

Request for ANS Performance Indicator Guidance Change

Emergency Preparedness Performance Indicators

EP03, "Alert and Notification System Reliability"

PURPOSE

This white paper was prepared by NSIR/DPR/LIB NRC in response to Reactor Oversight Process Feedback Form 71114.02-1266 generated by NRC Region III personnel in response to observed licensee behavior. The white paper requests the Nuclear Energy Institute (NEI) Reactor Oversight Process (ROP) Committee to engage in discussion with the Nuclear Regulatory Commission (NRC) in an effort to revise the NEI 99-02 guidance for the Alert and Notification System (ANS) Reliability Performance Indicator (ANS PI). Specifically, the NRC seeks to prohibit activities performed in advance of a regularly scheduled ANS test that would preclude evaluation of the as-found condition of the ANS. An example of such an activity is performing a pre-test to identify potential system problems and to correct them prior to the regularly scheduled test. Routine preventative maintenance performed soon prior to a regularly schedule ANS test could have a similar effect. The NRC believes that such pre-conditioning degrades the validity of the ANS PI as an indicator of the reliability of the ANS to perform its design function. The current ANS PI guidance in NEI 99-02 is silent in this regard; an area that the NRC believes needs to be addressed if the ANS PI is to continue as a uniform and valid indicator of ANS reliability and a replacement for direct inspection activity. The proposed resolution in this white paper will not impact PI data collection, data reporting, or record keeping practice. The proposed resolution will not affect any licensee which is testing its ANS in a manner that supports the validity of the ANS PI.

For the ANS PI to be a valid indicator of ANS reliability to perform its design functions, the data for the PI must be collected under conditions which simulate as closely as feasible the conditions under which the ANS will be called to alert and notify the public. There is no opportunity during an actual emergency to pre-condition the ANS response and none should be deemed acceptable for regularly scheduled ANS tests scored by the ANS PI.

BACKGROUND

NEI 99-02 describes the purpose of the ANS PI as follows:

This indicator monitors the reliability of the offsite Alert and Notification System (ANS), a critical link for alerting and notifying the public of the need to take protective actions. It provides the percentage of sirens that are capable of performing their safety function based on regularly scheduled tests.

NEI 99-02 further states that the ANS PI provides a uniform industry reporting approach that is not intended to replace any Federal Emergency Management Agency (FEMA) ANS reporting requirement. NEI 99-02 describes the periodic tests as the regularly scheduled tests, documented in the licensee's test plan or guidelines, which are conducted to actually test the ability of the sirens to perform their function. Tests performed for maintenance purposes are not counted in the performance indicator database. The guidance provides that the scheduling frequency and test methodology be consistent with the FEMA-approved final ANS design report for the particular site.

Section IV.D.3 of Appendix E to 10 CFR Part 50, provides that each nuclear power reactor licensee shall demonstrate that administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway EPZ. This section also establishes the design objective of the system as having the capability to essentially complete the initial notification of the public within the plume exposure pathway EPZ within about 15 minutes. Although not every event will require such urgent action, the capability must be maintained if the public is to be adequately protected in the event of a radiological emergency. The NRC regulations and regulatory guidance documents do not establish ANS testing scope, frequency, or methodologies, since offsite preparedness is under the cognizance of FEMA. FEMA evaluates the ANS design and observes initial ANS testing to determine whether the as-built design meets the commitments made in the ANS final design report. Periodic testing and maintenance requirements identified in the design report serve to ensure that the quality and capabilities of the approved design are maintained. The ANS PI trends and reports ANS performance and, in doing so, provides information the NRC relies upon, in lieu of direct inspection activity, to determine whether the ANS performance demonstrates the capability required by regulation. The NRC must know that the ANS PI data are valid and that they represent the true performance status of the site's ANS.

In May 2007, the ANS at a Midwest plant failed to actuate during a regularly scheduled monthly siren sounding test. Additional actuation attempts were made and 22 minutes later, the sirens sounded. The ANS failed to demonstrate its capability of performing its design function, the test was categorized as being an unsuccessful test, and the site's ANS PI went Yellow. During the 95002 supplemental inspection conducted in February 2008, the inspectors reviewed test data packages for the period January 2000 through January 2008 and determined that between 30 minutes to two days prior to the regularly scheduled test, the technician pre-tested the ANS activation equipment in the primary activation center (PAC) to verify that it would properly operate during the subsequent activation test. The pre-test included a polling of the sirens as well as visual inspections of the primary activation center equipment. The inspectors noted that the ANS activation equipment was rarely used other than for the regularly scheduled test and the pre-test. The inspectors also noted that every ANS test performed during this eight year period was preceded by a pre-test. The inspectors identified cases in which the pre-test identified equipment failures were corrected prior to execution of the regularly scheduled ANS test, thereby enabling the licensee to report more successful ANS PI test opportunities than would have been the case without the pre-test.¹ The inspectors believe that if the pre-testing had not been performed, the failures of the regularly scheduled ANS test may have caused appropriate corrective actions to be implemented to improve the ANS reliability and that the failures observed in May 2007 may have been avoided.

In 2005, NRC Region II submitted a feedback form, 71151-941 that identified (1) licensees conducting training just prior to a graded exercise, and (2) licensees conducting unscheduled ANS tests and doing maintenance prior to regularly scheduled PI tests. The regional office recommended creating an FAQ to document the resolution of the issue. The feedback and a draft FAQ was brought to the ROP Working Group. The Working Group determined preconditioning to be an event that should be handled by direct inspection rather than the Performance Indicator process. The feedback form closure stated that "Through discussion of this topic, the ROP Working Group has put licensees on notice that this [treatment as direct inspection] will be the expected practice and outcome."

¹ Consistent with NEI 99-02 guidance, the licensee did not score the pre-test failures as failed test opportunities in these cases.

DISCUSSION

This issue was raised previously in ROP Feedback Form 71151-941. Contrary to the ROP Working Group's conclusion on that feedback form that the licensees had been put on notice, the NRC identified a licensee who continued to perform pre-tests for as long as the site's ANS PI has been in place. Further, the inspectors, Region III management, and NRC Headquarters, were not able to identify a viable regulatory approach to initiate enforcement action against this licensee, thereby restricting the NRC's ability to address preconditioning as a direct inspection issue.

- The NRC regulations and regulatory guidance do not establish test frequency, scope, and methodology for the regularly scheduled ANS tests. Appendix E to 10 CFR Part 50 broadly requires that the licensee demonstrate that administrative and physical means have been established for alerting and providing instruction to the public. Although the validity of the ANS PI is in doubt during this period, no violation of an NRC emergency preparedness regulation occurred.
- Although 10 CFR 50.9 addresses the completeness and accuracy of information, the NRC determined that this would not be a viable approach in that the information submitted to the NRC could be described as inaccurate only if preconditioning had been prohibited in regulation. Although § 50.9 has been used in some cases involving miss-reported PIs, NEI 99-02, the document that governs the NRC-endorsed industry performance indicator program, does not prohibit preconditioning either. Accordingly, the data cannot be described as being incomplete or inaccurate.
- FEMA regulations and the guidance in NUREG-0654/FEMA-REP-1 (incorporated by reference into the FEMA regulations) do not prohibit preconditioning either. Even if the FEMA regulations did so prohibit preconditioning, the NRC would not have the authority to cite violations of another agency's regulations.

The NEI performance indicator program was advanced by the industry as an alternative to direct inspection of the activities addressed by the PIs. The NRC endorsed NEI 99-02 as an acceptable portion of the ROP process. As such, the NRC has a significant regulatory interest in the validity of the ANS PI. However, since the PI program is administered by the industry, the

NRC believes that it is the industry that must take action to ensure the continued uniformity and validity of the ANS PI through revision of the guidance in NEI 99-02. The NRC does not view the addition of language prohibiting preconditioning to be inconsistent with the scope and content of many of the ANS PI clarifying notes already provided in NEI 99-02 to establish and maintain a uniform and valid performance indicator. Because of the risk-significant nature of the ANS, the NRC requests that advance notice of the NEI 99-02 revision be provided to licensees in the form of a PI FAQ.

RECOMMENDATION

The NRC proposes the following clarifying note for consideration by the ROP Working Group:

A licensee should not perform any maintenance or test of the ANS that has the affect of masking the actual as-found condition of the ANS when the regularly scheduled ANS test is performed (i.e., preconditioning). Pre-testing the ANS equipment and correcting identified deficiencies prior to a regularly scheduled test is incompatible with the ANS PI purpose as a uniform and valid indicator of the ANS reliability to perform its safety function. Although periodic scheduling conflicts may not always be unavoidable, scheduling preventative maintenance soon before a regularly scheduled ANS test should be avoided to the extent feasible. Unplanned corrective maintenance needed to restore ANS operability, and the post-maintenance testing associated with that maintenance, prior to a regularly scheduled ANS test is acceptable.

The NRC will be receptive to alternative language that accomplishes the same end point.

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