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

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2
Docket Nos. 50-325, 50-324
Recommendation 2.3 Flooding Walkdown of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident

References:

1. Response to Request for Information Pursuant to Title 10 of the *Code of Federal Regulations* 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-inchi Accident, dated March 12, 2012, ADAMS Accession Number ML12053A340
2. Letter from David L. Skeen (USNRC) to Adrian P. Heymer (NEI), *Endorsement of Nuclear Energy Institute (NEI) 12-07, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features,"* dated May 31, 2012, ADAMS Accession Number ML12144A142

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued a Request for Information (i.e., Reference 1) requesting licensees to provide information regarding Recommendation 2.3, Flooding, to support the evaluation of the NRC staff recommendation for the Near-Term Task Force (NTTF) review of the accident at the Fukushima Dai-ichi nuclear facility.

By this letter, Carolina Power & Light Company (CP&L) submits the Brunswick Steam Electric Plant (BSEP) response regarding the performance of flooding walkdowns to identify and address degraded, non-conforming, or unanalyzed conditions and to verify the current plant configuration with the current flooding licensing basis. Enclosure 1 of this letter provides the requested information.

The information provided herein and the activities described in this report are consistent with the guidance provided in NEI 12-07, *Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features*, dated May 2012. The NRC endorsed the flooding walkdown guidance on May 31, 2012 (i.e., Reference 2).

This letter contains new regulatory commitments. There were 204 penetrations that could not be inspected due to restricted access. These penetrations will be inspected by July 31, 2013. Enclosure 2 of this letter documents this regulatory commitment.

A001
NRR

Please refer any questions regarding this submittal to Mr. Lee Grzeck, Manager – Regulatory Affairs, at (910) 457-2487.

I declare, under penalty of perjury, that the foregoing is true and correct. Executed on November 27, 2012.

Sincerely,

Michael J. Annacone

WRM/wrm

Enclosures:
1. Brunswick Steam Electric Plant Response to Recommendation 2.3 Flooding Walkdown of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident
2. List of Regulatory Commitments

cc (with enclosures):

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Brunswick Steam Electric Plant
Response to Recommendation 2.3 Flooding Walkdown
of the Near-Term Task Force Review of Insights
from the Fukushima Dai-ichi Accident

Brunswick Steam Electric Plant Flood Protection Features Walkdown Report

1.0 Executive Summary

This report summarizes the results of the flooding walkdowns performed at the Brunswick Steam Electric Plant (BSEP) in response to the March 12, 2012, NRC 50.54(f) Request for Information, Item 2.3. The flooding walkdowns were performed in compliance with the NRC-endorsed implementing guidance Nuclear Energy Institute (NEI) 12-07, Revision 0-A, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features." This report follows the direction provided in Appendix D of NEI 12-07.

BSEP is situated approximately two miles west of the Cape Fear River, which provides the plant with cooling water that is afterward discharged to the Atlantic Ocean. The Probable Maximum Hurricane provides the design basis flood hazard level at 22.0 ft. mean sea level (MSL) stillwater elevation with wave run up reaching 26.1 ft. MSL. The wave run up elevation at the Service Water Intake Structure is 28.3 ft. MSL due to its proximity to the intake canal. The nominal plant grade of the site is 20.0 ft. MSL resulting in two feet of water surrounding the plant facilities for a postulated maximum storm surge. Incorporated passive features at BSEP include wall penetration seals, floor drains, roof drains, and manhole covers.

Incorporated active features at BSEP include credited water-tight doors, sump pumps, and check valves that prevent flood infiltration. Openings, such as windows and doors, are located above the 22.0 ft. MSL flood level or have positive seals that will mitigate the flooding inleakage rate. Exterior personnel and equipment access doors in Class I structures have a specified inleakage rate which is well within the floor drain system capability. It is expected that any additional water entering the structures due to wave run-up or wind-driven rain would be minimal and would be removed by the floor drains that are installed in each safety-related structure. Measures have been established to provide temporary flood protection, such as sandbag dikes and metal flood barriers, as anticipatory mitigation means for flooding events.

The walkdown was completed by personnel trained to the requirements of NEI 12-07. Over 2000 items were included in the walkdown of BSEP Units 1 and 2, though inspection of several restricted access items has been delayed. Restricted access items are scheduled to be inspected by July 31, 2013. The deficiencies noted include degraded or missing penetration seals, gaps in weather stripping on doors, an unsealed transfer switch box, and several areas of insufficient detail in flooding preparation procedures. These items have been entered into the BSEP Corrective Action Program (CAP) for corrective actions (CAs) to be established. The monitoring and maintenance programs will adequately ensure that the flood protection features will continue to perform their credited functions.

2.0 Design Basis Flood Hazard Level

Design basis flood hazards were determined by reviewing the Current Licensing Basis (CLB). This includes docketed and currently effective written commitments for ensuring compliance with NRC requirements, and design basis information documented in the plant Updated Final Safety Analysis Report (UFSAR).

The plant is situated nearly two miles to the west of the Cape Fear River, which provides the plant with cooling water for the reactors via an intake canal. Cooling water from the plant is carried by a discharge canal to the Atlantic Ocean at the Caswell Beach area to the south of the plant site.

The Probable Maximum Flood of the BSEP site is based on the Probable Maximum Hurricane (PMH) as stated in the UFSAR. The weighted factors accounting for this PMH flooding potential of the site incorporate:

a. The storm surge created along the coast by the water accumulation from breaking waves [60%]

b. The astronomical tide [25%]

c. The reduction in central atmospheric pressure [10%]

d. The effects from waves [5%]

e. Storm rainfall [0%]

The weighted factors were defined and the PMH developed based on the model defined in Environmental Science Services Administration Memorandum 7-97 and 7-97A and from coastal effects as described in Coastal Engineering Research Center Report TR4. Computations of the surge hydrographs were completed in a supplement to the Preliminary Safety Analysis Report (PSAR) that describes the stillwater elevation. Flooding is not expected to come from an overland direction as the elevation of the land is greater than the expected surge of 22.0 ft. MSL between the plant and the Cape Fear River or the coast. In the intake canal, the surge stillwater level is expected to reach 22.0 ft. MSL at the BSEP site. The nominal plant grade of 20.0 ft. MSL results in two feet of water surrounding the plant for postulated maximum surge conditions. The most severe flood conditions at the BSEP site are those associated with a PMH coinciding with peak local astronomical tides. The surge of coastal waters preceding the postulated storm was conservatively assumed to break through the dunes at Kure Beach, located to the east.

The wave action on the structures on the ground will depend on the overland water depth caused by flooding. With the flood depth being two feet maximum at the plant site, the highest wave that can be sustained will be 1.6 ft. high. Waves larger than 1.6 ft. cannot be sustained due to the decreased water depth and because they will break when they reach the shallower two foot depth overland. Wave run-up on a vertical wall associated with 1.6 ft. waves is approximately 3.6 ft. Thus, the maximum instantaneous water elevation on any of these buildings is 25.6 ft. MSL. For further conservatism, this height was raised an additional 0.5 ft. to 26.1 ft. MSL.

Concerning the wave action on the Service Water (SW) Building, the original analysis conservatively estimated that waves generated or propagated along the intake canal to be 3.0 ft. high with a period of four seconds. The run-up due to these waves at the intake structure resulted in the maximum instantaneous water level of 28.3 ft. MSL. Though wave refraction was not considered in the original design calculations, later analysis confirmed that the height of wave run-up at 28.3 ft. MSL was conservative and, therefore, remains the CLB wave run-up height for the SW Building.

Other flooding hazards that were considered but were screened out include: the effects of the Probable Maximum Precipitation (PMP), flooding of streams or rivers, dam breaches and failures, tsunamis, channel migration or diversion, and ice induced flooding. The PMP would result in 31.6 in. over six hours of rainfall and would not result in any site flooding as the precipitation would drain into the adjacent intake and discharge canals with no means of reaching elevation 22.0 ft. MSL. Concerning the threat of tsunamis, the Atomic Energy Commission (AEC) Safety Evaluation Report for BSEP stated that historical tsunamis and earthquakes along the East Coast are exceedingly rare and of low magnitude and should not pose a safety problem. Ice induced flooding is also screened out as a possibility due to geographical location. It was also assumed to be highly unlikely that a natural event, such as river or canal blockage or river diversion, would occur. The intake canal begins at the deep ship channel in the Cape Fear River. As this channel is maintained by the U.S. Army Corps of Engineers as a navigation channel, and considering that it is almost twice as deep as the intake canal, river diversion or sufficient sedimentation to affect the water supply will not occur. To prevent blockage of the intake canal due to sedimentation, a monitoring program has been established to survey the cross section of the Intake Canal at various stations. Maintenance dredging will be performed as required based on these survey results.

No differences in flood hazard levels were found in the design or licensing basis documentation.

3.0 Licensing Basis Flood Protection and Mitigation Features

The design flood is based on the PMH and the storm surge level of 22.0 ft. MSL. The flood from the PMH is expected to have a peak storm surge with a duration of two hours. Since the stillwater flood level at the site was calculated to be 22.0 ft. MSL, Seismic Class I safety-related structures, which includes the Control Building (CB), Augmented Off-Gas (AOG) Building, Diesel Generator (DG) Building, Fuel Oil Tank Chambers (FOTC), Reactor Buildings 1 and 2 (RB1 and RB2), and SW Building, are waterproofed to 22.0 ft. MSL through incorporated passive exterior features and incorporated active features. The flooding functional requirement of Seismic Class I Structures is dictated by the PMH flood. The protection and mitigation features were not found to be unique to any particular plant mode of operation.

Incorporated passive features at BSEP include wall penetrations seals, floor drains, roof drains, and manhole covers. Incorporated active features at BSEP include credited water-tight doors, sump pumps, and check valves that prevent flood infiltration. Openings such as windows and doors are located above the flood level of 22.0 ft. MSL or have positive seals that will mitigate the flooding inleakage rate. Exterior personnel doors in Class I structures have a specified inleakage rate which is well within the floor drain system capability. It was assumed that any additional water entering the structures due to wave run-up or wind-driven rain would be minimal and would be removed by the floor drains that are installed in each safety-related structure.

As additional defense-in-depth for existing flood protection design features, the use of sandbag dikes is required as a temporary flood mitigation measure in accordance with BSEP procedure 0PEP-02.6, "Severe Weather." The sandbags are typically staged at the beginning of the hurricane season (i.e., June through November). An annual severe weather readiness review is completed prior to June 1 of each year, which includes a check of the status of sandbags located both inside and outside the Protected Area. In addition, severe weather/hurricane season preparations include the action to stage minimum numbers of sandbags near important areas. These measures are initiated at the direction of BSEP station management. According to the severe weather procedure, the use of sandbag dikes is to be considered to mitigate areas that may be susceptible to flooding and is required to be put in place for the areas specified for any hurricane. Sandbag dikes are used primarily around non-safety-related buildings such as the Emergency Operations Facility/Technical Support Center, Turbine Building, Radwaste Building, the North and South breezeway entrances, and the switchgear area. Concerning safety-related buildings, a three-foot high sandbag dike is constructed at the DG Building loading dock rollup door along the inside of the door only.

Advance notice is expected to be available to site management and preparations for a design flooding event can be staged, as appropriate, before any threat is observed. Preparations for a flooding event are directed by procedure 0AI-68, "Brunswick Nuclear Plant Response to Severe Weather Warnings," procedure 0PEP-02.6, "Severe Weather," and abnormal operating procedure 0AOP-13.0, "Operation During Hurricane, Flood Conditions, or Earthquake." A meteorological service provider is contracted to notify BSEP of National Oceanic and Atmospheric Administration (NOAA) hurricane watch and warning declarations affecting the plant. Additional notifications are made to provide the initiating criteria which trigger the procedures and activities for extreme hurricanes and are not relieved until official notification from NOAA data that the hurricane threat has passed.

4.0 Room Warning Systems to Detect Water

Water level warning systems are in sumps of safety-related buildings for the purpose of detecting internal flooding, and while not specifically credited for external flooding, these pumps would be available to detect water entering from an external source.

5.0 Flood Protection Features Effectiveness

A. Acceptance Criteria

The effectiveness of flood protection features inspected during the walkdown is evaluated in terms of the general acceptance criteria developed according to the guidance provided in NEI 12-07. For the credited features inspected at BSEP, the acceptance criteria summarized below were used as appropriate.

Site elevations and topography: Any minor or noticeable site topography changes from topography used in CLB flooding evaluation do not adversely affect the site drainage pattern.

Roof/floor drains: Location and dimensions are as shown on design drawings, no obstructions or blockage and no separation or corrosion is present. Pipe supports are attached.

Concrete curbs: Location and dimensions are as shown on design drawings, no obstructions or blockage, sign of structural degradation or opening, or surface cracks greater than 0.04 in. are present.

Credited water tight doors: The material condition has no sign of degraded door seals, broken/cracked door jams, fittings, fasteners or undocumented holes. The critical characteristics are consistency between design dimensions and construction, and component functionality.

Windows: No signs of degraded window seals or broken fittings or fasteners are present. Design dimensions and construction are consistent and component is functional.

Concrete structure/building walls: No signs of damage (i.e., leakage, surface cracks) that would cause the wall to be non-functional are present. No sign of structural degradation or opening, apparent degradation in structural members, water stains emanating from surface, leakage on interior surface or surface cracks greater than 0.04 in. in width are present.

Fire penetration seals: The material condition has no signs of corrosion, cracks, openings, through-wall holes, or water stains below penetration. The critical characteristics are that the link seal fits pipe sleeve, it is installed parallel to the wall, and no portion of the seal protrudes beyond the face of wall.

Wall/cable/vent/core bore penetrations: No signs of corrosion, cracks, openings, through wall holes, or water stains below penetration are present.

Pipe sleeve/pipe penetration seal/link seal: The material condition has no signs of corrosion, cracks, openings, through-wall holes, or water stains below the penetration. The critical characteristics are that the link seal fits tightly in the pipe sleeve, it is installed parallel to the wall, and no portion of the seal protrudes beyond the face of wall.

Check valves: Material condition does not exhibit damage (e.g., severe corrosion or missing fittings). No visual signs of leaking are present, and component is functional.

Float switches: Material condition does not exhibit damage (e.g., severe corrosion, missing fittings). No signs of damage (e.g., broken/cracked gauges) are present and component is functional.

DG Building/FOTC seals: Material condition does not exhibit damage (e.g., corrosion) or undocumented openings or holes. Critical characteristics are that the component is absent of corrosion, holes, gaps, and leakage, and is functional.

Manholes: No apparent signs of cracks, gaps, bends, or rust are present. Location and dimensions are as shown on design drawings. The inspection covers only the exterior side

of concrete/metal manhole cover. For the manhole structure: no signs of damage (e.g., leakage, surface cracks) that would cause the wall to be non-functional, or signs of structural degradation or opening, apparent degradation in structural members, water stains emanating from surface, leakage on interior surface or surface cracks greater than 0.04 in. in width are present.

Flood Mitigation Procedures: Procedures that exist for the operation, positioning, or installation of flood protection features will work under the conditions expected during a licensing basis flood, and the steps can be completed within the time available. Procedures that include a process for obtaining the credited warnings have sufficient time to perform the necessary actions. The instructions in the procedure are accurate and any needed support equipment is staged, available, and appropriate for completing the function. Training on the procedures is appropriate.

B. Effectiveness of Flood Protection Features at BSEP

The deficiencies at BSEP include degraded or missing penetration seals, gaps in weather stripping on doors, a spectacle flange not in design configuration whose current configuration would allow flooding, and a transfer switch box that could allow flooding. Overall, the deficient seals were not determined to pose a high flooding risk because of small inflow potential.

Reasonable simulations were scheduled for 17 activities. The reasonable simulations demonstrated that the incorporated active features, temporary active features, and passive features are available, functional, and implementable. The activities successfully performed consisted of closing severe weather doors, installing rattlespace contingency flood barriers, constructing a sandbag dike at the DG Building rollup door, checking railroad track door seals, staging portable air sump pumps, and securing a service water pump bay and a screenwash pump bay temporary penetration. Deficiencies were identified in some procedures due to a lack of detail, such as: missing or unclear direction on storage location of equipment, prestaging locations, weight indication for sandbags, and amount and type of sealant to be used. However, personnel completed the simulations within the required time indicating operator actions are feasible. One exception was the reasonable simulation for closing seal openings for the DG Buildings and FOTCs, which was incomplete because guidance was unclear in identifying the seals to be closed. The other exception was the reasonable simulation for reinstalling a screenwash or service water pump casing, if removed, which was not performed since it was deemed to be an action that is no longer necessary.

Condition reports have been issued, in the Corrective Action Program, addressing the identified deficiencies to ensure that the features will be able to effectively perform their credited flood protection function.

Additionally, flood protection features were reviewed to ensure that their flood protection function is adequately maintained. BSEP Technical Report 0BNP-TR-019; *External Event Protection Features*, identifies the scope and maintenance strategy for all external event protection features, including flooding protection features. All plant features with the functions to prevent or mitigate the effects of external events, including flooding, will be periodically inspected in accordance with the Preventive Maintenance Program. Thus, the maintenance and monitoring programs for the credited flood protection features are adequate to ensure the features will effectively perform their function.

6.0 Flood Protection Walkdown Implementation Process

A. Methodology of Walkdown

Walkdowns were completed in compliance with the guidance in NEI 12-07. A peer review was completed and identified no issues that resulted in a change to the walkdown process or methodology.

B. Organization Selection and Training

The Flooding Walkdown Team assigned to BSEP consisted of Flooding Walkdown Engineers (FWEs), Site Support Engineers, licensing basis reviewers, and plant operations personnel. Each team consisted of a minimum of one each of qualified mechanical and civil personnel assigned as Site Support Engineers, and a minimum of one each of qualified mechanical and civil personnel assigned as Walkdown Engineers. Before completing the walkdowns, the FWEs completed general and site licensing basis training, which included familiarization with walkdown scope, preliminary analysis activities, field walkdown approach, and documentation, in addition to the required NANTeL "Generic Training for Flooding Walkdowns," completed by all the walkdown team members.

7.0 Flood Protection Walkdown Results

A. Identified Deficiencies

Of the deficiencies noted, the majority pertain to penetrations. Some penetrations were judged to be deficient due to inadequate or missing seals, missing or corroded bolts, broken links or pressure plates, corrosion, open terminal boxes, or inadequate repairs for previous leakage. Other deficiencies identified include gaps in weather stripping on doors, and a transfer switch box that could allow flooding. Additionally, the reasonable simulations identified several deficiencies with regards to execution of flooding preparation procedures. A lack of specific detail in certain areas of these procedures was noted as the cause of most of these procedural deficiencies. The identified deficiencies are listed in the table below, arranged by the building in which the feature is located.

Feature	Condition	Resolution
Reasonable Simulation: DG Building Roll-up Door Dike	Discrepancy between requirement of number of bags used in one procedure versus height/width requirement in another procedure; material condition of sandbags poor; improper wrapping of plastic sheeting; crew untrained.	Procedure Revision Request (PRR) issued to revise 0AI-68, *Brunswick Nuclear Plant Response to Severe Weather Warnings.*
Reasonable Simulation: Operation During Hurricane, Flood Conditions, Tornado, or Earthquake Procedure	Inadequate reference to what penetrations are referred to in a direction to close seal openings.	PRR issued to revise 0AOP-13.0, *Operation During Hurricane, Flood Conditions, Tornado, or Earthquake.*

Feature	Condition	Resolution
Reasonable Simulation: Secure Pump Bay Opening Using Sandbags	Individual sandbag weight not clearly identified in order to meet total weight requirement.	PRR issued to revise 0AI-68, *Brunswick Nuclear Plant Response to Severe Weather Warnings.*
Reasonable Simulation: Staging Air Sump Pump at SW Building	Extra length hose not required to be prestaged in gang box prior to hurricane such that pumps may reach lower level.	Repair completed. Hose of adequate length fabricated and stored with the sump pump.
Reasonable Simulation: Brunswick Nuclear Plant Response to Severe Weather Warnings Procedure	No procedural detail on storage location of steel plates and sandbags, staging areas, or required support equipment for transport and installation of steel plates and sandbags for securing screenwash and service water pump bays; no procedural detail of tools, type and amount of sealant, calibrated measurement and test equipment (M&TE), torque value to complete installation of the four RB rattlespaces contingency flood protection barriers; inappropriate contingency action of reinstallation of pump casings if screenwash or service water pumps are removed for maintenance; unclear reference to completion of procedural attachment at times both before hurricane season and in preparation for anticipated hurricanes; incomplete assurance of condition of railroad track seal at rail bay doors; inaccurate or incomplete warehouse references for supply storage; unclear requirement for compressors to be rented that are not stored on site	PRR issued to revise 0AI-68, *Brunswick Nuclear Plant Response to Severe Weather Warnings.*
AOG Building conduit seals (2)	Annular space not sealed	Work Request (WR) issued
AOG Building link seal	Interior sealing material is loose, no visible water seal	Repair completed
AOG Building penetration	Annular space not sealed	WR issued
AOG Building penetration	Bolt missing from east panel, bolt stripped on east panel, pull box not sealed to concrete base, no gasket on panels of pull box	WR issued

Feature	Condition	Resolution
AOG Building severe weather exterior door	Gaps and minor cracking in seal	WR issued
AOG Building link seal	Corrosion on pipe sleeve	WR issued
DG Building penetration	Moderate rust on link seal, annular space not sealed, signs of past leakage	Repair completed
DG Building penetration	Moderate corrosion	WR issued
DG Building penetration	Severe corrosion, signs of leakage on pressure plate	WR issued
DG Building penetration	Annular seal degraded, with gaps, active water leak	Repair completed
DG Building penetration	Gap between sleeve and link seal	WR issued
DG Building penetration (2)	Minor corrosion, signs of past leakage annular only	Repair completed
DG Building penetrations (2)	Annulus not sealed	WR issued
DG Building penetrations (28)	Missing or inadequate annular seal	WRs issued. 16 of 28 penetration repairs completed
DG Building penetrations (3)	Gap between cable and annulus	WR issued
DG Building penetrations (5)	Core bore does not have a link seal	WR issued
DG Building Severe Weather Personnel Door	Gap in weather stripping	Repair completed
DG Building Loading Dock Roll-up Door	Door frame rails corroded; rubber stripping cracked	WR issued
FOTC link seal	End cap has multiple gaps due to tack welding	WR issued
FOTC link seal	Extruded link seal; end cap has multiple gaps due to tack welding	WR issued
FOTC water-tight exterior door	Gaps in weather stripping	WR issued
RB1 penetration	Pipe is well off center in sleeve, link seal missing or not installed properly, minor surface rust, duct tape in grout	WR issued
RB1 penetration	Broken link seal, severe corrosion on bolting	WR issued

Feature	Condition	Resolution
RB1 penetration	Double link seal, area of severe corrosion	WR issued
RB1 penetration	Water stain on wall indicating active leakage	WR issued
RB1 penetration	Grout covering seal is chipped with a small crack and minor signs of corrosion	WR issued
RB1 penetration	Evidence of past leakage, gap between process pipe and sealant material	WR issued
RB1 penetration	No link seal on rattlespace side	WR issued
RB1 penetration	Rope-like material loosely packaged around pipe, silicone applied with large gaps, missing portion of seal	WR issued
RB1 penetration	Attachment fillet weld has hole	WR issued
RB1 penetration	Conduit has an open LB where the conduit has been disconnected and cables cut that provides a potential flood path way to the HPCI Room	Repair completed
RB1 penetration	Signs of minor corrosion, appears to have been repaired with excessive sealant, spalling of concrete near invert of pipe	WR issued
RB1 penetration	Pipe is heavily rusted with major amount of excessive sealant and grout, major corrosion and material degradation with signs of major sealant injections and signs of former leakage, no signs of active leakage	WR issued
RB1 penetrations (2)	Corrosion, material degradation, signs of sealant injections, signs of former leakage	WR issued
RB1 penetrations (2)	Link seal rubber cut	WR issued
RB1 penetrations (2)	Missing or inadequate annular seal	WR issued
RB1 penetrations (3)	Link seal extruded	WR issued
RB1 penetrations (4)	Moderate corrosion	WR issued
RB1 penetrations (6)	Missing or inadequate annular seal	WR issued
RB1 water-tight personnel door	Gap in seal	Repair completed
RB2 penetration	Double link seal, minor corrosion	WR issued
RB2 penetration	Severe corrosion, signs of past leakage	WR issued

Feature	Condition	Resolution
RB2 penetration	Severe corrosion, bolts corroded off	WR issued
RB2 penetration	Feature has two link seals, two pipe sleeves and the pipe. 8 inch sleeve with a link seal, 4 inch sleeve with a link seal and then the 2 inch pipe	WR issued
RB2 penetration	Double link seal, minor corrosion, water stains	WR issued
RB2 penetration	Moderate corrosion	WR issued
RB2 penetration	Cocked links	WR issued
RB2 penetration	Gaps, missing links, seal missing	WR issued
RB2 penetration	Double link seal, injected with resin	WR issued
RB2 penetration	Minor corrosion, appears to have been repaired with resin	WR issued
RB2 penetration	Minor corrosion	WR issued
RB2 penetration	Severe corrosion on pipe sleeve, no closure plate on rattlespace	WR issued
RB2 penetration	Bolts corroded off	WR issued
RB2 penetration	Double link seal, link seal extrusion	WR issued
RB2 penetration	Broken link pressure plate	WR issued
RB2 penetration	Double link seal, minor corrosion	WR issued
RB2 penetrations (2)	Pipe sleeve has severe corrosion on wall plate, weld of wall plate corroded from the wall	WR issued
RB2 penetrations (5)	Water staining on wall below penetration	WR issued
RB2 railroad door	Missing approximately 3 inches of weather stripping	Repair completed
RB2 penetration	Missing link seal on rattlespace side	WR issued
RW Building spectacle flanges	Drawing shows both spectacles in closed position, but one flange is in open position with no procedure to change it before flooding event, which allows flood water from RW Building sump to backflow into AOG Building	Engineering evaluation determined the condition to be acceptable.

Feature	Condition	Resolution
SW Building floor drains (10)	Open to pump bay which allows flood water to directly enter building	Repair completed. Engineering change implemented to install baffle plates to limit in leakage to an acceptable level.
SW Building penetration	Corrosion on bottom bolts, link seal not flush with wall	WR issued
SW Building penetration	Corrosion on bottom part of sleeve	WR issued
SW Building penetration	No seal in annulus	WR issued
SW Building penetration	Severe corrosion	WR issued
SW Building penetration	Silicone has been injected. Link seal suspected, but cover needs to be removed to inspect	WR issued
SW Building penetration	Link is broken, annulus has gap	WR issued
SW Building penetration	Link is broken, silicone has been injected	WR issued
SW Building penetration	Severe corrosion, annulus not sealed	WR issued
SW Building penetration	Link is broken, overlapping links, silicone has been injected	WR issued
SW Building penetration	Link is broken	WR issued
SW Building penetration	Gap in annulus, grout over most of link seal	WR issued
SW Building penetration	Gap in annular seal, water coming out of seal and wall	WR issued
SW Building penetration	Severe corrosion, no annular seal, cable exposed	WR issued
SW Building penetration	Signs of corrosion	WR issued
SW Building penetration	Seal is cracked	WR issued
SW Building penetration	Gap in annular seal	WR issued
SW Building penetration	Conduit corroded, through wall crack	WR issued
SW Building penetration	Terminal box is open, holes for conduit not sealed	WR issued

Feature	Condition	Resolution
SW Building penetration	Crack in wall above is leaking water	WR issued
SW Building penetration	Severe corrosion, multiple bolts missing in link seal	WR issued
SW Building penetration	Part of link seal that is visible is severely corroded, has been repaired with sealant	WR issued
SW Building penetration	Spalling, conduit signs of past leakage, grout separated from wall, link seal pushed into valve pit	WR issued
SW Building penetration	Injected with silicone, minor rust stain on wall	WR issued
SW Building penetration	General corrosion, signs of past leakage. May have been repaired, missing bolt on link seal and rust stains on the wall.	WR issued
SW Building penetration	Injected with silicone rust stains on wall	WR issued
SW Building penetration	Link seal covered in grout, evidence of past and present minor leakage, puddle on floor	WR issued
SW Building penetration	Link seal is pushed out 1/2 inch, signs of leakage	WR issued
SW Building penetrations	Terminal box that is open, no cover plate	WR issued
SW Building penetrations (2)	Link seal visible, signs of leakage, corrosion, link seal extrudes, sleeve corroded	WR issued
SW Building penetrations (3)	Missing or inadequate link seal	WR issued
SW Building penetrations (5)	Corrosion on bottom bolts	WR issued
SW Building penetrations (3)	No seal in annulus	WR issued
SW Building penetrations (3)	Link seal not flush with wall	WR issued
SW Building penetrations (6)	Cable seal not present on interior of conduit	WR issued
SW Building penetrations (6)	Six set together, all grouted with water on wall, puddle on floor, indeterminate which is leaking	WR issued
Water Treatment Building (WTB) transfer switch box	Flooding from WTB and Fire Protection transfer switch box could cause water to enter MH-WT3 and ultimately enter conduit, impacting the DG Building	WR issued

B. Flood Protection Features That Could Not Be Inspected

There were no flood protection features that were inaccessible. However, there were 204 features that were not able to be inspected due to restricted access. There are five penetrations in RB1, 23 in RB2, 25 in the AOG Building, 128 in the DG Building, and 23 in the SW Building that have restricted access. The restricted access was due to several issues including the need for insulation removal, removal of plugs in backwater valves, or electrical cabinets that could not be opened at the time of the inspections. The penetrations that were not inspected represent less than 10 percent of the features that were selected for walkdown. These items are scheduled to be inspected no later than July 31, 2013.

8.0 Documentation of Available Physical Margins (APMs)

APMs have been collected and documented in the walkdown record forms and will be used in the flood hazard reevaluations performed in response to Recommendation 2.1: Flooding, of the 50.54(f) letter.

9.0 Planned and Newly Installed Flood Protection and Mitigation Measures

BSEP is currently taking measures to install permanent flood barriers to help prevent flooding into the seismic gap areas (i.e., rattlespaces) that exist between buildings. Currently, the temporary measures include installing four steel plates that are bolted and caulked into place at the rattlespace entrance prior to an anticipated flooding event. The new permanent barriers are designed such that the plates can be lowered into place using an installed track and then sealed for water prevention, rather than using bolts.

List of Regulatory Commitments

The following table identifies the actions in this document to which the Brunswick Steam Electric Plant (BSEP) has committed. Statements in this submittal, with the exception of those in the table below, are provided for information purposes and are not considered commitments. Please direct questions regarding these commitments to Mr. Lee Grzeck, Manager - Regulatory Affairs, at (910) 457-2487.

Commitment	Completion Date
The 204 penetrations (i.e., five penetrations in BSEP Unit 1 Reactor Building, 23 penetrations in BSEP Unit 2 Reactor Building, 25 penetrations in the Augmented Off-gas Building, 128 penetrations in the Diesel Generator building, and 23 penetrations in the Service Water building) that were not able to be inspected due to restricted access, the will be inspected.	July 31, 2013