Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

May 22, 2013

10 CFR 50.90
10 CFR 50.91

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

Watts Bar Nuclear Plant, Unit 1
Facility Operating License No. NPF-90
NRC Docket No. 50-390

Subject: **Application for One-Time Change to the Technical Specification (TS) 3.6.6 Completion Time for an Inoperable Containment Spray Train Under Exigent Circumstances to Allow for Pump Repair (WBN-TS-2013-011)**

In accordance with the provisions of Title 10 of the Code of Federal Regulations (10 CFR) 50.90, "Application for amendment of license, construction permit, or early site permit," the Tennessee Valley Authority (TVA) is submitting a request for an amendment to Facility Operating License No. NPF-90 for the Watts Bar Nuclear Plant (WBN), Unit 1.

The proposed change would revise the WBN Unit 1 TSs to allow a one-time extension to the Completion Time for TS Limiting Condition for Operation (LCO) 3.6.6 Required Action A.1 from 72 hours to seven days for an inoperable Containment Spray (CS) Train B. This change is necessary to provide sufficient time to replace a leaking mechanical seal on CS Pump 1B-B. The pump repair is currently scheduled for the week of June 24, 2013. Accordingly, TVA is requesting this proposed TS change under exigent circumstances in accordance with 10 CFR 50.91(a)(6), and requests that the Nuclear Regulatory Commission (NRC) expedite their review of the requested change to support approval by June 22, 2013.

The enclosure provides the basis for this exigent request, a description of the proposed change, technical evaluation of the proposed change, regulatory evaluation, and a discussion of environmental considerations. Attachment 1 to the enclosure provides a list of the regulatory commitments contained in this submittal. Attachment 2 to the enclosure provides the existing TS pages marked-up to show the proposed changes. Attachment 3 to the enclosure provides the retyped TS pages incorporating the proposed changes. Attachment 4 to the enclosure provides the Probabilistic Risk Assessment (PRA) evaluation supporting the proposed seven day CS Train B inoperability.

Based on the enclosed evaluation, TVA has determined that there is no significant hazards consideration associated with the proposed change and that the change qualifies for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9).

The WBN Plant Operations Review Committee has reviewed this proposed change and determined that operation of WBN in accordance with the proposed change will not endanger the health and safety of the public.

In addition, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and the enclosure to the Tennessee Department of Environment and Conservation.

Please address any questions regarding this request to Clyde Mackaman at (423) 751-2834.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 22nd day of May 2013.

Respectfully,

J.W. Shea
Vice President, Nuclear Licensing

Enclosure:
Evaluation of Proposed Change

cc (Enclosure):

NRC Regional Administrator - Region II
NRC Resident Inspector – Watts Bar Nuclear Plant
Director, Division of Radiological Health - Tennessee State Department ofEnvironment and Conservation

ENCLOSURE

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT, UNIT 1
NRC DOCKET NO. 50-390

EVALUATION OF THE PROPOSED CHANGE

Subject: **Application for One-Time Change to the Technical Specification (TS) 3.6.6 Completion Time for an Inoperable Containment Spray Train Under Exigent Circumstances to Allow for Pump Repair (WBN-TS-2013-011)**

1.0 SUMMARY DESCRIPTION

This evaluation supports a request to amend Facility Operating License No. NPF-90 for the Tennessee Valley Authority (TVA) Watts Bar Nuclear Plant (WBN), Unit 1. The proposed amendment would revise the Technical Specifications (TSs) to allow a one-time extension to the Completion Time for TS Limiting Condition for Operation (LCO) 3.6.6 Required Action A.1 from 72 hours to seven days for Containment Spray (CS) Train B.

This change is necessary to provide sufficient time to replace a leaking mechanical seal on CS Pump (CSP) 1B-B. The pump repair is scheduled for the week of June 24, 2013. Accordingly, TVA is requesting this proposed TS change under exigent circumstances, and requests that the Nuclear Regulatory Commission (NRC) expedite their review of the requested change to support approval by June 22, 2013.

2.0 DETAILED DESCRIPTION

2.1 Basis for the Exigent Request

Coming out of the Fall 2012 Unit 1 Refueling Outage 11 (U1R11), CSP 1B-B seal leakage was observed to be very low and continued to be very low (i.e., less than one drop/minute) until the next CSP 1B-B quarterly performance test in early February 2013, during which seal leakage was observed to have increased to 15 - 20 drops/minute, as documented in Problem Evaluation Reports (PERs) 690724 and 697750. During a subsequent test, PER 705344 (initiated on April 2, 2013) documented a further significant increase in CSP 1B-B seal leakage to approximately 100 drops/minute. In response, Operations convened an Operational Decision Making Issue (ODMI) team and issued Standing Order 13-007 requiring daily monitoring of seal leakage and provided three separate trigger points and actions. During the day shift on April 25, 2013, seal leakage was observed to be substantially higher, such that the determination of a leak rate by counting drops was no longer possible. A graduated cylinder was obtained and a timed collection of leakage determined a leak rate of 3180 cubic centimeters/hour (cc/hr).

An evaluation of CSP 1B-B operability was performed, in which it was concluded that seal failure was not imminent. Further validation was provided by observation of the most recent pump run, which was conducted in the afternoon of April 25, 2013. No visible seal leakage was observed during this run. More importantly, following the CSP 1B-B run, leakage was observed to be minimal (i.e., less than one drop/minute). After the conclusion of the pump run, leakage was observed to have returned to less than one drop/minute during frequent leak checks conducted throughout the following shift. Because the CSP 1B-B seal leakage had returned to a very low leakage rate, WBN determined that this provided reasonable assurance that the mechanical seal would not fail catastrophically and render the pump inoperable (Ref: PER 717540).

The exigency for conducting the mechanical seal replacement online resides in the fact that CSP seal leakage contributes to Reactor Coolant System (RCS) leakage and is considered a primary coolant source outside containment because the CSP suction is aligned to the containment sump during the recirculation phase of Loss of Coolant Accident (LOCA) mitigation. There is a limit of 3760 cc/hr for total RCS leakage outside containment as specified in Updated Final Safety Analysis Report (UFSAR) Table 6.3-6.

This limit is used in WBN's offsite and control room dose analyses, and is associated with the Primary Coolant Sources Outside Containment Program as required by WBN TS 5.7.2.4, which is a subset of the WBN American Society of Mechanical Engineers (ASME) Section XI System Pressure Test Program. The current CSP 1B-B leakage is required to be tracked by both programs.

With respect to the CSP 1B-B seal leakage, the measured leakage should not exceed the UFSAR limit for total leakage of 3760 cc/hr minus the cumulative sum of the actual current leakage from the other sources contributing to RCS leakage outside of containment. As described above, the CSP 1B-B seal leakage has returned to a manageable level following the last pump run. However, TVA recognizes the potential for another unexpected increase in CSP 1B-B seal leakage which could again result in RCS leakage that challenges the leakage limit. Therefore, TVA plans to replace the mechanical seal for CSP 1B-B during the week of June 24, 2013.

2.2 Proposed Technical Specification Changes

The proposed amendment would revise the WBN Unit 1 TSs to allow a one-time extension to the Completion Time for TS LCO 3.6.6 Required Action A.1 from 72 hours to seven days for CS Train B.

2.3 Justification for the Change

The CSP 1B-B mechanical seal needs to be replaced during the current Unit 1 Operating Cycle 12 (U1C12) based on the previously observed excessive seal leakage of 3180 cc/hr recorded on April 25, 2013 (PER 717540), and the potential for another unexpected increase in leakage. The proposed exigent TS change to allow for the repair of the CSP 1B-B mechanical seal cannot be avoided because of the minimal margin to the UFSAR leakage limit should seal leakage unexpectedly increase.

The current schedule is to perform seal replacement during the week of June 24 to June 30, 2013. The required major repair-related activities are:

- Isolate, tag out and drain system
- Disassemble pump
- Inspect bearings including shaft end play
- Remove rotating element
- Replace mechanical seal
- Reassemble pump
- Couple and align pump
- Release tagout and realign system
- Fill and vent
- Perform functional test

A one-time TS change to extend the Completion Time for TS LCO 3.6.6 Required Action A.1 for restoration of CS Train B to Operable status from 72 hours to seven days is necessary to support the CSP 1B-B mechanical seal replacement maintenance activity. The preliminary estimate for the seal replacement activity is 68 hours, not including potential discovery issues which may be encountered. To avoid an unnecessary plant shutdown during conduct of the required seal replacement

maintenance activity, a one-time seven day Completion Time for restoration of Unit 1 CS Train B is requested.

3.0 TECHNICAL EVALUATION

3.1 System Description

The CS system consists of two separate trains of equal capacity, with each train independently capable of meeting the system heat removal requirements. This system can be supplemented with two Residual Heat Removal (RHR) system pumps and two RHR heat exchangers in parallel, with associated piping, valves, and individual spray headers in the upper containment volume. Each CS train includes a pump, heat exchanger, ring header with nozzles, isolation valves and associated piping, and instrumentation and controls. Partial flow from an RHR system pump through its associated heat exchanger can be used to supplement each CS train. Independent electrical power supplies are provided for equipment in each CS train. In addition, each CS train is provided with electrical power from separate emergency diesel generators in the event of a loss of offsite electrical power. During normal operation, all of the equipment is idle and the associated isolation valves are closed.

Upon system activation during a LOCA or other high energy line break, adequate containment cooling is provided by the CS system. The CS system components operate in sequential spray cooling modes. These modes are:

1) Spray using a portion of the contents of the Refueling Water Storage Tank (RWST), with the spray directed into the containment atmosphere using the CS pumps;

2) Spray using the recirculation of water from the containment sump through the containment spray pumps and containment spray heat exchangers, and back to the containment (This spray mode is initiated after the RWST has been drained, but while there is still ice remaining in the Ice Condenser, and is useful in reducing sump water temperatures.); and

3) Spray with supplemental RHR spray using the diversion of a portion of the recirculation flow from the RHR system to additional spray headers. (RHR spray operation is initiated manually by the operator only if the Emergency Core Cooling System (ECCS) and CS system are both operating in the recirculation mode. If switchover to recirculation occurs prior to one hour after initiation of the LOCA, RHR spray operation can be commenced one hour after initiation of the LOCA. If switchover to recirculation occurs later than one hour after initiation of the LOCA, RHR spray operation can be commenced after completion of the switchover procedure.)

The spray water from the CS and RHR spray systems returns from the upper compartment to the lower compartment through two 14-inch drains in the bottom of the refueling canal. The curbing around the personnel access door and the equipment access hatch on the operating deck directs spray water flow towards the refueling canal. The air-water mixture entering the air return fans will be rerouted inside the polar crane

wall through the accumulator rooms utilizing existing curbing, the floor hatch cover, and the floor drainage system.

The limiting design basis accidents (DBAs) considered relative to containment Operability are the LOCA and the main steam line break (MSLB). The DBA LOCA and MSLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. Adequate containment heat removal capability for the WBN Unit 1 Ice Condenser reactor containment DBAs is provided by the containment Engineered Safety Features (ESF) systems, which consist of the Ice Condenser, the Air Return System (ARS), the CS system, and the RHR spray system. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to containment ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure, resulting in one train of the CS system, the RHR system, and the ARS being rendered inoperable. These systems are described in Section 6.2.2 of the WBN Unit 1 UFSAR.

The DBA analyses show that the maximum peak containment pressure of 11.01 pounds per square inch gauge (psig) results from the LOCA analysis, and is calculated to be less than the containment code design internal pressure of 13.5 psig at 250 degrees Fahrenheit (°F). The maximum peak containment atmosphere temperature of 327°F (in the lower compartment) results from the MSLB analysis. The calculated transient containment atmosphere temperatures are within acceptable ASME stress limits for the DBA MSLB. Performance of the containment heat removal systems is evaluated through analyses of the DBAs and various other cases as described in Chapter 15 and Sections 3.8.2 and 6.2.1 of the WBN Unit 1 UFSAR. The analyses were performed using the Westinghouse Electric Company (WEC) LOTIC computer code for Ice Condenser containments.

3.2 Technical Specification Change Evaluation

During a DBA, one train of the CS system and one train of the RHR spray system are required to provide the heat removal capability assumed in the safety analyses. To ensure that these requirements are met, TS LCO 3.6.6, "Containment Spray System," requires two CS trains and two RHR spray trains to be Operable with power from two safety related, independent power supplies. Therefore, in the event of an accident, at least one train in each system operates.

As previously described, TVA is proposing a one-time change to extend the Completion Time of TS LCO 3.6.6 Action A from 72 hours to seven days for CS Train B. This proposed change is needed to support the CSP 1B-B mechanical seal replacement maintenance activity, and acceptance of the change is based upon the continued Operability of CS Train A and both trains of RHR spray. While in the initial 72 hours of the LCO Action Completion Time, no additional single failure (i.e., in addition to the out of service CSP 1B-B) is required to be postulated. During the proposed seven day Completion Time for the CSP 1B-B seal repair, the inoperability of CS Train B is acceptable based on the following:

1) Even if the single failure criterion was not met and the Operable CS Train A were lost, an acceptable level of safety would be maintained. If CS cooling was lost, the containment design pressure of 13.5 psig may be exceeded, but sufficient margins exist such that there is no imminent threat of containment

failure. Based on sensitivity studies performed using the WEC LOTIC and WCOBRA/TRAC computer codes, it is estimated that the peak containment pressure could reach approximately 16.8 - 25.3 psig during a DBA LOCA with no CS cooling available or credited. As documented in NUREG/CR-6906, "Containment Integrity Research at Sandia National Laboratories," scale tests have been performed on containment models similar to the WBN Unit 1 containment design which demonstrate that containment failure occurs at pressures much greater than the design pressure (typically on the order of 4 - 6 times the design pressure for steel containments). In addition, increased leakage was not observed in these tests until pressures close to the containment ultimate (i.e., catastrophic rupture) pressure were reached. Therefore, even without crediting CS cooling, the predicted increase in peak containment pressure should not significantly challenge the containment integrity or result in increased leakage.

2) A Probabilistic Risk Assessment (PRA) evaluation was performed to assess the risk implications of increasing online maintenance of CSP 1B-B from 72 hours to seven days for the seven day period from June 24 through June 30, 2013. The details of the PRA evaluation are provided in Attachment 4 of this enclosure. The attached PRA evaluation is a TVA internal document and is provided for NRC information only. As discussed in the PRA evaluation, the total Incremental Core Damage Probability (ICCDP) is 8.99E-08, which is acceptably less than the ICCDP threshold of 1.0E-06. The Incremental Large Early Release Probability (ICLERP) is 3.95E-09, which is acceptably less than the ICLERP threshold of 1.0E-07. The ICCDP and ICLERP have been calculated consistent with Regulatory Guide 1.177, Revision 1, and the resulting threshold values meet the acceptance guidelines of Regulatory Guide 1.177 for one-time only TS changes (Tier 1). Accordingly, the PRA risk insights provide an additional basis for acceptance of the proposed seven day Completion Time for TS LCO 3.6.6 Required Action A.1. The compensatory measures for the exigent TS LCO 3.6.6 change identified in the PRA evaluation will be enforced, and a commitment to this effect is included in Attachment 1 of this enclosure.

3) As specified in Attachment 1 of this enclosure, TVA has included two additional commitments associated with this proposed TS change. The first commitment provides additional assurance that the required ECCS and containment ESF systems remain Operable for containment heat removal during the proposed seven day Completion Time of TS LCO 3.6.6 Required Action A.1 when CS Train B inoperability exceeds 72 hours. Otherwise, TS LCO 3.0.3 would apply as indicated in the second commitment.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

General Design Criterion (GDC) 38, "Containment Heat Removal"

A system to remove heat from the reactor containment shall be provided. The system safety function shall be to reduce rapidly, consistent with the functioning

of other associated systems, the containment pressure and temperature following any LOCA and maintain them at acceptably low levels.

Suitable redundancy in components and features, and suitable interconnections, leak detection, isolation, and containment capabilities shall be provided to assure that for onsite electric power system operation (assuming offsite power is not available) and for offsite electric power system operation (assuming onsite power is not available) the system safety function can be accomplished, assuming a single failure.

GDC 39, "Inspection of Containment Heat Removal Systems"

The containment heat removal system shall be designed to permit appropriate periodic inspection of important components, such as the torus, pumps, spray nozzles, and piping to assure the integrity and capability of the system.

GDC 40, "Testing of Containment Heat Removal Systems"

The containment heat removal system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole, and, under conditions as close to the design as practical, the performance of the full operational sequence that brings the system into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of the associated cooling water system.

GDC 50 "Containment Design Basis"

The reactor containment structure, including access openings, penetrations, and the containment heat removal system shall be designed so that the containment structure and its internal compartments can accommodate, without exceeding the design leakage rate and, with sufficient margin, the calculated pressure and temperature conditions resulting from any LOCA. This margin shall reflect consideration of (1) the effects of potential energy sources which have not been included in the determination of the peak conditions, such as energy in steam generators and energy from metal-water and other chemical reactions that may result from degraded emergency core cooling functioning, (2) the limited experience and experimental data available for defining accident phenomena and containment responses, and (3) the conservatism of the calculational model and input parameters.

The WBN Unit 1 containment structure and containment ESF systems have been designed to meet the intent of the above GDCs, as applicable. A detailed discussion of the design features and procedures which meet the intent of the corresponding criterion is contained in Section 3.1 of the WBN UFSAR. This evaluation demonstrates that the proposed temporary (one-time) reduction in CS system redundancy to allow for necessary online maintenance is acceptable considering the presented qualitative and deterministic assessments, and supporting PRA risk insights.

4.2 Precedent

The following license amendment approved by the NRC in 2008 for the Southern Nuclear Operating Company's Vogtle plant provides for a TS change similar to that proposed in this submittal.

> Vogtle Electric Generating Plant, Unit 2, "Issuance of Emergency Amendment Regarding One-Time Extension to Allowed Outage Time for Technical Specification 3.6.6 (TAC No. MD9003)," dated June 25, 2008 [ML081770464].

4.3 Significant Hazards Consideration

The proposed change will provide a one-time change to extend the Completion Time for Technical Specification (TS) Limiting Condition for Operation (LCO) 3.6.6 Required Action A.1 for restoration of Containment Spray (CS) Train B to Operable status from 72 hours to seven days. This change is necessary to support the CSP 1B-B mechanical seal replacement maintenance activity scheduled to commence on June 24, 2013.

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed change does not alter any plant equipment or operating practices in such a manner that the probability of an accident is increased. The proposed change will not alter assumptions relative to the mitigation of an accident or transient event. The proposed change has been evaluated for Incremental Core Damage Probability (ICCDP) and Incremental Large Early Release Probability (ICLERP) for the requested seven day period of CS Train B inoperability, and the results demonstrate that the change is acceptable.

   Therefore, this proposed change does not increase the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation.

   Therefore, this proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

   Based on the Operability of the required containment ESF systems for containment heat removal, the proposed change ensures that the accident analysis assumptions continue to be met. The design and operation of these

systems are not affected by the proposed change. The safety analysis acceptance criteria are not altered by the proposed change.

Therefore, the proposed change does not involve a significant reduction in the margin of safety.

Based on the above, TVA concludes that the proposed amendment does not involve a significant hazards consideration for WBN Unit 1, under the standards set forth in 10 CFR 50.92(c) and, accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. Watts Bar Nuclear Plant Updated Final Safety Analysis Report (UFSAR)

2. NUREG/CR-6906, "Containment Integrity Research at Sandia National Laboratories," published July 2006

3. Vogtle Electric Generating Plant, Unit 2, "Issuance of Emergency Amendment Regarding One-Time Extension to Allowed Outage Time for Technical Specification 3.6.6 (TAC No. MD9003)," dated June 25, 2008 [ML081770464]

4. Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis, Revision 2

5. Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," Revision 1

ATTACHMENT 1

List of Regulatory Commitments

The following table identifies those actions as committed by the Tennessee Valley Authority in this submittal for Watts Bar Nuclear Plant Unit 1. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

No.	Commitment	Due Date/Event
1	The Ice Bed, both trains of the Emergency Core Cooling System (ECCS), both trains of Residual Heat Removal (RHR) Spray, both trains of the Air Return System (ARS), and Containment Spray (CS) Train A will remain Operable, and the Ice Condenser Doors will remain Operable and closed.	During proposed 7 Day Completion Time of Technical Specification (TS) Limiting Condition for Operation (LCO) 3.6.6 Required Action A.1 when CS Train B inoperability exceeds 72 hours.
2	TS LCO 3.0.3 will be entered if the Ice Bed, any train of ECCS, RHR Spray, ARS, or CS Train A becomes inoperable, or any Ice Condenser Door becomes inoperable or open.	During proposed 7 Day Completion Time of TS LCO 3.6.6 Required Action A.1 when CS Train B inoperability exceeds 72 hours.
3	Enforce compliance with the compensatory measures identified in the Probabilistic Risk Assessment (PRA) evaluation for the exigent TS LCO 3.6.6 change.	During proposed 7 Day Completion Time of TS LCO 3.6.6 Required Action A.1.

ATTACHMENT 2

Proposed TS Changes (Mark-Ups) for WBN Unit 1

3.6 CONTAINMENT SYSTEMS

3.6.6 Containment Spray System

LCO 3.6.6 Two containment spray trains and two residual heat removal (RHR) spray trains shall be OPERABLE.

----------NOTE----------
The RHR spray train is not required in MODE 4.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One containment spray train inoperable.	A.1	Restore containment spray train to OPERABLE status.	72 hours (*)
B.	One RHR spray train inoperable.	B.1	Restore RHR spray train to OPERABLE status.	72 hours
C.	Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours
		AND		
		C.2	Be in MODE 5.	84 hours

* For the week commencing June 24, 2013 (expiring on June 30, 2013), containment spray pump 1B-B may be inoperable for a period not to exceed 7 days for mechanical seal repair.

ATTACHMENT 3

Proposed TS Changes (Final-Typed) for WBN Unit 1

3.6 CONTAINMENT SYSTEMS

3.6.6 Containment Spray System

LCO 3.6.6 Two containment spray trains and two residual heat removal (RHR) spray trains shall be OPERABLE.

----------NOTE----------
The RHR spray train is not required in MODE 4.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One containment spray train inoperable.	A.1	Restore containment spray train to OPERABLE status.	72 hours (*)
B.	One RHR spray train inoperable.	B.1	Restore RHR spray train to OPERABLE status.	72 hours
C.	Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours
		AND		
		C.2	Be in MODE 5.	84 hours

* For the week commencing June 24, 2013 (expiring on June 30, 2013), containment spray pump 1B-B may be inoperable for a period not to exceed 7 days for mechanical seal repair.

ATTACHMENT 4

PRA Evaluation of Online Maintenance of Containment Spray Pump 1B-B

PRA Evaluation

This evaluation provides discussion for increasing online maintenance of the Containment Spray Pump 1B-B from 72 hours to 7 days. This will be a one-time change to the COMPLETION TIME for REQUIRED ACTION A.1.

Information Inputs

The schedule for Work Week 811 was obtained on 05/13/2013 9:33am EST from the ESU.mdb database. If any potential risk activities are changed from the given date, or different risk-significant equipment becomes unavailable, the effect of PRA results will be evaluated using EOOS software in the Main Control Room or by contacting the Corporate PRA group. Based on the ESU.mdb database, the following list shows the risk significant equipment that is unavailable throughout Work Week 811.

- WBN-1-PMP-067-0047-B ERCW Pump E-B
- WBN-1-DXF-268-0002-B Hydrogen Mitigation Transformer
- WBN-1-FAN-030-0493 DG 1B-B Room Gen/Panel Vent Fan
- WBN-1-GEN-082-0001B-B Diesel Generator 1B-B
- WBN-1-MCC-214-B001-B 480V C&A Building Vent Board 1B1-B
- WBN-1-PMP-072-0010-B Containment Spray Pump (CSP) 1B-B
- WBN-2-PMP-070-0033-B Component Cooling System (CCS) Pump 2B-B

A. Estimated Increase in Risk

The WBN EOOS model was used to determine the CDF and LERF for the following equipment outage times:

1. DG 1B-B & CSP 1B-B (6/24/13 0:00 – 6/24/13 3:59)

   The ICCDP for this is:

   Risk = DG 1B-B & CSP 1B-B unavailable for 3.98 hours
   = (4.55E-05 – 1.12E-05) * (3.98/8766)
   = 1.56E-08 which is below the threshold of 1.0E-06

   The ICLERP for this is:

   Risk = DG 1B-B & CSP 1B-B unavailable for 3.98 hours
   = (3.46E-06 – 7.72E-07) * (3.98/8766)
   = 1.22E-09 which is below the threshold of 1.0E-07

2. CSP 1B-B (6/24/13 3:59 – 6/25/13 0:00)

   The ICCDP for this is:

   Risk = CSP 1B-B unavailable for 20.02 hours
   = (1.14E-05 – 1.12E-05) * (20.02/8766)
   = 4.57E-10 which is below the threshold of 1.0E-06

The ICLERP for this is:

Risk = CSP 1B-B unavailable for 20.02 hours
= (7.717E-07 – 7.7166E-07) * (20.02/8766)
= 9.14E-14 which is below the threshold of 1.0E-07

3. CCS Pump 2B-B & CSP 1B-B (6/25/13 0:00 – 6/25/13 8:00)

The ICCDP for this is:

Risk = CCS Pump 2B-B & CSP 1B-B unavailable for 8.00 hours
= (1.14E-05 – 1.12E-05) * (8.00/8766)
= 1.83E-10 which is below the threshold of 1.0E-06

The ICLERP for this is:

Risk = CCS Pump 2B-B & CSP 1B-B unavailable for 8.00 hours
= (7.717E-07 – 7.7166E-07) * (8.00/8766)
= 3.65E-14 which is below the threshold of 1.0E-07

4. ERCWP E-B, DG 1B-B Rm Gen/PNL Vent Fan, & CSP 1B-B (6/25/13 8:00 – 6/25/13 11:59)

The ICCDP for this is:

Risk = ERCWP E-B, DG 1B-B Rm Gen/PNL Vent Fan, & CSP 1B-B unavailable for 3.98 hours
= (4.39E-05 – 1.12E-05) * (3.98/8766)
= 1.48E-08 which is below the threshold of 1.0E-06

The ICLERP for this is:

Risk = ERCWP E-B, DG 1B-B Rm Gen/PNL Vent Fan, & CSP 1B-B unavailable for 3.98 hours
= (2.59E-06 – 7.72E-07) * (3.98/8766)
= 8.26E-10 which is below the threshold of 1.0E-07

5. DG 1B-B Room Gen/Panel Vent Fan & CSP 1B-B (6/25/13 11:59 – 6/25/13 16:00)

The ICCDP for this is:

Risk = DG 1B-B Room Vent Fan & CSP 1B-B unavailable for 4.02 hours
= (3.78E-05 – 1.12E-05) * (4.02/8766)
= 1.22E-08 which is below the threshold of 1.0E-06

The ICLERP for this is:

Risk = DG 1B-B Room Vent Fan & CSP 1B-B unavailable for 4.02 hours
= (2.52E-06 – 7.72E-07) * (4.02/8766)
= 8.02E-10 which is below the threshold of 1.0E-07

6. Hydrogen Mitigation Transformer & CSP 1B-B (6/25/13 16:00 – 6/26/13 3:59)

   The ICCDP for this is:

   Risk = Hydrogen Mitigation XFMR & CSP 1B-B unavailable for 11.98 hours
   = (1.14E-05 – 1.12E-05) * (11.98/8766)
   = 2.73E-10 which is below the threshold of 1.0E-06

   The ICLERP for this is:

   Risk = Hydrogen Mitigation XFMR & CSP 1B-B unavailable for 11.98 hours
   = (7.98E-07 – 7.72E-07) * (11.98/8766)
   = 3.60E-11 which is below the threshold of 1.0E-07

7. CSP 1B-B (6/26/13 3:59 – 6/28/13 16:00)

   The ICCDP for this is:

   Risk = CSP 1B-B unavailable for 60.02 hours
   = (1.14E-05 – 1.12E-05) * (60.02/8766)
   = 1.37E-09 which is below the threshold of 1.0E-06

   The ICLERP for this is:

   Risk = CSP 1B-B unavailable for 60.02 hours
   = (7.717E-07 – 7.7166E-07) * (60.02/8766)
   = 2.74E-13 which is below the threshold of 1.0E-07

8. 480V Control and Auxiliary (C&A) Building Vent Board 1B1-B & CSP 1B-B (6/28/13 16:00 – 6/28/13 20:59)

   The ICCDP for this is:

   Risk = 480V C&A Bldg Vent Bd 1B1-B & CSP 1B-B unavailable for 4.98 hours
   = (8.84E-05 – 1.12E-05) * (4.98/8766)
   = 4.39E-08 which is below the threshold of 1.0E-06

   The ICLERP for this is:

   Risk = 480V C&A Bldg Vent Bd 1B1-B & CSP 1B-B unavailable for 4.98 hours
   = (2.64E-06 – 7.72E-07) * (4.98/8766)
   = 1.06E-09 which is below the threshold of 1.0E-07

9. CSP 1B-B (6/28/13 20:59 – 7/1/13 0:00)

   The ICCDP for this is:

   Risk = CSP 1B-B unavailable for 51.02 hours
   = (1.14E-05 – 1.12E-05) * (51.02/8766)
   = 1.16E-09 which is below the threshold of 1.0E-06

   The ICLERP for this is:

   Risk = CSP 1B-B unavailable for 51.02 hours
   = (7.717E-07 – 7.7166E-07) * (51.02/8766)
   = 2.33E-13 which is below the threshold of 1.0E-07

Therefore, the total ICCDP for work week 811 is **8.99E-08** which is below the ICCDP threshold of 1.0E-06, and the total ICLERP for work week 811 is **3.95E-09** which is below the ICLERP threshold of 1.0E-07, for one time only changes to Technical Specification (TS) Completion Times.

B. Dominant Risk Contributors

The dominant risk contributors for Work Week 811 happen when the 480V C&A Building Ventilation Board 1B-B and CSP 1B-B are out of service. The resulting top cutsets/sequences for this scenario involve the Loss of CCS Train 1A in combination with Centrifugal Charging Pump 1A Room Cooler failing to operate, RCP seal leak, and CCS Pump 1A-A failing to operate or CCS Heat Exchanger A rupture/plugging.

C. Compensatory Measures

While 480V C&A Building Ventilation Board 1B-B and CSP 1B-B are out of service, protect Train A CCS risk significant equipment and Train A Charging Line risk significant equipment.

Also, during the MCR Chiller B-B outage, avoid concurrent ABGTS, EGTS, Annulus Vacuum Control System, and ACAS unavailability.

D. Effect of Compensatory Measures on Risk

While these compensatory measures were not included in the PRA model, these measures reduce risk and ensure that the Train A equipment remains available in case of an accident.

E. Extent of Condition

Seal leakage has not been an issue on the Train A CSP, and is only intermittently observed on the Train B CSP. Therefore, no changes were made regarding common cause.

F. External Event Risks

The probability of a seismic event occurring during the total 168 hours the WBN-1-PMP-072-0010-B is unavailable is considered low; therefore, the risk increase due to a seismic event during the total 168 hours the WBN-1-PMP-072-0010-B will be unavailable is considered low.

Watts Bar Lake is not expected to flood during the 168 hours the WBN-1-PMP-072-0010-B is unavailable. The probable maximum flood evaluation gives the plant greater than a 24 hour notice prior to the need to implement mitigative measures. Also, the CSPs are below plant grade and assumed to be flooded in the undesirable event of an external flood. Therefore, the risk increase due to external flooding is considered low.

In the event of a fire, each CSP is bounded by 2-hour fire rate regulatory fire barriers. Automatic detection is provided in each room except for the labyrinth; however, automatic suppression capability is not provided.

Each CSP is identified as a potentially spuriously operating component which must be prevented from starting. Each pump room contains the pump, its associated power cable and room cooler.

A fire in either room will damage the power cable for the pump. As such, the pump will be prevented from spurious operation given a fire in the room. The combustible loads in each room result in an equivalent fire severity of less than five minutes, which is significantly less than the capabilities of the barriers that bound the room. Therefore, postulated fires will not spread from the containment spray pump room to adjacent rooms. Considering the combustible loading and 2-hour fire rated regulatory fire barriers, in combination with the existing detection system (except in the entrance labyrinth) and lack of fire safe shutdown impact given a fire in either room, an adequate level of protection exists for the CSP rooms.

G. List of Acronyms

ABGTS	Auxiliary Building Gas Treatment System
ACAS	Auxiliary Control Air System
CCS	Component Cooling System
CDF	Core Damage Frequency
CSP	Containment Spray Pump
DG	Diesel Generator
EGTS	Emergency Gas Treatment System
EOOS	Equipment Out of Service
ERCW	Essential Raw Cooling Water
ERCWP	Essential Raw Cooling Water Pump
EST	Eastern Standard Time
ICCDP	Incremental Core Damage Probability
ICLERP	Incremental Large Early Release Probability
LERF	Large Early Release Frequency
MCR	Main Control Room
PRA	Probabilistic Risk Assessment
RCP	Reactor Coolant Pump
WBN	Watts Bar Nuclear Plant