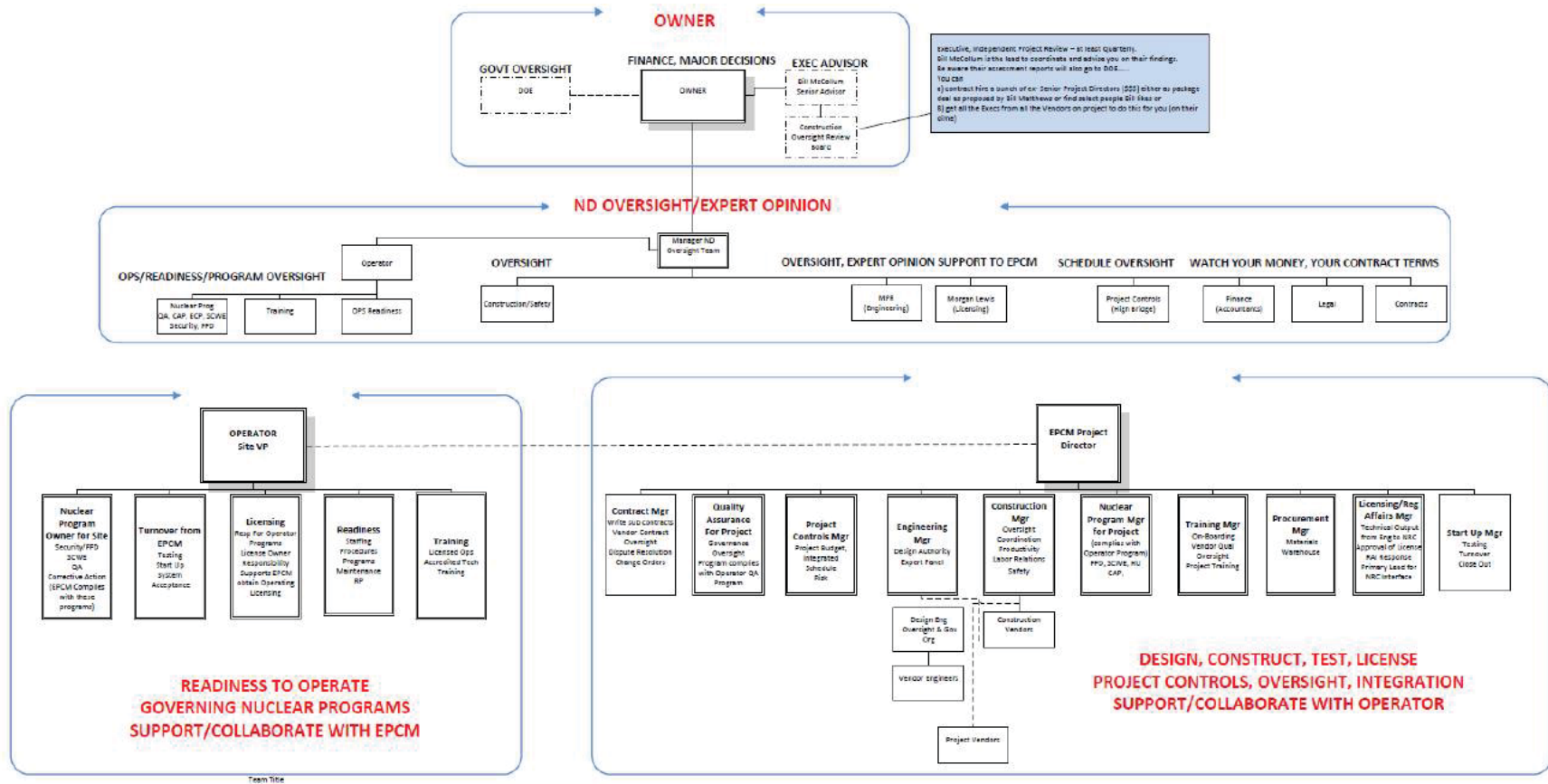


Figure 1 – Bellefonte Project Organization

Note – See NQAP organization chart for additional detail.

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Project Oversight

ND will provide a best-in-class project oversight organization resident on the plant site to provide oversight of the partner contractors and their subcontractors, to independently assess construction and engineering progress and quality, and to ensure ND fulfills its obligations as the holder of the Construction Permit. The project oversight organization will be actively engaged in the oversight, reviews/assessments, and tracking of progress using a risk informed approach to focus oversight on the most significant activities. The ND Oversight organization will provide the ND independent assessment of the services provided by the EPC, primarily focused on assessment of project controls, project progress reporting, contract management and construction implementation. Oversight of the proper implementation of design controls will primarily be the responsibility of the Quality Assurance organization. Project oversight activities will include:

- Oversight of the entire project, particularly adherence to applicable regulations and contract provisions
- Reviewing critical scope control decisions, performing independent field verification of work progress, and providing oversight of high risk activities such as licensed operator training
- Support for engagement with the NRC and other external stakeholders
- Ensuring effective implementation of the Quality Assurance Program, as well as development and maintenance of a proper Safety Conscious Work Environment
- Working closely with the EPCM Contract partner to ensure effective Configuration Management of design and licensing documents
- Project Controls for the Owner (managing risks, managing expenditures, tracking schedule, etc.)
- Assessment of increased risk technical and engineering topics to mitigate risks and ensure adherence to regulatory commitments and requirements, as well as reliable and robust operation of the plant upon completion

The project oversight organization will be staffed on a schedule commensurate with the oversight needs for planned and ongoing work. Leadership of the ND project oversight team will be comprised of personnel from:

- ND direct hires (the permanent ND staff for Bellefonte)
- MPR Associates, the nuclear industry's leading technical service firm
- High Bridge & Associates, the nuclear industry's leading project controls firm

The project oversight team will also be supported by the Operations Partner, providing operations expertise and ensuring effective continuity from construction to operation.

Regarding the ND hires, numerous qualified individuals are available in industry to fill these roles. ND will hire former senior experts from utilities, NSSS suppliers, A/E and EPC firms, along with specialty firms to form the project oversight team. Each of these personnel will have the requisite experience and qualifications for the roles they fill and in accordance with the Bellefonte NQAP requirements.

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In addition, ND anticipates the desire for, and benefit of, industry leading specialty support in the areas of engineering, project controls, and NRC licensing. This is the reason for including MPR and High Bridge in the project oversight organization. Personnel from those organizations will be included in the project oversight organization and ND will also have “reach back” ability to the full breadth and depth of expertise of those firms.

It is important to note that the ND plans for project oversight have evolved since the April 16, 2020 meeting. ND commits that personnel from SNL and Framatome will not be part of the ND project oversight organization. This will preserve independence between ND and those partners/contractors.

Operations Partner

The Owner-Operator organization and Conduct of Operations will meet all guidelines in NUREG-0800, Chapter 13, as well as the guidance in the applicable sections of Regulatory Guide 1.206. The detailed plan for Conduct of Operations will be provided in the application for the plant Operating License. Attachment 3 is a preliminary summary of the planned Conduct of Operations, tailored for the period of active construction. This plan will evolve and mature as the transition from deferred plant status approaches, those changes will be communicated with the NRC consistent with NRC’s Deferred Plant Policy Statement.

ND will engage an experienced commercial nuclear power plant operator (with an existing 10CFR50 Operating License) as the Operations Partner to provide the relevant experience, training and expertise to the ND organization. ND expects that the Operations Partner will continue in the operating phase of the project.¹ During construction, the selected Operations Partner will hire and train personnel to operate the plant, perform all activities associated with plant readiness to operate (infrastructure and personnel), and coordinate the turnover from EPCM construction project to Bellefonte operation. The Operations Partner also will participate in project oversight of organizations other than itself, particularly involving topics such as control room design, HFE, simulator design and use, etc. ND will ensure that the Operations Partner will have the requisite experience and qualifications described below and in accordance with the Bellefonte NQAP requirements. The Operations Partner organization will be staffed progressively over time, accommodating the needs to support construction in parallel with performing the readiness to operate scope, culminating with the needed infrastructure, qualified personnel, and culture to operate Bellefonte.

During the construction period, the Owner-Operator organization has two primary responsibilities: (1) oversee the EPCM and project subcontractors to ensure the plant is constructed in accordance with the Construction Permit and NRC requirements as well as ND expectations for performance and quality, and (2) prepare for operation of the plant through development of the needed operational infrastructure (procedures, programs, etc.) and hiring and training of the needed plant personnel. Table 2 provides a summary of the Operator

¹ Unrelated to NRC’s consideration of this CP transfer application, a future ND OL application will specify whether the Operations partner will become the licensed operator or continue to provide Operations Support Services to the ND Bellefonte organization.

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responsibilities and scope for these two parallel objectives. Table 3 defines the corresponding required capabilities for the Operations Partner to be qualified to satisfy their responsibilities.

Table 2 – Operations Partner Key Responsibilities

Construct the Plant Responsibilities	Readiness to Operate Responsibilities
• Participate in ND project oversight organization providing technical and operational expertise • Support the regulatory interface with the NRC • Take turnover of plant SSCs from EPCM • Participate in developing plans for startup testing of systems and components • Ensure required site security obligations are met • Ensure nuclear industry lessons learned are properly understood and addressed, and industry expectations are met	• Oversee the development and implementation of the Pre-operational Testing Program • Develop and implement plans and programs for training of personnel and preparation for operations, particularly the training and qualification of licensed operators • Oversee development and submittal of the application for an Operating License • Develop needed operational procedures and programs • Manage the supply of fuel for the initial core load • Develop and implement staff recruiting and training programs

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Table 3 – Operations Partner Qualifications

Construct the Plant Support Qualifications	Readiness to Operate Qualifications
• Site-related engineering studies such as meteorology, geology, seismology, hydrology, demography, and environmental effects • Design of plant and ancillary systems, including fire protection systems • Review and approval of plant design features, including human factors engineering considerations • Material and component specification review and approval • Site layout with respect to environmental effects and security provisions • Development of safety analysis reports • Review and approval of material and component specifications • Technical Support for Operations • Procurement of materials and equipment. • Management of construction activities • Document- control (ensuring retention and searchability to assure retrievability of design and licensing basis information)	• Development and implementation of procedures and programs • Hiring, training, and qualification of plant staff, including licensed operators • Nuclear, mechanical, structural, electrical, thermal-hydraulic, metallurgy and materials, and I&C engineering • Plant chemistry • Health physics • Fueling and refueling operations • Plant Maintenance • Plant Operations • Implementation of Quality Assurance programs • Safety review • Fire protection • Emergency coordination • Contractor oversight

Selection of the Operations Partner is a key decision and activity for ND given the role the Operations partner will have in ensuring the safe, reliable, and successful operation of Bellefonte in accordance with all NRC, industry, and ND requirements and expectations. The Operations partner will be selected and contracted, and the NRC notified of the selection, prior to transition out of deferred plant status.

There are numerous candidate utilities to be the Operations Partner for Bellefonte. As a result of the activities involved in the ongoing operation and maintenance of a nuclear power plant, virtually all currently licensed (in possession of a 10CFR50 Operating License) US nuclear operators have the needed technical capability and experience and thus are qualified. Current operators regularly:

- Train plant staff, particularly licensed operators and maintenance personnel
- Hire, train, and develop needed technical expertise in engineering, sciences, maintenance and operations
- Develop and maintain the needed procedures and programs
- Engage the NRC and other regulatory stakeholders
- Implement a 10CFR50, Appendix B Quality Assurance Program

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- Develop and implement design changes, involving both physical changes to the plant (involving engineering, procurement, construction, and testing) and maintaining the design and licensing bases
- Assess and resolve potential conditions adverse to quality or inconsistent with design and licensing bases
- Perform safety analyses
- Maintain a site boundary and ensure applicable security requirements are followed
- Maintain and update environmental reports, analyses, and evaluations
- Contract, oversee, and receive products and services from contractors

This experience provides a strong bases to create the necessary qualifications for a utility operator to be the Operations Partner at Bellefonte. At the same time, ND recognizes that completing the construction of a nuclear power plant is not exactly the same as operating a nuclear power plant. There can be different needs, different focuses, and different levels of challenge/complexity. To provide increased assurance that the Operations Partner has the requisite capabilities, ND will ensure the Operations Partner candidates meet the following selection criteria:

- Successfully completed an extended power uprate (EPU) in their fleet – Completing an EPU project involves significant change to the design and licensing bases for the plant as well as extensive physical design changes to the facility. The EPU project also involves considerable interaction with the NRC, major revisions to the plant Safety Analyses, and oversight of an A/E, an NSSS supplier, and other contract support. An EPU also requires evaluation of the cumulative impact of the design changes on numerous plans SSCs and the control room. Lastly, an EPU also requires an appropriate test program to confirm the acceptability of the modified plant design. These are all key capabilities and experience needed for Bellefonte, and the extent of the experience and challenge on an EPC project greatly exceeds the comparable experience and needs of day-to-day plant operation. In many ways portions of the plant are being reconstructed.
- Successfully renewed a 10CFR50 Operating License in their fleet – Completing a License Renewal involves many of the same capabilities as an EPU, and it also involves a heavy component of environmental review, evaluation and analysis. The plant Environmental Report is updated, emergency preparedness is reassessed, etc. The experience for a License Renewal complements the experience of an EPU, and together they ensure the operator has real-world experience for all of the roles and responsibilities needed at Bellefonte.
- Regularly completes major design change and refurbishment projects across their fleet – It is important that the Operations partner not just have completed an EPU and License Renewal, but that the needed skills and knowledge are maintained and demonstrated. ND will expect the Operations partner to demonstrate experience regularly completing major projects in their fleet. These include projects such as steam generator replacements, reactor head replacements, service water system modifications, I&C system replacements, etc.

ND has identified and engaged in initial discussions with candidate operators (all meet the criteria listed above). Those discussions are ongoing and concluding them at this time is not

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required since all candidates meet all applicable qualification criteria, construction has not started. Following approval of the requested transfer of the CPs and receipt of a conditional loan guarantee commitment from DOE, ND expects to select a fleet operator and enter into a contractual agreement. Once engaged, ND will inform the NRC of the entity selected and the members of the Operations Partner executive team initially staffed to the Bellefonte Operations organization.

COMMITMENTS RELATED TO OPERATIONS DURING CONSTRUCTION

1. Consistent with the NRC's Deferred Plant Policy Statement, ND will ensure that its required quality and oversight organization remain appropriate to the limited activities undertaken while in deferred plant status and provide the NRC significant advance notice of its plans and timing for transition from deferred plant status.
2. Prior to the initiation of any engineering or design activities beyond those authorized in deferred plant status, ND will enhance the Owner-Operator organization staff consistent with the increased responsibilities during construction.
3. Personnel from SNL and Framatome will not be part of the ND project oversight organization.
4. ND will notify the NRC of the selected Operations Partner and will demonstrate that the entity's specific experience and qualifications, including those of the executives assigned to Bellefonte, meet the selection criteria set out above including a current NRC reactor operating license under Part 50 or Part 52, relevant fleet experience with license renewal, extended power uprate and INPO accreditation.

RAI Number 4

The NRC staff from the Quality Assurance and Vendor Inspection Branch led the discussions regarding RAI Number 4. The NRC staff reviewed ND's Nuclear Quality Assurance Program (NQAP) in accordance with the requirements contained in Appendix B to 10 CFR Part 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," 10 CFR 50.80, "Transfer of Licenses," 10 CFR 50.34(h), "Contents of Applications; technical information," 10 CFR 50.54(a)(3), "Conditions of licenses," 10 CFR 50.55, "Conditions of Construction Permits, Early Site Permits, Combined Licenses, and Manufacturing Licenses," Standard Review Plan (SRP), NUREG-0800, Chapter 17.5, "Quality Assurance Program Description - Design Certification, Early Site Permit and New License Applicants," Revision 1, and the Commission Policy Statement on Deferred Plants, 52 Federal Register 38077 (1987).

Specifically, regarding RAI Number 4, the NRC staff stated that, based on ND's RAI response, it appears that ND believes its NQAP for Bellefonte Units 1 and 2 is the same as the NQAP that the staff had approved for Tennessee Valley Authority (TVA) for Bellefonte's construction permit. The staff further explained that ND is using a later revision of the TVA NQAP that has been amended and modified over time, specifically,

removing design and construction activities from the NQAP. TVA performed a gap analysis for the Clinch River ESP application and added additional QA controls for that application. Some of those additional QA controls are applicable to a construction permit, but it does not appear that ND incorporated those additional QA controls in its NQAP.

The staff quoted regulations in 10 CFR 50.34(h)(3), "Conformance with the Standard Review Plan (SRP)," that the SRP was issued to establish criteria that the NRC staff intends to use in evaluating whether an applicant/licensee meets the Commission's regulations. The NRC staff then described the applicable Sections of the SRP that ND would need to address in its NQAP. Specifically, the staff requested ND to supplement its RAI response to provide the required information per the following SRP Sections:

SRP Section A. "Organization"

The staff requested ND to include the following information in its NQAP:

- *Engineer Procurement Contractor (EPC) roles and responsibilities,*
- *The EPC's involvement with the ND organizational descriptions and ORG chart,*
- *Organizational elements which function under the cognizance of the QA program, and*
- *Descriptions of the Nuclear Power Group (NPG), or Nuclear Procedure System (NPS).*

SRP Section B. "QA Program"

The staff requested ND to include the following information in its NQAP, Section 3.3.3:

- *Specify the frequency assessments of effectiveness on quality services, and*
- *Reinstate the controls on the management position responsible to arrange for the assessment by an independent organization on an annual basis.*

SRP Section C. "Design Control"

The staff requested ND to include the following information in its NQAP:

- *In Section 7.2.6, clarify the responsible design organization required to identify and document the particular design verification method(s) used,*
- *In Section 7.2.4, clarify Engineer Procurement Contractor (EPC) design control in accordance with SRP Section C, "Design Control", interface control of design information transmitted across interfaces is documented and controlled, and*
- *In Section 7.2.7, clarify the measures that are provided to ensure design changes, including field changes, are subject to the same design controls that were applied to the original design and are reviewed and approved by the organization that performed the original design unless the originating organization designates another responsible organization.*

D. SRP Section V. "QA Program Commitments"

The staff stated that, in accordance with the SRP, certain quality assurance program commitments are necessary, including regulatory guides, generic letters, and standards. Specifically, the staff mentioned SRP Section V.1, "Regulatory Guides and Generic Letters," and SRP Section V.2, "Standards." The staff requested ND to supplement its RAI response to address the QA program commitment information that is currently missing from its NQAP.

E. Commission Policy Statement on Deferred Plants (52 Federal Register 38077)

The staff mentioned the Commission's Policy Statement on Deferred Plants, which states, "In the context of this policy statement, it is expected that a utility, planning to maintain its reactivation option or transfer of ownership to others, will identify any SSC which are important to safety and establish appropriate [MPD] for these SSC[s]." The staff then requested ND to include the following information in its NQAP:

- *In Appendix G, clarify the current status of structures systems and components (SSCs) maintenance, preservation, and documentation (MPD) and how ND will be addressing any issues entered in the CAP affecting SSCs.*

ND Response to RAI 4

Revision 1 of the ND NQAP is included as Attachment 4. NQAP Revision 1 was developed, reviewed and approved to address specific comments provided by the NRC as well as to correct some incorrect information and provide additional clarifying details. A mark-up of the NQAP Revision 1 which includes the evaluation of the changes is provided within Enclosure 1 of Attachment 4. The changes included within the NQAP Revision 1 were made to address gaps with compliance to NUREG-0800 "Standard Review Plan" Chapter 17, "Quality Assurance," Section 17.5, "Quality Assurance Program Description - Design Certification, Early Site Permit and New License Applicants," Revision 1. The following specific changes were made to the NQAP within Revision 1 to address these noted gaps to demonstrate compliance with the applicable sections of the SRP Chapter 17.5:

Revision 1 to the NQAP modified the organizational description provided with Sections 4.1.10, 4.1.11 and Appendix G to describe the Engineer Procurement Contractor (EPC) and its involvement with the BNL Units 1 & 2 Completion Project. The EPC's involvement with implementation of the NQAP is now provided and is defined within the ND organizational descriptions and is provided within the organization chart included as Appendix I of the NQAP. This now addresses the corresponding SRP Sections A.2, A.4, A.5 and A.6.

Revision 1 to the NQAP modified Section 3.3.3 to specify the frequency of the assessments of effectiveness of quality services to be performed. The specific frequency is now defined as being performed on an annual basis. This now addresses the corresponding SRP Section B.1.

Revision 1 to the NQAP modified Sections 7.2.4, 7.2.6 and 7.2.7 to provide additional guidance regarding specific elements of design control. Specifically, Section 7.2.6 was revised to clarify

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that the responsible design organization is required to identify and document the particular design verification method(s) used. Section 7.2.4 was modified to include the EPC and to describe the interface control of design information transmitted across interfaces. Section 7.2.7 was modified to clarify that measures are provided that will ensure design changes, including field changes, are subject to the same design controls that were applied to the original design and are reviewed and approved by the organization that performed the original design unless the originating organization designates another responsible organization.

Revision 1 to the NQAP added the additional commitments to regulatory guides, generic letters and standards within Appendix B, "Regulatory Guide Conformance Status" to conform to the requirements of the SRP Chapter 17.5 Section V.1, "QA Program Commitments" and Section V.2, "Standards" including associated. The following commitments, supplemental information and alternatives were added to the NQAP in Appendix B, "Regulatory Guide Conformance Status" to address the requirements of the SRP Chapter 17.5 Section V.1 and V.2:

1. Reg. Guide 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants" Revision 4 defines classification of systems and components. ND commits to the applicable regulatory position guidance provided in this RG.
2. Reg. Guide 1.29, "Seismic Design Classification for Nuclear Power Plants," Revision 5, defines systems required to withstand a safe shutdown earthquake. ND commits to the applicable regulatory position guidance provided in this RG.
3. Reg. Guide 1.37, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants," Revision 1, provides guidance on specifying water quality and precautions related to the use of alkaline cleaning solutions and chelating agents. ND will conform to RG 1.37, Revision 0. In addition, ND commits to the applicable regulatory position guidance in RG 1.37, Revision 1 with the following alternatives:
 - a. Regulatory Position (RP) C.1. ND commits to ANSI N45.2.1. Acceptable Codes and Standards are identified in ANSI N45.2.1, Sections 3 and 12. This position is an equivalent to RG 1.37, Revision 1, RP C.1.
 - b. Regulatory Position C.2. ND commits to ANSI N45.2.1, Section 3.4, with the following clarification, "The water quality for final flushes of fluid systems and associated components should be at least equivalent to the quality of the operating system water." This position is an equivalent to RG 1.37, Revision 1, RP C.2.
 - c. Regulatory Position C.3. In lieu of the commitments identified in this position, ND commits to ANSI N45.2.1 and ANSI N45.2.15. These standards are equivalent to the NQA-1-1994 parts that are referenced. In addition, the following clarification is added, "A suitable chloride stress-cracking inhibitor should be added to the fresh water used to flush systems containing austenitic stainless steels." This position is an equivalent to RG 1.37, Revision 1, RP C.3.
4. GL 89-02, "Actions to Improve the Detection of Counterfeit and Fraudulently Marked Products," and GL 91-05, "Licensee Commercial Grade-Dedication Programs." ND commits to implementing the actions and policies required by GL 89-02 and GL 91-05. Nuclear Power Group Procurement Engineering procedures for commercial grade

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dedication and receipt inspection activities are consistent with the GLs.

To supplement and support the ND NQAP, the program now conforms to the guidance of SRP Section 17.5, Paragraph II.V, to establish QA Program commitments for the Bellefonte 1&2 nuclear plants to specific quality standards. Each specific standard from the SPR and associated alternatives are described as follows:

1. In lieu of Subpart 2.2, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to ANSI N45.2.2- 1972, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plant."
2. In lieu of Subpart 2.4, "Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to
3. ANSI N45.2.4-1972, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations," with alternatives listed in the NQAP, Appendix B, "Regulatory Guide Conformance Status," Table 2.
4. In lieu of Subpart 2.5, "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils, and Foundations for Nuclear Power Plants," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to ANSI N45.2.5-1974, "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils, and Foundations During the Construction Phase of Nuclear Power Plants."
5. In lieu of Subpart 2.7, "Quality Assurance Requirements of Computer Software for Nuclear Facility Applications," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to RG 1.152, "Criteria for Programmable Digital Computer System Software in Safety-Related Systems of Nuclear Power Plants," Revision 3.
6. In lieu of Subpart 2.8, "Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for Nuclear Power Plants," ASME NQA-1- 1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to ANSI N45.2.8-1975, "Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants."
7. In lieu of Subpart 2.14, "Quality Assurance Requirements for Commercial Grade Items and Services," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to RG 1.123, "Quality Assurance Requirements for Control of Procurement of Items and Service for Nuclear Power Plants," Revision 1, with alternatives listed in NQAP, Appendix B, Table 2. In addition, ND commits to GL 89-02 and GL 91-05.
8. In lieu of Subpart 2.15, "Quality Assurance Requirements for Hoisting, Rigging, and Transporting Items for Nuclear Power Plants," ASME NQA-1-1994 Edition or ASME

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NQA-1- 2008/2009a Edition identified in SRP 17.5, ND commits to ANSI N45.2.2-1972, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plant."

9. In lieu of Subpart 2.20, "Quality Assurance Requirements for Subsurface Investigations for Nuclear Power Plants," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to ANSI N45.2.20-1979, "Supplementary Quality Assurance Requirements for Subsurface Investigations for Nuclear Power Plants."
10. SRP 17.5 identifies various Nuclear Information and Records Management Association (NIRMA) documents (Technical Guides [TG]-11-1998, 15-1998, 16-1998, and 21-1998) as acceptable quality standards for the establishment and controls of electronic records management and software controls. NQAP, Section 6.3.1 and Appendix B, Table 1, include the requirements of ANSI/ANS-3.2-2012, Section 3.17, which is consistent with the intent of RIS 2000-18 and the associated NIRMA TGs.

Currently, BNL Units 1&2 are being maintained as described within the NRC approved TVA NQAP Appendix G which conforms to the Commission Policy Statement on Deferred Plants. One of those elements is required to address structures systems and components (SSCs) maintenance, preservation, and documentation (MPD). Based on the guidance provided within the Commission Policy Statement on Deferred Plants (52 Federal Register 38077) a utility, planning to maintain its reactivation option or transfer of ownership to others, will identify any SSCs which are important to safety and establish appropriate MPD for these SSC(s). This expectation is currently being satisfied by TVA under the TVA NQAP and the associated implementing documents, including the use of the corrective action program as described within Appendix G Section 8.0. It is ND's intention to implement a corrective action program compatible with that currently in place for BNL Units 1&2, including the integration of all MPD documentation related to the units' SSCs.

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ATTACHMENT 1
MPR ASSOCIATES QUALIFICATIONS & EXPERIENCE



POWER

The experience to make it happen





SERVICES

Equipment and Systems
Engineering

Operations Improvement and
Asset Optimization

Structural, Fluid Systems and
Electrical Analysis

Regulatory Compliance,
Licensing and Permitting

Project and Construction
Management

Project Feasibility Studies

Due Diligence and Business
Case Analysis

MPR POWER

The experience to
make it happen

**MPR is a world-leading
independent and
diversified technical
services organization.**

Culture: MPR was founded in 1964 by Admiral Rickover's top U.S. Naval Reactors staff who instilled a sustainable culture of technical rigor, process discipline and business integrity.

Expertise: MPR provides high value management and technical solutions throughout the power industry. We drive and foster project success from development through long-term operation via improved equipment and plant safety and performance, effective capital utilization, enhanced project execution, and innovative approaches to ensure regulatory compliance.



Experience: We have improved operations at more than 600 plants in more than 70 countries - enabling the development, acquisition, financing





From concept to implementation, MPR provides technical services across the entire project, bridging the gap between architect engineers and original equipment manufacturers.



or construction of more than 50,000 MW of new generation facilities including: coal, gas turbine, nuclear, internal combustion engine, wind, solar, hydro, biomass, geothermal, and energy storage technologies.

Results: MPR demonstrates quality and sustainable impact by working seamlessly with client staff, effectively communicating results throughout the client's organization and effectively implementing specific plant, program and process improvements.

MPR innovatively applies state of the art analytical skills and tools and in-depth equipment and systems expertise to effectively address a wide range of power plant challenges and risks.

Our People: Our accomplished team includes technical and business advisors, engineers and analysts, project and construction managers, and equipment specialists. We recruit the best people and continuously

develop our staff in a culture grounded in technical excellence, personal accountability, empowerment and leadership.

Our Clients: MPR serves more than 200 power clients per year, including: more than half of the top 50 electric generating companies worldwide, 24 of the top 25 generators in the United States, most leading power industry original equipment manufacturers, some of the world's largest financial institutions, government agencies, and industry groups and associations.

MPR

POWER

Owner's Engineering Services





MPR as your Owner's Engineer provides you with an independent advocate who assures your project is executed on-time, on-budget, and operates reliably throughout its life-cycle.

MPR does not compete with large engineering and construction companies. Because of this, we work with equipment and service suppliers without concerns that conflict-of-interest considerations will bias project decisions.

Additionally, MPR's world-class technical experts can be brought to bear on emergent challenges to provide you confidence that equipment vendors and constructors will deliver the right solution every time. We work seamlessly with your staff and communicate ongoing results throughout your organization. Our accomplished team includes technical and business advisors, engineers and analysts, project and construction managers, and equipment specialists.

OWNER'S ENGINEERING

The experience to make it happen

SCOPE OF SERVICES

DEVELOPMENT

- Feasibility Studies
- Site identification and selection
- Assessment of plant linears (transmission, fuel, water)
- Fuel supply assessments
- Transmission studies
- Permitting support
- Scheduling and Cost Estimating

CONCEPTUAL ENGINEERING

- Technology evaluations
- FEED Package
- Transmission planning and permitting
- Air emissions and permitting support

EPC CONTRACTING

- Advise on contracting strategies
- EPC scope of work and plant technical requirements
- Identify EPC candidates
- EPC contract support
- EPC proposal evaluation
- EPC negotiation support

CONSTRUCTION MANAGEMENT

- Engineering document reviews
- On-site construction monitoring
- Technical resolution of problems during construction
- Construction schedule development and assessment
- Change Order management
- Manage supply of Owner-Furnished Equipment
- Coordinate activities between EPC and other organizations

COMMISSIONING AND START-UP

- Evaluate or develop commissioning and startup procedures
- Technical resolution of emergent startup problems
- Evaluate performance testing
- Witness performance testing



Committing to our clients' success, we work collaboratively, fulfill our promises, and exceed their expectations.



MPR BRINGS

VALUE ADDED

The MPR Advantage

50 years of experience

Track record of proven results

Supported development of more than 40,000 MW of new generation, and operation of more than 600 plants

Reduced project cost by leveraging best practices and lessons learned from similar projects

A rigorous and systematic engineering and design review methodology

Scope and project interfaces are well controlled, design issues are identified early, minimizing change orders, project costs, and project timeline

World-class technical expertise in power plant systems and OEM technology

Selected application of technical expertise resolves emergent technical challenges and allows Owners to go toe-to-toe with vendors and know they are getting the right answers

Communication focused on highest-priority risks with emphasis on actions to mitigate risks

Project risks are clear in real time, enabling the Owner to address risks early and prevent expensive consequences

Utility Generation – Nuclear Engineering

Core Competencies

MPR has been at the forefront of nuclear power since its founding more than 50 years ago. MPR has worked on every nuclear power plant in the U.S. and more than 150 world-wide. Our expertise spans the entire spectrum of nuclear plant engineering.

MPR's projects range from the engineering and development activities for the advancement and commercialization of new technologies to assisting operating facilities with urgent problem resolution, process improvement, and regulatory compliance. Our broad experience and technical capabilities allow us to be a world leader in specialty nuclear engineering services extending our services across all components and systems required for the safe and reliable operation of nuclear power plants. MPR's current range of commercial nuclear energy expertise and specialization includes:

- **Balance of Plant (BOP) Engineering:** All aspects of plant engineering benefit from the broad experience and expertise of MPR engineers, who define problems, analyze in-depth technical issues, and recognize performance needs. MPR acts as an independent owner's engineer and is not tied to specific modification methods. We provide conceptual designs, offer alternative solutions, perform problem-solving, investigate root causes, and correct specific problems in all areas of nuclear plant operations.
- **Nuclear Steam Supply System (NSSS) Engineering:** Acting as an independent owner's engineer, MPR provides flexible and responsive NSSS solutions that are in each client's best interests. We conduct comprehensive design reviews, analyze safety and containment issues, and remedy primary system components issues. MPR also applies our patented technology to repair internal components of boiling water reactors (BWRs).
- **Component and Equipment Engineering Services:** MPR is a one-stop shop for original equipment manufacturer (OEM) equivalent-component engineering support and replacement. Our design and analysis skills include reactor internals, emergency diesel generators, valves, reactor coolant pumps, seals and motors, instrumentation and control, electrical power systems, steam generators, turbines and generators, high energy piping and supports, balance-of-plant equipment, nuclear plant safety systems and components, control rod drives, nuclear fuel and control elements, containment systems, spent fuel storage, and structures.
- **Specialty Engineering, Analysis, and Programs:** MPR's state-of-the-art capabilities span the full range of specialty engineering and analysis areas, including engineering mechanics/structural analysis (e.g. ANSYS), computational fluid dynamics, thermal hydraulic analysis (e.g. RELAP, Gothic), rotor dynamics, human factors, electrical and T&D systems (e.g. ETAP, PSCAD), and materials and metallurgy. We are experts at integrating specialty services with other project activities.
- **Design-Fabricate Services:** MPR (with our newly formed Joint Venture, NuSource, LLC) provides seamless design-fabricate solutions for new and replacement equipment and for components specifically designed for the nuclear industry's special needs and demands. We also offer specialized expertise to design new components and to reverse-engineer existing components for unique projects.
- **Excitation System Equipment and Services:** MPR (with our partner Basler) forms a single supplier for comprehensive engineering and equipment-plus-maintenance support services

for the nuclear industry's aging excitation systems. As a team, we specialize in replacement systems and equipment, design and supply, technical support, transient analysis remodeling, and training.

- **Safety:** MPR has been involved with DOE and NRC safety research projects dating back to the late 1960s. Those relationships continue through today. We use our extensive experience and expertise to perform safety assessments and reviews as well as applying NRC licensing, safety criteria, and guidelines.
- **Owner's Engineer:** MPR has successfully executed many Owner's Engineer assignments; we understand the details of Engineering, Procurement, and Construction (EPC) contracts and have developed successful approaches for interfacing with EPC contractors.

Specifically our core competencies include:

Plant Systems & Components	• Power Upgrades • Plant Life Extension • Pumps • Air Operated Valves, Motor Operated Valves • Turbo-Machinery (e.g., main turbines, turbine drive pumps) Design, Analysis, and Testing (e.g., torsional testing) • Steam Plant Equipment (e.g., moisture separators, feedwater heaters) • Reactor Internals (e.g., shrouds, steam dryers) • ASME Code Engineering • Inservice Inspection • Supports and snubbers • Buried Pipe Inspection and Mitigation Evaluation • Concrete Degradation • Materials • Spent Fuel Cask Stack-Ups • Condition Based Maintenance and Reliability Center Maintenance • Commercial Grade Dedication
Electrical Power Systems Engineering & Analysis	• Modeling and Analysis (e.g., EMTP, PSCAD, ETAP) • Excitation Systems • Systems and Equipment Design
Instrumentation & Controls	• System specific design and analysis (e.g., DEHC and EHC, radiation monitoring, Plant Process Computer) • Verification & validation • Critical digital reviews
Environmental Qualifications Evaluations	• EDG excitation system qualification • Environmental Qualification Assessment for chemical resistance
Fire Analysis	• Training on fire inspections • Review of fire protection for fuel facility • Fire protection consultant to US Navy

Diesel Generators	• Engine Signature Analysis • Troubleshooting failures and out of spec conditions
Specialty Analyses	• Finite Element Stress Analysis (e.g., ANSYS) • Thermal-Hydraulic Analysis (e.g., RELAP, GOTHIC) • Rotordynamics • Fracture Mechanics Analysis • Computational Fluid Dynamics
Nuclear Technology, Safety & Regulation	• Regulatory issue resolution (e.g., GSI-191) • Steam generator performance and vibration assessment • Component Design Basis Inspection assessment and support • Licensing documentation development and reviews • Licensing basis reviews and reconstitution • Safety assessments • Seismic assessments and walkdowns • Post-Fukushima evaluations • Fuel handling and storage • Decontamination and decommissioning • Training classes • Small Modular Reactors and advanced reactors
Project Management & Controls	• Owner's Engineer • Cost Estimating and Analysis • Scheduling • Risk Management • Construction Management • Quality Assurance Support (e.g., audits, training)
Operational Issues Resolution	• Past Operability Determinations • Failure Analysis • Root Cause Analysis • Significance Determination Process Support



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ATTACHMENT 2
HIGH BRIDGE & ASSOCIATES QUALIFICATIONS & EXPERIENCE

HIGH BRIDGE ASSOCIATES, INC.

Project Management Consulting, Estimating and Engineering Services

HIGH BRIDGE ASSOCIATES, INC.

Global Leader in Improving Project Performance

High Bridge has supported clients on six continents with Nuclear, Fossil, Fusion, and Science energy projects. As our clients will attest, High Bridge provides the infrastructure to support the management of small to very large capital projects.

With extensive experience on large complex projects and the benefit of years of experience in project management processes, High Bridge can be the difference in developing a successful project. [Learn More](#)



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Phone:

770-729-8755

Engineering and Estimating Center of Excellence

2120 Northgate Park Lane, Suite 408 Chattanooga, TN 37415

Phone:

423-468-4317

COVID-19 Self Screening

COVID-19 Self Screening Questionnaire

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HIGH BRIDGE ASSOCIATES, INC.

Project Management Consulting, Estimating and Engineering Services

HIGH BRIDGE ASSOCIATES, INC.

High Bridge Background

High Bridge Associates, Inc. (High Bridge) was formed in 2003 as a Women-Owned Small Business with the goal of establishing a unique and focused service line to aid Owners in the management and control of medium to large capital projects. High Bridge established a growth strategy that emphasized attracting and retaining highly talented project management professionals and developing best-in-class project management processes. Today, High Bridge Associates along with our affiliate company Work Management, Inc. is one of the premier project management services companies in the US.

High Bridge provides a unique breadth of services tailored to our clients' needs with our Senior Consulting Practice providing high level project analysis, assessments, or process improvement guidance, our Managed Task Services providing integrated teams to develop, implement, and manage project management and control support, and our Staff Augmentation Services providing our clients with highly qualified personnel to fill client organizational requirements. High Bridge also provides specialty Estimating, Engineering, and related project controls services from our Chattanooga Office.

High Bridge Associates serves over 100 clients in 30 states. Our customers include Power Generation Utilities, EPC contractors, Equipment Manufacturers, and Federal Government

Agencies. Over 80% of our business derives from Commercial Power Generation; with 20% coming from Government, Industrial, and Petrochemical sectors.

Corporate Headquarters

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Engineering and Estimating Center of Excellence

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COVID-19 Self Screening

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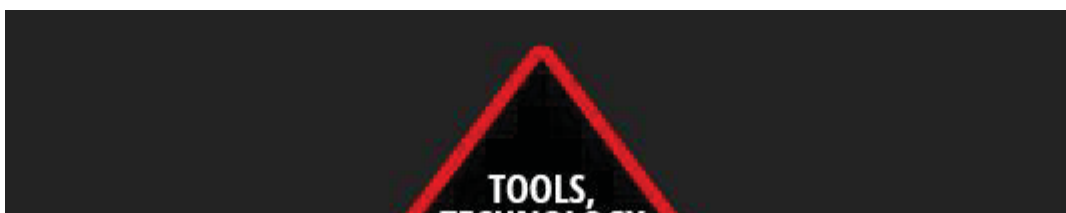
Project Management Consulting, Estimating and Engineering Services

HIGH BRIDGE ASSOCIATES, INC.

High Bridge Critical Success Factors

High Bridge Associates, Inc. provides the infrastructure to support the management of small to very large capital projects. With extensive experience on large complex projects and the benefit of years of experience on successful and failed management processes, High Bridge can be the difference in developing a successful project. High Bridge provides its expertise on a consulting level to help our clients develop or improve their current processes or on a defined scope/task basis where High Bridge would assume responsibility for performing these client-defined functions. Where beneficial, High Bridge can also provide highly experienced professionals to augment our clients' existing capabilities. The following outlines our areas of expertise.

Our primary focus on all of our projects is the establishment of good fundamental processes. These fundamentals processes are 1) Scope Development & Cost Estimating, 2) Planning & Scheduling, and 3) Cost Control & Change Management. After more than twenty years of providing our services to numerous industries, we have found that these three essential processes are critical to success.





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Services Overview

High Bridge Associates, Inc. (High Bridge) is a Planning and Project Management service company that supplies professional support to various industries including:

- Electric Power Generation & Transmission: Nuclear, natural gas, hydro, wind, and solar
- Government: Nuclear defense, science projects, & advanced nuclear power technology
- Oil, Gas, & Petro-Chemicals: Exploration, refining, & distribution
- Environmental: Decommissioning, deactivation, remediation cleanup, & demolition

Providing the framework and approach between management expectations and day-to-day activities is the key to success for any project or program. This framework is made up of various elements and management routines that creates the environment in which effective communications, project teamwork, and application of management systems and tools can flourish to produce effective results. We bring a proven experience competency and set of resource skills to assist customers for successfully “*Connecting Vision and Plans with Performance and Execution.*”





High Bridge adds strategic and tactical value for our customers with a customized delivery approach tailored to the needs of our customers to provide:

- Consulting: Independent assessments and process improvement reviews
- Managed Tasks: Deliverables managed by High Bridge Management and based on a defined scope of work
- Staff Augmentation: Resources for customer led teams based on T&M terms

We provide a cadre of core services and resources needed for successful planning and execution of large projects spanning the life cycle phases of engineering, licensing, construction, commissioning, operations, outage modifications, decommissioning, remediation, and demolition:

- Program planning, industry lessons learned, best practices, & integration
- Project controls, conceptual engineering, estimating, scheduling, reporting, & risk management
- Financial analysis, budgeting, contract administration, & change control
- Policies & procedures development, training, & information technology
- Project management, construction management, & outage management

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Consulting

Consulting Services

High Bridge brings a unique mix of experience and talent to its customers for the successful planning and execution of large complex projects. Our corporate management team and subject matter experts have careers and records of accomplishment that span the three primary stakeholder sectors that comprise projects



1. Owner/Licensees: The owner is the ultimate risk owner on large projects and bears ultimate responsibility for safe operations and economic profitability to state and federal regulators and stockholders across 80 years and the three life cycle phases of construction, operation, and decommissioning.
2. Engineering, Procurement, and Construction (EPC) Firms: EPC firms are engaged by owner/licensees to integrate and execute the enormous up-front capital outlay involved with large projects and to manage all labor, equipment, and material elements.

3. Original Equipment Manufacturers (OEM): OEM companies provide the technologies and hardware required for large projects that drive the basic design and operating criteria for the reliable performance and quality of large project facilities.

As a result of this resource pool makeup, High Bridge assembles consulting teams that bring the balance and insights of experience spanning these stakeholder sectors and project life cycle phases to add value to its customers. Our corporate leadership brings a unique commitment to and understanding of customer priorities and needs:

- High Bridge has led many large troubled project recovery efforts to assist utility owners with assessing project issues, developing a corrective action plan, and executing the steps required to address quality, safety, cost, and schedule performance elements.
- We have assisted owners, EPC, and OEM firms with the assessment of overall corporate Project Management Systems to achieve improved corporate-wide performance and results.
- High Bridge has performed hundreds of high-level cost and schedule validation reviews to check the fidelity and accuracy of project planning budgets, risk elements, and staffing levels.
- We have been part of owner/licensee/project teams evaluating technology options and life cycle economics for LLWR, SMR, and Advanced Reactor Projects.
- High Bridge personnel have served as subject matter experts (SME) for the American Nuclear Society (ANS) and International Atomic Energy Agency (IAEA) to assist member stakeholders with planning and training for New Nuclear Power (NNP) Plants.

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MANAGED TASK

Customers often have changing priorities and resource constraints. In these situations, they need High Bridge to provide a package of turn-key elements where it plans, integrates, leads, directs, manages, and performs the activities required to provide specific services and produce defined deliverable products. These services are typically developed based on customer provided detailed scopes of work to establish a fixed or not to exceed price for deliverable products and timeline milestones. While generally involving a duration spanning months, these tasks can span a timeframe of years, given the schedule and scope parameters upon which the price is based are firm.

Due to time constraints, customers also engage High Bridge to develop a detailed scope of work (SOW) package on which the managed task will be based. High Bridge follows a structured SOW development process involving customer stakeholder interviews, information compilation, facility walk-downs, condition discovery, and conceptual engineering. The SOW provides



the basis for managed task schedule and price against which potential change impacts can be identified and managed.

High Bridge has performed various types of managed tasks including:

- Development of web-based training and certification programs for customer staff personnel spanning project controls, cost estimating, scheduling, cost reporting, and change management.
- Development of corporate policies, plans, and procedures for project controls, cost estimating, scheduling, cost reporting, and change management.
- Providing project controls staff and services for specific projects and supplying the various reporting and review meetings defined as part of the defined business rhythm for daily, weekly, and monthly routines involved with the project.
- Preparing the SOW and detailed cost estimate documentation for a new or modification project.
- Preparing a high-level 3rd party independent assessment or sanity check of a project cost estimate, schedule, and risk register.

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Estimating

Over the past 16 years, High Bridge has developed a world class estimating capability designed to serve the nuclear, fossil, & solar sectors as well as industrial and commercial construction. High Bridge offers a variety of estimate products designed to provide accurate cost data, tailored to the size and design phase of client projects.

High Bridge's flagship product is a complete detailed take-off package that clients often use to develop work packages and manage work in the field. Our unique process delineates the steps taken to develop a detailed Class I-III estimate package with complete basis of estimate, where our team works with the client to ensure stakeholder alignment through each development phase of the estimate.

The Estimate Lite Package is a lower cost estimate option (Class IV-V) for projects in the early design phase and can be paired with our engineering services and Level I-II schedule.

Estimating Team



Benefits of High Bridge Estimating Process

- Works for all projects – conceptual to design issued – all phases
- Truly independent results for informed decisions
- Estimators possess extensive nuclear mods field experience
- Structured and disciplined processes for estimating, scheduling, and cost controls
- Detailed & well-documented scope development
- We estimate the entire project
- Accurate pricing through research and experience
- Identifies and evaluates risk, including enterprise risk
- Determines contingency & reserve needs for the entire project
- Delivers professionally packaged detailed reports
- Produces a real baseline document for effective project controls and change management
- Provides estimate details in working reports formatted to client specifications and cost tracking
- Incorporates client-specified WBS, schedule activities, commodities and other coding fields into estimate deliverables
- Offers a working Excel file of all estimate data
- Produces P6 Cost/Resource Loaded schedule directly from our estimates

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Engineering

Since the company's inception, High Bridge has been performing engineering functions on an as-requested basis for our clients. In response to clients' feedback, High Bridge opened a formal engineering office in Chattanooga, TN and performs the services listed as follows:

- Conceptual Engineering
- Engineering Scoping
- Third Party Analysis
- Feasibility Studies
- Alternative Analysis

These engineering services can be provided as stand-alone products or can be integrated into our existing estimate portfolio of services, depending on client needs.

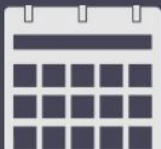
Engineering Team

High Bridge assembled senior engineers that have performed large and complex engineering projects around the country. These engineers work directly with clients

to ensure that the engineering scope and conceptual design are all-inclusive and will work for clients' specific needs.

Conceptual Engineering & Estimating

High Bridge understands that a project without the proper foundation has a much higher chance of failure. We provide our clients with tools and information to build that sturdy project foundation, the first step in proactively mitigating long-term potential risks. Conceptual engineering scope development is an important aspect of any project requiring design. High Bridge offers a Conceptual Engineering & Estimate Package. This package includes conceptual design, a conceptual Class IV-V estimate, a constructability review, a schedule, and cash flow curves. The package can be customized or truncated at the client's request.

	Initial Conceptual Design is the primary engineering component of this package. When complete, can be estimated.
	The budgetary or conceptual Class IV-V Estimate includes WBS structure/cost reporting structure and aligns with client/market rates for wages and material.
	The Constructability Review is performed by senior engineers, a distinction that sets High Bridge apart from the competition and sets clients up for success.
	The P6 Cost Loaded Schedule correlates to the activities and costs shown in the estimate.
	Cash Flow Curves for budgeting and forecasting adhere to industry standards and client preferences.



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Project Support

High Bridge has significant experience and resources to help in all of the following areas:

- Project Management & Controls
- Construction Management
- Risk Management
- Project Management Software System Planning & Development
- Business Management Processes
- Change Management
- Outage Management
- Performance Measurement
- Procedure Development
- Quality Management
- Litigation Management
- Work Control
- Work Management Processes
- Process Re-engineering

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Maintenance Support

- Maintenance Cost Reduction Program
- Maintenance Management Systems
- Materials Management / Bill of Materials
- Preventive / Predictive Programs

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ATTACHMENT 3

PRELIMINARY CONDUCT OF OPERATIONS PLAN

This attachment provides a preliminary plan for establishing Conduct of Operations for Bellefonte. ND plans to submit an updated Conduct of Operations plan to NRC prior to transition out of deferred plant status.

The Bellefonte Conduct of Operations will be based on current NRC guidance and expectations (latest revision of NUREG-0800), informed by previously developed and submitted information for Bellefonte.

13.1 ORGANIZATION

The organizational structure includes offsite and on-site functions including interface responsibilities for multiple organizations performing non-safety-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 the NQAP. Management gives careful consideration to the timing, extent and effects of organizational structure changes.

The Bellefonte organization is built around ND as the Owner, with partners providing industry-leading expertise to complement each other, focus on their areas of strength/experience, and provide a best-in-class integrated team to support both construction and subsequent operation. The key elements of the approach include:

- ND as the owner of the Bellefonte will have final authority for construction project design and execution.
- SNC-Lavalin (SNL) is the primary construction partner, described as the Engineering Construction and Procurement Manager (“EPCM”) and as such, SNL will have primary responsibility for carrying out the procurement, engineering and construction effort.

SNL is a global EPC company with demonstrated success in nuclear construction as well as construction management services. SNL and its predecessor organizations led the design and construction of numerous nuclear power plants world-wide.
- Framatome is the nuclear steam supply system (“NSSS”) designer and supplier partner and will have the primary responsibility for NSSS design, engineering and analysis support.

Framatome was the NSSS designer and supplier for the Bellefonte Babcock and Wilcox 205 pressurized water reactors (“PWRs”) and is the NSSS supplier for numerous other nuclear power plants in the US and world-wide.
- An Operations partner will be contracted to provide operations expertise and support, with primary responsibility for preparing for plant operations.

The Operations partner will be an established nuclear power plant operator and current holder of a 10CFR50 Operating License.

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- ND will staff a project oversight organization with primary responsibility to perform project, financial, technical, and quality oversight of the EPCM, NSSS supplier, the Operations partner and their subcontractors.

The project oversight organization will be staffed with direct ND employees, along with independent contractors, and personnel from industry-leading specialty contractors.

A summary level division of responsibility, focused on the construction phase of the project, is provided in Table 13-1.

Table 13-1. Bellefonte Responsibility Matrix

Function	Work Description	Primary Responsibility	Oversight
Project Oversight	ND will provide oversight of all EPCM and Operator Work to ensure project completed on time and on budget, and Operator ready to run and operate the plant safely	ND	N/A
License Holder	ND will hold the Bellefonte Operating License	ND	NRC
Scope Control	ND will review and approve all major scope changes	ND	N/A
Engineering	SNC-Lavalin will be design authority for completion of Bellefonte Unit 1, and will provide oversight of the multiple vendors who will perform the engineering design activities. SNC-Lavalin will provide all governing procedures and programs. Engineering completion will be in compliance with SNC-Lavalin approved QA Program.	EPCM	ND
Project Controls	SNC-Lavalin will be responsible for overall project schedule, project budget, project metrics and project risk management.	EPCM	ND
Licensing	SNC-Lavalin will complete all activities related to obtaining an Operating License for Bellefonte U1 and will coordinate with Operator as required	EPCM	ND

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Function	Work Description	Primary Responsibility	Oversight
Construction	SNC-Lavalin will provide a Construction Management organization to provide oversight of the multiple vendors who will perform the construction completion activities at Bellefonte. Construction will include installation of plant modifications and major projects and equipment refurbishment/replacement.	EPCM	ND
Procurement	SNC-Lavalin will perform procurement of all engineered materials (with exception of major projects). Procurement will be in accordance with SNC-Lavalin's QA Program	EPCM	ND
Quality Assurance	SNC-Lavalin will provide the overall 10CFR50, Appendix B Quality Assurance Program for the project and will provide oversight for any work not performed directly under SNC-Lavalin's program, e.g. major projects	EPCM	ND
Start Up	SNC-Lavalin will provide an organization responsible for coordinating all system and integrated tests, will ensure closeout of system design is completed, and complete the System Turnover process with the Operator. Start Up group will coordinate all start up tests; integrated functional tests, Reactor Coolant System Hydrostatic testing and power ascension tests with the Operator	EPCM	ND
Contract Management	SNC-Lavalin will act as Owner's Agent for all contracts and will prepare contracts; for services, equipment and major projects; select vendors, coordinate required change orders provide oversight of deliverables and pay invoices. ND will be signatory to the contracts	EPCM	ND
Training (Project)	SNC-Lavalin will perform training required to on-board project personnel to the site and provide oversight of the training qualifications required	EPCM	ND

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Function	Work Description	Primary Responsibility	Oversight
Programs (Project Execution)	SNC-Lavalin will provide required programs, processes and procedures for project execution organization; Safety, QA program, Human Performance, Fitness for Duty, Corrective Action Program, Employee Concerns, etc.	EPCM	ND
Operating Organization	Operator will hire all staff and provide an organizational structure required for Bellefonte plant operations	Operator	ND
Training (Operations)	Operator will provide and accredited training program and ensure all staff are trained to operate and maintain the plant	Operator	ND/INPO
Procedures	Operator will generate all operating procedures, maintenance procedures to operate and maintain the plant	Operator	ND
Programs (Operations)	Operator will develop all required programs to operate a nuclear plant	Operator	ND
Turnover	Operator will accept the plant for operations for the Construction Start Up Group	Operator	ND
Site Control	Operator will provide Nuclear Site Security, ensure all required site permits are maintained and shall provide an environmental control organization to ensure site complies with all required regulations	Operator	ND

13.1.1 Management and Technical Support Organization

The ND Executive Management organization is shown in Figure 13-1 and includes the positions described in Table 13-2. Figure 13-2 shows the broader ND Management Organization and associated responsibilities.

The ND Management organization has full responsibility for Bellefonte. The organization includes both off-site and on-site positions and responsibilities.

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Table 13-1. ND Key Senior Management Organization Positions

Position	Responsibility
Board of Directors	The Board of Directors is responsible for overseeing the performance of the senior managers of ND.
President and Chief Executive Officer (CEO)	The CEO is responsible for all aspects of design, construction and operation of ND's nuclear plants. The CEO is also responsible for all technical and administrative support activities provided by ND and contractors. The CEO reports to the ND Board of Directors with respect to all matters.
Chief Nuclear Officer (CNO) and Executive Vice President	The Chief Nuclear Officer (CNO) and Executive Vice President reports to the CEO and is responsible for BLN plant licensing, engineering, procurement, construction and testing activities and ultimately the safe, reliable, and efficient operation of BLN.
Senior Vice President, Nuclear Operations	The Senior Vice President, Nuclear Operations reports directly to the CNO and Executive Vice President and has responsibility for organizations that coordinate and integrate efforts and initiatives into day-to-day ND Nuclear business at BLN 1&2.
Vice President, Engineering and Projects	The Vice President Engineering and Projects reports directly to the CNO and Executive Vice President and has responsibility for support organizations that coordinate and integrate efforts and initiatives into day-to-day ND Nuclear business.
Vice President, Nuclear Support	The Vice President Engineering and Projects reports directly to the CNO and Executive Vice President and is responsible for the management positions responsible for: • Corporate oversight and governance of the planning and execution of outages and outage scheduling • Nuclear security • Non-engineering technical programs • Corporate governance of functional areas (maintenance, operations, radiation protection, chemistry, work control, and procedures) • Developing programs to control procedures and instructions • Maintaining the Nuclear Operating Experience Review Program • Overseeing the training and performance improvement functions
Vice President, Procurement	The Vice President, Procurement reports to the CNO and Executive Vice President and is responsible for procurement.

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Position	Responsibility
General Manager, Licensing and Performance Improvement	The General Manager, Licensing and Performance Improvement, is responsible for maintaining an interface between ND and the NRC and licensing activities and for directing and managing Nuclear Safety Review Board activities.
General Manager, Nuclear Oversight and Assessment	The General Manager, Nuclear Oversight and Assessment reports to the CNO and Executive Vice President and is responsible for the Quality Assurance organization and functions, and the Bellefonte Completion Project Independent Oversight organization.

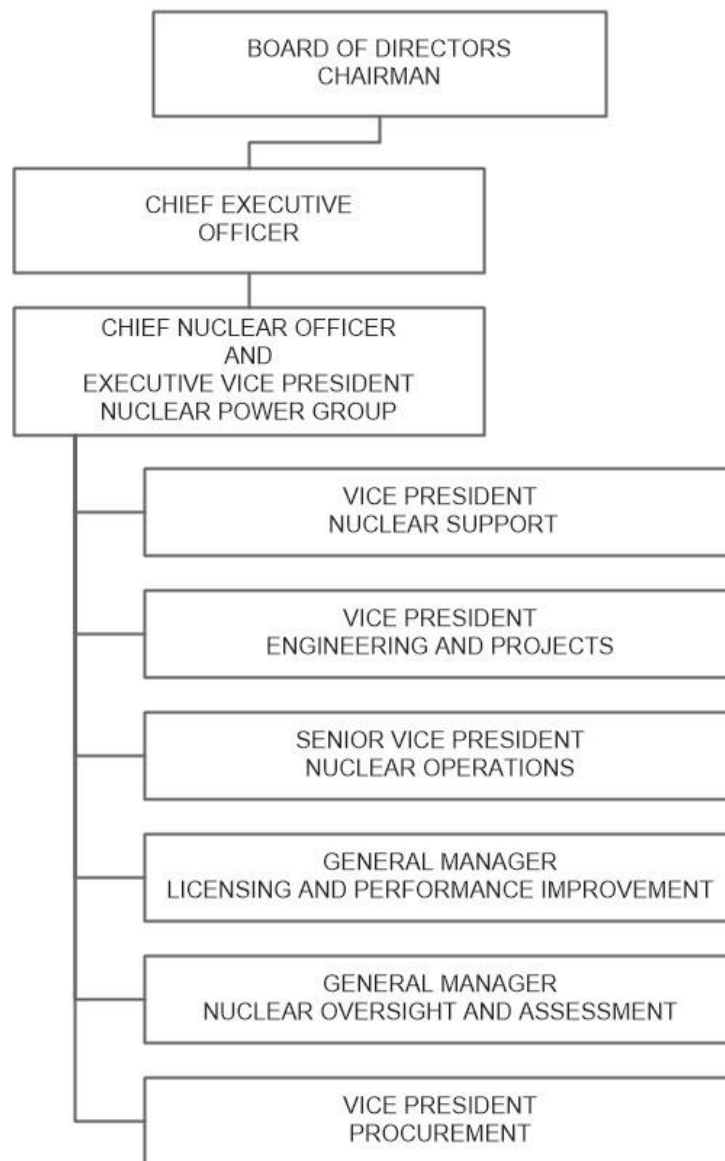


Figure 13-1. ND Executive Management Organization

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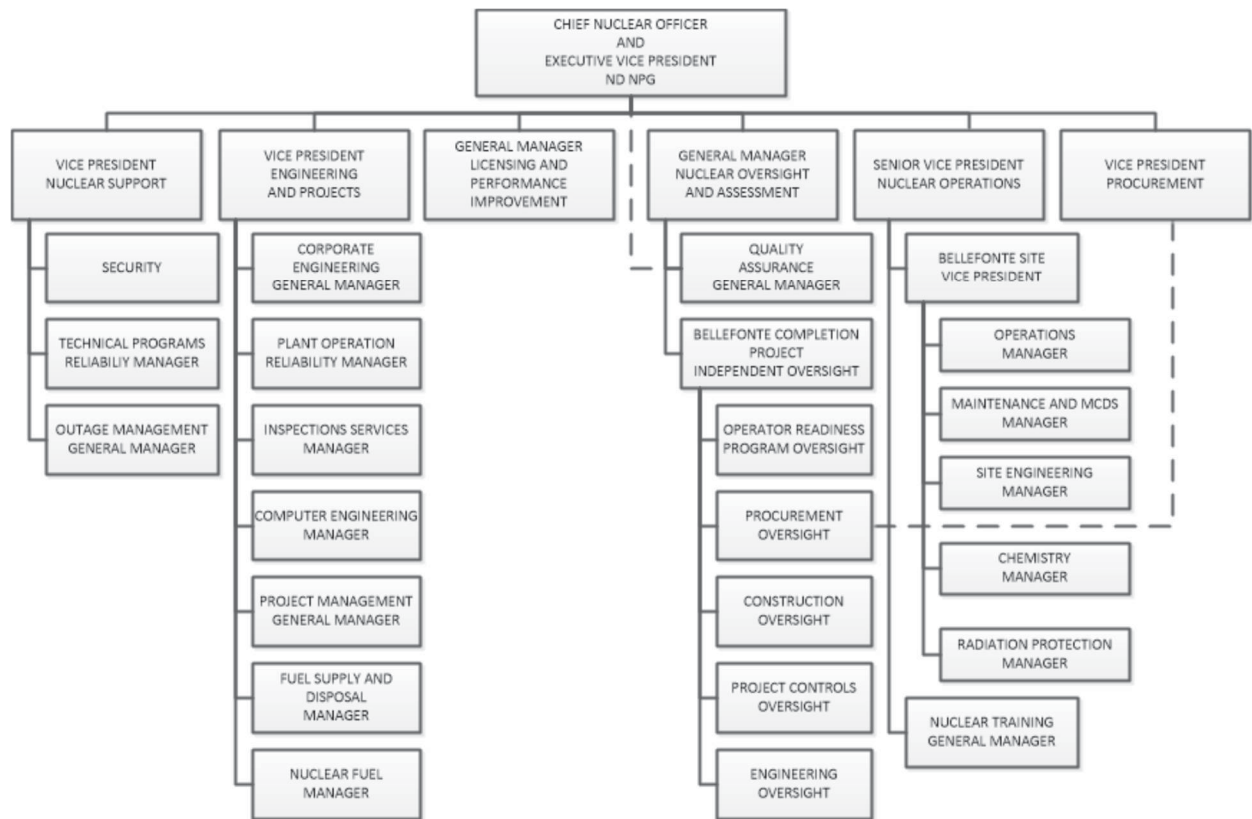


Figure 13-1. ND Management Organization

The responsibility for completing the engineering, procurement, and construction of Bellefonte is delegated to the EPCM. Responsibility for operations is delegated to the Operations partner. ND provides management and oversight of the EPCM, the Operations partner and their subcontractors, and retains overall responsibility for the Bellefonte site, plant performance, and adherence to applicable regulations and permits.

The CNO and Executive Vice President is the corporate officer responsible for nuclear activities. This individual has no ancillary responsibilities that might detract attention from nuclear safety matters.

Technical support of the engineering, procurement, and construction activities is provided by the EPCM, the NSSS supplier, ND corporate staff, the Operations partner, and specialty contractors.

The project organizational relationship during construction is shown in Figure 13-2.

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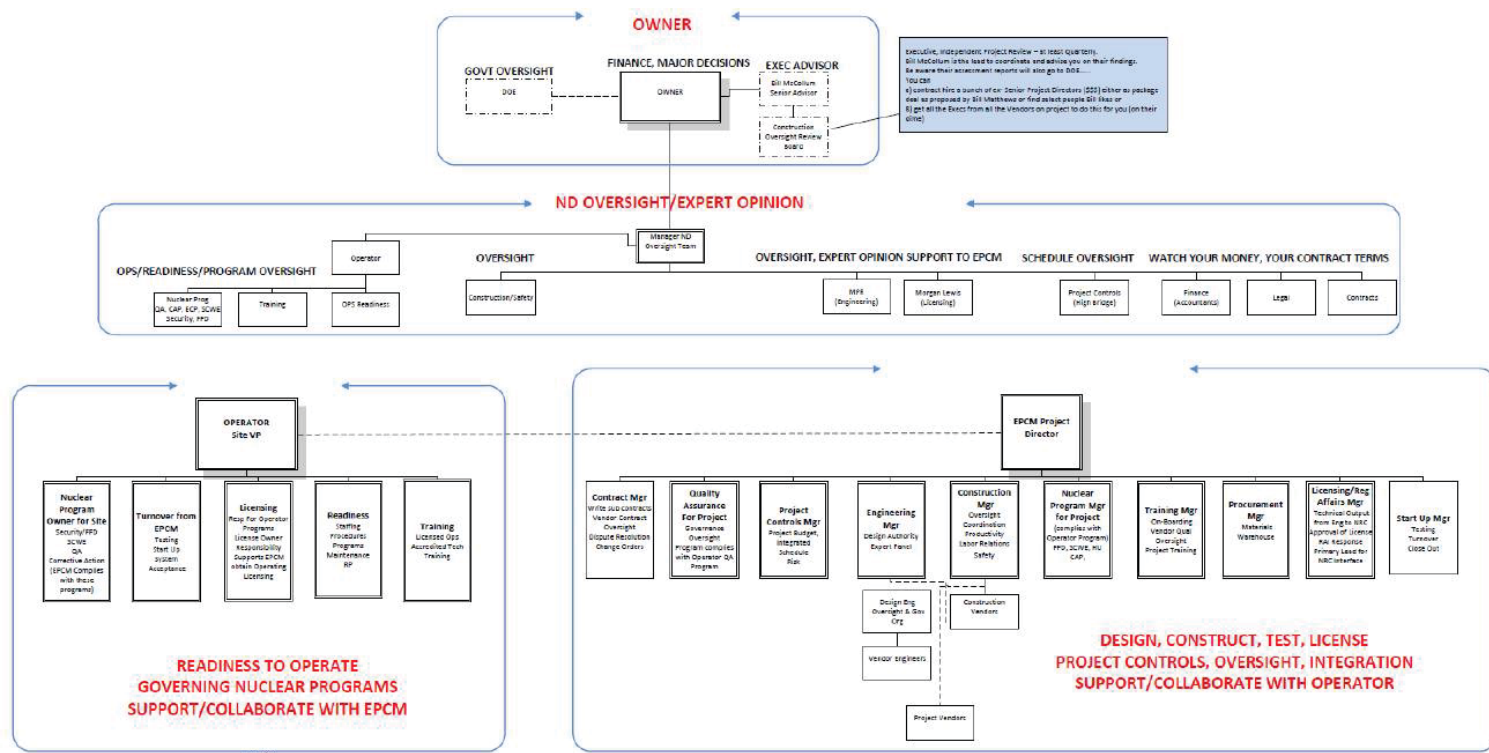


Figure 13-2. Bellefonte Project Organizational Relationship

The Management and Technical Support organization will evolve as project planning is matured and the transition out of deferred plant status approaches. When complete, the Management and Technical Support organization staffing plan will:

- Define, both in numbers of personnel and necessary position qualifications and experience, the design and construction responsibilities for ND and contractor/vendor personnel
- Clearly define management and organizational responsibilities to address HFE considerations
- Define clearly that:
 - The organizational units involved in the design and construction of the project communicate among each other in a searchable and retrievable documented form, and management clearly and unambiguously controls the project and its documentation
 - Clear management control and effective lines of authority and communication exist among the organizational units involved in managing, operating, and providing technical support for the facility
 - There is clear management control of the organizational units involved in operating and providing technical support for the facility, and there are clear lines of authority between management and these groups and effective communication among them and with management

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- Require that the experience and qualifications of members of the management and technical support organizations meet or exceed those endorsed by RG 1.8, “Qualification and Training of Personnel for Nuclear Power Plants” as described within the NQAP.
- Identify plans related to the organizational, staffing, and management structure responsible for the design and construction of the nuclear facility, to ensure that the staff has complete and accurate information for its review and in accordance with the requirements of 10 CFR 50.34(f)(3)(vii).
- The detailed organization and description of roles and responsibilities will:
 - Identify and describe the organizational groups and individual positions responsible for implementing all aspects of the project, including those groups and individual positions responsible for implementing the initial test program and providing technical support for the operation of the facility
 - Describe how the organization provides for the integrated management of activities that support the construction, operation, and maintenance of the facility
 - Describe how it will obtain personnel with sufficient experience to provide management and technical support for the facility
 - Describe how it will carry out its responsibilities to conduct the initial test program, provide sufficient technical support for all aspects of the project, and safely operate of the facility
 - Provide reasonable assurance that the organization designated as being responsible for the initial test program, can collectively provide staff, and add staff on a case-by-case basis, with the skill and experience necessary to develop and conduct the initial test program, and provide technical support for the operation of the facility
 - Describe how the plant’s operating and technical staff will be utilized in developing, conducting, and participating in the initial test program, in reviewing test results and the plan--specific test- program training
 - Describe how the organization will carry out its responsibilities to control major contractors and has committed to consider safety first, with due consideration of risk insights, in design and construction of the facility and during the transition from construction through testing to operation
 - Describe the role and function of the EPCM and the NSSS supplier during design and construction and has described organizational controls over the project-related activities of the EPCM and NSSS supplier including preservation of documentation.

13.1.2 Operating Organization

The Operations partner has primary responsibility for plant operations, including staffing the Operating Organization. The Operations partner will be contracted, the NRC notified, and details of the Operating Organization developed prior to transitioning out of deferred plant status. The schedule, relative to fuel loading for each unit, will be provided for filling all positions.

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The Operating Organization will:

- Meet the guidelines of Regulatory Guide (RG) 1.28, Rev. 3, "Quality Assurance Program Criteria (Design and Construction)," for the design and construction operating organization (*see* NQAP, App. B, Table 1)
- Meet the guidelines of RG 1.33, Rev. 2, "Quality Assurance Program Requirements (Operation)," for the operating organization, and for onsite review and rules of practice (*see* NQAP, App. B, Table 1)
- Meet Branch Technical Position (BTP) 9.5-1, "Fire Protection Program" (See NQAP, App. C, Section 5.0)
- Meet the guidelines of RG 1.8, Rev. 2 "Qualification and Training of Personnel for Nuclear Power Plants," for the operating organization (*see* NQAP, App. B, Table 1)
- Be consistent with one of the options in the Commission Generic Letter (GL) 86-04 "Policy Statement on Engineering Expertise on Shift"
- Meet NUREG-0737 and Supplement 1, "Clarification of TMI Action Plan Requirements," Items I.A.1.1, "Shift Technical Advisor," and I.A.1.3, "Shift Manning" (*see* NQAP, App. B, Table 1)

The implementation of the Operating Organization will:

- Demonstrate and describe:
 - The reporting responsibilities and authorities in the functional areas of radiation protection/health physics, quality assurance, and training, and that the reporting responsibilities and authorities ensure independence from normal operating pressures
 - Clearly defined responsibilities of the operating organization related to activities important to the safe operation and maintenance of the facility
 - Functional areas, (e.g., maintenance, operations, training, etc.), are separately supervised and/or managed
 - There is sufficient managerial depth available to provide qualified backup for overall station operation in the event of unexpected contingencies of a temporary nature
- Describe how the responsibilities and authorities of operating organization personnel conform to ANSI N18.7/ANS-3.2 (1976) (*see* NQAP, App. A), RG 1.189, "Fire Protection for Nuclear Power Plants"; (*see* NQAP) and RG 1.8, Rev. 2, "Qualification and Training of Personnel for Nuclear Power Plants," (*see* NQAP, App. B, Table 1) including reflecting the staff position in NUREG-0694, "TMI-Related Requirements for New Operating Licenses," Item I.C.3, "Shift Supervisor Responsibilities," which clearly establishes the command duties of the shift supervisor/manager, clearly defines the duties, responsibilities and authorities of the shift supervisor/manager and the control room operators, and emphasizes management responsibilities for safe operation and maintenance of the plant

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- Demonstrate that assignments of onsite shift operating crews are made in accordance with 10CFR50.54(i), (j), (k), (l), and (m), and the staffing follows the guidance of NUREG-0737, Item I.A.1.1, "Shift Technical Advisor," and Item I.A.1.3, "Shift Manning," as follows:
 - A shift supervisor / manager with a senior reactor operator's license, who is also a member of the station supervisory staff, shall be onsite at all times when at least one unit is loaded with fuel
 - In addition to the licensed personnel specified in 10CFR50.54(m), an auxiliary operator (non-licensed) shall be assigned to each reactor and an auxiliary operator shall be assigned for each control room for an operating reactor, and the auxiliary operators shall be qualified to support the unit to which they are assigned
 - A licensed senior reactor operator shall, at all times, be in the control room from which a reactor is being operated; the shift supervisor may act as a relief operator for the licensed senior reactor operator for either unit being operated from that control room, provided he holds a current
 - license for each unit assigned to the control room
 - An additional licensed reactor operator shall be onsite at all times and available to serve as relief operator for that control room; this individual may serve as relief operator for each unit being operated from that control room, provided he holds a current license for each unit
 - Engineering expertise shall be onsite at all times a unit is operated in Modes 1-4, and this engineering expertise should be consistent NUREG-0737, Item I.A.1.1, and consistent
 - with one of the options in the Commission's Policy Statement on Engineering Expertise on Shift
 - A health physics technician shall be onsite at all times when there is fuel in a reactor
 - A chemistry/radiochemistry technician shall be onsite at all times when a unit is being operated in Modes 1-4
 - Assignment, stationing, and relief of operators and senior operators within the control room shall be as described in RG 1.114, "Guidance to Operators at the Controls and Senior Operators in the Control Room of a Nuclear Power Unit."
- Justify, as needed, requests for exemption from the licensed operator staffing requirements specified in 10CFR50.54(m) and NUREG-0737; Item I.A.1.1, "Shift Technical Advisor," and Item I.A.1.3, "Shift Manning," can be justified and reviewed using the guidance set forth in NUREG-1791
- Demonstrate that the number of licensed and non-licensed personnel for onsite shift operating crews should be sufficient to avoid the routine use of overtime

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- Describe how the plant operating and technical staff will be utilized in developing, conducting, and participating in the initial test program, in reviewing test results and the plant-specific test-program training
- Follow the guidance of SRP Section 9.5.1 for assignments of personnel to the fire brigade, including commitments that:
 - The responsibilities of the fire brigade members do not conflict with their responsibilities during a fire emergency
 - The minimum number of fire brigade members available onsite for each shift operating crew is consistent with the activities required to combat the most significant fire, with a minimum size of five persons unless a site evaluation has been completed
- Require the experience and qualifications of members of the operating organization to meet or exceed those endorsed by RG 1.8 (*see* NQAP, App. B, Table 1).

13.2 TRAINING

13.2.1 Reactor Operator Training

Reactor Operator training is the responsibility of the Operations Partner. The Operations Partner will be contracted and the NRC notified prior to transitioning out of deferred plant status, and appropriate details of the Reactor Operator training program will be developed and provided to the NRC on the needed schedule relative to fuel load for the first unit.

The Reactor Operator training program will:

- Meet the guidance in RG 1.8, Rev. 2, "Qualification and Training of Personnel for Nuclear Power Plants," (*see* NQAP, App. B, Table 1) including American National Standards Institute /American Nuclear Society (ANSI/ANS)-18.1-1971, "Selection, Qualification, and Training of Personnel for Nuclear Power Plants" (*see* NQAP, App. B, Table 1)
- Meet the guidance in NEI 06-13A, "Template for an Industry Training Program Description"
- Meet the guidance of RG 1.149, "Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations," including ANSI/ANS-3.5-1998, "Nuclear Power Plant Simulators for Use in Operator Training and Examination"
- Require the initial and requalification licensed operator training to be developed, established, implemented, and maintained using a systems approach to training, as defined in 10CFR55.4, "Definitions"
- Demonstrate that a licensed operator training program will be established, implemented, and maintained by 18 months prior to fuel load by means of the following:

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- Describing how the licensed operator training program conforms to RG 1.8, Rev. 2 (*see* NQAP, App. B, Table 1)
 - Including in the licensed operator training program, as a minimum, the subjects in 10CFR55.31, “How to Apply,” 10CFR55.41, “Written examination: Operators,” 10CFR55.43, “Written examination: Senior operators,” 10CFR55.45, “Operating tests,” and RG 1.8, Rev. 2 (*see* NQAP, App. B, Table 1) for reactor operators and senior reactor operators, as appropriate
 - Describing how the licensed operator training program conforms to NEI 06-13A
- Demonstrate that a requalification program for operators and senior operators conforms to 10CFR55.59 and will be in effect within 3 months of the issuance of an OL
- Include a system to periodically evaluate the licensed operator training program by individuals other than those directly responsible for the training, including assessment of program effectiveness in developing the trainees’ ability to meet performance requirements of the job; the program will be periodically revised and updated, to reflect the result of program evaluations, industry experience, and changes to the facility, procedures, regulations, and quality requirements.

13.2.2 Non-Licensed Plant Staff Training

Non-Licensed staff training is the responsibility of the Operations partner. The Operations partner will be contracted and the NRC notified prior to transitioning out of deferred plant status, and appropriate details of the Non-Licensed Plant Staff training program will be developed and provided to the NRC on the needed schedule relative to support of construction and fuel load for the first unit.

The Non-Licensed Plant Staff training program will:

- Meet the guidance in RG 1.8, Rev. 2 “Qualification and Training of Personnel for Nuclear Power Plants,” (*see* NQAP, App. B, Table 1) including ANSI/ANS-18.1-1971, “Selection, Qualification, and Training of Personnel for Nuclear Power Plants” (*see* NQAP, App. B, Table 1)
- Meet the guidance in RG 1.149, “Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations” for simulation facilities
- Meet the guidance in NEI 06-13A, “Template for an Industry Training Program Description”
- Require the non-licensed plant staff training program to be established, implemented, and maintained by 18 months prior to fuel load by means of the following:
 - Describing how the non-licensed plant staff training program conforms to RG 1.8, Rev. 2 (*see* NQAP, App. B, Table 1)
 - Describing how the non-licensed plant staff programs conform to NEI 06-13A

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- Require initial training and retraining of non-licensed plant staff training to be developed, established, implemented, and maintained using a systems approach to training, as defined in 10CFR55.4
- Include a system to periodically evaluate the non-licensed plant staff training programs by individuals other than those directly responsible for the training, including an assessment of program effectiveness in developing the trainees' ability to meet performance requirements of the job; the program should be periodically revised and updated, to reflect the result of program evaluations, industry experience, and changes to the facility, procedures, regulations, and quality requirements

13.3 EMERGENCY PLANNING

Emergency Planning is the responsibility of the Operations partner. The Operations partner will be contracted and the NRC notified prior to transitioning out of deferred plant status. A Preliminary Emergency Plan will be developed and provided to the NRC prior to transitioning out of deferred plant status.

As required by 10CFR50.34(a)(10), ND will include in the Preliminary Emergency Plan a discussion of preliminary plans for coping with emergencies, including the applicable items in Appendix E to 10CFR50, as well as the means by which the standards of 10CFR50.47(b) will be met. Specific plans for coping with emergencies will be provided in the Operating License application as required by 10CFR50.34(b)(6)(v).

13.4 OPERATIONAL PROGRAMS

Development of Operational Programs is the responsibility of the Operations partner. The Operations partner will be contracted and the NRC notified prior to transitioning out of deferred plant status.

Development of the Operational Programs will be performed as part of the scope to develop the necessary operational infrastructure.

The Operating License application will include a table listing for all Operational Programs:

- The Program Title
- The underlying requirement causing the need for the program
- The applicable section of the FSAR
- The schedule milestone for implementation
- The implementing requirement/regulation

13.5 PROCEDURES

Development of necessary procedures is the responsibility of the EPCM for construction scope to complete the plant and the Operations partner for plant operation. The EPCM will be

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contracted to develop the necessary procedures after the Construction Permit is transferred. The Operations partner will be contracted and the NRC notified prior to transitioning out of deferred plant status.

Development of the necessary procedures will be performed on the needed schedule to support engineering, procurement, construction, testing, and fuel load.

13.5.1 Administration Procedures

The administrative procedures will:

- Meet the guidance of RG 1.33, Rev. 2, "Quality Assurance Program Requirements (Operation)," (*see* NQAP, App. B, Table 1) including ANSI/ANS-3.2, "Managerial, Administrative, and Quality Assurance Controls for the Operational Phase of Nuclear Power Plants" (*see* NQAP, App. B, Table 2)
- Be developed for designating individuals responsible for directing the activities of licensed control-room operators, and the process for defining and assigning the responsibilities of control-room supervisors and operators will comply with NUREG-0694, "TMI-Related Requirements for New Operating Licenses," Items I.A.1.2 and I.C.3.
- Comply with NUREG-0694, Item I.C.2 for shift relief and turnover
- Ensure administrative controls requiring supervisors and operators to be present in the control room comply with RG 1.114, "Guidance to Operators at the Controls and to Senior Operators in the Control Room of a Nuclear Power Unit"
- Ensure administrative controls designating a specific area within the control room as the "surveillance area," conform to RG 1.114
- Ensure control room access conforms to the guidance described in NUREG-0694, Item I.C.4
- Ensure administrative procedures that provide feedback on operation, design, and construction of the facility comply with 10CFR50.34(f)(3)(i) and with NUREG-0737, "Clarification of TMI Action Plan Requirements," Task Action Plan Item I.C.5
- Ensure administrative controls governing crane operations include a requirement that the operators of cranes over fuel pools be qualified and conduct themselves in accordance with the guidelines of ANSI-B30.2-1976, "Overhead and Gantry Cranes"
- Ensure the vendor interface program requires that vendor information for safety-related components is incorporated into plant documentation as described in Generic Letter (GL) 90-03, "Relaxation of Staff Position in Generic Letter 83-28"

The administrative procedures in support of the Initial Test Program will:

- Ensure the administrative and organizational system used to develop, review, and approve individual test procedures provides for appropriate levels of review prior to final approval, and that the individuals performing these functions meet the qualification

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requirements described in the NQAP; system designers will provide the test objectives and acceptance criteria used in developing detailed test procedures, and the participating system designers will include those of the EPCM, NSSS supplier, and other major contractors, subcontractors, and vendors, as appropriate.

- Ensure a robust Conduct of Test Program, including:
 - The test program will be conducted by appropriately qualified personnel using detailed procedures approved by designated management positions within the Management and Technical Support organization
 - The controls used to ensure that test prerequisites are met will include requirements for inspections, checks, etc., require identification of test personnel completing data forms or check sheets, and require identification of dates of completion
 - The controls provided for plant modification and repairs, identified as a result of plant testing, are found to be acceptable if (1) the controls are sufficient to ensure the required repairs and modifications will be made, (2) the controls will ensure retesting is conducted following such modifications or repairs, and (3) the controls will ensure a review of any proposed facility modifications by the original design organization or other designated design organizations; requirements for documentation associated with such controls will permit audits to be made to ensure proper implementation of controls
 - The controls pertaining to adherence to test procedures and to methods for changing test procedures are adequate, and modifications to startup test procedures will be made in accordance with technical specifications for post-fuel loading tests
- Ensure the review, evaluation, and approval of test results is adequate, based on:
 - The controls that will govern the review, evaluation, and approval of test results will provide for a technical evaluation of test results by qualified personnel and approval of test results by personnel in designated management positions in the Management and Technical Support organization
 - Design organizations will be notified and participate in the resolution of problems involving design that result in or contribute to a failure to meet test acceptance criteria
 - Requirements that test data for each major test phase will be reviewed and approved prior to beginning the next phase of testing, and test data at each major power test plateau or power/flow test condition will be reviewed and approved before proceeding to the next test level during the power ascension test phase

13.5.2 Operating and Maintenance Procedures

The Operating and Emergency Operating Procedures will:

- Meet the guidance in RG 1.33, Rev. 2 (*see* NQAP, App. B, Table 1), including American National Standards Institute (ANSI)/American Nuclear Society (ANS)-3.2, “Managerial,

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Administrative, and Quality Assurance Controls for the Operational Phase of Nuclear Power Plants” (see NQAP, App. B, Table 1)

- Meet the guidance in RG 1.114, “Guidance to Operators at the Controls and to Senior Operators in the Control Room of a Nuclear Power Plant”
- Ensure the procedure-development program includes:
 - Generic Guidelines (GTGs) for the EOPs
 - General plant procedures (including startup, power, and shutdown operations)
 - System operating procedures (instructions for energizing, filling, venting, draining, starting up, and shutting down, changing modes of operation, and returning to service following testing)
 - Test and maintenance procedures
 - Surveillance testing procedures
 - Abnormal and emergency operations procedures
 - Alarm-response procedures
 - Mode-specific procedures, (e.g., refueling activities, etc.)
- Ensure the basis for developing the operating procedures includes:
 - Plant-design bases
 - System-based technical requirements and specifications
 - Results of task analyses
 - Important human activities (HAs)
 - Initiating events to be considered in the EOPs, including those initiating events in the design bases
 - The GTGs for the EOPs
 - Appropriate human factors engineering (HFE) of procedures
- Ensure the development of a site writer’s guide (SWG) to establish the process for developing technical procedures that are complete, accurate, consistent, and easy to understand and follow, that the guide is used for all procedures within the scope of this program, and that the guide contains:
 - Objective criteria so that the procedures developed in accordance with the SWG are consistent in organization, style, and content.
 - Instructions for procedure, content and format, including writing of the action steps specifying acceptable lists of abbreviations/acronyms, and terms to be used.
- Ensure procedures contain the following elements:
 - Title and identifying information such as number, revision, and date
 - Statement of applicability and purpose

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- Prerequisites
 - Clearly defined entry conditions
 - Precautions (including warnings, cautions, and notes)
 - Important human actions
 - Limitations and actions
 - Acceptance criteria
 - Checkoff lists
 - References
- Ensure the procedure development program:
 - Verifies that the procedures are technically correct and can be completed satisfactorily by plant staff, based on a walkdown of the procedure either on a plant-referenced simulator or in the facility itself (where a walkdown is not possible, a tabletop verification of the procedure may be used)
 - Validates the use of procedures by conducting an integrated system validation using the plant simulator, considering the guidance in NUREG-0711, "Human Factors Engineering Program Review Model," Section 11, "Human Factors Verification and Validation"
 - Ensures that when procedures are modified, verification is performed of the adequacy of the content, format, and integration, and verification ensures that the procedures correctly reflect the characteristics of the modified plant and can be used effectively to operate or maintain the plant.
 - Ensures that procedures are validated when a modification substantially changes personnel tasks significant to plant safety
- Ensure a procedures-generation package (PGP) is developed which includes:
 - Plant-Specific Technical Guidelines (P-STGs)
 - A SWG that details the methods to be used by the applicant in preparing EOPs based on P-STGs
 - A description of the verification and validation (V&V) program for the EOPs
 - A description of the program for training operators on EOPs
- Ensure the P-STG:
 - Results in EOPs based on acceptable technical guidelines derived from approved analyses of transients and accidents
 - Conforms to the guidance in NUREG-0800, Chapter 13.5.1.1 for use of GTGs
- Ensure the SWG conforms to the following:

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- The SWG provides sufficient information to develop EOPs that are useable, accurate, complete, readable, convenient to use, and acceptable to control-room personnel
 - The SWG supports long-term consistency within and between procedures in the areas of organization, format, style, and content
 - The SWG contains the necessary information and guidance for translating the technical information of the GTG into the plant's EOPs
 - The SWG consolidates in one place the information necessary to perform a task, and when cross-referencing is necessary, a method is used that is quick, creates the least amount of disruption or chance of error, describes why the operator is leaving one part and going to another, and indicates when to return to the original procedure
 - The SWG contains direction that results in procedures with the following characteristics:
 - Procedures that are easy to read
 - Procedures that can be read rapidly without interruption
 - Procedures that can be precisely understood
 - Procedures that can be understood without the aid of additional material
 - The reader accepts the information presented in the procedure
 - Procedures that can be easily learned
 - Procedures that can be retained
 - Procedures that can be used easily for instruction
 - Procedures are simple, ordered, and pertinent
 - The SWG describes the organization, content, and format of major sections of the EOPs
 - The SWG provides direction on writing style
 - The SWG addresses how EOPs interface with control-room staffing and division of responsibilities, including:
 - Structuring of EOPs to ensure that minimum staffing can execute the EOPs
 - Designating the operators' responsibilities when implementing EOPs
 - Sequencing action steps to minimize physical interference between operators
 - Sequencing action steps to avoid their unintentional duplication of steps by operators
- Ensure EOP V & V is conducted during licensed operator training, as appropriate, to efficiently use the control-room simulator, and when EOP V & V is tied to training, a

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formal V & V process is used that documents the results and provides the information back into the EOP development program

- Ensure the portion of the V & V process using control-room walkthroughs and use of operators is carried out for each unit to the extent that the units differ in terms of instrumentation, controls, equipment, or any other aspect that may impact plant safety.
- Ensure procedure V&V demonstrates the following:
 - EOPs are technically correct and accurately reflect the GTGs
 - EOPs are written following the guidance in the P-SWG
 - EOPs are useable and can be understood and followed without confusion, delays, or errors
 - The controls, equipment, and indications referenced in the EOPs are available, use the same designations, same units of measurement, and operate as specified in the procedures
 - EOP language and level of information is compatible with the number, qualifications, training, and experience of the operating staff
 - EOPs will guide the operator in mitigating transients and accidents
 - EOPs will demonstrate that plant operators, subject matter experts, and procedure writers are involved and participate in the V & V, how the roles performed by the participants will be demonstrated, and how the roles are based on the specific V & V activity being evaluated
 - The criteria for selecting scenarios for the V & V and to exercise the full complement of EOPs, including multiple failures (simultaneous and sequential) are included
 - A description is included of the plan for correcting and revising EOPs based on the results of the V & V and feedback from simulator exercises, control-room walkthrough, desktop reviews, operating team reviews, and operator training
 - Revisions to EOPs are validated and verified and conditions under which revisions should be validated and verified are defined
 - A description of the method by which multiple units will be handled in the V & V process to account for differences between units
 - An indication that the EOPs can be effectively employed with minimum control-room staffing
 - A description of the plan for determining EOP adequacy (availability, readability, and usability) and correspondence of the EOPs and control-room instrumentation and controls; when instrumentation and controls have not been evaluated against the needs of the operators as a part of the P-STGs, the information and control needs of the operators will be evaluated as part of the V & V program
 - A description of the method that will be used to determine the adequacy of control-room instrumentation and controls

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- Ensure the procedure training program demonstrates the following:
 - Trainees understand the philosophy behind the design of the EOPs.
 - Trainees understand the mitigation strategy and technical bases of the EOPs.
 - Trainees have a working knowledge of the technical content of the EOPs
 - Trainees are capable of executing the EOPs as individuals and as teams under operational conditions
 - How plant-referenced or limited scope simulation is used for training, and if a limited scope simulator is used for training and it is not possible to fully exercise all parts of the EOPs, the PGP describes the method used to ensure that the V & V program covers those areas missed
 - The extent to which all EOPs will be exercised by all operators
 - The method for training in areas not covered by simulator scenarios is described
 - The use of other training methods
 - The use of a wide variety of scenarios in the EOP training program
 - The operators will be trained prior to implementation of EOPs
 - How operators will be evaluated as part of the training program
- Ensure the procedure development program schedule includes milestones for:
 - PGP submittal at least three months prior to the beginning of formal
 - operator training on EOPs
 - Completion of operating procedures prior to fuel load to allow adequate
 - time for plant staff familiarization and to allow NRC staff adequate time to
 - develop operator license examinations
 - Availability of procedures to support preoperational testing and initial operations
- Ensure there is a plan for procedure maintenance and control of procedure updates, that procedure modifications are integrated across the full set of procedures, and changes in a procedure do not conflict with other procedures nor are inconsistent the other procedures
- Ensure an evaluation of the means by which personnel access and use procedures, especially during operational events, including both hardcopy and computer-based procedures; the evaluation will address the storage of procedures, ease of the operator's access to the correct procedures, and laydown of hard-copy procedures for use in the main control-room, the remote shutdown facility, and local control stations.

Maintenance And Other Operating Procedures will:

- Be targeted for completion about six months before fuel loading to allow adequate time for plant staff familiarization and to allow NRC staff adequate time to develop operator license examinations

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- Meet the following regulations and staff guidelines:
 - 10CFR50.34(a)(6) and 10CFR50.34(b)(6)(iv) and the 10CFR50, Appendix B, Criteria V and VI
 - 10CFR50.34(f)(2)(ii), 10CFR50.34(f)(3)(i), and TMI items I.C.1, and I.C.5 regarding the development, verification and validation, implementation, and maintenance of revision of plant procedures
 - Guidelines in the Regulatory Position Section of Regulatory Guide 1.33, Rev. 2 (*see* NQAP, App. B, Table 1)
 - Guidelines of ANSI/ANS 3.2 - 1976, Section 5.3 (*see* NQAP, App. B, Table 1)

13.6 PHYSICAL SECURITY

Physical Security, Access Authorization, and Cybersecurity are the responsibility of the Operations partner. The Operations partner will be contracted and the NRC notified prior to transitioning out of deferred plant status. A Preliminary Security Plan will be developed and provided to the NRC prior to transitioning out of deferred plant status. A final Security Plan will be included with the Operating License application.

13.7 FITNESS FOR DUTY

Development of Fitness for Duty Programs is the responsibility of the EPCM for the Construction Program and the Operations partner for the Operational Program. The EPCM will be contracted to develop the necessary program after the Construction Permit is transferred. The Operations partner will be contracted and the NRC notified prior to transitioning out of deferred plant status.

13.7.1 Operational Program

The Operational Fitness for Duty Program is the responsibility of the Operations partner. The Operations partner will be contracted prior to transitioning out of deferred plant status. The Operational Fitness for Duty Program will be included with the Operating License application.

13.7.1 Construction Program

The Construction Fitness for Duty Program is the responsibility of the EPCM. The EPCM will be contracted after the Construction Permit is transferred. The Fitness for Duty Construction Program will be provided to the NRC prior to transitioning out of deferred plant status.

The Construction Fitness for Duty Program provides reasonable assurance that:

1. Individuals are trustworthy and reliable as demonstrated by the avoidance of substance abuse

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2. Individuals are not under the influence of any substance, legal or illegal, or mentally or physically impaired from any cause, which in any way adversely affects their ability to safely and competently perform their duties
3. Measures are established and implemented for the early detection of individuals who are not fit to perform their duties
4. The construction site is free from the presence and effects of illegal drugs and alcohol
5. The workplaces are free from the presence and effects of illegal drugs and alcohol

The Construction Fitness for Duty Program will meet the requirements of

- 10CFR26.401 – How the requirements and standards for the establishment, implementation, and maintenance of FFD programs will be implemented
- 10CFR26.403 – The requirements that will establish and implement a clear, concise, and written FFD policy statement and confirmation that this policy is provided to individuals who are subject to the FFD program, including how the elements of the FFD program described in 10CFR26.403 will be developed, implemented, and maintained in written procedures
- 10CFR26.405 – The requirements for the implementation of the drug and alcohol testing program
- 10CFR26.406 – Approach for implementing a fitness monitoring program to deter substance abuse and detect indications of possible use, sale, or possession of illegal drugs, use or possession of alcohol while constructing safety- or security-related SSCs, or impairment from any cause that if left unattended may result in a risk to public health and safety or the common defense and security.
- 10CFR26.407 – How the individuals specified in 10CFR26.4(f) will be constructing or directing the construction of safety- or security related SSCs, and how to ensure that these individuals are subject to behavioral observation
- 10CFR26.409 – Sanctions for FFD policy violations that, at a minimum, will prohibit the individuals specified in 10CFR26.4(f) from being assigned to construct or direct the construction of safety- or security-related SSCs unless or until the licensee or other entity determines that the individual's condition or behavior does not pose a potential risk to public health and safety or the common defense and security
- 10CFR26.411 – Approach to establish, implement, and maintain a system of files and procedures to protect personal information
- 10CFR26.413 – Approach to establish, implement, and maintain procedures for the review of a determination that an individual in 10CFR26.4(f) has violated the FFD policy, including requirements for an objective and impartial review of the facts related to the determination that the individual has violated the FFD policy
- 10CFR26.415 – How audits will be performed to assure the continuing effectiveness of the FFD program, including FFD program elements that would be provided by contractor/vendors (C/Vs), and the FFD programs of C/Vs that will be by ND

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- 10CFR26.417 – Ensuring that records pertaining to the administration of the program are maintained so that they would be available for NRC inspection purposes and for any legal proceedings resulting from the administration of the program, that ND will report to the NRC any intentional act that casts doubt on the integrity of the FFD program and any programmatic failure, degradation, or discovered vulnerability of the FFD program that may permit undetected drug or alcohol use or abuse by individuals who are subject to 10CFR26, Subpart K, and that ND will submit the annual performance report and event reports, as required to the NRC Operations Center
- 10CFR26.419 – Requirements to develop, implement, and maintain procedures for evaluating whether to assign individuals to construct or direct the construction of safety- and security-related SSCs, including requirements to provide reasonable assurance that the individuals would be fit to safely and competently perform their duties, and would be trustworthy and reliable, as demonstrated by the avoidance of substance abuse

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ATTACHMENT 4
NUCLEAR DEVELOPMENT
NUCLEAR QUALITY ASSURANCE PLAN
REVISION 1

ENCLOSURE 1

Summary of Changes to the Nuclear Development (ND) Nuclear Quality Assurance Plan (NQAP), Revision 1

Change No.	Description of Change	Reason for Change	Basis for Conclusion that the Change is Not a Reduction in Commitment
1	Modified Section 3.3.3 to add more specific guidance related to the Assessment of Effectiveness including the frequency for performance.	To address comments provided by the NRC during its review of the NQAP.	Based on guidance provided within 10CFR50.54.a, adding more specific guidance to the NQAP is not a reduction in commitment that would require prior NRC approval.
2	Modified Sections 4.1.10, 4.1.11 and Appendix G to describe the EPC SNC-L and the NSSS supplier Framatome. The EPC and NSSS supplier have been noted on the organization chart provided within Appendix I.	To address comments provided by the NRC during its review of the NQAP.	Based on guidance provided within 10CFR50.54.a, adding details to the organizational description, including describing the major contractors to the NQAP is not a reduction in commitment that would require prior NRC approval.
3	Modified Section 7.2.4 to provide additional clarification regarding interface controls with SNC-L and Framatome.	To address comments provided by the NRC during its review of the NQAP.	Based on guidance provided within 10CFR50.54.a, adding details to the description of interface control related to the major contractors is not a reduction in commitment that would require prior NRC approval.
4	Modified Section 7.2.6.C to provide an additional guidance regarding design verification.	To address comments provided by the NRC during its review of the NQAP.	Based on guidance provided within 10CFR50.54.a, adding details to the requirements for design verification is not a reduction in commitment that would require prior NRC approval.
5	Modified Section 7.2.7 to provide an additional guidance regarding requirements associated with design changes.	To address comments provided by the NRC during its review of the NQAP.	Based on guidance provided within 10CFR50.54.a, adding details to the requirements for design changes is not a reduction in commitment that would require prior NRC approval.

ENCLOSURE 1

Change No.	Description of Change	Reason for Change	Basis for Conclusion that the Change is Not a Reduction in Commitment
6	Modified Appendix B to add additional commitments, alternatives and supplemental information.	To address comments provided by the NRC during its review of the NQAP.	Based on guidance provided within 10CFR50.54.a, adding additional commitments and supplemental information is not a reduction in commitment that requires prior NRC approval. Providing alternatives to the guidance provided within the SRP Section 17.5, Paragraph II.V is not a reduction in commitments to the NQAP but requires prior NRC approval since it is an alternative to the use of ASME NQA-1 standards.
7	Editorial and administrative changes throughout the document.	To correct and clarify information.	Based on 10CFR50.54.a editorial and administrative changes are not a reduction in commitment that would require prior NRC approval.

ENCLOSURE 2

ND Nuclear Quality
Assurance Plan ND-NQA-
PLN89-A, Revision 1

ND Quality Assurance Program	Nuclear Quality Assurance Plan (NQAP) (Quality Assurance Program Description)	ND-NQA-PLN89-A Rev. 1 Page 1 of 131
		Quality Related ☒ Yes ☐ No
		Effective Date 05-10-2020
Approved by:	Joseph Bourassa /  Quality Assurance Manager	6/11/2020 Date

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REVISION LOG

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0	Refer to Appendix A	All	Initial Issue
1	Refer to Cover Page	A	Document updated to Revision 1 throughout

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CNO Nuclear Quality Assurance Policy Statement

It is the policy of ND that activities affecting quality be accomplished in accordance with the ND Nuclear Quality Assurance Plan (NQAP) and ND procedures to ensure safe and reliable nuclear operations. As chief nuclear officer, I am responsible for ensuring that nuclear safety is the overriding priority, and that ND's safety and quality-related activities are carried out in accordance with applicable regulatory and ND nuclear procedural requirements. QA personnel have a direct reporting relationship to me and act as my representatives to strengthen nuclear safety and compel improved performance through audits, assessments, and inspections.

The QA organization is responsible for verifying implementation of quality-related activities at corporate and nuclear plant sites. QA personnel have the authority to initiate stop work, if required, to restrict further processing, delivery, or installation of a non-conforming item or unsatisfactory condition until completion of corrective action or satisfactory dispositioning. QA personnel are sufficiently independent from considerations of cost or scheduling to ensure objectivity in performing QA activities. QA personnel have direct access to appropriate levels of management. They also have independence and organizational freedom to be able to effectively assure conformance to QA program requirements.

Line management is responsible for compliance with the NQAP and ND procedures. Line management ensures quality is emphasized in planning, implementing, verifying, and documenting work. Line management is also responsible for pursuing Continuous Improvement through self-assessment practices and prudent application of the Corrective Action Program which may require a level of analysis beyond the minimum required by procedures. Insights from Independent Oversight are expected to be used by line management to improve Nuclear Safety and in the pursuit of Continuous Improvement. Line management is expected to support ND and the industry QA program audits and assessments with subject matter experts and to provide support of the QA rotational development program.

ND Nuclear professionals are responsible for complying with ND procedures as written. Nuclear professionals are expected to value the insights and perspectives of independent oversight and provide timely and effective responses to identified issues. Differing professional opinions are to be encouraged, discussed, and resolved in a timely manner. ND Nuclear professionals shall ensure a healthy nuclear safety culture by emphasizing safety over competing goals to ensure protection of people and the environment.

William McCollum /



June 11, 2020

Chief Nuclear Officer (CNO) and Executive Vice President,
Nuclear Power Group, ND

Date

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1.0 PURPOSE

This document defines and describes the nuclear quality assurance (QA) requirements for Nuclear Development (ND) and establishes responsibilities for their implementation. The principal objective of the Nuclear Quality Assurance Plan (NQAP) is to provide confidence that activities affecting quality during design, construction, early site permits, operation, and maintenance are accomplished in a manner to achieve compliance with pre-established quality objectives and acceptance criteria.

2.0 APPLICABILITY

The NQAP applies to: (1) ND Nuclear personnel and organizations performing activities that could affect quality-related structures, systems, and components at ND's Bellefonte 1 & 2 nuclear plants and (2) contractor activities that could affect quality-related structures, systems, and components, unless ND has approved alternate administrative controls for those activities.

3.0 GENERAL

It is the policy of the Nuclear Development (ND) that activities which affect quality be accomplished in a planned and systematic manner to achieve compliance with pre-established quality objectives and acceptance criteria. Accordingly, ND has established and will maintain a quality assurance program.

The QA program is founded on the principle that the line organization has the primary responsibility for quality and safety. Quality assurance objectives are not to be subordinated to achieving cost or schedule objectives. Line management will be held accountable for compliance with the quality assurance program and quality requirements. Self-assessment practices are used to ensure the desired levels of quality and safety are achieved and maintained.

Management policies and requirements for the ND Quality Assurance Program are established by the Chief Nuclear Officer (CNO) and Executive Vice President. These management policies and requirements provide the controls that must be applied to the activities performed by and for the agency to ensure implementation of ND commitments. Conflicts involving interpretation of quality assurance requirements of ND's NQAP are resolved by the Chief Nuclear Officer (CNO) and Executive Vice President.

Activities may be performed by a contractor using their quality assurance program provided that the contractor's quality assurance program is approved by ND and appropriate interfaces are established. Where ND has delegated responsibility for implementation of parts of the NQAP to contractors, ND line management retains responsibility for adequacy of contractor implementation of quality requirements.

This NQAP is formatted in such a manner as to provide users with a functionally usable document from which Nuclear Procedure System (NPS) documents are developed to implement the requirements stated herein.

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The source requirement documents for QA activities are listed in Appendix B. Not only are the source requirement documents listed (e.g., ANSI Standards and Regulatory Guides) but they also specify the particular sections of these source documents that must be addressed (e.g., ANSI N18.7, Section 5.2.12). Providing specific sections of the source requirement documents facilitates use by individuals responsible for the development of applicable procedures and instructions.

However, it must be stressed that the entire set of source requirement documents referenced in each section must be reviewed and understood to capture the program requirements of each source requirement document in QA Program procedures and instructions.

The following subsections identify the management and regulatory requirements applicable to the NQAP. An overview of the program and a description of the functions of the various organizations performing activities within the scope of the program are provided.

3.1 General Management Requirements

The management policies and requirements for the QA Program are established by the Chief Nuclear Officer (CNO) and Executive Vice President. These management policies and requirements provide the administrative controls that shall be applied to activities performed by and for ND to ensure activities are performed in a manner consistent with QA objectives and to provide adequate record of accomplishment of commitments.

3.2 General Regulatory Requirements

The NQAP shall address the conditions of licenses and permits and encompass the applicable regulatory requirements contained in Appendix B of this program description.

3.3 NQAP Overview

The quality assurance program includes the CNO Nuclear Quality Assurance Policy Statement, this NQAP, the ASME Section III Quality Assurance Manual (ASME III QAM) (when active), and other quality-related NPS documents. The NQAP provides direction and implements requirements derived from regulatory requirements, national codes and standards, and other ND commitments. General regulatory guidance and national standards that ND is obligated to implement in the NQAP are listed in Appendix B, "Regulatory Guide Conformance Status."

3.3.1 Implementation

- A. The requirements established by this program description and the ASME III QAM (when active) are implemented by ND Nuclear documents sponsored by various organizations. To ensure the NQAP is fully integrated and implemented, procedures and instructions address additional implementing level details contained in requirement documents on which the NQAP is based.

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- B. The terms "procedure" and/or "instruction," when used within this program description, also includes written standards and documents of a similar nature.

3.3.2 Authority and Organizational Freedom of Those Performing QA Verification

Personnel with responsibility for performing QA verification functions shall have sufficient authority and organizational freedom to:

- C. Identify quality problems.
- D. Initiate, recommend, and provide corrective actions through a comprehensive corrective action program.
- E. Verify the implementation of corrective actions.
- F. Initiate stop work, if required, to restrict further processing, delivery, or installation of a non-conforming item or unsatisfactory condition until completion of corrective action or satisfactory dispositioning.

The individuals and organizations responsible for performing QA verifications and assessments of the NQAP shall be formally designated and sufficiently independent from considerations of cost or scheduling to ensure objectivity in performing assessments. They shall be afforded direct access to appropriate management levels.

QA verification of conformance to established quality assurance program requirements is accomplished by those who have neither the direct responsibility nor the authority for performing the quality-related work activities being verified.

3.3.3 Assessment of Effectiveness

The QA General Manager shall assess the overall effectiveness of the NQAP for ND's Corporate and Bellefonte (BLN) site on an annual basis. The results shall be reported to the Chief Nuclear Officer (CNO) and Executive Vice President, and affected vice presidents. These assessments include the ND organization and contractors. The performance of the Engineering Procurement Contractor (EPC) SNC-Lavalin (SNC-L) and the nuclear steam supply system (NSSS) Framatome are evaluated at a frequency of once per year. QA also verifies the effectiveness of NSSS suppliers through annual audits and reviews of their performance. The frequency may be extended based on an evaluation of individual elements.

The QA General Manager shall arrange for a biennial assessment of the ND Nuclear Quality Assurance program by an organization external to the QA organization. The QA General Manager shall arrange for the assessment of the performance of the BLN QA program by an independent organization at a frequency that meets regulatory requirements.

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3.3.4 Achievement of Quality in Performance

Management personnel shall ensure, through organizational structure, self-evaluation, and assigned functional responsibilities, that the attainment of program objectives is accomplished by those who have been assigned the work. Achievement of quality in the performance of quality-related activities is the responsibility of each individual involved in ND's nuclear power program.

3.3.5 Interpretation of Quality Assurance Program Requirements

The QA General Manager shall provide interpretation of NQAP requirements for ND organizations. Differences involving interpretation or implementation of the NQAP shall be immediately identified and reported to QA for resolution. If satisfactory resolution is not readily attainable, then the difference shall be escalated to the appropriate executive nuclear manager and ultimately the CNO and Executive Vice President, if necessary.

3.3.6 Units with Construction Permits

Refer to Appendix G for BLN 1 & 2 construction permits.

4.0 ORGANIZATION

The organizational structure, functional responsibilities, levels of authority, and lines of internal and external communication for the management, direction, and execution of the NQAP shall be clearly established for all organizational levels. This NQAP describes the general organizational structure and primary responsibilities of the ND Nuclear organization and responsibilities of non-nuclear organizations involved in the NQAP. The Human Resources organization shall prepare organization charts that show overall ND Nuclear organizational structure.

The overall organizational structure is shown in Appendix I. The QA organizations are responsible for establishing upper-tier QA Program requirements and implementation of Quality Assurance functions at corporate and nuclear plant sites. The size of the QA organizations, including the size of respective Site QA staffs, is determined by assessing the resources required to adequately perform functions and workloads assigned to each QA organizational unit.

Bellefonte Nuclear Power Plant's Final Safety Analysis Report (FSAR) references the ND Organization Topical Report or provides a description of other key organizational positions, including the CNO and Executive Vice President's organization and plant operating staffs, responsible for administering and implementing the NQAP.

4.1 Functions of Organizations

ND management, while carrying out their functions, are required to fully comply with all aspects of the NQAP applicable to their organization and ensure proper implementation. This subsection identifies (1) functional responsibilities that are generally implemented through procedures and instructions by all ND organizations

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involved in the program and (2) specific NQAP responsibilities for sponsors of upper-tier corporate program documents.

4.1.1 Executive Nuclear Management

- A. The CNO and Executive Vice President has the overall responsibility for the establishment, implementation, and administration of ND's NQAP and the evaluation of its effectiveness. This responsibility is administered through management staff.
- B. The Senior Vice President, Nuclear Operations reports directly to the CNO and Executive Vice President and has responsibility for organizations that coordinate and integrate efforts and initiatives into day-to-day ND Nuclear business at BLN 1&2. The BLN Site Vice President and the Nuclear Training General Manager report to this position.
- C. The Engineering and Projects Vice President reports directly to the CNO and Executive Vice President and has responsibility for support organizations that coordinate and integrate efforts and initiatives into day-to-day ND Nuclear business. Organizations reporting to this position include Corporate Engineering, Plant Operation Reliability Manager, Inspections Services Manager, Computer Engineering Manager, Project Management, Fuel Supply and Disposal Manager and Nuclear Fuels.
- D. The Vice President, Nuclear Support reports to the CNO and Executive Vice President. The Vice President, Nuclear Support reports to the CNO and Executive Vice President. In addition to the responsibilities described in subsection 4.1.2 the Vice President, Nuclear Support is responsible for the management positions responsible for:
 1. providing corporate oversight and governance of the planning and execution of plant nuclear outages and outage scheduling,
 2. nuclear security, which includes protection of safeguard information, reporting of safeguard events, and development and maintenance of the Site Physical Security/Contingency Plans.
 3. technical programs including reliability, safety, emergency preparedness, performance improvement, document control and quality assurance records management
 4. providing corporate governance of functional areas (maintenance, operations, radiation protection, chemistry, work control, and procedures) for BLN nuclear plants,
 5. developing programs to control procedures and instructions,
 6. maintaining the Nuclear Operating Experience Review Program,
 7. overseeing the training and performance improvement functions,

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including development of the ND Nuclear corrective action program, and establishing and maintaining trend analysis procedures for adverse conditions and quality indicators.

- E. The Vice President, Procurement reports to the CNO and Executive Vice President.

In addition to the responsibilities described in subsection 4.1.2, the management position responsible for procurement, is responsible for ensuring that the QA requirements established by this program description are either included or referenced (as appropriate) in related Procurement sponsored program areas identified in the body of this Program.

4.1.2 ND Organizations

All ND organizations that work directly under the ND NQAP have the following general functions:

- A. Invoke appropriate NQAP requirements on other organizations that provide services for quality-related programs and features.
- B. Regularly review the status and adequacy of those parts of the NQAP, which they are executing.
- C. Develop, control, and maintain procedures and instructions as appropriate to implement quality-related activities and processes.
- D. Ensure appropriate controls for documents and records generated within the organization or received from external sources.
- E. Ensure appropriate controls are developed and implemented to maintain housekeeping and cleanliness requirements of facilities, systems, and components during the performance of work activities.
- F. Identify and resolve adverse conditions and perform related corrective action activities including assessing trends for internally and externally identified problems.
- G. Make personnel and resources available during audit performance and ensure that audit responses and corrective actions are completed within established timeframes.
- H. Develop certification programs as appropriate and ensure that trained, qualified, and, where required, certified employees are used in the performance of quality-related activities.
- I. Initiate stop work within their area of responsibilities when warranted.

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- J. Ensure personnel performing quality-related activities receive indoctrination and training as necessary to ensure that adequate proficiency is achieved and maintained.
- K. Ensure procedures adequately address interfaces of affected organizations.
- L. Ensure during preparation and review of procedures and procurement documents that appropriate technical and QA requirements are included.

4.1.3 Nuclear Operations (NO)

- A. In addition to the responsibilities described in subsection 4.1.2, the Senior Vice President, Nuclear Operations is responsible for ensuring that the QA requirements established by this program description are either included or referenced (as appropriate) in related NO-sponsored program areas identified in the body of this program description.
- B. The BLN Site Vice President is also responsible for:
 - 1. The site compliance with the operating unit license, governmental regulations, and ASME Code requirements.
 - 2. Supplementing programs at licensed units ensuring that the QA requirements of this program description are appropriately established in licensed unit's site procedures.
 - 3. The plant technical review process and PORC.
 - 4. Fire Protection Program.
- C. Site Organizations
 - 1. The following site management positions report to the BLN Site Vice President:
 - a. The management position responsible for plant operations.
 - b. The management position responsible for site engineering.
 - c. The management position responsible for Maintenance.
 - d. The management position responsible for Chemistry.
 - e. The management position responsible for Radiation Protection.
 - f. The management position responsible for training.
 - g. The management position(s) responsible for project management.

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- h. The management positions responsible for business operations and planning are matrix to this position.

4.1.4 Operations Support

See 4.1.1 D.

4.1.5 Corporate Engineering

- A. The management position responsible for corporate engineering reports to the Engineering and Projects Vice President. For issues involving nuclear safety or quality, the management position responsible for corporate engineering has the requisite authority and organizational freedom to report directly to the CNO and Executive Vice President.
- B. This management position is responsible for ensuring that the QA requirements established in this program description are either included or referenced (as appropriate) in related engineering-sponsored program areas identified in the body of this program description.
- C. In addition to the responsibilities described in subsection 4.1.2, the management position is responsible for:
 - 1. Development of programs to control documents and development of a QA records program.
 - 2. Support of the computer process systems. Computer process systems support coordinates the implementation of the software quality assurance program.
 - 3. Nuclear Cyber Security, which includes the development and maintenance of the Site Cyber Security Plans.
- D. Developing and maintaining the ASME III QAM for Bellefonte are the responsibilities of the manager responsible for BLN Project.
- E. The engineering organizations are responsible for independent technical reviews. These reviews primarily include:
 - 1. System performance monitoring as required by the Maintenance Rule, 10 CFR 50.65.
 - 2. Technical operability evaluations.
 - 3. Review of technical specification changes that affect the design basis.
 - 4. Review of Final Safety Analysis Report changes that affect the design basis.

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5. Self-assessments to ensure maintenance of design basis and adequacy of technical programs.

4.1.6 Procurement

See 4.1.1 E.

4.1.7 Licensing and Performance Improvement

- A. The management position responsible for Licensing and Performance Improvement reports to the CNO and Executive Vice President.
- B. In addition to the responsibilities described in subsection 4.1.2, the management position for Licensing and Performance Improvement is responsible for:
 1. Maintaining an interface between ND and NRC for licensing activities.
 2. Directing and managing Nuclear Safety Review Board (NSRB) activities.
- C. Nuclear Safety Review Board
 1. The NSRB is an offsite committee, which provides senior level oversight of ND's nuclear program with respect to nuclear safety. The NSRB reviews include the activities of the line organizations, as well as other review, audit, and verification organizations. The NSRB also provides senior level management with an assessment of facility operations and recommendations to improve nuclear safety and plant reliability.
 2. The Chairperson, NSRB, has an independent reporting relationship to the CNO and Executive Vice President, and other ND Nuclear management on nuclear safety matters. The Chairperson, NSRB, is responsible for advising the CNO and Executive Vice President on the adequacy and implementation of ND's nuclear safety policies and programs and for evaluating these policies and programs for compliance with regulatory requirements governing nuclear safety.
 3. The Chairperson NSRB is responsible for complying with the requirements of ANSI N18.7-1976/ANS 3.2. The management position responsible for nuclear licensing is responsible for ensuring that the QA requirements established by the QA program related to NSRB functions are either included or referenced (as appropriate) in related procedures or instructions.
 4. The NSRB shall function to provide for independent review as specified in Section 4.1.7C.5.b and oversight of operational phase audits and technical reviews as specified in Sections 12.2E and 4.1.5E.
 5. The Chairperson, members, and alternate members of the NSRB shall be appointed in writing by the CNO and Executive Vice President. The CNO

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and Executive Vice President may delegate the signing of the appointment letter to a subordinate.

Each member shall have an academic degree in engineering or a physical science field, or the equivalent; and shall have a minimum of five years technical experience in one or more of the areas specified in ANSI N18.7-1976/ANS 3.2.

The NSRB shall be composed of at least five members, including the Chairperson. Members of the NSRB may be from ND Nuclear or other organizations external to ND. No more than two alternates shall participate as voting members in NSRB activities at any one time.

a. Functions

The NSRB shall, as a minimum, incorporate the following functions:

- (1) Advise the CNO and Executive Vice President on all matters related to nuclear safety;
- (2) Recommend to the CNO and Executive Vice President any corrective action to improve nuclear safety and plant operations; and
- (3) Notify the CNO and Executive Vice President of any safety significant disagreement between the NSRB and the organization or function being reviewed.

b. NSRB Review Responsibilities

The NSRB shall be responsible for the review of:

- (1) The 10 CFR 50.59 Program. 10 CFR 50.59 evaluations will be screened. Review of representative 10 CFR 50.59 evaluations will be performed, selected based on safety significance, for 1) changes to procedures, equipment or systems and 2) tests or experiments completed under the provision of 10 CFR 50.59, to verify that such actions did not require a license amendment;
- (2) Proposed changes to procedures, equipment, or systems that require a license amendment as defined in 10 CFR 50.59;
- (3) Proposed tests or experiments that require a license amendment as defined in 10 CFR 50.59;
- (4) Proposed changes to Technical Specifications or the Operating License relating to nuclear safety prior to implementation, except in those cases where the change is identical to a previously reviewed proposed change;

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- (5) Violations of codes, regulations, orders, license requirements, and internal procedures or instructions having nuclear safety significance;
- (6) Reportable events (10 CFR 50.73);
- (7) Plant staff performance;
- (8) Recognized indications of unanticipated deficiencies in any aspect of design or operation of structures, system, or components that could affect nuclear safety;
- (9) Significant accidental, unplanned, or uncontrolled radioactive releases, including corrective action to prevent recurrence;
- (10) Significant operating abnormalities or deviations from normal and expected performance of equipment that affect nuclear safety; and
- (11) Implementation of the corrective action program.

- c. Minutes of each NSRB meeting and reports of other reviews shall be forwarded to the CNO and Executive Vice President within 30 days following completion of the meeting or review.

4.1.8 Nuclear Oversight and Assessment

The management position responsible for Nuclear Oversight and Assessment reports to the CNO and Executive Vice President and manages the ND Nuclear Quality Assurance organization and the Bellefonte Completion Project Independent Oversight organization.

4.1.9 Quality Assurance (QA)

- A. The QA General Manager reports to the General Manager, Nuclear Oversight and Assessment. The QA General Manager has an independent reporting relationship to the CNO and Executive Vice President on quality issues.

The quality organization has direct access to appropriate levels of management and sufficient independence and organizational freedom to be able to effectively assure conformance to quality assurance program requirements.

The QA General Manager administers quality assurance responsibilities through the management positions responsible for corporate QA, site QA and quality services.

The QA General Manager is required to have a bachelor's degree in an engineering or related science, or equivalent related experience. The QA General Manager shall have at least 10 years of experience in a senior managerial capacity with five years' experience in nuclear quality assurance

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related activities. At least one year of experience shall be nuclear power plant experience in the implementation of the quality assurance program.

The QA General Manager has responsibility for the administration of ND's NQAP requirements for projects being implemented on the BLN units by other organizations. The QA General Manager has responsibility for NQAP implementation for BLN Construction Permit status under guidance of GL-87-15 and RG 1.2 and other organizations.

- B. The management position responsible for corporate QA reports directly to the QA General Manager and manages the development and maintenance of ND Nuclear quality assurance programs to ensure compliance with regulations, commitments, and policies, including those Quality Assurance programs that govern activities performed by site Quality Assurance organization personnel. The management position responsible for corporate QA also manages the training program for ND Nuclear QA personnel and the quality audit program.

The management position responsible for corporate QA is required to have four years of experience in the field of quality assurance, or equivalent number of years of nuclear plant experience in a supervisory position, preferably at an operating nuclear plant or a combination of the two. At least one year of this four years of experience shall be nuclear power plant experience in the implementation of the quality assurance program.

- C. The management position responsible for quality services reports directly to the QA General Manager. The management position responsible for quality services:
1. Manages ND's review and qualification of suppliers to ensure final acceptance of all "safety-related material" for all nuclear plants to comply with applicable specifications and requirements.
 2. Manages the vendor audit program.
 3. Develops and implements the nuclear Quality Control (QC) program which includes the QC inspection program, and the QC training program.
- D. The management positions responsible for site QA report directly to the QA General Manager and are responsible for the quality assurance functions and oversight of quality control performance at the site. The management positions responsible for site QA provide oversight of day-to-day plant activities important to safety (for example, the QA organization routinely attends and participates in daily plant work schedule and status meetings to assure they are kept abreast of day-to-day work assignments throughout the plant and that there is adequate QA coverage).

The management positions responsible for site QA are required to have a bachelor's degree in an engineering or scientific discipline, or equivalent related experience. They shall have at least nine years of experience in plant design, construction, power plant operation, or maintenance, including five years of

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experience in QA-related activities.

E. ND Nuclear Quality Assurance is responsible for:

1. Developing and administering the NQAP and the QA organization procedures required to ensure that ND activities provide the required degree of safety and reliability.
2. Providing oversight of ND activities by auditing, inspecting, assessing and observing the conduct of activities at corporate and nuclear plant sites to ensure that they provide the required high degree of safety and reliability and are carried out consistent with applicable laws, regulations, regulatory commitments, licenses, and other requirements. The depth and scope of oversight is dependent on the item's or subject's importance to safety and performance history.
3. Stopping work or further processing, delivery, or installation or taking other comparable actions when warranted to control and/or prevent the use of non-conforming materials or continuance of activities adverse to quality at Corporate and nuclear plant sites.
4. Establishing upper-tier QA requirements for QA training and for evaluating the implementation and effectiveness of that training.
5. Developing and implementing the vendor audit and services QA Program which includes auditing, source inspection and surveillance of supplier activities. Developing and maintaining the Acceptable Suppliers List (ASL) of approved vendors.
6. Conducting overview of procured engineering services (offsite) including the review of procurement documents for QA requirements utilizing graded approach criteria, in-depth technical and/or performance based auditing, performing pre- award surveys, and reviewing contractor QA programs.
7. Planning, conducting, and reporting the results of corporate and site audits and following-up identified adverse conditions to ensure appropriate corrective action has been taken.
8. Not Used
9. Developing, reviewing, and maintaining the NQAP.
10. Verifying through assessing or other means that QA requirements are contained in applicable Site QA program procedures, and quality-related activities comply with QA program requirements.
11. Developing and implementing the nuclear QC program which includes the QC inspection program.

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12. Reviewing the ASME III QAM - BLN 1 & 2 (when active).
13. Managing development, maintenance, and improvements of site/corporate quality methodologies to evaluate quality programs and technical programs based on observations and trending.
14. Analyzing technical and quality programs from many sources to develop recommendations for senior management action. This includes oversight and independent analysis of trending results. Results are provided to senior management. Advising senior management relative to alternative solutions to technical and quality problems to improve the effectiveness and efficiency of implementation techniques.
15. Advising and interfacing with senior site and corporate management on matters pertaining to the assessment program to aid in the identification and resolution of items that could result in enforcement actions, reduction in power generation, or endangering the health and safety of the general public.

4.1.10 Bellefonte Completion Project Independent Oversight

The management position responsible for Bellefonte Completion Project Independent Oversight reports to the General Manager, Nuclear Oversight and Assessment. This position is responsible for in BLN Project independent oversight of Operator Program Readiness, Construction, Project Controls, Engineering, and Procurement. The management position responsible for Procurement Oversight has an independent reporting relationship to the Vice President, Procurement. This organization is required to be independent of the organization performing the implementing functions.

4.1.11 Bellefonte Units 1 & 2

- A. See Appendix G for additional details of the Bellefonte Units 1 & 2 organization.
- B. Principle Contractors in the Bellefonte Completion Project – The majority of the work involved with the project is being delegated to the primary contractor as the EPC SNC-L. The nuclear steam supply system (NSSS) supplier will be Framatome. These key participants are required to have a Quality Assurance Program that has been reviewed and approved by ND and will be maintained on the Bellefonte list of approved suppliers. SNC-L and Framatome are required to develop and maintain a Bellefonte Completion Project specific Quality Assurance Program that complies with the requirements of the NQAP and satisfies the requirements of 10CFR50 Appendix B. The Bellefonte Completion Project specific Quality Assurance Program is required to be developed in accordance with the SNC-L and Framatome Quality Assurance Programs. These Project Quality Assurance Programs are to be reviewed and approved by ND management prior to performing Bellefonte Completion Project construction activities. The major portions of the NQAP that are delegated to SNC-L and Framatome include engineering, procurement and construction along with supporting NQAP elements.

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4.1.12 Inspection, Testing, Monitoring and Analysis

The management position responsible for inspection, testing, monitoring and analysis reports to the Vice President Engineering and Projects. This is responsible for the Inspection Services Organization (ISO). ISO assists the responsible organization at the sites in the performance of ASME, Section XI, NDE. This organization has a quality responsibility to the management position responsible for nuclear engineering.

4.1.13 Human Resources (Nuclear)

The management position responsible for human resources (nuclear) has the requisite authority and organizational freedom to report directly to the CNO and Executive Vice President for issues related to nuclear personnel. In addition, the management position responsible for human resources (nuclear) maintains a position qualification documentation and validation program.

5.0 NUCLEAR QA PROGRAM

The QA General Manager develops this program description to establish the requirements of the NQAP that encompass the general management and general regulatory requirements in sections 3.1 and 3.2 of this program description. The program requirements apply to design, construction, testing, operation, maintenance, repair, replacement, and modification of BLN 1 & 2 nuclear facilities.

ND Nuclear organizations performing activities within the scope of the NQAP shall implement the program through written procedures and instructions.

5.1 Program Scope

- A. The requirements of the NQAP shall apply to activities associated with structures, systems, and components which are safety-related and shall take into account special equipment, environmental conditions, skills, or processes.
- B. The requirements shall also apply to ND identified quality-related programs and features which are important to the continued reliable operation of ND's nuclear facilities. Organizations responsible for these programs and features shall determine the extent to which these requirements apply and develop and document applicable NQAP elements and the levels of verification required.
 1. Technical requirements related to engineering design are specified by the manager responsible for nuclear engineering. QA shall review or assess these programs and features. The program procedures shall be included in NPS documents.
 2. Programs and features for which the NQAP applies are listed below. Appendix C, "Guidelines for Determination of ND-Identified Quality-Related Classifications," was used to develop the list.
 - a. Radiological Control.

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- b. Emergency Preparedness.
- c. Nuclear Plant Security.
- d. Radioactive Material Shipment.
- e. Special Nuclear Material Management.
- f. Fire Protection.
- g. Radwaste Management Systems, Structures, and Components.
- h. Seismic Category I (L) Items.
- i. Non-safety-related Anticipated Transient Without Scram (ATWS) Equipment.
- j. Chemistry.
- k. Safety Parameter Display System
- l. Nuclear Cyber Security

When using services outside ND Nuclear, responsible organizations for the above programs and features shall specify the extent of applicable QA requirements.

- C. To facilitate proper application and implementation of the NQAP, the manager responsible for a nuclear site (delegated to the manager responsible for engineering at the nuclear site) shall develop a Q-List for BLN 1 and 2. The Q-List shall document and classify structures, systems, and components consistent with their importance to safety.
- D. Selected requirements of the NQAP shall apply to safety-related activities associated with the license application for new nuclear generation.

5.2 Graded Approach

The NQAP shall provide for the graded application and verification of QA requirements to quality-related items and activities.

- A. The following criteria are to be considered when applying NQAP requirements:
 - 1. The impact on safety of an item malfunction or failure.
 - 2. The specification, design, fabrication complexity, or uniqueness of the item, and the environment under which the item must function.
 - 3. The need for special controls and assessments of equipment, processes, and operational activities.

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4. The degree to which functional compliance can be demonstrated by an inspection or test.
 5. The quality history of the item or activity and its degree of standardization.
 6. The intended life span during which the item must perform a quality-related function.
 7. Requirements of applicable codes and standards.
- B. The following factors are to be considered in the degree of QA verification required to ensure implementation of NQAP requirements:
1. New activities not previously performed or implemented.
 2. Trend or previous histories of quality problems.
 3. Activities critical to safety or having the most potential to impact safety.
 4. Revisions of the procedures which have recently been implemented.
 5. Activities that have not been assessed in the recent past or are performed infrequently.
 6. Activities that are performed by new personnel, contractors, or technicians.
 7. The requirements of applicable codes and standards that are mandated for the item or activity.

5.3 Program Elements

This section identifies or references the NQAP elements delineated through the ASME III QAM for BLN 1 & 2 (when active) during construction completion and implemented through ND Nuclear procedures and instructions. The documents identified in Appendix B contain QA requirements applicable to the NQAP elements. The NQAP shall encompass the following elements:

- A. Establishment and use of a comprehensive list of safety-related structures, systems, and components for BLN 1 and 2 identifying the critical plant features that will receive the highest level of QA program application.
- B. Use of a graded approach in the application and verification of NQAP requirements. Quality-related items and activities shall be subjected to a level of QA controls and verification commensurate with their importance to nuclear safety.
- C. Assignment of responsibilities to appropriate organizations and positions for implementation of the NQAP.

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- D. Preparation of NPS documents which provide specific guidance in planning, performing, assessing, and controlling activities affecting quality to ensure that quality-related activities are performed in accordance with applicable national codes and standards, regulatory requirements, licensing commitments, and management requirements.
- E. Verification of the adequacy of quality-related structures, systems, and components by appropriate inspections, tests, and assessments; and of quality-affecting activities by periodic reviews, audits, and assessments to ensure the adequacy and effectiveness of the NQAP and its implementation.
- F. Provisions for adequate indoctrination and training of personnel, and qualification or certification when required, prior to their performing activities which affect quality.
- G. Provisions for special controls, processes, test equipment, tools, and skills necessary to attain the required quality.
- H. Measures to control cleanness of facilities, material, and equipment; fire prevention; plant access; and equipment protection. Controls shall be applied to the extent necessary to ensure that only proper materials, equipment, processes, and procedures are utilized, and that the quality of items is not degraded through improper practices and techniques.
- I. Prompt identification, documentation, evaluation, and correction of adverse conditions.
- J. Generation and retention of adequate records to demonstrate compliance with NQAP requirements, applicable national codes and standards, and regulatory requirements.

5.4 Program Documents

The quality assurance program shall be documented by written procedures and instructions. The quality assurance program documents, required by this program description and the ASME III QAM (when active) are contained in the NPS. Requirements for preparation, review, concurrence, and approval of NQAP documents are contained in NPS documents.

- A. ASME III QAM for BLN 1 & 2 (when active) during Construction Completion

Associated with this program description is the ASME III QAM. The ASME III QAM is a self-contained manual that prescribes specific QA requirements for the control of items and activities subject to the ASME Code Section III, Division 1. The ASME III QAM satisfies the ASME Section III Code requirement to fully describe both the quality assurance program and the specific responsibilities applied to ND's activities as an "N" certificate holder. The ASME III QAM is filed with the Authorized Inspection Agency in accordance with the requirements of ASME Code, Section III. Changes to the ASME III QAM shall

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be coordinated with the Authorized Inspection Agency for review and acceptance prior to implementation.

B. Nuclear Quality Assurance Plan

This Nuclear Quality Assurance Plan (Quality Assurance Program Description) contains regulatory and management QA requirements and responsibilities that other NPS documents must address. This program description and implementing documents meet the requirements of 10 CFR 50, Appendix A; 10 CFR 50, Appendix B; applicable ASME Section XI and ASME OM Code requirements for a nuclear QA program. To ensure the nuclear program is fully integrated, additional implementing level details contained in requirements documents shall be included in procedures and instructions sponsored by implementing organizations.

C. Implementing Procedures

The NQAP establishes the quality assurance program requirements. The NQAP places responsibilities on identified sponsors to develop specific elements of the quality assurance programs addressing specific requirements of source requirement documents. Sponsors of NPS documents are required to identify the document as "quality related" if it contains quality assurance program requirements. Corporate NPS documents identified as quality related receive review and concurrence by QA personnel or others knowledgeable of QA requirements.

5.5 Program Changes

Changes to the NQAP shall be submitted to the NRC in compliance with 10 CFR 50.54 and 10 CFR 50.55. Changes to the NQAP will be distributed to senior managers and department heads for incorporation into their quality procedures.

6.0 CONTROL OF DOCUMENTS AND RECORDS

6.1 Procedures and Instructions

6.1.1 General

- A. The QA program requires that quality-related activities shall be prescribed by documented procedures and instructions appropriate to the circumstances. Activities shall be accomplished in accordance with these procedures and instructions.
- B. The requirements of this section are applicable to the preparation, review, and approval of procedures and instructions (for example, this program description, NPS documents, ASME III QAM, etc.). Requirements for the preparation, review, and approval of drawings are in Section 7.0 of this program description. Requirements for plant reviews are in Section 9.9 of this program description.

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6.1.2 Program Elements

A. Content

Procedures and instructions shall:

1. Describe quality-related activities in adequate detail for the intended user, and include quantitative or qualitative acceptance criteria sufficient for determining that the activities have been satisfactorily accomplished.
2. Describe significant interfaces between personnel and organizations that affect, or are affected by, quality-related activities.
3. Include or reference appropriate technical, QA, regulatory, and licensing requirements, including those in design output documents.

B. Review

Procedures and instructions shall:

1. Receive a documented review for adequacy by a qualified reviewer other than the preparer.
2. Receive the review and concurrence of affected organizations outside the issuing organization prior to approval, unless concurrence has been established in a higher-level document.
3. Receive a review to ensure proper incorporation of QA requirements. These reviews are by QA personnel or others knowledgeable of QA requirements.

C. Approval

Procedures and instructions shall be approved for release by the sponsoring organization prior to use.

D. Procedural Control

Procedures shall be issued for the identification and control of quality-related procedures, instructions, and their changes. The organizations responsible for preparing, reviewing, approving, and issuing procedures, instructions, and changes shall be specified.

E. Review of Operational Phase Procedures

Operational phase site procedures and instructions shall be reviewed to ensure that specific known changes in source documents or changes identified through usage are included as necessary and in a timely manner. The following mechanisms ensure that appropriate procedure reviews are conducted:

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1. Plant modification program
 2. Resolution of issues identified by QA, NRC, Licensing, and corrective action program
 3. Technical specification and FSAR update reviews (including the contractor's dry cask storage system Certificate of Compliance licensing basis documents).
 4. Source document program and process for administering Site procedures
 5. Testing program
- F. Change Control
6. Changes to procedures and instructions shall be reviewed and approved prior to their implementation by the same organizations that performed the original review and approval, or by another organization assigned by appropriate management or designated in a controlling procedure or instruction.
 7. Changes shall be reviewed by organizations having access to pertinent background information upon which to base their approval and having adequate understanding of the requirements and intent of the original document.
 8. Minor changes, such as inconsequential editorial corrections that do not affect the outcome, results, functions, processes, responsibilities, and requirements of the performance of procedures or instructions, do not require the same review as the original, but shall be reviewed and approved as defined in controlling documents.

6.1.3 Responsibilities

- A. The management position responsible for operations support is responsible for the development of programs to control procedures and instructions. The program elements in Section 6.1.2 and the related source requirements contained within the documents listed in Section 6.1.4 shall be addressed.
- B. The QA General Manager shall:
 1. Perform reviews or assessments of ND Nuclear NPS documents that implement the NQAP and,
 2. Verify through assessing or other means that reviews are conducted by personnel knowledgeable in QA requirements.
- C. Deleted.
- D. ND organizations that work directly under the ND NQAP are responsible for:

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3. Implementing the requirements of the QA program through written procedures and instructions.
4. Ensuring reviews of NPS documents that implement the NQAP are conducted by personnel knowledgeable of QA requirements.

6.1.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which must be addressed in the development of programs for procedures and instructions.

6.2 Document Control

6.2.1 General

- A. The QA program requires that for activities affecting quality, measures shall be established to ensure that documents prescribing the activity, including changes, are approved for release by authorized personnel, reviewed for adequacy, and made available to personnel performing the prescribed activity prior to commencing work.
- B. The requirements of this section are applicable to the distribution and control of documents after they have been approved for use.

6.2.2 Program Elements

- A. Identification and Distribution
 1. The types of documents to be controlled shall be identified. Appendix H lists types of controlled documents and manuals.
 2. Master document indexes shall be established and maintained for identifying all controlled documents and their revision status.
 3. The distribution of documents shall be controlled and maintained to assist in preventing the use of obsolete or superseded documents.
- B. Controlled Use
 1. Quality related activities shall be performed in accordance with approved and controlled instructions, procedures, and drawings.
 2. Organizations shall ensure through procedures or instructions that those participating in an activity are made aware of and use proper and current documents.
- C. Control of Equipment Technical Information

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Administrative controls shall provide for control and distribution of equipment technical information (ETI) supplied to ND.

6.2.3 Responsibilities

The management position responsible for nuclear engineering is responsible for the development of programs to control documents. The program elements in Section 6.2.2 of this section and the related source requirements contained within the documents listed in Section 6.2.4 shall be addressed.

6.2.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which must be addressed in the development of programs and procedures for the control of documents.

6.3 QA Records

6.3.1 General

- A. The QA program established for the generation, collection, storage, maintenance, and retrieval of QA records requires that records be correctly identified, reviewed, stamped, or otherwise authenticated, retained, and retrievable without undue delay.
- B. The storage of quality assurance records in electronic media shall be consistent with the intent of Regulatory Issue Summary (RIS) 2000-18, dated October 23, 2000 and associated Nuclear Information and Records Management Association (NIRMA) Technical Guides (TGs): NIRMA TG 11-1998, NIRMA TG 15-1998, NIRMA TG 16-1998, and NIRMA TG 21-1998. The guidance of RIS 2000-18 should also be applied to the records keeping and maintenance requirements in other parts of the regulations that accept the storage of records in the form of electronic media.
- C. The use of optical disks for electronic records storage and retrieval systems shall comply with the NRC guidance in Generic Letter 88-18.

6.3.2 Program Elements

- A. Sufficient records and documentation shall be prepared and maintained to provide evidence of the quality of items or activities affecting quality. QA records shall be legible, complete, and identifiable to the item involved.
- B. Design specifications, procurement documents, procedures, and instructions shall specify the QA records to be generated, supplied, and maintained by or for ND. Retention times shall be designated. Indexes shall be established to designate those types of QA records to be maintained.

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- C. Measures shall be established to maintain control of in process QA documents prior to their completion.
- D. Requirements and responsibilities shall be established consistent with applicable codes, standards, and procurement documents for record transmittal, receipt, retention, updating and supplementing of information, and maintenance of the records subsequent to the completion of work and record retrieval.
- E. Permanent and temporary QA record storage facilities shall be established to store QA records to prevent infestation, deterioration, or destruction.
- F. Measures shall be taken to preclude the entry of unauthorized personnel into QA record storage areas to ensure the integrity of the stored QA records.
- G. Records shall be maintained in a manner that will allow access by the Authorized Inspection Agency representative.

6.3.3 Responsibilities

The management position responsible for nuclear engineering is responsible for the development of a QA records program. The program elements in Section 6.3.2 and the related source requirements contained within the documents listed in Section 6.3.4 shall be addressed.

6.3.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which must be addressed in the development of programs and procedures for the control of records.

7.0 DESIGN CONTROL

7.1 General

The QA program requires that measures shall be established and documented to ensure that applicable specified design requirements, such as design bases, regulatory requirements, and codes and standards, are correctly translated into specifications, drawings, procedures, or instructions.

7.2 Program Elements

7.2.1 Basic

- A. Specific items, services, and activities subject to design control shall be identified (e.g., reactor physics analysis, stress and thermal analyses, computer code development and use, computer software, compatibility of materials, drawings, specifications, engineering procedures, and instructions).

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- B. Design activities shall be documented in sufficient detail to permit verifications and audits.
- C. Measures shall be established and implemented to ensure that design output documents appropriately identify engineering requirements that apply to plant activities, and to ensure that plant personnel are made aware of engineering requirements that could affect the performance and scope of their responsibilities before those engineering requirements are implemented.
- D. Measures shall be established and implemented to provide test requirements in design output documents for the following tests as appropriate:
 - 1. Design qualification.
 - 2. Product acceptance (proof).
 - 3. Pre-operational.
 - 4. Construction.
 - 5. Start-up.
 - 6. Surveillance.
 - 7. Functional.
 - 8. Post-maintenance.
 - 9. Post-modification.
- E. Measures shall be established and implemented to provide documented input to other organizations which may request input for their special tests.
- F. Acceptance criteria shall be defined for verifications, inspections, and tests in appropriate design output documents.
- G. Design output documents shall be utilized, as appropriate, for procurement activities.
- H. The Q-List identified in Section 5.1C of this program description shall be developed using appropriate regulations, regulatory guides, and national codes and standards (such as 10 CFR 50, Appendix R; 10CFR50.48(c) Fire Protection, National Fire Protection Association Standard, NFPA 805; Regulatory Guides 1.26 and 1.29; and ASME Boiler and Pressure Vessel Code).
- I. Measures shall be established to ensure the environmental qualification (EQ) of safety- related electrical and mechanical equipment is included, as appropriate, within the design basis.

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- J. Errors and deficiencies in approved design documents, including design methods (such as described in calculations) that could affect quality-related activities are documented and corrected. (Reference Section 10.0 of this program description)

7.2.2 Design Inputs

- A. Design assumptions, design inputs, and deviations from approved design inputs shall be identified, reviewed, approved, and documented prior to declaring the structure, system, or component affected by the design operable.
- B. Design inputs shall be correctly translated into design outputs.
- C. Provisions shall be made to relate the final design to the source of design input.

7.2.3 Design Analysis

- A. The performance of design analysis shall be planned and controlled.
- B. The suitability of application of materials, parts, equipment, and processes essential to the function of a structure, system, or component shall be reviewed to ensure that functional requirements are met.

7.2.4 Interface Control

Internal and external design responsibilities and interface controls, procedures and lines of communication among participating organizations, including the EPC SNC-L and the NSSS supplier Framatome are defined. Interface control of design information transmitted across interfaces and across technical disciplines shall be established and defined to facilitate the preparation, review, approval, release, distribution, and revision of documents involving design interfaces. This process ensures that quality-related structures, systems, and components are compatible geometrically, functionally, and with plant processes and environments.

7.2.5 Design Output

- A. Engineering requirements on plant activities (e.g., operation, maintenance, installation, modification, surveillance) shall be identified in design output documents.
- B. Measures shall be established and documented to control the preparation, review, approval, issuance, and revision of design output documents. These measures shall include criteria and responsibilities to ensure that adequate technical and quality requirements are incorporated prior to issuance.
- C. Drawings and specifications shall include, as appropriate, quantitative and qualitative acceptance criteria. These acceptance criteria shall be sufficient for determining that quality-related activities have been satisfactorily accomplished.

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- D. Drawings and specifications shall receive documented reviews and approvals (and concurrences as required) by responsible organizations prior to use.
- E. After approval, drawings shall be controlled in accordance with the requirements of Sections 6.2 and 6.3 of this program description.
- F. Revisions shall be reviewed and approved by the same organizations that performed the original review unless another appropriate organization that has access to pertinent background information is designated in the appropriate NPS document or procurement documents.

7.2.6 Design Verification

- A. The translation of design inputs into design documents shall be verified and the verification documented.
- B. Criteria for determining design verification methods shall be established, identified, implemented, and procedurally controlled. The responsibilities of the verifier, the areas and features to be verified, and documentation requirements shall be included.
- C. The responsible design organization is required to identify and document the particular design verification method(s) used.
- D. Design verification shall be performed by individuals or groups other than those who performed the original design.
- E. For nuclear units under a construction permit, design verification shall be complete prior to initial fuel loading.
- F. For operating nuclear units, design verification shall be complete prior to reliance upon the component, system, or structure to perform its function. Design outputs which are released prior to verification being completed shall be identified and tracked to ensure the component, system, or structure is not relied upon to perform its function until the verification is complete.
- G. When a verification test is used to verify the adequacy of a specific design feature in lieu of other verifying processes, the test shall include suitable qualification testing of a prototype unit under conditions that simulate, to the extent practical, the most adverse design condition. The prototype, component, and feature tests are performed as early as possible and prior to plant installation of the equipment or at least prior to the point where installation of the item would be relied upon to perform its function. In those cases where the most adverse design conditions cannot be achieved in tests, suitable analysis shall be performed to extrapolate test results to design conditions.

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7.2.7 Design Changes

- A. Measures shall be provided that will ensure design changes, including field changes and modifications are subject to the same design controls that were applied to the original design.. They are subject to design control measures commensurate with or better than those applied to the original design.
- B. Design changes shall be reviewed and approved by the organization responsible for the original design unless another appropriate organization that has access to pertinent background information is designated another responsible organization in the appropriate NPS documents or procurement documents.
- C. Design changes that affect the supply of a quality-related item or service controlled by procurement documents shall not be returned to operation until: (1) the change is reflected in the appropriate change document such as a contract or purchase order change notice, (2) the change document has received the requisite reviews and approvals, and (3) the change document has been submitted to and accepted by the respective supplier.
- D. Proposed modifications to quality-related structures, systems, and components shall be reviewed, approved, and controlled in accordance with applicable requirements of the appropriate license and Section 9.9 of this Program. Design modifications shall be at least equivalent to the quality specified in the latest approved design basis.
- E. Measures to control plant configuration and ensure that the actual plant configuration is accurately depicted on drawings and other appropriate design output documents and reconciled with the applicable design basis shall be established, documented, and implemented.
- F. The design integrity shall be maintained during plant maintenance and modification processes, including temporary changes, and throughout the life of the plant.

7.3 Responsibilities

- A. The management position responsible for nuclear engineering is responsible for the development of a design control program. The program elements in Section 7.2 and the related source requirements contained within the documents listed in Section 7.4 shall be addressed. This management position is also responsible for implementation of programs for maintaining design control at licensed units and corporate.
- B. The management position responsible for BLN Project is responsible for implementation of programs for maintaining design control at BLN 1 & 2.

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7.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls which must be addressed in the development of programs and procedures for control of the design process.

8.0 PROCUREMENT AND MATERIAL CONTROL

8.1 Procurement Document Control

8.1.1 General

The QA program requires that measures shall be established to ensure that control is applied to documents used to obtain materials, parts, components, spare and replacement parts, and services required to construct, test, modify, maintain, repair, or operate nuclear facilities, commensurate with their importance to safety.

8.1.2 Program Elements

A. Procurement Document Planning

The procurement process, as documented in ND Nuclear procedures, shall identify each activity in the process, who accomplishes the activity, how, and when the activity is performed. The process shall be planned to integrate the following activities as a minimum:

1. Document preparation, review, and change control.
2. Selection of procurement sources.
3. Bid evaluations and award.
4. Purchaser control of supplier performance.
5. Verification activities of purchaser.
6. Control of non-conformances.
7. Corrective actions.
8. Acceptance of item or service.
9. QA records.
10. Audit of procurement program.

B. Procurement Document Content

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In the preparation of procurement documents, responsible organizations shall as applicable:

1. Specify or reference applicable design basis technical requirements as defined by Engineering, such as regulatory requirements (including 10 CFR 50.49 and 10 CFR Part 21 as applicable); QA requirements; material and component identification requirements; drawings; specifications; inspection and test requirements (including acceptance criteria); calibration, handling, storage, packaging, and shipping requirements; and special process instructions. All technical requirements shall be prepared, reviewed, and released under the requirements established by Section 7.0 of this program description.
2. For commercial-grade replacement items intended for safety-related use, Engineering shall determine critical characteristics and specify inspection and acceptance criteria to ensure that items dedicated after receipt are acceptable for use as replacement parts.
3. As appropriate, require that suppliers have a documented QA program that is approved by ND and appropriate interfaces established.
4. As appropriate, require that NQAP requirements be imposed on sub-vendors and subcontractors in sub-tier procurement documents.
5. Identify the documentation to be prepared and/or maintained by the supplier and submitted to ND for review and approval.
6. Identify records to be retained, maintained, and controlled by the vendor or contractor, and those documents and records that the vendors or contractors shall transfer to ND prior to installation or use of an item or service as applicable.
7. Include provisions for right of access to the facilities and records of vendors, contractors, and sub-tier vendors and contractors for source surveillances and audits.
8. Include requirements as defined by Engineering to ensure that suitable spare and replacement materials and components are purchased to the applicable requirements of the NQAP and: (1) specifications and codes equivalent to those specified for the original equipment, or those specifications and codes specified by approved design output; or (2) in cases where the original item or part is found to be commercially "off the shelf" or without specifically identified quality assurance requirements, spare and replacement parts may be similarly procured but, at the very least, equivalent performance is ensured; or (3) in those where the QA requirements of the original item cannot be determined, a documented evaluation establishing the requirements and controls is conducted.
9. Include requirements for reporting non-conformances and for approving corrective actions and non-conformance dispositions.

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C. Procurement Document Review and Approval

The review and approval of procurement documents shall include a documented review to ensure that technical, quality assurance, and administrative requirements are included in procurement documents prior to their use.

D. Procurement Document Change Control

Changes in procurement documents shall be subject to the same degree of control as was utilized in the original documents. Changes such as typographical corrections, quantity, or monetary changes do not require a review.

8.1.3 Responsibilities

- A. The management position responsible for procurement is responsible for the development of a procurement document control program. The program elements in Section 8.1.2 and the related source requirements contained within the documents listed in Section 8.1.4 shall be addressed.
- B. The management position responsible for procurement is responsible for implementation of programs for maintaining procurement document control.

8.1.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which must be addressed in the development of programs and procedures for control of procurement documents.

8.2 Control of Purchased Material, Equipment, and Services

8.2.1 General

The QA program requires that measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors, conform to the procurement documents.

8.2.2 Program Elements

A. Evaluation and Selection of Suppliers

- 1. Evaluations of prospective suppliers shall be conducted and documented to demonstrate that their qualifications and capabilities are adequate to meet procurement document requirements. Supplier evaluations shall include supplier performance assessments as appropriate.

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2. Evaluations and selection of procurement sources shall include, as appropriate, the use of historical quality performance data, source surveys or audits, or source qualification programs.
3. A list of approved suppliers shall be maintained.

B. Bid Evaluation and Award

A documented system for reviewing and evaluating bids and correcting bid discrepancies shall be established to ensure suppliers' conformance to procurement document requirements.

C. Effectiveness Assessments

1. The effectiveness of the suppliers' control of quality shall be assessed through periodic audits and/or surveillances utilizing a graded approach consistent with the importance, complexity, and quantity of the items and services procured.
2. The assessments shall consist of, as appropriate, checks, reviews, verifications, examinations, and witnessing of activities related to the fabrication, testing, inspection, and shipment of material, including periodic assessments of suppliers' certificates of conformance.
3. Records, qualifications, and process specifications or procedures shall be documented and verified to be in accordance with contract requirements.

D. Acceptance of Procured Services

Procured services shall be accepted, as appropriate, by:

1. Technical verification of product/data produced.
2. Assessments and/or audit of the activity.
3. Review of objective evidence such as certifications.

E. Acceptance of Procured Items

Procured items shall be accepted by receipt inspection and any combination of the following, as appropriate, based on the item's degree of complexity, uniqueness, and safety classification.

1. Source verification.
2. Pre-installation testing inspection.
3. Supplier certificate of conformance.
4. Post installation testing.

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F. Receipt Inspection

1. Receipt inspection shall be performed utilizing graded approach criteria to ensure that material and equipment is properly identified to the purchase document and receiving documentation and meets requirements of procurement documents. When graded approach criteria are applied to receipt inspection activities, line verification will be required. The applicable QA organization shall independently verify line organization performance to ensure adequacy of line verifications.
2. Deficiencies, such as damage, shall be documented and resolution of the deficiency shall be in accordance with approved documents.
3. Records, such as inspection and test records, shall be available at the Site prior to installation or use of the material or equipment.

G. Maintaining Disposition of Received Items

1. A quality control method for identifying the status of items (e.g., an inventory system, tagging, labeling, and color code) shall be employed that indicates whether items received are acceptable or unacceptable for installation.
2. Items may be installed prior to final disposition of a deficiency. Non-conforming items shall be controlled in accordance with Section 10.2.1.

8.2.3 Responsibilities

- A. The management position responsible for procurement is responsible for the development of programs to control purchased material, equipment, and services. The program elements in Section 8.2.2 and the related source requirements contained within the documents listed in Section 8.2.4 shall be addressed.
- B. The management position responsible for procurement is responsible for implementation of programs for maintaining control of purchased material, equipment, and services.
- C. The QA General Manager is responsible for evaluation and selection of suppliers, acceptance of procured items (as described in Section 9.1.2C), periodic assessments of suppliers utilizing graded approach criteria, and maintenance of an Acceptable Suppliers List (ASL).

8.2.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which must be addressed in the development of programs and procedures for the control of purchased material, equipment, and services.

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8.3 Identification and Control of Materials, Parts, and Components

8.3.1 General

The QA program shall ensure that only correct and accepted items are installed and used, and that an item can be related to applicable drawings, specifications, or technical documents at any stage of construction, maintenance, or modification as required.

8.3.2 Program Elements

A. Identification

Identification of quality-related items shall be verified and documented prior to release for fabrication, assembly, shipping, and installation. Identification requirements shall be specified in applicable design and procurement documents. Determination of identification requirements shall be based on the item importance to safety, quality, or potential hazards.

B. Traceability

Traceability of materials, parts, or components to specific manufacturing, installation, maintenance, and/or test records shall be provided as required by codes, standards, or specifications; and shall be accomplished through the recording of heat, batch, lot, part, or serial numbers, or other appropriate identification, either on the item or on records traceable to the item.

8.3.3 Responsibilities

- A. The management position responsible for procurement is responsible for the development of the material management program for identification and control of materials, parts, and components. The program elements in Section 8.3.2 and the related source requirements contained within the documents listed in Section 8.3.4 shall be addressed.
- B. The management position responsible for procurement is responsible for implementation of programs for maintaining identification and control of materials, parts, and components.

8.3.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which must be addressed in the development of programs and procedures for the identification and control of items.

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9.0 CONTROL OF PLANT ACTIVITIES

9.1 Inspection and Line Verification

9.1.1 General

The QA program requires that inspection and line verification procedures and instructions include provisions for inspections and line verifications to ensure quality.

9.1.2 Program Elements

A. Line Verification

1. Line verifications shall be performed and documented to substantiate and ensure that an activity or condition has been implemented and accomplished in conformance with specific requirements.
2. Requirements for line verification identified by design output documents shall be included in implementing documents.
3. Qualification of personnel performing line verifications shall be contained in procedures and instructions developed by the organization performing the line verification and shall be in accordance with Regulatory Guide 1.8 as endorsed in Appendix B of this program description.

B. Inspection Plans and Instructions

Inspections shall be controlled by plans or instructions, which implement requirements, assign responsibilities, and identify acceptance criteria derived from design output documents as appropriate.

1. Inspections to verify conformance to codes, standards, and design output shall be required for each operation. Factors used to determine the extent of inspections to be performed are listed in Section 5.2 of this NQAP.
2. Inspection hold points, witness points, and notification points shall be used as required or needed to verify in-process or final achievement of quality. When graded approach criteria are applied to design/regulatory required inspection activities, line verification will be required. The QA organization shall independently verify line organization performance to ensure adequacy of line verifications.
3. Indirect control by assessment of processing methods, equipment, and personnel shall be specified when direct inspection is impossible or disadvantageous.
4. Instructions for activities such as sampling, assessments, and independent inspections shall be included.

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5. Persons responsible for performing sampling, assessments, and independent inspections shall be specified.

C. Inspection Performance

Inspections shall be performed by QA or other qualified individuals approved by QA utilizing graded approach criteria in accordance with controlled plans or instructions which specify attributes to be verified in accordance with requirements and acceptance criteria.

1. Inspections shall be performed by individuals delineated above other than those who performed or directly supervised the activity being inspected.
2. Personnel performing inspections shall be trained, qualified, and certified, as required, within their discipline in accordance with established requirements. The requirements criteria shall be approved by QA.
3. Measuring and test equipment (M&TE) used to perform inspections shall be controlled, calibrated, and maintained as required in Section 9.5 of this program description. The identification of M&TE shall be documented.
4. Work shall not proceed beyond designated hold points prior to release by authorized personnel.

D. Results

Records of inspection results and personnel performing the inspection shall be retained as required in Section 6.3 of this program description.

1. Inspection records shall be identified as such and shall be retrievable.
2. Inspection records shall contain a description of the type of inspection, the date performed, inspection or verification of corrective action results, and identification of the inspector and data recorder as well as the person approving the inspection results including the date of approval.
3. Inspection records and/or data sheets shall include a statement attesting to the acceptability of results and provide for identifying the individual who performed the evaluation.
4. Periodic trending of inspection results shall be performed and reported to appropriate management.
5. Records shall be kept in sufficient detail to permit adequate evaluation of inspection activities.

9.1.3 Responsibilities

- A. The management position responsible for inspection, testing, monitoring and analysis, and the QA General Manager are responsible for including the

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applicable QA program elements in Section 9.1.2 and the related source requirements found in the documents listed in Section 9.1.4, within the inspection program. The QA General Manager reviews and approves the inspection program to ensure inclusion of QA requirements for their respective site.

- B. The management position responsible for inspection, testing, monitoring and analysis, and the Vice President, Nuclear Support are responsible for including the program elements in Section 9.1.2 and the related source requirements contained within the documents listed in Section 9.1.4, as applicable, within the line verification program.
- C. The management position responsible for nuclear engineering is responsible for providing qualitative / quantitative criteria in design output documents, which are incorporated in implementing procedures.
- D. For BLN 1 & 2, the management position responsible for BLN Project is responsible for providing qualitative / quantitative criteria in design output documents, which are incorporated in implementing procedures.
- E. Not Used.
- F. The QA General Manager is responsible for establishing and implementing programs for training and certification of personnel performing QC activities.

9.1.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which must be addressed in the development of programs and procedures for inspection.

9.2 Quality Assurance Assessments

9.2.1 General

Assessments by QA are performed as a type of verification to ensure that observed quality- related activities are performed in accordance with requirements and desired results are achieved.

9.2.2 Program Elements

- A. Assessment procedures and instructions shall address assessment techniques.
- B. Assessment frequencies shall be based on such factors as the status and safety significance of the activity or process, frequency of occurrence, degree and acceptability of previous experience, adverse trends, and testing or operation sequences.

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- C. The results of assessments shall be documented and reported to appropriate levels of management.
- D. Records shall be maintained in sufficient detail to provide adequate documentation of assessed activities.
- E. Follow up verifications or additional assessments shall be conducted as necessary to ensure that required corrective action has been taken.
- F. Assessments shall be performed in accordance with written procedures and instructions by qualified and appropriately trained personnel not having direct responsibility in the areas being assessed.

9.2.3 Responsibilities

The QA General Manager is responsible for the development and implementation of the QA assessment program.

9.2.4 Source Requirement Documents

None applicable.

9.2.5 Units with Construction Permits

For units with construction permits, refer to Appendix G.

9.3 Control of Special Processes

9.3.1 General

Those processes, as determined by the Engineering organization, which by their nature make a direct inspection either impossible or disadvantageous, are controlled as special processes.

Special processes shall be controlled and accomplished in accordance with approved process control documents by qualified personnel using qualified written procedures.

9.3.2 Program Elements

- A. Processes, which are to be controlled, as special processes, shall be documented in design output documents and maintained current. These processes shall include, but not be limited to welding, forming and bending, heat treating, chemical cleaning, protective coatings, and NDE.
- B. Measures shall be established, documented, and implemented, as appropriate, using specifications, procedures, and instructions to ensure that special processes are accomplished under controlled conditions and in accordance with applicable codes, standards, specifications, manufacturer instructions, or other special requirements. These measures shall include

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requirements for procedures, equipment, personnel, specifications, and control of consumable materials.

- C. When a special process is not covered by existing codes or standards, or when an item's quality requirements exceed the requirements of existing codes or standards, any special requirements necessary for controlling, implementing, and documenting the special process shall be defined as appropriate.
- D. Procedure, Equipment, and Personnel Qualification and Certification
 - 1. Personnel performing special processes shall be qualified and, when required, certified in accordance with the applicable codes, standards, and any special requirements.
 - 2. Qualification or certification of procedures, equipment, and personnel required by codes, standards, or any special requirements shall be performed.
 - 3. Documentation shall be maintained for these qualifications and certifications. M&TE used in special processes shall be controlled in accordance with Section 9.5 of this program description.

E. Results

Results of examinations associated with special processes shall be documented and evaluated for acceptability. Documentation shall provide for identifying the individual who performed the evaluation.

9.3.3 Responsibilities

- A. The management position responsible for nuclear engineering is responsible for development of programs for control of special processes. The program elements in Section 9.3.2 and the related source requirements contained within the documents listed in Section 9.3.4 shall be addressed.
- B. The management position responsible for Inspection Services Organization (ISO) is responsible for interpretation of NDE results when not achievable at the site level, and development and implementation of NDE methods and procedures. The management position responsible for ISO is also responsible for the qualification or certification of ISO NDE procedures, equipment, and personnel.
- C. Deleted
- D. The management position responsible for BLN Project has the responsibility for developing and implementing the NDE Program for ASME Section III work (when active) at BLN 1 & 2. (See also Appendix G.)

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- E. The QA General Manager reviews and approves the inspection program for control of special processes to ensure inclusion of QA requirements and is also responsible for the development of upper tier QA requirements for the NDE program for licensed units (refer to Section 9.3.2). For construction NDE activities, refer to Appendix G.
- F. The management position responsible for nuclear engineering is responsible for coordinating with appropriate organizations and determining which processes are to be controlled as special processes and for developing engineering requirements for NDE.
- G. The management position responsible for nuclear engineering is responsible for the qualification or certification of ND Nuclear special process procedures, equipment, and personnel for all areas other than NDE.

9.3.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which must be addressed in the development of programs and procedures for the control of special processes.

9.4 Test Control

9.4.1 General

The QA program requires that controls shall be established to ensure that required testing is identified and performed in accordance with procedures, which incorporate engineering requirements.

9.4.2 Program Elements

- A. The following types of tests, as a minimum, shall be included:
 - 1. Design qualification tests.
 - 2. Product acceptance (proof) tests prior to installation.
 - 3. Pre-operational tests.
 - 4. Construction tests.
 - 5. Start-up tests.
 - 6. Surveillance tests.
 - 7. Functional tests.
 - 8. Post maintenance tests.

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9. Post modification tests.

10. Special tests.

B. Test Performance

1. Tests shall be accomplished in accordance with written and approved test procedures which include the requirements and acceptance criteria of technical specifications, drawings, specifications, codes, standards, regulatory requirements, and scoping documents as applicable.
2. Tests performed following plant repairs, replacements, maintenance, or modifications shall be conducted in accordance with the original design and testing requirements or approved documented alternatives. Tests shall be sufficient to confirm that the changes produce expected results and do not reduce safety of operations.
3. Test procedures or instructions include the following, as applicable:
 - a. Description of test objective.
 - b. Instructions for performing the test.
 - c. Test prerequisites such as calibrated instrumentation, adequate test equipment and instrumentation including their accuracy requirements, completeness of the item to be tested, suitable and controlled environmental conditions, provisions for data collection and storage, and qualified personnel.
 - d. Provisions to assure test prerequisites have been met.
 - e. Mandatory inspection hold points.
 - f. Acceptance or rejection criteria.
 - g. Methods of recording, documenting, and reviewing test data and results.
 - h. Provisions for assuring that adverse conditions are corrected, or are evaluated and determined not to adversely impact testing, prior to the initiation of pre-operational testing of the affected item.

C. Test Results

Test results shall be documented in a suitable test results package that contains:

1. The identification of the item to which it applies.
2. The identification of instructions followed in performing the test.

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3. Pertinent inspection and test data.
4. Significant dates and times.
5. Signature of inspector or tester.
6. Conditions encountered which were not anticipated, including identification of deviations or adverse conditions, and actions taken to resolve the condition.

D. Results Evaluation

The technical acceptability of the results shall be evaluated by an appropriate authority to ensure that the test requirements have been satisfied.

- E.** Records of test results shall be retained in accordance with Section 6.3 of this program description.

9.4.3 Responsibilities

- A.** The management position responsible for nuclear engineering is responsible for the development of test control programs. The program elements in Section 9.4.2 and the related source requirements contained within the documents listed in Section 9.4.4 shall be addressed.
- B.** The management position responsible for a nuclear site, (delegated to the management position responsible for site engineering) is responsible for reviewing test results and specifying through design output documents the acceptance criteria for tests necessary to demonstrate an item's compliance with design parameters for initial acceptance and major modifications for licensed units.
- C.** Deleted
- D.** The management position responsible for a nuclear site, (delegated to the management position responsible for site engineering) is responsible for the development of tests (startup and operations phase) which incorporate engineering requirements and for the conduct of tests, including leak tests (operations phase). He is also responsible for documenting, evaluating, and determining acceptability of test results.
- E.** The QA General Manager is responsible for oversight of the test control program (i.e., test performance, test results and acceptability of tests).
- F.** Deleted

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9.4.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Program. These establish mandatory controls, which must be addressed in the development of programs and procedures for the control of tests.

9.5 Control of M&TE and Installed Safety-Related I&C Devices

9.5.1 General

Measures shall be established to control equipment, which is used to conduct measurements or tests related to determining the functionality or quality of structures, systems, and components within the scope of the QA program.

9.5.2 Program Elements

A. Requirements Common to M&TE and Installed Safety-Related I&C Devices

1. Procedures or instructions for administrative controls shall establish:
 - a. Controls for calibration, selection, identification, and utilization of M&TE and installed safety-related I&C devices.
 - b. The scope of the various safety-related calibration and control programs.
 - c. The types of equipment to be controlled.
2. Calibration procedures and instructions, as a minimum, shall include:
 - a. The identity of the item to be calibrated.
 - b. Calibration equipment and reference standards to be used.
 - c. Checks, tests, measurements, and acceptance tolerances.
 - d. Sequence of operations.
 - e. Special instructions when necessary.
 - f. Recording of performer and applicable procedure or instruction.
 - g. Recording of as found and as left data.
3. Intervals shall be established for calibration and adjustments of M&TE and installed safety related I&C devices. These intervals shall be based on required accuracy, purpose, degree of usage, stability characteristics, and other conditions which may affect the measurement or output data.

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4. An index, listing, or log shall be procedurally maintained; and shall identify each piece of M&TE and installed safety-related I&C device within the calibration program.
5. Reference standards shall be traceable to nationally recognized standards or physical constants. When national standards do not exist, the basis for calibration shall be documented and approved by designated responsible management.
6. Prior to use, M&TE and installed safety-related I&C devices shall be identifiable and traceable to applicable calibration records.

B. Unique Requirements for M&TE

Controls for M&TE shall include the following requirements. These requirements are in addition to those noted in Section 9.5.2A.

1. M&TE shall be stored, calibrated, and used in environments that will not adversely affect its accuracy.
2. M&TE shall be identified to indicate the date of the last calibration, by whom it was calibrated, and when the next calibration is due.
3. Methods shall be established to identify previous usage of M&TE when found to be out of calibration. These methods shall require that inspections or tests be repeated or a documented evaluation be performed when the integrity of past measurements obtained with the suspect equipment or device cannot be demonstrated.
4. Calibration standards, including test stands that are used as a standard (i.e., multiple M&TE) shall have an accuracy of at least four times the required accuracy of the equipment being calibrated. When this is not possible, standards shall have an accuracy that ensures the equipment being calibrated will be within required tolerances. The basis of acceptance shall be documented and authorized by identified responsible management.
5. M&TE shall be conspicuously labeled, tagged, or otherwise controlled to ensure performance of required calibrations on or before the established due date.
6. M&TE which are consistently found out of calibration shall be identified as non-conforming, removed from service, and repaired or replaced.

C. Unique Requirements for Installed Safety-related I&C Devices

Controls for installed safety-related I&C devices shall include the following requirements. These requirements are in addition to those noted in Section 9.5.2A.

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1. The calibration of installed safety-related I&C devices that provide final measurements data or controls shall be against M&TE that have an accuracy equal to or better than the required accuracy of the devices being calibrated.
2. Installed safety-related I&C devices shall be controlled to ensure performance of required periodic calibrations.
3. Environmental qualification controls for 10 CFR 50.49 installed safety-related I&C devices shall be established in applicable design documents. These controls shall be maintained when installed safety-related I&C devices are opened in place or removed for calibration in a laboratory.
4. Installed safety-related I&C devices which are consistently found to be out of calibration shall be identified and repaired or replaced.

D. Unique Requirements for Installed Compliance I&C Devices

Controls for installed compliance I&C devices shall include the following requirements. These requirements are in addition to those noted in Sections 9.5.2A and 9.5.2C.

1. Methods shall be established to identify previous usage of installed compliance I&C devices when found to be out of calibration. These methods shall require that inspections or tests be repeated or a documented evaluation be performed when the integrity of past measurements obtained with the suspect equipment or device cannot be demonstrated.

9.5.3 Responsibilities

- A. The management position responsible for a nuclear site is responsible for the development of controls for M&TE and installed safety-related I&C devices. The program elements in Section 9.5.2 and the related source requirements contained within the documents listed in Section 9.5.4 shall be addressed.
- B. For BLN 1 & 2, the management position responsible for BLN Project is responsible for the development of controls for M&TE and installed safety related I&C devices. The program elements in Section 9.5.2 and the related source requirements contained within the documents listed in Section 9.5.4 shall be addressed.
- C. The management position responsible for a nuclear site, (delegated to the management position responsible for site engineering) is responsible for providing qualitative/quantitative criteria in design output documents for licensed plants.
- D. For BLN 1 & 2, the responsibility for providing qualitative / quantitative criteria in design output documents is assigned to the management position responsible for BLN Project.

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9.5.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls which must be addressed in the development of programs and procedures for the control of M&TE and installed safety-related I&C devices.

9.6 Handling, Storage, and Shipping

9.6.1 General

Measures shall be established such that items, including consumables, under the scope of the QA program are handled, stored, and shipped by qualified individuals in a manner to prevent deterioration, contamination, damage, or loss of identification in accordance with approved engineering and procurement documents.

9.6.2 Program Elements

A. Marking

Items and/or their containers shall be adequately marked so that the items may be properly identified, maintained, and preserved during shipping, receiving, and storage. Marking shall also indicate the presence of special environments or the need for special controls.

B. Packaging and Cleaning

1. Packaging shall be adequate to provide protection against effects such as corrosion and contamination, which would lower the quality of items or cause deterioration beyond specified limits.
2. Special coverings, special equipment, and special protective environments shall be provided and maintained, as required, by procurement documents and vendor instructions determined to be applicable by the responsible engineer.
3. Cleaning operations shall be performed, as required, prior to coating, packaging, storing, or installing items.

C. Shipping and Handling

Special protection required for shipping shall be provided and maintained, as specified, by procurement documents or vendor instructions. Specified instructions and precautions for handling shall be followed.

D. Storage

1. Methods of controlling stored items, including shelf life, shall be established to minimize the potential for damage or deterioration during storage.

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2. Appropriate facilities shall be provided for storage of items requiring special environmental conditions.
3. Periodic assessments of storage areas and stored items shall be performed and documented to verify compliance with storage requirements.
4. Proper maintenance shall be provided for stored items, where necessary to prevent deterioration.

9.6.3 Responsibilities

- A. The management position responsible for procurement is responsible for the development of program controls for handling, storing, and shipping. The program elements in Section 9.6.2 and the related source requirements contained within the documents listed in Section 9.6.4 shall be addressed.
- B. The management position responsible for procurement is responsible for implementation of programs for handling, storage, shipping, and issuance of materials.
- C. The management position responsible for nuclear engineering is responsible for establishing storage, handling, and shipping requirements and preventive maintenance requirements during storage.

9.6.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which must be addressed in the development of programs and procedures for the control of handling, storage, shipping, cleaning, and preservation of items.

9.7 Inspection, Test, and Operating Status

9.7.1 General

Measures shall be established and documented to ensure that the operating status is current and the acceptability of items is known throughout fabrication, storage, construction, installation, operation, maintenance, and modification.

9.7.2 Program Elements

- A. Inspection and Test Status
 1. The status of inspections and tests shall be identified either on the items or in documents traceable to the items to ensure that required inspections and tests are performed and to preclude inadvertent bypassing.

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2. The status of inspections and tests shall be maintained through the use of indicators such as tags, markings, shop travelers, routing cards, stamps, inspection records, or other suitable means.
3. The authority for application and removal of tags, markings, labels, and stamps shall be specified.
4. Deletions or alterations of required inspections, tests, and other critical operations shall be controlled through appropriate changes to applicable procedures. These changes shall be handled in accordance with Section 6.1.2F of this program description.

B. Operating Status

1. The operating status of items (including temporary alterations) shall be indicated by status indicators such as tags on valves and switches to prevent inadvertent operation.
2. Plant instructions that require items to be removed from service for maintenance, testing, or modification shall require designated personnel permission and the completion of the appropriate clearance (hold order or approved plant procedures) before commencement of the activity.

9.7.3 Responsibilities

- A. The management position responsible for a nuclear site is responsible for the development of controls to maintain inspection, test, and operating status. The program elements in Section 9.7.2 and the related source requirements contained within the documents listed in Section 9.7.4 shall be addressed.
- B. The management position responsible for a nuclear site, (delegated to the management position responsible for site engineering) is responsible for establishing applicable inspection and test acceptance criteria to ensure the acceptability of items is maintained.
- C. Deleted
- D. The management position responsible for BLN Project is responsible for the implementation of programs for maintaining inspection, test, and system status for BLN 1 & 2 construction permit activities (when active).
- E. The management position responsible for a nuclear site is responsible for the implementation of programs for maintaining inspection, test, and operating status at licensed units.

9.7.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which

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must be addressed in the development of programs and procedures for the control of inspection, test, and operating status.

9.8 Control of Maintenance

9.8.1 General

The nuclear maintenance program, including corrective and preventive maintenance, shall ensure that quality-related structures, systems, and components are maintained (including appropriate equipment qualification maintenance) at a level sufficient to perform their intended functions.

9.8.2 Program Elements

A. Preventive Maintenance

A preventive maintenance program prescribing the frequency and type of maintenance activities to be performed shall be established and maintained.

B. Procedures and Instructions

Maintenance shall be carried out in accordance with procedures or instructions to ensure quality at least equivalent to that specified in the approved design basis or approved alternatives. Procedures or instructions shall be written to the level of detail that is normally expected of the user group. Training, experience, and the technical complexity of the work are factors which should be considered in determining the level of detail the procedure or instruction should contain. Guidelines shall be established for the use of these procedures or instructions.

C. Maintenance Preplanning

Maintenance shall be preplanned to include as appropriate:

1. Review of work-initiating documents to ensure quality requirements have been addressed.
2. Evaluation of the use of special processes, equipment, and materials including potential hazards to personnel and equipment and ALARA considerations.
3. The potential for common-mode failures when working on similar multiple or redundant systems and components.
4. Documented approval by designated personnel to release equipment or systems for maintenance.
5. Inspection and testing, as appropriate, to ensure a suitable level of confidence. This includes post maintenance testing commensurate with the maintenance performed to ensure that the equipment is capable of

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being returned to service, that the original deficiency (if any exists) has been corrected, and that no new deficiency has been created.

D. Malfunctions

The cause of malfunctions shall be evaluated and documented in accordance with ND's nuclear corrective action program.

E. Trending

The Maintenance Program shall establish the parameters for trending maintenance activities and describe the methods for evaluating and documenting adverse trends.

9.8.3 Responsibilities

- A. The management position responsible for a nuclear site is responsible for the development of the nuclear maintenance program. The program elements in Section 9.8.2 and the related source requirements contained within the documents listed in Section 9.8.4 shall be addressed.
- B. Deleted
- C. The management position responsible for BLN Project is responsible for the implementation of the nuclear maintenance program during construction phase activities for BLN 1 & 2.
- D. The management position responsible for a nuclear site is responsible for the implementation of the nuclear maintenance program during operations phase activities.

9.8.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which must be addressed in the development of programs and procedures for the Nuclear Maintenance Program.

9.9 Plant Reviews

9.9.1 General

- A. The plant staff organization provides reviews of day-to-day activities to ensure they are conducted in a safe manner. Qualified Reviewers provide for reviews of procedures, procedure changes, and proposed changes to structures, systems, and components that affect nuclear safety in their area of expertise.
- B. The Plant Operations Review Committee (PORC) is a multi-disciplined committee responsible for providing an oversight review of documents required

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for the safe operation of the plant. The PORC advises the management position responsible for plant operations on matters related to nuclear safety.

9.9.2 Plant Reviews

A. Activities which affect nuclear safety shall be conducted as follows:

1. Proposed changes or modifications to plant nuclear safety-related structures, systems, and components shall be reviewed in accordance with approved written procedures. Such modifications shall be reviewed by an individual/group other than the individual/group which designed the modification, but who may be from the same organization as the individual/group, which designed the modification. Proposed modifications to plant nuclear safety-related structures, systems, and components shall be approved by the manager responsible for plant operations, or designee, prior to implementation.
2. Written procedures shall be established, implemented, and maintained covering the following activities:
 - a. The applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978 and in accordance with Appendix B of this program description;
 - b. The emergency operating procedures which implement NUREG-0737 and NUREG-0737, Supplement 1, as stated in Generic Letter 82-33;
 - c. Security Plan implementation;
 - d. Radiological Emergency Plan Implementation;
 - e. Offsite Dose Calculation Manual implementation;
 - f. Fire Protection Program Implementation;
 - g. Radiation Protection Program;
 - h. Process Control Program Implementation (radwaste packaging and shipping);
 - i. In Plant Radiation Monitoring;
 - j. Quality Assurance Program for effluent and environmental monitoring, using the guidance contained in Regulatory Guide 4.15, December 1977, Regulatory Guide 1.21, Revision 1, 1974 and Regulatory Guide 4.1, Revision 1, 1975; and
 - k. Not Used.

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I. Cyber Security Plan implementation.

3. Procedures required by Section 9.9.2A.2, procedures and programs required by site-specific technical specifications, other procedures which affect plant nuclear safety, and changes (other than editorial or typographical changes) thereto, shall be prepared and reviewed in accordance with approved administrative procedures prior to implementation except as specified in Section 9.9.2A.6.

Procedures or procedure changes shall be reviewed by a qualified individual knowledgeable in the subject matter other than the preparer. The reviewer may be from the same or different organization. Procedures not reviewed by PORC shall be approved by the responsible management in accordance with established program requirements. Procedures reviewed by PORC shall be approved by the manager responsible for plant operations, or designee.

4. Qualified Reviewers responsible for reviews performed in accordance with Section 9.9.2A.3 shall be designated and qualified. Qualifications of qualified reviewers shall be as specified in written procedures. Such reviews shall include a determination of whether additional cross-disciplinary review is necessary. If deemed necessary, such review shall be performed by review personnel of the appropriate discipline.
5. Procedures and intent changes to these procedures within the scope of 10 CFR 50.59 shall be reviewed to determine whether a license amendment is required.
6. Temporarily approved changes to procedures of Section 9.9.2A.2 shall be made in accordance with ANSI N18.7-1976/ANS 3.2, as modified in Appendix B of this program description. Such changes shall be documented, reviewed, and approved in accordance with Sections 9.9.2A.3 and 9.9.2A.4 within 14 days and in accordance with approved administrative procedures.

B. Plant Operations Review Committee (PORC)

BLN 1 and 2 shall have a PORC which shall function to advise the management position responsible for plant operations in matters related to nuclear safety. This advisory function shall be performed by the PORC acting in a formal meeting periodically and as situations demand. PORC shall be organized, and conduct business as described below. The Chairperson and members shall be appointed in writing by the management position responsible for plant operations. PORC members shall meet the experience requirements of ANSI N18.1-1971 and ANSI/ANS 3.1-1981 as endorsed by Regulatory Guide 1.8, Revision 2, April 1987, "Qualification and Training of Personnel for Nuclear Power Plants," as outlined in Appendix B of this program description. This applies to the correlated ANSI N18.1-1971 and ANSI/ANS 3.1-1981 Manager or Supervisor position for the represented organization. (Operations

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representatives who hold or who have held SRO licenses at the station are considered qualified.)

1. Composition

The composition of PORC shall be as follows:

Chairperson: Director, Operations

Member: operations representative(s)

Member: maintenance representative(s)

Member: chemistry control representative(s)

Member: radiological protection representative(s)

Member: engineering representative(s)

2. Alternates

Alternate chairpersons and members shall be appointed in writing by the management position responsible for plant operations.

3. Meeting Frequency

The PORC shall meet at least once per calendar month and as convened by the PORC Chairperson or designated alternate.

4. Quorum

The PORC shall consist of the chairperson or designated alternate and three of the five functional area representatives.

5. Reporting

The PORC reports to the management position responsible for plant operations on its activities and findings. The meeting minutes shall serve as the official correspondence from PORC to the management position responsible for plant operations. PORC recommendations shall be recorded in the minutes and submitted to the management position responsible for plant operations.

6. Functions

- a. Advise the management position responsible for plant operations on matters related to nuclear safety;

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- b. Recommend to the management position responsible for plant operations approval or disapproval of items considered under Section 9.9.2B.7; and
- c. Provide written notification to the management position responsible for a nuclear site and the NSRB of safety-significant disagreements between the PORC and the management position responsible for plant operations within 24 hours. The management position responsible for plant operations shall have responsibility for resolution of such disagreements.

7. Responsibilities

The PORC shall be used to conduct, as a minimum, reviews of the following. The PORC may delegate the performance of reviews, but shall maintain cognizance over and responsibility for them, e.g., subcommittees.

- a. New procedures or changes to existing procedures recommended by Regulatory Guide 1.33, Revision 2, Appendix A, February 1978; that require an evaluation in accordance with 10 CFR 50.59.
- b. The emergency operating procedures which implement NUREG-0737 and NUREG-0737, Supplement 1, as stated in Generic Letter 82-33;
- c. Physical Security Plan;
- d. Radiological Emergency Plan;
- e. Offsite Dose Calculation Manual;
- f. Process Control Program (radwaste packaging and shipping);
- g. Additional PORC reviews specifically required by site-specific technical specifications or the plant's licensing basis;
- h. Proposed changes to TS; Technical Requirements Manual; their bases; amendments to the Operating License;
- i. Selected 10 CFR 50.59 evaluations; and
- j. Cyber Security Plan.

9.9.3 Records

The PORC shall maintain written minutes of PORC meetings that, at a minimum, document the results of its activities. Copies shall be provided to the management position responsible for a nuclear site. At a minimum, the PORC minutes shall include results of the activities conducted under the provisions of Section 9.9.

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10.0 ADVERSE CONDITIONS

10.1 General

Measures shall be established to ensure that items that do not conform to requirements are controlled to prevent their inadvertent installation or use. Adverse conditions, including non-conforming items or non-hardware problems such as failure to comply with operating license, technical specifications, or procedures, shall be identified, evaluated, corrected, tracked, trended, and when required, reported to appropriate levels of management.

Procedures or instructions implementing the corrective action program shall establish the criteria for documenting and tracking adverse conditions.

10.2 Program Elements

10.2.1 Control of Non-conforming Items

- A. Organizations responsible for items determined to be non-conforming during receipt inspection, construction, maintenance, modifications, or operations shall identify (physical identification) and segregate the non-conforming items from acceptable items to prevent further processing, delivery, installation, or inadvertent use. When segregation is not practical, tagging, marking or other means of identification is acceptable.
- B. In cases where a non-conforming item is needed for use prior to correcting the non-conformance, a conditional release request document is required. The conditional release request document requires appropriate reviews and approvals. In addition, for equipment to be energized, operated, or pressurized an evaluation and justification is required.

10.2.2 Corrective Action for Adverse Conditions

- A. ND Nuclear and onsite non-nuclear service organizations performing quality-related activities at nuclear facilities shall promptly identify and resolve adverse conditions.
- B. Minor deficiencies, which may be brought into compliance within an acceptable timeframe, shall be corrected on the spot in accordance with established instructions.
- C. Adverse conditions shall be dispositioned by organizations with defined responsibility and authority; and shall be corrected in accordance with documented plans.
- D. Disposition actions for non-conforming items may be accept-as-is, repair, rework, scrap, or return to vendor. Dispositions of accept-as-is or repair shall be reviewed and approved by Corporate or Site Engineering. Reworked or repaired, and replaced items shall satisfy the original inspection and test requirements or acceptable alternatives.

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- E. The cause of significant adverse conditions shall be determined and corrective action taken to preclude recurrence.
- F. Significant adverse conditions shall be reported to appropriate levels of management.
- G. The satisfactory completion of corrective actions shall be verified and documented by the appropriate organization.
- H. Independent verification of corrective action implementation is performed as specified within the corrective action program.

10.2.3 Escalation of Adverse Conditions

Commensurate with their importance to quality or safety, adverse conditions which are not being effectively or timely resolved shall be escalated to appropriate levels of management in a timely manner.

10.2.4 Tracking

Procedures describing the corrective action program shall establish the requirements for those adverse conditions, which shall be tracked.

10.2.5 Quality Trend Analysis

Trend analysis shall be performed on adverse conditions and quality indicators associated with QA verification activities, through the periodic review and evaluation of CR data and other performance monitoring information as part of the corrective action program. Trend results shall be used to advise management of the quality status, identify adverse trends that need increased management attention, and compare quality of performance among organizations. The trend analysis program shall be described in procedures or instructions and shall include the following items as a minimum.

- A. Identify the quality indicators associated with QA verification activities to be trended.
- B. Specify the process of data handling such as gathering, collecting, sorting, grouping, and coding.
- C. Specify the process to be used in analyzing data and trend determination.
- D. Describe the actions to be taken when an adverse trend is identified.
- E. Describe the type, distribution, and frequency of issue of trend results reporting.

10.2.6 Stop Work

Work shall be stopped under any of the following conditions:

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- A. Work is proceeding in violation of approved and controlling documents.
- B. A condition, which clearly indicates that cessation of an activity, is the only means available to protect the health and safety of the public and/or plant personnel.
- C. An activity, which if continued, will require extensive rework or repair for corrective action.
- D. An activity, which if continued, may jeopardize nuclear safety.
- E. A condition that represents continual failure to comply with technical or administrative controls.

10.3 Responsibilities

- A. The management position responsible for operations support is responsible for the development, review and approval of the ND Nuclear corrective action program. The program elements in Section 10.2 and the related source requirements contained within the documents listed in Section 10.4 shall be addressed.
- B. Deleted
- C. For the BLN project, the management position responsible for BLN Project is responsible for the development, review and approval of the corrective action program. The program elements in Section 10.2 and the related source requirements contained within the documents listed in Section 10.4 shall be addressed.
- D. Line managers are responsible to stop any work within their areas of responsibility when a continuation of activities could meet the criteria of Section 10.2.6
- E. QA is responsible to issue a formal Stop Work Order, as required, if a line manager fails to act on a stop work condition. Stop Work Orders shall remain in effect until proper evaluation can be made and adequate corrective action can be applied.
- F. The management position responsible for operations support is responsible to establish and maintain trend analysis procedures for adverse conditions and the quality indicators generated by QA verification activities such as audits, assessments, inspection, and vendor audits and surveillances. The QA General Manager is responsible for oversight and independent analysis of ND Nuclear CAP trending.
- G. Deleted

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10.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls which must be addressed in the development of programs and procedures for the corrective action program.

11.0 INDOCTRINATION, TRAINING, QUALIFICATION, AND CERTIFICATION

11.1 General

Personnel performing quality-related activities shall receive indoctrination and training, as necessary, to ensure that adequate proficiency is achieved and maintained.

11.2 Program Elements

11.2.1 Indoctrination and Training

- A. Personnel performing quality-related activities shall receive training related to administrative controls and the purpose, scope, and implementation of the NQAP.
- B. For personnel performing quality-related activities, proficiency shall be maintained and demonstrated through activities such as annual performance evaluation, retraining, reexamining, or recertifying.
- C. Training of employees performing quality-related activities shall be conducted, as appropriate, when new programs or procedures affect the scope of their work and whenever changes in their duties or responsibilities occur.
- D. The scope, method, and objectives of formal training for quality-related activities shall be documented.
- E. Records documenting the date, attendance, content, instructor, and duration of training sessions shall be prepared and maintained to demonstrate individual qualification and training program implementation for employees performing quality-related activities.

11.2.2 Qualification and Certification

Qualification and certification programs shall be established and maintained to include the following:

- A. Certification of personnel, as needed, to perform inspections, tests, examinations, special processes, or lead audits prior to performance of the activity. Certifications shall delineate the functions personnel are qualified to perform and the criteria used for qualification.

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- B. Personnel qualification criteria for applicable inspection, test, or examination techniques, audits, special processes, and capabilities necessary to perform the activity safely and in compliance with applicable requirements.
- C. A method to assess the performance of certified individuals and the qualifications of employees performing quality-related activities, to determine their initial and continued acceptability for performing their duties and to provide an assessment of the current level of qualification and certification.
- D. Development and maintenance of qualification and certification records and documents in accordance with applicable commitments and regulatory requirements.

11.3 Responsibilities

- A. The management position responsible for operations support is responsible for the development of the program for indoctrination and training.
- B. Other ND Nuclear managers are responsible for delineating training requirements in their applicable areas of responsibility and providing these requirements to the management position responsible for operations support.
- C. The management position responsible for human resources (nuclear) is responsible for establishing a position qualification documentation and validation program.
- D. Managers are responsible for implementing the indoctrination and training program and, as appropriate, developing a certification program and implementing the certification requirements in their area of responsibility.
- E. The program elements in Section 11.2 and the related source requirements contained within the documents listed in Section 11.4 shall be addressed in the development and implementation of indoctrination, training, qualification, and certification activities.

11.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls which must be addressed in the development of programs and procedures for the indoctrination, training, qualification, and certification program.

12.0 AUDITING

12.1 General

Measures shall be established to implement a comprehensive audit program, which consists of internal audits, including ND Nuclear and other organizations, which support the nuclear program and contractor/supplier audits to determine and assess the adequacy and effectiveness of the QA program.

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12.2 Program Elements

- A. An audit plan shall be prepared identifying the audits to be performed and their frequencies and schedule.
- B. Audits shall include: a determination of the effectiveness of QA program elements; evaluation of work areas, activities, processes, and items; review of documents and records; review of audit results with responsible management; follow up on corrective action taken for deviations identified during the audit; and escalation to appropriate senior management of any safety significant disagreement between the auditing organization and the organization or function being audited.
- C. Audits shall be performed in accordance with written procedures or checklists by qualified, certified, and appropriately trained personnel not having direct responsibilities in the areas being audited.
- D. Audited organizations shall provide access to facilities, documents, and personnel needed to perform the audits. They shall take necessary action to correct deviations identified by the audit in a timely manner.
- E. Internal Audits
 - 1. The scope of an audit shall be determined by considering such factors as work areas, activities, processes, or items and the specific organizations involved.
 - 2. The auditing organizations shall ensure that audit procedures and instructions adequately cover applicable elements of the NQAP.
 - 3. Audits of Design and Construction Phase units and the Fitness for Duty Program are in accordance with the Code of Federal Regulations.
 - 4. Audits of operational phase units shall be performed with oversight by the NSRB. Except as noted in 12.2E.4.f, 12.2E.4.g, 12.2E.4.h, 12.2E.4.m, and 12.2E.4.n below, audit frequencies shall be biennially. These audits shall encompass:
 - a. The conformance to provisions contained within the Technical Specifications and applicable license conditions.
 - b. The performance, training and qualifications of the plant staff.
 - c. The results of actions taken to correct deficiencies occurring in site equipment, structures, systems, components, or method of operation that affect nuclear safety.
 - d. The performance of activities required by the Nuclear Quality Assurance Program to meet the criteria of Appendix B, 10 CFR Part 50 and 10 CFR Part 72, Subpart G.

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- e. Any other activities and documents considered appropriate by the NSRB or the CNO and Executive Vice President.
 - f. The fire protection programmatic controls including the implementing procedures at least once per 24 months.
 - g. An independent fire protection and loss prevention program inspection and audit shall be performed at a maximum interval of 24 months utilizing either qualified offsite license personnel or an outside fire protection firm.
 - h. An inspection and audit of the fire protection and loss prevention program shall be performed by an outside qualified fire consultant at intervals no greater than three years.
 - i. The Radiological Environmental Monitoring program and the results thereof.
 - j. The performance of activities required by the NQAP to meet the criteria of Regulatory Guide 4.15, December 1977, Regulatory Guide 1.21, Rev. 1, 1974, and Regulatory Guide 4.1, 1975.
 - k. The Offsite Dose Calculation Manual and implementing procedures.
 - l. The Process Control Program and implementing procedures for solidification of wet radioactive wastes.
 - m. The site Radiological Emergency Plan and implementing procedures in accordance with the Code of Federal Regulations.
 - n. The site Physical Security/Contingency Plan and implementing procedures in accordance with the Code of Federal Regulations.
 - o. The site Cyber Security Plan and implementing procedures in accordance with the Code of Federal Regulations.
5. A grace period not to exceed 90 days can be applied to audits with a biennial frequency, with the following exceptions. No grace period is permitted for the audits of Emergency Preparedness, Security, Cyber Security or Access Authorization.
6. Audit reports, including recommendations to the management of the organization being audited, shall be maintained.
- F. Contractor/Supplier Audits
- 1. Audits of selected suppliers shall be conducted to verify implementation and adequacy of specified QA requirements.

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2. Contractors/suppliers to be audited shall be selected on the basis of the importance of their products or services to safety, status of contract activity, historical performance of the supplier, and potential QA problems that may be discovered during source surveillance inspection activities or earlier audits.
3. Audit schedules shall be prepared and audits shall be conducted in accordance with the schedules.
4. Audit reports shall be prepared and reviewed by the audit team, approved by management, and transmitted to the supplier and appropriate management within ND.
5. A grace period not to exceed 90 days may be applied to Contractor/Supplier audits that normally are of 36-month frequency.

12.3 Responsibilities

- A. The QA General Manager is responsible for the development of the ND Nuclear audit program. The program elements in Section 12.2 and the related source requirements contained within the documents listed in Section 12.4 shall be addressed.
- B. Deleted
- C. QA is responsible to conduct audits, including audits of selected suppliers, to verify implementation and adequacy of specified QA requirements.

12.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Program. These establish mandatory controls, which must be addressed in the development of programs and procedures for the control of audits.

13.0 COMPUTER SOFTWARE AND DATA

13.1 General

The program elements in Section 13.2 of this program description apply to application software meeting the criteria of Appendix E of this Program, whether procured or developed at ND. The controls established shall be commensurate with the importance of the application software to nuclear safety.

13.2 Program Elements

- A. Controls shall be established for the development of application software and associated documentation, including requirements specification, design specifications, coding conventions, and user documentation.

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- B. Controls shall be established for changes to application software and associated software documentation.
- C. Software documentation shall be controlled in accordance with Section 6.2 of this program description.
- D. Software documentation specified as QA records shall be controlled in accordance with Section 6.3 of this program description.
- E. Documentation shall be provided for application software describing the correct usage.
- F. A central list of application software, which meets the criteria of Appendix E of this program description, with appropriate levels of classification shall be established and maintained. Involved personnel shall be trained on the intent and purpose of the list.
- G. Prior to implementation, application software shall be verified to demonstrate that the system requirements are satisfied in the system design, implemented in the computer code, validated through documented tests, and the test results independently reviewed.
- H. Controls shall be established to verify the accuracy and integrity of data input into automated computer databases.
- I. For currently active application software developed or purchased prior to October 16, 1986, only the requirements of Section 13.2B, 13.2E, and 13.2F apply. In addition, this application software shall be validated through documented tests and test results independently reviewed.

13.3 Responsibilities

The management position responsible for nuclear engineering is responsible for the development of controls for computer software and data. The program elements in Section 13.2 and the criteria of Appendix E of this program description shall be addressed.

13.4 Source Requirement Documents

The applicable source requirements documents and their exceptions are noted in Appendix B of this program description. These establish mandatory controls, which must be addressed in the development of programs and procedures for the control of computer software and data.

14.0 REFERENCES

14.1 Regulations

10 CFR 20, "Standards for Protection Against Radiation."

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10 CFR 21, "Reporting of Defects and Non-compliance."

10 CFR 50, "Domestic Licensing of Production and Utilization Facilities."

10 CFR50.48(c) Fire Protection, National Fire Protection Association Standard, NFPA 805

10 CFR 50.49, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants."

10 CFR 50.54, "Conditions of Licenses."

10 CFR 50.55, "Conditions of Construction Permits."

10 CFR 50.55a, Codes and Standards."

10 CFR 50.55(e), "Conditions of Construction Permits."

10 CFR 50.59, "Changes, Tests, and Experiments."

10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants."

10 CFR 50, Appendix B, "Quality Assurance Requirements for Nuclear Power Plants and Fuel Reprocessing Plants."

10 CFR 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979."

10 CFR 50.62, "Requirements for Reduction of Risk from Anticipated Transients without Scram (ATWS) Events for Light-Water-Cooled Nuclear Power Plants."

10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors."

10 CFR 50.73, "Licensee Event Report System."

10 CFR 50.120, "Training and Qualification of Nuclear Power Plant Personnel."

10 CFR 52, "Licenses, Certifications, And Approvals for Nuclear Power Plants."

10 CFR 55, "Operators' Licenses."

10 CFR 70, "Domestic Licensing of Special Nuclear Material."

10 CFR 71, Subpart H, "Quality Assurance (Packaging and Transportation of Radioactive Material)."

10CFR 73.54, "Protection of Digital Computer and Communication Systems and Networks"

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10 CFR 73.55, "Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors against Radiological Sabotage."

10 CFR 73.71, "Reporting of Safeguards Events."

10 CFR 74, "Material Control and Accounting of Special Nuclear Material."

10 CFR 75, "Safeguards on Nuclear Material - Implementation of US/IAEA Agreement."

10 CFR 100, "Reactor Site Criteria."

14.2 Regulatory Guidance

Refer to listing in Appendixes B and C of this program description.

14.3 ND Licensing Submittal Documents

Bellefonte Nuclear Plant Technical Specifications, Administrative Controls Section.

14.4 QA Manuals

ASME Section III Quality Assurance Manual (ASME III QAM).

14.5 Other

INPO 84-010, "Vendor Equipment Technical Information Program (VETIP)," March 1984.

NEI 04-02, Revision 2, Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program

NRC letter from H. J. Thompson, Jr., dated April 16, 1985, "Quality Assurance Guidance for ATWS Equipment That Is Not Safety Related," Generic Letter 85-06 (A02 850422 044).

NRC letter from D. G. Eisenhut dated April 24, 1986, "Implementation of Fire Protection Requirements," Generic Letter 86-10 (A02 860512 005).

NUREG 0800, Section 9.5.1, Branch Technical Position, CMEB 9.5-1 (formerly BTP ASB 9.5-1), Rev. 2, July 1981, "Fire Protection for Nuclear Power Plants."

Appendix A to Branch Technical Positions APCS 9.5-1, August 23, 1976.

Safety Evaluation by the Office of Nuclear Reactor Regulation Proposed Change to the Quality Assurance Program Common Safety Review Board conduct of Operations Southern Nuclear Operating Company, Inc. Joseph M. Farley Nuclear Plant, Units 1 and 2, Edwin I. Hatch Nuclear Plant, Units 1 and 2, Vogtle Electric Generating Plant, Units 1 and 2, Docket Nos. 50-348, 50-364, 50-321, 50-366, 50-422, and 50-425 to Appendix B

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NEI 14-05, "Guidelines for the Use of Accreditation in lieu of Commercial Grade Surveys for Procurement of Laboratory Calibration and Test Services," Revision 1

NOTE

The terms and definitions identified in this section are important in order to have a consistent understanding of requirements of the NQAP. Regulatory Guide 1.74, which endorses ANSI N45.2.10, contains terms and definitions applicable to the nuclear industry. This section identifies acceptable alternatives to these definitions with an asterisk (*).

15.0 DEFINITIONS

Adverse Conditions - Deficiencies including non-conforming material, parts, or components; failures; malfunctions; deviations; hardware problems involving noncompliance with licensing commitments, specifications, or drawing requirements; abnormal occurrences; and non-hardware problems such as failure to comply with the operating license, technical specifications, licensing commitments, procedures, instructions, or regulations.

Assessment - An evaluation of the adequacy and effectiveness of quality programs, processes, ongoing tasks or activities, or management controls to identify opportunities for improvement, performance problems, or verify resolution of problems.

***Audit** - A documented activity performed in accordance with written procedures or checklists to verify, by examination and evaluation of objective evidence, that applicable elements of the NQAP have been developed, documented, and effectively implemented in accordance with specified requirements. An audit should not be confused with assessment or inspection for the sole purpose of process control or product acceptance.

Basic Component - Refer to 10 CFR 21 for definition of basic component.

Commercial-Grade Items - Refer to 10 CFR 21 for definition of commercial grade items.

Construction Tests - Those tests which are performed on safety-related and other plant components and systems on nuclear units which may satisfy prerequisites to the preoperational test program. Construction tests include pressure and other integrity tests; component and piping system cleaning and flushing; and equipment checkout, initial operation, and adjustments.

Corrective Action - The action taken to correct an adverse condition. Corrective action includes interim measures and corrective and preventive actions.

Dedication - Refer to 10 CFR 21 for definition of dedication.

Emergency Preparedness - A program which ensures the preparation and implementation of plans and procedures to provide, in the event of an emergency, protective measures for health and safety of ND personnel and the public.

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Environmental Protection - A program that provides controls, mainly in association with Environmental Protection Agency (EPA) requirements, for non-radiological environmental monitoring and compliance activities. These include hazardous and non-radiological waste material (solid, liquid, and gas) which could be released to the environment.

Experience in Nuclear Quality Assurance Related Activities - Participated in one of the following: QA or QC function or involvement in program quality for programs subject to QA/QC audits or inspection.

Features - Refers to either individual structures, systems, and components specifically called out by the scope of this Program (such as seismic Category 1 [L] items) or structures, systems, and components that may be integral to, or associated with, the programs identified in Section 5.1B of this Program.

Finding - A term defined in Quality Assurance audit and assessment procedures equivalent to adverse audit findings specified in ANSI/ASME N45.2.12 - 1977 section 4.5.

Fire Protection - A program that provides controls necessary for the protection of the life and health of ND plant personnel and the public, to limit damage of property, and to minimize loss of generating capacity resulting from fire or explosion.

Functional Test - The manual operation or initiation of a system, subsystem, or component to verify that it functions within design tolerances (e.g., the manual start of a core spray pump to verify that it runs and that it pumps the required volume of water.)

Graded Approach - A methodology of applying a grading criteria based on an item's impact on safety, quality history, and other factors such that determination can be made as to the type and degree of QA program requirements which need to be applied. Refer to Section 5.2.

Greater than Class C waste (GTCC waste) - Low-level radioactive waste that exceeds the concentration limits of radionuclides established for Class C waste in 10 CFR 61.55.

Handling - The act of physically moving items by hand or by mechanical means but not including transport modes.

Hold Point - A designated stopping place during or following a specific activity at which inspection or examination is required before further work can be performed.

Important to - A system, structure, or component condition/function required to store spent nuclear fuel safely; to prevent damage to spent nuclear fuel or high-level waste container during handling and storage, and to provide reasonable assurance that spent nuclear fuel can be received, handled, packaged, stored and retrieved without undue risk to the health and safety of the public.

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Independent Offsite Safety Review - Safety reviews performed by the Nuclear Safety Review Board (NSRB) which provide additional assurance that ND licensed nuclear plants are operating without undue risk to the health and safety of plant personnel and the public.

***Inspection** - A phase of quality control performed by certified inspection personnel or other qualified individuals approved by QA that, by means of examination, observation, and/or measurement determines the conformance of materials, supplies, components, parts, appurtenances, systems, processes, or structures to predetermined quality requirements.

Installed Compliance Instrumentation and Control (I&C) Devices - Process instruments which are used to determine or verify compliance with plant technical specification requirements for parameters such as flows, pressures, temperatures, levels, voltages, and currents.

Item - Any level of unit assembly, including structure, system, subsystem, subassembly, component, part, or material.

Line Verification - A routine verification by a qualified individual who is in the work-performing organization who did not perform or directly supervise the activity to be verified.

Measuring and Test Equipment (M&TE) - Equipment or devices used to calibrate, measure, gauge, examine, compare, test, inspect, monitor, or control in order to acquire data to determine compliance with design, specification, licensing, or other established requirements. M&TE includes both laboratory and portable instruments, gauges, tools, fixtures, test or analytical test stands, reference and transfer standards, nondestructive examination equipment, etc., where data obtained will be used to determine acceptability or be the basis for design or engineering evaluations.

Non-safety-Related Anticipated Transient Without Scram (ATWS) - Special features that, as referenced in 10 CFR 50.62, fall into a category of items which could be related to an expected operational transient (such as loss of feedwater, loss of condenser vacuum, or loss of offsite power to the reactor) which is not accompanied by the reactor trip system shutting down the reactor.

Notification Point - A specific pre-established point within a selected activity where work may proceed after contacting and receiving concurrence from the organization responsible for the notification point.

Nuclear Cyber Security - A program which provides controls to protect digital computer and communication systems and networks from cyber attacks in accordance with 10CFR73.54, Protection of Digital Computer and Communication Systems and Networks.

Nuclear Plant Security - A program which provides controls to ensure continued operability of security equipment and the integrity of nuclear plant security. This

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includes prevention of sabotage, safeguard information and material, plant access, and physical security events.

Operational Phase - That period of time during which the principal activity is associated with normal operation of the plant. This phase of plant life is considered to begin formally with receipt of the operating license onsite and ends with commencement of plant decommissioning. In addition, there are certain pre-operational activities (for example, testing, training, maintenance) proceduralized in accordance with operations NQAP requirements and initiated by the operations staff prior to receipt of the operating license which are considered to be operational phase activities at the time these activities begin.

Post maintenance Tests - Testing performed after completion of maintenance to verify the operational/functional acceptability of components/systems upon completion of maintenance.

Post modification Tests - Tests performed after completion of a plant modification to demonstrate conformance with as-designed requirements and to determine the effect of the modification on the overall system.

Pre-operational Tests - Tests identified in a facility's Safety Analysis Report and performed on any system or plant feature for the purpose of proving its ability to perform its designed function.

Procurement Documents - Contractually binding documents that identify and define the requirements that items or services must meet in order to be considered acceptable by the purchaser.

Programs - Programs which administer and control activities and associated features as identified in Section 5.1B of this Program that require control based on regulatory requirements or ND commitments.

Quality Assurance Records - Those records which furnish documentary evidence of the quality of items and of activities affecting quality. A document is considered to be a QA record when the document has been completed.

Quality Control Inspectors - Personnel whose qualifications are not required to meet those specified in ANSI N18.1 and who are performing inspection, examination and testing activities during the construction or operational phases of the plant shall be qualified to ANSI N45.2.6-1978 as certified Quality Control Inspectors.

Quality-Related - Quality-related is a term which encompasses quality assurance program requirements that describe activities which affect structures, systems, and components.

These requirements provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. In addition to safety-related structures, systems, components, and activities, the term "quality-related" encompasses the broad class of plant features covered (not necessarily explicitly) in

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the General Design Criteria of 10 CFR 50, Appendix A, that contribute in an important way to the safe operation and protection of the public in all phases and aspects of facility operation (i.e., normal operation and transient control as well as accident mitigation).

Radioactive Material Shipment - A program that provides controls for handling and/or shipping of radioactive material (NRC-licensed packages only).

Radwaste Management Systems, Structures, and Components - Special features containing radioactive materials (i.e., liquids, gases, or solids) that, by design or operating practice, provide a means of processing prior to final disposition.

Reference Standards - Standards (primary, secondary, and working standards where appropriate) used in a calibration program. These standards establish the basic accuracy limits for the calibration program.

Reportable Events - Any of those conditions specified in 10 CFR 50.73.

Safety-Related Structures, Systems, and Components - Those items that are necessary to ensure:

- A. The integrity of the reactor coolant pressure boundary.
- B. The capability to shut down the reactor and maintain it in a safe condition.
- C. The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the applicable guideline exposures set forth in 10 CFR 50.34(a)(1) or 10 CFR 100.11, as applicable.

Seismic Category I(L) - Special features that apply to non-safety-related systems, structures, and components which provide structural integrity in preventing damage to a safety-related system, structure, and component in case of a failure and/or damage during a safe shutdown earthquake (SSE).

Significant Adverse Condition - A documented adverse condition that is determined to be a QA programmatic deficiency. Criteria for significance are specified in the corrective action program.

Special Nuclear Material Management - A program which provides for special nuclear material (SNM) control and accountability as required by 10 CFR 70, 74, and 75. This program includes SNM inventories and system reviews, inspections, records management, and DOE/NRC inventory and transfer reports.

Special Tests - A test that is (a) an engineering test including qualification testing for design verification or evaluation of components, structures, or systems, (b) a general test that is not specifically related to plant systems or features, such as the material testing and product testing that is normally performed by a testing lab, or (c) tests or experiments not described in the facilities Safety Analysis Report which may affect the operation of systems described therein (reference 10 CFR 50.59).

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Startup Tests - Those tests as identified in the Final Safety Analysis Report that commence after receipt of an operating license allowing fuel loading and testing at ranges through zero power, power escalation, and 100% warranty run. Startup tests prove that the unit has been properly designed and constructed and will meet all licensing requirements and specific contractual criteria. Startup tests are also referred to as Power Ascension Tests.

***Storage** - The act of holding items at the construction or operating Site in an area other than its permanent location in the plant.

Surveillance Tests - Periodic tests to verify that structures, systems, and components continue to function or are in a state of readiness to perform their functions.

Test Record Drawings - A set of as-constructed drawings which depict the configuration of a system as tested.

Test Scoping Documents - Documents which include descriptions of each test to be performed including safety precautions to be followed, specific identification of test objectives, the means of performing the test, prerequisites that must be completed, environmental conditions required for testing, justification for a proposed degree of simulation less than full simulation, and specific acceptance criteria or a description of the means of determining acceptance criteria from functional testing requirements.

Test Deficiency - Any condition during which the equipment or system being tested: (1) fails to operate (e.g., pump will not operate, no control room annunciation), (2) operates in a suspected adverse manner (e.g., motor operates but smokes, questionable vibration), or (3) operates outside limits of documented acceptance criteria (e.g., inadequate flow, slow valve closure time).

Trend Analysis - Evaluation of data that has been compiled or grouped onto charts, diagrams, reports, or other formats such that the prevailing tendency of selected parameters can identify areas that need improving and areas of past successes.

***Verification** - An act of confirming, substantiating, and ensuring that an activity or condition has been implemented and accomplished in conformance with specific requirements. This includes line verifications.

Appendix A
Comparison Matrix of Quality Assurance Program Requirements with those of 10 CFR 50,
Appendix B, and Selected ANSI Standards

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<u>10 CFR 50, Appx B</u>		<u>ANSI N45.2 - 1971</u>		<u>ANSI N18.7 - 1976</u>	
Criterion	NQAP	Section	NQAP	Section	NQAP
I	4.0; 4.1	2.0	5.0	3.1	4.1; 5.0
II	5.0	3.0	4.0; 4.1	3.2	4.0; 4.1
III	7.0	4.0	7.0	3.3	11.0
IV	8.1	5.0	8.1	3.4	4.0; 11.0
V	6.0; 7.0; 9.9	6.0	6.0; 7.0; 9.9	4.0	4.1.7C; 5.3; 6.0
VI	6.0; 7.0; 9.9	7.0	6.0; 7.0; 9.9		4.1.9; 9.9; 12.0
VII	8.2	8.0	8.2	5.1	5.0
VIII	8.3	9.0	8.3	5.2.1	4.0
IX	9.3	10.0	9.3	5.2.2	6.0
X	9.1	11.0	9.1	5.2.3	6.0
XI	9.4	12.0	9.4	5.2.4	6.0
XII	9.5	13.0	9.5	5.2.5	6.0
XIII	9.6	14.0	9.6	5.2.6	6.0; 9.7
XIV	9.7	15.0	9.7	5.2.7	6.0; 9.8
XV	10.0	16.0	10.0	5.2.8	6.0; 9.1; 9.4
XVI	10.0	17.0	10.0	5.2.9	5.1; 6.0
XVII	6.3	18.0	6.3	5.2.10	4.1.2; 6.0
XVIII	12.0	19.0	12.0	5.2.11	6.0; 10.0
				5.2.12	6.0; 6.3
				5.2.13	6.0; 8.0; 9.6
				5.2.14	6.0; 10.0
				5.2.15	6.0
				5.2.16	6.0; 9.5
				5.2.17	6.0; 9.1
				5.2.18	6.0; 9.3
				5.2.19	6.0; 9.4
				5.3	6.0
				5.3.1	6.0
				5.3.2	6.0
				5.3.3	6.0
				5.3.4	6.0
				5.3.5	6.0; 9.8
				5.3.6	6.0; 5.1
				5.3.7	6.0; 9.5
				5.3.8	6.0; 5.1
				5.3.9	6.0; 5.1
				5.3.10	6.0; 9.1; 9.4

Appendix B
Regulatory Guide Conformance Status
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Table 1 (pages 1 through 10) is a matrix of the source requirement documents (e.g., Regulatory Guides and ANSI Standards) which apply to applicable portions of the NQA program description. Table 1 specifies the particular sections of the source documents (e.g., ANSI N18.7, Section 5.2.12) that establish mandatory controls, which must be addressed in the development of the associated implemented programs and procedures.

Table 2 (pages 11 through 29) identifies alternatives to sections of the source requirement documents listed in Table 1.

TABLE 1

SOURCE REQUIREMENT DOCUMENT \ NQA PLAN SECTION	Procedures and Instructions	Document Control	QA Records	Design Control	Procurement Document Control	Control of Purchased Material, Equipment, and Services	Identification and Control of Materials, Parts, and Components	Inspection and Line Verification	Control of Special Processes	Test Control	Control of M&TE and Installed Safety-Related I&C Devices	Handling, Storage and Shipping	Inspection, Test and Operating Status	Control of Maintenance	Adverse Conditions	Identification, Training Qualification, and Certification	Auditing	Computer Software and Data	Definitions
	6.1.4	6.2.4	6.3.4	7.4	8.1.4	8.2.4	8.3.4	9.1.4	9.3.4	9.4.4	9.5.4	9.6.4	9.7.4	9.8.4	10.4	11.4	12.4	13.4	15.0
Reg. Guide 1.8 R/2 April 1987 ANSI N18.1 - 1971, and ANSI/ANS 3.1 - 1981, "Personnel Selection & Training"								X								X			
Reg. Guide 1.33 R/2 February 1978 ANSI N18.7 – 1976/ANS-3.2 "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants"	X Sect. 5	X Sect. 5.2.1 5	X Sect. 5.2.12	X Sect. 5.2.7. 2	X Sect. 5.2.13 5.2.13. 1	X Sect. 5.2.1 3.2	X Sect. 5.2.13. 3	X Sect. 5.2.8 5.2.1 7	X Sect. 5.2.1 2 5.2.1 8	X Sect. 5.2.8 5.2.1 9	X Sect. 5.2.16	X Sect. 5.2.13. 4	X Sects. 5.2.6 5.2.8 5.2.14	X Sect. 5.2.7 5.3.5	X Sect. 5.2.11 5.2.14	X Sect. 3.3	X Sect. 4.5		

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TABLE 1

SOURCE REQUIREMENT DOCUMENT	NQA PLAN SECTION																		
	Procedures and Instructions	Document Control	QA Records	Design Control	Procurement Document Control	Control of Purchased Material, Equipment, and Services	Identification and Control of Materials, Parts, and Components	Inspection and Line Verification	Control of Special Processes	Test Control	Control of M&TE and Installed Safety-Related I&C Devices	Handling, Storage and Shipping	Inspection, Test and Operating Status	Control of Maintenance	Adverse Conditions	Identification, Training Qualification, and Certification	Auditing	Computer Software and Data	Definitions
	6.1.4	6.2.4	6.3.4	7.4	8.1.4	8.2.4	8.3.4	9.1.4	9.3.4	9.4.4	9.5.4	9.6.4	9.7.4	9.8.4	10.4	11.4	12.4	13.4	15.0
Reg. Guide 1.28 R/3 August 1985 ANSI N45.2 – 1971 “Quality Assurance Program Requirements for Nuclear Power Plants”	X Sect. 6	X Sect. 7	X Sect. 18	X Sect. 4	X Sect. 5	X Sect. 8	X Sect. 9	X Sect. 11	X Sect. 10	X Sect. 12	X Sect. 13	X Sect. 14	X Sect. 15		X Sect. 16 17	X Sect. 2	X Sect. 19		
Reg. Guide 1.37 R/0 March 16, 1973 ANSI N45.2.1 – 1973, “Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants”	X Sect. 2.1 2.2		X Sect. 9					X	X Sect. 2.5	X	X Sect. 2.5								
Reg. Guide 1.38 R/2 May 1977 ANSI N45.2.2 – 1972 “Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants (During the Construction Phase)”	X Sect. 2.1 2.2		X Sect. 8			X Sect. 5	X	X Sects. 5.2 7.4		X Sect. 2.3	X Sect. 2.5	X		X Sect. 6	X Sect. 5.5				

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TABLE 1

SOURCE REQUIREMENT DOCUMENT	NQA PLAN SECTION																		
	Procedures and Instructions	Document Control	QA Records	Design Control	Procurement Document Control	Control of Purchased Material, Equipment, and Services	Identification and Control of Materials, Parts, and Components	Inspection and Line Verification	Control of Special Processes	Test Control	Control of M&TE and Installed Safety-Related I&C Devices	Handling, Storage and Shipping	Inspection, Test and Operating Status	Control of Maintenance	Adverse Conditions	Identification, Training Qualification, and Certification	Auditing	Computer Software and Data	Definitions
	6.1.4	6.2.4	6.3.4	7.4	8.1.4	8.2.4	8.3.4	9.1.4	9.3.4	9.4.4	9.5.4	9.6.4	9.7.4	9.8.4	10.4	11.4	12.4	13.4	15.0
Reg. Guide 1.39 R/2 September 1977 ANSI N45.2.3 – 1973 “Housekeeping During the Construction Phase of Nuclear Power Plants”	X Sect. 2.1 2.2		X Sect 4					X				X Sect. 3.3							
Reg. Guide 1.30 R/0 August 11, 1972 ANSI N45.2.4 – 1972, “Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations”	X Sect. 2.1 2.3	X Sect. 2.3	X Sect. 8			X Sect. 2.2		X Sect. 2.4 5.1 6.1 7.0		X	X Sect. 2.5	X Sect. 2.2	X		X Sect. 2.6				

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TABLE 1

SOURCE REQUIREMENT DOCUMENT	NQA PLAN SECTION																		
	Procedures and Instructions	Document Control	QA Records	Design Control	Procurement Document Control	Control of Purchased Material, Equipment, and Services	Identification and Control of Materials, Parts, and Components	Inspection and Line Verification	Control of Special Processes	Test Control	Control of M&TE and Installed Safety-Related I&C Devices	Handling, Storage and Shipping	Inspection, Test and Operating Status	Control of Maintenance	Adverse Conditions	Identification, Training Qualification, and Certification	Auditing	Computer Software and Data	Definitions
	6.1.4	6.2.4	6.3.4	7.4	8.1.4	8.2.4	8.3.4	9.1.4	9.3.4	9.4.4	9.5.4	9.6.4	9.7.4	9.8.4	10.4	11.4	12.4	13.4	15.0
Reg. Guide 1.94 R/1 April 1976 ANSI N45. 2.5 – 1974 Supplementary Quality “Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants”	X Sect. 2.1 2.2	X Sect. 2.2	X Sect. 7				X	X Sect. 2.3 4 5 6		X	X Sect. 2.5	X	X Sects. 3 4 5			X Sect. 2.4			
Reg. Guide 1.58 R/1 September 1980 ANSI/ASME N45.2.6 – 1978 “Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants”			X Sect. 6					X	X	X						X			

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TABLE 1

SOURCE REQUIREMENT DOCUMENT	NQA PLAN SECTION																		
	Procedures and Instructions	Document Control	QA Records	Design Control	Procurement Document Control	Control of Purchased Material, Equipment, and Services	Identification and Control of Materials, Parts, and Components	Inspection and Line Verification	Control of Special Processes	Test Control	Control of M&TE and Installed Safety-Related I&C Devices	Handling, Storage and Shipping	Inspection, Test and Operating Status	Control of Maintenance	Adverse Conditions	Identification, Training Qualification, and Certification	Auditing	Computer Software and Data	Definitions
	6.1.4	6.2.4	6.3.4	7.4	8.1.4	8.2.4	8.3.4	9.1.4	9.3.4	9.4.4	9.5.4	9.6.4	9.7.4	9.8.4	10.4	11.4	12.4	13.4	15.0
Reg. Guide 1.64 R/2 June 1976 ANSI N45.2.11 – 1974 “Quality Assurance Requirements for the Design of Nuclear Power Plants”	X Sect. 2.2	X Sect. 7	X Sect. 10	X											X Sect. 9		X Sect. 11	X Sect. 6.1	
Reg. Guide 1.144 R/1 September 1980 ANSI N45.2.12 – 1977 “Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants”			X Sect. 5														X		
Reg. Guide 1.123 R/1 July 1977 ANSI N45.2.13 – 1976 “Quality Requirements for Control of Procurement of Items and Services for Nuclear Power Plants”	X Sect. 2		X Sect. 11		X Sect. 3.0	X		X Sect. 7 10			X Sect. 7.4				X Sects. 8 9	X Sect. 7.5	X		
Reg. Guide 1.146 R/0 August 1980 ANSI N45. 2.23 – 1978 “Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants”			X Sect. 5													X	X		

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TABLE 1

SOURCE REQUIREMENT DOCUMENT	NQA PLAN SECTION																	
	Procedures and Instructions	Document Control	QA Records	Design Control	Procurement Document Control	Control of Purchased Material, Equipment, and Services	Identification and Control of Materials, Parts, and Components	Inspection and Line Verification	Control of Special Processes	Test Control	Control of M&TE and Installed Safety-Related I&C Devices	Handling, Storage and Shipping	Inspection, Test and Operating Status	Control of Maintenance	Adverse Conditions	Identification, Training Qualification, and Certification	Auditing	Computer Software and Data
	6.1.4	6.2.4	6.3.4	7.4	8.1.4	8.2.4	8.3.4	9.1.4	9.3.4	9.4.4	9.5.4	9.6.4	9.7.4	9.8.4	10.4	11.4	12.4	13.4
Reg. Guide 1.152 November 1985 ANSI/IEEE – ANS-7-4.3.2 – 1982 “Application Criteria for Programmable Digital Computer Systems in Safety Systems of Nuclear Power Generating Stations”																		X Sects. 6 7
Reg. Guide 1.189, April 2001 “Fire Protection for Operating Nuclear Power Plants”																	X 1.7.10.1	
10 CFR 21						X								X	X			
10 CFR 50, Appendix B	X Crit. V	X Crit. VI	X Crit. XVII	X Crit. III	X Crit. IV	X Crit. VII	X Crit. VIII	X Crit. X	X Crit. IX	X Crit. XI	X Crit. XII	X Crit. XIII	X Crit. XIV		X Crit. XVI	X Crit. II	X Crit. XVIII	
10 CFR 50.49				X	X									X				
10 CFR 50.55a				X														
10 CFR 50.55e															X			
10 CFR 50.59				X											X			
10 CFR 50.72															X			

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TABLE 1

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TABLE 1

SOURCE REQUIREMENT DOCUMENT	NQA PLAN SECTION																		
	Procedures and Instructions	Document Control	QA Records	Design Control	Procurement Document Control	Control of Purchased Material, Equipment, and Services	Identification and Control of Materials, Parts, and Components	Inspection and Line Verification	Control of Special Processes	Test Control	Control of M&TE and Installed Safety-Related I&C Devices	Handling, Storage and Shipping	Inspection, Test and Operating Status	Control of Maintenance	Adverse Conditions	Identification, Training Qualification, and Certification	Auditing	Computer Software and Data	Definitions
6.1.4	6.2.4	6.3.4	7.4	8.1.4	8.2.4	8.3.4	9.1.4	9.3.4	9.4.4	9.5.4	9.6.4	9.7.4	9.8.4	10.4	11.4	12.4	13.4	15.0	
ASME OM Code “Code for Operation and Maintenance of Nuclear Power Plants”				X						X			X		X				
Final Safety Evaluation for Technical Report NEI 14-05 “Guidelines for the Use of Accreditation in lieu of Commercial Grade Surveys for Procurement of Laboratory Calibration and Test Services,” Revision 1																X			

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Additional Commitments

1. Reg. Guide 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants" Revision 4 Revision 4, defines classification of systems and components. ND commits to the applicable regulatory position guidance provided in this RG.
2. Reg. Guide 1.29, "Seismic Design Classification for Nuclear Power Plants," Revision 5, defines systems required to withstand a safe shutdown earthquake. ND commits to the applicable regulatory position guidance provided in this RG.
3. Reg. Guide 1.37, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants," Revision 1, provides guidance on specifying water quality and precautions related to the use of alkaline cleaning solutions and chelating agents. ND will conform to RG 1.37, Revision 0. In addition, ND commits to the applicable regulatory position guidance in RG 1.37, Revision 1 with the following alternatives:
 - a. Regulatory Position (RP) C.1. ND commits to ANSI N45.2.1. Acceptable Codes and Standards are identified in ANSI N45.2.1, Sections 3 and 12. This position is an equivalent to RG 1.37, Revision 1, RP C.1.
 - b. Regulatory Position C.2. ND commits to ANSI N45.2.1, Section 3.4, with the following clarification, "The water quality for final flushes of fluid systems and associated components should be at least equivalent to the quality of the operating system water." This position is an equivalent to RG 1.37, Revision 1, RP C.2.
 - c. Regulatory Position C.3. In lieu of the commitments identified in this position, ND commits to ANSI N45.2.1 and ANSI N45.2.15. These standards are equivalent to the NQA-1-1994 parts that are referenced. In addition, the following clarification is added, "A suitable chloride stress-cracking inhibitor should be added to the fresh water used to flush systems containing austenitic stainless steels." This position is an equivalent to RG 1.37, Revision 1, RP C.3.
4. GL 89-02, "Actions to Improve the Detection of Counterfeit and Fraudulently Marked Products," and GL 91-05, "Licensee Commercial Grade-Dedication Programs." ND commits to implementing the actions and policies required by GL 89-02 and GL 91-05. Nuclear Power Group Procurement Engineering procedures for commercial grade dedication and receipt inspection activities are consistent with the GLs.

Quality Standards Supplemental Information and Alternatives

To supplement and support the ND Quality Assurance Program, the NQAP conforms to the guidance of SRP Section 17.5, Paragraph II.V, to establish QA program commitments for the Bellefonte 1 & 2 nuclear plants to specific quality standards as described below.

1. In lieu of Subpart 2.2, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to ANSI N45.2.2-1972, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plant."

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2. In lieu of Subpart 2.4, "Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to
3. ANSI N45.2.4-1972, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations," with alternatives listed in the NQAP, Appendix B, "Regulatory Guide Conformance Status," Table 2.
4. In lieu of Subpart 2.5, "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils, and Foundations for Nuclear Power Plants," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to ANSI N45.2.5-1974, "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils, and Foundations During the Construction Phase of Nuclear Power Plants."
5. In lieu of Subpart 2.7, "Quality Assurance Requirements of Computer Software for Nuclear Facility Applications," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to RG 1.152, "Criteria for Programmable Digital Computer System Software in Safety-Related Systems of Nuclear Power Plants," Revision 3.
6. In lieu of Subpart 2.8, "Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for Nuclear Power Plants," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to ANSI N45.2.8-1975, "Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants."
7. In lieu of Subpart 2.14, "Quality Assurance Requirements for Commercial Grade Items and Services," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to RG 1.123, "Quality Assurance Requirements for Control of Procurement of Items and Service for Nuclear Power Plants," Revision 1, with alternatives listed in NQAP, Appendix B, Table 2. In addition, ND commits to GL 89-02 and GL 91-05.
8. In lieu of Subpart 2.15, "Quality Assurance Requirements for Hoisting, Rigging, and Transporting Items for Nuclear Power Plants," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to ANSI N45.2.2-1972, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plant."
9. In lieu of Subpart 2.20, "Quality Assurance Requirements for Subsurface Investigations for Nuclear Power Plants," ASME NQA-1-1994 Edition or ASME NQA-1-2008/2009a Edition identified in SRP 17.5, ND commits to ANSI N45.2.20-1979, "Supplementary Quality Assurance Requirements for Subsurface Investigations for Nuclear Power Plants."
10. SRP 17.5 identifies various Nuclear Information and Records Management Association (NIRMA) documents (Technical Guides [TG]-11-1998, 15-1998, 16-1998, and 21-1998) as acceptable quality standards for the establishment and controls of electronic records management and software controls. NQAP, Section 6.3.1 and Appendix B, Table 1, include the requirements of ANSI/ANS-3.2-2012, Section 3.17, which is consistent with the intent of RIS 2000-18 and the associated NIRMA TGs.

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NRC Regulatory Guide 1.8 - "Personnel Selection and Training," Revision 2, 4/87, endorses ANSI N18.1-1971 and ANSI/ANS 3.1-1981.

The Nuclear Quality Assurance Plan (NQAP) follows this Guide with the following alternatives:

- A. ND will meet the requirements of Regulatory Guide 1.8, Revision 2 (4/87) for all new personnel qualifying on positions identified in regulatory position C.1 after January 1, 1990. Personnel qualified on these positions prior to this date will still meet the requirements of Regulatory Guide 1.8, Revision 1-R (5/77). As specified in regulatory position C.2, all other positions will meet the requirements of ANSI/ANS N18.1-1971.
- B. Section 4.3.2 - There may be occasions where ND will utilize a composite crew (multidiscipline) during operations phase activities to efficiently perform a task. As such, a foreman may not have the experience required in one of the disciplines he supervises. In these instances, the foreman will meet the requirements of ANSI N18.1 in at least one of the disciplines, and additional technical support, procedure support, and/or discipline support will be available to the foreman for the task period.
- C. In lieu of the training guidelines endorsed by Regulatory Guide 1.8, Revision 2, specified in Regulatory Position Sections C.1.b and C.1.f, ND shall comply with the requirements of 10 CFR 55.31(a) (4) and 10 CFR 55.59 as they apply to training programs based on a Systems Approach to Training (SAT) as defined in 10 CFR 55.4 and using a plant-referenced simulator as required by 10 CFR 55.45.
- D. ND uses the methodology for equating education and experience contained in ANSI 3.1-1987 for guidance to evaluate equivalent related experience for a degree.
- E. In addition to the training guidelines in subsections 5.3.2, 5.3.3, 5.3.4, and 5.5 of ANSI N18.1- 1971, ND shall comply with the requirements of 10 CFR 50.120 as it applies to training programs based on a systems approach to training.
- F. In lieu of the one year of experience in the implementation of the quality assurance program for the management position responsible for site QA (ANSI/ANS 3.1-1981, Section 4.4.5.b), ND requires five years of experience in QA-related activities.

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NRC Regulatory Guide 1.28 - "Quality Assurance Program Requirements (Design and Construction)," Revision 3, 8/85, allows continued implementation of ANSI N45.2-1971 as previously committed.

The NQAP follows this Guide.

NRC Regulatory Guide 1.30 - "Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment," 8/72, endorses ANSI N45.2.4-1972.

The NQAP follows this Guide with the following alternatives:

- A. ANSI N45.2.4 states that the Appendixes are not a part of the standard; therefore, ND does not consider the Appendixes to be mandatory.
- B. Section 2.1, "Planning" - The intent of this section shall be met in different forms depending on magnitude and scope of work.
- C. During the operational phase, tests are performed as determined by the site engineering organization, modification, or maintenance engineers, as appropriate, based upon the equipment or system functions that could be impacted by the work performed.
- D. ND's alternative to the tagging of in plant process instruments for calibration status (ANSI N45.2.4, Section 6.2.1) is that each item of process control instrumentation is uniquely identified with an instrument number. This number is utilized in an instrument maintenance record so that the current calibration status and data attesting to the status of each item are documented along with the identification of the person performing the calibration. In addition, this record system provides a mechanism for evaluating equipment performance and adjusting calibration frequencies to ensure quality performance.
- E. Section 6.2.2 - For modifications, ND interprets this section as not requiring that an entire system be retested after modifications. Testing will be performed on equipment that has or could be impacted by the modification in accordance with applicable design and testing requirements to verify that operability requirements are met and that interfacing components and equipment functions have not been degraded.
- F. ND implements the requirements of N45.2.4 Sections 5.1 and 6.1 with a performance-based graded QA verification program consisting of quality control inspection, line verification, and quality assessments.

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NRC Regulatory Guide 1.33 - "Quality Assurance Program Requirements (Operations)," Revision 2, 2/78 endorses ANSI N18.7-1976/ANS 3.2.

The NQAP follows this Guide with the following alternatives:

- A. ANSI N18.7-1976 references certain other standards to which ND takes exception. ND's exception and appropriate alternatives to the other standards are listed in this Appendix in the appropriate location.
- B. Section 5.2.2 - The guidelines of this section are accepted with the following interpretations:
 1. Temporary changes which clearly do not change the intent of the approved procedure shall as a minimum be approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator License on the unit affected or as defined in Section 9.9 of this Program, the FSAR, or appropriate plant procedures.
 2. For facilities holding a construction permit where system(s) and/or components have been released to the operations organization, temporary changes to procedures, as described above, shall as a minimum be approved by two members of the plant management staff, at least one of whom shall be a designated member of the plant operations management staff.
- C. Section 5.2.13.1 - The statement that changes made to procurement documents be subject to the same degree of control as was used in the preparation of the original documents is applied consistent with the requirements of ANSI N45.2.11, paragraph 7.2. Minor changes to documents, such as inconsequential editorial corrections or changes to commercial terms and conditions, may not require that the revised document receive the same review and approval as the original documents.
- D. Section 5.2.15 - The guidelines of this section are accepted with the following alternatives:
 1. Minor changes to documents are processed as delineated in Section 6.1.2F.3 of this Program.

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3. ND has programmatic controls in place that make a biennial review process unnecessarily duplicative. These programmatic controls ensure procedures are periodically reviewed and maintained current when pertinent source material is revised; the plant design changes; and/or any deficiencies occur. ND has determined that this approach better addresses the purpose of the biennial review process and that, from a technical and practical standpoint, is better suited to ensure the validity of operational phase site procedures and instructions.
- E. Section 5.2.17 - The statement that deviations, their cause, and any corrective action completed or planned shall be documented will apply to significant deviations. Other identified deviations will be documented and corrected. This interpretation is consistent with Appendix B to 10 CFR 50, Criterion XVI, "Corrective Action."
 - F. ND will comply with regulatory position C.4 except that audit frequencies are specified in NQAP Section 12.2E. A grace period not to exceed 90 days will be applied to the biennial frequency for internal audits described in Section 4.5 of ANSI N18.7-1976 which states that audits of safety- related activities are completed "within a period of two years." This grace period will not be applied to audits of the Radiological Emergency Plans to satisfy the requirements of 10 CFR 50.54 (t) (1), Security to satisfy the requirements of 10 CFR 50.54 (p) (3) and 10 CFR 73.55 (m), Access Authorization to satisfy the requirements of 10 CFR 73.56 (n) (1) and (n) (2).
 - G. Section 4.3.4.4.c - The independent review body implements this section by reviewing reportable events that are reported to the NRC in accordance with 10 CFR 50.73.
 - H. When purchasing commercial grade services from domestic and international calibration or testing laboratories accredited to ISO/IEC 17025 that are accredited by an Accreditation Body that is a signatory to the ILAC MRA, the procurement documents are not required to impose a quality assurance program consistent with ANSI N45.2-1971. Alternative requirements described in NRC Final Safety Evaluation for Technical Report NEI 14-05 Revision 1, Agency-wide Documents Access and Management System (ADAMS) Accession No. ML14322A535 may be implemented in lieu of imposing a quality assurance program consistent with ANSI N45.2-1971.

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NRC Regulatory Guide 1.37 - "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water Cooled Nuclear Power Plants," 3/73, endorses ANSI N45.2.1-1973.

The NQAP follows this Guide with the following alternatives:

- A. The phrase "when applicable" used in Regulatory Guide 1.37, paragraph C.2, leaves open to interpretations which specific requirements and recommendations contained in ANSI N45.2.1- 1973 are applicable to and achievable during the construction or operation phase. The interpretation of "when applicable" will be made with appropriate concurrence in a written procedure before its application.
- B. The second sentence of paragraph C.3 should be amended to read:

"The water quality for final flushes of fluid systems and associated components during the operations phase shall be at least equivalent to the quality required for normal operation. This requirement does not apply to dissolved oxygen or nitrogen limits nor does it infer that other additives normally in the system water will be added to the flush water."
- C. Temporary ink markings placed by the fabricator as mill marks may remain on components that operate at temperatures greater than 140°F (normal or accident) and have a 40 year integrated radiation dose less than 106 rads.
- D. Control of halogen, sulfur, or low-melting metal contents is not required for abrasive tools such as grinding wheels, cutoff wheels, sanding paper, and flapper wheels. Use of abrasive tools on corrosion-resistant alloys shall be followed by cleaning with an approved solvent. Particulate residue shall be removed by vacuum, brush, dry wiping cloth, or air, with special attention to crevices.
- E. Temporary tape and markings (ink and paint) may remain on components that operate at temperatures less than 140°F (normal or accident).

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- G. Section 2.1, "Planning - For operations phase activities, the required planning is frequently performed on a generic basis for application to many systems and component installations. This results in standard procedures for cleaning, inspection, and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique; however, standard procedures are reviewed for applicability in each case. Cleaning procedures are limited in scope to those actions or activities, which are essential to maintain or achieve required quality. This is consistent with Section 5.2.17, paragraph 5, of ANSI N18.7-1976, which provides for examination, measurement, or testing to ensure quality or indirect control by monitoring of processing methods.
- H. ND intends to conform to the cleanness requirements of Section 3.1 of ANSI N45.2.1-1973 with the exception of permissible particle sizes for cleanness Classes B and D. In these cases, ND will conform to the requirements of ANSI N45.2.1-1980, Section 3.2.2.1(b), which states, "There shall be no particles larger than 1/32 inches by 1/16 inches long (0.8 mm by 1.6 mm)" for cleanness Class B, and Section 3.2.4.4 which states, "Particles no larger than 1/16 inch by 1/8 inch long (1.6 mm by 3.2 mm) on a 14 mesh (1.4 mm, ASTM E-11, "Specification for Wire Cloth Sieves for Testing Purposes) or finer filter, or the equivalent" for cleanness Class D.

NRC Regulatory Guide 1.38 - "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water Cooled Nuclear Power Plants," Revision 2, 5/77 endorses ANSI N45.2.2-1972.

The NQAP follows this Guide with the following alternatives:

- A. Storage requirements at the site are determined by the responsible engineering unit. This determination involves an evaluation of the complexity of the item and its importance to safety. The various types of storage are provided (yard, warehouse, humidity controlled, etc.) but the classification levels of N45.2.2 are not necessarily employed.
- B. In accordance with ASME QA Case 78-N45.2.2-01-0, welding electrodes hermetically sealed in metal containers may be stored under conditions described for level C items unless other storage requirements are specified by the manufacturer. Storage conditions for level C items may also apply to bare wire and consumable inserts unless specified otherwise by the manufacturer.

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- D. Austenitic stainless steel and nickel alloy items may have markings applied directly to the bare metal surfaces provided the requirements of ND internal procedures, which control the chemical content of the marking materials, are met.
- E. Tubing and piping materials shall have end caps or plugs while in storage unless specified otherwise by engineering specification. End caps or plugs are not mandatory on tube or pipe fittings provided the requirements of ND internal procedures to store under cover with protection from the elements are met. These materials are required to be in a visually clean condition and free of visually detectable defects prior to installation.
- F. Section 6.4.1 - ND will meet this section through periodic inspection of randomly selected stored items by QC inspection personnel certified to ANSI N45.2.6. The criteria and factors regarding frequency and degree are established in Section 5.2A and 5.2B of this Program.
- G. ND takes exception to ANSI N45.2.2, Section 5.2.1. ND's alternative is that shipping damage inspection shall be done before unloading if evidence of possible shipping damage would be lost in unloading, such as when the item is secured to the carrier, covered by tarpaulin, accompanied by a visible impact recorder, or when the contract requires any of the above. Personnel performing preliminary visual observations (prior to unloading) per Section 5.2.1 need not be qualified to ANSI N45.2.6. Item inspections per Section 5.2.2 are performed by personnel qualified to ANSI N45.2.6. The item inspections also ensure that no damage has occurred during shipping.
- H. Section 6.4.2(8) - ND will follow either vendor recommendations for preventive maintenance, an engineering evaluation, or engineering requirements documents delineating appropriate maintenance requirements, for items in storage. Engineering evaluations and engineering requirement documents will consider vendor recommendations.
- I. Section 6.5 (last sentence) - During a period of installed storage or extended layup after release of an item from permanent storage, vendor recommendations for preventive maintenance, or an engineering evaluation or an engineering requirements document delineating appropriate maintenance requirements will be followed. Engineering evaluations and engineering requirement documents will consider vendor recommendations.

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- K. ND's alternative to the requirements of Section 6.6 of ANSI N45.2.2 is that Procurement will maintain written records of pertinent information such as storage location and receipt inspection results and will take necessary action to provide packaging for items not suitably packaged for storage. Written records of personnel access to nuclear stores are kept for entry during times when nuclear stores personnel are not on duty. All other times, the storeroom is locked and admittance is controlled by stores personnel.
- L. ND does not utilize specific levels for classification of items (ANSI N45.2.2, Section 2.7); however, the specific requirements identified in the Standard are used as a guide with respect to protecting the equipment.
- M. ND does not utilize specific levels for packaging (ANSI N45.2.2, Section 3.2). All purchased items have been properly packaged. Additionally, periodic storage inspections are conducted to ensure protective measures specified in the Standard to prevent damage or deterioration are complied with and are imposed until the item or component is issued for use. Purchased items undergo receiving inspection using the graded approach. This inspection verifies that items have been properly packaged for shipment and will ensure that any special protective measures specified in the Standard to prevent damage, deterioration, or contamination will be imposed until the item or component is issued for use.
- N. ND takes exception to the requirement (ANSI N45.2.2, Section 6.2.4) that salt-tablet dispensers in any storage area shall not be permitted. ND Procurement stores salt-tablet dispensers in sealed containers for use outside of the storage area only.
- O. Sections 7.3.2 and 7.4.2 - Use of hoisting equipment beyond its rated load is acceptable when specifically approved with technical justification by engineering.
- P. Section 5.2.2(1) Physical Properties - QC Inspectors, Engineers, or other technically competent individuals assure that physical properties conform to specified requirements and that chemical and physical test reports meet the requirements.
- Q. Section 2.4 - Off-site inspection, examination or testing is audited by personnel who are qualified in accordance with ANSI N45.2.23 rather than ANSI N45.2.6 as stated in the ANSI Standard.

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NRC Regulatory Guide 1.39 - "Housekeeping Requirements for Water-Cooled Nuclear Power Plants," Revision 2, 9/77 endorses ANSI N45.2.3-1973.

The NQAP follows this Guide with the following alternative:

The zone designations of Section 2.1 of N45.2.3 and the requirements associated with each zone are not consistent with the requirements for an operating plant. Instead, ND Nuclear procedures or instructions for housekeeping activities which include the applicable requirements outlined in Section

2.1 of N45.2.3 and which take into account radiation control considerations, security considerations, fire protection considerations, and personnel and equipment safety considerations are developed on a case basis.

NRC Regulatory Guide 1.58 - "Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel," Revision 1, 9/80 endorses ANSI N45.2.6-1978.

The NQAP follows this Guide with the following alternatives:

- A. ND complies with Regulatory Position C.1 of this Regulatory Guide, as follows:
 1. Construction testing personnel are qualified to Regulatory Guide 1.28 (ANSI N45.2).
 2. Operations, maintenance, and modification testing personnel are qualified to Regulatory Guide 1.8 (ANSI N18.1) as endorsed in Appendix B of this program description.
 3. Quality control inspection personnel are qualified to ANSI N45.2.6.
- B. Certifications may not correspond to the levels established in N45.2.6. Inspection, examination, and testing personnel may be classified by disciplines (mechanical, civil, electrical, instrumentation, hanger, etc.) and certified by procedure to perform the functions identified in N45.2.6, Tables I, L-I, and L-II.
- C. Medical eye examinations for inspection, testing, and examination personnel are made in accordance with ND eye examination requirements.
- D. ANSI/ASNT CP-189, 1995 Ed. "Standard for Qualification and Certification of Nondestructive Testing Personnel" will be used to qualify and certify Nondestructive Examination (NDE) personnel. In ASME Section XI applications, CP-189 will be used, as modified by ASME Section

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- E. XI. ANSI/ASNT CP-189, 1995 Ed. is acceptable for qualification of personnel performing NDE of primary containment.
- F. ND complies with Regulatory Position C.2 as follows: For containment leak rate testing personnel, ND as a minimum will meet the qualification requirements of ANSI N45.2.6 as endorsed by Regulatory Guide 1.58, Revision 1.

NRC Regulatory Guide 1.64 - "Quality Assurance Requirements for the Design of Nuclear Power Plants," Revision 2, 6/76, endorses ANSI N45.2.11-1974.

The Nuclear Quality Assurance Program follows this Guide with the following alternative to Regulatory Position C.2:

- A. If in an exceptional circumstance, the engineer's supervisor is the only person technically qualified to perform the review, the design verification review will be conducted by the supervisor, provided that:
 - 1. The other provisions of this Regulatory Guide and ANSI N45.2.11, Section 6.1 are satisfied.
 - 2. The justification is individually documented and approved in advance by the supervisor's management.
 - 3. QA will audit the use of supervisors as design verifiers to guard against abuse.

NRC Regulatory Guide 1.74 - "Quality Assurance Terms and Definitions," 2/74, endorses ANSI N45.2.10-1973.

The NQAP follows this Guide with applicable alternatives noted in Section 15.0 of this Program.

NRC Regulatory Guide 1.88 - "Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records," Revision 2, 10/76, endorses ANSI N45.2.9-1974.

The NQAP follows this guide with the following alternatives:

- A. Section 2.2.1 - ND may also define lifetime QA records to be "life of the nuclear liability policy, plus the subsequent 10 years during which claims may be covered by the policy." This definition is consistent with ANI Information Bulletin 15-01 "Nuclear Liability Insurance Records Retention, and the requirements of our nuclear insurer.

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- C. Section 5.4.3 - In order to preclude deterioration, manufacturer's packaging and storage recommendations for special process records will be considered.
- D. Section 5.6 - ND will provide two-hour minimum fire-rated protection for QA records and utilize one of the following alternatives as single storage facilities:
 - 1. A fire-resistive vault or file room that meets the applicable requirements of ANSI N45.2.9- 1974 with the following exceptions:
 - a. Records will be afforded the protection of a two-hour rated facility.
 - b. Records will be stored in fully enclosed cabinets.
 - c. Structure, doors, frames, and hardware shall be designed to fully comply with a minimum two-hour rating.
 - d. Pipes or penetrations will be allowed for fire protection, lighting, temperature, humidity control, or communications.
 - e. Work not directly associated with records storage or retrieval will be prohibited in the facility.
 - f. Smoking and eating/drinking will be prohibited throughout the records facility.
 - 2. One-hour fire-rated cabinets if the following conditions are met:
 - a. The records are recreatable, OR
 - b. Are contained within a facility of fire-resistive construction with adequate smoke detection or fire-suppression systems: OR
 - c. Are within a facility with a fuel loading less than 25 pounds/square foot as defined by NFPA 232-1980.
- E. QA records may be temporarily stored for 60 days or less in steel file cabinets or drawers if the following conditions are met:
 - 1. The records are recreatable, OR
 - 2. Are contained within a facility of fire-resistive construction with adequate smoke detection or fire-suppression systems: OR

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3. Are within a facility with a fuel loading less than 25 pounds/square foot as defined by NFPA 232-1980.
- F. For storage of film and other processed records, humidity and temperature controls shall be provided to maintain a stable environment. Recommendations by the manufacturer will be considered in determining an acceptable range of tolerance.
- G. In addition to the records specified in Appendix A to ANSI N45.2.9-1974, the following records and retention times are applicable to BLN:
1. Licensee Event Reports required by 10 CFR 50.73 (3 years).
 2. Records of changes made to the procedures required by NQAP Section 9.9.2B.7.a for BLN only (3 years).
 3. Records of surveillance activities, inspections, and calibrations required by the Technical Specifications and the Fire Protection Program (5 years).
 4. Records of sealed source and fission detector leak tests and results (5 years).
 5. Records of annual physical inventory of all sealed source material of record (5 years).
 6. Records of reactor tests and experiments (lifetime).
 7. Records of in-service inspections performed pursuant to the Technical Specifications (lifetime).
 8. Records of quality assurance activities required by the NQAP not listed in items 1 through 5 above and which are classified as permanent records by applicable regulations, codes, and standards (lifetime).
 9. Records of 50.59 screening reviews and evaluations performed for changes made to equipment pursuant to 10 CFR 50.59 (lifetime).
Records of 50.59 screening reviews and evaluations performed for changes made to procedures or tests and experiments pursuant to 10 CFR 50.59 (5 years).
 10. Records of the reviews required by NQAP Sections 9.9.2 and 4.1.7C (lifetime).

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11. Records of the service lives of all hydraulic and mechanical snubbers required by Technical Requirement (TR) 3.7.3, "Snubbers," including the date at which the service life commences, and associated installation and maintenance records (lifetime).
12. Records of secondary water sampling and water quality (lifetime).
13. Records of analyses required by the Radiological Environmental Monitoring Program that would permit evaluation of the accuracy of the analysis at a later date (these records should include procedures effective at specified times and QA records showing that these procedures were followed (lifetime).
14. Records of reviews performed for changes made to the Offsite Dose Calculation Manual and the Process Control Program (lifetime).
15. Records of steam generator tube surveillance (lifetime).

NRC Regulatory Guide 1.94 - "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants," Revision 1, 4/76, endorses ANSI N45.2.5-1974.

The NQAP follows this Guide with the following alternatives:

- A. The qualification requirements for quality control (QC) inspectors are stated in our position on Regulatory Guide 1.58 in this table.
- B. Testing frequency and QC acceptance criteria for concrete construction is described in the Safety Analysis Report for BLN 1 and 2.
- C. Burning of bolt holes is acceptable when specifically approved by engineering.
- D. The installation method for high strength bolting may be either the automatic cutoff impact wrench method, turn-of-nut method, or direct tension indicator method.
- E. Torque wrench inspection of completed connections installed by the turn-of-nut method shall not be required but may serve to resolve disagreements concerning the results of inspection of bolt tension.
- F. Torque wrench inspection of the load indicator washer type of direct tension indicator shall not be required.

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- G. Bolts shall be considered long enough if the bolt point is flush with or outside the face of the nut.
- H. When specified by the design output document, ND's alternative for visual welding acceptance criteria will be NCIG-01, May 7, 1985, Revision 2, "Visual Weld Acceptance Criteria for Structural Welding of Nuclear Power Plants."
- I. For modifications or repairs to structures within the scope of N45.2.5-1974, plant management shall refer to the Site Engineering organization for any design analyses.
- J. Verification of pre-weld activities, including fit-up, will be verified through a graded QC inspection program, unless 100 percent inspection is specified in design output documents.
- K. Much of N45.2.5 applies to construction and pre-operational testing. As a result, many of the listed tests are not appropriate in an operational plant. In lieu of this, ND utilizes the appropriate engineering organizations to establish the need for specific tests or test procedures during the operational phase, and the guidance provided in ANSI N45.2.5-1974 is considered for applicability.
- L. ND implements the requirements of N45.2.5 Section 3, 4, and 5 with a performance-based graded QA verification program consisting of quality control inspection, line verification, and quality assessments.

NRC Regulatory Guide 1.116 - "Quality Assurance Requirements for the Installation, Inspection, and Testing of Mechanical Equipment and Systems," 6/76, endorses ANSI N45.2.8-1975.

The NQAP follows this Guide with the following alternatives:

- A. QA programmatic/administrative requirements included in the Regulatory Guide shall apply to construction, maintenance, and modification activities. Technical requirements associated with maintenance and modifications shall be the original requirements or better (e.g., code requirements, material properties, design margins, manufacturing processes, and types of inspection requirements).
- B. Much of N45.2.8 applies to construction and pre-operational testing. As a result, many of the listed tests are not appropriate in an operational plant. In lieu of this, ND utilizes the appropriate engineering organizations to establish the need for specific tests or test procedures during the operational phase and the guidance provided in ANSI N45.2.8-1975 is considered for applicability.

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- C. ND implements the requirements of N45.2.8 Sections 4.4 and 5.1 with a performance based, graded QA verification program consisting of quality control inspection, line verification, and quality assessments.

NRC Regulatory Guide 1.123 - "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants," Revision 1, 7/77, endorses ANSI N45.2.13-1976.

The NQAP follows this Guide with the following alternative:

- A. Section 4.2 - In the special case of "commercial grade items": the supplier may not be evaluated by one of the methods identified; however, the procurement documents shall contain acceptance requirements (special receipt inspection requirements, special tests, or functional tests) specific to the item being procured. The acceptance (dedication) of commercial grade items intended for safety-related applications meets the intent of EPRI NP-5652 as accepted by the NRC.
- B. Section 7.5 - Personnel responsible for performing verification activities are qualified in accordance with ANSI N45.2.6 or ANSI N45.2.23 as applicable.
- C. Section 3.2.3 - When purchasing commercial grade calibration or testing services from a laboratory holding accreditation by an accrediting body recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), commercial grade surveys need not be performed provided each of the following conditions are met:
 - 1. A documented review of the supplier's accreditation is performed and includes a verification of the following:
 - a. The calibration or test laboratory holds accreditation by an accrediting body recognized by the ILAC MRA. The accreditation encompasses ISO/IEC-17025:2005, "General Requirements for the Competence of Testing and Calibration Laboratories."
 - b. For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.
 - 2. For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty.

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3. The purchase documents require that:
 - a. The service must be provided in accordance with their accredited ISO/IEC-17025:2005 program and scope of accreditation.
 - b. As-found calibration data must be reported in the certificate of calibration when calibrated items are found to be out-of-tolerance. (for calibration services only)
 - c. The equipment/standards used to perform the calibration must be identified in the certificate of calibration. (for calibration services only)
 - d. The customer must be notified of any condition that adversely impacts the laboratory's ability to maintain the scope of accreditation.
 - e. Additional technical and quality requirements, as necessary, based upon a review of the procured scope of services, which may include, but are not necessarily limited to, tolerances, accuracies, ranges, and industry standards.
4. It is validated, at receipt inspection, that the laboratory's documentation certifies that:
 - a. The contracted calibration or test service has been performed in accordance with their ISO/IEC-17025:2005 program, and has been performed within their scope of accreditation, and
 - b. The purchase order's requirements are met.

NRC Regulatory Guide 1.144 - "Auditing of Quality Assurance Programs for Nuclear Power Plants," Revision 1, 9/80, endorses ANSI N45.2.12-1977.

The NQAP follows this Guide with the following alternatives:

- A. Paragraph 2.3 - Technical specialists who assist in performing audits in their area of special expertise will perform their audit duties under the supervision of a certified lead auditor.

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- C. ND implements the requirements of Regulatory Guide paragraph C.3.a and Sections 3.4 and 3.5 of ANSI N45.2.12 with a performance-based, graded QA audit program. Real time adjustments are made to the audit scope, depth, and frequency based on an item's or subject's importance to safety and performance history. Real-time adjustments allow emphasis to be placed in areas where performance is weak and decrease emphasis where performance is evaluated to be good.
- D. Section 4.5.2 - QA will have a certified lead auditor or a manager of the auditor either conduct the required follow up or attest to the acceptability of the follow up conducted by audit personnel.
- E. Regulatory Guide 1.144, Section C.3.b(2):

When purchasing commercial grade calibration or testing services from a laboratory holding accreditation by an accrediting body recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), commercial grade surveys need not be performed provided each of the following conditions are met:

- 1. A documented review of the supplier's accreditation is performed and includes a verification of the following:
 - a. The calibration or test laboratory holds accreditation by an accrediting body recognized by the ILAC MRA. The accreditation encompasses ISO/IEC-17025:2005, "General Requirements for the Competence of Testing and Calibration Laboratories."
 - b. For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.
 - c. For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty.
- 2. The purchase documents require that:
 - a. The service must be provided in accordance with their accredited ISO/IEC-17025:2005 program and scope of accreditation.

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- c. As-found calibration data must be reported in the certificate of calibration when calibrated items are found to be out-of-tolerance. (for calibration services only)
 - d. The equipment/standards used to perform the calibration must be identified in the certificate of calibration. (for calibration services only)
 - e. The customer must be notified of any condition that adversely impacts the laboratory's ability to maintain the scope of accreditation.
 - f. Additional technical and quality requirements, as necessary, based upon a review of the procured scope of services, which may include, but are not necessarily limited to, tolerances, accuracies, ranges, and industry standards.
3. It is validated, at receipt inspection, that the laboratory's documentation certifies that:
- a. The contracted calibration or test service has been performed in accordance with their ISO/IEC-17025:2005 program, and has been performed within their scope of accreditation, and
 - b. The purchase order's requirements are met.

NRC Regulatory Guide 1.146 - "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants," 8/80, endorses ANSI N45.2.23-1978.

The NQAP follows this Guide with the following alternative:

- A. In addition to the State agencies and technical societies recognized by ANSI N45.2.23, Section 2.3.1.3, ND may grant two points for professional competency to those individuals licensed as either a Reactor Operator (RO) or Senior Reactor Operator (SRO) by the NRC.
- B. Replace Section 2.3.4 of ANSI N45.2.23 with the following:

"Prospective Lead Auditors shall demonstrate their ability to effectively implement the audit process and effectively lead an audit team. This process is described in written procedures which provide for evaluation and documentation of the results of this demonstration. A prospective Lead Auditor shall participate in at least one nuclear quality assurance audit within the year preceding the individual's effective date of qualification."

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NRC Regulatory Guide 1.152 - "Criteria for Programmable Digital Computer System Software in Safety-Related Systems of Nuclear Power Plants," November 1985, endorses ANSI/IEEE-ANS-7- 4.3.2-1982.

The NQAP follows this Guide consistent with Section D of the Guide, with the following alternative:

- C. "For programmable digital computer system software installed in safety-related protection systems, ND will follow this guide for the verification and validation of program elements specified in Sections 13.2G and 13.2H of the NQAP."

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Appendix C
Guidelines for Determination of Identified Quality Related Classifications
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1.0 INTRODUCTION

The guidelines for classifying components, systems, and activities as quality related depend on the relationship of the terms quality related and safety related as discussed in 2.0 and 3.0 below. The guidelines are contained in Section 4.0 of this Appendix.

2.0 QUALITY-RELATED

- A. Quality-related (QR) is a term, which encompasses quality assurance program requirements that describe activities, which affect structures, systems, and components. These requirements provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. In addition to safety-related structures, systems, components, and activities, the term "quality- related" encompasses the broad class of plant features covered (not necessarily explicitly) in the General Design Criteria of 10 CFR 50, Appendix A, that contribute in an important way to the safe operation and protection of the public in all phases and aspects of facility operation (i.e., normal operation and transient control as well as accident mitigation).
- B. Quality-related is more encompassing than the term safety related. Appendix D shows the scope of the Nuclear Quality Assurance Program. All quality-related items and activities are not necessarily safety-related. Appendix D illustrates the programmatic relationships.

3.0 SAFETY-RELATED

- A. Use of the term safety-related (or variations thereof) and the methodology for classifying items and activities as safety-related has been established in the General Design Criteria and Safety Analysis Report for BLN. The term safety-related as used in this appendix, this program description and other Nuclear Quality Assurance Program documents is generic in nature.
- B. Items and activities classified as safety-related are subject, without exception, to the requirements of 10 CFR 50, Appendix B. All safety-related items and activities are also quality-related.

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5.0 GUIDELINES

Some items and activities are classified as quality-related but not safety-related. However, because some items and activities classified as quality-related are considered important to the continued reliable operation of ND's BLN nuclear facilities, ND shall apply the requirements of all or selected parts of the NQAP to such items and activities.

- A. Structures, systems, and components shall be classified as quality-related but not safety-related if they fit one or more of the following categories:
 1. Contain radioactive material and have not been identified as safety-related.
 2. Are required by ANS 3.2/ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants," and are not identified as safety-related (e.g., plant security system).
 3. Are fire protection features that provide protection for safety-related structures, systems, or components.
 4. Are structures, systems, and components that have environmental or operability requirements important to the safe operation of the unit (as specified in the Plant Technical Specifications).
 5. Are structures, systems, and components that could impact reliability and operability goals recommended by ND Nuclear management and approved by the CNO and Executive Vice President.
- B. Those components or systems designated as Seismic Category I (L) in nuclear plant FSARs shall be classified as quality-related. Seismic Category I (L) is the non-safety-related portion of Seismic Category I. (Refer to Appendix D.)
- C. Additional components or systems, not identified in the FSARs as NNS or Seismic Category I (L,) can be designated as quality-related but not safety-related. Such additional components or systems could include the following:
 1. Plant security system.
 2. Plant radiological controls and radwaste systems.

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3. Other structures, systems, and components which have special environmental or operability requirements.
 4. Structures, systems, or equipment designated by ND Nuclear management as requiring some level of quality control because of their importance to plant reliability or operability.
- D. Items to which one or more of the following regulatory documents are applicable should be considered for classification as quality-related.
1. Regulatory Guide 1.143, "Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants."
 2. 10 CFR 71, Subpart H, "Quality Assurance (Packaging and Transportation of Radioactive Material)."
 3. Regulatory Guide 1.29, "Seismic Design Classification."
 4. 10 CFR 73.55, "Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors against Radiological Sabotage."
 5. 10 CFR 50.62, "Requirements for Reduction of Risk from Anticipated Transients without Scram (ATWS) Events for Light-Water-Cooled Nuclear Power Plants."
 6. 10 CFR 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979."
 7. ANS 3.2/ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants."
 8. Regulatory Guide 1.33, Revision 2, February 1978, "Quality Assurance Program Requirements (Operation)."
 9. NRC letter from H. J. Thompson, Jr., dated April 16, 1985, "Quality Assurance Guidance for ATWS Equipment That is Not Safety Related," Generic Letter 85-06, (A02 850422 044).
 10. NRC letter from D. G. Eisenhut dated April 24, 1986, "Implementation of Fire Protection Requirements," Generic Letter 86-10 (A02 860512 005).

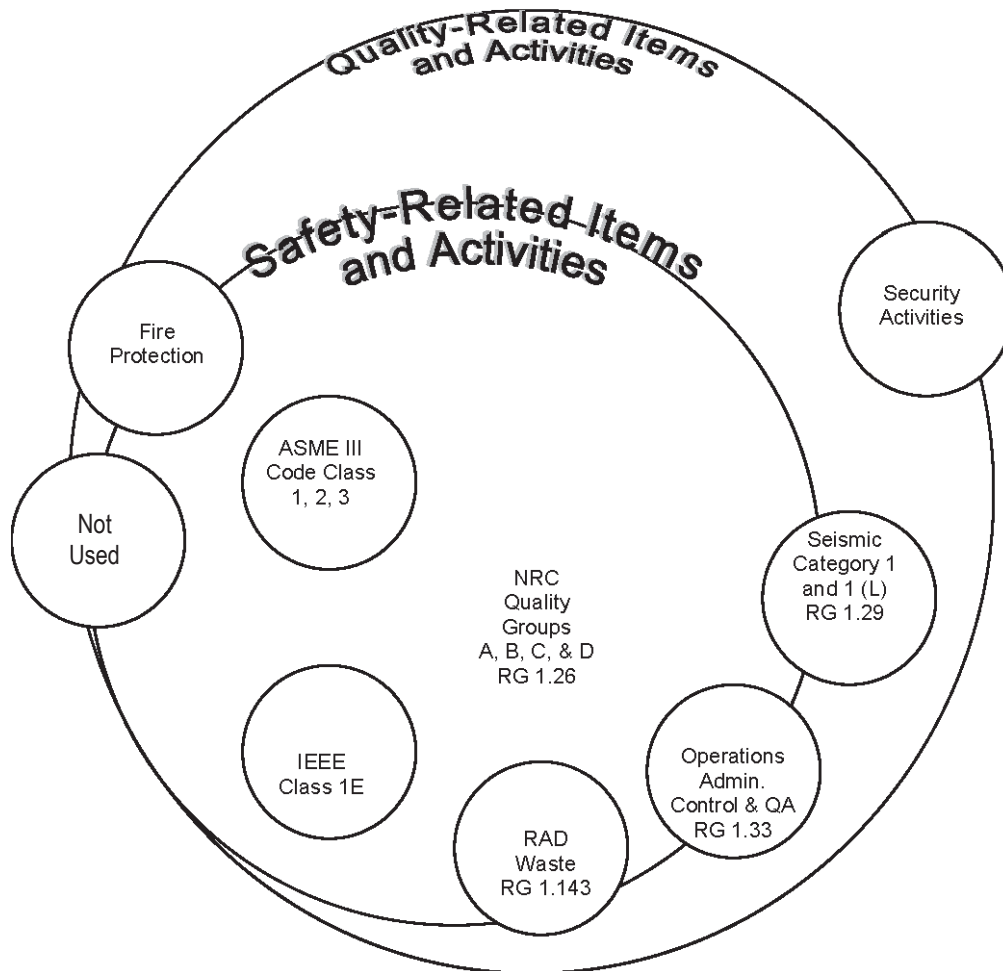
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11. NUREG 0737, "Clarification of TMI Action Plan Requirements."
 12. NUREG 0800, Section 9.5.1, Branch Technical Position, CMEB 9.5-1 (formerly BTP ASB 9.5-1), Revision 2, July 1981, "Fire Protection for Nuclear Power Plants."
 13. Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls, and Quality Assurance, (the "FRACQA Letter") - GL 77-02"
- E. New systems (or items being added as a result of approved modifications) shall be classified on the same basis as the existing components or systems.
- F. Classification of components or systems as quality-related but not safety-related shall be performed in accordance with approved corporate or site engineering procedures or at ND Nuclear management direction.

Appendix D
Scope of Nuclear Quality Assurance Program

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This diagram displays the relationship of safety-related to quality-related items and activities. Examples of these items and activities are shown. It is not intended to show each specific item and activity within the scope of the Nuclear QA Program.

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Appendix E Computer Software

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The requirements of Section 13.0 apply to application software, which performs any of the following:

- A. Directly operate safety-related plant equipment.
- B. Generates design output for the design of safety-related or quality-related functions, structures, systems, or components.
- C. Used by control room personnel, without further verification, to make plant operating decisions affecting:
 - 1. The integrity of the reactor coolant pressure boundary.
 - 2. The capability to shut down the reactor and maintain it in a safe condition.
 - 3. The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the applicable guideline exposures set forth in 10 CFR 50.34(a)(1) or 10 CFR 100.11, as applicable.
- D. Perform calculations, the results of which are used, without further verification to operate, maintain, inspect, or test safety-related or quality-related structures, systems, and components.
- E. Performs engineering calculations, the results of which are used, without further verification to support the design of safety-related and quality-related structures, systems, and components.
- F. Generates output used to procure safety- or quality-related items.
- G. Maintains, controls, or distributes information to be used without further verification in the procurement, design, operation, and maintenance of safety-related or quality-related structures, systems, and components.

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Appendix G
Quality Assurance Programs for Bellefonte Units 1 and 2
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1.0 GENERAL

This appendix to the Nuclear Development's (ND's) Nuclear Quality Assurance Plan (NQAP) describes the top level policy that assigns major functional responsibilities for activities conducted by or for ND Bellefonte Units 1 and 2 (BLN) while the construction permits for the units remain, first, in a terminated status, and then transition to a deferred status. The NQAP describes the methods and establishes the administrative control requirements that meet applicable 10 CFR 50, Appendix B requirements, NRC Generic Letter 87-15, "Policy Statement on Deferred Plants," and the BLN 1 & 2 construction permits as reinstated in accordance with the terms of the NRC order reinstating the BLN Units 1 & 2 construction permits to TVA, dated March 9, 2009.

Current ND Nuclear programs and procedures that implement the NQAP, as well as the existing ND Nuclear organizational structures are to be focused on the completion of the BNL 1 & 2. This appendix is developed to take into account the unique requirements and commitments necessary to ensure effective quality assurance program implementation and oversight of BLN 1 & 2.

The execution and accountability for quality assurance for the BLN 1 & 2 units remains with ND, but may be delegated to support contractors for specific tasks and activities. Contracted activities are implemented through an ND approved EPC (SNC-L) Quality Assurance Program (QAP) or may be implemented through direct implementation of the ND Quality Assurance Program (NQAP) through ND procedures. ND's review and approval of a contractor QAP, and any changes thereto, ensures that regulatory requirements and ND specific commitments of this NQAP are met. ND retains and exercises the overall responsibility for the establishment and execution of an effective QA program for BLN 1 & 2.

Procedures and instructions that implement the requirements of the NQAP are developed prior to commencement of those activities and are reviewed and approved by ND.

ND will also provide NRC with revisions to the NQAP as necessary per 10 CFR 50.55 as ND transitions BLN through the five phases discussed in Paragraph 2.0.

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Appendix G

Quality Assurance Programs for Bellefonte Units 1 and 2

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3.0 BACKGROUND

The completion of Bellefonte 1 and 2 will be conducted in five (5) phases.

- **Phase 1: Verification & Validation**

During this phase, clear decisions regarding regulatory and licensing strategies will be established. Based on original design criteria and necessary regulatory updates, engineering design scoping documents will be developed for each system in order to support detailed design in Phase 2.

- **Phase 2: Design & Development**

By prioritizing the engineering and procurement work, ND will have the capability to phase in construction work in a logical manner to expedite project completion.

- **Phase 3: Implementation / Construction**

ND will select, manage and support the construction execution services during this crucial phase.

- **Phase 4: Evaluation / Commissioning**

ND will select an experienced US Nuclear Operator to work with ND through the start-up and commissioning of Bellefonte Unit 1. The chosen Operator will provide a fully trained organization to accept system turnover through participation in plant testing and startup.

- **Phase 5: Operations**

The chosen experienced US Nuclear Operator will operate the completed nuclear plant under the ND NQAP and will provide the governance and oversight for required nuclear regulatory programs to obtain and maintain an ND operator license for BLN.

4.0 SCOPE/APPLICABILITY

This appendix applies to BLN 1& 2 plant activities while ND evaluates, maintains and preserves the units for the reactivation of construction and completion activities. ND will take the actions necessary to maintain and preserve the units in order to maintain the option of plant reactivation in accordance with Generic Letter 87-15, "Policy Statement on Deferred Plants" and the terms of the NRC order reinstating the BLN Units 1 & 2 construction permits, dated March 9, 2009.

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5.0 ORGANIZATION

This section describes the highest levels of the ND organizational structure shown in Appendix I including functional responsibilities, levels of authority and interfaces for establishing, executing, and verifying the implementation of quality assurance requirements for BLN 1 & 2. The organizational structure includes offsite and on-site functions including interface responsibilities for multiple organizations performing non-safety-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 NQAP. Management gives careful consideration to the timing, extent and effects of organizational structure changes.

The QA General Manager is responsible for ensuring that the ND BLN QA organization is sized commensurate with assigned duties and responsibilities. This is accomplished through the use of a dedicated and experienced QA organization performing oversight activities both onsite and offsite.

The following sections describe the reporting relationships, functional responsibilities, and authorities for organizations implementing and supporting the NQAP as it applies to BLN Units 1 & 2 in a terminated or deferred plant status. The ND Nuclear organization is described herein and in the NQAP.

A majority of the work involved with the completion of BNL Units 1 & 2 is being delegated to the EPC SNC-L. The major portions of the NQAP that are delegated to SNC-L include engineering, procurement and construction along with supporting NQAP elements.

5.1 President and Chief Executive Officer (CEO)

The CEO is responsible for all aspects of design, construction and operation of ND's nuclear plants. The CEO is also responsible for all technical and administrative support activities provided by ND and contractors. The CEO directs the CNO and Executive Vice President. The CEO also directs the executive responsible for resources and operations support. The CEO reports to the ND Board of Directors with respect to all matters.

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5.3 Chief Nuclear Officer (CNO) and Executive Vice President

The Chief Nuclear Officer (CNO) and Executive Vice President reports to the CEO and is responsible for BLN plant licensing, engineering, procurement, construction and testing activities and ultimately the safe, reliable, and efficient operation of BLN. The CNO and Executive Vice President directs Vice Presidents and EH General Manager, Nuclear Oversight and Assessment and ensures the implementation of this NQA Plan for activities at BLN. The CNO and Executive Vice President also directs the planning and development of the ND staff and organization resources and is responsible for establishing and managing the contracts for the BLN completion, engineering, licensing, testing, startup and operation of BLN plants in accordance with the Nuclear Quality Assurance Program.

5.3.1 Senior Vice President, Nuclear Operations

The Senior Vice President, Nuclear Operations reports directly to the CNO and Executive Vice President and has responsibility for organizations that coordinate and integrate efforts and initiatives into day-to-day ND Nuclear business at BLN 1&2. The BLN Site Vice President and the Nuclear Training General Manager report to this position.

5.3.2 Vice President, Engineering and Projects

The Vice President Engineering and Projects reports directly to the CNO and Executive Vice President and has responsibility for support organizations that coordinate and integrate efforts and initiatives into day-to-day ND Nuclear business. Organizations reporting to this position include Corporate Engineering, Plant Operation Reliability Manager, Inspections Services Manager, Computer Engineering Manager, Project Management, Fuel Supply and Disposal Manager and Nuclear Fuels.

5.3.3 Vice President, Nuclear Support

The Vice President, Nuclear Support reports to the CNO and Executive Vice President. In addition to the responsibilities described in subsection 4.1.2 the Vice President, Nuclear Support is responsible for the management positions responsible for:

1. providing corporate oversight and governance of the planning and execution of plant nuclear outages and outage scheduling,
2. Nuclear security, which includes protection of safeguard information, reporting of safeguard events, and development, implementation, and maintenance of the Site Physical Security/Contingency Plans.

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3. technical programs including reliability, safety, emergency preparedness, performance improvement, document control and quality assurance records management
4. providing corporate governance of functional areas (maintenance, operations, radiation protection, chemistry, work control, and procedures) for BLN nuclear plants,
5. developing programs to control procedures and instructions,
6. maintaining the Nuclear Operating Experience Review Program,
7. Overseeing the training and performance improvement functions, including development of the ND Nuclear corrective action program, and establishing and maintaining trend analysis procedures for adverse conditions and quality indicators.

5.3.4 Vice President, Procurement

The Vice President, Procurement reports to the CNO and Executive Vice President.

In addition to the responsibilities described in subsection 4.1.2, the management position responsible for procurement, is responsible for ensuring that the QA requirements established by this program description are either included or referenced (as appropriate) in related Procurement sponsored program areas identified in the body of this Program.

5.3.5 General Manager, Nuclear Oversight and Assessment

The General Manager, Nuclear Oversight and Assessment reports to the CNO and Executive Vice President.

The ND Nuclear Oversight and Assessment organization includes:

1. The Quality Assurance organization which is responsible for independently planning and performing activities to verify the effective implementation of the NRC approved NQAP described in this document for BLN 1 and 2 activities including, but not limited to engineering, QA/QC, licensing, document control, corrective action program, and procurement that support plant completion. The QA General Manager has an independent reporting relationship to the CNO and Executive Vice President on quality issues.

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3. The Bellefonte Completion Project Independent Oversight organization which is responsible for providing independent oversight of Operator Readiness, Procurement, Construction, Project Controls and Engineering.

5.4 Authority to Stop Work

ND Nuclear QA and Contractor quality assurance and 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 structure, system or component integrity may be jeopardized. This extends to off-site work performed by suppliers furnishing safety-related materials and services to ND.

5.5 Organizational Independence

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

6.0 PROGRAM

- A. During the period that BLN units 1 & 2 remain in terminated or deferred status as described in Generic Letter 87-15, "Policy Statement on Deferred Plants" the Quality Assurance elements described in this appendix and the body of the NQAP will be accomplished through written, reviewed and approved procedures.
- B. Site procedures that were not used in the period of deferral before the construction permits were withdrawn were placed in inactive status. As activities necessary to consider the viability of construction completion are required, the applicable procedures will be reactivated, reviewed and reissued prior to the conduct of the activity.

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8.0 PLANT EQUIPMENT POLICY

- A. An important factor in construction reactivation and completion includes the impact of equipment age on its continued suitability for use. Considerations regarding age degradation due to design life, outdated or obsolete equipment, design improvements, any impact associated with resource recovery activities, and economic feasibility to replace rather than preserve equipment indefinitely under a lay-up program must be taken into account given the age of certain existing equipment. For these reasons, in August 2003 the Tennessee Valley Authority (TVA), the owner of BLN 1&2 at that time, submitted and in May 2004 the NRC approved a change to the NQAP that allowed preventive maintenance to be terminated on selected equipment and to allow that equipment to be entered into the corrective action program as “deferred equipment”. TVA procedure controls prohibited, and ND procedure controls will continue to prohibit “deferred equipment” from being used in nuclear safety related applications without further evaluation and having been fully restored or replaced.
- B. Structures, systems or components that have been affected in the course of resource recovery activities conducted by TVA prior to ND procurement of BLN 1 & 2 will likewise be entered into the ND corrective action program and prohibited from being returned to service without evaluation and having been restored or replaced.

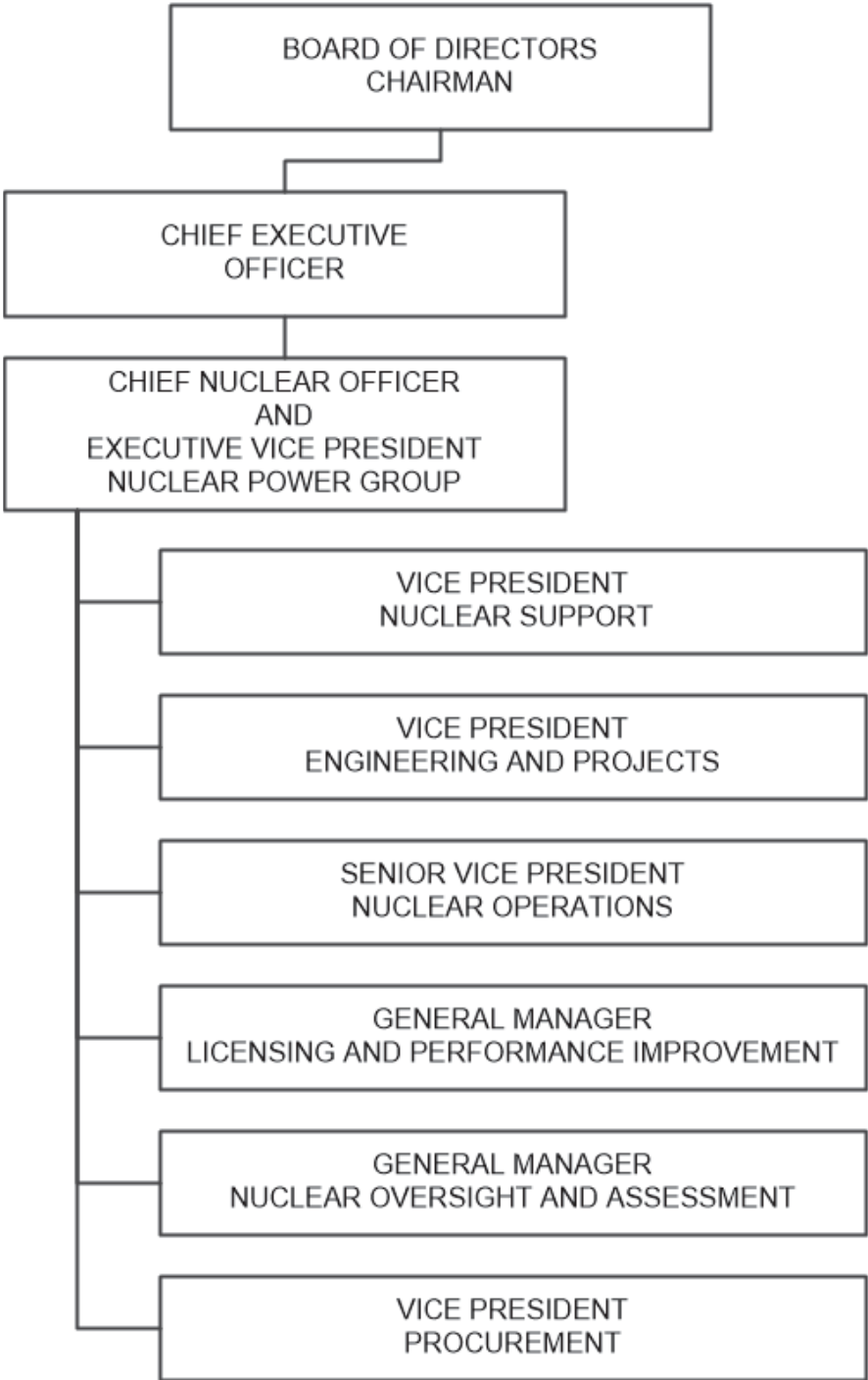
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Appendix H
Types of Controlled Documents and Manuals
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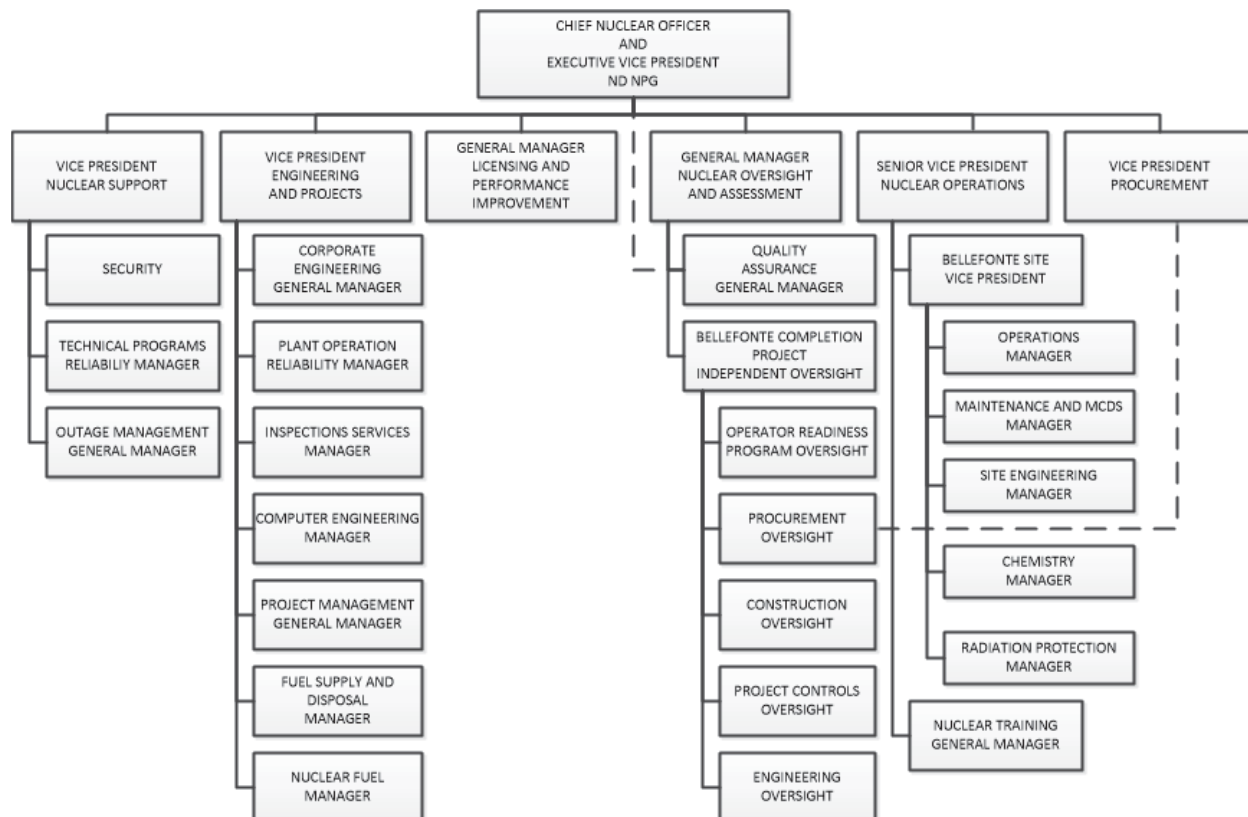
- A. Design Specifications and Drawings
- B. Safety Analysis Reports for the 10 CFR 50 Reactor Power Facilities
- C. Program Manuals
- D. Plant Instructions
- E. Radiological Protection Plan
- F. Nuclear Engineering Procedures Manual
- G. Site Engineering Project Manuals
- H. ASME Section III Quality Assurance Manuals
- I. Nuclear Procedures System Manuals
- J. As-built Documents
- K. Computer Programs
- L. Non-conformance Reports
- M. Nuclear Quality Assurance Plan
- N. System Descriptions
- O. Topical Report
- P. Not Used
- Q. Radiological Emergency Plan
- R. Fire Protection Reports
- S. Part 52 Plants Safety Analysis Reports and QAPD

Appendix I
ND NQAP Organization Chart
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**NUCLEAR DEVELOPMENT NQAP
ORGANIZATION CHARTS**



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ND NQAP Organization Chart
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Note – The EPC SNV-L is described within the organizational section of the NQAP. The responsibility for completing the engineering, procurement and construction of Bellefonte is delegated to the EPC SNV-L. Responsibility for operations is delegated to the Operations partner. ND provides management and oversight of the EPC SNV-L, the Operations partner and their subcontractors, and retains overall responsibility for the Bellefonte site, plant performance, and adherence to applicable regulations and permits.

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List of Abbreviations
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The following abbreviations are used in this program description:

AISC - American Institute of Steel Construction

ALARA - As Low as Reasonably Achievable

ANS - American Nuclear Society

ANSI - American National Standards Institute

ASL - Acceptable Suppliers List

ASME - American Society of Mechanical Engineers

ASME III QAM - ASME Section III Quality Assurance Manual

ASNT - American Society for Nondestructive Testing

ATWS - Anticipated Transient Without Scram

AWS - American Welding Society

BLN - Bellefonte Nuclear Plant

CEO - Chief Executive Officer

COO - Chief Operating Officer

CNO – Chief Nuclear Officer

CFR - Code of Federal Regulations

DOE - Department of Energy

EPRI - Electric Power Research Institute

ESPA - Early Site Permit Application

ESP - Early Site Permit

FSAR - Final Safety Analysis Report

I&C - Instrument and Control

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IEEE - Institute of Electrical and Electronics Engineers

ITS - Important to Safety

M&TE - Measuring and Test Equipment

NDE - Nondestructive Examination

NFPA - National Fire Protection Association

NNS - Non-nuclear Safety

NO - Nuclear Operations

NPS - Nuclear Procedures System

NQAP - Nuclear Quality Assurance Plan

NRC - Nuclear Regulatory Commission

NSRB - Nuclear Safety Review Board

NSSS - Nuclear Steam Supply System

PI - Performance Improvement

PORC - Plant Operations Review Committee

QA - Quality Assurance

QAPD - Quality Assurance Program Description

QC - Quality Control

SNC-L - SNC-Lavalin

SNM - Special Nuclear Material

SSAR - Site Safety Analysis Report

SVP - Senior Vice President

TVA - Tennessee Valley Authority