

POLICY ISSUE INFORMATION

October 17, 2008

SECY-08-0155

FOR: The Commissioners

FROM: R. W. Borchardt
Executive Director for Operations

SUBJECT: UPDATE ON THE DEVELOPMENT OF THE CONSTRUCTION
INSPECTION PROGRAM FOR NEW REACTOR CONSTRUCTION
UNDER 10 CFR PART 52

PURPOSE:

This information paper summarizes the development of the construction inspection program for new reactor construction under Title 10 of the *Code of Federal Regulation* (10 CFR) Part 52 and the incorporation of lessons learned from construction experience into the U. S. Nuclear Regulatory Commission's (NRC's) program. This paper does not address any new commitments or resource implications.

SUMMARY

This information paper summarizes the development of the construction inspection program for new reactor construction under Title 10 of the *Code of Federal Regulation* (10 CFR) Part 52. The major topics discussed are ongoing development of the assessment process, enforcement process development, evaluation of safety culture attributes within the construction inspection program, and implementation of enhancements to the NRC's operating experience program to better integrate construction experience for new reactor construction under 10 CFR Part 52.

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The program has been developed with stakeholder input and used the existing reactor oversight program as a point of reference. Major program elements will include:

- Evaluating construction issues utilizing a defined process;
- Providing a predictable NRC response for a given level of overall licensee performance during construction by using the construction response table;
- Utilizing the traditional enforcement approach for construction;
- Developing a construction experience program; and
- Communicating domestic and international operating experience related to construction amongst stakeholders and incorporating appropriate lessons learned in NRC's policies and programs.

Future activities include staffing an allegation program infrastructure for NRO and evaluating attributes important to safety culture for potential use in the construction inspection program.

BACKGROUND:

The Division of Construction Inspection and Operational Programs in the Office of New Reactors (NRO) and the Region II Center for Construction Inspection have been conducting periodic public meetings with the industry and other NRC stakeholders for the past 21 months to discuss the development of programs and procedures related to new reactor construction under 10 CFR Part 52. One of the primary purposes of these meetings has been to develop NRC programs in the areas of assessment, safety culture, and enforcement for the oversight of new reactor construction.

Additionally, this paper also addresses the staff commitment, as discussed in Staff Requirements Memorandum dated November 13, 2007, to keep the Commission informed on how lessons from domestic and foreign construction experience are being incorporated into NRC programs.

DISCUSSION:

Assessment Process

A fundamental goal of the NRC's oversight of new reactor construction activities is to ensure that each plant is constructed in accordance with the design and will operate safely. The intent of the NRC's oversight program is to ensure that licensees (and their contractors/vendors) detect and correct problems in a manner that focuses on quality and safety as top priorities. The construction inspection program and construction assessment process have been structured to reflect the rapidly changing nature of a construction environment. Additionally, the staff has evaluated NUREG-1055, "Improving Quality and the Assurance of Quality in the Design and Construction of Nuclear Power Plants," the lessons learned from domestic construction experience, as well as the lessons learned and challenges to our international regulatory counterparts who are currently overseeing nuclear construction activities. These insights have been incorporated into construction inspection and assessment documents. As a result, the staff has developed a transparent and predictable process that objectively evaluates licensee performance of construction activities, and the effectiveness of licensee or contractor oversight and quality assurance efforts associated with construction.

The attributes and structure of Inspection Manual Chapter (IMC) 0305, "Operating Reactor Assessment Program," were used as a point of reference for the development of the assessment process for new nuclear reactor construction under 10 CFR Part 52. Relevant aspects of IMC 0305 that will be utilized for assessing licensee performance during construction were incorporated into the development of the construction assessment process.

The construction assessment process is documented in IMC 2505, "Periodic Assessment of Construction Inspection Program Results," and will be implemented on a periodic basis to evaluate licensees' performance and to assess the allocation of NRC inspection resources. The construction assessment process will begin after a Limited Work Authorization or a Combined License has been issued, and the NRC has begun inspections under either IMC 2503, "Construction Inspection Program: Inspections of Inspections, Tests, Analysis, and Acceptance Criteria (ITAAC)," or IMC 2504, "Construction Inspection Program - Non-ITAAC Inspections," and there is sufficient activity occurring for an assessment to be meaningful.

The goal of oversight during the fast-paced activities of new reactor construction is to quickly and effectively identify and resolve issues that may arise. The Construction Finding Flowchart (Enclosure 1) visually depicts the process that the NRC will follow in order to disposition a construction issue. NRC-identified issues that are greater-than-minor and are not in compliance with regulatory requirements or legally binding licensee commitments are considered to be findings. Findings will be evaluated to determine if the issue is related to an ITAAC, if the issue has an impact on the ITAAC acceptance criteria, and if the licensee has submitted an ITAAC closure letter. Appropriate regulatory actions will be taken based on the staff's evaluation of the finding. In addition, all violations will be evaluated in accordance with the Enforcement Policy to determine the appropriate severity level. For the construction inspection program, the traditional enforcement approach will be used to assess significance in lieu of a Significance Determination Process (SDP) for construction. Escalated enforcement actions will be included in the assessment process for 6 months from the date of the issuance of the violation, or until the NRC has accepted the licensee's corrective actions, whichever is longer.

The staff has developed a Construction Response Table (CRT) (Enclosure 2). The CRT will be used to develop a predictable NRC response to licensee's performance. Significant issues that are identified could potentially have broader implications regarding the licensee's performance than just the single issue. Therefore, significant issues are the input to the CRT and will result in the inspection program being expanded beyond the baseline inspection program to review either additional samples in the area of concern or to review non-targeted ITAAC in the area of concern. As such, the CRT provides for increasing NRC actions in response to declining licensee performance. Increasing NRC actions could include additional NRC inspections, increased engagement of NRC management with licensee management, and additional enforcement actions. As the expected relatively short construction periods make it likely that Performance Indicators (PIs) would not have time to develop meaningful insights, PIs will not be developed for the construction inspection program.

The construction assessment process is divided into three basic parts: continuous assessment, quarterly assessment, and semi-annual performance review. The periodic assessments will continue until construction is complete and the assessment process has transitioned to the Reactor Oversight Process (ROP). The construction inspection and assessment process will include a review of inspection findings, enforcement, allegations, safety culture, and the results of NRC program inspections. During performance assessments, violations applicable to the

assessment period will be evaluated to determine if a construction safety focus issue (CSFI) exists by determining if the violations had a common cause warranting additional licensee and/or NRC attention. A CSFI will be an NRC-identified issue concerning a common cause for violations identified during an assessment period. The appropriate column of the CRT applicable to the licensee will be determined by the violations and CSFIs identified during the assessment period. Performance assessment letters will generally be issued following the semi-annual assessment meetings.

As is done with the operating plants, plants under construction with significant performance weaknesses will be discussed at the existing Agency Action Review Meeting to confirm the appropriateness of NRC actions. The Commission will be briefed on the results of this meeting. Additionally, an annual public meeting will be held near the new reactor construction site. This meeting provides an opportunity to engage interested stakeholders on licensee's performance and the role of the NRC.

Use of Safety Culture Attributes

Reviews of historical construction issues identified in the U.S. (e.g., NUREG-1055) and current international experiences have reemphasized the importance of safety culture in the new construction environment. While the construction assessment process will address components of safety culture for new reactor construction, final details of the process have not been fully developed to date. The staff has discussed proposed approaches that include consideration of areas important to safety culture in the assessment process during public meetings with stakeholders. Considerable feedback regarding NRC review of areas important to safety culture has been received from the industry during these public meetings. The staff is continuing to monitor the evaluation of safety culture components within the framework of the ROP and to engage with industry and other public stakeholders to discuss proposed approaches for including safety culture in the context of the construction assessment process. CSFIs are envisioned to be similar to the ROP's substantive cross-cutting issues in order to address the agency's review of attributes important to safety culture. Informed by ongoing ROP initiatives, the final inputs to CSFIs will continue to be developed with stakeholders during the conduct of future public meetings.

Enforcement

Violations identified during construction inspections will be dispositioned utilizing a traditional enforcement approach because the staff has concluded that it is most appropriate for this application. The use of traditional enforcement has already been established and was effectively used to address issues identified by inspectors during the Browns Ferry 1 recovery project. Traditional enforcement is also being used for the Watts Bar Unit 2 reactivation.

A proposed revision to the Enforcement Policy was published in the *Federal Register* on September 15, 2008, for public comment. The proposed revision contains examples of violations (including construction) to reflect the 10 CFR Part 52 licensing process and lessons learned. Violations that do not meet the criteria of Severity Level I, II, III, and IV would be considered minor and, as in the ROP, would not typically be documented by NRC inspectors.

The use of non-cited violations (NCVs) as part of the enforcement process is predicated on a licensee having an effective correction action program (CAP) into which identified issues are entered and are effectively resolved in a timely and lasting manner. The NRC will assess the effectiveness of the CAP by screening CAP issues on a frequent basis, performing semi-annual trend reviews, reviewing the disposition of NRC identified issues, and performing periodic problem identification and resolution team inspections. Licensee performance weaknesses in the identification and resolution of issues in the CAP may lead to enforcement actions.

Initially, it is expected that licensee individuals will have limited experience with the implementation of their licensee's CAP. Therefore, prior to or near the beginning of construction for each plant, problem identification and resolution inspections will be conducted to assess the licensee's implementation of their CAP for the purpose of making a determination regarding the use of NCVs. A subsequent sufficient degradation of the CAP program may result in the NRC reverting to the issuance of a Notice of Violation for Severity Level IV violations instead of issuing non-cited violations. The use of a standardized and clearly documented CAP program has been discussed at public workshop meetings. The industry continues to develop a standardized CAP program which the NRC will review and will endorse, if found acceptable.

Construction Experience

As discussed in SECY-08-0117, in close coordination with the Office of Nuclear Reactor Regulation, the staff is developing a construction experience program for new reactors. The staff is communicating construction experience to stakeholders via generic communications and will continue to incorporate lessons learned into NRC programs from recent and ongoing domestic and international construction activities. For example, issues identified at the fuel cycle facilities that are under construction will be considered in the development of inspection documentation and enforcement thresholds. In another example, a recently identified Catawba construction error regarding incorrectly installed floor drain orifice plates is being incorporated into construction inspection program guidance.

The staff also continues to interact extensively with international colleagues regarding experience in ongoing new reactor construction inspection and assessment activities and has incorporated lessons learned into NRC programs. For example, recent safety culture issues identified at foreign construction sites are being considered during the development of guidance for inspection and assessment of safety culture components. A recent internal flooding event at a foreign reactor construction site is being evaluated for lessons learned and a possible generic communication regarding vulnerabilities to adverse weather. Another recently identified issue at a foreign reactor construction site concerning containment liner bulging and weld joint quality controls were assessed against the inspection procedures and communicated to all NRC construction inspectors via the internal construction experience program. The staff has realized great benefit from the evaluation of domestic and international construction activities and will continue to assess events for incorporation into NRC programs.

Future Activities

Currently, the new reactor allegation process is being supported by the Office of Nuclear Reactor Regulation, using existing agency policies and procedures. To date, there have been relatively few allegations related to new reactor activities. As planned, NRO will develop its own allegation review infrastructure to support the anticipated increase in allegations associated with

new construction activities. The Region II Center for Construction Inspection has received allegations associated with construction activities related to fuel cycle facilities and is utilizing the existing allegation process to address these issues.

The staff incorporated the comments and insights from stakeholders and meetings over the past 21 months into IMC 2505, which was approved on September 25, 2008. The incorporation of areas important to safety culture into the inspection and assessment process will occur following completion of the ongoing staff efforts with full consideration of stakeholders' input and feedback. Once the inspection and assessment process for new reactors is fully developed and includes safety culture attributes, a review will be conducted to determine if there are any additional resource needs required to properly implement the program.

NRO has been developing the necessary programs and procedures to address the inspection of anticipated new nuclear power plant construction. The staff will continue to discuss the development of these programs and procedures with stakeholders in periodic public meetings and Commission briefings.

COORDINATION:

The Office of the General Counsel reviewed this report and has no legal objection.

/RA by Bruce S. Mallett acting for/

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Enclosures:

1. Construction Finding Flowchart
2. Construction Response Table

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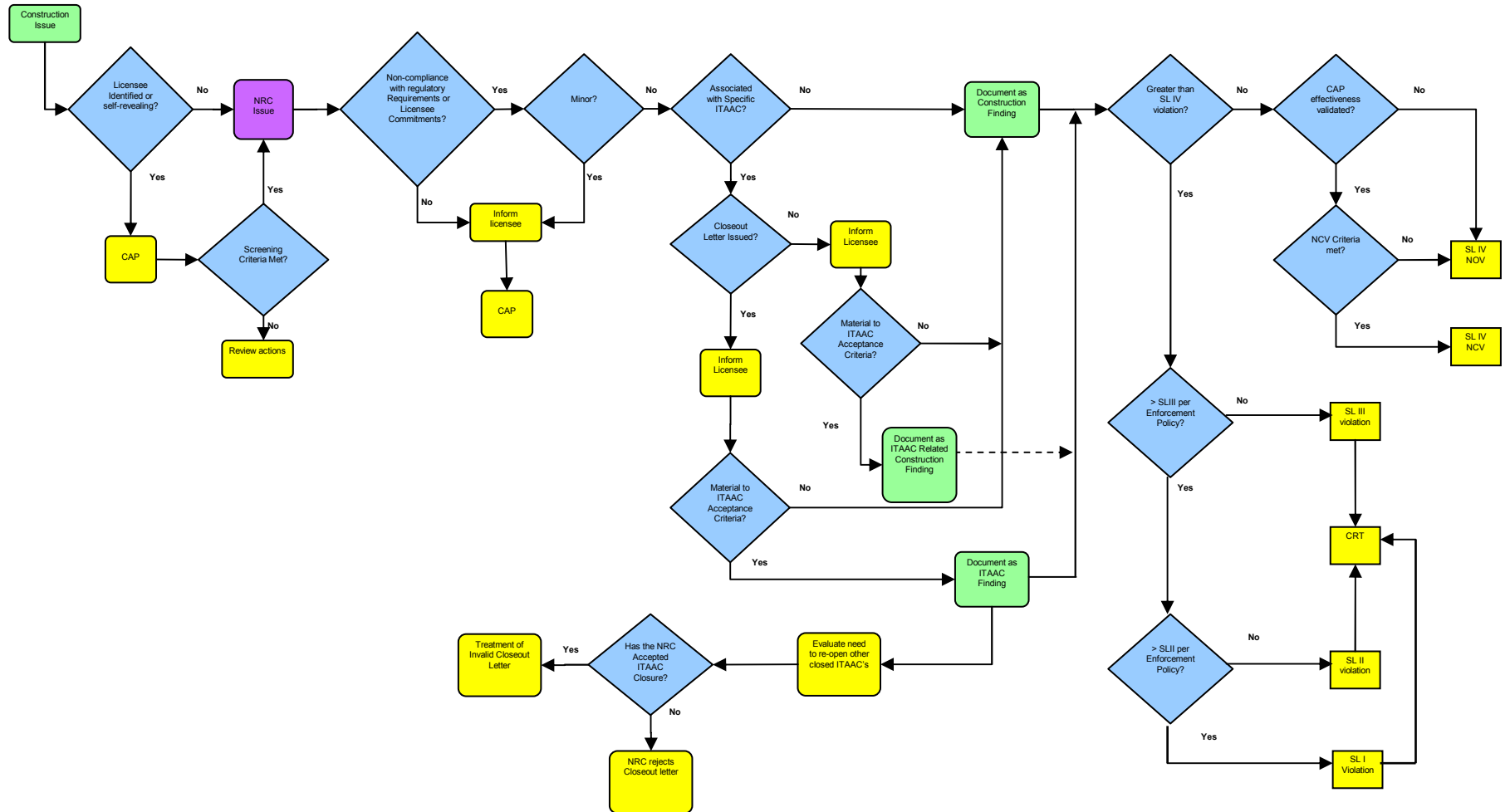
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Construction Findings Flowchart



Construction Response Table

		Baseline Program column	Increased Focus Program column	Expanded Program column	Unacceptable Performance column
RESULTS		Only SL IV violations and no Construction Safety Focus Issues (CSFIs). License requirements fully met	One or two SLIII violations and/or CSFIs. License requirements met with some challenges to licensee	Any combination of three SL III violations or CSFIs, or one SL II violation. License requirements met with some significant challenges to licensee	One SL I violation, multiple SLII violations, or a combination of the following: 1 SL II and a total of four SL III violations/CSFIs; or a total of seven SL III violations and /or CSFIs. Loss of Confidence to construct within licensing requirements in areas of concern
RESPONSE	Regulatory Performance Meeting	None	Branch Chief (BC) or Division Director (DD) Meet with Licensee	Deputy Regional Administrator (DRA) or designee meet with senior licensee management	Executive Director for Operations (EDO) or designee meet with senior licensee management
	Licensee Action	Licensee Corrective Action	Licensee root cause evaluation and corrective action with NRC Oversight	Licensee cumulative root cause evaluation with NRC Oversight.	Licensee Performance Improvement Plan and Independent inspection with NRC Oversight.
	NRC Inspection	Baseline Inspection Program	Limited increase in NRC oversight of area(s) of concern. Expanded Inspection in accordance with IP 90001.	Expanded NRC oversight in area(s) of concern. ITAAC sample increased as appropriate. Expanded inspection in accordance with IP 90002.	Reactive team inspection in area(s) of concern. Expanded inspection in accordance with IP 90003.
	Regulatory Actions	None (Additional actions considered for plants exiting Expanded Program column or Unacceptable Performance column).	Additional inspection only. (Additional actions considered for plants exiting Expanded Program column or Unacceptable Performance column).	Additional inspection only. Evaluate continued use of non-cited violations. (Additional actions considered for plants exiting Unacceptable Performance column).	At minimum, issue Confirmatory Action Letter. Evaluate need for Demand for Information and/or Order. Discontinue use of non-cited violations
COMMUNICATION	Assessment Letters	BC or DD review/sign assessment report (w/ inspection plan)	DD review/sign assessment report (w/ inspection plan)	DRA review/sign assessment report (w/ inspection plan)	RA or EDO review/sign assessment report (w/ inspection plan)
	Annual Public Meeting	SRI or BC Meet with Licensee	BC or DD Meet with Licensee	DRA (or designee) Discuss Performance with Licensee	EDO (or designee) Discuss Performance with Licensee
	Commission Involvement	None	None	None	Commission Meeting with Senior Licensee Management
	INCREASING SAFETY/REGULATORY SIGNIFICANCE ----->				