POLICY ISSUE
NOTATION VOTE

May 18, 2009 SECY-09-0075

FOR: The Commissioners

FROM: R. W. Borchardt
Executive Director for Operations

SUBJECT: SAFETY CULTURE POLICY STATEMENT

PURPOSE:

The staff of the U.S. Nuclear Regulatory Commission (NRC) has prepared a draft safety culture policy statement and requests Commission approval to publish it in the *Federal Register* (FR) for public comment. In addition, this paper contains the staff's review and conclusions related to the issues and questions in the Commission's Staff Requirements Memorandum (SRM) for COMGBJ-08-0001, "A Commission Policy Statement on Safety Culture," dated February 25, 2008.

SUMMARY

The staff considered how best to convey the Commission's expectations for safety culture. The staff reviewed domestic and international documents, considered NRC lessons learned, and obtained wide ranging stakeholder input on questions related to issues in the SRM through FR Notices (FRN) and in a February 3, 2009, public workshop.

Based on the staff's review and stakeholder feedback, the staff has (1) concluded that the NRC's oversight of safety culture as applied to reactors has been strengthened, is effective, and continues to be refined in accordance with the existing reactor oversight process (ROP) self-assessment process; (2) described actions taken and planned for increasing attention to safety culture in the materials area; (3) described actions taken and planned for most effectively utilizing stakeholder involvement to address safety culture for all NRC and Agreement State licensees and certificate holders including any unique aspects of security; and (4) developed

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one safety culture policy statement that acknowledges the equal importance of safety and security within the overarching safety culture. The staff is recommending that the draft safety culture policy statement (Enclosure 1) be published in the FR for additional public comment to facilitate discussions with stakeholders and interested parties in public meetings and other outreach forums prior to developing a final policy statement for Commission consideration. The staff also documented the development of the draft safety culture policy statement's safety culture characteristics (Enclosure 7). The staff recognizes that these safety culture characteristics are not all inclusive; there are many other characteristics and attitudes in organizations and individuals that may be indicative of a positive safety culture. However, licensees and certificate holders will be expected to (1) consider the extent to which these characteristics and attitudes are present in their organizations and among individuals who are overseeing or performing regulated activities and (2) take steps, as necessary, to foster a positive safety culture commensurate with the safety and security significance of activities and the nature and complexity of the licensee's or certificate holder's organization and functions. The staff also documented NRC and Agreement State considerations (Enclosure 8).

BACKGROUND

In 1991, as a result of the 1986 Chernobyl accident, the International Nuclear Safety Group (INSAG) emphasized the concept of safety culture to the nuclear industry in its report, INSAG-4, "Safety Culture." INSAG is an advisory group to the International Atomic Energy Agency (IAEA). The INSAG-4 definition of safety culture is, "that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance."

The Commission has long expressed its expectations for safety culture in previous policy statements. In 1989, the Commission published its "Policy Statement on the Conduct of Nuclear Power Plant Operations" (54 FR 3424) to make clear the Commission's expectations of utility management and licensed operators with respect to the conduct of operations. The policy statement stated, "the phrase safety culture refers to a very general matter, the personal dedication and accountability of all individuals engaged in any activity which has a bearing on the safety of nuclear power plants." The policy statement further stated that the Commission issued the policy statement to help foster the development and maintenance of a safety culture at every facility licensed by the NRC.

In 1996, the Commission published a policy statement, "Freedom of Employees in the Nuclear Industry to Raise Safety Concerns Without Fear of Retaliation" (61 FR 24336), to set forth its expectations that licensees and other employers subject to NRC authority will establish and maintain safety-conscious environments in which employees feel free to raise safety concerns, both to their management and to the NRC, without fear of retaliation. This policy statement applied to NRC-regulated activities of all licensees and their contractors and subcontractors. A safety conscious work environment is an important attribute of safety culture and is one of the safety culture characteristics in the draft safety culture policy statement.

In response to Commission direction and in response, in part, to the Davis-Besse reactor vessel head degradation event, the staff modified selected parts of the ROP to enhance the oversight of areas important to safety culture. In developing the changes to the ROP, the staff identified 13 safety culture components (i.e., overarching characteristics of a positive safety culture in an

organization or a program). When developing the safety culture components and aspects for the ROP, the staff reviewed and considered the following: organizational behavior, safety culture and safety climate research literature, case studies from the nuclear arena and other domains, the IAEA work on the attributes of a positive safety culture, and principles for a strong nuclear safety culture from the Institute of Nuclear Power Operations (INPO). Within each of the safety culture components are aspects that provide more specific examples of organizational characteristics and workforce attitudes and behaviors. The NRC staff made further modifications based on its discussions of the safety culture components and aspects with stakeholders in frequent public meetings. The ROP safety culture components and cross-cutting aspects were developed to apply to power reactor organizations. When introducing these safety culture changes to the ROP in 2006, the NRC adopted the INSAG-4 definition of safety culture.

Enclosure 6 contains additional information on the agency's more recent safety culture activities related to the oversight of operating reactors, fuel cycle facilities, new reactor construction, and security.

DISCUSSION

The NRC's regulations are designed to protect the public, workers, and the environment against radiation hazards from the use of radioactive materials. The agency's scope of responsibility includes the regulation of commercial nuclear power plants; research, test, and training reactors; nuclear fuel cycle facilities; medical, academic, and industrial uses of radioactive materials; and the transport, storage, and disposal of radioactive materials and wastes. The NRC carries out these responsibilities in numerous ways including through such regulatory activities as inspecting licensed and certified facilities and activities; collecting, analyzing, and disseminating information about operational safety; investigating nuclear incidents; and developing policy and providing direction on safety and security issues at nuclear facilities. Because licensees and certificate holders use or provide services related to the use of radioactive material, they bear the primary responsibility for safely and securely handling these materials. Therefore, it is the responsibility of each licensee and certificate holder to develop and maintain a positive safety culture which establishes that nuclear safety and nuclear security issues,[1] as an overriding priority, receive the attention warranted by their significance. However, as the regulatory agency, the Commission has an independent oversight role (through inspection and assessment processes) including addressing licensees' and certificate holders' performance related to areas important to safety culture.

In SRM-COMGBJ-08-0001, the Commission directed the staff to expand the Commission's policy on safety culture to address the unique aspects of security and to ensure the resulting policy is applicable to all licensees and certificate holders.[2] The SRM also directed the staff to

[1] Throughout this paper, the terms "safety" or "nuclear safety," "security" or "nuclear security," and "safety culture" are used. These terms refer to matters that are related to NRC-regulated activities including radiation protection, safeguards, material control and accounting, physical protection, and emergency preparedness.

[2] Throughout this paper, the phrase "licensees and certificate holders" includes licensees, certificate holders, permit holders, authorization holders, holders of a quality assurance program approval, and applicants for a license, certificate, permit, authorization, or quality assurance program approval.

continue its broad review of issues related to safety culture. Additionally, in consideration of the ongoing assessment of safety culture components of the ROP and the fuel facility pilots and their potential applicability to other NRC licensees, the SRM directed that the staff review of issues should address, at a minimum, the following: (1) whether safety culture as applied to reactors needs to be strengthened; (2) how to increase attention to safety culture in the materials area; (3) how stakeholder involvement can most effectively be used to address safety culture for all NRC and Agreement State licensees and certificate holders including any unique aspects of security; and (4) whether publishing NRC's expectations for safety culture and for security culture is best accomplished in one safety/security culture statement or in two separate statements, one each for safety and security, while still considering the safety and security interfaces.

In order to address the questions in the SRM and to develop a draft safety culture policy statement, the staff formed a task group and steering committee. They conducted document reviews and other information collection activities including stakeholder outreach activities through a February 3, 2009, public workshop; January 23 and February 9, 2009, FRNs (74 FR 4260 and 74 FR 6433); and through other forums.

<u>Conclusions on the Issues Posed by the Commission</u>

(1) Whether safety culture as applied to reactors needs to be strengthened.

The staff believes that the current process of considering cross-cutting aspects of inspection findings is effective because it offers insights into a licensee's safety culture. In addition, it is consistent with the original tenets of the ROP. (i.e., It is transparent, objective, understandable, predictable, risk informed, and performance based.) By tagging cross-cutting aspects to inspection findings, the staff has been able to gain insights into performance areas that have the potential to reflect organizational dynamics including safety culture. When recurring aspects were identified, safety culture assessments have been conducted to determine if an organizational safety culture challenge existed. The NRC's regulatory response has focused on licensees' corrective action plans and their demonstrated improvement through subsequent safety culture assessments and inspection findings.

The combined focus of NRC and nuclear power industry on safety culture has increased attention to this issue across the operating fleet and could have contributed to the relatively low number of units currently in Column 3 (Degraded Cornerstone) or Column 4 (Multiple/Repetitive Degraded Cornerstone) of the ROP Action Matrix. The staff is aware of an increasing number of licensees that are conducting periodic safety culture self-assessments independent of the NRC's regulatory response. These licensees are typically using outside contractors.

The NRC's oversight of safety culture as applied to reactors continues to be refined in accordance with the existing ROP self-assessment process. For example, when the Commission inquired about this issue in SRM-COMGBJ-08-0001, the staff was incorporating improvements to ROP guidance. These improvements were implemented in January 2009 based on lessons learned from the initial 18-month implementation period of the 2006 ROP safety culture enhancements as well as lessons learned from the

supplemental inspection at Palo Verde Nuclear Generating Station (Inspection Procedure 95003), special internal reviews, and feedback from internal and external stakeholders. The staff will continue to solicit feedback from internal and external stakeholders to inform future improvements to the ROP including its implementation of safety culture oversight.

(2) How to increase attention to safety culture in the materials area.

The staff has taken initial steps to increase attention to safety culture in the materials area. In its efforts to develop the draft safety culture policy statement, the staff conducted numerous outreach activities with a variety of materials licensees including holding a public workshop in February 2009 and having a breakout session dedicated to materials users. However the staff recognizes more needs to be accomplished in this area. In order to further engage materials users following Commission approval to publish the draft policy statement, the staff intends to take the following actions:

(a) hold a public meeting to solicit input on the draft policy statement and use the publication of the draft policy statement and the public meeting to obtain additional stakeholder views on how the NRC can increase attention to safety culture in the materials area and

(b) continue to engage the Agreement States on how best to increase the attention that the Agreement States and Agreement State licensees give to safety culture including requesting the Agreement States to share the draft policy statement with their licensees.

The staff is continuing to develop a strategy to increase the attention to safety culture in the materials area and will give the Commission recommendations for accomplishing this objective when it provides a draft final policy statement for Commission consideration.

(3) How stakeholder involvement can most effectively be used to address safety culture for all NRC and Agreement State licensees and certificate holders including any unique aspects of security.

The January and February 2009 FRNs and the February 3, 2009, public workshop represented the first opportunity for NRC's stakeholders to provide input into the draft policy statement and to identify ways that NRC could increase attention to safety culture including any unique aspects of security. As noted above, the staff intends to publish an FRN and hold a public workshop to provide opportunities for NRC stakeholders to comment on the draft policy statement and to identify ways the NRC could increase attention to safety culture.

(4) Whether publishing the NRC's expectations for safety culture and for security culture is best accomplished in one safety/security culture statement or in two separate statements, one each for safety and security, while still considering the safety and security interfaces.

The staff considered how best to convey the Commission's expectations for safety culture and security culture. Based on the staff's review and stakeholder feedback, the staff recommends that the Commission's expectations for safety culture be published in one

policy statement entitled, "A Safety Culture Policy Statement." However, this policy statement should explicitly state that safety and security are to be treated equally within the overarching safety culture. The importance of treating both safety and security in an equal manner within NRC's regulatory framework is clearly evident in our mission and strategic goals. Further, it is important for licensees and certificate holders to provide personnel in the safety and security sectors with an appreciation for the importance of each, emphasizing the need for integration and balance to achieve optimized protection.

The draft safety culture policy statement (Enclosure 1) includes discussions of the background of the policy statement, the statement of policy, the safety culture concept, stakeholder outreach, safety and security culture, characteristics of a positive safety culture, and implementation of policy. Information on the staff's review and conclusions for each of the above SRM issues as well as a summary of stakeholder feedback are provided in Enclosures 2 through 5. Some of these enclosures also provide additional information that relates to the development of the safety culture policy statement and the issues described in the SRM. For example, Enclosure 2 documents that the nuclear reactor industry through the Nuclear Energy Institute and INPO has undertaken several initiatives related to safety culture including the development of safety culture assessment guidance. Enclosure 5 includes a discussion of safety/security interface consideration.

Development of the "Safety Culture Characteristics" in the Draft Safety Culture Policy Statement

In SRM-COMGBJ-08-0001, the Commission directed the staff to address certain issues in consideration of the on-going assessment of safety culture components of the ROP and the fuel facility pilot and their potential applicability to other licensees. The staff developed safety culture characteristics (i.e., the overarching characteristics of an organization's or a program's positive safety culture) that retain the safety culture concepts of the ROP safety culture components, explicitly communicate the central role of security considerations in a nuclear safety culture, and generically apply to the wide range of entities and activities the NRC regulates. The safety culture characteristics in the draft policy statement have not yet been applied to the NRC oversight programs for the full range of NRC licensees and certificate holders. Enclosure 7 provides an overview of the development of the draft safety culture policy statement's safety culture characteristics.

Although the safety culture characteristics themselves will be applicable to all licensees and certificate holders, there may be other examples that more specifically address the unique characteristics of a licensee's or certificate holder's environment (i.e., unique for medical and industrial applications, operating reactors, research and test reactors, fuel cycle facilities, and new reactor construction environments). There are also other characteristics and attitudes in organizations and individuals that may be indicative of a positive safety culture. However, licensees and certificate holders will be expected to (1) consider the extent to which these characteristics and attitudes are present in their organizations and among individuals who are overseeing or performing regulated activities and (2) take steps, as necessary, to foster a positive safety culture commensurate with the safety and security significance of activities and the nature and complexity of the licensee's or certificate holder's organization and functions.

During the development of the draft safety culture policy statement, the staff in both the working group and the steering committee engaged in numerous discussions regarding whether the

safety culture characteristics should be included in the draft policy statement and, if so, where they should be located. Some staff expressed views that the safety culture characteristics should be included in the Statement of Policy section in order to clearly define what is meant by a positive safety culture. The majority of the staff expressed the view that the characteristics should not be included in the Statement of Policy section but that they should be included elsewhere in the draft policy statement in order to keep the Statement of Policy section brief and concise, maintain this section at a high level, and with an understanding that placement of the characteristics in another section of the policy does not invalidate its standing as part of the policy statement. These differing views were considered by the staff in several forums. The staff decided not to include the safety culture characteristics in the Statement of Policy section for the above noted reasons, but instead, to develop a separate "characteristics of a positive safety culture" section in the draft policy statement. Enclosure 9 includes a non-concurrence submitted by a member of the staff (NRC Form 757, "Non-Concurrence Process") based on the placement of the safety culture characteristics in the Statement of Policy section of the draft policy statement.

NRC and Agreement State Considerations

The draft policy statement provides the Commission's expectations regarding the need to promote a positive safety culture. Issuance of the draft policy statement would elevate awareness of this issue to State regulatory authorities and NRC and State licensees. The policy statement does not provide expectations for how licensees and certificate holders should address the safety culture characteristics because of the diversity of licensees' and certificate holders' environments. However, when final, it will provide the expectation that licensees and certificate holders will consider and foster the safety culture characteristics commensurate with the safety significance of activities and the nature and complexity of their organization and functions. It also does not address the NRC's implementation of the safety culture characteristics in its licensee or certificate holder oversight programs. The staff plans to review its programs and processes for the oversight of licensees and certificate holders with respect to expectations in the policy statement. If the staff finds that implementation approaches need to be further developed or changed, the staff will engage with stakeholders.

The staff is considering how to increase attention to safety culture through NRC oversight programs for licensee and certificate holders. The staff will consider the activities of the licensees and certificate holders, the existing regulatory framework that applies to those activities, the safety and security significance of the activities, and other factors when making its evaluation. Because of the diversity among licensees and certificate holders, the program offices will prioritize their efforts and determine the appropriate level of review of certain oversight programs and processes with respect to the expectations in the policy statement.

Since the NRC will be issuing a policy statement (and not a rule); Agreement States are not required to implement the policy, and it is not legally binding upon NRC or Agreement State licensees. If the Commission (1) determines that Agreement States should be required to implement a program involving the oversight of safety culture or (2) decides to make other substantive changes to be legally binding on NRC and State licensees, the NRC would need to initiate a subsequent rulemaking. Enclosure 8 provides an attachment that more fully addresses NRC and Agreement State considerations.

COMMITMENTS

(1) The staff will continue to develop a strategy to accomplish the Commission's objective of increasing the attention of safety culture in the materials area and plans to provide the Commission with recommendations for accomplishing this objective when the staff provides a draft final policy statement for Commission consideration.

(2) At the time the staff provides the Commission with a draft final policy statement for its consideration, the staff will update the Commission on progress that has been made towards determining how stakeholder involvement can most effectively be used to address safety culture for all NRC and Agreement State licensees and certificate holders including any unique aspects of security.

(3) The staff will provide the Agreement States with copies of the draft policy statement and will request the Agreement States to share the draft policy statement with their licensees.

(4) The staff will provide a draft final policy statement to the Commission incorporating a discussion of public comments and feedback.

(5) The staff will review its programs and processes for the oversight of licensees and certificate holders with respect to expectations following Commission approval of the final policy statement.

RESOURCES

The staff estimates that the resources required to fulfill the commitments described in this paper are approximately 4 full time equivalents (FTE). Since this effort was initiated after the fiscal year (FY) 2010 budget was developed, no resources are specifically budgeted for this effort. However, several offices have budgeted resources for overall safety culture related activities that were used to support this activity in FY 2008 and FY 2009 and that will continue to be used in FY 2010.

Currently, for FY 2010 there are approximately 2 FTE available that can be reallocated to support these efforts. Specifically, the Office of Enforcement has budgeted 0.5 FTE to support these efforts; the Office of Nuclear Materials Safety and Safeguards has budgeted 1.0 FTE for all their safety culture activities, and these resources will be applied to this effort as well as incorporating safety culture in ongoing efforts to revise the fuel cycle facility oversight process; the Office of Federal and State Materials and Environmental Management Programs (FSME) has budgeted 0.5 FTE (0.3 FTE is allocated to the Regions) that can be applied to these efforts; and the Office of New Reactors expects to fund their activities with currently budgeted resources. Offices that currently do not have resources budgeted, or sufficient resources budgeted, to fund the activities required to fulfill the commitments outlined in this paper (such as the Offices of Nuclear Security and Incident Response, Nuclear Reactor Regulation, Nuclear Regulatory Research, and FSME) would need to reallocate resources commensurate with other priorities. In most cases, this is less than approximately 0.6 FTE.

RECOMMENDATION

The staff recommends that the Commission approve the staff's recommendation to publish the draft Safety Culture Policy Statement as an FRN for a 75-day public comment period to facilitate additional discussions with stakeholders and interested parties before it develops a draft final policy statement.

COORDINATION

The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

Representatives from the Organization of Agreement States and the Conference of Radiation Control Program Directors participated in the workshop on the panels. The following information was provided to all of the States for their information: (1) a copy of the FRN for the February 3, 2009, public workshop which included the policy questions discussed in the workshop; (2) a copy of the draft Commission paper; and (3) a copy of the draft policy statement.

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R. W. Borchardt
Executive Director
for Operations

Enclosures:
1. Draft Federal Register Notice
2. Safety Culture as Applied to Reactors
3. Safety Culture in the Materials Area
4. Stakeholder Involvement
5. Safety and Security Culture
6. Summary of NRC's Safety Culture Activities
7. Development of the Safety Culture Characteristics
8. NRC and Agreement State Considerations
9. NRC Form 757 "Non-Concurrence Process"

DRAFT FEDERAL REGISTER NOTICE

NUCLEAR REGULATORY COMMISSION

[NRC-2009-xxxx]

Draft Safety Culture Policy Statement:

Request for Public Comments

AGENCY: Nuclear Regulatory Commission (NRC).

ACTION: Issuance of draft safety culture policy statement and notice of opportunity for public comment.

DATES: Comments are requested 75 days from date of this *Federal Register* Notice. Comments received after this date will be considered if it is practical to do so, but the NRC is able to assure consideration only for comments received on or before this date. Please refer to the Supplementary Information section for additional information including questions for which the NRC is requesting comment.

ADDRESSES: Members of the public are invited and encouraged to submit comments by 75 days from the date of this *Federal Register* Notice, by mail to Isabelle Schoenfeld, Office of Enforcement, Mail Stop O-4 A15A, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, or by e-mail to isabelle.schoenfeld@nrc.gov.

SUMMARY: The NRC is issuing a draft policy statement that sets forth the Commission's expectation that all licensees and certificate holders[1] establish and maintain a positive safety culture that protects public health and safety and the common defense and security when carrying out licensed activities. The Commission defines safety culture as that assembly of characteristics, attitudes, and behaviors in organizations and individuals that establishes that, as an overriding priority, nuclear safety and nuclear security issues[2] receive the attention warranted by their significance. The Commission also considers nuclear safety and security issues to be equally important in a positive safety culture. The importance of treating safety and security in an equal manner within NRC's regulatory framework is clearly evident in our mission and strategic goals. Experience has shown that certain organizational characteristics and personnel attitudes and behaviors are present in a positive safety culture. These include, but are not limited to, individuals demonstrating ownership and personal responsibility for maintaining safety and security in their day-to-day work activities; the implementation of processes for planning and controlling work activities such that safety and security are maintained; a work environment in which personnel feel free to raise safety and security concerns without fear of retaliation; prompt and thorough identification, evaluation, and resolution of nuclear safety and security issues commensurate with their significance; the availability of the resources needed to ensure that safety and security are maintained; decision-making processes that protect safety and security; clearly defined roles and responsibilities for maintaining safety and security; and the seeking out and implementation of opportunities to improve safety and security. The NRC expects its licensees and certificate holders to foster

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[2] Throughout this document, the terms "safety" or "nuclear safety," "security" or "nuclear security," and "safety culture" are used. These terms refer to matters that are related to NRC-regulated activities, including radiation protection, safeguards, material control and accounting, physical protection, and emergency preparedness.

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these characteristics, attitudes, and behaviors in their organizations and among individuals who are overseeing or performing regulated activities commensurate with the safety and security significance of their activities and the nature and complexity of their organization and functions.

The NRC is requesting comments on the draft safety culture policy statement and associated questions.

SUPPLEMENTARY INFORMATION:

(1) <u>Background</u>

The Commission has long expressed its expectations for safety culture in previous policy statements. In 1989, the Commission published its "Policy Statement on the Conduct of Nuclear Power Plant Operations" (54 FR 3424; January 24, 1989) to make clear the Commission's expectations of utility management and licensed operators with respect to the conduct of operations. The policy statement stated, "the phrase safety culture refers to a very general matter, the personal dedication and accountability of all individuals engaged in any activity which has a bearing on the safety of nuclear power plants." The policy statement further stated that the Commission issued the policy statement to help foster the development and maintenance of a safety culture at every facility licensed by the NRC.

In 1996, the Commission published a policy statement, "Freedom of Employees in the Nuclear Industry to Raise Safety Concerns Without Fear of Retaliation" (61 FR 24336; May 14, 1996), to set forth its expectations that licensees and other employers subject to NRC authority will establish and maintain safety-conscious environments in which employees feel free to raise safety concerns, both to their management and to the NRC,

without fear of retaliation. This policy statement applied to NRC-regulated activities of all licensees and their contractors and subcontractors. A safety conscious work environment is an important attribute of safety culture and is one of the safety culture characteristics in the draft safety culture policy statement.

The importance of a positive safety culture for activities involving civilian uses of radioactive materials and other potential hazards has been demonstrated by a number of significant, high-visibility events world-wide that have occurred in the 20-year period since the Commission published its 1989 policy statement addressing safety culture in nuclear power plants. The events occurred across multiple industries including at nuclear power plants, fuel cycle facilities and in other industries such as chemical processing plants and aerospace. Examples of nuclear industry events include those that occurred at the Davis-Besse Nuclear Power Station and the Peach Bottom Atomic Power Station. Workers at the Davis-Besse Nuclear Power Station discovered a cavity in the reactor pressure vessel head caused by boric acid corrosion. The corrosion developed over a period of several years but was not discovered before the cavity developed. The licensee's analysis of the event identified weaknesses in the station's safety culture as the root cause of the event. It particularly noted that management prioritized "production over safety." At the Peach Bottom Atomic Power Station, personnel behaviors adverse to the security of the plant were identified, specifically, inattentiveness by security officers.

Other licensees have had recurring problems resulting in violations of NRC regulations. Through a Commission confirmatory order, a fuel cycle facility licensee, Nuclear Fuel Services, Inc., committed to having a third-party assessment of its safety culture to

determine the causes of its continuing problems and to taking appropriate corrective actions. The third-party assessment identified weaknesses in every area important to safety culture. In addition, weaknesses in the safety culture of licensees and certificate holders have contributed to unscheduled events or incidents that the Commission has determined to be significant from the standpoint of public health and safety. Examples linked to characteristics and attitudes in organizations and individuals associated with weak safety cultures include inadequate procedures; procedures not being followed; inadequate supervision; decision-making that does not ensure that safety and security are maintained; and ineffective problem identification, evaluation, and resolution. They have included medical misadministrations (such as giving iodine-131 to lactating females that resulted in the uptake by their infants and multiple events associated with prostate brachytherapy treatment) and overexposures arising from the loss of control of radiography or well logging sources.

(2) <u>Statement of Policy</u>

The NRC defines safety culture as that assembly of characteristics, attitudes, and behaviors in organizations and individuals that establishes that, as an overriding priority, nuclear safety and nuclear security issues receive the attention warranted by their significance. The Commission also considers nuclear safety and nuclear security issues to be equally important in a positive safety culture. Further, it is important for licensees and certificate holders to provide personnel in the safety and security sectors with an appreciation for the importance of each, emphasizing the need for integration and balance to achieve optimized protection. Safety and security activities are closely intertwined, and it is critical that consideration of these activities be integrated so as not to diminish or adversely affect either safety or security. A safety culture that accomplishes this would

include all nuclear safety and nuclear security issues associated with NRC-regulated activities including radiation protection, safeguards, material control and accounting, physical protection, and emergency preparedness issues among the issues that receive attention as a matter of priority.

The Commission's regulations are designed to protect both the public and workers against radiation hazards from the use of radioactive materials. The Commission's scope of responsibility includes regulation of commercial nuclear power plants; research, test, and training reactors; nuclear fuel cycle facilities; medical, academic, and industrial uses of radioactive materials; and the transport, storage, and disposal of radioactive materials and wastes. The Commission carries out these responsibilities in numerous ways including through such regulatory activities as inspecting licensed and certified facilities and activities; collecting, analyzing, and disseminating information about operational safety and security; investigating nuclear incidents; and developing policy and providing direction on safety and security issues.

The Commission believes that, because licensees and certificate holders use or provide services related to the use of radioactive material, they bear the primary responsibility for safely handling and securing these materials. It is, therefore, each licensee's and certificate holder's responsibility to develop and maintain a positive safety culture that establishes that nuclear safety issues and nuclear security issues, as an overriding priority, receive the attention warranted by their significance. Therefore, licensees and certificate holders should foster a positive safety culture in their organizations and among individuals who are overseeing or performing regulated activities. However, as the regulatory agency, the Commission has an independent oversight role (through inspection and assessment

processes) including addressing licensees and certificate holders performance related to areas important to safety culture.

(3) Safety Culture Concept

In 1991, as a result of the 1986 Chernobyl accident, the International Nuclear Safety Group (INSAG) emphasized the concept of safety culture for the nuclear industry in its report, INSAG-4, "Safety Culture." INSAG is an advisory group to the International Atomic Energy Agency (IAEA). The INSAG-4 definition of safety culture is, "that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance."

Implied in the INSAG definition of safety culture is the recognition that every organization is continually faced with resolving conflicts among its goals for cost, schedule, and quality (or safety). The organization's members (groups and individuals) also face conflicts among different goals in performing their jobs. Management establishes the framework (management systems, programs, processes) and communicates its priorities for resolving conflicts among different goals. Members of the organization work within that framework and are influenced by management's priorities, but they have their own beliefs and attitudes about what is important and make individual choices on how to proceed when faced with multiple competing goals. The INSAG definition emphasizes that in a positive safety culture, the goal of maintaining nuclear safety receives the highest priority in the organization's and individuals' decision-making and actions when faced with a conflict with other organizational or individual goals.

The Commission modified the INSAG definition of safety culture which refers to “nuclear plant safety.” The Commission is strongly committed to promoting positive safety cultures among its nuclear reactor licensees; however, the Commission regulates many other organizations and processes involving civilian uses of radioactive materials. These regulated activities include industrial radiography services; hospitals, clinics and individual practitioners involved in medical uses of radioactive materials; research and test reactors; large-scale fuel fabrication facilities; as well as nuclear power plants. The Commission also regulates the construction of new facilities where operations will involve radioactive materials with the potential to affect public health and safety and the common defense and security. Therefore, by revising the INSAG definition of safety culture to replace “nuclear plant safety” with “nuclear safety,” the Commission is emphasizing that it expects all of its licensees and certificate holders to place the highest priority on nuclear safety commensurate with the risks inherent in the regulated activities.

The Commission also modified the INSAG definition to adequately capture or communicate the equal importance of nuclear security and nuclear safety in a positive safety culture. Following the terrorist attacks of September 11, 2001, the Commission increased its attention to the important role of security in regulated facilities whose operations can have an impact on public health and safety. The Commission issued orders enhancing security at its NRC-regulated facilities to further ensure public health and safety and the common defense and security. One of the insights gained from the greater emphasis on security is the importance of incorporating security considerations into a safety culture and effectively managing the safety and security interface. In general, the safety and security interface refers to the organizational and individual awareness that the functions and goals of safety and security must be considered together so that actions to achieve either set of functions and goals do not inadvertently compromise the other. Therefore, to emphasize the equal

importance of nuclear security and nuclear safety in a positive safety culture, the Commission has added “nuclear security” to the safety culture definition. The NRC’s modified INSAG definition is provided in the Statement of Policy section above.

(4) <u>Stakeholder Outreach</u>

The Commission’s February 28, 2009, Staff Requirements Memorandum (SRM)-COMGBJ-08-0001, “A Commission Policy Statement on Safety Culture,” stated in part that the staff should, as part of its public stakeholder outreach, reach out to all types of licensees and certificate holders. In the development of the draft policy statement, the NRC staff sought insights and feedback from stakeholders. This was accomplished by providing information in a variety of forums such as stakeholder organization meetings, newsletters, and teleconferences and by publishing questions in *Federal Register* Notices entitled “Safety Culture Policy Statement: Public Meeting and Request for Public Comments” (74 FR 4260; January 23, 2009, and 74 FR 6433; February 9, 2009) that were related to the Commission’s SRM. In addition, a significant stakeholder outreach activity was accomplished by a public workshop held on February 3, 2009, at NRC Headquarters in Rockville, Maryland. The staff reviewed and considered the stakeholder feedback derived from these different forums and incorporated it into the development of the draft policy statement and recommendations.

(5) <u>Safety and Security Culture</u>

In SRM-COMGJB-08-0001, the Commission also considered whether publishing the NRC’s expectations for safety and security culture is best accomplished in one safety/security

culture statement or in two separate statements, one each for safety and security, while still considering the safety and security interface.

Based on a variety of sources including document reviews and stakeholder feedback, the Commission concluded there is no one definitive view of this issue, but the results weighed heavily toward a single policy statement to be titled a “Safety Culture Policy Statement.” Document reviews and stakeholder feedback suggested that a single policy statement (1) builds on the fact that safety and security have the same ultimate purpose of protecting people and the environment from unintended radiation exposure and (2) encourages attention to the ways safety and security interface. The term “safety culture” should be considered as all encompassing because there would be no need for security pertaining to the use of radioactive material if it were not for radioactive material used by licensees and certificate holders.

Safety and security have been the primary pillars of NRC’s regulatory programs. However, in the current heightened threat environment, there has been a renewed focus on security, and the staff has implemented a number of efforts to enhance security and strengthen the safety and security interface. It is important to understand that both safety and security share a common purpose of protecting public health and safety. In today’s environment, safety and security activities are closely intertwined, and it is critical that consideration of these activities be integrated so as not to diminish or adversely impact either safety or security. Further, it is important for licensees and certificate holders to provide personnel in the safety and security sectors with an appreciation for the importance of each, emphasizing the need for integration and balance to achieve optimized protection. The importance of both safety and security in an equal and balanced manner within NRC’s regulatory framework is clearly evident in the Commission’s mission and strategic goals.

While many safety and security activities complement each other or are synergistic, there remain potential differences. It is then imperative that mechanisms be established to resolve these differences if we must assure the adequate protection of public health and safety and promote the common defence and security. Hence, safety and security have implications for each other in connection with all aspects of nuclear activities. For example, the enhanced risk of a sabotage event has highlighted the importance of integrating safety and security in the field of protection and of identifying areas where they need to complement each other so that a terrorist event can be dealt with in as seamless a fashion as possible.

One important difference or challenge is the way in which individuals involved in safety and security activities approach the goal of risk mitigation and protection of public health and safety. The safety staff is typically focused on preventing errors that would result in an inadvertent accident while the security staff is focused on preventing deliberate attacks or diversion of certain materials that could cause harm. Another difference is the way in which individuals involved in safety and security activities approach information sharing. The safety staff promotes information sharing and collaboration while the security staff promotes the sensitivity of information and a need to know. These differences as well as any others identified through stakeholder interactions would need to be resolved and managed. Another challenge is that the organization/facility must ensure that the existence of motivated and capable persons with ill intent is recognized and that the importance of nuclear security to prevent such persons from unauthorized access is understood. This need for an improved sensitivity to the current threat environment is exacerbated by the significant growth in nuclear utilization worldwide.

Based on the above considerations, the Commission concluded that a single policy statement would accomplish its goal that, as an overriding priority, safety issues and security issues receive the attention warranted by their significance. Although, in some cases, issues relating to security might be handled differently than issues related to safety. A single policy statement recognizes there is one overarching culture in an organization; however, safety and security functions and goals must be treated equally within that overarching safety culture.

(6) Characteristics of a Positive Safety Culture

Experience has shown that certain organizational attributes and personnel attitudes and behaviors are present in a positive safety culture. Therefore, in 2006, when the NRC implemented an enhanced reactor oversight process (ROP) that more fully addressed safety culture, it identified and incorporated safety culture components that are overarching characteristics of a positive safety culture. The NRC based its development of the safety culture components on a review of a variety of sources of information including the Institute of Nuclear Power Operations; the IAEA; the Nuclear Energy Agency; the regulatory approaches of other domestic and international organizations; and the organizational behavior, safety culture, and safety climate research literature. The Commission presented drafts of the safety culture components and aspects in frequent public meetings and modified them in response to stakeholder feedback.

For the purpose of this policy statement, the NRC modified the ROP safety culture components (termed “safety culture characteristics”) to explicitly address security in the safety culture characteristics descriptions, create a more generic description for each safety

culture characteristic that would apply to the range of NRC licensees and certificate holders, and maintain all the safety culture concepts in the safety culture components. The staff presented the draft safety culture characteristics for stakeholder comment in a February 3, 2009, public workshop and on the NRC's public safety culture Web site (http://www.nrc.gov/about-nrc/regulatory/enforcement/safety-culture.html).

Although the safety culture characteristics themselves are applicable to all licensees and certificate holders, there may be other examples that more specifically address the unique characteristics of a licensee's or certificate holder's environment (i.e., unique for medical and industrial applications, operating reactors, research and test reactors, fuel cycle facilities, and new reactor construction environments). Hence, the Commission recognizes that these safety culture characteristics are not all inclusive; other characteristics and attitudes in organizations and individuals may be indicative of a positive safety culture. However, the Commission expects its licensees and certificate holders to consider the extent to which these characteristics and attitudes are present in their organizations and among individuals who are overseeing or performing regulated activities and to take steps, if necessary, to foster a positive safety culture commensurate with the safety and security significance of activities and the nature and complexity of the licensee's or certificate holder's organization and functions.

The following characteristics are indicative of a positive safety culture, are relevant across the broad range of licensees' and certificate holders' activities, and address the importance of security:

- Personnel demonstrate ownership for nuclear safety and security in their day-to-day work activities by, for example, ensuring that their day-to-day work activities and

products meet professional standards commensurate with the potential impacts of their work on safety and security. They proceed with caution when making safety- or security-related decisions and question their assumptions, especially when faced with uncertain or unexpected conditions, to ensure that safety and security are maintained.

- Processes for planning and controlling work ensure that individual contributors, supervisors, and work groups communicate, coordinate, and execute their work activities in a manner that supports safety and security. For example, individuals and work groups communicate and cooperate during work projects and activities to ensure their actions do not interact with those of others to adversely affect safety or security. In addition, managers and supervisors are accessible to oversee work activities, including those of contractors or vendors, and they challenge work activities and work products that do not meet their standards.

- The licensee or certificate holder maintains a safety conscious work environment in which personnel feel free to raise safety and security concerns without fear of retaliation. For example, claims of harassment, intimidation, retaliation, and discrimination are investigated consistent with the regulations regarding employee protection. If an instance of harassment, intimidation, retaliation, or discrimination for raising a safety or security concern is identified, corrective actions are taken in a timely manner.

- The licensee or certificate holder ensures that issues potentially impacting safety or security are promptly identified, fully evaluated, and promptly addressed and corrected, commensurate with their significance.

- The licensee or certificate holder ensures that the personnel, equipment, tools, procedures, and other resources needed to assure safety and security are available. For example, training is developed and implemented or accessed to ensure personnel competence. Procedures, work instructions, design documentation, drawings, databases, and other job aids and reference materials are complete, accurate, and up-to-date.

- Licensee or certificate holder decisions ensure that safety and security are maintained. For example, production, cost, and schedule goals are developed, communicated, and implemented in a manner which demonstrates that safety and security are overriding priorities.

- Roles, responsibilities, and authorities for safety and security are clearly defined and reinforced. For example, personnel understand their roles and responsibilities in maintaining safety and security. Programs, processes, procedures, and organizational interfaces are clearly defined and implemented as designed. Leaders at all levels of the organization consistently demonstrate that safety and security are overriding priorities.

- The licensee or certificate holder maintains a continuous learning environment in which opportunities to improve safety and security are sought out and implemented. For example, individuals are encouraged to develop and maintain current their professional and technical knowledge, skills, and abilities and to remain knowledgeable of industry standards and innovative practices. Personnel seek out and implement opportunities to improve safety and security performance.

(7) <u>Implementation of Policy</u>

This policy statement describes areas important to safety culture, but it does not address how the licensee or certificate holder should establish and maintain a positive safety culture in its organization. Licensees and certificate holders differ in their size and complexity, infrastructure, and organizational frameworks. Therefore, a single approach for establishing and maintaining a positive safety culture is not possible. Nevertheless, the Commission expects that nuclear safety and security issues receive the attention warranted by their significance, and all licensees and certificate holders consider and foster the safety culture characteristics (commensurate with the safety and security significance of activities and the nature and complexity of their organization and functions) in carrying out their day-to-day work activities and decisions.

QUESTIONS FOR WHICH NRC IS SEEKING INPUT:

(1) The draft policy statement provides a description of areas important to safety culture, (i.e., safety culture characteristics). Are there any characteristics relevant to a particular type of licensee or certificate holder (if so, please specify which type) that do not appear to be addressed?

(2) Are there safety culture characteristics as described in the draft policy statement that you believe do not contribute to safety culture and, therefore, should not be included?

(3) Regarding the understanding of what the Commission means by a “positive safety culture,” would it help to include the safety culture characteristics in the Statement of Policy section in the policy statement?

(4) The draft policy statement includes the following definition of safety culture: "Safety culture is that assembly of characteristics, attitudes, and behaviors in organizations and individuals that establishes that, as an overriding priority, nuclear safety and nuclear security issues receive the attention warranted by their significance." Does this definition need further clarification to be useful?

(5) The draft policy statement states, "All licensees and certificate holders should consider and foster the safety culture characteristics (commensurate with the safety and security significance of activities and the nature and complexity of their organization and functions) in carrying out their day-to-day work activities and decisions." Given the diversity among the licensees and certificate holders regulated by the NRC and the Agreement States, does this statement need further clarification?

(6) How well does the draft safety culture policy statement enhance licensees' and certificate holders' understanding of the NRC's expectations that they maintain a safety culture that includes issues related to security?

(7) In addition to issuing a safety culture policy statement, what might the NRC consider doing, or doing differently, to increase licensees' and certificate holders' attention to safety culture in the materials area?

(8) How can the NRC better involve stakeholders to address safety culture, including security, for all NRC and Agreement State licensees and certificate holders?

To ensure efficient consideration of your comments, please identify the specific question numbers with your comments when applicable. When commenting, please exercise caution with regard to site-specific security-related information. Comments will be made available to the public in their entirety. Personal information such as your name, address, telephone number, and e-mail address will not be removed from your submission.

For the Nuclear Regulatory Commission.

_____

Cynthia A. Carpenter, Director

Office of Enforcement

Dated at Rockville, Maryland, this_____day of_____, 2009.

SAFETY CULTURE AS APPLIED TO REACTORS

In the February 25, 2008, Staff Requirements Memorandum (SRM) for COMGBJ-08-0001, "A Commission Policy Statement on Safety Culture," the Commission directed the staff to review specific issues related to safety culture in consideration of the safety culture components of the reactor oversight process (ROP) and fuel facility pilot and their potential applicability to other U.S. Nuclear Regulatory Commission (NRC) licensees. This enclosure addresses the following specific SRM question for consideration: whether safety culture as applied to reactors needs to be strengthened.

Conclusion

The staff believes that the current process of considering cross-cutting aspects of inspection findings is effective because it offers insights into a licensee's safety culture. In addition, it is consistent with the original tenets of the ROP. (i.e., It is transparent, objective, understandable, predictable, risk informed, and performance based.) By tagging cross-cutting aspects to inspection findings, the staff has been able to gain insights into performance areas that have the potential to reflect organizational dynamics including safety culture. When recurring aspects were identified, safety culture assessments have been conducted to determine if an organizational safety culture challenge existed. The NRC regulatory response has focused on licensees' corrective action plans and their demonstrated improvement through subsequent safety culture assessments and inspection findings.

The combined focus of the NRC and the nuclear power industry on safety culture has increased attention to this issue across the operating fleet and could have contributed to the relatively low number of units currently in Column 3 (Degraded Cornerstone) or Column 4 (Multiple/Repetitive Degraded Cornerstone) of the ROP Action Matrix. The staff is aware of an increasing number of licensees that are conducting periodic safety culture self-assessments independent of the NRC's regulatory response. These licensees are typically using outside contractors.

The NRC's oversight of safety culture as applied to reactors continues to be refined in accordance with the existing ROP self-assessment process. For example, when the Commission inquired about this issue in SRM-COMGBJ-08-0001, the staff was incorporating improvements to ROP guidance. These improvements were implemented in January 2009 based on lessons learned from the initial 18-month implementation period of the 2006 ROP safety culture enhancements as well as lessons learned from the supplemental inspection at Palo Verde Nuclear Generating Station (Inspection Procedure 95003, "Supplementary Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs or One Red Input" (Agencywide Documents Access and Management Systems (ADAMS) Accession No. ML080040267)), special internal reviews, and feedback from internal and external stakeholders. The staff will continue to solicit feedback from internal and external stakeholders to inform future improvements to the ROP including its implementation of safety culture oversight.

Review

In response to Commission direction and ongoing ROP improvements, the staff evaluated whether safety culture as applied to reactors needed to be strengthened.

The staff implemented ROP safety culture enhancements in July 2006. As discussed in Enclosure 6, the staff monitored and reviewed the enhancements during the initial 18-month implementation period. Based on the lessons learned from this review as well as from supplemental inspections, special internal reviews, and feedback from internal and external stakeholders, the staff concluded that the NRC's independent oversight of safety culture as applied to reactors needed to be further clarified and enhanced. The staff subsequently implemented improvements to its ROP guidance in January 2009.

Subsequent to these ROP modifications, the NRC staff held a public workshop on February 3, 2009, on the development of a policy statement on safety culture and security culture. Ten different organizations including licensees, State regulators, and non-governmental organizations were represented on the workshop panels discussing the three topics. Overall, approximately 160 individuals participated in person, through the Webinar, or by teleconference. Approximately 60 stakeholders participated via Webinar as did one of the workshop panelists. By making the meeting available through the Webinar, a barrier to stakeholder participation in the workshop was lowered. This allowed greater participation by smaller licensees and certificate holders, State government representatives, and other stakeholders. Ten sets of written comments were submitted. The comments received in response to the public meeting and the January 23 and February 9, 2009, *Federal Register* Notices (FRN) are documented in the meeting summary and are provided on the NRC's public safety culture Web site (http://www.nrc.gov/about-nrc/regulatory/enforcement/safety-culture.html).

A breakout session during this workshop was specifically dedicated to discussing whether safety culture as applied to reactors needed to be strengthened. In formulating the staff's conclusion in response to this SRM question, the staff considered stakeholder feedback and written comments that were provided during and subsequent to the public workshop based on questions the staff posed on this topic. A summary of written comments is provided below.

The staff believes that the current process of considering safety culture components and aspects is consistent with, and implements, the original tenets of the ROP. The ROP safety culture process has been transparent as cross-cutting aspect assignments and safety culture assessment evaluations are highlighted during inspection exit meetings and are described in inspection reports. Semi-annual assessment reports issued to licensees describe the substantive cross-cutting issues (SCCI). The staff identifies its inspection findings and SCCIs using criteria that include objective elements. The NRC also provides guidance on assigning cross-cutting aspects, making decisions on when to identify an SCCI, and reviewing safety culture assessments. The process has been risk-informed and performance-based because the assignment of a cross-cutting aspect requires an inspection finding of greater-than-minor significance. Collectively, these elements ensure the process is objective, understandable, and predictable. Notwithstanding, the staff recognizes that any evaluation of areas important to a licensee's safety culture will also need to include some measure of subjective or qualitative decision-making to integrate insights that are not amenable to more objective or quantitative treatment.

Summary of Stakeholder Comments on Whether Safety Culture as Applied to Reactors Needs to be Strengthened

During the February 3, 2009, public workshop, panel members representing various stakeholder groups and members of the public provided feedback to the staff. The staff also provided

questions on this issue in FRNs and on the NRC's public safety culture Web page. (Link noted above.) The staff considered inputs from both the workshop discussions and comments submitted in response to the FRN questions in formulating its recommendations for the Commission's safety culture policy statement.

Some stakeholder comments were supportive of the NRC's oversight of safety culture. For example, stakeholders (including the State of California) commented that the NRC's proactive safety culture assessment at nuclear power plants should not be eliminated. Others suggested that, although industry's attempts to improve the self-assessment process at plants are positive, a licensee-controlled self-assessment process should not replace the parallel NRC process for safety culture assessments. Similar comments stated that the industry's self-assessment process should complement rather than replace the NRC's oversight and that the number of lapses at nuclear power plants highlight the importance of having a strong NRC independent safety culture oversight rather than relying on plant self-assessments. One stakeholder (State of California) commented that the industry's proposed licensee-controlled self-assessment approach does not currently consider safety conscious work environment (SCWE) attributes, and another stakeholder commented that the NRC should continue to strengthen its oversight and assessment of safety culture and SCWE at sites in California.

Other stakeholder comments were critical of the ROP safety culture guidance and assessment process. For example, some stakeholders commented that the current ROP safety culture guidance is too narrow, prescriptive, subjective, and complex and that it is not a leading indicator of declining performance. Stakeholders also commented that NRC staff decisions are not consistent, predictable, repeatable, or transparent; and stakeholders commented that the NRC staff focuses additional inspection effort on plants with declining performance rather than on plants in the Licensee Response column of the ROP Action Matrix. One stakeholder (State of California) commented that the NRC's oversight of security measures at commercial nuclear power plants may need to be improved. Some stakeholders also had the impression that the NRC has not conducted an assessment of the effectiveness of the enhanced ROP safety culture guidance and that the NRC has no routine centralized process for collecting, analyzing, and disseminating security-inspection findings that may be common to other plants.

Some stakeholders provided the following recommendations to improve the safety culture assessment processes. One commenter (an Organization of Agreement States/Conference of Radiation Control Program Directors representative) indicated that there is room for safety and security improvement at the reactor facilities and suggested that the NRC should develop policies to promote the culture from within. This commenter also suggested that there should be an emphasis on human performance issues, utility employees should be actively engaged in the process through training, and the use of feedback (e.g., surveys) should be encouraged. Another stakeholder said that the industry safety culture assessments should be conducted more frequently than once every 2 years. The NRC and the nuclear industry should adopt a common language to describe safety culture attributes and principles. The NRC staff should develop clear expectations and directives for establishing an adequate safety culture (including direction on how periodic reviews should be performed) which should be supported by enforcement or incentives. The NRC staff should develop a regulatory issue summary or an NRC regulatory guide that explains these expectations. Some stakeholders (including the State of California) also believed that new regulatory requirements should require a thorough evaluation of a plant's safety culture and SCWE during the NRC staff's review of license renewal applications. Some stakeholders commented that repairing poor safety culture can

take a long time, safety culture can deteriorate more rapidly in some circumstances, and frequent safety culture surveys could lead to survey fatigue which would decrease their meaning and value.

The staff will consider these and other stakeholder comments during the continued development of the safety culture policy statement.

Industry Initiatives to Develop an Alternate Safety Culture Oversight and Assessment Methodology

Before and during the safety culture policy statement public workshop, the Nuclear Energy Institute (NEI) provided a high-level characterization of its proposal to replace the ROP SCCI process. NEI proposed that each site would have a licensee-controlled process to evaluate various sources of safety culture inputs in accordance with the “Principles for a Strong Nuclear Safety Culture” developed by the Institute of Nuclear Power Operations (INPO) to determine if a safety culture issue exists. NEI proposed that the NRC maintain regulatory oversight of safety culture by using Inspection Procedure 71152, "Identification and Resolution of Problems" (ADAMS Accession No. ML073540265), to inspect the licensee-controlled process. NEI also proposed to develop guidance for standardizing safety culture assessments. The proposed guidance would use the Utility Services Alliance safety culture assessment approach and INPO’s “Principles for a Strong Nuclear Safety Culture.” The staff recognizes the value of industry initiatives regarding safety culture and will consider the alternative approaches to a safety culture assessment; however, as noted elsewhere in this paper, the staff also acknowledges the simultaneous need for independent regulatory oversight as part of the overall process.

The staff plans to ask NEI for more details about its proposed safety culture assessment guidelines. The staff recognizes that there may be benefit to both the industry and the NRC if there is an agreed-upon approach defining how licensees should conduct safety culture assessments. NEI plans to submit the guidance to the NRC staff for review in 2009, and the NRC staff will consider endorsing it after careful review and discussions with stakeholders.

SAFETY CULTURE IN THE MATERIALS AREA

In the February 25, 2008, Staff Requirements Memorandum (SRM) for COMGBJ-08-0001, "A Commission Policy Statement on Safety Culture," the Commission directed the staff to review specific issues related to safety culture in consideration of the safety culture components of the reactor oversight process and fuel facility pilot and their potential applicability to other U.S. Nuclear Regulatory Commission (NRC) licensees. This enclosure addresses the following specific SRM question for consideration: how to increase attention to safety culture in the materials area.

Conclusion

The staff has taken initial steps to increase attention to safety culture in the materials area. In its efforts to develop the draft safety culture policy statement, the staff conducted numerous outreach activities with a variety of materials licensees including holding a public workshop in February 2009 and having a breakout session dedicated to materials users. However, the staff recognizes more needs to be accomplished in this area. In order to further engage materials users following Commission approval to publish the draft policy statement, the staff intends to take the following actions:

(a) hold a public meeting to solicit input on the draft policy statement and use the publication of the draft policy statement and the public meeting to obtain additional stakeholder views on how the NRC can increase attention to safety culture in the materials area and

(b) continue to engage the Agreement States on how best to increase the attention that the Agreement States and Agreement State licensees give to safety culture including requesting the Agreement States to share the draft policy statement with their licensees.

The staff's conclusion, to continue to engage the Agreement States is consistent with recommendations from stakeholders. The staff would, at a minimum, use Webinar or Web-streaming technology to reach licensees and certificate holders in different geographic regions but does not plan to hold multiple workshops on the draft policy statement. The staff will also continue to discuss with Agreement States ways to increase the attention of materials licensees to safety culture and will convey to Agreement States those suggestions that specifically concern them.

Review

As part of developing the draft policy statement, the staff conducted outreach activities with a wide variety of material licensees. This provided the NRC with a unique opportunity to begin increasing the attention to safety culture among licensees and certificate holders.

The staff sought stakeholder input on how the NRC should increase attention to safety culture in the materials area. This includes the public workshop on the development of a policy statement held on February 3, 2009, previously mentioned in Enclosure 2. Ten different organizations including licensees, State regulators, and non-governmental organizations were represented on the workshop panels discussing the three topics. The use of Webinar at the workshop allowed greater participation by smaller licensees and certificate holders, State government

representatives, and other stakeholders. The staff devoted one session of the workshop to the question of how to increase attention to safety culture in the materials area and to several related but more specific questions. Public input was also sought on these questions through the January 23, 2009, and February 9, 2009, *Federal Register* Notices (74 FR 4260 and 74 FR 6433), respectively, and on NRC's public safety culture Web site (http://www.nrc.gov/about-nrc/regulatory/enforcement/safety-culture.html).

As noted above, the Agreement States administer the vast majority of materials licenses. In conducting its review, the staff recognized that this requires additional consideration on how best to meet the Commission's direction regarding increasing attention to safety culture in the materials area. For example, although the NRC may express its expectations for Agreement States in a policy statement, these expectations would not be a matter of compatibility. A policy statement would announce the Commission's views on safety culture including security and would contribute towards elevating awareness of the issue to State regulatory authorities and NRC and State licensees. Hence, while issuing a policy statement effectively announces the NRC's views and expectations relating to safety culture and would be an effective tool to help the NRC increase attention to safety culture at NRC licensees and at the Agreement States, it must rely on the Agreement States to provide this outreach to their licensees because the NRC does not regulate these licensees. If, however, the Commission decides that Agreement States licensees' safety culture actions should be a matter of compatibility, then additional rulemaking would be required. A more detailed discussion of compatibility is provided in Enclosure 8.

Agreement States cannot be required to implement the policy statement, and the policy statement is not binding on Agreement State licensees. Therefore, it is important to continue to work with the Agreement States as the Commission continues to develop its policy on safety culture so as to more fully encompass materials licensees. The staff is continuing to develop a strategy to accomplish the Commission's objective of increasing attention to safety culture in the materials area and will provide the Commission with recommendations for accomplishing this objective when it provides a draft final policy statement for Commission consideration. This will allow the staff to develop recommendations that consider (1) additional stakeholder input including additional insights from the Agreement States and (2) insights arising from further progress on the safety culture pilot program initiated by the Office of Nuclear Materials Safety and Safeguards through the efforts to develop the revised fuel facility oversight process and through subsequent efforts to apply insights to other material licensees and certificate holders. In addition, having a draft policy statement available may assist stakeholders in developing suggestions for ways to increase attention to safety culture. The staff will continue to evaluate the comments and recommendations that have been received when developing the longer-term recommendations.

Summary of Stakeholder Comments on How to Increase Attention to Safety Culture in the Materials Area

There was general agreement that the approach the NRC takes in the policy statement should be flexible enough to address differences among the licensees and certificate holders and should consider risk. A number of commenters recommended taking a graded approach based on the type of licensee and the risk of the activities involved. Although one commenter indicated a preference for having the expectations on security culture prescriptive for academic and medical licensees, some commenters would like the NRC's approach for addressing safety culture to be performance based. That is, the NRC should not dictate specific criteria in this area. There was also general agreement in favor of consistency in the application of the policy

at the NRC and the Agreement States. One commenter suggested that there is complexity associated with having different approaches used by the NRC and the Agreement States and that this makes it more difficult for licensees to use a standard approach in areas such as corrective action programs and a safety conscious work environment. This difficulty arises because the NRC regulates some activities and Agreement States regulate other activities, and different approaches are taken with regard to the oversight of these areas. One commenter asked whether the NRC had considered making the policy a matter of compatibility.

Some commenters suggested that the NRC coordinate more with the Agreement States regarding the NRC's application and implementation of safety culture policy to the materials arena. One commenter suggested that the NRC should reach out more to the regulated community (such as individual doctors and employees) and focus on education and awareness. Another stakeholder suggested that the NRC work with professional societies (i.e., Society for Nuclear Medicine, American Association of Physicists in Medicine, Health Physics Society, American College of Radiology, and American Society for Therapeutic Radiology and Oncology) to have safety culture incorporated into their standards of practice which are then adopted by licensees.

A number of commenters wanted to understand the NRC's expectations regarding oversight. Some commenters suggested that the NRC revise its enforcement approach because the current focus on potential violations without acknowledging the positive aspects of programs could have a negative impact on the site's programs and its safety and security culture. One commenter suggested that the NRC refrain from citing a licensee's self-identified violations, if appropriate corrective action has been taken. Another commenter suggested that the NRC should consider developing different levels of certifications such as a platinum level of safety conscious awareness. A commenter suggested that the NRC should encourage licensees to continue to focus on safety culture and to expect them to conduct activities such as self assessments and audits to improve their performance.

Based on the material stakeholder comments, the staff concluded that there is value in striving towards a common understanding of expectations. The consensus among commenters is that the NRC's safety culture policy expectations should not be different for different types of licensees. However, the approach should also recognize the range of materials licensees and not apply a one-size-fits-all perspective. One commenter suggested that the methods that the NRC uses to share information such as generic communications and licensee newsletters could be used by the Agreement States. Another commenter suggested that the Agreement States could help licensees maintain a safety culture if they were to conduct inspections requested by the licensee.

The Organization of Agreement States/Conference of Radiation Control Program Directors representative raised the following points in the workshop. The approach needs to (1) be performance based, (2) appropriately consider the relative risk of the activities, and (3) be generic enough to address the range of different types of licensees. It was indicated that it would be almost impossible to develop one interpretation for all 36 Agreement States, and in the absence of a single policy, there could be 36 variations of a policy. It was suggested that there is a need for uniformity based on sound policy and that the guidance needs to be simplified and made un-burdensome. There is some skepticism, specifically that the NRC's effort to increase the attention to safety culture may be a reaction to the U.S. Congress at the expense of the States.

The following suggestions were made for moving forward with the development of the policy statement.

- First, the NRC should look at vulnerability versus the actual risk.
- Second, the NRC should look at data for basing its decisions (i.e., how many devices have been stolen/attempted to be stolen before and after the implementation of the increased security requirements).
- Third, the NRC needs to listen to the stakeholders and avoid making the presumption that the NRC knows best.
- Fourth, there is the need to continue with a questioning attitude and to trust but verify.

The staff will continue to consider these and other stakeholder comments during further development of the safety culture policy statement.

STAKEHOLDER INVOLVEMENT

In the February 25, 2008, Staff Requirements Memorandum (SRM) for COMGBJ-08-0001, "A Commission Policy Statement on Safety Culture," the Commission directed the staff to review specific issues related to safety culture in consideration of the safety culture components of the reactor oversight process (ROP) and fuel facility pilot and their potential applicability to other U.S. Nuclear Regulatory Commission (NRC) licensees. This enclosure addresses the following specific SRM question for consideration: how stakeholder involvement can most effectively be used to address safety culture for all NRC and Agreement State licensees and certificate holders including any unique aspects of security.

Conclusion

The NRC provided the first opportunity for its stakeholders to provide input into the draft policy statement and to identify ways that the NRC could increase attention to safety culture for all NRC and Agreement State licensees and certificate holders including any unique aspects of security through *Federal Register* Notices (FRN) (74 FR 4260; January 23 and 74 FR 6433; February 9, 2009) and a public workshop held on February 3, 2009. As noted in Enclosure 3, the staff concluded it should provide additional opportunities for the public to be involved in developing the final policy statement and that it should publish the draft policy statement for public comment. These additional opportunities will help to inform the staff about how best to involve the NRC and Agreement States licensees and certificate holders to determine how stakeholder involvement can most effectively be used to address safety culture for all NRC and Agreement State licensees and certificate holders.

Engaging the Agreement States and other stakeholders on issues relating to the development of the final policy statement is an important step in achieving the Commission's objective of ensuring that the policy is applicable to all licensees and certificate holders. Therefore, it is important to continue to work with stakeholders as the Commission continues to develop its policy on safety culture so as to more fully encompass all licensees and certificate holders.

Review

The staff's initial public outreach efforts were directed towards (1) involving stakeholders in the development of the draft policy statement, (2) obtaining stakeholder views on the issues related to safety culture that the Commission has directed the staff to consider, and (3) increasing the awareness of safety culture and its importance to the safe and secure use of radioactive material as a first step towards encouraging licensees and certificate holders to increase the attention they pay to safety culture.

In the process of developing the draft safety culture policy statement and developing responses to the questions posed in the SRM, the staff sought to involve stakeholders. To obtain the views of a range of licensees, certificate holders, and other stakeholders, the staff sought public comments on a set of specific policy questions related to the questions in the SRM through FRNs that informed the public of the February 3, 2009, workshop and posting the questions on the NRC's public safety culture Web site (http://www.nrc.gov/about-nrc/regulatory/enforcement/safety-culture.html). In addition to the FRNs, the public workshop was publicized through invitations to email lists of various stakeholder groups, mentioning the public workshop at other meetings, and Office of Public Affairs news releases. The news releases were also translated into Spanish and distributed to multicultural media outlets.

Ten different organizations including licensees, State regulators, and non-governmental organizations participated in the workshop panels. The Organization of Agreement States (OAS) and the Conference of Radiation Control Program Directors (CRCPD) participated on the panels discussing (1) safety culture and security culture and (2) materials area considerations. Overall, approximately 160 individuals participated in person, through the Webinar, or by teleconference. As noted in Enclosure 2, by making the meeting available through the Webinar, a barrier to stakeholder participation in the workshop was lowered. This allowed greater participation by smaller licensees and certificate holders, State government representatives, and other stakeholders. Approximately 60 stakeholders participated via Webinar as did one of the workshop panelists.

In addition to the public workshop, the staff conducted other outreach activities to increase the attention to safety culture among licensees and certificate holders (as described in the section below on a summary of outreach and communication activities). These activities included discussing the topic (1) at conferences and other external meetings, (2) at NRC meetings (as appropriate) and NRC advisory committee meetings, and (3) in licensee newsletters. The staff plans to continue using these forums to increase the attention to safety culture during the development of the policy statement and when it issues a final policy statement.

Summary of Stakeholder Comments on How Stakeholder Involvement Can Most Effectively be Used to Address Safety Culture for All NRC and Agreement State Licensees and Certificate Holders

A commenter suggested that the NRC work with professional societies to include safety culture in their standards of practice. A commenter suggested that the NRC should reach out to the regulated community, specifically doctors and their employees, by focusing on education and public awareness; the same commenter suggested that the NRC consider developing certifications in areas related to safety culture (i.e., safety conscious awareness). Furthermore, a number of commenters identified the NRC's interactions with licensees as opportunities for the NRC to improve the attention that licensees give to maintaining a safety and security culture.

Commenters provided suggestions on how to effectively involve stakeholders in the development and implementation of the NRC's safety culture policy. The suggestions included NRC sponsored workshops across the country with various categories of licensees and certificate holders to share information on safety culture and security culture, best practices, and lessons-learned and to facilitate the ability of the regulated community to share information. Commenters also suggested that the NRC continue to coordinate with the Agreement States on the policy statement.

A comment from the Illinois Emergency Management Agency suggested that having regional meetings with materials licensees and other stakeholders would have better conveyed the importance that NRC gives to safety culture. They also indicated that the meetings should not focus on specific uses of materials and that previous meetings on safety culture for materials licensees appeared to only address fuel cycle licensees and did not address the bulk of licensees that need to be addressed.

The staff will continue to consider these and other stakeholder comments during further development of the safety culture policy statement.

Summary of Draft Safety Culture Policy Statement Outreach and Communication Activities

In developing the draft policy statement, the staff conducted a number of outreach activities, in addition to the February 3, 2009, public workshop to ensure that as many stakeholders as possible were aware of the staff's activities in this area, and also, to solicit their feedback. Stakeholder outreach included the following activities:

- The staff made presentations at the Institute of Nuclear Power Operations (INPO) Human Performance Workshop, the National Association of Employee Concerns Professionals meeting, and a significant and widely attended presentation at the 2009 NRC Regulatory Information Conference. The staff provided overviews of NRC safety culture activities including the development of the draft policy statement.

- The staff gave a presentation at the Test, Research, and Training Reactors Annual Meeting to present the status of the policy statement development activity. The audience included representatives from research reactor facilities from across the nation including from government, major universities, national laboratories, and the industry.

- The staff had many discussions at the monthly ROP meetings which were focused primarily on lessons learned during the 18-month initial implementation period of the ROP safety culture enhancements and the resultant changes to ROP guidance documents. The staff discussed the draft changes and the reasons for proposing them with the external stakeholders to solicit their questions and comments during safety culture-specific sessions (focused on Inspection Manual Chapters (IMC) 0305, "Operating Reactor Assessment Program" (Agencywide Documents Access and Management Systems (ADAMS) Accession No. ML090700528); IMC 0612, "Power Reactor Inspection Reports" (ADAMS Accession No. ML082270500); and Inspection Procedure 95003, "Supplementary Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs or One Red Input" (ADAMS Accession No. ML080040267)).

- The staff provided presentations at the Corrective Action Program Owners Group meeting where the audience consisted of staff and managers who work in the corrective action program and/or the quality assurance area. Attendees were primarily from U.S. nuclear power plants but also included representatives from contractors, the Nuclear Energy Institute (NEI), INPO, and the Canadian nuclear regulatory agency and nuclear plants. Presentations included a summary of changes to ROP guidance documents related to safety culture.

- The staff made presentations at new reactor construction stakeholder meetings and at the workshop on Vendor Oversight for New Reactor Construction to discuss safety culture as part of the Construction Assessment Program indicating that more details would be provided in the future.

- The staff contacted the chairmen of several regional security manager associations (i.e., Region I Nuclear Security Association, Southeast Nuclear Security Association, Midwest Nuclear Security Association, and Western Nuclear Security Association) to discuss

issues involving safety culture and the unique aspects of security. This effort resulted in obtaining a panel member from one of these organizations for the public workshop.

- The staff briefed NEI representatives on integrating the nuclear materials safety and safeguards safety culture pilot into a new fuel cycle initiative. The staff informed the representatives that the Commission had emphasized that the policy statement should apply to all licensees and certificate holders, and thus, the staff plans to monitor the development of the policy statement to inform the fuel cycle safety culture effort.

- The staff sent invitations by email and made follow-up telephone calls to ensure that the safety culture policy statement public workshop was well publicized to as many stakeholders as possible including the fuel cycle licensees' e-mail lists; a significant holder of a certificate under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 71, "Packaging and Transportation of Radioactive Materials;" NEI; and other contacts such as an attorney involved in spent fuel issues and a stakeholder involved in uranium enrichment activities. In addition, the staff invited potential panelists and publicized the workshop to stakeholders to encourage participation and the submission of comments.

- The staff participated in teleconferences with OAS and CRCPD, conducted separate phone calls with OAS and CRCPD board members, and offered to hold more detailed discussions on safety culture, the development of the policy statement, and the public workshop.

- The staff participated in the OAS annual meeting, a teleconference with the Advisory Committee on the Medical Uses of Isotopes, and outreach to regional State liaison officers to raise awareness of the development of the policy statement.

- The staff distributed information through available established mailing lists with audiences that included Agreement State Radiation Control Program Directors; Non-Agreement State Radiation Control Program Directors; Indian Tribes; uranium recovery stakeholders; and medical, irradiator, and manufacturing and distributor licensees to raise awareness of the development of a policy statement. The staff also provided information in the winter newsletter of the Federal and State Materials and Environmental Management Programs.

SAFETY AND SECURITY CULTURE

In the February 25, 2008, Staff Requirements Memorandum (SRM) for COMGBJ-08-0001, "A Commission Policy Statement on Safety Culture," the Commission directed the staff to review specific issues related to safety culture in consideration of the safety culture components of the reactor oversight process and fuel facility pilot and their potential applicability to other U.S. Nuclear Regulatory Commission (NRC) licensees. This enclosure addresses the following specific SRM question for consideration: whether publishing NRC's expectations for safety culture and for security culture is best accomplished in one safety/security culture statement or in two separate policy statements.

Conclusion

The NRC staff considered how best to convey the Commission's expectations for safety culture and security culture. Based on the staff's review and stakeholder feedback, the staff concluded that the Commission's expectations for safety culture should be published in one policy statement entitled, "A Safety Culture Policy Statement," but emphasize that safety and security should be treated equally within the overarching safety culture.

Review

The staff considered how to address the safety and security culture issues to inform the draft policy statement. In consideration of the SRM question on safety and security culture, the staff developed the following three options: (1) separate policy statements, one for safety culture and one for security culture; (2) one policy statement that covers both safety and security; and (3) an organizational high-level policy statement. Option (2) had the following three sub-options: (2.a) safety and security are treated equally as a safety and security culture; (2.b) there is a hierarchical treatment of safety over security or security over safety, and (2.c) there is one overarching culture (i.e., a safety culture where safety and security are treated equally within it).

To consider the safety and security issues and the above options, the staff gathered data and reviewed the organizational safety and security culture literature, international reports, and non-nuclear industries information. A summary of these reviews appears in a separate section below. The staff agreed that the NRC should base the policy statement on the following criteria with regard to how culture affects the safety and security functions and goals:

- ensure equal treatment of safety and security functions and goals;
- articulate that both safety and security serve the same ultimate purpose of protecting people and the environment from unintended radiation exposure;
- acknowledge that cultural manifestations come from a common or shared source of values, beliefs, and attitudes;
- encourage attention to the ways in which safety and security interface;
- acknowledge that the goals of ensuring safety and security may be accomplished in different ways; and

- ensure that the policy statement is understandable to the spectrum of licensees.

Based on the information gathered from the document review, a February 2009 public workshop and in responses to questions posed in (74 FR 4260; January 23 and 74 FR 6433; February 9, 2009) *Federal Register* Notices, the staff decided on option 2.c (i.e., there is one overarching culture, a safety culture, with safety and security functions and goals treated equally within it). In summary, the staff developed its conclusion on the following considerations derived from the document reviews and stakeholder feedback:

- A single policy statement builds on the fact that safety and security have the same ultimate purpose of protecting people and the environment from unintended radiation exposure and encourages attention to the ways safety and security interface.

- The term "safety culture" should be considered as all encompassing because there would be no need for security in this area if it were not for radioactive material.

- The policy statement should give special attention to the safety and security interface within the safety culture; it should acknowledge clearly that the goals of ensuring safety and security may be accomplished differently; and it should apply to the entire spectrum of licensees and certificate holders.

- "Safety culture" is a well known term and will be less confusing to the public; however, it should clearly address the equal treatment of safety and security within it.

- Most stakeholders providing views on this question in the public workshop and in written comments supported one policy statement using the term "safety culture."

- There can only be one overarching culture in the organization with recognition that there may be subcultures within it. However, the organization should ensure that the subcultures support and do not undermine the overarching safety culture.

- The agency's enhanced safety culture characteristics include security in addition to safety in their descriptions to reinforce that safety and security should be treated equally.

Because the safety and security interface is a significant issue within safety culture, a separate section of this enclosure contains a discussion of safety and security interface considerations and NRC actions.

Summary of Stakeholder Comments on Whether Publishing NRC's Expectations for Safety Culture and for Security Culture is Best Accomplished in One Safety/Security Culture Statement or in Two Separate Policy Statements

Overall, the comments favored a single safety culture policy statement that included both safety and security culture. Although there is significant diversity among licensees and certificate holders, the commenters noted that the treatment of safety culture should not result in differing standards when it comes to maintaining a nuclear safety and security culture that protects the health and safety of the public. The policy statement should recognize that security culture is one of several integrated parts of safety culture (i.e., there is no real distinction between cultures, and there is not a stand alone radiation safety culture, a nuclear criticality safety culture, a fire safety culture, or an environmental protection culture). The commenters also

discussed the concepts of a performance-based methodology and a graded approach. The policy statement should recognize and allow for a graded approach to a safety and security culture based on the relative risks of the authorized materials and activities and should not apply a one-size-fits-all approach.

Reactor licensees noted that they have made substantial progress over several years toward the goal of fully integrating security into plant processes. To address security in a separate policy statement might provide negative reinforcement to the ideas that security is held to a different standard and that current proven processes are not sufficient. Fuel cycle licensees also supported a single policy statement to establish the expectation that the safety culture inherently includes a security culture as an integral and necessary component. Views supporting a hierarchical structure considered in option 2.b came from some materials licensees while other material licensees believed that a single policy statement should be drafted to address both safety and security. A few stakeholders supported option 1. They believed that the NRC should concentrate on defining safety and security policies separately while avoiding obvious conflicts between the statements.

The Organization of Agreement States/Conference of Radiation Control Program Directors representative at the February 3, 2009, workshop indicated that safety and security should be considered together (which is the approach that is currently taken in most of the States). A comment from the Illinois Emergency Management Agency suggested that safety and security policies should be defined separately, obvious conflicts should be avoided, and resolution of conflicts between the policies should be allowed at the lowest possible level such as at an Agreement State.

The staff will continue to consider these and other stakeholder comments during further development of the safety culture policy statement.

Document Review Summary

As noted above, the staff gathered data and reviewed the organizational safety/security culture literature, international reports, and non-nuclear industries information.

<u>Organizational</u>

Information gathered from organizational literature did not provide a definitive answer to the one policy statement or two policy statements question. However, in either case, the document should recognize the interface between safety and security. Organizational theory supports the notion of subcultures within a larger organization; so from the theoretical point of view, expectations are best expressed in one policy statement that reflects the idea that the subcultures are part of a whole. However, the research on organizational culture is not conclusive on this topic. While none of the research compared safety and security functions within nuclear power plants, research in European railways showed that in these organizations safety culture is oriented towards preventing accidents while security culture is oriented to preventing intentional harm. The distinctions that clarify the functions of safety and security support the conclusions of the North American Treaty Organization conference on nuclear security which suggested that, even though security culture could adapt concepts from the work in safety culture, it is important to avoid combining safety and security into one concept.

International

The staff concluded that there is no clear guidance from the International Atomic Energy Agency (IAEA) or an international consensus on how countries should implement both safety and security cultures or on the hierarchy of the cultures. Many international documents promote a security culture (i.e., the IAEA Convention on Physical Protection of Nuclear Material dated March 3, 1980, and amended in July 2005; the IAEA 20/20 report issued February 2008; the IAEA Code of Conduct on the Safety and Security of Radioactive Sources issued March 2005; and the best practices developed by the Institute of Nuclear Materials Management). IAEA has endorsed the concept of security culture as being fundamental to nuclear security implying co-equal status with the nuclear safety culture. The International Nuclear Safety Group (INSAG)-4 report issued in 1991 was used to develop the recently published nuclear security culture guide (Nuclear Security Series No. 1). The IAEA guide on "Considerations to Launch Nuclear Power Programme" dated March 5, 2007, infers that security culture should be part of safety culture or that Member States with existing safety culture statements should expand them to include security culture. The basic components of each culture are similar and in general do not contradict each other at a high level although there are some differences in the implementation of security culture at the operator and individual levels. All these documents stress that the cultures should be complementary to each other rather than conflicting and that differences should be identified and managed appropriately. However, some international papers argue that safety and security cultures should not be merged into a single entity because of differences in individual attitudes, potentially different competent authorities, and the need for State involvement caused by information confidentiality and threat concerns.

Non-Nuclear Industries

The staff's limited review indicated that the issue of safety culture and security culture and their interrelationships does not appear to be highly developed in other hazardous industries or on domestic corporate agendas as it is in the nuclear industry. Additional research would be needed to provide a firm conclusion. As a result, the staff could draw only mixed inferences from the information. In the biological industry, reference was made to the fact that bio-security has to be built on a robust bio-safety practice and culture. In aviation, a Government Accountability Office report on industry safety and security did not address the culture aspects, but the Arab Airline Carrier Association defined security to be a part of safety with a goal to promote safety and security culture at regional levels. In the maritime industry, safety and security are considered to have the same goal – namely the protection of people, property, and the environment. Security risks are connected to protection against willful (i.e., intentional) acts of disturbance, damage, or destruction while the safety is concerned with minimizing the risk of something accidentally going wrong. Safety and security go hand in hand, in that security threats, latent or acute, will influence the behavior of the crew on board and thus also have an impact on safety.

The chemical industry, however, had the closest relationship with the nuclear industry regarding safety and security. In the chemical industry, there is an intrinsic link between chemical safety and chemical security – two concepts with the shared objective of making the operation of a chemical facility trouble free. There is also a certain tension between safety and security. For example, the proponents of the engineering approach to safety typically call for building additional redundancy into at-risk systems; proponents of security reply that greater redundancy tends to render these systems, equipment, and components even more vulnerable to malicious acts making security even more costly and problematic than would otherwise be the case. Another important characteristic of an effective safety culture which is often treated quite

differently in security culture is error tolerance. Such a culture focuses primarily on the ability of employees to perform their duties effectively; it downplays assessing blame and punishing errors. In this regard, because of the nature of the threats, the security culture does not encourage an atmosphere of openness in which employees throughout the organizational hierarchy feel comfortable about discussing errors and near misses. Despite occasional conflict between the tenets of chemical security and chemical safety, the former is emerging as a distinct and important approach to enhancing physical protection at chemical facilities. The American Chemical Council has indicated that attention to security is a natural corollary to the chemical industry's safety culture. Security efforts, like safety efforts, protect the community and employees while keeping the transportation of hazardous materials operational. By reducing the risk of a wide range of threats to the transportation of hazardous materials, security measures can enhance the goal of the safe transportation of hazardous materials.

Discussion of the Safety and Security Interface and NRC Actions in this Area

Safety has been the primary pillar of the NRC's regulatory programs. However, the current heightened threat environment has created a renewed focus on security; therefore, the staff has taken a number of steps to enhance security and strengthen the safety and security interface. It is important to understand that both safety and security share the common purpose of protecting public health and safety. In today's environment, safety and security activities are closely intertwined, and it is critical that consideration of these activities must be integrated so as not to diminish or adversely affect either safety or security. The importance of considering both safety and security in an equal and balanced manner within the NRC's regulatory framework is clearly evident in its mission and strategic goals. Further, it is important for licensees and certificate holders to provide personnel in the safety and security sectors with an appreciation for the importance of each emphasizing the need for integration and balance to achieve optimized protection.

While many safety and security activities complement each other or are synergistic, potential differences remain. It is then imperative that mechanisms be established to resolve these differences if the NRC is to ensure the protection of public health and safety and promote the common defence and security. Hence, safety and security have implications for each other in connection with all aspects of nuclear activities. For example, the enhanced risk of a sabotage event has highlighted the importance of integrating safety and security in the field of protection and of identifying areas where they need to complement each other, so that a terrorist event, if and when it occurs, can be dealt with in as seamless a fashion as possible.

One important difference or challenge is the way in which individuals involved in safety and security activities approach the goal of risk mitigation and protection of public health and safety. The safety staff is typically focused on preventing errors that would result in an inadvertent accident; however, the security staff is focused on preventing deliberate attacks or diversion of certain materials that could cause harm. Another difference is the way in which individuals involved in safety and security activities approach information sharing. The safety staff promotes information-sharing and collaboration, but the security staff promotes the sensitivity of information and the need-to-know. These aspects and others identified through stakeholder interactions must be resolved and managed. Another challenge is that the organization/facility must ensure that the existence of motivated and capable persons with ill intent is understood, the importance of nuclear security to prevent such persons from access is recognized, and the insight into the complexity of nuclear security as a distinct discipline from nuclear safeguards and nuclear safety is achieved. The need for an improved sensitivity to this environment is exacerbated by the significant growth in nuclear utilization leading to more players in the field.

Due to the fact that globalization leads to new players and threats, the enhancement of intelligence and the importance of protecting some sensitive material (confidentiality) is necessary.

The NRC has undertaken a number of activities to address the safety/security interface. During its evaluation of a petition for rulemaking (PRM 50-80) submitted by the Union of Concerned Scientists and the San Luis Obispo Mothers for Peace, the NRC staff determined that it might be appropriate to establish requirement(s) to address changes made at nuclear power plants to address potential adverse interactions involving the safety and security interface at nuclear power plants and other types of facilities. The staff was aware of instances where the failure to promptly and effectively communicate actions taken by operations, maintenance, or security personnel at licensed facilities to potentially affected organizations could result in adverse effects on plant safety or security. Some examples included the placement of security barriers that diminished access to fire suppression equipment, the placement of scaffolding during maintenance activities that affected security lines of fire, and the staging of temporary equipment within security isolation zones. The NRC was already considering these issues as part of a rulemaking but highlighted these issues to licensees in an expedited manner. In 2005, the staff published Information Notice (IN) 2005-33, "Managing the Safety/Security Interface," dated December 30, 2005. The IN urged licensees to explicitly consider the safety and security interface issues and take appropriate actions so as not to degrade either safety or security of the facility. Copies of the IN were shared with Category 1 materials licensees.

In 2006 and 2007, the NRC published in the *Federal Register* (FR) proposed rules for nuclear power plants, "Power Reactor Security Requirements" (71 FR 62663; October 26, 2006), and for a geologic repository operations area, "Geological Repository Operations Area Security and Material Control and Accounting Requirements" (72 FR 72522; December 20, 2007). These documents proposed requirements to address the potential for adverse safety and security interactions. The final reactor security rule was published on March 27, 2009 (74 FR 13926). One of the key new features of this rule was to add a regulatory requirement for a safety and security interface (Title 10 of the *Code of Federal Regulations* (10 CFR), Section 73.58, "Safety/security interface requirements for nuclear power reactors"). These requirements mandate that licensees establish adequate programs for assessing, managing, and coordinating proposed changes and activities to identify potential adverse interfaces between safety and security and take appropriate compensatory or mitigative actions to maintain both safety and security. Specifically, the rule requires licensees to (1) assess and manage the potential for adverse effects on safety and security (including the site emergency plan) before implementing changes to the plant configurations, facility conditions, or security and (2) where potential adverse interactions are identified, licensees must communicate them to appropriate licensee personnel and take compensatory and/or mitigative actions to maintain safety and security under applicable Commission regulations, requirements, and license conditions. The scope of changes to be assessed and managed must include planned and emergent activities (such as, but not limited to, physical modifications, procedural changes, changes to operator actions or security assignments, maintenance activities, system reconfiguration, access modification or restrictions, and changes to the security plan and its implementation).

In addition, 10 CFR Part 73.55(c)(7), "Security implementing procedures," of 10 CFR 73.55, "Requirements for the physical protection of licensed activities in nuclear power reactors against radiological sabotage," requires licensees to review and update existing procedures to reference the requirements of the interface between safety and security as outlined in 10 CFR 73.58. These procedures should clearly define processes to ensure that a comprehensive and effective network of communications between the operations (safety) and security staffs is maintained at

the facility. In addition, 10 CFR 73.55(m), “Security program reviews,” of 10 CFR 73.55 requires licensees to ensure that the reviews and audits of its site physical protection program include activities involving the interface between safety and security.

As part of this effort, the NRC also developed Draft Regulatory Guide DG-5021, “Managing the Safety/Security Interface,” for nuclear power plants. The guidance states that a licensee’s management controls and processes for the interface between safety and security should ensure that the security staff is notified of potential changes to the characteristics of the site’s physical layout (including topographical changes); the configuration of facilities, structures, systems, and components; the site’s operational procedures; and day-to-day or planned activities. Controls and processes should also ensure that the security organization has the opportunity to review proposed changes and activities to identify potential adverse impacts on the functions and performance of the elements of its site physical protection program established within the owner-controlled, protected, and vital areas.

SUMMARY OF NRC'S SAFETY CULTURE ACTIVITIES

Safety Culture Enhancements for the Reactor Oversight Process

One of the lessons learned following the discovery of the reactor pressure vessel head degradation at the Davis-Besse Nuclear Power Station was that a weak safety culture was a contributing cause that led to the degradation. On July 1, 2004, the staff of the U.S. Nuclear Regulatory Commission (NRC) provided the Commission options for enhancing its oversight of safety culture in SECY-04-0111, "Recommended Staff Actions Regarding Agency Guidance in the Areas of Safety Conscious Work Environment and Safety Culture." In the August 30, 2004, Staff Requirements Memorandum (SRM)-SECY-04-0111, the Commission directed the staff, in part, to enhance the reactor oversight process (ROP) guidance related to cross-cutting issues to more fully address safety culture, continue to monitor industry efforts to assess safety culture, and develop inspection guidance for evaluating a licensee's safety culture for licensees with significant performance issues. In SRM-SECY-05-0187, "Status of Safety Culture Initiatives and Schedule for Near-Term Deliverables," dated December 21, 2005, the Commission directed the staff, in part, to continue to interact with stakeholders, build from enhancements already made to the ROP, and ensure that the resulting ROP modifications are consistent with the regulatory principles that guided the development of the ROP such that overall assessments of licensee performance remain transparent, understandable, objective, predictable, risk informed, and performance based.

The staff held public meetings with external stakeholders and modified selected inspection manual chapters and procedures to more fully address safety culture. The NRC staff enhanced the ROP by incorporating 13 safety culture components and the enhanced ROP was implemented in 2006. The enhanced ROP integrated safety culture into substantive cross-cutting issues (SCCI) by assigning cross-cutting aspects (associated with 9 of the 13 safety culture components) to inspection findings (including security-related findings) if applicable. The ROP supplemental inspection program considers all 13 safety culture components. Based on a licensee's performance issues, the NRC staff has a graded response in accordance with supplemental inspection guidance.

In 2007-2008, the staff reviewed the implementation of the enhanced ROP. As a result of this review and lessons learned, the staff developed additional clarifications and modifications to the ROP inspection procedures and manual chapters in 2009. The staff continues to assess the ROP safety culture enhancements to determine that they meet the ROP regulatory principles of being transparent, understandable, objective, predictable, risk informed, and performance based.

Fuel Cycle Safety Culture Pilot (2007 and 2008)

The staff made considerable progress in evaluating how to incorporate safety culture into its oversight processes through the Office of Nuclear Material Safety and Safeguards (NMSS) Safety Culture Pilot which was implemented in 2007. The NMSS Pilot was conducted by an interoffice Safety Culture Task Group led by NMSS and included staff from various offices and Region II with knowledge and experience in the areas of safety culture, inspection, and rulemaking. The task group reviewed the ROP safety culture components for their applicability to the fuel cycle environment. Based on site visits to two fuel cycle facilities which included interviews at those sites and a review of the NMSS inspection procedures as well as other NMSS oversight programs and processes, the staff concluded that the 13 safety culture components could apply to the fuel cycle

environment. However, the staff would need to modify some descriptions to address the unique characteristics of that environment.

The staff developed five options regarding the pilot implementation strategy for the fuel cycle oversight program, and the options ranged from no action to rulemaking. For stakeholder feedback, the staff presented the options at a Fuel Cycle Information Exchange meeting in June 2008. The staff believes that the appropriate approach is to explicitly apply safety culture components consistently throughout the fuel cycle inspection and assessment program. However, this effort will now be integrated into another initiative – the revised fuel facility oversight process. The intent of this process is to draw on risk insights to develop a more stable, predictable, and transparent oversight process building on the principles of the ROP. The staff formed a steering committee, and its charter is expected to be finalized in the third quarter of 2009. There are limited resources for the Fiscal Year (FY) 2010 budget, and resources are being planned for the FY 2011 budget.

This activity will consider how it will incorporate the safety culture characteristics in the final safety culture policy statement into the revised fuel facility oversight process. In addition, decisions on applying the insights from the pilot to other types of licensees regulated by NMSS will be made when the fuel facility oversight process initiative is accomplished to take advantage of knowledge gained from that initiative.

Safety Culture Considerations for New Reactor Construction

The staff from the Office of New Reactors (NRO) has actively participated on the existing safety culture inter-office teams (and task groups) to provide input to the existing ROP safety culture approach. Participation in these meetings helped inform NRO staff in its development of the process for considering areas important to safety culture for the new reactor construction inspection program. The staff assembled an inter-office task group to review the existing ROP safety culture components (as outlined in Regulatory Issue Summary 2006-13, “Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture”) and to develop an approach for use in new reactor construction. In addition, a contractor reviewed the safety culture components independently from the NRC staff. The results of the task group and the independent contractor concluded that construction events could be identified for each of the existing components, and as a result, the existing components could be considered in the oversight process being developed by NRO. The staff and the new reactor construction stakeholders recognize that a strong safety culture during new reactor construction is paramount for ensuring that the newly constructed plant is in compliance with its design and capable of operating safely following construction. As a result, the staff is continuing to evaluate the appropriate level of monitoring of safety culture as a potential input to the Construction Response Table or equivalent program assessment tool. The staff intends to continue seeking stakeholder input on the development of its oversight program for new reactor construction including the areas important to safety culture during the regularly scheduled public meetings.

Activities Related to Nuclear Security/Safety Culture

After licensees implemented security requirements at nuclear power plants following the events of September 11, 2001, the NRC observed significant improvements in the security of these facilities through baseline and special inspections (e.g., material control and accounting, Section B.5.b Temporary Instructions) and NRC-evaluated force-on-force exercises. Because of concerns involving the control of sensitive security-related information, the Commission directed that the security cornerstone would have a separate but parallel ROP process. The

NRC has identified a number of issues through both allegations and inspections that relate to the cross-cutting areas of the ROP. These include human performance issues (i.e., inattentiveness both at an over-watch post for a vehicle barrier system and in the search train), problem identification and resolution issues (i.e., ineffective corrective actions for identified inoperable vital area doors over an extended period), and safety conscious work environment issues (i.e., security officers feeling discouraged from reporting safety concerns including behavioral observation program elements). The security cornerstone of the ROP is an evaluation of a licensee's implementation of its security program. Included within this assessment process is the treatment of security performance issues as they may relate to the cross-cutting areas (i.e., human performance, problem identification and resolution, and safety conscious work environment) within the NRC's safety culture framework. These security performance issues that are identified as having cross-cutting aspects are assessed in an integrated fashion across the seven cornerstones of safety.

In late 2006, the NRC senior management identified an action item related to the security inspection process and human performance issues that involved the need to identify ways for resident inspectors to be more sensitive to security issues and more involved in security inspections at sites. This need was addressed by a report of an Ad Hoc Review Group that was issued in May 2007. The conclusions and recommendations of this report gained added importance when the NRC became aware of evidence of inattentive security officers at the Peach Bottom Atomic Power Station in September 2007 (Agencywide Documents Access and Management Systems Accession No. ML080420566). To address the inattentiveness concerns, the staff, in September 2007, ensured that onsite NRC staff increased random inspections at security posts at all nuclear power plants (i.e., during weekends and backshifts). To better inform NSIR of actions it might take to determine how security-related performance issues could be addressed in the framework of safety culture, security representation is now on the Safety Culture Working Group. On July 21, 2008, the NRC issued interim guidance for regional offices to use in the Resident Inspection Program to enhance resident inspector sensitivity and involvement in the routine oversight of security at power reactors. Resident inspectors will receive permanent guidance that will address implementation of the policy statement's safety culture expectations.

With regard to security officer inattentiveness, the staff issued a Security Advisory SA-07-06, "Security Officers Inattentive to Duty," to emphasize that licensees of power reactors, Category I and III fuel cycle facilities, independent spent fuel storage installations and conversion facilities, and certificate holders of gaseous diffusion plants should have effective processes and procedures in place to ensure that individuals performing specific security duties are attentive to those duties. To address the broader industry concerns related to inattentive security officers, the NRC issued to licensees of power reactors and Category I fuel cycle facilities an industry-wide Bulletin, "Security Officer Attentiveness" (2007-01), in December 2007, to gather information on licensees' programs to determine the need for further regulatory action. After reviewing all the licensee responses to the Security Bulletin, the staff identified the need to request additional information. In July 2008, the staff issued a Request for Additional Information to all licensees. All licensee responses have been received, reviewed, and assessed. The staff plans on closing Security Bulletin 2007-01 by issuing closure letters to affected licensees in 2009.

DEVELOPMENT OF THE SAFETY CULTURE CHARACTERISTICS

When the U.S. Nuclear Regulatory Commission (NRC) staff developed safety culture characteristics in response to the February 25, 2008, Staff Requirements Memorandum for COMGBJ-08-0001, "A Commission Policy Statement on Safety Culture," it retained the concepts of the reactor oversight process' (ROP) 13 safety culture components but revised them to be generically applicable to all licensees and certificate holders and to explicitly address security. They were streamlined to reduce redundancies and the wording used to describe some of the concepts was clarified. Discussion of these changes follows.

Applicability

Because the 13 safety culture components were tailored for use in the ROP, some of the terminology used in the ROP component descriptions is not applicable to the other NRC-regulated non-reactor organizations and processes. For example, one ROP component refers to the licensee's "corrective action program" because power reactor licensees in the U.S. have established sophisticated formal processes and programs for identifying, evaluating, and resolving nuclear safety issues. By contrast, a small industrial radiography firm typically would not have the resources to establish a formal program. However, the overarching principle, which is that an organization with a healthy safety culture identifies, evaluates, and resolves safety and security problems, applies to large power reactors and small firms as well. Therefore, the safety culture characteristics refer to identifying, evaluating, and resolving problems affecting safety and security but do not use the term "corrective action program." Instead, the safety culture characteristics include a "problem identification and evaluation" characteristic and a "problem resolution" characteristic.

Security

For consistency with the NRC's mission and increased focus on the safety/security interface, each of the safety culture characteristics refers to "safety and security" where only "safety" was previously mentioned. For example, the ROP continuous learning environment component is described as, "the licensee ensures that a learning environment exists." The related safety culture characteristic is described as, "management maintains a continuous learning environment in which opportunities to improve safety and security are sought out and implemented." The unique aspects of security would be addressed as appropriate within the examples or aspects for each component.

Streamlined

In accordance with Inspection Manual Chapter-0305, "Operating Reactor Assessment Program," the ROP inspection staff uses 9 of the 13 safety culture components when implementing the baseline inspection program. Four of the components are "reserved" for use only during supplemental inspections when a licensee's performance has declined. When the staff had the opportunity to consider the four reserved components in inspection activities, it became clear that some of them were redundant with the safety culture concepts captured in the nine baseline components and their associated aspects. For example, the staff noted that the extent to which a licensee implements improvements that are identified through operating experience (OpE) reviews or self and independent assessments is an indication of the extent to which the licensee is maintaining a continuous learning environment (one of the reserved components). *(NOTE: OpE and self and independent assessments are two of the nine ROP baseline program components.)* Alternatively, if a licensee identifies problems or weaknesses

from OpE reviews or assessments and resolves them, then the use of OpE and assessments can be viewed as indicating that the licensee's processes for identifying and resolving problems are effective (the ROP Corrective Action Program component).

Power reactor licensees and other NRC-regulated entities use a variety of means to identify problems as well as opportunities for improvement. The overarching safety culture concepts are that the licensee identifies problems and resolves them and seeks out and implements opportunities for improvement no matter what means are used to achieve these ends. Therefore, the set of safety culture characteristics does not include OpE and self and independent assessments as separate components although they continue to be meaningful examples of a positive safety culture in nuclear power plants. Similar considerations led to the elimination of "safety policies" and "organizational change management" as safety culture characteristics in the revised set.

Clarified

The staff observed that the wording of some of the ROP components could be improved to more fully or accurately communicate the overarching concept. For example, the work practices component is described as, "personnel work practices support human performance," which does not fully capture the intended scope of this component. Although using human performance enhancing tools (such as self and peer checking and following procedures and holding pre-job briefs) provides evidence of a healthy safety culture, there are additional attitudes and behaviors at the individual contributor level that provide equally important diagnostic information about the strength of the organization's safety culture. These may include not only following procedures but also taking responsibility to ensure that an error found in a procedure is corrected; not only re-checking one's calculations when performing an engineering analysis but also questioning one's underlying assumptions and the data on which the analysis is based; or not only wearing one's personal protective equipment but also insisting that co-workers protect themselves. Therefore, to more accurately capture the intended broader scope of these safety culture-related attitudes and behaviors, the staff rewrote the description of the ROP work practices component as the following safety culture characteristic: "As individual contributors, personnel demonstrate ownership for safety and security in their day-to-day work activities."

NRC AND AGREEMENT STATE CONSIDERATIONS

U.S. Nuclear Regulatory Commission (NRC) Considerations

The staff is continuing to consider how to increase attention to safety culture through NRC oversight programs for licensee and certificate holders. The staff will consider the activities of the licensees and certificate holders, the existing regulatory framework that applies to those activities, the risk of the activities, and other factors when making its evaluation. Because of the diversity among materials licensees and the risk of their activities, the Office of Federal and State Materials and Environmental Management Programs will prioritize its efforts and determine the appropriate level of review of certain oversight programs and processes with respect to the expectations in the final policy statement.

The employee protection requirements in Title 10 of the *Code of Federal* Regulations (10 CFR) Sections 30.7, 40.7, 61.9, 70.7, and 71.9 (all entitled "Employee Protection") are an example of existing regulatory requirements that address a characteristic of safety culture. Efforts to increase the attention to safety culture may involve reevaluating these existing requirements (such as the employee protection requirements) to determine whether they may need to be modified or supplemented. This would involve evaluating the extent to which the current NRC requirements address the NRC expectations of safety culture including security in the final policy statement and the current level of compatibility required by the Agreement States (see the section below for a more detailed discussion of Agreement State considerations). This information will allow the NRC to better evaluate whether it needs to conduct a rulemaking to address safety culture and whether it may be appropriate to re-evaluate the compatibility category of those requirements. As with the ongoing evaluation of the compatibility category for the employee protection requirements, the staff will work with the Agreement States on the reevaluation so as to be fully informed of their views.

With regard to rulemaking, the staff is continuing its broad review of issues related to safety culture as part of its effort to develop or refine existing oversight processes, consistent with the existing regulatory frameworks, and to revise the Commission's policy statement on safety culture. The current staff review has not determined that a rulemaking is necessary at this time. As reflected in the proposed draft policy statement, the staff revised the safety culture components (termed safety culture characteristics in the policy statement) in consideration of lessons learned to make them more widely applicable and to incorporate the unique aspects of security. Based on lessons learned, the staff is continuing to refine the reactor oversight process safety culture enhancements and is continuing its efforts to incorporate areas important to safety culture into the oversight of new reactor construction. In addition, the staff is proceeding with the development of the revised fuel facility oversight process. Finally, the staff is continuing to engage the Agreement States on how best to increase the attention that they and their licensees give to safety culture. These efforts will provide additional information that will be useful for evaluating the need for, or benefit of, conducting a rulemaking in this area.

Agreement State Considerations

The NRC administers approximately 3,400 materials licenses, and the 36 Agreement States administer approximately 18,900 materials licenses. If New Jersey becomes an Agreement State, approximately 500 licensees would be transferred to the State of New Jersey. Some of the Agreement State licensees perform activities within NRC jurisdiction under reciprocity. The

staff is evaluating how the Commission expectations in the final policy statement may be extended to these licensees.

A policy statement is not considered a rule within the meaning of the Administrative Procedures Act and cannot be accorded the status of a rule. As a consequence, Agreement States cannot be required to implement elements of a policy statement, and it cannot be considered to be binding upon, or enforceable against, NRC or Agreement State licensees. Although the NRC may express its expectations for Agreement States in a policy statement, these expectations would not be a matter of compatibility. A policy statement would announce the Commission's views on safety culture and security culture and would contribute towards elevating awareness of the issue to State regulatory authorities and NRC and State licensees. Such a policy statement announcing the NRC's interpretation of existing regulations may have some persuasive impact on courts interpreting similar regulations at both the State and Federal level but would not bind an Agreement State in implementing its corresponding compatible regulations.

The NRC does have adequate legal authority under the compatibility standards of the Atomic Energy Act of 1954 (AEA) to require States to adopt criteria when it is established in a regulation. Congress added Section 274a in the AEA to clarify the respective responsibilities of the States and the Atomic Energy Commission with respect to the regulation of byproduct, source, and special nuclear materials, and establish procedures for the discontinuance of certain of the Commission's regulatory responsibilities and the assumption thereof by the States. The NRC is statutorily required to determine that the State program is adequate and compatible to protect public health and safety from radiological hazards. The NRC has described its policy on compatibility and has established compatibility categories in the *Federal Register* (FR), in its "Policy Statement on Adequacy and Compatibility of Agreement State Programs" (62 FR 46517; September 3, 1997). The NRC's determination includes a review of the State's regulations. As a result, NRC regulations have compatibility classifications that determine the amount of flexibility an Agreement State has in adopting the regulatory requirements. The NRC would need to follow this rulemaking procedure before requiring States to implement this policy.

Reevaluations of the compatibility designation of existing requirements would be provided to the joint NRC/Agreement State Standing Committee on Compatibility which would offer an independent review and assessment of the staff's designations. However, the NRC would need to perform a subsequent rulemaking if it determines that Agreement States should implement a program involving the oversight of safety culture or it seeks to make other substantive changes relating to safety culture or security culture that would be legally binding on NRC and State licensees.

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U.S. NUCLEAR REGULATORY COMMISSION

NON-CONCURRENCE PROCESS

SECTION A - TO BE COMPLETED BY NON-CONCURRING INDIVIDUAL

TITLE OF DOCUMENT	ADAMS ACCESSION NO.
Draft Safety Culture Policy Statement	
DOCUMENT SPONSOR	SPONSOR PHONE NO.
Stewart Magruder	**301-415-8730**
NAME OF NON-CONCURRING INDIVIDUAL	PHONE NO.
Isabelle Schoenfeld	**301-415-3280**

☑ DOCUMENT AUTHOR ☐ DOCUMENT CONTRIBUTOR ☐ DOCUMENT REVIEWER ☑ ON CONCURRENCE

TITLE	ORGANIZATION
Senior Program Manager	**Office of Enforcement**

REASONS FOR NON-CONCURRENCE

Please see attached

☐ CONTINUED IN SECTION D

SIGNATURE Isabelle Schoenfeld

DATE 4/22/09

SUBMIT FORM TO DOCUMENT SPONSOR AND COPY TO YOUR IMMEDIATE SUPERVISOR AND DIFFERING VIEWS PROGRAM MANAGER

Enclosure 9

Non-Concurrence Statement Re: Draft Safety Culture Policy Statement, submitted by Isabelle Schoenfeld

Issue

The Commission's February 25, 2008 Staff Requirements Memorandum (SRM) directed the staff, in part, to: "...expand the Commission's policy of safety culture to address the unique aspects of security and to ensure the resulting policy is applicable to all licensees and certificate holders." The draft Federal Register Notice (FRN) in Enclosure 1 of the Commission Paper does not adequately address the Commission's direction to provide the NRC's expectations for safety culture, in that the characteristics of a positive safety culture are not included in the only section of the FRN that addresses Commission policy, i.e., the "Statement of Policy" section.

Recommendation for Consideration

Based on the SRM direction to expand the Commission's policy of safety culture and publish the NRC's expectations for safety culture to apply to all licensees and certificate holders, the draft FRN should include, at a minimum, in the "Statement of Policy" section, the information presented in quotes below (now presented in the "Summary" section of the draft FRN). The quoted information is a summary of the staff's proposal for Commission expectations (i.e., safety culture characteristics) indicative of a positive safety culture. In addition, the draft FRN should continue to include the more complete description of these characteristics in the "Characteristics of a Positive Safety Culture" section. Or, the more complete description should replace the following summary in the "Statement of Policy" section:

"Experience has shown that certain organizational characteristics and personnel attitudes and behaviors are present in a positive safety culture. These include, but are not limited to, individuals demonstrating ownership and personal responsibility for maintaining safety and security in their day-to-day work activities; the implementation of processes for planning and controlling work activities such that safety and security are maintained; a work environment in which personnel feel free to raise safety and security concerns without fear of retaliation; prompt and thorough identification, evaluation and resolution of nuclear safety and security issues, commensurate with their significance; the availability of the resources needed to ensure that safety and security are maintained; decision-making processes that protect safety and security; clearly defined roles and responsibilities for maintaining safety and security; and the seeking out and implementation of opportunities to improve safety and security. The NRC expects its licensees and certificate holders to foster these characteristics, attitudes, and behaviors in their organizations and among individuals who are overseeing or performing regulated activities commensurate with the safety and security significance of their activities and the nature and complexity of the licensee's or certificate holder's organization and functions."

By including this information in the "Statement of Policy" section, the Commission (1) would more clearly communicate to licensees, certificate holders and other interested parties, the importance the Commission places on these expectations of a positive safety culture, and (2) would be consistent with the previous policy on safety culture in the 1989 policy statement on the "Conduct of Nuclear Power Plant Operations."

Background

The proposed safety culture characteristics incorporate the concepts first described in the 1989 Conduct of Nuclear Power Plant Operations policy statement. They also incorporate the concepts in the Reactor Oversight Process (ROP) safety culture components, developed by the staff in response to the Commission's direction in SECY-SRM 2004-0111, which required the staff to enhance the ROP to more fully address safety culture. To enhance the ROP, the staff identified 13 safety culture components based on a review of a wide range of information sources, including the Institute of Nuclear Power Operations (INPO); the International Atomic Energy Agency (IAEA); the Nuclear Energy Agency (NEA); other industries; the organizational behavior, safety climate and safety culture research literature; and staff knowledge and experience. The 13 safety culture components were extensively discussed with stakeholders in public meetings prior to their implementation in the ROP in 2006.

In response to the Commission's February 2008 SRM, the staff reviewed and modified the ROP's safety culture components to (1) address security, (2) be more clearly applicable to all licensees and certificate holders, and (3) incorporate lessons learned from applying the safety culture components in the ROP. The result was nine safety culture characteristics that retain all of the concepts of the ROP safety culture components but are streamlined (i.e., eliminate redundancies), emphasize security and are applicable across the range of NRC-regulated work contexts. The staff is proposing to refer to the concept descriptions as safety culture "characteristics," rather than "components," to reduce potential confusion on the part of internal and external stakeholders between the safety culture characteristics described in the draft safety culture policy statement and the ROP's safety culture components. The staff posted and requested comments on the proposed safety culture characteristics at the February 3, 2009 public workshop and on the NRC's public safety culture website. The posted description of each safety culture characteristic included two illustrative examples of how behavior or attitudes indicative of the concept may be observed in any workplace where safety and security are important. The illustrative examples were provided to enhance all of NRC's stakeholders' understanding of each characteristic.

The initial draft Commission Paper, developed by staff in response to the February 2008 SRM, included the proposed safety culture characteristics and associated illustrative examples in the "Statement of Policy" section of the FRN. It was then determined that the safety culture characteristics should be removed from the "Statement of Policy" section and placed in another section of the FRN (for reasons discussed below) and that the illustrative examples should be removed because they were thought to be too detailed for a policy statement. In the next draft, the characteristics were placed in a section of the FRN titled "Characteristics of a Positive Safety Culture" and although the illustrative examples were removed, the characteristics were revised to retain the key descriptors from the illustrative examples. In that draft, the "Statement of Policy" section provided information on the characteristics in the summary form quoted above. In the final draft, this summary was removed from the "Statement of Policy" section and is now included in the "Summary" section. As a result, the draft policy statement forwarded to the Commission contains no information on the safety culture characteristics, i.e., areas that are indicative of a positive safety culture, in the "Statement of Policy" section.

The reasons for this direction apparently stem from two main concerns. First, there was a concern that placing the safety culture characteristics in the "Statement of Policy"

section would limit the Commission's ability to make changes to them and could also limit the staff's ability to engage with industry stakeholders with the objective of defining areas important to safety culture with a common terminology. Second, there was a concern that placing the safety culture characteristics in the "Statement of Policy" section would commit the Commission to safety culture characteristics that have not been fully discussed with internal and external stakeholders.

Discussion

The recommendation to include the safety culture characteristics in the "Statement of Policy" section of the FRN is based on several considerations: (1) describing the characteristics of a positive safety culture will be informative to licensees, certificate holders and other stakeholders who may not be familiar with the concepts; (2) including Commission expectations (i.e., characteristics) in the "Statement of Policy" is consistent with previous policy statements; (3) the underlying concepts can be worded in a variety of ways to make them more clearly applicable to specific work environments, so that including the characteristics in the statement of policy would not, in fact, constrain staff efforts to develop common terminology with the affected industries, and (4) the staff is recommending that the draft policy statement be published for comment. If the Commission approves the staff's recommendation, there will be additional opportunities for stakeholders to consider and comment on them.

Enhanced Communication

The commercial nuclear power industry is highly familiar with the concept of safety culture, beginning with the introduction of that term to the industry following the 1986 Chernobyl accident. However, as the Commission has recognized, it may not be as well-understood among other licensees and certificate holders. Although the NRC modified INSAG definition of safety culture in the draft policy statement provides a very general description of a positive safety culture, it is at a high-level and would be of limited usefulness to licensees and certificate holders in fully understanding the concept or recognizing either strengths or weaknesses in their own safety culture. Therefore, including the safety culture characteristics in the "Statement of Policy" section would better inform licensees and certificate holders of the Commission's expectations and increase the likelihood that all licensees and certificate holders would be able to address the policy expectations.

Level of Detail

Including the Commission's expectations (i.e., characteristics) in the "Statement of Policy" would be consistent with previous policy statements. For example, the 1989 policy statement on the Conduct of Nuclear Power Plant Operations provided the Commission's expectations for positive safety cultures at operating reactors by defining safety culture and providing a general description of areas important to safety culture in the "Policy Statement" section of the FRN. Examples of concepts describing a positive safety culture from the 1989 Policy Statement (in quotes below) that are incorporated into the proposed safety culture characteristics (in parentheses below) include:

- "Management must provide the leadership that nurtures and perpetuates the safety culture...The starting point for the necessary full attention to safety matters is with the senior management of all organizations concerned." (Licensee Decision Making – Management decision-making ensures that safety and security are maintained.)

- "...the personal dedication and accountability of all individuals engaged in any activity which has a bearing on the safety of nuclear power plants" (Work Practices – As individual contributors, personnel demonstrate ownership for safety and security in their day-to-day work activities.)
- "Clear lines of responsibility and communication are established;" (Accountability – Roles, responsibilities and authorities for safety and security are clearly defined and reinforced.)
- "...sound procedures are developed;" (Resources – Management ensures that the personnel, equipment, procedures, and other resources needed to assure safety and security are available.)
- "Open attitudes are required in such staff [the operating organization] to ensure that information relevant to plant safety is freely communicated;" (Safety Conscious Work Environment (SCWE) – Management maintains a SCWE in which personnel feel free to raise concerns without fear of retaliation.)
- "...an inherently questioning attitude, the prevention of complacency, a commitment to excellence..." (Continuous Learning Environment – Management maintains a continuous learning environment in which opportunities to improve safety and security are sought out and implemented.)

The Commission has also previously emphasized the importance of promptly identifying and resolving problems that may affect nuclear safety and security, which are two of the proposed safety culture characteristics by determining that licensee "problem identification and resolution" processes are cross-cutting concerns since the inception of the ROP in 2000. Therefore, the concepts described in the proposed safety culture characteristics have been previously discussed by the Commission in other communications. What is different about the proposed characteristics for this policy statement is their broader applicability and inclusion of security.

Changes to Terminology

With regard to the concern that placing the safety culture characteristics in the "Statement of Policy" section would limit the Commission's ability to make changes to them and could also limit the staff's ability to engage with industry stakeholders with the objective of defining areas important to safety culture with a common terminology, note that the draft policy statement clearly states that the characteristics are not all-inclusive; that there may be other characteristics that may also be indicative of a positive safety culture in the specific work environments of different licensees and certificate holders.

The proposed safety culture characteristics are based on the ROP safety culture components, which the staff has evaluated for applicability to other environments including fuel cycle facilities, new reactor construction, and the NRC's internal safety culture. They represent concepts that are used in many other organizations' and regulatory bodies' safety culture descriptions (although they are sometimes termed attributes, aspects, principles, and may be worded differently). In addition, organizational weaknesses related to these characteristics have been determined to be root or contributing causes of significant events in not only the domestic and international nuclear industry but also in other industries. Although they may be expressed with different wording in the different environments, the underlying concepts are similar. Hence, there is a firm basis for presenting these characteristics as indicative of a positive safety culture.

If the NRC staff and stakeholders (e.g., reactor community, and/or Agreement States, and/or other stakeholders) are able to attain a common terminology(ies) that result in different wording of the safety culture characteristics, that should not impact the policy statement because it is the underlying concepts that are important, rather than the specific terminology used to describe them. If the underlying concepts are retained in future applications, there should be no need to revise the characteristics in the policy statement. Hence, including the characteristics in the "Statement of Policy" section should not preclude the staff's working with stakeholders to achieve more commonality in terminology. Furthermore, if, in the future, there is a need to modify the characteristics because the concepts have changed based on lessons learned, research, or other circumstances, then the Commission has the option to update the policy statement to reflect the needed changes.

Stakeholder Discussions

With regard to the concern that the proposed characteristics have not been fully discussed with internal and external stakeholders, it is important to note that, as discussed above, the concepts are not new. The proposed safety culture characteristics incorporate those concepts included in the 1989 policy statement, retain all of the concepts in the ROP safety culture components and have been presented to the public. As discussed in the Background section above, the ROP safety culture components were developed after extensive review and were vetted with internal stakeholders and external stakeholders. The fact that the safety culture characteristics address security, apply to all licensees and certificate holders, provide greater clarity and were streamlined does not change the concepts. Also, the staff is recommending that the Commission seek additional public comments on the draft policy statement including on the safety culture characteristics. Therefore, there will be opportunity for both internal and external stakeholders to comment on the characteristics before a final policy statement is published.

Conclusion:

NRC licensees and certificate holders possess a range of understanding of safety culture, it is therefore important to include the safety culture characteristics in the "Statement of Policy" section of the FRN to enhance their understanding of and appreciation for the importance of addressing characteristics that are indicative of a positive safety culture. In addition, providing the Commission's expectations in the "Statement of Policy" section is consistent with the 1989 policy statement and other policy statements. Not providing information on the safety culture characteristics in the "Statement of Policy" section may create the appearance that the characteristics included in the 1989 policy statement are no longer important to the Commission and that the Commission no longer supports the concepts in the safety culture components in the ROP. A policy statement that includes only the modified INSAG definition and a statement that licensees and certificate holders should foster a positive safety culture without describing what that means in the Statement of Policy section, could appear to be a step backwards in the Commission's efforts to promote a positive safety culture.

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U.S. NUCLEAR REGULATORY COMMISSION

NON-CONCURRENCE PROCESS

TITLE OF DOCUMENT	ADAMS ACCESSION NO.
Draft Safety Culture Policy Statement	

SECTION B - TO BE COMPLETED BY NON-CONCURRING INDIVIDUAL'S SUPERVISOR
(THIS SECTION SHOULD ONLY BE COMPLETED IF SUPERVISOR IS DIFFERENT THAN DOCUMENT SPONSOR.)

NAME
David Solorio

TITLE	PHONE NO.
Branch Chief	301-415-0149

ORGANIZATION
Office of Enforcement/Concerns Resolution Branch

COMMENTS FOR THE DOCUMENT SPONSOR TO CONSIDER

- [x] I HAVE NO COMMENTS
- [ ] I HAVE THE FOLLOWING COMMENTS

- [ ] CONTINUED IN SECTION D

SIGNATURE David C Solorio

DATE 4/30/09

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Actions taken to address non-concurrence:

The following actions were taken to address the differing views expressed in this non-concurrence:

1. The issue of the wording and proper placement of the safety culture characteristics was discussed extensively during the development of the draft policy statement language and a number of meetings of the task group and the steering committee were devoted solely to this issue. The discussions were very open and candid during these meetings and individuals were provided a chance to fully discuss each of their views. Each of the views was considered by the steering committee.

2. On the basis of the following factors, as articulated by the steering committee, the safety culture characteristics were not incorporated into the "Statement of Policy" section of the draft policy statement

    a. The "statement of policy" section of the policy statement should be kept brief, concise, and written to a high level. This will keep the "Statement of Policy" section very crisp and to the point to ensure it is well understood by all stakeholders and conveys the Commission's expectations clearly.

    b. Placement in another section of the policy does not invalidate its standing as part of the policy statement.

3. Following the development of the non-concurrence, and to ensure that the individual's views were clearly understood by the working group members, the steering committee, and each of the offices on concurrence for the Commission Paper and draft policy statement, the individual's non-concurrence statement was included and highlighted in an e-mail to each of the Office Directors and Regional Administrators for their review.

4. The Commission Paper was modified to include a summary of the staff discussions on this issue and to highlight that the non-concurrence was included as an Enclosure to the Commission Paper.

5. Finally, one of the questions in the Federal Register Notice was revised to specifically request public input on whether or not the safety culture characteristics should be included in the "statement of policy" section.

Based on the above, I believe that the staff has appropriately considered the views expressed in the non-concurrence and that the safety culture characteristics should not be included in the "Statement of Policy" section of the draft policy statement.

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(3-2009)

U.S. NUCLEAR REGULATORY COMMISSION

NON-CONCURRENCE PROCESS

TITLE OF DOCUMENT	ADAMS ACCESSION NO.
Draft Safety Culture Policy Statement	

SECTION C - TO BE COMPLETED BY DOCUMENT SPONSOR

NAME	
Stewart Magruder	
TITLE	PHONE NO.
Deputy Director	301-415-8730
ORGANIZATION	
Office of Enforcement	

ACTIONS TAKEN TO ADDRESS NON-CONCURRENCE (This section should be revised, as necessary, to reflect the final outcome of the non-concurrence process, including a complete discussion of how individual concerns were addressed.)

Please see attached.

☐ CONTINUED IN SECTION D

SIGNATURE - DOCUMENT SPONSOR	DATE	SIGNATURE - DOCUMENT SIGNER	DATE
Stewart L. Magruder	4/30/09	/RA Darren Ash for EDO	5/18/09

NON-CONCURRING INDIVIDUAL *(To be completed by document sponsor* when process is complete, i.e., after document is signed):

☐ CONCURS

☐ NON-CONCURS

☐ WITHDRAWS NON-CONCURRENCE (i.e., discontinues process)

☐ WANTS NCP FORM PUBLIC

☐ WANTS NCP FORM NON-PUBLIC