



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

December 20, 2017

MEMORANDUM TO: Catherine Haney, Regional Administrator

FROM: William B. Jones, Director  
Division of Construction Oversight

SUBJECT: WATTS BAR UNIT 2 CONSTRUCTION LESSONS LEARNED REPORT

The Watts Bar 2 Construction Oversight Lessons Learned Working Group has completed the Watts Bar Unit 2 Construction Lessons Learned Review Report. The report, which is enclosed, will be made available to the public via the U.S. Nuclear Regulatory Commission's Agencywide Documents Access and Management System. Issuance of the report concludes the working group's actions under its charter.

Enclosure:  
Watts Bar Unit 2 Construction Lessons Learned Report



cc: V. McCree, EDO  
L. Dudes, RII  
J. Munday, RII  
B. Holian, NRR  
F. Brown, NRO

CONTACT: Tomy Nazario, R2/DCO  
Phone: 240-701-4174

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OFFICE	RII: DCO/CIB3	RII: DCO			
SIGNATURE					
NAME	T. Nazario	W. Jones			
DATE	12/20/17	12/20/17			



# **WATTS BAR NUCLEAR PLANT UNIT 2 CONSTRUCTION LESSONS LEARNED**

**October 31, 2017**

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# Executive Summary

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This report summarizes the Watts Bar Nuclear Plant Unit 2 (WBN2) Construction Lessons Learned project. The lessons learned project involved contributions from senior staff, interviews of staff involved with the reactivation of WBN2, and review of previous lessons learned efforts. The lessons learned contained in this report highlight actions that contributed to the effectiveness of program implementation and enhancements for future activities, consistent with the U.S. Nuclear Regulatory Commission's (NRC's) Principles of Good Regulation (Independence, Openness, Efficiency, Clarity, and Reliability). This report also provides a comparison that will inform the development of prospective inspection programs and identify areas for followup.

This report groups the lessons learned into the areas of (1) planning, scheduling, and reporting, (2) inspection program staffing, (3) communications, and (4) construction to operations transition. Specific lessons and recommendations range from improvements to existing inspection program guidance to the use of tabletop exercises to identify potential gaps, strengths, and focus areas.

This report documents the following additional lessons and recommendations:

- The agency's ability to adapt to change throughout all phases of a project is key to the successful completion of inspection and licensing objectives.
- Early inspection program development by experienced and knowledgeable staff is valuable to the inspection effort.
- Staff training and selections for first time and one-of-a-kind projects are an essential element to regulatory oversight effectiveness.
- Stakeholder engagement during all phases of a project assist with keeping everyone informed and serve as a platform for open communication.

Although this report refers to a number of lessons and the corresponding recommendations as "proposed," several recommendations have been implemented and the associated actions have been completed. In other cases, the lesson or the recommendation may not apply, in which case a justification is provided.

In summary, this report captures noteworthy lessons learned from the reactivation of WBN2. The consideration and potential implementation of these lessons learned and recommendations will serve as a principal component to the development of future NRC programs. Moreover, these lessons will continue to support the NRC's commitment to continuous improvement.

## ACRONYMS

CFR	<i>Code of Federal Regulations</i>
ADAMS	Agencywide Documents Access and Management System
CIPIMS	Construction Inspection Program Information Management System
DCO	Division of Construction Oversight
IMC	inspection manual chapter
IP	inspection procedure
IP&S	inspection plan and scheduling
ITAAC	inspections, tests, analyses, and acceptance criteria
NGO	nongovernmental organization
NRC	U.S. Nuclear Regulatory Commission
NRO	Office of New Reactors
NRR	Office of Nuclear Reactor Regulation
OEDO	Office of the Executive Director for Operations
ORAT	Operational Readiness Assessment Team
RII	Region II
ROP	Reactor Oversight Process
SRI	senior resident inspector
TVA	Tennessee Valley Authority
WBN1	Watts Bar Nuclear Plant Unit 1
WBN2	Watts Bar Nuclear Plant Unit 2
WRAG	WBN2 Review and Assessment Group

## I. BACKGROUND

The reactivation of Watts Bar Nuclear Plant Unit 2 (WBN2) has a unique licensing history and regulatory framework. The Watts Bar site consists of two Westinghouse-designed pressurized-water reactors, owned and operated by the Tennessee Valley Authority (TVA). TVA received a construction permit for Watts Bar Nuclear Plant Unit 1 (WBN1) and WBN2 in 1973 under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities." In 1985, TVA stopped construction on WBN1 and WBN2 because of multiple construction quality issues. TVA completed WBN1 in 1995, but it has conducted very little work specific to WBN2 since 1985.

In 2007, TVA informed the U.S. Nuclear Regulatory Commission (NRC) of its plan to resume construction of WBN2. Shortly thereafter, the NRC staff submitted SECY-07-0096, "Possible Reactivation of Construction and Licensing Activities for the Watts Bar Nuclear Plant Unit 2," dated June 7, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML071220492) to the NRC Commission. The SECY paper discussed the staff's approach for possible reactivation of licensing and construction inspection activities for WBN2. The Commission approved the staff's recommendations for the licensing and inspection of WBN2 in Staff Requirements Memorandum (SRM)-SECY-07-0096, dated July 25, 2007 (ADAMS Accession No. ML072060688). In keeping with its approach, the NRC staff developed a site-specific inspection program contained within Inspection Manual Chapter (IMC) 2517, "WBN2 Construction Inspection Program." This IMC delineates the policy for the conduct of inspections at WBN2 during construction and startup under the following IMCs:

- IMC 2512, "Light Water Reactor Inspection Program—Construction Phase"
- IMC 2513, "Light Water Reactor Inspection Program—Preoperational Testing and Operational Preparedness Phase"
- IMC 2514, "Startup Testing Inspections"

IMC 2517 also defines the roles and responsibilities for Region II (RII) and NRC Headquarters.

The NRC reviewed all historical documentation to determine the status of the IMC 2512 inspection procedures (IPs) in effect at the time TVA stopped construction and to confirm that all issues and inspection requirements would be completed for WBN2. The NRC staff called this effort the reconstitution process. The staff documented the results of the reconstitution process in Inspection Report 05000391/2009602, dated April 30, 2009 (ADAMS Accession No. ML091210420), and used the results to identify areas that required additional inspections.

During the early stages of the NRC's oversight of WBN2, RII coordinated and worked extensively with the WBN2 Special Projects Branch in the NRC Office of Nuclear Reactor Regulation (NRR). This coordination resulted in the establishment of an oversight group known as the WBN2 Review and Assessment Group (WRAG), which consisted of NRC senior managers from RII and NRC Headquarters, the cognizant RII branch chief, NRR senior project manager, and senior resident inspector. The senior managers in NRR and RII construction organizations co-chaired the WRAG.

The WRAG proved to be a key process in integrating licensing and inspection activities with the licensee's schedule and focused the NRC's management oversight on complying with the

Commission's directions in SRM-SECY-07-0096. The WRAG ensured an effective integration of licensing and inspection activities, which enabled NRC staff to be adequately prepared to support meetings and hearings.

To effectively manage the IMC 2517 inspection program, RII developed a site-specific inspection plan and scheduling (IP&S) tool to complete the inspections required by IMC 2512, IMC 2513, and IMC 2514; open temporary instructions (TIs); and open NRC generic communications such as generic letters and bulletins. The IP&S tool also facilitated the accounting, tracking, and completion of items that resulted from the reconstitution of the inspection program. The tool assisted with and provided sufficient flexibility for rescheduling inspections to accommodate applicant schedule changes.

The NRC staff reviewed inspection activities, particularly near the completion of construction, on a nearly daily basis to establish when, where, and what type of inspection resources were needed. The NRC assigned additional resident inspectors to the site, and regional inspectors remained on site for weeks to several months during construction, preoperational testing, and startup testing. As an example, the agency used the former WBN1 senior resident inspector to assist in the development of other inspectors and with WBN2 operational knowledge transfer. This helped maintain project continuity and train other inspectors during the preoperational and startup periods. Additionally, the continued use of rotational resident inspector positions helped maintain adequate levels of staffing at the site. The NRC regional offices, the NRC Technical Training Center (TTC), and NRC Headquarters provided support during the construction period and through startup testing. IMC 2517 governs the qualifications for individuals performing these different types of inspections.

As the project neared completion, the WRAG provided frequent communication on the status of WBN2 and eliminated the need for the generic readiness IP 94300, "Status of Plant Readiness for an Operating License," 90-day status report, and subsequent status report updates. The NRC issued IP 94302, "Status of WBN2 Readiness for an Operating License," specific to WBN2, which provided a list of open items to be tracked and resolved following issuance of the operating license (ADAMS Accession No. ML15288A305). IP 94302 provided updated guidance to support reporting the status of WBN2 readiness for an operating license. This guidance allowed for a detailed understanding of the outstanding and completed inspections, the type (discipline), and the inspectors needed to accomplish the remaining work. The NRC made the list of open items available to the public (via ADAMS) and provided the basis for RII's assessment of WBN2 readiness for an operating license.

Consistent with the NRC's value of openness, the agency held numerous public meetings through standing weekly teleconferences, WRAG updates, end-of-cycle meetings, nongovernmental organization (NGO) interactions, and informational meetings. These meetings took place in the NRC Headquarters and RII offices and in the vicinity of Watts Bar. The NRC held an informational public meeting on March 26, 2015, at a high school in Athens, TN, as construction activities were ending. At the meeting, NRC senior management met with the public, TVA, and other stakeholders concerning WBN2 and discussed the status of the WBN2 construction project, including major milestones and potential challenges that could impact the project schedule. During this meeting, the RII Regional Administrator and the NRR Office Director addressed the operating license process. The NRC also held a meeting with NGOs earlier that same day.

The NRC developed a detailed transition plan (ADAMS Accession No. ML15096A204) in April 2015 to support the transition of WBN2 from construction and testing under IMC 2517 to



the Reactor Oversight Process (ROP). This transition plan ensured the use of a deliberate approach to transition each individual ROP cornerstone. It also assigned responsibilities resolving any relevant open issues to ensure that each cornerstone was ready for NRC monitoring using the ROP before final transition (i.e., performance indicators and inspections).

The ROP and IMC 2517 provided the guidance for the inspection and assessment of the licensee's performance through preoperational and startup testing and into full-power operations. The RII construction organization continued to participate in WBN2 briefings until the followup items identified in the IP-94302 letter were closed. The Division of Reactor Projects assumed the lead oversight responsibility following issuance of the operating license and established a communication protocol that included a standardized form of upcoming activities, challenges, and resource needs. The Division shared this communication protocol within RII and with the cognizant headquarters offices, including the Office of the Executive Director for Operations (OEDO). OEDO also used this tool to update the Commission on ongoing activities at WBN2.

On May 26, 2015, the Commission issued SRM-SECY-15-0068, "Watts Bar Nuclear Plant, Unit 2—Review Status and Authority of the Director of the Office of Nuclear Reactor Regulation for Operating License Issuance" (ADAMS Accession No. ML15146A213). The Commission approved the staff's recommendation to grant the NRR Office Director the authority to issue WBN2 a full-power operating license. On October 22, 2015, the NRC issued the operating license (ADAMS Accession No. ML15251A587). After issuance of the operating license, the NRC disbanded the WRAG, and NRC oversight of WBN2 transitioned to the ROP for operating reactors.

## II. SCOPE AND METHODOLOGY

On March 8, 2017, the NRC RII staff conducted and documented an initial lessons learned effort in a memorandum from William B. Jones, Director, Division of Construction Oversight (DCO) in RII to Chris Miller, Director, Division of Inspection and Regional Support (DIRS) in NRR. RII staff issued the WBN2 lessons learned memorandum to capture the staff's initial insights into the implementation of the WBN2 oversight program. The staff identified four general areas into which the lessons were categorized: organization, construction inspection, testing, and transition. The associated items provided an outline of the types of issues the staff and management addressed to accomplish the inspection and assessment of WBN2 during construction and transition to commercial operation. The attachment to this report includes the specific items identified in the memorandum.

In June 2017, RII established an interoffice working group made up of senior staff from NRR and the RII inspection office to further assess the lessons learned from WBN2. The working group transmitted its charter via memorandum dated June 26, 2017 (ADAMS Accession No. ML17192A031). The working group focused on aspects of the WBN2 reactivation, including the transition from construction to operations. The working group used the March 8, 2017, lessons learned memorandum as a basis for this report.

On August 9–10, 2017, the working group met to discuss WBN2 lessons learned. The group reviewed several documents, combined lessons learned from previous efforts, and identified lessons learned that could be retained and disseminated in a manner that would maximize their benefits and usefulness to the staff. Section III of this report describes the following four general lesson learned areas:

- Lesson Area 1: Planning, Scheduling, and Reporting
- Lesson Area 2: Inspection Program Staffing
- Lesson Area 3: Communications
- Lesson Area 4: Construction to Operations Transition

The working group developed specific lessons under each general lesson area. Some lessons have overlapping themes. Section IV of this report further discusses the specific recommendations and applicability to existing processes such as those covered under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." This report consolidates all the lessons gathered through interviews and other similar efforts, including the March 8, 2017, memorandum.

The following individuals contributed to this Watts Bar Plant Unit 2 Construction Lessons Learned report:

- Tomy Nazario, NRC RII
- James Baptist, NRC RII
- Christopher Even, NRC RII
- Jason Eargle, NRC RII
- Stephen Campbell, NRC NRR
- Phil O'Bryan, NRC NRO

### III. LESSONS LEARNED

#### Lesson Area 1: Planning, Scheduling, and Reporting

- 1.a Because of the plant's unique nature and licensing basis, the NRC developed project-specific procedures and processes for WBN2. For example, the staff developed and issued IMC 2517, "WBN2 Construction Inspection Program," and IP 37002, "Construction Refurbishment Process—Watts Bar Unit 2." During the development of the IMC and IP, the program office engaged experienced regional inspectors to compile guidance that was more directly applicable to and specifically designed for the inspectors.

The regional inspectors involved in the IMC and IP development had direct involvement in the restart of the Browns Ferry Nuclear Power Plant and Watts Bar during the 1980s and 1990s. The authors of the WBN2-specific documents understood the unique history of Watts Bar and had first-hand knowledge of the licensing basis, technology, and the material condition of the plant. They also had an indepth understanding of the inspection program used for WBN1 and how to develop a program that supported the Commission's approach that employed "the current licensing basis for Unit 1 as the reference basis for the review and licensing of Unit 2," as stated in SRM-SECY-07-0096. In summary, the participation of experts and knowledgeable staff in the development of the inspection program proved valuable, as evidenced by site-specific tailored guidance and procedures that required minimal future revisions.

**Lesson: For first-of-a-kind or unique projects, the engagement of experienced experts and knowledgeable staff during the development of guidance documents proved valuable and resulted in final guidance that was tailored to the unique licensing basis of Watts Bar.**

- 1.b During the early stages of the WBN2 project, the regional construction organization was initially set up to mirror the current operating reactor oversight organizational structure, which distributed the responsibilities to a project management division (Division of Reactor Projects) and an inspection support division (Division of Reactor Safety). This division of responsibilities introduced additional approval layers and independent tracking of open items. It also resulted in inspection planning, scheduling, and reporting challenges. Initially, there were varied methods of coordinating inspections because inspection assignments were independently assigned, scheduled, and tracked among different work groups. This inspection planning methodology required resident and project staff to routinely validate project schedule information to ensure that inspections were scheduled accordingly. Moreover, the documentation and reporting of inspections varied, requiring added review efforts by the project managers.

A centralized project management approach was instituted with a single management chain of command at the project level to address some of the unique inspection planning challenges. This approach assigned all inspection items to the project management branch responsible for project oversight, so that a single point of contact collectively assigned, scheduled, and tracked inspection items instead of multiple sources and work groups. In summary, this approach resulted in a "one stop shop" for inspection assignments, which contributed to a more structured environment, improved status updates, and provided a consistent quality of inspection reports.

The centralized project management approach instituted an environment of clear expectations and development of detailed roles and responsibilities with sufficient authority, all of which contributed to project success.

**Lesson: A centralized project management structure with single management chain of command, institution of clear expectations, and development of detailed roles and responsibilities with sufficient authority were key to project success.**

- 1.c As discussed in Section I of this report, the NRC initiated a review of all historical documentation to determine the status of all open items and confirm that all issues had been addressed and inspection requirements would be completed for WBN2. This effort was known as the reconstitution effort. During the reconstitution effort (2008–2009) for WBN2, the retention of applicable documentation (in accordance with agency guidance) for open items was important to establishing a comprehensive basis for the resumption of discontinued projects. These open items included legacy items, generic communications, allegations, corrective action programs, special programs, and unresolved items. In some cases, the thorough and detailed documentation of these historical open items provided the staff a comprehensive basis during the reconstitution effort.

**Lesson: Retention of thorough and detailed documentation associated with open items was important to establishing a comprehensive basis for the resumption of discontinued projects.**

- 1.d In addition to reviewing the documentation of open items during the reconstitution effort, the staff reviewed IPs to determine whether inspection objectives had been satisfied. The staff reviewed historical inspection reports (pre-2008) to determine whether IP samples had been completed. If inspection sample information was limited or incomplete, the staff made conservative decisions and determined those to be incomplete samples that required further inspection. Examples of such limited or incomplete information included (1) a specific unit identifier for components was not listed, (2) sufficient detail to provide the basis for completion of IP steps and substeps was lacking, (3) the intent of the top level steps could not be satisfied as documented in the historical inspection reports, and (4) only partial inspections of WBN2 were performed for some systems common to or shared with WBN1.

As the staff developed the WBN2 inspection program (post-2008), the staff implemented a detailed recording and accounting of IP steps and substeps in publicly available inspection reports. This effort proved beneficial and valuable because of the ability to accurately track inspection completion in spite of project delays.

**Lesson: Progress of the inspection program (including IP samples) should be thoroughly documented and accounted for to ensure completion. The documentation and status of top-level and lower level inspection steps should contain sufficient detail such that they can be reconstituted if the need arises.**

- 1.e Typically, large-scale construction projects rely on complex schedules. The NRC project management staff and resident inspectors initiated several compensatory measures to gather real-time site activity information and validate schedule information. This information was then matched up with inspection objectives and schedule site visits. It was recognized early on that remotely synchronizing inspection schedules with

construction schedules required additional onsite corroboration because the higher level construction schedules did not reflect specific field work inspection activities. The resident staff was routinely relied upon to validate and corroborate schedule information, causing additional administrative burden on the inspectors. It is important to note that while the NRC was and continues to be focused on the nuclear safety of construction projects versus construction schedules, efficiently managing and planning inspection resources is consistent with one of the five Principles of Good Regulation (Efficiency). For WBN2, onsite NRC representatives continuously evaluated, monitored, corroborated, and modified inspection schedule changes that could affect NRC resources.

**Lesson: Use onsite NRC project management to continuously evaluate, monitor, corroborate, and modify inspection schedules in order to minimize impacts to NRC resources and support the agency's oversight responsibilities.**

## **Lesson Area 2: Inspection Program Staffing**

- 2.a A main component of inspection program implementation was the continuity of staffing on the project and the use of experienced personnel. During the development of the inspection program, the NRC used experienced individuals who participated in construction inspection programs in the 1980s and 1990s. Experiences and insights provided by these team members greatly contributed to the establishment of a viable program and to the completion of the inspection program. The ability to retain key, experienced personnel during different phases of the project provided continuity and stability to the oversight of WBN2 construction.

It is important to note that during the WBN2 project, the NRC underwent several changes and transitions in staffing at the management level both in RII and NRC Headquarters. Consequently, a contributor to the successful completion of the inspection program was that key staff remained on the project as attrition or staffing changes took place.

Throughout the WBN2 project, a number of individuals supported inspections on a rotational basis, which allowed the agency to develop and train staff who would later be assigned to 10 CFR Part 52 (Advanced Passive (AP) 1000) projects. Given the complexity and duration of large-scale projects, it is important to develop and conduct detailed tabletop exercises for project staffing strategies. These strategies should include the use of individuals with extensive relevant experience, the evaluation of training programs, and the involvement of stakeholders.

**Lesson: Project staffing within the organization should be commensurate with the level of activity at the site to provide flexibility, continuity, and assurance that the NRC is equipped to handle attrition and transition events, such as project delays, turnover of personnel, or reprioritization of agency activities.**

- 2.b During the WBN2 project, some targeted work activities for inspection occurred outside of normal working hours (dayshift Monday through Friday). Because of the large number of construction and testing activities during different phases of the project, both regional and resident inspectors exercised a large degree of flexibility to successfully cover and inspect around-the-clock work activities. Typically, resident inspectors were expected to cover backshift and weekend work activities, as stated in Regional Office

Instruction 2251, "Staff Guidance for the Division of Reactor Projects," and IMC 2515, "Light Water Reactor Inspection Program-Operations Phase." However, resident guidance and expectations on how to provide backshift and weekend coverage did not include or apply to inspectors who were not part of the resident program.

**Lesson: Clearly establish and manage expectations and guidance for onsite inspection presence during construction and testing such that resources are evenly distributed and equitably assigned during backshift and weekend hours.**

- 2.c Resident offices at operating sites and construction sites are composed of a senior resident inspector (SRI) who performs supervisory duties, resident inspector(s), and an administrative assistant. Historically, SRIs are solicited for informal input during the selection of their staff; however, they are not directly involved in the selection process. Inspection staff turnover at Watts Bar and specific inspection skill needs changed throughout the project. The NRC recruited high-performing individuals in an effort to meet short-term and long-term staffing needs. During the selection process, key personnel, including the SRI, were consulted and asked for their input on specific skill needs. The regional inspection organization found it to be beneficial to engage site supervisory staff (i.e., the SRI) and RII leadership during the selection of candidates for projects such as WBN2 that required unique skill sets and experience.

**Lesson: Engage site supervisory staff (i.e., the SRI) and regional leadership during the selection of candidates for projects that require unique skill sets and experience.**

- 2.d The NRC trained and qualified inspectors to perform WBN2-specific inspections in support of the WBN2 project. IMC 2517 governs the qualifications for individuals performing inspections at WBN2, including testing activities, whereas IMC 1252, "Construction Inspector Training and Qualification Program," dated April 25, 2011 (ADAMS Accession No. ML110470606), governs the construction inspector qualification program for AP1000 sites under construction (10 CFR Part 52). It is important to note that IMC 2517 contains qualification guidance for inspections of testing, and IMC 1252 also requires the Preoperational and Startup Testing Inspection course (with a focus on inspections, tests, analyses, and acceptance criteria (ITAAC)); however, the IMC 1252-specific course was never developed and IMC 1252 was superseded in August 2017 by IMC 1245, "Qualification Program for New and Operating Reactor Programs," Appendix C-15, "Construction Inspector Technical Proficiency Training and Qualification Journal."

Given the industry's proposals to build numerous plants with new reactor designs, the agency trained and qualified most construction inspectors under IMC 1252 during the same time the WBN2 project was taking place. The inspection needs at that time resulted in a limited number of qualified and experienced individuals available to inspect testing activities at WBN2. Even though the regional inspection office started out with a limited number of qualified testing inspectors, the efforts to conduct just-in-time training and increase the number of qualified testing inspectors contributed to the successful completion of key and targeted testing inspections.

**Lesson: Proactive regional training enhancements during the testing phases of WBN2 contributed to the successful completion of key and targeted testing inspections.**



## Lesson Area 3: Communications

- 3.a Effective communications during the project were important because of the unique nature and complex licensing history of WBN2. Stakeholder involvement at all levels included NRC Headquarters, RII, the public, other government agency representatives, NGOs, the Commission, and the licensee's organization.

During the early stages of the project, an oversight group (the WRAG) consisting of senior personnel from RII and NRC Headquarters was established. The WRAG's scope of activities included the following:

- oversight for overall project planning among the NRC offices
- communication of licensing and technical issues to stakeholders
- conduct of periodic meetings with the applicant to discuss progress of the reactivation effort and identify ways to enhance NRC oversight of the project
- oversight for the established WBN2 Reactivation Communication Plan to ensure that key stakeholders were informed of the review status
- coordination and oversight of the applicant's preoperational and startup testing

As the WRAG increased its oversight role, added benefits were noted throughout the project, such as the WRAG's ability to coordinate and prioritize resources. The WRAG continuously evaluated the project for change, including redirection and curtailment of specific inspection and licensing activities as a result of changes in project scope, schedule, and objectives. The WRAG also contributed to periodic internal and external meetings, the development of the communication plan, and effective communications through different phases of the project.

**Lesson: The WRAG proved to be a key component of the WBN2 oversight effort. The WRAG closely integrated project priorities and focused the NRC's management oversight.**

- 3.b The NRC held numerous public meetings through recurring weekly teleconferences, WRAG updates, end-of-cycle meetings, NGO interactions, and informational meetings. These meetings took place at the NRC Headquarters office and the RII office and in the vicinity of Watts Bar. Between 2015 and 2016, the NRC developed an internal communications plan for the transition of the plant from construction to operations. The transition communication plan outlined the NRC's criteria for determining readiness for WBN2 to startup. The plan also contained key messages and specific actions during the phases of the transition. The NRC developed another communication plan in 2010 on the Notice of Violation associated with molded case circuit breakers. Even though multiple communication plans existed throughout the project, one integrated and comprehensive communication plan may have been easier to update and maintain. Also, the development of a communications plan during the early stages of the project may have further enhanced communications at all levels.

**Lesson: The use of several detailed communication plans for WBN2 proved valuable; however, the development of one integrated and comprehensive**

communication plan would be easier to update and enhance communications at all levels.

#### **Lesson Area 4: Construction to Operations Transition**

- 4.a NRC inspectors witness, first hand, equipment assembly and subsequent testing during construction and component testing of the plant. This afforded inspectors the opportunity to gain unique insights into the equipment history of targeted safety-related components, such as safety injection pumps. Construction IPs for WBN2 provided limited guidance on how to inspect component testing activities. IMC 2517 governs preoperational and startup testing inspections; however, the guidance did not incorporate component testing.

**Lesson: Inspections of construction component testing should be incorporated into the inspection program and should be used to inform preoperational and startup testing inspections.**

- 4.b The NRC staff performed an Operational Readiness Assessment Team (ORAT) inspection in accordance with IMC 2514. Before issuance of the operating license at WBN2, IMC 2514 identified the requirement to perform the ORAT inspection in accordance with IP 93806, "Operational Readiness Assessment Team Inspections," to assist the NRC's determination for plant startup readiness.

In June 2015, TVA informed the NRC of its "Declaration of Readiness for WBN2 Operational Readiness Assessment Team Inspection" (ADAMS Accession No. ML15156A848). TVA's letter briefly described the manner in which it had or will fulfill ORAT inspection-specific prerequisites. ORAT inspections typically coincided with the construction window after system completion and turnover to operations but before plant startup. This allowed inspectors to sample safety-related systems with issued operational procedures and, in some cases, partial or full implementation of those procedures.

Both IMC 2514 and IP 93806 allowed for the ORAT inspections to be tailored to the individual plant circumstances. The NRC staff performed the ORAT inspection with a number of safety-related systems incomplete and still within the custody of the project's construction organization. Because of the timing of the inspection and the limited time between construction completion and turnover of all systems, several site procedures were not fully issued or implemented.

On July 27, 2015, the NRC staff completed the ORAT inspection and concluded that TVA adequately demonstrated the readiness of the facility and staff to safely start up and conduct power operations at WBN2. The staff performed a number of inspections to support plant operations, after the turnover of the safety-related systems to the operations organization but before the systems were relied upon. This approach supported the NRC's determination for plant startup readiness and allowed the NRC to inspect the implementation of safety-significant activities.

**Lesson: Perform a detailed assessment of the licensee's readiness for an ORAT inspection immediately before the inspection to validate that the licensee's operational programs and safety-related systems have met the ORAT prerequisites.**



- 4.c Following the issuance of the operating license on October 22, 2015 (ADAMS Accession No. ML15251A587), WBN2 transitioned into the ROP. The NRC monitored plant performance by focusing on seven cornerstones as part of the ROP. These cornerstones were assessed by a combination of objective performance indicators reported by the licensee and the NRC inspectors' findings. ROP cornerstones became monitorable and transitioned from the NRC's WBN2 construction assessment process (IMC 2517) to the ROP (IMC 0305, "Operating Reactor Assessment Program," and IMC 0609, "Significance Determination Process"), as construction activities finalized and the plant's operations organizations took operational control.

The NRC developed IMC 2517 (as discussed above in Section I) and used the traditional enforcement process to assess findings identified throughout the construction phase because of the unique nature of WBN2. During the transition of cornerstones from construction to operations, the inspectors noted that the assessment guidance for dispositioning findings differed under the construction assessment process and the ROP. In some cases under IMC 2517, assessment guidance was limited and did not fully address findings associated with operational programs, whereas the ROP may have been more applicable to disposition these types of findings. Nonetheless, inspectors used the applicable guidance and successfully evaluated findings during the transition process.

**Lesson: Phase the transition from construction to operations inspections and assessment programs (including enforcement) to reflect the licensee's operational transition and ensure applicable NRC processes are being used.**

## IV. RECOMMENDATIONS

Recommendations are primarily based on how the lessons learned may apply to current and future 10 CFR Part 52 reactor construction projects. The NRC considered plants to be constructed, restarted, or licensed under 10 CFR Part 50 as part of the lessons learned evaluation. These lessons learned may also be applicable to future NRC-regulated construction projects of different types.

WBN2 Lesson Learned	Applicability to 10 CFR Part 50 and 10 CFR Part 52	Recommendations
<b>1. Planning, Scheduling, and Reporting</b>		
1.a For first-of-a-kind or unique projects, the engagement of experienced experts and knowledgeable staff during the development of guidance documents proved valuable and resulted in final guidance that was tailored to the unique licensing basis of Watts Bar.	<p>10 CFR Part 50: Future 10 CFR Part 50 projects would have to be evaluated on a case-by-case basis to determine whether this lesson and recommendation could be applied. Existing guidance (i.e., IMC 0040, "Preparing, Revising and Issuing Documents for the NRC Inspection Manual") may be applicable to future projects and thus govern corresponding inspection programs.</p> <p>10 CFR Part 52: During the early development of the 10 CFR Part 52 inspection program, experienced and knowledgeable staff (including regional inspectors) participated in the development of the program through working groups and review and concurrence of draft documents.</p>	<p>Continue to use guidance contained in IMC 0040, specifically, Sections 06.04, "Regional and Office Comments," and 06.05, "Comment Resolution."</p> <p>It is important to note that IMC 0040 outlines regional comment participation during the draft process. This guidance serves well for the revision of existing inspection manual documents; however, for unique or first-of-a-kind projects, the working group recommends that experienced and knowledgeable personnel (including those in the region) become involved at the earliest stages of guidance development.</p> <p>Also, for unique or first-of-a-kind efforts, use tabletop exercises in which key personnel discuss simulated scenarios. The tabletop exercises can be used to assess inspection program guidance documents and procedures before issuance.</p>
1.b A centralized project management structure with single management chain of command, institution of clear expectations,	10 CFR Part 50: Future 10 CFR Part 50 projects would have to be evaluated on a case-by-case basis to determine whether this lesson and	Evaluate consolidation of resources and simplified management reporting structure (one division reporting structure vs.

<b>WBN2 Lesson Learned</b>	<b>Applicability to 10 CFR Part 50 and 10 CFR Part 52</b>	<b>Recommendations</b>
<p>and development of detailed roles and responsibilities with sufficient authority were key to project success.</p>	<p>recommendation could be applied. Organizational structure and management structure may be dependent upon available resources at the time.</p> <p>10 CFR Part 52: The NRC has implemented aspects of this recommendation for the 10 CFR Part 52 inspection program.</p> <p>Examples include the following:</p> <ul style="list-style-type: none"> <li>• Reorganized the construction divisions in RII, which merged two divisions into one division, also known as the DCO merger (this introduced a single management chain of command for the project oversight group and inspection group).</li> <li>• Designated a senior construction program manager with sufficient scheduling authority and responsible for the planning, scheduling, and tracking of inspection assignments.</li> <li>• Developed a Construction Inspection Program Information Management System (CIPIMS) with the ability to plan, schedule, and generate consistent inspection reports.</li> <li>• Conducted periodic internal meetings to discuss inspection</li> </ul>	<p>two divisions already in place via the DCO merger).</p> <p>Establish clear roles and responsibilities that support the inspection program and ensure an organizational structure that allows for work assignments to be equitably distributed.</p> <p>Consider centralizing project management responsibilities and clearly defining project management roles and responsibilities at the beginning of a project.</p>

WBN2 Lesson Learned	Applicability to 10 CFR Part 50 and 10 CFR Part 52	Recommendations
<p>1.c Retention of thorough and detailed documentation associated with open items was important to establishing a comprehensive basis for the resumption of discontinued projects.</p>	<p>planning, project assessment, and expectations.</p> <p>Ensure retention of inspection open items and allegation-related material for discontinued construction projects, as applicable and consistent with agency guidance.</p> <p>Aspects of this recommendation have been implemented for 10 CFR Part 52 inspection program; CIPIMS has the ability to record inspections.</p>	<p>Evaluate the need for retention of documents associated with projects that have ceased construction, consistent with record retention policies.</p>
<p>1.d Progress of the inspection program (including IP samples) should be thoroughly documented and accounted for to ensure completion. The documentation and status of top-level and lower level inspection steps should contain sufficient detail such that they can be reconstituted if the need arises.</p>	<p>10 CFR Part 50: This lesson directly applies to both 10 CFR Part 50 and 10 CFR Part 52 projects.</p> <p>Part 10 CFR 52: The NRC has implemented aspects of this recommendation in part for the 10 CFR Part 52 inspection program.</p> <p>For 10 CFR Part 52, CIPIMS provides the ability to track IP completion to the desired level; however, at this time it is unclear how to determine whether the intent of the IP steps have been met. Even though IP samples are recorded at the top-level steps, consistent with IMC 2506, "Construction Reactor Oversight Process General Guidance and Basis Document," dated February 20, 2017 (ADAMS Accession No. ML16315A349), detailed recording may be warranted to ensure that</p>	<p>Evaluate the need for detailed IP sample documenting and accounting. As learned throughout the WBN2 project, thorough and detailed accounting of inspection objectives proved valuable because of project delays. It is important to note that some IPs may take several years to complete and therefore rely on a cumulative sample and satisfaction of inspection objectives.</p>

WBN2 Lesson Learned	Applicability to 10 CFR Part 50 and 10 CFR Part 52	Recommendations
	the intent of IPs and supporting objectives have been satisfied.	
1.e Use onsite NRC project management to continuously evaluate, monitor, corroborate, and modify inspection schedules in order to minimize impacts to NRC resources and support the agency's oversight responsibilities.	<p>10 CFR Part 50: This lesson directly applies to both 10 CFR Part 50 and 10 CFR Part 52 projects.</p> <p>10 CFR Part 52: The NRC recently piloted aspects of this recommendation at Virgil C. Summer Nuclear Station, Units 2 and 3.</p>	Evaluate results from the pilot for efficiencies and aspects transferrable to current construction project manager (CPM) activities, including conduct of CPM activities onsite.
<b>2. Maintaining an Adequate Inspection Staff</b>		
2.a Project staffing within the organization should be commensurate with the level of activity at the site to provide flexibility, continuity, and assurance that the NRC is equipped to handle attrition and transition events, such as project delays, turnover of personnel, or reprioritization of agency activities.	<p>10 CFR Part 50: This lesson directly applies to both 10 CFR Part 50 and 10 CFR Part 52 projects.</p> <p>10 CFR Part 52: The NRC has discussed aspects of this recommendation as part of the development of the construction ROP transition plan.</p> <p>Refer to the following documents for more information:</p> <ul style="list-style-type: none"> <li>Construction Inspection Program Public Meeting, July 19, 2016 (ADAMS Accession No. ML16197A125)</li> <li>SECY-17-0048, Construction Reactor Oversight Process Self-Assessment for Calendar Year</li> </ul>	<p>Develop early project staffing strategies through the use of detailed tabletop exercises. These strategies should include the use of individuals with varying technical expertise and extensive experience, the evaluation of training and programs, and the involvement of stakeholders. The following are considerations for the tabletop exercises:</p> <ul style="list-style-type: none"> <li>Use rotations and increased staffing, as applicable, commensurate with the level of activity.</li> <li>Assign test inspectors to facilitate and respond to testing activities on short notice.</li> <li>Use a diversified group of knowledgeable and experienced inspectors (Tiger team) who can address targeted project needs.</li> <li>Maintain the presence of an onsite project manager (see Lesson 1.e).</li> </ul>

WBN2 Lesson Learned	Applicability to 10 CFR Part 50 and 10 CFR Part 52	Recommendations
	2016, dated April 11, 2017 (ADAMS Accession No. ML17047A694).	<ul style="list-style-type: none"> <li>Have a multidisciplinary and technical team (panel) collectively review tests for technical adequacy.</li> </ul>
2.b Clearly establish and manage expectations and guidance for onsite inspection presence during construction and testing such that resources are evenly distributed and equitably assigned during backshift and weekend hours.	This lesson directly applies to both 10 CFR Part 50 and 10 CFR Part 52 projects.	<p>Evaluate the following:</p> <ul style="list-style-type: none"> <li>Revise the existing inspection program or regional office guidance to include expectations for onsite presence by nonresident inspectors.</li> </ul> <p>Revise position descriptions and performance elements and standards to include backshift and weekend coverage for nonresident inspectors, and communicate the change as appropriate</p>
2.c Engage site supervisory staff (i.e., the SRI) and regional leadership during the selection of candidates for projects that require unique skill sets and experience.	<p>10 CFR Part 50: This lesson directly applies to both 10 CFR Part 50 and 10 CFR Part 52 projects.</p> <p>10 CFR Part 52: The NRC implemented aspects of this recommendation during the selection of resident inspector development program candidates for AP1000. During the interview process, all resident inspector development program candidates were interviewed on site to meet with the site supervisory staff (i.e., the SRI) and briefly experience the work site. Include the SRI in the resident inspector selection process, including onsite and field interviews.</p>	<p>Evaluate the need for modifying the selection and interview process to include the following:</p> <ul style="list-style-type: none"> <li>onsite interviews, as applicable</li> <li>involvement of site supervisory staff (i.e., the SRI) during the interview and selection process</li> <li>training of supervisory staff on how to interview candidates</li> </ul>

<b>WBN2 Lesson Learned</b>	<b>Applicability to 10 CFR Part 50 and 10 CFR Part 52</b>	<b>Recommendations</b>
<p>2.d Proactive regional training enhancements during the testing phases of WBN2 contributed to the successful completion of key and targeted testing inspections.</p>	<p>10 CFR Part 50: This lesson directly applies to both 10 CFR Part 50 and 10 CFR Part 52 projects.</p> <p>10 CFR Part 52: The NRC addressed aspects of this recommendation in the latest revision of IMC 1245, "Qualification Program for New and Operating Reactor Programs," dated August 24, 2017. IMC 1245 includes a new Appendix C-15, which integrates the different qualifications and recognizes the experience needed to perform operational inspections, such as startup testing.</p>	<p>The latest revision of IMC 1245 addresses this recommendation for all qualifications.</p> <p>As continued improvements to the qualification program are made, consider the following:</p> <ul style="list-style-type: none"> <li>• just-in-time training for testing and operational programs</li> <li>• postqualification mentoring and on-the-job training</li> </ul>
<p><b>3. Effective Communications with Internal and External Stakeholders</b></p> <p>3.a The WRAG proved to be a key component of the WBN2 oversight effort. The WRAG closely integrated project priorities and focused the NRC's management oversight.</p>	<p>10 CFR Part 50: The NRC would have to evaluate future 10 CFR Part 50 projects on a case-by-case basis to determine whether this lesson and recommendation apply.</p> <p>10 CFR Part 52: The Office of New Reactors and RII conduct oversight of 10 CFR Part 52 plants. The use of CIPIMS, weekly project meetings, periodic senior management meetings with the licensee, and periodic agency assessments accomplish some of the objectives similar to the WRAG. However, the staff should consider the benefits of a project-specific and integrated</p>	<p>Evaluate the need for and consider the establishment of an oversight group for plants under construction.</p>

WBN2 Lesson Learned	Applicability to 10 CFR Part 50 and 10 CFR Part 52	Recommendations
	management oversight group for 10 CFR Part 52 plants.	
3.b The use of several detailed communication plans for WBN2 proved valuable; however, the development of one integrated and comprehensive communication plan would be easier to update and enhance communications at all levels.	This lesson directly applies to both 10 CFR Part 50 and 10 CFR Part 52 projects. Instead of developing multiple communications plans for a single project, consider developing one integrated project communications plan.	Consider early review and development, as applicable, of an integrated, comprehensive, and project-specific communication plan that includes periodicity of communication, roles and responsibilities, frequently asked questions, use of social media for public outreach, and partnering with the Office of Public Affairs.
<b>4. Construction to Operations Transition Readiness Review</b>		
4.a Inspections of construction component testing should be incorporated into the inspection program and should be used to inform preoperational and startup testing inspections.	<p>10 CFR Part 50: The NRC would have to evaluate future 10 CFR Part 50 projects on a case-by-case basis to determine whether this lesson and recommendation apply.</p> <p>10 CFR Part 52: The NRC incorporated aspects of this recommendation into IMC 2503, "Construction Inspection Program: ITAAC Related Work," dated July 5, 2012.</p>	<p>This recommendation has been addressed for 10 CFR Part 52 in the latest revision of IMC 2503.</p> <p>Consideration should be given as to whether component testing inspections should be incorporated in the 10 CFR Part 50 inspection program and applicable IPs and potential revisions to IMC 1252.</p>
4.b Perform a detailed assessment of the licensee's readiness for an ORAT inspection immediately before the inspection to validate that the licensee's operational programs and safety-related systems have met the ORAT prerequisites.	<p>10 CFR Part 50: The NRC would have to evaluate future 10 CFR Part 50 projects on a case-by-case basis to determine how this lesson and recommendation could be applied.</p> <p>10 CFR Part 52: This lesson does not directly apply to 10 CFR Part 52 plants because operational readiness was incorporated into the combined license process and</p>	<p>The NRC addressed this recommendation for 10 CFR Part 52 through implementation of the combined license process and IMC 2504.</p> <p>For future 10 CFR Part 50 projects, consider whether detailed assessments of the licensee's readiness for an ORAT inspection should be performed immediately before the inspection.</p>



WBN2 Lesson Learned	Applicability to 10 CFR Part 50 and 10 CFR Part 52	Recommendations
	<p>10 CFR Part 52 inspection program (IMC 2504, "Construction Inspection Program—Inspection of Construction and Operational Programs"). For 10 CFR Part 52 plants, operational readiness is based on satisfactory completion of inspections of ITAAC. Completion of targeted ITAAC is closely monitored, inspected, and recorded through the use of CIPIMS.</p> <p>Additionally, IMC 2504 specifically discusses the confirmation of operational programs and the NRC staff's role in informing the Commission of the status of these programs before making the determination that the licensee can load fuel (see 10 CFR 52.103(g)).</p>	
<p>4.c Phase the transition from construction to operations inspections and assessment programs (including enforcement) to reflect the licensee's operational transition and ensure applicable NRC processes are being used.</p>	<p>This lesson directly applies to both 10 CFR Part 50 and 10 CFR Part 52 projects since both programs transition from a construction assessment program to the ROP.</p> <p>Scenarios may exist in the future where testing activities associated with operational programs may be taking place while the plant remains under construction, yet the applicable cornerstones have not transitioned to the ROP.</p>	<p>Evaluate the need for a phased approach for the transition of ROP cornerstones. The evaluation should address which process (construction or ROP) is better suited to assess findings during the different stages of the project where the cornerstone may not have yet transitioned to the ROP.</p>

## **Attachment**

### **Watts Bar 2 Construction Oversight Lessons Learned Working Group Charter**



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

June 26, 2017

MEMORANDUM TO: William B. Jones, Director  
Division of Construction Oversight

FROM: Laura A. Dudes, Deputy Regional Administrator for Construction  
Office of the Regional Administrator **/RA/**

SUBJECT: WATTS BAR UNIT 2 CONSTRUCTION INSPECTION AND  
OVERSIGHT LESSONS-LEARNED

This memorandum transmits the enclosed Watts Bar Unit 2 Construction Inspection and Oversight Lessons-Learned Working Group Charter. The Working Group (WG) is comprised of inter-office staff that have broad knowledge of the construction inspection and assessment programs as implemented under 10 CFR Part 50 and Part 52. The purpose of the Working Group is to assess the U.S. Nuclear Regulatory Commission's (NRC's) construction oversight and inspection activities at Watts Bar 2 and identify lessons learned from that project that can be used to further enhance our construction oversight and inspection activities going forward for both 10 CFR Part 50 and 10 CFR Part 52 facilities.

As the lead for the assessment, you should ensure the WG focuses on the different aspects of the construction inspection programs, included in the Construction Reactor Oversight Process (cROP) through the transition to the Reactor Oversight Process (ROP). This will include development and implementation of the IMC 2517, "Watts Bar Unit 2 Construction Inspection Program," and the transition to IMC 2515, "Light Water Inspection Program-Operations Phase".

The lessons-learned should include, for example those attributes that made the development of the Inspection, Planning and Scheduling (IPS) for Watts Bar Unit 2 under IMC 2517 effective and areas to focus on to improve any future implementation. Addressing the different areas in the March 9, 2017, staff's Watts Bar Lessons Learned Memorandum (ML17067A458), in this context should provide guidance for any future 10 CFR Part 50 new or reactivation activities. You are also to consider the ongoing 10 CFR Part 52 oversight and inspection activities and provide a comparison to the lessons-learned from Watts Bar Unit 2 as a separate attachment for follow up by the Region II Division of Construction Oversight and other divisions within the NRC as applicable.

In addition to the members in your group, Headquarters or Regional support will be provided to you, as requested. The WG should provide a written report to the Region II, Regional Administrator, by August 25, 2017, which at a minimum documents the areas for improvement, their bases, and any WG recommendations.

CONTACT: Laura A. Dudes, ORA  
(404) 997-4472

Documentation of the recommendations should be completed in accordance with Exhibit 2, Effectiveness Review Report Template, of Management Directive 6.8 "Lessons-Learned Program". Region II DCO will ensure that program office recommendations are submitted to the appropriate contact.

Enclosure:

1. Watts Bar Unit 2 Construction Inspection and Oversight Lessons-Learned Working Group Charter

## **Watts Bar Unit 2 Construction Inspection and Oversight Lessons Learned Working Group Charter**

### **PURPOSE**

The purpose of this working group (WG) is to assess the U.S. Nuclear Regulatory Commission (NRC) Watts Bar Unit 2 construction inspection and assessment reactivation through power operation. Lessons learned through this initiative shall consider specific insights into the different areas identified in the staff's March 9, 2017, Watts Bar Lessons Learned Memorandum (ML17067A458) and to identify areas to emphasize. This lessons-learned review should evaluate the NRC's construction inspection and oversight implementation for the effectiveness of the programs and processes, highlight actions that contributed to the effectiveness of program implementation and areas to specifically emphasize where improvements can be made in keeping with the NRC's Principles of Good Regulation (Independence, Openness, Efficiency, Clarity, and Reliability).

The WG's review should also consider the inspection and oversight program implementation for the AP-1000 plants as compared to the lessons-learned from Watts Bar Unit 2. Specific areas of focus will be provided as a separate attachment for follow up by the Region II Division of Construction Oversight.

### **WORKING GROUP MEMBERSHIP**

The WG will be led by Mr. Jason Eargle, Senior Construction Inspector, Division Construction Oversight (DCO). The other full time members are Mr. Phil O'Bryan, Division of Construction Inspection and Operational Programs (DCIP), and Mr. Steven Campbell, Division of Inspection and Regional Support (DIRS).

### **SCOPE**

The WG should focus on the different aspects of the Watts Bar Unit 2 construction program development, through the transition of program responsibilities to operating reactors. The staff's March 9, 2017, Watts Bar Lessons Learned Memorandum provides insights into the program implementation areas of Organization, Construction Inspection, Testing, and Transition. The WG should utilize applicable inspection manual chapters (IMCs), including IMC 2517, "Watts Bar Unit 2 Construction Inspection Program," IMC 2515, "Light-Water Reactor Inspection Program - Operations Phase," and those related to the 10 CFR Part 52 Light Water Reactor Inspection Program. This comparison will inform the lessons-learned, and identify areas for follow-up separate to this WG's activities.

### **PROCESS**

The WG should remain focused on the implementation of the inspection and oversight programs at Watts Bar Unit 2. A comparison to the inspection and oversight program implementation at the AP-1000 facilities should be conducted to identify areas for consideration by Region II's DCO and NRO as needed. Duplication of work already in process or completed as part of other efforts should be avoided. This specific assessment may include vertical slice reviews of the major inspection activities, planning processes and resource loading implemented at WB2 using the staff's lessons-learned and other background information. Vertical slice reviews are examinations of the portions of the requirements, policies, procedures or guidance applicable to the specific actions considered significant within this assessment. WG observations that are

Enclosure

best suited for incorporation into other oversight programs such as the Reactor Oversight Self-Assessment or the Construction Reactor Oversight Process Self-Assessment, should be coordinated and submitted for such consideration.

## **DOCUMENTATION**

The WG should provide a written report to the Region II, Regional Administrator, by August 25, 2017, which at a minimum documents the WG recommendations. Documentation should be completed in accordance with Exhibit 2, Effectiveness Review Report Template, of Management Directive 6.8 "Lessons-Learned Program," and submitted to the contact for that program. The report will be made publically available.

Memorandum to Mr. William B. Jones from Ms. Laura A. Dudes

SUBJECT: WATTS BAR UNIT 2 CONSTRUCTION INSPECTION AND OVERSIGHT  
LESSONS-LEARNED

**DISTRIBUTION:**

Laura Dudes, RII  
William Jones, RII  
Michael Ernstes, RII  
Jamie Heisserer, RII  
Randall Musser, RII  
Rebecca Nease, RII  
Jason Eargle, RII  
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ADAMS: ☒ No. ACCESSION NUMBER: **ML17192A031**

☒ SUNSI REVIEW COMPLETE    ☒ FORM 665 ATTACHED

OFFICE	RII:ORA					
SIGNATURE	LAD					
NAME	L. Dudes					
DATE	06/26/2017					

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