

POLICY ISSUE INFORMATION

July 28, 2011

SECY -11-0102

FOR: The Commissioners

FROM: Eric J. Leeds, Director
Office of Nuclear Reactor Regulation

SUBJECT: FOURTH REPORT ON THE STATUS OF REACTIVATION OF
CONSTRUCTION AND LICENSING FOR WATTS BAR NUCLEAR
PLANT, UNIT 2

PURPOSE:

This paper is the fourth status report informing the Commission about the U.S. Nuclear Regulatory Commission (NRC) staff's activities, accomplishments, and challenges related to the reactivation of construction, licensing, and inspection for Watts Bar Nuclear Plant (WBN), Unit 2. This paper updates the status information in SECY-10-0166, "Third Report on Status of Licensing for the Watts Bar Nuclear Plant, Unit 2," dated December 27, 2010. This paper does not address any new commitments or resource implications.

SUMMARY:

The WBN site has two Westinghouse-designed pressurized-water reactors. Unit 1 has been in operation since the NRC issued a full-power license in 1996. On March 4, 2009, the Tennessee Valley Authority (TVA) submitted an updated operating license (OL) application for the unfinished WBN Unit 2. Although TVA originally expected to complete Unit 2 by April 2012, it recently announced that completion is delayed until about July to September 2012. The NRC staff review of the OL application, including the safety, environmental, physical and cyber security, emergency preparedness, and antitrust areas, is in progress. Dedicated resident inspectors (RIs), with assistance from other regional inspectors, are inspecting TVA's construction activities. The staff has met periodically with the Advisory Committee on Reactor Safeguards (ACRS) Subcommittee on Plant Operations and Fire Protection to discuss the results of the staff's ongoing review. In addition, the proceeding has been contested, but a hearing has not yet been held by the Atomic Safety and Licensing Board panel.

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The Watts Bar Unit 2 Reactivation Assessment Group meets periodically to provide management oversight and direction for the staff's review of the OL application and inspection of construction activities.

The sections below discuss the status of the staff's review, including inspection activities and critical issues.

DISCUSSION:

As discussed in the third status report, NUREG-0847, "Safety Evaluation Report [SER] Related to the Operation of Watts Bar Nuclear Plant, Unit 1 and 2," Supplement 21 (SSER 21), issued February 2009, identifies open items that the applicant must resolve before the issuance of an OL. Since then, the staff has made significant progress in its review of these issues and documented the results in SSER 22, issued February 2011, and in SSER 23, issued June 2011. The staff continues to review the remaining items.

Enclosure 1 provides a statistical summary of the major work activities associated with the licensing of WBN Unit 2. In addition, it describes the relative contribution of the various causes for delays in accomplishing work activities as originally planned. Management has used this information to identify actions that could be taken to minimize further impacts to the schedule.

The information below outlines the current status of staff's review of the OL application.

Licensing Activities

The following information summarizes the NRC staff's licensing activities:

- The review of the final safety analysis report (FSAR) topics is 85 percent complete. SSER 23 documents the status of the staff's review and identifies some open items related to FSAR topics that will require confirmation, inspection verification, receipt of final technical specification information, or submission of additional information for the staff's evaluation. TVA is addressing the open issues as the construction progresses.

The staff continues to focus primarily on the review the design-basis accident analyses, radiological dose analyses, atmospheric dispersion factor analyses, and fire protection report.

- The staff has completed its review of TVA's responses to post-1995 generic communications (i.e., bulletins, generic letters, or orders) except NRC Bulletin 2011-01, "Mitigating Strategies," dated May 11, 2011, which required addressees to provide a comprehensive verification of their compliance with the regulatory requirements in Section 50.54(hh)(2) of Title 10 of the *Code of Federal Regulations* (10 CFR) in light of the recent events at Japan's Fukushima Daiichi facility. The staff will review TVA's response after its submission. The staff will take appropriate action should it deem that further regulatory action is necessary based on the ongoing evaluations of this event.
- The staff is addressing its review of pre-1995 generic communications as part of the FSAR review, including Three Mile Island Action Plan items. This effort is in progress.

- TVA established its nuclear performance plan, which included corrective action programs (CAPs) and special programs (SPs), to resolve certain concerns with the quality of construction at WBN in the 1970s and early 1980s. The staff has completed its review of TVA's approach for implementing the CAPs and SPs at WBN Unit 2. The Region II inspection of TVA's implementation of CAPs and SPs is in progress.
- The staff has completed its review of TVA's quality assurance program, which includes a WBN appendix, to determine that the proposed project completion activities are adequately addressed.
- The staff completed its review of the construction refurbishment program, which addresses the potential degradation of systems, structures, and components during the period of plant deferral. Region II continues its inspection of TVA's implementation activities.
- The staff completed its review of TVA's licensing basis preservation program, which was developed to provide a process to identify and address any impacts on the staff's previous conclusions on WBN Unit 1 and design changes to support dual-unit considerations. The staff has completed audits or inspections or both of TVA's implementation of these programs at WBN Unit 2.
- As part of its updated OL application, TVA submitted a supplement to its final environmental impact statement for the completion and operation of WBN Unit 2. The staff is currently reviewing this submittal and expects to complete its review in early 2012.
- The staff has completed its review of the physical security plans and the radiological emergency preparedness plan.

The Federal Emergency Management Agency (FEMA) provided its findings and determinations to the NRC staff on the adequacy of the offsite emergency planning and preparedness.

- TVA has provided a cyber-security plan and implementation schedule using the template in Nuclear Energy Institute 08-09, "Cyber Security Plan Template," Revision 6, issued April 2010. By letter dated June 10, 2011, TVA updated its implementation plan and schedule, which takes into account common systems that are shared between WBN Units 1 and 2. The staff plans to conduct a cyber-security inspection at WBN Unit 2, following TVA's implementation, which will occur before the issuance of a license.
- On June 14, 2011, the Office of Nuclear Material Safety and Safeguards issued a license to TVA under 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," to receive, possess, inspect and store special nuclear material in the form of fresh nuclear fuel assemblies at WBN Unit 2. TVA has begun to receive the 193 fuel assemblies that will comprise the complete core for WBN Unit 2.

- On February 16, 2011, Region I issued a license under 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," and 10 CFR Part 40, "Domestic Licensing of Source Material." The license authorizes TVA to receive, acquire, possess, and transfer byproduct and source materials for use in calibration and standardization of instruments, source and intermediate range detectors, reactor surveillance capsules, and reactor startup source.
- The staff has coordinated with the U.S. Department of Justice (DOJ) on the staff's antitrust review. On December 16, 2010, DOJ informed the staff that no significant changes requiring an antitrust hearing have occurred. On March 21, 2011, the Director of the Office of Nuclear Reactor Regulation (NRR) issued a Director's Decision that also concluded that no significant changes have occurred that would require an antitrust review. On March 22, 2011, the NRC filed a copy of this Director's Decision with the Secretary of the Commission for the Commission's review. The Commission did not, on its own motion, decide to institute a review of the decision within the 30-day time period. On March 28, 2011, the staff published a notice of the Director's Decision in the *Federal Register* (76 FR 17160) to provide an opportunity for the public to request a reevaluation of the "no significant change" determination. The NRC received no such request.
- As part of its statutory responsibilities, ACRS reviews and reports on applications for construction permits and facility OLS and advises the Commission on the hazards of proposed reactor facilities. The staff has met periodically with the ARCS Subcommittee on Plant Operations and Fire Protection to discuss significant topics as it completes its reviews. Further meetings with the ACRS Subcommittee are scheduled for July, October, and November 2011; the ACRS Full Committee meeting is scheduled for December 2011.

Construction Inspection Activities

Construction Inspection Resources

Region II construction inspections continued to increase with the increased pace of safety-related construction activities at WBN Unit 2. In fiscal year (FY) 2010, WBN Unit 2 inspections increased by over 50 percent from the previous year. Based on the first 6 months of FY 2011, the NRC expects a similar level of increase in inspection effort for the rest of FY 2011. Dedicated WBN Unit 2 construction RIs and regional inspectors perform WBN Unit 2 construction inspections. The resident staff continues to comprise one senior RI and three RIs. To maintain the RI staffing at these levels, Region II has used long-term rotational assignments. One of the construction RIs will eventually transition to an operations RI.

The staff has estimated the resources needed to complete the remaining construction inspections and to perform the preoperational testing and startup testing inspection programs. Region II has sufficient staff to perform the required inspections for WBN Unit 2. The NRC is pursuing training related to preoperational and startup testing to ensure that inspectors have the correct skill sets in these areas, which were last inspected in the mid-1990s. The NRC is also considering the use of inspectors from other regions with experience in testing programs.

Transition from Construction to Operations

Region II is planning to transition the inspection oversight of the WBN Unit 2 project from construction (Center for Construction Inspection (CCI)) to operations (Division of Reactor Projects (DRP)). CCI will have lead responsibility for the completion of construction inspections under NRC Inspection Manual Chapter (IMC) 2512, "Light-Water Inspection Program—Construction Phase," dated October 16, 2007, and for the completion of preoperational inspections under IMC 2513, "Light-Water Reactor Inspection Program—Preoperational Testing and Operational Preparedness Phase," dated August 5, 2008. The transfer of lead responsibility from CCI to DRP will occur upon the issuance of an OL. IMC 2514, "Light-Water Reactor Inspection Program—Startup Testing Phase," dated August 12, 1989, specifies the inspections, including the operational readiness assessment team inspection, that NRC staff will perform during this timeframe.

The Region II WBN Unit 2 inspection branch recently added a team leader position. This individual will coordinate the testing inspections that appear in both IMC 2513 and IMC 2514 and will provide continuity as the focus for the WBN Unit 2 project shifts to testing; DRP will have the lead responsibility in that area. An additional key aspect of the WBN Unit 2 transition is the development and implementation of the Reactor Oversight Process transition plan. IMC 2517, "Watts Bar Unit 2 Construction Inspection Program," dated April 30, 2010, provides guidance for the transition plan. The transition of WBN, Unit 2, to the Reactor Oversight Process will be a phased approach on an individual cornerstone basis.

Independent Design Verification Program

The NRC staff completed an independent design verification program (IDVP) inspection in March 2011. The IDVP inspection assessed the adequacy of the plant design by performing a "vertical slice" of systems and by ensuring that appropriate engineering analysis, calculations, and other design documents fully support the stated ability of each system to perform its safety function. In 2010, TVA performed its own IDVP review to examine the design of two safety-related systems in detail. The NRC's IDVP inspection assessed the overall quality of TVA's review effort and also performed a detailed design review of two other safety-related systems. In addition, the NRC's IDVP inspection reviewed the overall design of the WBN electrical distribution system with an emphasis on dual-unit operations. The NRC performed the electrical design review as part of the electrical distribution system functional inspection. The agency completed the IDVP portion of the inspection successfully without identifying any significant findings. For the electrical distribution system functional inspection, an additional followup inspection is necessary to ensure that the WBN electrical distribution system design is adequate to support dual-unit operation.

Annual Assessment and Meeting

On February 10, 2011, the NRC staff completed the end-of-cycle assessment of construction activities at WBN Unit 2 for the period of January 1 through December 31, 2010. The staff found that TVA conducted its construction activities in a manner that complied with the Commission's rules and regulations, the conditions of the applicant's construction permit, and the WBN Unit 2 regulatory framework commitments. On April 28, 2011, the NRC held a meeting near the WBN site to present the end-of-cycle assessment results to members of the

public. During the meeting, the NRC also discussed the current status of the WBN Unit 2 licensing review and construction inspection programs.

Construction Inspection Activities Continue

Region II inspectors continue to inspect WBN Unit 2 construction activities. The Region II Inspection Planning and Scheduling (IP&S) database includes approximately 500 construction inspection items. The number of IP&S items is fairly constant; the staff only adds new items based on inspection results and licensing followup actions. Region II has inspected a large number of the 500 IP&S items to some degree but has only closed 77 items. Region II is closely monitoring the status of IP&S items; it has placed particular emphasis on completing inspections in the areas in which construction has sufficiently progressed. The staff will assess IP&S items that cannot be closed before startup for their impact on plant startup and will develop an alternate closure schedule. Region II recently started inspections of the preoperational testing program.

As TVA continues to implement its CAPs and SPs to resolve historical construction and performance deficiencies at WBN, the staff will continue its inspection of these activities. For the majority of CAPs and SPs, TVA plans to implement the same actions for WBN Unit 2 that it successfully implemented for Unit 1. Region II has completed inspections and closed approximately 20 percent of the CAPs and SPs.

The staff completed its third problem identification and resolution inspection of the CAP for WBN Unit 2 in May 2011. The inspection team noted an overall improvement in TVA's implementation of the CAP for WBN Unit 2.

Critical Areas for Resolution

The staff is facing certain technical and schedule challenges. NRR senior management is taking the following actions to address these challenges:

- In areas related to (1) the fire protection program, (2) accident, transient, and meteorological analyses, including dose consequences, and (3) environmental impacts, including consideration of severe accident mitigation design alternatives, the staff requested additional information from TVA to complete its review. The staff also identified areas where the applicant needed to resolve certain inconsistencies between its submittals and its current WBN Unit 1 licensing basis documentation (which is the reference basis for WBN Unit 2). Resolution of these items is critical to the completion of the project.

TVA has had difficulty providing adequate and timely responses to the staff's requests for additional information. The staff reiterated to TVA, through letters, the need for timely, complete, and high-quality responses to its requests for additional information and for the resolution of inconsistencies. Senior NRC management is interfacing with TVA to ensure that it identifies the problems, understands the causes, and completes corrective actions in a timeframe to support the OL review schedule.

The resolution of these issues may delay the completion of the staff's licensing review of safety and environmental portion of the project to early 2012. The completion of these

activities may also impact the start of the pending hearing process and TVA's original schedule for commercial operation in October 2012. By letter dated July 20, 2011, the staff informed TVA of this potential for delay in the schedule. The staff will inform the Commission of any additional challenges that may affect the schedule.

- Tasking Memorandum COMGBJ-11-0002, "NRC Actions Following the Events in Japan," dated March 23, 2011, directed the NRC staff to establish a senior-level task force to conduct a methodical and systematic review of NRC processes and regulations to determine whether the agency should make additional improvements to its regulatory system. The report of the near-term task force review has been issued with recommendations associated with WBN Unit 2. The NRC will consider the impact of any Commission decision on the task force's recommendations, once determined, on the licensing of WBN Unit 2 as the agency moves forward.

Future Actions and Milestones

Enclosure 2 is the pictorial depiction of future activities and milestones along with the expected periods for accomplishment. The representation of these activities and milestones should not be taken as any pre-disposition of findings or conclusions by the staff.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

/RA/

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Enclosures:

1. [Statistical Status Report](#)
2. [Future Activities](#)

Statistical Status Report

(Status as of Issuance of SSER 23 in June 2011)

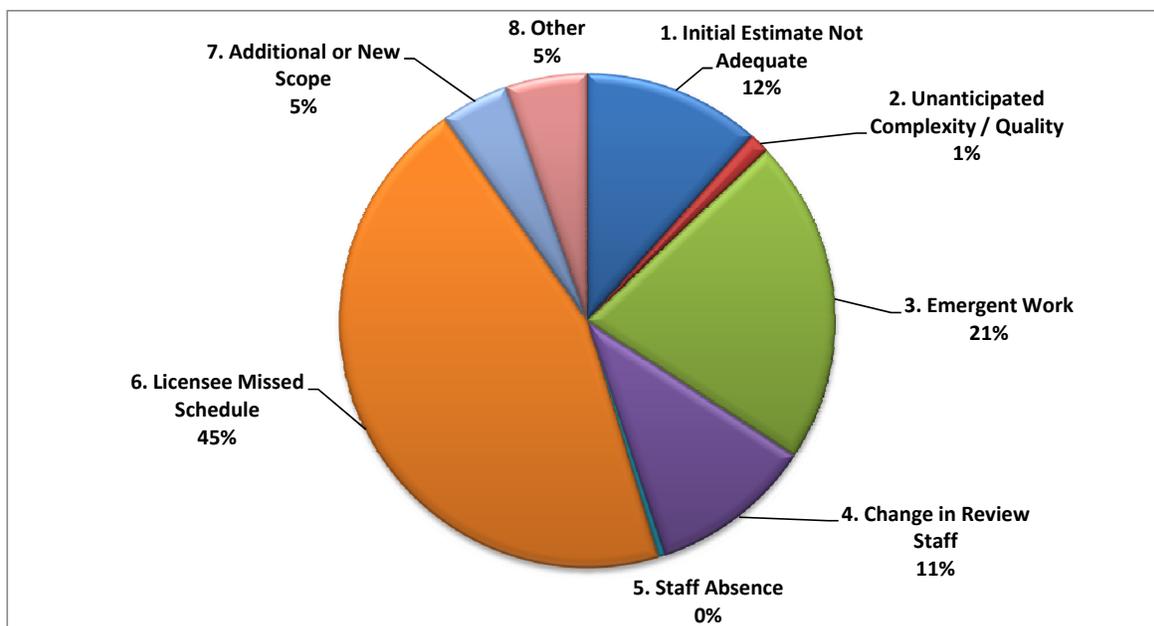
| <u>Project Milestones:</u> | <u>Total Items Identified</u> | <u>Items Completed to Date</u> | <u>Completed vs. Total</u> |
|--|-------------------------------|--------------------------------|----------------------------|
| FSAR Review Sections | 309 | 284 | 92% |
| Corrective Actions Program | 29 | 29 | 100% |
| Generic Communications* | 57 | 54 | 95% |
| TMI Action Items | 42 | 42 | 100% |
| <u>Special Programs:</u> | | | |
| Emergency Preparedness | 1 | 1 | 100% |
| Cyber Security Plan | 1 | 1 | 100% |
| IPE/IPEEE** | 2 | 0 | 0% |
| Financial Qualifications | 1 | 1 | 100% |
| Anti-Trust | 1 | 1 | 100% |
| <u>Other Licenses:</u> | | | |
| Part 30/40 Byproduct and Source Material | 1 | 1 | 100% |
| Part 70 Special Nuclear Material | 1 | 1 | 100% |

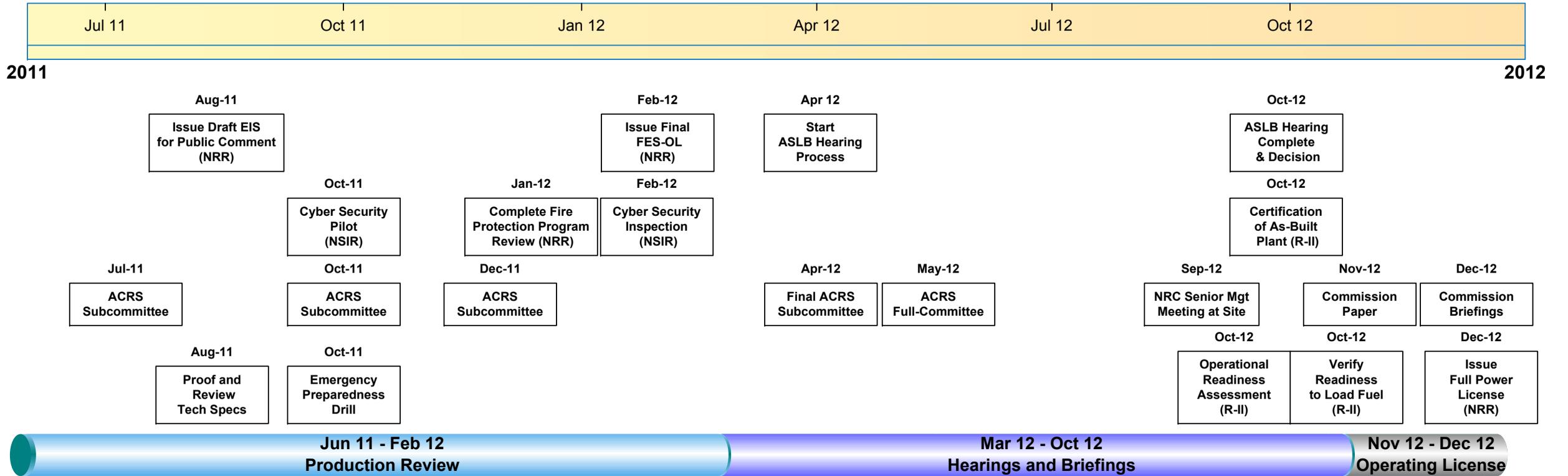
Region II Inspection Program:

Inspection Items In Progress

Notes: * Review of 30-day response to BL 2011-01 in progress. Staff evaluation completed for 2 items and will be included in the next SSER.
 ** Staff evaluation completed and will be included in the next SSER.

Project Risk Influence Factors





PHASE II

PHASE III

PHASE IV

WATTS BAR UNIT 2 REACTIVATION PROJECT PLAN
U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation

As of July 21, 2011
 Center for Planning and Analysis Branch
 Control Number:
 171273_DP_TMLN_Rev19.vsd