

POLICY ISSUE **(Information)**

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SECY-14-0049

FOR: The Commissioners

FROM: Mark A. Satorius
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SUBJECT: CONSTRUCTION REACTOR OVERSIGHT PROCESS
SELF-ASSESSMENT FOR CALENDAR YEAR 2013

PURPOSE:

The purpose of this paper is to present the results of the U.S. Nuclear Regulatory Commission (NRC) staff's calendar year (CY) 2013 self-assessment of the Construction Reactor Oversight Process (cROP). This paper does not address any new commitments.

SUMMARY:

The results of the CY 2013 self-assessment indicate that the cROP met its program goals and achieved its intended outcomes. The NRC staff found that the cROP met the agency's strategic goals of ensuring safety and security through objective, risk-informed, understandable, and predictable oversight; and adhered to the NRC's principles of good regulation (i.e. independence, openness, efficiency, clarity, and reliability). The staff will continue to solicit input from internal and external stakeholders to further improve the cROP based on feedback and lessons-learned.

BACKGROUND:

The NRC staff performed the CY 2013 self-assessment in accordance with Inspection Manual Chapter (IMC) 2522, "Construction Reactor Oversight Process Self-Assessment Program," dated November 30, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12289A044). The staff has issued two previous cROP self-assessment Commission papers and has briefed the Commission annually on the results following the Agency Action Review Meeting. The Commission has provided the staff with

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direction in the form of a staff requirements memorandum (SRM) as a result of these briefings. In SRM-M130529, "Briefing on the Results of the Agency Action Review Meeting (AARM), 9:00 A.M., Wednesday, May 29, 2013 [...]," dated June 13, 2013 (ADAMS Accession No. ML13164A337), the Commission did not identify any new cROP requirements for staff action.

In SECY-13-0042, "Construction Reactor Oversight Process Self-Assessment for CY 2012," dated April 15, 2013 (ADAMS Accession No. ML13045A462), the NRC staff informed the Commission that it planned to incorporate needed revisions in final guidance documents to support full implementation of the cROP on July 1, 2013. As planned, the staff incorporated lessons-learned from the cROP pilot and fully implemented the cROP.

In SECY-11-0111, "Staff Progress in Resolving Issues Associated with Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)," dated August 12, 2011 (ADAMS Accession No. ML11174A304), the NRC staff proposed ITAAC and construction experience (ConE) program updates be included in the annual cROP self-assessment report beginning in April 2012. The Commission subsequently approved this proposal. ITAAC and ConE program updates are included in Enclosures 1 and 2, respectively.

The cROP does not apply to NRC oversight of construction activities at Watts Bar Nuclear Plant (WBNP), Unit 2. NRC staff guidance for the oversight of WBNP, Unit 2, is in IMC 2517, "Watts Bar Unit 2 Construction Inspection Program" (ADAMS Accession No. ML13136A301). The staff updated the Commission on the status of the WBNP, Unit 2, construction inspection program (CIP) in SECY-12-0103, "Sixth Report on the Status of Reactivation of Construction and Licensing for Watts Bar Nuclear Plant, Unit 2," dated July 24, 2012 (ADAMS Accession No. ML12152A056). To the extent that it would be appropriate to do so, the staff plans to incorporate lessons-learned from the implementation of the WBNP, Unit 2, CIP in the cROP.

DISCUSSION:

The NRC staff conducted numerous activities and obtained data from many sources to ensure that it performed a comprehensive and robust cROP self-assessment for CY 2013. Data sources included the cROP performance metrics described in IMC 2522, internal and external stakeholder feedback, and direction and insight that the Commission provided in recent years. The staff analyzed this information to gauge cROP effectiveness and potential areas for improvement. The scope of the staff's self-assessment included key cROP program areas, cROP communication activities, independent and focused evaluations, and cROP resources.

cROP Program Evaluations

The NRC staff performed evaluations in the three key cROP program areas: the construction inspection program, construction significance determination process (SDP), and construction assessment and enforcement programs.

Construction Inspection Program

NRC inspectors independently verified that licensees constructed new reactors in accordance with the approved design. The NRC staff identified that the licensees and their consortium

partners experienced some challenges with detailed design implementation and configuration control in accordance with their licensing basis in the civil/structural and digital instrument and controls area; and ensured that adequate corrective actions were developed and implemented. The staff continues to be responsive to emerging issues associated with the AP1000[®] construction projects, providing effective inspection oversight and timely technical support to characterize inspection findings. The staff improved the CIP through incorporation of internal feedback provided through the established change process and the integration of ConE. Notable improvements include clarifying screening criteria for inspection findings and streamlining the different types of findings to eliminate confusion.

In 2013, the NRC staff formed the initial test program (ITP) working group to develop NRC inspection guidance related to preoperational and startup/power ascension testing for new reactors. Members of the ITP working group met with representatives of the Chinese Regulator (i.e., National Nuclear Safety Administration (NNSA)) in China in July 2013 for a bilateral meeting on commissioning. The next bilateral meeting with NNSA is tentatively scheduled for September 2014 in China. In CY 2014, the ITP working group will continue to establish the requirements for a preoperational and startup testing inspection program, construct the regulatory framework necessary to implement this program, and provide information and training on this program.

Construction Significance Determination Process

NRC staff implementation of the construction SDP ensured that the significance of findings was accurately characterized. The staff incorporated several lessons-learned identified during the cROP pilot in the SDP guidance document and the SDP continued to be an effective tool for determining the safety and security significance of inspection findings. The staff added guidance to require inspectors to gather the necessary information regarding the impact of the identified deficiency on the respective system's and structure's design function to better facilitate discussions during the Significance and Enforcement Review Panel. In addition, the staff clearly designated the appropriate time in construction when a finding can be considered to have an impact on the respective system or structure's design function. For example, the staff clarified that prior to installation of a portion of a system or structure, a design control finding cannot be considered to have an impact on the design function of that system or structure, and the safety significance of such findings is very low (green).

The industry has requested that the NRC staff consider assigning a color of green to licensee-identified construction violations and has provided a basis for this request. Currently, guidance in the NRC Enforcement Manual states that licensee identification of a violation generally is not considered when determining the significance of the violation. The staff plans to evaluate this request in CY 2014.

There are currently no pending updates to the construction SDP. The NRC staff will continue to monitor SDP implementation and consider improvements as necessary.

Construction Performance Assessment and Enforcement Programs

The NRC staff implementation of the assessment program ensured that the NRC and licensees took appropriate actions to address performance issues commensurate with the issues' safety

significance. The staff has not deviated from the guidance in the construction action matrix. Virgil C. Summer, Units 2 and 3, and Vogtle, Units 3 and 4, remained in the Licensee Response column of the construction action matrix in CY 2013.

On September 9, 2013, the NRC completed the ninth full revision of the NRC Enforcement Manual, which now includes a guidance section for reactors under construction. This section provides information regarding enforcement activities involving facility construction, safeguards, emergency preparedness, and fitness-for-duty. Enforcement Guidance Memorandum 11-006, "Enforcement Actions Related to the Construction Reactor Oversight Process," dated December 21, 2011 (ADAMS Accession No. ML11354A092), provided enforcement guidance for use during the cROP pilot program and will remain in effect until the NRC issues a revision to the Enforcement Policy.

The NRC staff recognizes that a positive safety culture during new reactor construction is paramount. An organization's culture should emphasize safety over competing goals and focus on the traits of a positive nuclear safety culture (as articulated in the NRC's Safety Culture Policy Statement) during plant design, construction, and operation. The staff's current safety-culture approach includes identifying findings with construction cross-cutting aspects, evaluating these findings against a predefined set of criteria to determine whether a substantive cross-cutting issue exists, and conducting appropriate followup actions using a graded approach. In response primarily to internal feedback, the staff increased the timeframe for considering findings with cross-cutting aspects in the assessment process from 6 months to 12 months. During its assessment of licensee performance, the staff did not identify any existing substantive cross-cutting issues at Vogtle, Units 3 and 4, or Virgil C. Summer, Units 2 and 3.

The NRC staff engaged with the Institute of Nuclear Power Operations (INPO), the Nuclear Energy Institute, and other external stakeholders to develop a common safety-culture language for nuclear power reactors. This language, which better aligns the industry's terminology and definitions with those of the NRC's, will enhance communication and will better facilitate common understanding of licensee performance in the area of safety culture. INPO 12-012, "Traits of a Healthy Nuclear Safety Culture," dated January 31, 2013, and the meeting summary from the January 2013 workshop (ADAMS Accession No. ML13038A054) document this effort. The staff also issued NUREG 2165, "Safety Culture Common Language," to formally document the common language for all NRC programs. In addition, the staff incorporated the common language in guidance documents for the NRC's safety culture approach for operating reactors and, in CY 2014, plans to incorporate the common language in guidance documents for the NRC's safety-culture approach for reactors under construction.

cROP Communications and Performance Metrics

The NRC staff used a variety of communication vehicles to ensure that stakeholders have access to cROP information and have ample opportunity to provide feedback. The staff continued to conduct quarterly public meetings with external stakeholders; senior Region II and Office of New Reactors management conducted semiannual visits to the two construction sites during which topics of mutual interest were discussed with senior licensee and other consortium management. The staff also provided opportunities for internal stakeholders to provide input on cROP effectiveness through the internal feedback process, periodic meetings, and telephone

conferences. The staff also maintained the cROP Web pages to ensure that they communicate accurate and timely information to all stakeholders.

Ten of the 11 performance metrics for the cROP met established criteria as defined in Appendix A, "cROP Self-Assessment Metrics," to IMC 2522, dated November 30, 2012 (ADAMS Accession No. ML12289A041). The metric that was not met concerned the timely response to technical assistance requests (TARs). This metric measures the time from receipt of the TAR until its resolution, with a goal of 90 percent being resolved within 30 days. The intent of this metric is to determine whether or not the NRC staff is providing adequate support in the resolution of technical issues that arise. Three of 4 TARs were not resolved within 30 days of their receipt. However, each of these TARs was resolved within 30 days of the requested date for resolution. The staff plans to revise this metric to more accurately measure the staff's support of technical issue resolution. As such, the new metric will measure the percentage of TARs that are resolved within 30 days of the requested date for resolution. The staff's analysis of the performance metrics is further discussed in the annual performance metric report.

Independent and Focused Evaluations

A memorandum dated March 8, 2013 (ADAMS Accession No. ML13066A739), transmitted the charter for a working group formed to assess the NRC's requirements, policies, procedures, and practices during the first year of post-combined-license implementation of Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," of Title 10, "Energy," of the *Code of Federal Regulations* (10 CFR 52). The working group was directed to evaluate whether the outcomes of new reactor program activities have been effective, realistic, and timely. The working group's efforts and recommended program enhancements are contained in the report, "Title 10 of the Code of Federal Regulations Part 52 Implementation Self-Assessment Review: 1 Year Post-Combined License Issuance," dated July 22, 2013 (ADAMS Accession No. ML13196A403). The NRC staff has developed action plans to ensure that the recommended program enhancements are implemented, and several of these action plan items have already been completed.

A working group was formed to develop an overall integrated strategy and plan to support an effective transition of new reactors from construction to operations. The working group was directed to identify gaps and action items needed to ensure that a smooth transition will occur from the cROP to the Reactor Oversight Process (ROP) for new reactors. A report summarizing the group's activities and recommendations will be issued to senior NRC management in CY 2014. The recommendations will be evaluated for potential enhancements to the cROP, ROP, and the transition between them.

cROP RESOURCES:

At the end of CY 2013, 50 full-time employees assigned to Region II were qualified construction inspectors. An additional three employees were undergoing construction inspector qualifications. Construction resident inspector (CRI) staffing is largely based on the amount and type of safety-related activities occurring on site. During CY 2013, the NRC assigned one senior CRI and two CRIs to Vogtle, Units 3 and 4, and also to V.C. Summer, Units 2 and 3. Overall NRC staff effort needed to implement the cROP in CY 2013 increased from previous

years. This was primarily because of an increase in construction activities at Virgil C. Summer, Units 2 and 3, and Vogtle, Units 3 and 4. The staff's direct inspection effort will increase over the next several years as the units proceed through construction and into the preoperational testing phase. The staff will continue to monitor direct inspection hours and will appropriately adjust its direct construction inspection hour estimate of 35,000 up or down, as applicable, as plant construction proceeds. Enclosure 3, "Construction Reactor Oversight Process Resources," further discusses cROP resources.

CONCLUSION:

The self-assessment results for CY 2013 show that the cROP provided effective oversight by meeting program goals and achieving intended outcomes. The cROP was successful in being objective, risk-informed, understandable, and predictable. The cROP also ensured openness and effectiveness in support of the agency's mission and its strategic goals of safety and security. During CY 2013, the NRC staff continued to identify opportunities to strengthen program effectiveness and implementation. The staff recognizes the value of continuous improvement and, therefore, will continue to consider stakeholder feedback in its efforts to apply lessons-learned and improve various aspects of the cROP.

COORDINATION:

This paper has been coordinated with the Office of the General Counsel, which 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. Staff Progress in Resolving Issues
Associated with ITAAC
2. Construction Experience Update
3. Construction Reactor Oversight
Process Resources

Staff Progress in Resolving Issues Associated with Inspections, Tests, Analyses, and Acceptance Criteria

The U.S. Nuclear Regulatory Commission (NRC) staff continues to implement and refine the processes and guidance developed for inspections, tests, analyses, and acceptance criteria (ITAAC) closure. Since the last ITAAC update in SECY-13-0042, "Construction Reactor Oversight Process Self-Assessment for Calendar Year 2012," dated April 15, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13045A493), the staff facilitated 10 public workshops to solicit input, exchange views, and reach consensus on issues involving industry guidance on ITAAC closure, develop additional ITAAC closure notification (ICN) examples for use in guidance, and other construction inspection program topics. Members of the public, the Nuclear Energy Institute (NEI), industry representatives, and other external stakeholders participated in these public workshops. Staff is anticipating the first significant population of ICNs to be submitted over the next year for the Vogtle and Virgil C. Summer new plant construction sites as more ITAAC are completed.

ITAAC Closure Notifications

The first ICN was submitted on November 6, 2012, by Southern Nuclear Operating Company for the backfill compaction under the Seismic Category 1 structures. This submittal is publicly available (ADAMS Accession No. ML12328A160). The ICN was reviewed for acceptance by the NRC's Office of New Reactors (NRO) staff, in accordance with the new ITAAC Closure Verification Process Office Instruction discussed below. The staff completed its review of the ICN and determined that it did not contain sufficient information to demonstrate that the ITAAC had been successfully completed by the licensee, as required by Title 10 of the *Code of Federal Regulations* (10 CFR) 52.99(c)(1). On January 8, 2013, the staff issued a notice of insufficient information (ADAMS Accession No. ML12356A469) that addressed the level of detail contained in the ICN and identified the information that would be needed for the staff to complete its verification review. On February 1, 2013, Southern Nuclear Operating Company resubmitted the ICN, which included the additional information (ADAMS Accession No. ML13032A592). The staff completed its review of this revised ICN and determined that the ITAAC had been completed successfully. The staff issued this determination in *Federal Register* notice (FRN) 78 FR 36277 on June 17, 2013.

In addition to the ICN discussed above, Southern Nuclear Operating Company has submitted six additional ICNs for Vogtle Electric Generating Plant, Unit 3, for review. The NRC staff has completed the review of all six ICNs. Of these, the staff has issued a total of four FRNs documenting the completion of the six ICNs. Southern Nuclear Operating Company has submitted four ICNs for Vogtle Electric Generating Plant, Unit 4. The staff has completed the review of all four ICNs and has published three FRNs documenting their completion. South Carolina Electric and Gas Company has submitted two ICNs for Virgil C. Summer, Unit 2, and the staff has completed its review of both ICNs. No ICNs have been submitted for Virgil C. Summer, Unit 3.

Interim Operations and ITAAC Hearing Procedures

The NRC staff submitted SECY-13-0033, "Allowing Interim Operations Under Title 10 of the Code of Federal Regulations Section 52.103," to the Commission on April 4, 2013 (ADAMS Accession No. ML12289A928), and the associated staff requirements memorandum (SRM) was issued on July 19, 2013 (ADAMS Accession No. ML13200A115). The SECY informed the Commission of issues associated with interim operation while ITAAC hearings were pending and sought approval to allow the staff to make the 10 CFR 52.103(g) finding on all acceptance criteria being met. The Commission in the SRM approved the staff's recommendation that the Commission delegate the 10 CFR 52.103(g) finding to the staff.

Since the issuance of SECY-13-0033 and the associated SRM, the NRC staff, the Office of the General Counsel and the Office of Commission Appellate Adjudication have formed an ITAAC Hearing Procedures Working Group which is developing procedures and templates for use in the hearing process. After seeking stakeholder input on the draft procedures, the staff will submit a SECY paper for Commission approval. In addition, the staff is developing an NRO Office Instruction related to the issuance of the 10 CFR 52.103(g) finding and an associated template for the Information SECY that will be sent to the Commission.

Continuing Enhancements to Industry Guidance on ITAAC Closure

Since the last update on ITAAC process development activities, NRC staff and industry have been proactive in refining the industry guidance in NEI 08-01, "Industry Guidance for the ITAAC Closure Process under 10 CFR Part 52," Revision 4, which was issued in July 2010 (ADAMS Accession No. ML102010076). The methodologies described in NEI 08-01, Revision 4, were endorsed with Regulatory Guide (RG) 1.215, Revision 1, "Guidance for ITAAC Closure under 10 CFR Part 52" (ADAMS Accession No. ML112580018) in May 2012. Through a series of public workshops, the staff continues to work with industry and other stakeholders to develop additional ITAAC closure guidance. The updated guidance has been included in NEI 08-01, Revision 5, which was submitted on July 18, 2013 (ADAMS Accession No. ML13224A058). The staff has completed its review of this latest revision, which was the subject of a February 27, 2014, public meeting. Based on discussions from that public meeting, the staff is assessing whether additional updates are needed in NEI 08-01 to support an update to RG 1.215. The staff will discuss plans to update RG 1.215 in a future public meeting, which is expected to take place in April 2014. The staff will continue to refine guidance, as needed, as experience is acquired through performance of ITAAC and as ICN submittals begin.

ITAAC Process Development Documentation

The NRC staff is developing an NRO Office Instruction on the staff's determination process to support 10 CFR 52.103. This instruction will provide guidance on the review of the licensee's ITAAC completion to support the staff in making the finding in accordance with Section 52.103(g) that all the acceptance criteria were met. In addition, the instruction also provides guidance on the staff's conclusion on the 52.103(g) finding for interim operation under 10 CFR 52.103(c). The staff is also developing the template which will be used to provide an Information SECY to the Commission informing them that the staff is ready to make the 52.103(g) finding.

Office of the Inspector General Audit Report

The Office of the Inspector General (OIG) completed its audit of the ITAAC process and subsequently issued its ITAAC audit report, dated July 12, 2012 (ADAMS Accession No. ML12194A434). The report includes 10 recommendations, and the NRC staff addressed each in a response memorandum dated August 16, 2012 (ADAMS Accession No. ML12212A177). The staff issued the latest status update on August 1, 2013 (ADAMS Accession No. ML13192A297). In an October 21, 2013, memorandum to the staff (ADAMS Accession No. ML13294A570), the OIG stated that of the 10 recommendations, 7 were closed, 2 were resolved, and 1 remains unresolved. The remaining unresolved item concerns the development and implementation of a change-management process to address future change in the ITAAC process. This recommendation is being addressed through the evaluation of an agency-level management system, which is expected to include a change management process to address future changes in NRC processes. While this agency-level management system is being developed, NRO's Division of Construction Inspection and Operational Programs will develop a formal change management process that can be used to address future changes in the ITAAC process.

Construction Experience Update

During 2013, the U.S. Nuclear Regulatory Commission (NRC) staff continued to screen daily event issues through the Operating Experience Clearinghouse meetings. The program continued to ensure that all relevant construction experience (ConE), both domestic and international, was evaluated for applicability to the NRC's new reactor licensing and vendor and construction inspection programs. In addition, the ConE program issued three information notices dealing with recent safety culture issues, instrument sensing line sloping problems and fabrication welding problems, and supported many others. The ConE program disseminated construction-related insights and lessons-learned in 12 operating experience (OpE) communications. Jointly with the Office of Nuclear Reactor Regulation's (NRR's) OpE group, ConE initiated three issues for resolution (IFR) of events requiring further technical evaluation and closed three IFR. The staff exchanged ConE information with international partners and with the Institute of Nuclear Power Operations. Through these efforts, insights were offered to internal and external stakeholders on the design, construction, and operation of new reactors. The staff will continue to focus on the timely evaluation and dissemination of domestic and international ConE.

The NRC staff continued the implementation of the center of expertise between NRR and the Office of New Reactors for OpE and ConE programs. The purposes of this effort are to: (1) combine ConE program activities with those of the OpE program to improve the overall efficiency and effectiveness of both programs, and (2) ensure that technical consistency between the two program offices is maintained. In support of this effort, the staff issued and is implementing a combined OpE and ConE office instruction and an associated Inspection Manual chapter. The staff is currently working on a joint OpE/ConE handbook.

Construction Reactor Oversight Process Resources

The initial direct inspection effort estimate is 35,000 hours per unit over the life of the construction project. This number includes 15,000 hours for inspections, tests, analyses, and acceptance criteria (ITAAC)-related inspections; 10,000 hours for construction and operational program inspections; 5,000 hours for reactive inspections above the baseline program in response to licensee performance issues, allegations, and nonperformance issues/events; and 5,000 hours for technical support for construction inspection.

Table 1 summarizes the U.S. Nuclear Regulatory Commission (NRC) staff resources expended at the four AP1000[®] units under construction, in hours, for the Construction Reactor Oversight Process during the past three calendar year (CY) inspection cycles. Significant work related to ITAAC increased in CY 2013 at Vogtle, Unit 3, and Summer, Unit 2, with a corresponding increase in NRC inspection effort. Because it is still early in plant construction, ITAAC-related inspection hours are relatively low, allegation inspection hours are very low, and headquarters technical support hours are also low compared to the estimates. The staff's overall direct inspection effort will increase over the next several years as the units proceed through construction and into the preoperational testing phase. The staff will continue to monitor direct inspection hours and will appropriately adjust its overall direct construction inspection hour estimate of 35,000 up or down, as applicable, as plant construction proceeds.

Table 1: Actual Construction Inspection Program Resource Expenditures 2011–2013 (Hours)					
Inspection Activity	Hour Estimate Per Plant	Summer U2	Summer U3	Vogtle U3	Vogtle U4
ITAAC Direct Inspections	15,000	1905	331	1796	530
Program Direct Inspections	10,000	2302	1252	2646	989
Reactive and Allegation Inspections	5,000	0	0	39	0
Headquarters Technical Staff Inspection Support*	5,000	372	372	372	372
TOTAL	35,000	4579	1954	4852	1891
<p>* To date, NRC Headquarters technical staff inspection support hours expended have not been linked to a specific docket. Therefore, it is not possible to determine the expended hours on a unit-specific basis. The total hours have been split evenly between the four units under construction in this table.</p>					