September 21, 2011

Mr. Mark McBurnett, Senior Vice President
Oversight & Regulatory Affairs
Nuclear Innovation North America, LLC
4000 Avenue F
Bay City, TX 77414

SUBJECT: REGULATORY AUDIT SUMMARY OF SOUTH TEXAS PROJECT, UNITS 3 AND 4 COMBINED LICENSE APPLICATION REVISION 4 – AMERICAN SOCIETY OF MECHANICAL ENGINEERS DESIGN SPECIFICATIONS AND COMPONENT CLASSIFICATION

Dear Mr. McBurnett:

By letter dated September 20, 2007, STP Nuclear Operating Company submitted a combined license application (COLA) for two new units designated South Texas Project (STP) Units 3 and 4. On January 24, 2011, Nuclear Innovation North America (NINA) became the primary applicant for the license for these two units.

The U.S. Nuclear Regulatory Commission (NRC) Office of New Reactors (NRO) is reviewing the STP COLA that incorporates by reference the Advanced Boiling Water Reator Design Control Document. As part of this review, the NRO Engineering Mechanics Branch 2 conducted an audit of the design documents of the STP COLA for major components to ensure that these design documents appropriately include American Society of Mechanical Engineers boiler and Pressure Vessel Code, Section III, Division 1, and component classification requirements.

The audit was conducted at the Sargent & Lundy office in Chicago, Illinois, from January 18 through 21, 2011, supplemented by follow-up audits in Westinghouse's Rockville, MD, office on April 7 and 18, 2011, and use of the NINA virtual reading room. This audit supports the reviews of Standard Review Plan Sections 3.2.1, 3.2.2, 3.9.3, 3.9.4, and 3.9.5 of the STP Units 3 and 4 COLA. The NRC staff followed the guidance in NRO Office Instruction NRO-REG-108, "Regulatory Audits," in performing this audit. Enclosure 1 is the summary of the audit, including a list of the NRC staff and the applicant team participating in the audit.

Please contact Tom Tai at (301) 415-8484 or Tom.Tai@nrc.gov if you have any questions related to the audit.

Sincerely,

/RA/

George Wunder, Acting Chief
BWR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket Nos.: 52-012, 52-013

cc w/encl: See next page

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OFFICE	PM:NRO/DNRL/BWR	LA:NRO/DNRL/BWR	NRO/DE/EMB2	BC:NRO/DE/EMB2	AC:NRO/DNRL/BWR
NAME	TTai	Babeywickrama w/edits	TLe	JDixon-Herrity	GWunder
DATE	09/19/11	9/12/11	09/19/2011	09/19/2011	09/21/2011

OFFICIAL RECORD COPY

COL - STP Nuclear - South Texas Mailing List (Revised 09/06/2011)

cc:
Certrec Corporation
4200 South Hulen, Suite 422
Fort Worth, TX 76109

Mr. Brian Almon
Public Utility Commission
William B. Travis Building
PO Box 13326
1701 North Congress Avenue
Austin, TX 78701-3326

Ms. Michele Boyd
Legislative Director
Energy Program
Public Citizens Critical Mass Energy
and Environmental Program
215 Pennsylvania Avenue, SE
Washington, DC 20003

Mr. Ed Halpin
President & CEO
STP Nulcear Operating Company
P.O. Box 289
Wadsworth, TX 77483

Mr. Scott Head
Manager, Regulatory Affairs
STP Units 3 & 4
Nuclear Innovation North America, LLC
4000 Avenue F
Bay City, TX 76109

Ms. Susan M. Jablonski
Office of Permitting, Remediation
and Registration
Texas Comm. on Env. Quality
MC-122
P.O. Box 13087
Austin, TX 78711-3087

Judge
Matagorda County
Matagorda County Courthouse
1700 Seventh Street
Bay City, TX 77414

M. A. McBurnett
Senior VP, Oversight & Regulatory Affairs
Nuclear Innovation North America, LLC
4000 Avenue F
Bay City, TX 77414

Bill Mookhoek
Licensing Supervisor
STP Units 3 and 4
4000 Avenue F
Bay City, TX 77414

Mr. Peter G. Nemeth
Crain, Caton & James, P.C.
P.O. Box 289
Mail Code: N5005
Wadsworth, TX 77483

Mr. Terry Parks
Chief Inspector
Texas Department of Licensing
and Regulation
Boiler Division
P.O. Box 12157
Austin, TX 78711

Kathy C. Perkins, RN, MBA
Assistant Commissioner
Division for Regulatory Services
Texas Department of State Health Services
P.O. Box 149347
Austin, Texas 78714-9347

Policy Director
Environmental and Natural Resources
P. O. Box 12428
Austin, TX 78711-3189

COL - STP Nuclear - South Texas Mailing List

Mr. Frank M. Quinn
8 Oak Avenue
Gaithersburg, MD 20877-2705

Regional Administrator
Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive
Suite 400
Arlington, TX 76011-8064

Alice Hamilton Rogers, PE
Inspections Unit Manager
Texas Department of State Health Services
P.O. Box 149347
Austin, Texas 78714-9347

Ms. Jamey Seely
President & CEO
Nuclear Innovation North America, LLC
521 5th Avenue, 30th Floor
New York, NY 10175

Mr. Robert E. Sweeney
IBEX ESI
4641 Montgomery Avenue
Suite 350
Bethesda, MD 20814

COL - STP Nuclear - South Texas Mailing List

Email
APH@NEI.org (Adrian Heymer)
awc@nei.org (Anne W. Cottingham)
BrinkmCB@westinghouse.com (Charles Brinkman)
cindyrae_52@yahoo.com
cwaltman@roe.com (C. Waltman)
david.lewis@pillsburylaw.com (David Lewis)
Derlinda.Bailey@chguernsey.com (Derinda Bailey)
donald.woodlan@luminant.com (Donald Woodlan)
dwuokko@tane.toshiba.com (Dale Wuokko)
ed.burns@earthlink.net (Ed Burns)
eliza.seedcoalition@gmail.com (Elza Brown)
erg-xl@cox.net (Eddie R. Grant)
gzinke@entergy.com (George Alan Zinke)
jerald.head@ge.com (Jerald G. Head)
jim.riccio@wdc.greenpeace.org (James Riccio)
Joseph_Hegner@dom.com (Joseph Hegner)
junichi_uchiyama@mnes-us.com (Junichi Uchiyama)
kdrichards@stpegs.com (Kevin Richards)
KSutton@morganlewis.com (Kathryn M. Sutton)
kwaugh@impact-net.org (Kenneth O. Waugh)
lchandler@morganlewis.com (Lawrence J. Chandler)
ldblaylock@cpsenergy.com (Larry Blaylock)
louis.eichenberger@ge.com (Louis Eichenberger)
Marc.Brooks@dhs.gov (Marc Brooks)
maria.webb@pillsburylaw.com (Maria Webb)
mark.beaumont@wsms.com (Mark Beaumont)
Mark.Crisp@chguernsey.com (Mark Crisp)
matias.travieso-diaz@pillsburylaw.com (Matias Travieso-Diaz)
maurerbf@westinghouse.com (Brad Maurer)
media@nei.org (Scott Peterson)
MSF@nei.org (Marvin Fertel)
nirsnet@nirs.org (Michael Mariotte)
Nuclaw@mindspring.com (Robert Temple)
patriciaL.campbell@ge.com (Patricia L. Campbell)
Paul@beyondnuclear.org (Paul Gunter)
pbessette@morganlewis.com (Paul Bessette)
pshastings@duke-energy.com (Peter Hastings)
RJB@NEI.org (Russell Bell)
Rschrauder@tane.toshiba.com (Robert Schrauder)
sabinski@suddenlink.net (Steve A. Bennett)
sandra.sloan@areva.com (Sandra Sloan)
sfrantz@morganlewis.com (Stephen P. Frantz)
smhead@stpegs.com (Scott Head)
stephan.moen@ge.com (Stephan Moen)

COL - STP Nuclear - South Texas Mailing List

Tansel.Selekler@nuclear.energy.gov (Tansel Selekler)
tom.miller@hq.doe.gov (Tom Miller)
Vanessa.quinn@dhs.gov (Vanessa Quinn)
Wanda.K.Marshall@dom.com (Wanda K. Marshall)
wayne.marquino@ge.com (Wayne Marquino)
wemookhoek@stpegs.com (Bill Mookhoek)

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NEW REACTORS
DIVISION OF ENGINEERING
REGULATORY AUDIT REPORT

Docket No.:	52-012 and 52-013
Applicant:	Nuclear Innovation North America (NINA) 4000 Avenue F Bay City, TX 77414
Applicant Contact:	Mr. Mark McBurnett, Senior Vice President Oversight & Regulatory Affairs Nuclear Innovation North America, LLC
Application and Section:	ABWR Combined Operation License Application - Sections 3.2.1, 3.2.2, 3.9.3, 3.9.4 and 3.9.5
Audit Dates:	January 18 - 21, 2011 April 7, 18, 2011
Audit Reviewers:	Tuan Le, NRO/DE/EMB1, Team Leader Jennifer L. Dixon-Herrity, NRO/DE/EMB2 Richard McNally, NRO/DE/EMB2 Sardar Ahmed, NRO/DE/EMB2 Yiu Law, NRO/DE/EMB1 Terri Spicher, NRO/DE/EMB1 Jason Huang, NRO/DE/EMB2 Tekia Govan, NRO/DNRL/BWR
Approved by:	Jennifer L. Dixon-Herrity, Branch Chief Engineering Mechanics Branch 2 Division of Engineering Office of New Reactors

Enclosure

EXECUTIVE SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) staff conducted an audit of the design documents for the advanced boiling-water reactor (ABWR) risk significant components. The audit was conducted at the Sargent & Lundy office in Chicago, Illinois, from January 18 through 21, 2011, supplemented by follow-up audits at the Westinghouse office in Rockville, MD, office on April 7 and 18, 2011, and use of the Nuclear Innovation North America (NINA) virtual reading room. The purpose of this audit was to verify: (1) that the design specifications of South Texas Project (STP) Units 3 and 4 for major components appropriately include the American Society of Mechanical Engineers (ASME) boiler and pressure vessel (B&PV) Code, Section III, Division 1, 1989 Edition requirements and are documented in accordance with the requirements of Subarticle NCA-3250 of the Code, and (2) that the functional design, qualification, and classification to be used in the STP Units 3 and 4 satisfy Standard Review Plan (SRP) Sections 3.2.1 ,3.2.2, 3.9.3, 3.9.4 and 3.9.5 thereby meeting the regulations.

The results of the audit are summarized below.

Review of ASME Code Design Specifications

The NRC staff found that the design documents have been adequately prepared in accordance with the ASME Code, Section III, NCA-3250 for design specifications. The NRC staff found that the design specifications adequately reflect design information provided in the ABWR design control document (DCD). Although the detailed design is not complete and a license amendment request will be submitted for changes to code editions, the level of detail is sufficient to support the NRC staff review and conclude that it is consistent with NRC criteria and regulations. The applicant has added inspections, tests, analysis, and acceptance criteria (ITAAC) to allow the NRC to review the design reports. At this point, the completion of the design and code changes can be verified. Additionally, all but two of the audit findings have been resolved. The hydraulic control unit (HCU) and the fine motion control rod drive (FMCRD) specifications did not have the loads available. They were either designated as “Later” or generic in nature. These two findings will remain as audit open items. The applicant will revise the design documents to address the two remaining audit open items. The NRC staff will verify that they have been incorporated when the revised design documents are submitted by NINA.

Review of Component Classification

The NRC staff found that the level of detail is sufficient to conclude the classification of risk-significant mechanical components is consistent with NRC criteria and regulations.

REPORT DETAILS

Scope of Review

The scope of the audit included verification that a sample of the design documents available components selected from the list of risk-significant components provided by the applicant met the regulations and the DCDs. The list of risk-significant components is included in the audit plan, “Audit Plan: Audit of Risk Significant Components of South Texas Project.” (Reference 2) and in Table 1. Documents reviewed are listed in Attachment 1.

Table 1: Risk Significant Components

System / Function	Risk Significant Components
RCIC (Reactor Core Isolation Cooling) System	Turbine, Pump, Min Flow Bypass Valve, Injection Valve, Check Valve F038, Check Valves {F003, F005}, Isolation Valves {F035, F036, F039}, Suction Strainers
COPS (Containment Overpressure Protection) System	AOV {F007, F010} Rupture Disks Flow Lines
RPV (Reactor Pressure Vessel)	Reactor Vessel Design Reactor Internals
Containment	Wetwell/Drywell Vacuum Breakers
Classification	Component Classification, Q-List, P & IDs
HPCF (High pressure core flooder)	Pumps, Maintenance Valve F005 {B, C}, Injection Valves F003 {B,C}
CRD (Control Rod Drive)	Hydraulic Control Units Scram Pilot Solenoid Valves (part of HCU) Scram Valves to FMCRDs (part of HCU)
NB (Nuclear Boiler) System	Isolation Check Valves F003B and F004B SRV discharge piping ADS F010 {A,C,F,H,L,N,R,T} Non-ADS F010 {B,D,E,G,J,K,M,P,S,U}
RSW (Reactor Service Water) System	Pumps Supply Isolation Valves F015 {A,B,C,D,E,F} F002 {A,B,C,D,E,F} Heat Exchangers
RCW (Reactor Cooling Water) System	Pumps Isolation Valves F015 {A,B,C,D,E,F} F002 {A,B,C,D,E,F} Heat Exchangers
RHR (Residual Heat Removal)	ACIWA Manual Valves {F101, F102} Heat Exchangers Pumps Injection Valves {F001, F003, F005, F006} {A,B,C} Admission Valves, F012
SLC (Standby Liquid Control)	Tank, Valves {F006}, Piping, Pumps
RWCU (Reactor Water Cleanup System)	Isolation Valves {F002, F003} Remote Manual Shutoff Valve {F026}
Emergency Diesel Generator System	Starting Receiver Tanks and Valves Safety-related diesel cooling water system and lube oil system

Planned Codes and Standards Amendment

The applicant informed the NRC that all the ASME design specifications that the NRC staff would be reviewing were written to a more current set of codes and standards than those called out in the DCD. For example, rather than ASME Section III 1989, the STP Units 3 and 4 component design specifications called out the 2004 version. The applicant explained that it was their intent to request a license amendment during the construction period to update many of the codes called out in their application to the more current codes. The applicant further explained that the design hold was put in place as suggested in NRC Interim Staff Guidance 11 (ISG-11), DCD/COL-ISG-011 "Finalizing Licensing-basis Information," with the plan to proceed with a license amendment request following issuance of the COL license.

The NRC staff observed that as a result, the current STP Units 3 and 4 component design specifications do not meet the current certified ABWR DCD.

In the case of the use of ASME codes, the approach adopted by STP Units 3 and 4 in preparing design specifications is not consistent. Earlier specifications simply called out the 2004 Edition of the codes that the applicant planned to go to later while reactor pressure vessel (RPV) specification called out the 1989 Code Edition for RPV design. Design specifications signed off in the last two months noted "holds" for every code called out. The NRC staff discussed these observations with the applicant to understand how the changes would be controlled. The applicant explained that the holds were put in place per their Procedure PI-STP34-116, "Preparation and Control of ASME Section III Design, Safety-Related and Non-Safety-Related and Generic Specifications." This procedure called for a hold tabulation to track all information that the applicant put on hold or had concerns about. This applied to portions of the design that had yet to be provided because the design had not progressed far enough to have the information available or areas where they were questioning the validity of the information (the code edition, for example). It was the applicant's plan to put the holds in place until the procurement specifications were ready to go out for bid. At that point, either the license amendment for the codes has been approved and the code edition corrected to the code edition approved in the license or management determined that the new edition would be used at their own risk and the holds would be removed. The NRC staff questioned how design control was maintained if applicant removed the hold at their own risk.

The applicant explained that changes to the design had been made after the change was approved for the Final Safety Analysis Report (FSAR). The applicant had several processes in place to track and to evaluate this change request. STP Procedure U7-P-EN02-0004, "Changes to STP 3 and 4 Requirements Documents," provides a process for submitting and processing changes to engineering technical specifications and changes to the combined license application (COLA) or DCD which would require NRC approval. The process involves a Project Design Review Board made up of senior NINA staff which reviews and approves each change to be made. Through this process, Requirements Change Request (RCR) #S&L 09-19062 was generated. This change request will evaluate the Tier 2* Codes and Standards change recommended for the STP design to update the design specifications to the applicable Code/Standard year in the COLA to the most current codes approved by the NRC or used by industry. The update was previously suggested by the NRC and was found to be of value for the applicant because their design currently allows different edition of the code in different areas of the plant. This inconsistency was identified by the applicant as a potential for errors. Further, applicant found that it would avoid the need for code reconciliation in procurement. The review of the RCR was in process during the audit.

The applicant also provided Procedure 7A10-0301-0009, Rev. 6, "Project Specific Pre-Baseline Design Change Control Procedure." This document established direction for implementation of pre-baseline design change control using design proposal notices and design change notices. It did not apply in this case. It would be used to control changes to be made prior to licensing. The applicant maintains a baseline Document U7-PROJ-G-PD-0011, "Applicable Codes and Standards," which documents the codes and standards approved for the project. This document listed all the codes and standards described in the FSAR and DCD and had not been revised to use the newer codes at the time the audit was occurring. PI-STP34-122, "Licensing Impact Screening - Change Proposal Notice and Requirements Change Request Processing," describes a process for evaluating potential licensing impacts and documenting impacts in proposed change notices. Project Instruction PI-STP34-124, "STP 3&4 Impact Assessment Review," describes the process for assessing impact on STP design basis documents and engineering documents using the STP Impact Assessment Database. The NRC staff noted that through these two procedures, the applicant would be able to ensure that all affected documents would be identified for revision once a change was processed.

Title 10 of the *Code of Federal* Regulations (10 CFR) Part 50, Appendix B, Criterion III and V requires that the applicant have measures established to assure that applicable regulatory requirements specified in the license are correctly translated into specifications and drawings and that applicant have procedures controlling activities affecting quality. Based on NRC staff's review, the NRC staff concluded that the applicant has processes in place to control and document changes and that the pending license amendment and potential changes in the specifications were in these processes. The design was put on hold for the review by the NRC per NRC guidance in ISG-11, but the NRC staff acknowledged that the design work will be ongoing until plant construction is complete. The processes discussed above should ensure that, when completed, the plant design would be in accordance with the codes approved. Further, the NRC staff will have the opportunity to verify that the design was in accordance with approved codes and standards for the design through the existing piping design ITAAC (DCD Tier 1, ITAAC 3.3.1) and an ITAAC added during the current application review calling for review of the Component Design Reports (in Site-Specific ITAAC Table 3.0-14 of FSAR, Rev. 4).

The only remaining concern noted was that the code identified in the license amendment could not be used for piping design, since 10 CFR 50.55a does not allow use of the 2004 code for piping design. In reviewing the piping design specifications provided, the NRC staff noted that these documents are not yet signed by a registered Professional Engineer (PE) and that the piping design is not being reviewed as part of this audit. Piping Design Acceptance Criteria (DAC) will be addressed through review of ITAAC at a later date. This concern will be addressed at that point or through NRC staff review of the amendment.

ASME Component Design

The NRC staff found that each set of design specification documents reviewed addressed the following design related information consistent with the requirements of the ASME Section III, NCA-3250:

- ASME classification and jurisdiction boundary
- Design basis and service limits

- Design information
    - Loadings for design, service level (A, B, C, D), and test conditions
    - Load combinations and acceptance limits
    - Deformation limits (if applicable)
- Material specification including corrosion allowance
- Fabrication specification including welding requirements
- Leak testing and qualification requirements
- Overpressure protection (if applicable)
- Operability requirements
- Regulatory requirements

Each set of design documents reviewed during audit for a risk significant component included its design and/or purchase specification, detailed design drawings of the component parts, parts lists and other design-related documents. The design specification audit was conducted for the following risk significant components:

Suction Strainers – Emergency Core Cooling System (ECCS)

The reactor core isolation cooling (RCIC), residual heat removal (RHR), and high pressure core flooder (HPCF) pump suction strainers are designed to ASME Section III, Subsection NC, Quality Group (QG) B. Each STP unit has one RCIC pump suction strainer, three RHR pump suction strainers, and two HPCF pump suction strainers. In Purchase Specification U7-SITE-M-SPEC-STNR-7399, the applicant uses NUREG/CR-6224 (2003 Revision) guidance to perform parametric study of potential BWR ECCS strainer blockage due to loss-of-coolant accident a (LOCA) generated debris. The NRC staff noted that this specification referenced ASME Section III Code Edition and was on hold. ASME Sections II, V and IX referenced 2007 Edition with 2008 and 2009 Addenda were also on hold. Where the design specifications referenced Section XI, Code was identified as using the 2004 Edition.

Related Request for Additional Information (RAI) on Suction Strainers:

In RAI 03.09.03-7, the NRC staff asked the applicant to provide and to confirm the following:

1. The load combinations of the ECCS strainer will be evaluated as shown in Table 3.9-2 of the DCD.

2. The ECCS strainer design, stress analysis is performed in accordance with ASME Section III code requirements.

3. Provide ASME design specification and design report of the ECCS strainer for NRC staff review. The strainer design specification and design report are prepared in accordance with the ASME Code, Section III, NCA-3250.

In response to this RAI, the applicant stated:

1. The load combinations for the STP Units 3 and 4 ECCS suction strainers will be evaluated as shown in Table 3.9-2 of the DCD.

2. The ECCS strainer design and the stress analysis will be performed in accordance with ASME Section III code requirements.

3. A draft version of the design specification for the ECCS strainers is currently available for NRC review. The specification does not yet include the specific loads and load combinations to be applied to the design of the STP Units 3 and 4 ECCS suction strainers. The final completed specifications for all ECCS strainers, which includes the specific loads and load combinations, will be available for NRC review by January 15, 2011. The design reports for the HPCF and RHR suction strainers will be available for NRC review by January 15, 2011, and the design report for the RCIC suction strainer will be available by March 15, 2011. Both the strainer design specification and the design reports will be prepared in accordance with the ASME Code, Section III, NCA-3250 requirements.

During the audit of the suction strainer specifications, the NRC staff inquired about the code used for the suction strainer stress analysis. The suction strainers of STP Units 3 and 4 are designed and analyzed in accordance with ASME Section III, Subsection NC requirements. The applicant provided a proposed design report site-specific ITAAC (STP FSAR, Table 3.0 -14) that will include the suction strainer stress analysis. The NRC staff determined that the proposed ITAAC was an acceptable approach to resolve this issue. Therefore, the reviewed information is satisfactory for the closure of RAI 03.09.03-7.

Air Operated Valves, Rupture Disc, Flow Lines - ACS

Air operated valves are specified Safety Class 2, QG B and Seismic Category I. Valve Data Sheets U3-ACS-FV-0133 and U3-ACS-FV-0134 for Valves FV-0133 and FV-0134 respectively, also identified valve acceleration loads (limits) for all three directions as follows:

Loading condition	Horizontal H1	Horizontal H2	Vertical V1
Upset	3G	3G	3G
Faulted	4G	4G	4G
Emergency	6G	6G	6G

The body configuration of the check valve and gate valve was indicated as “To be verified.” In response to NRC staff’s question as to what process is in place to track the verification, the applicant provided the Hold Tabulation Sheet U7-SITE-M-SPEC-HOLD-VLV-7384 for tracking the verification of valve data. Upon review of the hold tabulation sheet, the NRC staff noted that it incorrectly indicated U7-SITE-M-SPEC-ASME-VLV-7342 Revision E instead of U7-SITE-M-SPEC-ASME-VLV-7384 Revision E for ASME Design Spec No./Rev and U7-SITE-M-SPEC-VLV-7342 Revision E instead of U7-SITE-M-SPEC-VLV-7384 Revision E for Procurement Spec No./Rev. The applicant revised the Hold Tabulation Sheet during the audit. The NRC staff found the revision of the hold tabulation sheet acceptable.

The rupture discs are specified to be Safety Class 2, QG B, and Seismic Category I for Disc D001 and Safety Class 3, QG C, and Seismic Category I for Disc D002. In ASME Design Specification U7-SITE-P-SPEC-ASME-PIPE-7347, Revision D, piping specialty data sheets were listed in Attachment A for the two rupture discs for Units 3 and 4. These data sheets were listed but were not included in the design specification. The applicant provided preliminary data sheet templates as these data sheets were not complete at the time of the audit. The applicant stated that these data sheets will be signed by a registered PE and issued separately. The

NRC staff reviewed the valve data sheet templates and found the response acceptable since the NRC staff would have the opportunity to review the final design through ITAAC. The flow lines are specified as Safety Class 2, QG B, and Seismic Category I for piping including supports and valves forming part of containment boundary. Flow lines beyond the first rupture disk up to and including the second rupture disc are specified as Safety Class 3, QG C, and Seismic Category I for piping including supports and valves.

The procurement specification number was listed as N/A in the document matrix. This was brought to the applicant's attention in Action Item 3 of the Action Items List, in Attachment 2. Document matrix was updated by the applicant, as shown in Attachment 3, to include the procurement specification number. The NRC staff reviewed the valve data sheets and found the revision acceptable.

Reactor Pressure Vessel and Internal - RPV

Transitions (safe end) between nozzle, connecting pipes, weld to nozzle, steam outlet nozzle at the weld preparation at the end of the nozzle forging including integral support skirt attachment/ attachment weld to conical portion of the support skirt, nozzles (stub tubes), bottom head penetrations including the differential pressure line tees, the weld between the shroud support and vessel, piping finish integral with vessel, weld between reactor internal pump motor casing and the pressure vessel, are designed to ASME Section III, Subsection NB-1132.2. The remainder of the support skirt, support flange, and the anchor bolts will be in full compliance with ASME Section III, Subsection NF. The crevices and annular gaps which are in contact with reactor coolant will be eliminated where possible.

Additional stress evaluations will be performed in accordance with ASME Code requirements for RPV top head lifting lug and will be evaluated following the guidelines in NUREG-0612 in addition to ASME Subsection NB-2300 requirements. The NRC staff noted that the guidelines in Regulatory Guide (RG) 1.207, "Guidelines for Evaluating Fatigue Analyses Incorporating the Life Reduction of Metal Components Due to the Effects of the Light-Water Reactor Environment for New Reactors," of environmental assist fatigue are not required to be used in the certified ABWR plant. However, the applicant uses RG 1.207 guidance to evaluate the environmental fatigue of the ASME Class 1 carbon steel piping, but not for other ASME component designs.

The reactor internals loading is specified in the Design Specification 3B11-D003-3005-01, Rev. 7, "Reactor Pressure Vessel Reactor Internals Specification." This document addresses loads for core support components including the top guide (with hardware), shroud, core plate, steam separator, and fuel support (with hardware).

The NRC staff found that the reactor internal components did not have seismic requirements. At the NRC staff's inquiry, the applicant will update the Procedure U7-SPEC-G-GDD-0013 (Classification Summary) to reflect seismic requirements for Specification 7B11-D001-3001-01 (Core Support Structures and Reactor Internals). This item was Action Item 12, in Attachment 2. The applicant revised the specification to include the seismic classification of the non-safety related reactor internal components. This information was provided in the Virtual Reading Room on March 10, 2011. The NRC staff reviewed the revised specification and considered Action Item 12 closed.

The RPV vent and head spray assembly, listed as reactor internals in the DCD, was not included in the design specification. The applicant explained that this is not a risk significant component; however, since it is listed in the DCD, it should have been included in the audit.

Action Item 8 was generated for the applicant to complete the design specification for this component. The applicant revised the specification and provided this information in the Virtual Reading Room on March 10, 2011. The NRC staff reviewed the revised specification and considered the revision acceptable. Action Item 8 is closed.

In a follow-up audit, the NRC staff also discovered that RG 1.20 is not included as reference in the reactor vessel specification. The applicant responded that RG 1.20 is included as reference in the primary references in this specification. The applicant will provide a list of these primary references. In addition, the NRC staff also noted that the surveillance sample holder is not included in the specification although it is described in the ABWR DCD in Subsection 3.9.5.1.2.10. The applicant responded that this information is in Appendix B of the specification. The NRC staff reviewed this information and considered this issue is closed.

Hydraulic Control Unit (HCU), Scram Pilot Solenoid Valves, Scram Valves – Control Rod Drive (CRD)

The HCU assembly is designed and classified as ASME Section III, Subsection NC (Class 2) QG B. The nitrogen gas bottles and scram accumulators are designed to ASME Section III Subsection NC. The connecting weld between nitrogen gas bottle and attachments is designed in accordance with ASME Section III, Subsection NC. Other parts of the attachments are designed in accordance with ASME Section III Subsection NF. Remaining CRD system is designed to ASME B31.1 code requirements.

The documents audited included HCU Design Specification U7-CRD-M-SPEC-ASME-0001 Revision B, HCU Equipment Requirements Specification U7-CRD-M-SPEC-HCU-0001 Revision 6, FMCRD Equipment Requirements Specification U7-CRD-M-SPEC-FCRD-0001 Revision D, and FMCRD Design Specification U7-CRD-M-SPEC-ASME-0002 Revision.

The NRC staff found that for the HCU equipment requirement specification, the loads were not available. Page 48/57, Sections 6.2.3 and 6.2.4, refer to Paragraph 3.1.3.g which said “Later.” Additionally, in the FMCRD specification, the load table is generic. On Pages 29-33, Table 1 did not list the values and Table 2 load combinations were generic. These audit findings were discussed with the applicant and will remain as audit open items until the information is made available for review and verified by the NRC staff.

The CRD mechanisms are discussed in four different specifications. Specifically, they are in the core support structure, RPV, HCU, and FMCRD specifications. The NRC staff found that the RGs 1.26 and 1.29 are not discussed or referenced in these specifications. The applicant responded that the core support structure and the reactor internal specifications reference Project Requirements Document 7A10-0301-004, “Project Specific Safety/Quality Group Classification,” which contains these RGs; the RPV specification references the FSAR, which discusses RGs 1.20, 1.26, and 1.29; for the HCU specification, these RGs are in the HCU Equipment Requirement specification; for the FMCRD Specification, the FMCRD Equipment Requirement Specification references the HCU Equipment Requirements Specification, which includes these RGs. The NRC staff considers this explanation sufficient to close this issue.

The CRD mechanism housing is not discussed in the equipment function for CSS. The applicant advised that the CRD mechanism housing is discussed in the design requirements section in Paragraph 5.2.6 of the Core Support Structure and Reactor Internal Equipment Requirement Specification. The NRC staff accepts this explanation and the issue is closed.

The NRC staff questioned why the acronym list is missing from the specification. The applicant explained that the acronym list is not needed because all acronyms are defined as appropriate in the specifications. The NRC staff considers this approach acceptable and the issue is closed.

Responsibilities and Duties are missing in the HCU and FMCRD specifications. Specifically, services provided by certificate holder; equipment provided by certificate holder; and equipment and services beyond scope of certificate holder. The applicant clarified that in the HCU Equipment Requirement Specification, Section 1 describes scope of services and equipment, which clearly describes certificate holder's (vendor's) duties and responsibilities. In the FMCRD Equipment Requirement Specification, Section 1 describes scope of equipment, Sections 7 through 12 describe scope of services, which clearly describes certificate holder's duties and responsibilities. The NRC staff considers this approach acceptable and the issue is closed.

Isolation Check Valves, SRV Discharge Piping, ADS, Non-ADS - NB

In reviewing the design specifications for the nuclear boiler system, NRC staff identified several questions with discrepancies in the wording in the specification as compared to the DCD. Terms used in a table describing materials in the specification did not match with the DCD. Further, the NRC staff questioned the practice of identifying the use of RGs 1.31, 1.37, and 1.44 in the text, but not identifying the revision in the text or listing the RG in the list of references. The material changes resulted from their change process and were fully documented in the site specific application Table 5.2-4. The failure to include the RGs was identified as an over sight in the development of the specification and the applicant stated that it will be corrected. The correction is tracked by the applicant change notice process. The NRC staff found the approach acceptable. The NRC staff also found these design specifications acceptable because they are consistent with the requirements of ASME Section III, NCA-3250.

Pumps, Supply Isolation Valves, Heat Exchangers - RSW

The safety-related RSW pumps are designed to ASME Section III, Division 1, Subsection ND. The design seismic loads, response spectra and safe shutdown earthquake (SSE) are specified in Technical Report U7-PROJ-C-RPT-DESN-6001, Revision B, Applicable Seismic Response Spectra. The dynamic load cases are listed up to 100 Hz frequency and provided in this technical report.

The supplied valves are designed to ASME Section III, Subsection ND, QG C, Seismic Category 1. The design requirements of these valves including design loads are specified in the Design Specification U7-SITE-M-SPEC-ASME-VLV-7342, Large Bore Valve-ASME Section III Division I Class 3 Design Specification, Revision F.

The heat exchangers are designed to ASME Section III, Subsection NC (Tube)/Subsection ND (Shell Side), including the supports designed to Subsection NF and TEMA Class C requirements. The NRC staff found these design specifications acceptable because they are consistent with the requirements of ASME Section III, NCA-3250.

Manual Valves, Heat Exchangers, Pumps, Injection Valves, Admission Valves – Residual Heat Removal (RHR)

The isolation valves including shutdown suction line isolation valves are designed to ASME Section III, Subsection NB, Seismic Category I, other isolation valves are designed to Subsection NC, Seismic Category I. The heat exchanger primary side is designed to ASME Section III, Subsection NC, Seismic Category I. RHR pumps are designed to pumps ASME Section III, Subsection NC, Seismic Category I. The design specifications of RHR valves, heat exchangers, pumps, injection valves and admission valves are acceptable per ASME Section III, NCA-3250.

Tank, Valves, Piping, Pumps – Standby Liquid Control System (SLC)

The valve specification in Design Specification U7-SITE-M-SPEC-ASME-VLV-7343 has tag numbers and valve names that do not match the current P&ID Drawing U3-SLC-M-DWG-PID-0001-01, SLC, Revision D for two SLC valves. The applicant explained that an alternative naming procedure was used to further clarify the valve function. An action item 5 was created to update the valve specifications to include the new valve tag numbers, with the valve names unchanged. During the audit, the applicant revised the valve specifications to include the new valve tag numbers. The NRC staff found that the revision of the valve specification acceptable and the action item 5 was closed.

Isolation Valves, Reactor Manual Shutoff Valve - RWCU

The remote manual shutoff Valve F026 (Tag No. FV-0002), isolation Valves FV-0003 & FV-0004 is specified Safety Class 1, QG A, and Seismic Category I. In Attachment B of Design Specification U7-SITE-M-SPEC-ASME-VLV-7384, Revision E on Pages 21 of 25 and 22 of 25, the valve body type for check, gate and globe valves were not provided and were stated as "To be verified." The verification was not documented in Hold Tabulation Sheet U7-SITE-M-SPEC-HOLD-VLV-7384. In response to NRC staff's enquiry as Action Item 15, applicant provided this as Item No. 18 on the "Hold Tabulation Sheet."

The Valve Data Sheets U3-RWCU-M-DATA-VLV-FV-0002 Revision A for Valve FV-0002, U3-RWCU-M-DATA-VLV-FV-0003 Revision A for Valves FV-0003 and U3-RWCU-M-DATA-VLV-FV-0004 Revision A for Valve FV-0004 indicated valve acceleration loads (limits) for horizontal (H1 & H2) and vertical (V) loading conditions for upset, emergency and faulted conditions are on hold. This hold item was not tracked on Hold Tabulation Sheet U7-SITE-M-SPEC-HOLD-VLV-7384. In response to NRC staff's inquiry, these were provided on the hold tabulation sheet and were found to be acceptable.

Main Steam Safety Relief Valves (MSRV)

Of the holds identified in the packages related to the MSRVs, only one, the need to address valve transients in the MSRV design specification, was identified which could cause an issue with procurement of the equipment (the hold needed to be addressed to meet ASME code). This was in addition to the hold on the codes discussed above, the applicant explained that this aspect of the design was not complete at that point and that the transients would be addressed prior to going out for procurement. The NRC staff found that, due to the status of the design at the time of the review, that this was acceptable and that NRC staff would have opportunities to verify that the hold was addressed through an ITAAC that calls for review of the component design reports.

ASME Component Design Conclusions

In general, the NRC staff found that both the design and procurement specifications were completed at a high level of quality. The NRC staff has the following conclusions:

- With the exception of the RPV, the components are not designed to the codes of record. The applicant plans to submit a license amendment to address changing the code of record and has procedures in place that should control the design. Further, the applicant has an ITAAC in place that will allow for review of the final design.

- Each design/purchase specification document appropriately addresses information identified in NCA-3250, as applicable.

- Information on design criteria, analytical method, functional capability and classification specified in the design documents is consistent with that included in the DCD and satisfy the regulatory guidance provided in SRP Section 3.2.1, 3.2.2, 3.9.3, 3.9.4 and 3.9.5.

- Fabrication and installation of the RPV and other risk significant components will be performed in accordance with the ASME Code, Section III, Subsection NB, NC, ND, NF or NG, Article 4000.

- The HCU and the FMCRD specifications do not have all the loads available. They are either designated as "Later" or they are generic in nature. These two findings will remain as audit open items. The applicant will revise the design documents to address the two remaining audit open items. The NRC staff will verify that they have been incorporated when the revised design documents are submitted by NINA.

Component Classification

As defined in the audit plan (Reference 2), the objective of the classification review is to confirm that the functional design, qualification, and classification to be used in the STP Units 3 and 4 satisfy SRP Sections 3.2.1 and 3.2.2. The NRC staff audit of quality group and seismic classifications was established to evaluate a sample of design basis documentation for risk-significant components to confirm the classifications applied in the detailed design are consistent with NRC criteria, including General Design Criterion (GDCs) 1 and 2, and the licensing basis. The primary purpose and focus of the NRC staff review is to determine if there is a sufficient documented basis to conclude that classifications are correct based on their specific safety function. A secondary purpose was to verify that the classification process satisfies GDCs 1 and 2 by ensuring appropriate classifications, as well as codes and standards, are correctly translated into design basis documents to be used for procurement.

Other Classification Documents

The NRC staff examined the design basis documents and requested copies of the following additional design documents referenced in the Project Specific Safety/Quality Group Classification document and other design documents.

- GDD-0013 Classification Summary

- GDD-0001 Seismic Design Classification

- PRD-0011 Applicable Codes and Standards

Although the applicant does not have a "Q" list or similar design document to readily identify the specific safety function of each system component to establish the basis for each system component classification, the applicant did provided Document U7-SITE-M-LIST-EQPT-G0001, Revision B, as an example of a mechanical equipment list that identifies a summary of basic component safety functions regarding reactor coolant pressure boundary and containment integrity.

When asked if there was any documentation available of internal reviews, self-assessments or audits in the area of QG or seismic classification, the applicant's project team provided the following reference documents:

NRC Inspection Report

- 99900507/2009-201, dated September 14-17, 2009

S&L Internal Audits

- 2009-037, dated March 2-6, 2009
- 2009-073, dated November 2-6, 2009
- 2010-012, dated May 3-6, 2010
- 2010-044, dated November 12-19, 2010

Fluor Surveillances of S&L

- SV-09-18, dated May 26-28, 2009
- S-09-S29, dated July 21-23, 2009 and August 4-6, 2009
- S-10-S-20, dated June 22-24, 2010
- S-10-S-36, dated June 22-24, 2010

Quality Assurance (QA) Audits

During the review of the COL application, the NRC staff was concerned about a review to verify classifications and issued a number of RAIs about ITAAC. Although the applicant does not apply ITAAC for this purpose, the NRC staff found that some type of inspection and verification is appropriate to establish that the as-built QGs/ASME Code Class and seismic classification are consistent with the Tier 1 design description and with the license. There should also be further clarification as to how the applicant will verify the as-built QGs/ASME Code Class and seismic classification, such as through QA inspections, the generic piping ITAAC, basic configuration ITAAC, or by independent organizations such as the ASME Authorized Inspector.

In a revised response to RAI 03.02.02-6 dated February 10, 2010, (ML100490763) the applicant identified that classifications are verified though the design/QA process and therefore an ITAAC is not needed. NRC staff concurs that, consistent with the COL license information in ABWR DCD Subsection 1.1.11.1, the cited design/QA verification process is an acceptable alternative

way to close the RAI 03.02.02-6 without a separate ITAAC to verify QG classification, provided there is some type of licensing commitment by the applicant to ensure the design verification process and as-built reconciliation are completed prior to fuel load.

The NRC staff audit review determined that, although some of the above cited QA audits evaluated certain aspects of design control and specification reviews, none of the audits included verification or validation of quality group or seismic classifications. Therefore, NRC staff was unable to apply existing audits as confirmation that the comprehensive system and mechanical component classifications for all important to safety components have been validated, but other project documents were reviewed to ensure classifications for risk-significant mechanical components are verified by the applicant.

Classification Documents

Project Specific Safety/Quality Group Classification U7-PROJ-G-PRD-0004, Revision 0.

This project requirements document is the primary classification document referenced by the applicant in the document matrix (as listed in Attachment 3). The NRC staff review of this document determined that the applicable RGs 1.26 and 1.29 are referenced as well as the ASME Section III Code, the ABWR DCD Revision 4 and project documents including applicable codes and standards, applicable RGs, and the classification summary. The project requirements document identifies that the definitions are based on ANS 52.1. NRC staff has not endorsed this standard and, therefore, has not used it as a basis for acceptability regarding classifications. The NRC staff review did not identify any discrepancies between the Project Specific Safety/Quality Group Classification document and the licensing basis documents.

General Design Document Classification Summary U7-SPEC-G-GDD-0013, Revision B.

Document GDD-0013 summarizes the systems and components classifications consistent with the DCD and COLA, includes QA Requirement E criteria and addresses a process to resolve any inconsistency by applying the Project Specific Safety/Quality Group document. This document references the Project Specific Safety/Quality Group Classification and the Seismic Design Classification documents. As described below under the review of the Seismic Design Classification document, NRC staff is concerned that the RPV internals are not specifically designated as requiring a seismic analysis in the DCD and Document GDD-0013. Therefore, it is not clear that non-safety-related RPV internals will be analyzed for seismic events to prevent their collapse. As discussed in RPV and internals section of the main summary report, the applicant has Action Item 12, in Attachment 2 to address this seismic classification of reactor internals. Other than the classification of RPV internals, the NRC staff review did not identify any discrepancies between the General Design Document Classification Summary and the licensing basis documents.

Seismic Design Classification U7-PROJ-C-GDD-0001, Revision A.

This general design document describes the seismic classification criteria as Seismic Category I and Seismic Category II, but the DCD and COLA do not use the term Seismic Category II. The NRC does not specifically use the term Seismic Category II in RG 1.29, but the intent of Seismic Category II is to provide for analyzing non-safety-related SSCs in the vicinity of safety-related SSCs that should be prevented from collapsing in a seismic event. The NRC staff was concerned that the design basis documents concerning use of this term was inconsistent with the licensing basis classification. The NRC staff is also concerned that certain

non-safety-related SSCs, such as RPV internals are not specifically designated as Seismic Category II or requiring a seismic analysis in the DCD and Document GDD-0013. However, note (f) in DCD Table 3.2-1 does state that equipment that is not safety-related, but which could damage Seismic Category I equipment if its structural integrity failed, is checked analytically and designed to assure its integrity under seismic loading resulting from the SSE. Mechanical Equipment List U7-SITE-M-LIST-EQPT-6001, Revision B

The Mechanical Equipment List includes safety class, QG, seismic category, reactor coolant pressure boundary (RCPB) and primary containment vessel (PCV). The NRC staff review did not identify any discrepancies between this document and the licensing basis documents.

Design Specifications and Associated P&ID Review

Service Water Pumps Design Specification U7-RSW-M-SPEC-ASME-PUMP-7396, Revision D

The service water pumps are not included in DCD Table 3.2-1, but are included in Table 3.2-1 of the COLA as QG C. The specification is certified by a PE and contains holds pending verification (Hold Tabulation Sheet U7-RSW-M-SPEC-HOLD-PUMP-7396). The ASME Section III Code referenced is the 1994 edition with a hold. The data sheets are referenced for the safety related functions. The jurisdictional boundaries are described as the circumferential joint. Editions of various referenced codes vary as summarized below:

- ASME Section II 2007 with 2008 & 2009 Addenda (certificate holder to perform reconciliation)
- ASME Section III NCA/ND, 2004 Edition
- ASME Section V, 2004 Edition
- ASME Section XI, 2004 Edition
- Codes Cases per RG 1.84 Rev 23
- NQA-1, 1994 Edition (Hold)
- OM Code, 2004 Edition
- Specification U7-RSW-M-SPEC-PUMP-7396, Revision D includes general system functions
- *Data Sheet:* Section III, Cl. 3, QG C, Seismic Category I, ASME N Stamp required
- Service: cooling service for safety-related loads
- Project P&ID U3-RSW-M-DWG-P&ID-0001-01, Revision D

The COLA did not include the classification of the service water system outside the scope of the ABWR standard design and a revision was proposed to include the classifications. The project P&ID was reviewed to ensure consistency with the licensing basis. Classification called out included QG C, SC-3 and Seismic Category I.

RHR Heat Exchangers Design Specification U7-RHR-M-SPEC-ASME-HX-7322, Revision D,

The RHR Heat Exchangers are in referenced DCD Table 3.2-1 as QG B. The specification is certified by a PE and contains holds pending verification (Hold Tabulation Sheet U7-RHR-M-SPEC-HOLD-HX-7322). The data sheets are referenced for the safety-related functions. The jurisdictional boundaries are described as the circumferential joint. In the design section, editions of various referenced codes vary as summarized below:

- ASME Section II, 2007 with 2008 & 2009 Addenda (certificate holder to perform reconciliation)
- ASME Section III, 2004 Edition (Hold)
- ASME Section V, 2007 with 2008 & 2009 Addenda
- ASME Section XI, 2004 Edition (Hold)
- Codes Cases per RG 1.84 Rev 23 and RG 1.147 Revision 8
- OM Code 2004 Edition (Hold)

    1. *Data Sheets*Tube side: RG 1.26 QG B, Sect III Code Class 2
    2. Shell side: RG 1.26 QG C, Sect III Code Class 3

- Seismic Category I
- N stamp required
- 10 CFR Part 50, Appendix B, NQA-1 1994 & NCA 4000

RHR Pumps Design Specification U7-RHR-M-SPEC-ASME-PUMP-7387, Revision D

The RHR pumps are included in DCD Table 3.2-1 as QG B and Seismic Category I. The specification is certified by a PE and contains holds pending verification (Hold Tabulation Sheet U7-RHR-M-SPEC-HOLD-PUMP-7387). The pumps are designated as ASME Section III, Division 1, Class 2 NQA-1. The safety-related function is injecting water into the RPV. The jurisdictional boundaries are described as the circumferential joint. Editions of various referenced codes vary as summarized below:

- ASME Section II, 2007 with 2008 & 2009 Addenda (material reconciliation to be performed by certificate holder)
- ASME Section V, 2007 Edition with 2008 & 2009 Addenda
- ASME Section IX, 2007 Edition with 2008 & 2009 Addenda
- ASME Section XI, 2004 Edition

- Codes Cases per RG 1.84 Rev 23 and RG 1.147
- OM Code 2004 Edition
- QME-1 2007 Edition
- *Data Sheet:* Safety-related, Section III, Cl. 2, QG B, Seismic Category I, *Active*

SLC Tank Design Specification U7-SLC-M-SPEC-ASME-TANK-7333, Revision B

The SLC Tank is in referenced DCD Table 3.2-1 as QG B and designated as an ASME Section III, Class 2 component in DCD subsection 3.9.31.6. The design specification is certified by a PE and contains holds pending verification (Hold Tabulation Sheet U7-SLC-M-SPEC-HOLD-TANK-7333). The data sheets are referenced for the safety-related functions. The jurisdictional boundaries are described as the circumferential joint. In the design section, editions of various referenced codes vary as summarized below:

- ASME Section II, 2007 with 2008 & 2009 Addenda
- ASME Section III, 2004 Edition
- ASME Section V, 2007 with 2008 & 2009 Addenda
- ASME Section IX, 2007 Edition with 2008 & 2009 Addenda
- ASME Section XI, 2004 Edition
- Codes Cases per RG 1.84 Revision 23 and RG 1.147 Revision 8
- OM Code 2004 Edition
- *Data Sheet: QG B, SC-2, Sec*tion III, Cl. 2, Seismic Category I

SLC Pump Design Specification U7-SLC-M-SPEC-ASME-PUMP-7383, Revision D

The SLC Pump is in referenced DCD Table 3.2-1 as QG B, Safety Class 2 and Seismic Category I. The design specification is certified by a PE and contains holds pending verification (Hold Tabulation Sheet U7-SLC-M-SPEC-HOLD-PUMP-7386). The data sheets are referenced for the safety-related functions. The jurisdictional boundaries are described as the circumferential joint. In the design section, editions of various referenced codes vary as summarized below:

- ASME Section II, 2007 with 2008 & 2009 Addenda (material reconciliation by certificate holder)
- ASME Section III, 2004 Edition (NCA-4134.10(a) may not be applied per 10 CFR 50.55(a))
- ASME Section V, 2007 with 2008 & 2009 Addenda (Hold)
- ASME Section IX, 2007 Edition with 2008 & 2009 Addenda

- ASME Section XI, 2004 Edition
- Codes Cases per RG 1.84 Revision 23 and RG 1.147
- OM Code 2004 Edition (Hold)
- Operability considered
- *Data Sheet:* QG B, SC-2, ASME Section III, Cl. 2, Seismic Category I

Valves

Data sheets in design specifications for the following risk-significant valves were reviewed to evaluate consistency with licensing documents and the project P&ID. No discrepancies were identified. The valve classification reviews is summarized in Table 2.

Table 2**:** Summary of Valve Classification Review

System/Valve Tag	Spec. No.	QG	ASME Class	P&ID
RSW – QG C in DCD				
FV-0003	U7-SITE-M-SPEC-ASME-VLV-7342	C	3	U3-RSW-MDWG-P&ID-001
FV-0009	same	C	3	same
RHR – QG A or B in DCD				
FV-0001	U7-SITE-M-SPEC-ASME-VLV-7384 and 7342	B	2	U3-RHR-M-DWG-P&ID-001
HV-0003 A, B, C	same	B	2	same
FV-0005 A	same	B	2	same
CHKV-0006 A, C	same	B	2	same
CHKV-0006 B	same	A	1	same
FV-0013 A, B, C	same	B	2	same
FV-0005 B	same	A	1	same
FV-005 C	same	A	1	same
SLC – QG A in DCD				
FV-005 A, B	U7-SITE-M-SPEC-ASME-VLV-7343	A	1	U3-SLC-M-DWG-P&ID-001

Staff Observations

A review of project documents determined that there is a process to correct discrepancies in classifications discovered during the detailed design.

There is no specific “Q” list or other similar document that can be used to validate classifications based on the component safety function. However, design specifications are to include the specific safety function and no discrepancies were identified in the application of NRC criteria for the sample of risk-significant mechanical components.

A project requirements document references the classification summary, seismic design classification and applicable codes and standards documents that are to reflect the licensing basis. This project requirements document explains the safety classes that are based on ANS standards not endorsed by the NRC. The NRC has not used the ANS standards or safety class as a basis for acceptability regarding classifications.

A general design document includes a classification summary of quality group, safety class, QA requirement and seismic category that is in general consistent with the classification approach included in the DCD and FSAR, other than use of the term seismic Category II.

Another general design document includes seismic design classification criteria that is in general consistent with the DCD and FSAR, except that the DCD, FSAR and the NRC do not use the term seismic Category II.

A project requirements document identifies two lists of codes and standards used for the standard plant and COLA site-specific systems. No discrepancies between the licensing documents and the project requirements document were identified.

Project P&IDs, data sheets in design specifications and summary lists in project documents were reviewed for selected risk-significant components and no discrepancies were identified in regard to quality group, seismic classification or ASME Code class were identified, other than application of the term seismic Category II that is not specifically used in the DCD and FSAR.

Holds exist in design specifications regarding application of codes and standards editions and other design information. A process is in place to remove holds as the detailed design progresses. The project requirements document on codes includes a summary of codes and standards stated in the DCD and COL FSAR. The application of ASME Section III for risk-significant mechanical components is consistent with the licensing documents. The applicant intends to update the codes and standards to more recent codes and standard endorsed by the NRC, including ASME Section III 2004 and has performed code reconciliation between the 1989 and the 2004 Code editions.

As shown in the design specifications, certificate holders will perform reconciliation pertaining to recent editions of ASME Section II material standards. Based on NRC Interim Staff Guidance ISG-11, the applicant plans to update licensing and design documents to reflect current codes and standards acceptable to the NRC.

Based on a review of design specifications for selected risk-significant mechanical components, the specifications are certified by a registered mechanical engineer, require N stamping, identify codes and standards (with selected holds on code editions and other design information),

address jurisdictional boundaries with appropriate quality group, seismic category and ASME Code class designated on data sheets or attachments. No discrepancies were identified, other than the Seismic Category II classification applied in design documents and a specific concern related to RPV non-safety-related internals not specifically designated for seismic analysis. (Refer to applicant action item).

Component Classification Conclusions

NRC staff concludes that, although the detailed design is not complete and a license amendment request will be submitted for changes to code editions, the level of detail is sufficient to support the NRC staff review and conclude that the classification of risk-significant mechanical components is consistent with NRC criteria and regulations. The following specific conclusions and recommendations were identified by NRC staff:

- Other than for code edition issues and a clarification needed concerning a seismic classification concern for the non-safety-related RPV internals, the detailed design pertaining to the classification of risk-significant mechanical components is consistent with the licensing basis and NRC criteria.

- The applicant appears to have an effective process to translate licensing information pertaining to classifications into detailed design documents and resolve discrepancies in classifications discovered during the detailed design.

- It is understood that the applicant will submit a license amendment to update codes and standards to reflect more recent editions of codes and standards acceptable to the NRC.

- The applicant should consider performing QA audits, or design reviews to ensure that all system and component classifications are correct on the basis of the safety function they perform.

- Although the data sheets and design documents reviewed generally reflect Unit 3, it is understood that Unit 4 is expected to be a duplicate of Unit 3

Audit Open Items

1. In the HCU equipment requirement specification, the loads were not available. More specifically, Page 48 /57, Sections 6.2.3 and 6.2.4 refer to Paragraph 3.1.3.g which states “Later.” This is action item 19 that is listed in Attachment 2.

2. In the FMCRD specification, the load table is generic. Pages 29-33, Table 1 did not list the load values and on Table 2 load combinations were generic. This is action item 21 that is listed is in Attachment 2.

References

1. NRO Office Instruction NRO-REG-108 (Revision 0), “Regulatory Audits”

2. DCD/COL-ISG-011, Finalizing Licensing-basis Information dated November 2, 2009 (ML092890623)

3. Audit Plan of South Texas Project Design Specifications - Regulatory Audit of Risk Significant Components dated January 6, 2011 (ML110030808)

4. ASME Boiler and Pressure Vessel Code, Section III, Division 1, “Nuclear Power Plant Components, American Society of Mechanical Engineers”

5. SRP Section 3.2.1 “Seismic Classification”

6. SRP Section 3.2.2 “System Quality Group Classification”

7. SRP Section 3.9.3 “ASME Code Class 1, 2, and 3 Components and Component Supports, and Core Support Structures”

8. SRP Section 3.9.4 “Control Rod Drive Systems”

9. SRP Section 3.9.5 “Reactor Pressure Vessel Internals”

Exit Attendee List:

Name	Organization
Jennifer Dixon-Herrity	NRC
Tuan Le	NRC
Richard McNally	NRC
Sardar Ahmed	NRC
Yiu Law	NRC
Tekia Govan	NRC
Michael Shewski	S & L
Dave Petin	S & L
Frank Pontillo	S & L
Bob Hooks	S & L
Sabastian Sirabusa	S & L
Milos Stepanovic	S & L
Sean Noonan	S & L
Koichi Kondo	TANE
Kiyohide Morishita	TANE
Yukitaka Yamazeaki	TANE
William R. Peebles	TANE
Yusuyuka Ito	Toshiba
Keiji Matsunaga	Toshiba
Makoto Vkai	Toshiba
Takuya Miyagawa	Toshiba
Hiroyuki Torigoe	Toshiba
Junichi Yamazaki	Toshiba
P. K. Agrawal	S & L
Tom Kujacoski	S & L
Jonathon Hagedorn	S & L
James Fisicaro	TANE
Dave Skiba	S & L
Terry Sopkin	S & L
Janey McIntyre	S & L
A. L Kurtz	S & L
R. H. Scheide	NINA
Tom Daley	NINA
Jim Tomkins	NINA
Delfo Blanchinl	S & L
Bansi Pandit	S & L
Caroline Schlaseman	MPR / TANE
Stefan Janusz	S & L

Documents Reviewed

Design and Procurement Specifications:

- 3B11-D003-3005-01, Reactor Pressure Vessel Design Specification, Rev. 7 (U3-RPV-M-SPEC-ASME-0001, Rev. H dated March 4, 2011)
- 3B11-D001-3005-01, Support Structures and Reactor Internals - Design Specification, Rev. 4 (U3-RPV-M-SPEC-ASME-0002, Rev. E dated March 3, 2011)
- 7B11-D001-3001-01, Support Structures and Reactor Internals – Equipment Requirements Specification, Rev. 3 (U7-RPV-M-SPEC-DESN-0002, Rev. D dated March 26, 2009)
- 7C12-D004-3005-01, Hydraulic Control Units Design Specification, Rev. 2 (U7-CRD-M-SPEC-ASME-0001, Rev. B dated July 6, 2009)
- 7C12-D004-3001-01, Hydraulic Control Units (HCU) Equipment Requirements Specification, Rev. 3 (U7-CRD-M-SPEC-HCU-0001, Rev. 6 dated July 6, 2009)
- 7C12-D005-3005-01, Fine Motion Control Rod Drive (FMCRD) Design Specification, Rev. 2 (U7-CRD-M-SPEC-ASME-0002, Rev. C dated August 18, 2009)
- 7C12-D005-3001-01, Fine Motion Control Rod Drive (FMCRD) Equipment Requirements Specification, Rev. 3 (U7-CRD-M-SPEC-FCRD-0001, Rev. D dated August 6, 2009)
- U7-SLC-M-SPEC-ASME-TANK-7333,Standby Liquid Control System (SLC) Tank Specification, Rev. B, July 23, 2010
- U7-SITE-M-SPEC-ASME-VLV-7343, Standby Liquid Control System (SLC) Valve Specification, Rev. E
- U7-SITE-P-SPEC-ASME-0002,Standby Liquid Control System (SLC) Piping Specification, Rev. B
- U7-SLC-M-SPEC-ASME-PUMP-7386, Standby Liquid Control System (SLC) Pumps Specification, Rev. D
- U7-SITE-P-SPEC-ASME-0001, ASME III, Division I, Class 1, 2, and 3 Piping and Piping Supports for the Nuclear Boiler System, Rev. C
- U7-SITE-M-SPEC-ASME-VLV-7384, Safety Related Large Bore Containment Isolation Valves – ASME Section III, Division I Class 1 & 2 Design Specification, Rev E
- U7-SITE-M-SPEC-ASME-MSRV-7381, Main Steam Safety Relief Valves-ASME Section III, Division I Class1 Design Specification, Rev. E
- U7-RBCW-M-SPEC-ASME-PUMP-7358, Reactor Building Cooling Water Pumps ASME Section III Division I Class 3 Design Specifications, Rev. D
- U7-SITE-M-SPEC-ASME-VLV-7342, Large Bore Valve-ASME Section III Division I Class 3 Design Specification, Rev. F
- U7-EDG-M-SPEC-ASME-DG-7300, Emergency Diesel Generator-ASME Section III, Division I Class1 Design Specification, Rev. 1
- U7-RSW-M-SPEC-ASME-PUMP-7396, Service Water Pumps Specification, Rev. D, January 14, 2011
- U7-RHR-M-SPEC-ASME-HX-7322, RHR Heat Exchangers Specification, Rev. D, September 1, 2010
- U7-RHR-M-SPEC-ASME-PUMP-7387, RHR Pumps Specification, Rev. D, May 28, 2010
- U7-SLC-M-SPEC-ASME-PUMP-7383, SLC Pump Specification, Rev. D, June 8, 2010

- U7-SITE-M-SPEC-STNR-7399, ECCS Suction Strainer Specification, Rev. D
- U7-SITE-P-SPEC-ASME-PIPE-7347, Rev. D, Containment Overpressure Protection Rupture Disk Specification
- U7-SITE-P-SPEC-ASME-0018, Rev. B, Containment Overpressure Protection
- U7-FAB-P-SPEC-PIPE-7332, Rev. D, Piping Component Specification
- U7-RBCW-M-SPEC-PUMP-7358, Rev E, Reactor Building Cooling Water Pump Specification
- U7-EDG-M-SPEC-DG-7300, Rev 1, Emergency Diesel Generator Specification
- U7-PCS-S-ASME-7519, Rev. C1, Containment Wetwell/Drywell Vacuum Breakers (Draft)
- U7-PROJ-G-PRD-0004, Revision 0, Classification Specification
- U7-SPEC-G-GDD-0013, Rev. B, Classification Summary
- U7-PROJ-C-GDD-0001, Rev A, Seismic Design Classification

Procedures:

- PI-STP34-116, “Preparation and Control of ASME Section III Design Safety-related and Non-safety-related and Generic Specifications,” Revision 13, December 9, 2010
- PI-STP34-124, “STP Units 3 & 4 Impact Assessment Review,” Revision 1
- PI-STP34-122, “STP 3 & 4 Licensing Impact Screening – Change Proposal Notice and Requirements Change Request Processing,” Revision 3
- U7-P-EN02-0004, “Changes to STP 3 & 4 Requirements Documents,” Revision 5
- U7-PROJ-D-PRD-0009, “Project Specific Pre-Baseline Design Change Control Procedure,” Revision G
- U7-PROJ-G-PRD-011, “Applicable Codes and Standards,” Revision 2
- RCR# S&L09-19062, “Tier 2* Codes and Standards Update”
- 7A10-0501-0013, General Design Document Classification Summary, Rev. 2 (U7-SPEC-G-GDD-0013, Rev. C dated February 25, 2011)
- GDD-0001, Seismic Design Classification (U7-PROJ-C-GDD-0001, Rev. A)

Hold Tabulation Sheets:

- U7-SITE-M-SPEC-HOLD-MSRV-7381
- U7-SITE-M-SPEC-HOLD-PUMP-7358U7-SITE-M-SPEC-HOLD—0001
- U7-SITE-M-SPEC-HOLD-HX-7323
- U7-SITE-M-SPEC-HOLD-VLV-7384

Drawings:

- 7C12-D004-3102-01, Hydraulic Control Unit Design Specification Drawing, Rev.1
- 7C12-D004-3102-03, Gate Valve 20A Design Specification Drawing, Rev.1
- 7C12-D004-3102-04, Gate Valve 32A Design Specification Drawing, Rev.1
- 7C12-D004-3102-05, Angle Valve Design Specification Drawing, Rev.1
- 7C12-D004-3102-06, Cartridge Valve Design Specification Drawing, Rev.1

P&IDs:

- U3-RBCW-P-DWG-PID-0001 Sheets 01, 04, and 07, Rev D
- U3-NB-M-DWG-PID-0001, Sheets 01 - 03, Rev. D
- U3-NB-M-DWG-PID-0001-03, Sheets 04 & 05, Rev B
- U7-PROJ-M-RPT-DESN-6001, Rev. A
- U7-PROJ-M-RPT-DESN-6003, Rev. A
- U3-ACS-M-DWG-P&ID-0001-01, Rev. F
- U3-ACS-M-DWG-P&ID-0001-02, Rev. F
- U3-ACS-M-DWG-P&ID-0001-03, Rev. F
- U3-ACS-M-DWG-P&ID-0001-04, Rev. F
- 3C12-2101-0001-00003, Rev. 4
- U3-SLC-M-DWG-P&ID-0001-01, Rev. D
- U3-SLC-M-DWG-P&ID-001
- U3-RSW-M-DWG-P&ID-0001-01, Rev. D
- U3-RSW-MDWG-P&ID-001
- U3-RHR-M-DWG-P&ID-001

Valve Data Sheets:

- U3-ACS-FV-0133
- U3-ACS-FV-0134

Code Reconciliation Reports:

U7-PROJ-M-RPT-DESN-6001, Rev. A, November 17, 2010, ASME Code Reconciliation Report, 1989 Edition through 2004 Edition, S&L

U7-PROJ-M-RPT-DESN-6003, Rev. A, ASME Code Reconciliation Report, 1989 Edition through 2004 Edition, Reddy Engineering, Inc.

Mechanical Equipment Lists:

U7-SITE-M-LIST-EQPT-6001, Rev. B
U7-SITE-M-LIST-EQPT-G0001, Rev. B

Other Documents:

NRC Inspection Report 99900507/2009-201, dated September 14-17, 2009

S&L Internal Audits

- 2009-037, dated March 2-6, 2009
- 2009-073, dated November 2-6, 2009

- 2010-012, dated May 3-6, 2010
- 2010-044, dated November 12-19, 2010

Fluor Surveillances of S&L

- SV-09-18, dated May 26-28, 2009
- S-09-S29, dated July 21-23, 2009 and August 4-6, 2009
- S-10-S-20, dated June 22-24, 2010
- S-10-S-36, dated June 22-24, 2010

ACTION ITEMS LIST
NRC Audit of South Texas Project Units 3 & 4
January 18 - 21, 2011

No.	Session Date	Session Time	Action Item Description	Specification Title	Requestor	Responsible Organization	Responsible Person	Due Date	Response/ Status	Notes/ Comments
1	1/18	1:00PM	Provide NRC with updated matrix file "Document Matrix for NRC Audit January 18-20, 2011" and ASME Design Specification presentation presented by B. Pandit.	N/A	Tekia Govan	NINA	Dick Scheide	Closed	Emailed files to Tekia Govan.	None
2	1/18	5:00PM	Add hold tabulation to binders for each applicable specification.	N/A	Jennifer Dixon-Herrity	S&L	S&L Engineers	Closed	Added hold tabulations to all specification binders.	None
3	1/18	5:00PM	Identify revision number for P&IDs in matrix file "Document Matrix for NRC Audit January 18-20, 2011" and provide to NRC. Identify procurement specification for piping.	N/A	Richard McNally/ Sardar Ahmed	NINA/ S&L	Dick Scheide/ Tom Kujawski	1/21/11	Matrix will be updated to include the P&ID revision number and piping specification number.	Matrix updated with P&ID revision numbers, piping specification numbers and a paper copy was provided to the NRC. Matrix will be released at the end of the audit due to potential for additional changes.
4	1/18	5:00PM	Provide NRC with QA audit reports for specifications.	N/A	Richard McNally	S&L	Jim McIntyre	Closed	S&L QA to provide audit report.	The QA list of reports / audits is in agreement with the documents given to the NRC.
5	1/18	5:00PM	Continue Rupture Disk discussion on 1/19/11	Piping Specialties	Sardar Ahmed	NRC	Sardar Ahmed	Closed	Discussion Completed 1/19/11	None
6	1/18	5:00PM	Continue Reactor Internals and Core Support Structure discussion on 1/19/11	Core Support Structures and Reactor Internals	Yiu Law	NRC	Yiu Law	Closed	Discussion Completed 1/19/11	None
7	1/19	10:45am	Provide details to NRC on the interface between the upper guide rod and the RPV head.	Core Support Structures and Reactor Internals	Yiu Law	TOSHIBA	Keiji Matsunaga	Closed	Toshiba provided details on the interface between the upper guide rod and the RPV head.	None

Attachment 2

ACTION ITEMS LIST (Con't)
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No.	Session Date	Session Time	Action Item Description	Specification Title	Requestor	Responsible Organization	Responsible Person	Due Date	Response/ Status	Notes/ Comments
8	1/19	1:15 PM	RPV Vent and head spray requirements are not included in Reactor Internals Specification. Requirements are listed in DCD but are not included in Reactor Internals Spec.	Core Support Structures and Reactor Internals	Yiu Law	TOSHIBA	Keiji Matsunaga	Closed	RPV Vent and Head Spray shall be included in Reactor Pressure Vessel Specification.	During the follow up audit on April 7, 2011, the staff found that the RPV Head and Spray Assembly spec was included and found appropriate in the Reactor Pressure Vessel spec, thus this action item is considered close.
9	1/19	1:15 PM	Provide NRC with S&L project procedure process for closing hold points in specifications.	N/A	Jennifer Dixon-Herrity	S&L	Mike Shewski	Closed	Provided NRC with Project Instruction (PI-STP34-116).	Discussion completed on 1/20/11 in AM.
10	1/19	1:15 PM	Provide NRC with ASME Code Reconciliation documentation.	N/A	Richard McNally	S&L	Bansi Pandit	Closed	Reviewed Code Reconciliation with Richard McNally.	Provided PRD-0011 Applicable Codes and Standards to Jennifer Dixon-Herrity.
11	1/19	2:30 PM	Why doesn't the DCD discuss environmental effects on fatigue qualifications for components?	N/A	Tuan Le	TOSHIBA/ NINA/ TANE	Keiji Matsunaga/ Tom Daley/ Caroline Schlaseman	Closed	Discussion Completed 1/20/11	Regulatory Guide 1.207 does not apply to ABWR DCD.
12	1/19	2:30 PM	Update U7-SPEC-G-GDD-0013 (Classification Summary) to reflect seismic requirements for specification 7B11-D001-3001-01 (Core Support Structures and Reactor Internals).	Core Support Structures and Reactor Internals	Tuan Le	NINA/ TOSHIBA	Tom Daley/ Keiji Matsunaga	Closed	Discussion Completed 1/20/11	The applicant revised the classification table of U7-SPEC-G-GDD-0013 specification to include the seismic classification for the non-safety related reactor internal components.
13	1/19	4:30 PM	Discuss Nuclear Boiler Main Steam Relief Valve Specification.	Nuclear Boiler Main Steam Relief Valves	Jennifer Dixon-Herrity	S&L/ TANE	Frank Pontillo/ Bansi Pandit/ Junichi Yamazaki	Closed	Discussion Completed 1/20/11	None
14	1/19	4:30 PM	Is there a tracking mechanism for components released from holds for bid purposes to ensure they are revisited if required?	N/A	Jennifer Dixon-Herrity	S&L	Mike Shewski	Closed	Discussion Completed 1/20/11	None

ACTION ITEMS LIST (Con't)
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No.	Session Date	Session Time	Action Item Description	Specification Title	Requestor	Responsible Organization	Responsible Person	Due Date	Response/ Status	Notes/ Comments
15	1/20	4:00 PM	Updating the hold list on Large Bore CIV Specification (7384) Attachment B.	Large Bore CIV	Sardar Ahmed	S&L	Milos Stefanovic	Closed	Revise documents by end of NRC Audit.	Provided the NRC with revised hold lists on 1/21/11.
16	1/20	4:00 PM	Revise valve tag number for SLC valve data sheet.	Small Bore Valves	Yiu Law	S&L	Milos Stefanovic	Closed	Revise documents by end of NRC Audit.	Provided the NRC with revised SLC valve data sheets on 1/21/11.
17	4/7	NA	Provide primary references in the reactor vessel specification that contain RG 1.20 as reference.	Reactor Pressure Vessel Design Specification	Terri Spicher	NINA	Richard Scheide	Closed	NINA response on 5/11/11	Applicant addressed concern
18	4/7	NA	Review Appendix B of the reactor vessel specification to find information on the Surveillance Sample Holder	Reactor Pressure Vessel Design Specification	Terri Spicher	NRC	Terri Spicher	Closed	NINA response on 5/11/11	Applicant addressed concern
19	4/18	NA	Provide loads in HCU specification	HCU equipment requirement specification	Jason Huang	NINA	Richard Scheide	Action	TBD	
20	4/18	NA	Include RG 1.26 and 1.29 in HCU and FMCRD specifications.	HCU and FMCRD equipment requirement specifications	Jason Huang	NINA	Richard Scheide	Closed	NINA response on 5/11/11	Applicant addressed concern
21	4/18	NA	Address "generic" loads in the FMCRD specification	FMCRD specification	Jason Huang	NINA	Richard Scheide	Action	TBD	
22	4/18	NA	Address missing CRDM housing	CRDM specification	Jason Huang	NINA	Richard Scheide	Closed	NINA response on 5/11/11	Applicant addressed concern
23	4/18	NA	Missing acronym list	CRDM specification	Jason Huang	NINA	Richard Scheide	Closed	NINA response on 5/11/11	Applicant addressed concern
24	4/18	NA	Missing responsibilities and duties description in specification	HCU and FMCRD specifications	Jason Huang	NINA	Richard Scheide	Closed	NINA response on 5/11/11	Applicant addressed concern

DOCUMENT MATRIX
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Item No.	System	Equipment/ Component Description	DCD Tag No. (Old)	Project P&ID Tag No. (New)	Project P&ID No.	ASME Design Spec No./Rev	Procurement Spec No./Rev.	Related DCD/COLA Section/Figure No.
1	Reactor Core Isolation Cooling System (RCIC)	RCIC Turbine Driven Pump	C001	PUMP-001	U3-RCIC-M-DWG-P&ID-0001-03, Rev. E	U7-RCIC-M-SPEC-ASME-PUMP-7389 Rev. D	U7-RCIC-M-SPEC-PUMP-7389 Rev. D	T1: 2.4.4 T2: 5.4.6 Figure 5.4-8
2	Reactor Core Isolation Cooling System (RCIC)	Min Flow Bypass Valve	F011	FV-0011	U3-RCIC-M-DWG-P&ID-0001-02, Rev. E	U7-SITE-M-SPEC-ASME-VLV-7384 Rev. E	U7-SITE-M-SPEC-VLV-7384 Rev. E	T1: 2.4.4 T2: 5.4.6 Figure 5.4-8
3	Reactor Core Isolation Cooling System (RCIC)	Injection Valve	F004	FCV-0004	U3-RCIC-M-DWG-P&ID-0001-02, Rev. E	U7-SITE-M-SPEC-ASME-VLV-7342 Rev. F	U7-SITE-M-SPEC-VLV-7342, Rev. F	T1: 2.4.4 T2: 5.4.6 Figure 5.4-8
4	Reactor Core Isolation Cooling System (RCIC)	Check Valve	F038	CHKV-0053	U3-RCIC-M-DWG-P&ID-0001-01, Rev. E	U7-SITE-M-SPEC-ASME-VLV-7384 Rev. E	U7-SITE-M-SPEC-VLV-7384 Rev. E	T1: 2.4.4 T2: 5.4.6 Figure 5.4-8
5	Reactor Core Isolation Cooling System (RCIC)	Check Valves	F003, F005	CHKV-0003, CHKV-0005	U3-RCIC-M-DWG-P&ID-0001-02, Rev. E	U7-SITE-M-SPEC-ASME-VLV-7342 Rev. F	U7-SITE-M-SPEC-VLV-7342, Rev. F	T1: 2.4.4 T2: 5.4.6 Figure 5.4-8
6	Reactor Core Isolation Cooling System (RCIC)	Isolation Valves	F035, F036, F039	FV-0050, FV-0051, FV-0054	U3-RCIC-M-DWG-P&ID-0001-01, Rev. E	U7-SITE-M-SPEC-ASME-VLV-7384 Rev. E	U7-SITE-M-SPEC-VLV-7384 Rev. E	T1: 2.4.4 T2: 5.4.6 Figure 5.4-8
7	Reactor Core Isolation Cooling System (RCIC)	ECCS Suction Strainer	D002	STNR-002	U3-RCIC-M-DWG-P&ID-0001-02, Rev. E	U7-SITE-M-SPEC-ASME-STNR-7399 Rev. D	U7-SITE-M-SPEC-STNR-7399 Rev. D	T1: 2.4.4 T2: 5.4.6 Figure 5.4-8
8	Containment Overpressure Protection System (ACS)	Air Operated Valve	F007	FV-0133	U3-ACS-M-DWG-P&ID-0001-01, Rev. F	U7-SITE-M-SPEC-ASME-VLV-7384 Rev. E	U7-SITE-M-SPEC-VLV-7384 Rev. E	T1: 2.14.6 T2: 6.2.5 Figure 6.2-39 Table 3.9-8
9	Containment Overpressure Protection System (ACS)	Air Operated Valve	F010	FV-0134	U3-ACS-M-DWG-P&ID-0001-01, Rev. F	U7-SITE-M-SPEC-ASME-VLV-7384 Rev. E	U7-SITE-M-SPEC-VLV-7384 Rev. E	T1: 2.14.6 T2: 6.2.5 Figure 6.2-39 Table 3.9-8

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Item No.	System	Equipment/ Component Description	DCD Tag No. (Old)	Project P&ID Tag No. (New)	Project P&ID No.	ASME Design Spec No./Rev	Procurement Spec No./Rev.	Related DCD/COLA Section/Figure No.
10	Containment Overpressure Protection System (ACS)	Rupture Disk	D001	RPD-001	U3-ACS-M-DWG-P&ID-0001-01, Rev. F	U7-SITE-P-SPEC-ASME-PIPE-7347, Rev. D	U7-SITE-P-SPEC-PIPE-7347, Rev. E	T1: 2.14.6 T2: 6.2.5 Figure 6.2-39 19.5.2, 19E.2, 19K.11.6, Table 3.2-1, Table 6.2-7
11	Containment Overpressure Protection System (ACS)	Rupture Disk	D002	RPD-002	U3-ACS-M-DWG-P&ID-0001-01, Rev. F	U7-SITE-P-SPEC-ASME-PIPE-7347, Rev. D	U7-SITE-P-SPEC-PIPE-7347, Rev. E	T1: 2.14.6 T2: 6.2.5 Figure 6.2-39 19.5.2, 19E.2, 19K.11.6, Table 3.2-1, Table 6.2-7
12	Containment Overpressure Protection System (ACS)	Flow Lines	Various	Various	U3-ACS-M-DWG-P&ID-0001-01/02/03/04, Rev. F	U7-SITE-P-SPEC-ASME-0018 Rev. B	U7-FAB-P-SPEC-PIPE-7332, Rev. D	Figure 6.2-39
13	Reactor Pressure Vessel	Reactor Vessel Design	N/A	N/A	N/A	3B11-D003-3005-01 Rev.7 (U3-RPV-M-SPEC-ASME-0001 Rev. G)	3B11-D003-3005-01 Rev.7 (U3-RPV-M-SPEC-ASME-0001 Rev. G)	T1:2.1 T2:3.9, 4.1, 4.5, 5.2, 5.3
14	Reactor Pressure Vessel	Reactor Internals	N/A	N/A	N/A	3B11-D001-3005-01 Rev.3 (U3-RPV-M-SPEC-ASME-0002 Rev. D)	3B11-D001-3005-01 Rev.3 (U3-RPV-M-SPEC-ASME-0002 Rev. D)	T1:2.1 T2:3.9, 4.1, 4.5, 5.2, 5.3
15	Containment	Wetwell/Dry well Vacuum Breakers	N/A	N/A	N/A	U7-PCS-S-ASME-7519 Rev. C1 (DRAFT)	U7-PCS-S-ASME-7519 Rev. C1 (DRAFT)	T1: 2.14.1 T2: 6.2.1.1.2.1 6.2.1.1.4.1, 6.2.1.1.5.5 6.2.1.1.5.6.3
16	Classification	Various (See Notes)	Various (See Notes)	Various (See Notes)	Various (See Notes)	N/A	U7-PROJ-G-PRD-0004, Rev. 0 (Classification Specification)	Table 3.2-1
17	High Pressure Core Flooder (HPCF)	Pump	C001B, C	PUMP-001B, C	U3-HPCF-M-DWG-P&ID-0001-01/02, Rev. E	U7-HPCF-M-SPEC-ASME-PUMP-7388 Rev. F	U7-HPCF-M-SPEC-PUMP-7388 Rev. F	Section 2.4.2, Section 6.3. Figure 6.3-7
18	High Pressure Core Flooder (HPCF)	Maintenance Valves	F005B, C	HV-0006B, C	U3-HPCF-M-DWG-P&ID-0001-01/02, Rev. E	U7-SITE-M-SPEC-ASME-VLV-7342, Rev. F	U7-SITE-M-SPEC-VLV-7342, Rev. F	Section 2.4.2, Section 6.3. Figure 6.3-7

DOCUMENT MATRIX (Con't)
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Item No.	System	Equipment/Component Description	DCD Tag No. (Old)	Project P&ID Tag No. (New)	Project P&ID No.	ASME Design Spec No./Rev	Procurement Spec No./Rev.	Related DCD/COLA Section/Figure No.
19	High Pressure Core Flooder (HPCF)	Injection Valves	F003B, C	FV-0004B, C	U3-HPCF-M-DWG-P&ID-0001-01/02, Rev. E	U7-SITE-M-SPEC-ASME-VLV-7384 Rev. E	U7-SITE-M-SPEC-VLV-7384 Rev. E	Section 2.4.2, Section 6.3. Figure 6.3-7
20	High Pressure Core Flooder (HPCF)	ECCS Suction Strainer	D003B, C	STNR-002 B, C	U3-HPCF-M-DWG-P&ID-0001-01/02, Rev. E	U7-SITE-M-SPEC-ASME-STNR-7399 Rev. D	U7-SITE-M-SPEC-STNR-7399 Rev. D	T1/2.4.2 Figure 6.3-7
21	Control Rod Drive (CRD)	Hydraulic Control Units	D004	HCU-WWXX/YYZZ	U3-CRD-M-DWG-P&ID-0001-03, Rev. E	U7-CRD-M-SPEC-ASME-0001 Rev. B	U7-CRD-M-SPEC-ASME-0001 Rev. B	Figure 4.6-8 Sh3
22	Control Rod Drive (CRD)	Scram Pilot Solenoid Valves (part of HCU)	D004	HCU-WWXX/YYZZ-139	U3-CRD-M-DWG-P&ID-0001-03, Rev. E	U7-CRD-M-SPEC-ASME-0001 Rev. B	U7-CRD-M-SPEC-ASME-0001 Rev. B	Figure 4.6-8 Sh3
23	Control Rod Drive (CRD)	Scram Valves to FMCRDs (part of HCU)	D004	HCU-WWXX/YYZZ-126	U3-CRD-M-DWG-P&ID-0001-03, Rev. E	U7-CRD-M-SPEC-ASME-0001 Rev. B	U7-CRD-M-SPEC-ASME-0001 Rev. B	Figure 4.6-8 Sh3
24	Nuclear Boiler System (NB)	Isolation Check Valves	F003B, F004B	CHKV-0052B, CHKV-0053B	U3-NB-M-DWG-PID-0001-02, Rev. D	U7-SITE-M-SPEC-ASME-VLV-7384 Rev. E	U7-SITE-M-SPEC-VLV-7384 Rev. E	Figure 5.1-3 Sh4/Section 2.1.2 (Tier 1)
25	Nuclear Boiler System (NB)	Safety Relief Valve Discharge Piping	Various	Various	U3-NB-M-DWG-PID-0001-01/02/03, Rev. D & 04/05, Rev. B	U7-SITE-P-SPEC-ASME-0001 Rev. C	U7-FAB-P-SPEC-PIPE-7332, Rev. D	Figure 5.1-3
26	Nuclear Boiler System (NB)	ADS Valves	F010A, C, F, H, L, N, R, T	SRV-003A, C, F, H, L, N, R, T	U3-NB-M-DWG-PID-0001-03, Rev. D & 04, Rev. B	U7-SITE-M-SPEC-ASME-MSRV-7381, Rev. E	U7-SITE-M-SPEC-MSRV-7381, Rev. E	Figure 5.1-3 Sh2/Section 2.1.2 (Tier 1)
27	Nuclear Boiler System (NB)	Non-ADS Valves	F010B, D, E, G, J, K, M, P, S, U	SRV-003B, D, E, G, J, K, M, P, S, U	U3-NB-M-DWG-PID-0001-03, Rev. D & 04, Rev. B	U7-SITE-M-SPEC-ASME-MSRV-7381, Rev. E	U7-SITE-M-SPEC-MSRV-7381, Rev. E	Figure 5.1-3 Sh2/Section 2.1.2 (Tier 1)
28	Reactor Service Water System (RSW)	Pump	C001	PUMP-001A1, A2, B1, B2, C1, C2	U3-RSW-M-DWG-P&ID-0001-01/02/03, Rev. D	U7-RSW-M-SPEC-ASME-PUMP-7396, Rev. D	U7-RSW-M-SPEC-PUMP-7396, Rev. D	T1: 2.11.9 T2: 9.2.15 Figure 9.2-7
29	Reactor Service Water System (RSW)	Supply Isolation Valve	F002, F015	FV-0003, FV-0009	U3-RSW-M-DWG-P&ID-0001-01/02/03, Rev. D	U7-SITE-M-SPEC-ASME-VLV-7342, Rev. F	U7-SITE-M-SPEC-VLV-7342, Rev. F	T1: 2.11.9 T2: 9.2.15 Figure 9.2-7
30	Reactor Service Water System (RSW)	Heat Exchanger **(Same as Item #33)**						

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Item No.	System	Equipment/ Component Description	DCD Tag No. (Old)	Project P&ID Tag No. (New)	Project P&ID No.	ASME Design Spec No./Rev	Procurement Spec No./Rev.	Related DCD/COLA Section/Figure No.
31	Reactor Building Cooling Water System (RBCW)	Pumps	C001A,B,C,D, E,F	PUMP-001A1,A2, B1,B2,C1,C2	U3-RBCW-P-DWG-PID-0001-01/04/07, Rev. D	U7-RBCW-M-SPEC-ASME-PUMP-7358, REV. D	U7-RBCW-M-SPEC-PUMP-7358, REV. E	T1: 2.11.3, Table 8.3-1, T2: 9.2.11, Figure 9.2-1,
32	Reactor Building Cooling Water System (RBCW)	Isolation Valves	F015 (A,B,C,D,E,F), F002 (A,B,C,D,E,F)	HV-0013A1,A2, B1,B2,C1,C2 HV-0002A1,A2, B1,B2,C1,C2	U3-RBCW-P-DWG-PID-0001-01/04/07, Rev. D	U7-SITE-M-SPEC-ASME-VLV-7342, Rev. F	U7-SITE-M-SPEC-VLV-7342, Rev. F	Table 3.9-8, Figure 9.2-1
33	Reactor Building Cooling Water System (RBCW)	Heat Exchangers	B001A,B,C,D, E,F, G,H,J	HX-001A1,A2,A3, B1,B2,B3,C1,C2, C3	U3-RBCW-P-DWG-PID-0001-01/04/07, Rev. D	U7-RBCW-M-SPEC-ASME-HX-7323, REV. G	U7-RBCW-M-SPEC-HX-7323, REV. G	T1: 2.11.3, Table 8.3-1, T2: 9.2.11, Figure 9.2-1,
34	Residual Heat Removal System (RHR)	ACIWA Manual Valves	F101, F102	HV-0023, HV-0024	U3-RHR-M-DWG-P&ID-0001-01/02/03, Rev. E	U7-SITE-M-SPEC-ASME-VLV-7342, Rev. F	U7-SITE-M-SPEC-VLV-7342, Rev. F	T1: 2.4.1 T2: 5.4.7 Figure 5.4-10
35	Residual Heat Removal System (RHR)	Heat Exchangers	B001 A, B, C	HX-001 A, B, C	U3-RHR-M-DWG-P&ID-0001-01/02/03, Rev. E	U7-RHR-M-SPEC-ASME-HX-7322, Rev. D	U7-RHR-M-SPEC-HX-7322, Rev. D	T1: 2.4.1 T2: 5.4.7 Figure 5.4-10
36	Residual Heat Removal System (RHR)	Pumps	C001 A, B, C	PUMP-001 A, B, C	U3-RHR-M-DWG-P&ID-0001-01/02/03, Rev. E	U7-RHR-M-SPEC-ASME-PUMP-7387, Rev. D	U7-RHR-M-SPEC-PUMP-7387, Rev. D	T1: 2.4.1 T2: 5.4.7, Figure 5.4-10
37	Residual Heat Removal System (RHR)	Injection Valves	F001, F003, F005, F006 (A,B,C)	FV-0001, HV-0003, FV-0005, CHKV-0006 (A/B/C)	U3-RHR-M-DWG-P&ID-0001-01/02/03, Rev. E	U7-SITE-M-SPEC-ASME-VLV-7384 Rev. E U7-SITE-M-SPEC-ASME-VLV-7342, Rev. F	U7-SITE-M-SPEC-VLV-7384 Rev. E U7-SITE-M-SPEC-VLV-7342, Rev. F	T1: 2.4.1 T2: 5.4.7 Figure 5.4-10
38	Residual Heat Removal System (RHR)	Admission Valves	F012A,B,C	FV-0013 A, B, C	U3-RHR-M-DWG-P&ID-0001-01/02/03, Rev. E	U7-SITE-M-SPEC-ASME-VLV-7342, Rev. F	U7-SITE-M-SPEC-VLV-7342, Rev. F	T1: 2.4.1 T2: 5.4.7 Figure 5.4-10
39	Residual Heat Removal System (RHR)	ECCS Suction Strainer	D001 A, B, C	STNR-001 A, B, C	U3-RHR-M-DWG-P&ID-0001-01/02/03, Rev. E	U7-SITE-M-SPEC-ASME-STNR-7399 Rev. D	U7-SITE-M-SPEC-STNR-7399 Rev. D	T1: 2.4.1 T2: 5.4.7 Figure 5.4-10
40	Standby Liquid Control System (SLC)	Tank	A001	TANK-001	U3-SLC-M-DWG-PID-0001-01, Rev. D	U7-SLC-M-SPEC-ASME-TANK-7333, Rev. B	U7-SLC-M-SPEC-TANK-7333, Rev. B	Figure 9.3-1/Section 2.2.4 (Tier 1)/Table 6.1-1 (Tier 2)
41	Standby Liquid Control System (SLC)	Valve	F006A,F006B	FV-0005A, FV-0005B	U3-SLC-M-DWG-PID-0001-01, Rev. D	U7-SITE-M-SPEC-ASME-VLV-7343 Rev. E	U7-SITE-M-SPEC-VLV-7343 Rev. F	Figure 9.3-1, Table 6.2-7 (Tier 2)
42	Standby Liquid Control System (SLC)	Piping	Various	Various	U3-SLC-M-DWG-PID-0001-01, Rev. D	U7-SITE-P-SPEC-ASME-0002 Rev. B	U7-FAB-P-SPEC-PIPE-7332, Rev. D	Figure 9.3-1

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43	Standby Liquid Control System (SLC)	Pumps	C001A, C001B	PUMP-001A, PUMP-001B	U3-SLC-M-DWG-PID-0001-01, Rev. D	U7-SLC-M-SPEC-ASME-PUMP-7386, Rev. D	U7-SLC-M-SPEC-ASME-PUMP-7386, Rev. D	Figure 9.3-1/Section 2.2.4 (Tier 1)
44	Reactor Water Cleanup System (RWCU)	Isolation Valve	F002, F003	FV-0003, FV-0004	U3-RWCU-M-DWG-P&ID-0001-01, Rev. D	U7-SITE-M-SPEC-ASME-VLV-7384 Rev. E	U7-SITE-M-SPEC-VLV-7384 Rev. E	T1/2.6.1 T2/5.4.8 Figure 5.4-12
45	Reactor Water Cleanup System (RWCU)	Remote Manual Shutoff Valve	~~F028~~ F026	FV-0002	U3-RWCU-M-DWG-P&ID-0001-01, Rev. D	U7-SITE-M-SPEC-ASME-VLV-7384 Rev. E	U7-SITE-M-SPEC-VLV-7384 Rev. E	T1/2.6.1 T2/5.4.8 Figure 5.4-12
46	Emergency Diesel Generator System (EDG)	Starting Receiver Tanks and Valves	Receivers: A300A, A301A	See Note	U3-EDG-M-DWG-P&ID-0001-03, Rev. D2	U7-EDG-M-SPEC-ASME-DG-7300 Rev. 1	U7-EDG-M-SPEC-DG-7300 Rev. 1	2.12.13, 9.5.6
47	Emergency Diesel Generator System (EDG)	Safety-related lube oil system	NA	NA	U3-EDG-M-DWG-P&ID-0001-01, Rev. D2	U7-EDG-M-SPEC-ASME-DG-7300 Rev. 1	U7-EDG-M-SPEC-DG-7300 Rev. 1	2.12.13, 7.3.1.1.6, 9.5.7
48	Emergency Diesel Generator System (EDG)	Safety-related diesel cooling water system	NA	NA	U3-EDG-M-DWG-P&ID-0001-02, Rev. D2	U7-EDG-M-SPEC-ASME-DG-7300 Rev. 1	U7-EDG-M-SPEC-DG-7300 Rev. 1	2.12.13, 7.3.1.1.6, 9.5.5