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MEMORANDUM TO: Christopher G. Miller, Director  
Division of Inspection and Regional Support  
Office of Nuclear Reactor Regulation

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SUBJECT: RESULTS OF THE CALENDAR YEAR 2018 REACTOR  
OVERSIGHT PROCESS SELF-ASSESSMENT  
EFFECTIVENESS REVIEW ON THE SAFETY CULTURE  
PROGRAM

This memo provides the results of the calendar year 2018 Reactor Oversight Process (ROP) self-assessment effectiveness review of the Nuclear Regulatory Commission's (NRC's) safety culture oversight program for operating power reactors. The staff previously provided information to the Commission on the overall effectiveness of the safety culture program, and NRC's oversight in that area, as part of SECY-18-0071, "Evaluation of the Implementation Status of Certain Voluntary Industry Initiatives." In that paper, the staff documented its conclusion that the current process for monitoring and assessing safety culture at nuclear power plants, including the industry's implementation of Nuclear Energy Institute (NEI) 09-07, "Fostering a Strong Nuclear Safety Culture," was effective. The results of that evaluation can be found in the Agencywide Documents Access and Management System at Accession No. ML18078A156. This memo supplements that evaluation with a review of the effectiveness of an initiative to establish common safety culture language and of the effectiveness of the NRC's safety culture assessor qualification program.

### **History of the NRC's Safety Culture Program**

The NRC has long recognized the importance of a strong nuclear safety culture. In 1989, in response to an incident at the Peach Bottom Atomic Power Station, the NRC issued "Policy Statement on the Conduct of Nuclear Power Plant Operations." This policy statement describes the NRC's expectation that licensees place appropriate emphasis on safety in the operation of nuclear power plants, including personal dedication and accountability of all individuals engaged

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in any activity that has a bearing on the safety of nuclear power plants. Additionally, the policy statement underscores management's responsibility for fostering the development of a healthy safety culture at each facility and for providing a professional working environment in the control room—and throughout the facility—to ensure safe operations.

In 1996, following an incident at the Millstone Power Station in which workers were retaliated against for whistleblowing, the Commission issued "Freedom of Employees in the Nuclear Industry to Raise Safety Concerns without Fear of Retaliation." This policy statement describes the NRC's expectation that all NRC licensees establish a safety conscious work environment (SCWE) in which workers feel free to raise nuclear safety concerns without fear of harassment, intimidation, retaliation, or discrimination. A SCWE is an important attribute of a strong nuclear safety culture.

In 2002, investigations into the discovery of degradation of the reactor pressure vessel head at Davis-Besse Nuclear Power Station revealed that safety culture weaknesses were the root cause of the event. As a result, the NRC made significant changes to the ROP to strengthen the agency's ability to effectively monitor licensee performance and detect potential safety culture weaknesses during inspections and performance assessments. Regulatory Issue Summary 2006-13, "Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture," dated July 31, 2006, provides information to reactor licensees on the revised ROP. Most notably, the NRC revised the existing cross-cutting areas of human performance, problem identification and resolution, and SCWE to incorporate aspects that are important to safety culture. The intent of the revisions to the ROP was threefold:

1. Provide better opportunities for the NRC staff to consider safety culture weaknesses and to encourage licensees to take appropriate actions before significant performance degradation occurs.
2. Provide the NRC staff with a process to determine the need to specifically evaluate a licensee's safety culture after performance problems have placed the licensee in the Degraded Cornerstone column of the Action Matrix.
3. Provide the NRC staff with a structured process to evaluate the licensee's safety culture assessment and to independently conduct a safety culture assessment for a licensee in the Multiple/Repetitive Degraded Cornerstone column of the Action Matrix.

In 2008, the NRC developed several additional changes to the guidance on oversight of safety culture in the ROP as a result of lessons learned from a supplemental inspection conducted at the Palo Verde Nuclear Generating Station.

The NRC's final Safety Culture Policy Statement (SCPS) was published on June 14, 2011. The SCPS provides the NRC's expectation that individuals and organizations performing regulated activities establish and maintain a healthy safety culture that recognizes the safety and security significance of their activities and the nature and complexity of their organizations and functions. Because safety and security are the primary pillars of the NRC's regulatory mission, consideration of both safety and security issues, commensurate with their significance, is an underlying principle of the SCPS.

### **Effectiveness Review Methodology**

In an effort to evaluate the effectiveness of the safety culture common language initiative and the safety culture assessor qualification program, the Division of Inspection and Regional Support (DIRS) implemented the process below:

- Drafted a survey for internal stakeholders.
- Provided survey questions to regional Technical Support Branch Chiefs.
- Provided 30 days for completion of the survey.
- Solicited industry feedback during routine ROP public meetings.
- Received input from internal and external stakeholders.
- Collected and evaluated the information received.

### **Safety Culture Common Language Initiative**

Before work began on the 2011 SCPS, the nuclear power industry approached the NRC about developing a shared set of terms to describe safety culture. With insights gained during the development of the SCPS, the Office of Nuclear Reactor Regulation, along with the Institute of Nuclear Power Operations (INPO) and NEI, hosted a series of public workshops beginning in December 2011 to discuss the idea of a safety culture common language. The intent of this initiative was to align terminology between the NRC's inspection and assessment processes within the ROP and the industry's assessment process. This was important because the previous terminologies were different and difficult to compare such that both the NRC and the industry could have a complete picture of the safety culture at each site. The goal of the common language initiative was to combine and synthesize the different terminologies into one set of collective terms and definitions that were applicable to both NRC inspection programs and INPO/industry assessment programs. This initiative was within the Commission-directed framework for enhancing the treatment of cross-cutting areas in the ROP to more fully address safety culture.

In March 2014, the staff published NUREG-2165, "Safety Culture Common Language," which documents the outcomes of public workshops to develop a common language to describe safety culture in the nuclear industry. These workshops, held in December 2011, April 2012, November 2012, and January 2013, included subject matter experts from the NRC, the nuclear power industry, and the public. Using the SCPS definition and traits, the workshop participants developed a common set of terminology to describe safety culture. The common language was finalized and agreed upon at the January 2013 workshop. The NRC staff uses the agreed-upon common language to implement elements of its programs that provide oversight of regulated activities. Parts of the common language were incorporated into the ROP for operating nuclear reactors. All changes to oversight programs, including the ROP, have been documented in their associated inspection manual chapters (IMCs) and inspection procedures.

In 2018, the Reactor Assessment and Human Factors Branch in DIRS sent a survey (refer to Enclosure 1 for additional details) to a sample of regional inspectors from all regions, to gain insight on the effectiveness of these programs. As discussed above, feedback on the common language initiative was also specifically solicited from industry representatives, including NEI, and other external stakeholders at monthly ROP public meetings. The survey results indicated that the safety culture common language is viewed favorably, and the changes made to the

previous language were deemed as improvements. DIRS did not identify any additional areas for improvement or actions associated with this initiative

Some survey respondents also highlighted perceived weaknesses in the current cross-cutting issues program. This feedback will be considered as part of a focused effectiveness review of that program, which is planned for calendar year 2019.

### **Safety Culture Assessor Training**

The NRC's safety culture assessor qualification program is described in IMC 1245, "Qualification Program for New and Operating Reactor Programs," Appendix C-12, "Safety Culture Assessor Training and Qualification Journal." Appendix C-12 outlines the specific training and qualification requirements associated with developing safety culture assessment skills through individual study activities, formal classroom and computer-based instruction, and on-the-job training. Qualification as a safety culture assessor requires the completion of a variety of activities, each of which is designed to train a prospective assessor on information-gathering techniques or to practice a skill that may be important during safety culture assessments. There are two levels of qualification, safety culture assessor (SCA) and senior SCA. In order to qualify, a prospective SCA must demonstrate the skills needed to participate on a safety culture inspection team, while qualification as a senior SCAs requires a candidate to demonstrate the skills needed to lead safety culture inspection teams. Once qualified, the assessor will have demonstrated the following competencies:

- understands the history, legal basis, and processes used to achieve the NRC's regulatory objectives in this area;
- masters the techniques and skills needed to collect, analyze, and integrate information using a safety culture focus to develop a supportable regulatory conclusion; and
- demonstrates the personal and interpersonal skills needed to carry out assigned regulatory activities, either individually or as part of a team.

The NRC requires all SCAs to complete an assessor qualification interview to evaluate how well an individual can integrate and apply the necessary competencies to field situations. To date, the NRC has four qualified senior SCAs, and seventeen qualified SCAs representing all four regions and NRC headquarters. This includes several SCA-qualified resident inspectors. DIRS maintains a master list of those individuals who are qualified, as well as the employees who are currently working on their senior SCA or SCA qualifications, and provides overall management of the qualification program.

The effectiveness review survey identified that inspection staff who are familiar with, are currently working on, or have become qualified SCAs, found the qualification program in IMC 1245, Appendix C-12 to be effective for training personnel to become qualified SCAs. DIRS did not identify any additional areas for improvement or actions associated with this program as a result of the effectiveness review.

### **Summary of Effectiveness Review Assessment**

The staff has determined that the current process for monitoring and assessing safety culture at nuclear power plants is effective. This review determined that the safety culture common language initiative has resulted in improved communication between various stakeholders on

safety culture performance. In addition, those NRC staff members who have completed, or are in the process of completing, the IMC 1245, Appendix C-12 qualification indicated that the qualification program is effective in preparing them to serve as SCAs or senior SCAs. This effectiveness review did not identify any specific areas for improvement. Issues identified during the survey associated with the cross-cutting issues program will be assessed during another effectiveness planned for calendar year 2019.

Enclosure:

1. Safety Culture Common Language  
Effectiveness Review Survey Questions

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## **Safety Culture Common Language Effectiveness Review Survey Questions**

The survey was conducted using a 5-point Likert scale. Responses could include: strongly agree; agree; neither agree nor disagree; disagree; strongly disagree. The survey included the following questions:

- Are you aware that in 2008, the NRC staff led an effort to expand the Commission's safety culture policy to address the unique aspects of security and ensure applicability to all licensees and certificate holders?
- Were you part of the NRC staff that led the effort to expand the Commission's safety culture policy to address the unique aspects of security and ensure applicability to all licensees and certificate holders?
- How familiar are you with the Safety Culture Program?
- I use tenants of the Safety Culture Program Regularly?
- In my opinion, the changes to the safety culture policy address the unique aspects of safety/security and ensures applicability to all licensees and certificate holders?
- In my opinion, the intended results of changes to the Safety Culture policy have been realized.
- The SCPS provides the NRC's expectation that individuals and organizations performing regulated activities establish and maintain a healthy safety culture that recognizes the safety and security significance of their activities and the nature and complexity of their organizations and functions.
- The changes made to the safety culture language found in IMC 0310 enable me to more effectively assign cross-cutting aspects to inspection findings.
- The safety culture language helps me clearly understand the underlying principles of safety culture.
- The examples in the accompanying NUREG-2165 are useful for clarifying the definitions of the safety culture traits.
- Overall, I am satisfied with the safety culture language located in IMC 0310 and NUREG-2165.
- In my opinion, the current safety culture language found in the cross-cutting areas is an improvement to the ROP framework.
- The new safety culture language makes it easier for me to determine the appropriate cross-cutting aspect for my inspection findings.
- In my opinion, the safety culture common language initiative was an effective use of staff resources.