Summary of the Public Meeting on NRC's Safety Culture Initiative
October 26, 2005
Rockville, MD

A. Presentations

NRC staff made several presentations at this meeting. These presentations are summarized below, and the presentation slides are available on the NRC safety culture website at: http://www.nrc.gov/what-we-do/regulatory/enforcement/scpm102605slides.pdf.

Introduction

The staff and managers involved with the NRC's safety culture initiative, through participation on the Working Group, Steering Committee, and Support Team, represent a variety of offices (Office of Enforcement (OE), Office of Nuclear Reactor Regulation (NRR), Office of Nuclear Regulatory Research (RES), Office of Nuclear Materials Safety and Safeguards (NMSS), and the Regions). At this meeting, the NRC was seeking comments and feedback from stakeholders on the topics presented.

Status of Safety Culture Initiatives

The drivers of NRC's safety culture initiatives were described as the Davis Besse Lessons Learned Report, the General Accounting Office (GAO) report on Davis Besse, congressional encouragement, and the Staff Requirements Memorandum (SRM) on SECY-04-0111 "Recommended Staff Actions Regarding Agency guidance in the areas of Safety Conscious Work Environment (SCWE) and Safety Culture."

Since the last public meeting in August 2005, the staff had developed a plan to accomplish the work in two phases. The first phase was to be completed by March 2006, and the second phase will be accomplished by January 2007. The activities under the first phase are: 1) develop and begin to implement enhancements to the Reactor Oversight Process (ROP) to more fully address safety culture, 2) develop and begin to implement a methodology for documenting and assessing inspection information related to the cross cutting areas and safety culture, 3) develop a process to determine the need for a specific evaluation of safety culture for plants in the degraded cornerstone column of the ROP Action Matrix, 4) develop and begin to implement training for inspectors on safety culture and on the ROP enhancements, and 5) interact with stakeholders in revising the ROP. The activities under the second phase are: 1) complete the implementation of the enhancements of the ROP, 2) develop guidance for inspectors in conducting a specific evaluation of safety culture, and 3) train inspectors on the additional enhancements of the ROP and on the specific evaluation of safety culture.

In addition, the staff had revised the Safety Culture Attributes Table (table) based on stakeholder feedback and screening criteria. The staff also submitted to the Commission SECY-05-0187, "Status of Safety Culture Initiatives and Schedule for Near Term Deliverables," which described the two phased approach and provided a status of activities to date. Since August 2005, the NRC has met on two occasions with Senate staff from the Committee on Environment and Public Works and the Subcommittee on Clear Air and Nuclear Safety to provide a status of safety culture initiatives and planned activities. The Senate staff requested that additional meetings be held on a regular basis to keep them informed of progress in this

area. Finally, the staff issued Regulatory Issues Summary (RIS) 2005-18, "Guidance Document for Establishing and Maintaining a Safety Conscious Work Environment."

The next steps for the staff included finalizing the table, based on stakeholder feedback, completing phase one activities by March 2006, completing phase 2 activities by January 2007, and carrying out these activities with continued stakeholder interactions.

<u>Reactor Oversight Process (ROP) approach to safety culture</u>

An NRC presenter outlined a suggested approach for enhancing the ROP to more fully address safety culture. The idea for this approach was based in part from stakeholder comments, and the starting points for this approach were the ROP and the Safety Culture Attributes Table (table). The proposed approach was called the ROP findings approach and would use the ROP to identify possible safety culture insights during the existing process of investigating green or greater findings. This approach would not be used for minor findings. As part of the approach, guidance and training would be provided to inspectors on how to use relevant aspects of the table to help identify safety culture insights for potential findings. The inspectors would not use the entire table, only those portions applicable to the finding under development or investigation. This approach could lead to potential modifications to the cross-cutting areas, the cross-cutting assessment process, and possible agency actions, as further discussed below.

To evaluate this approach, the staff informally reviewed findings documented in inspection reports (mostly from 2004) from several sites to determine whether safety culture insights could be gained by applying the table as guidance. A range of sites were chosen for this evaluation, from a site with one green finding to a site with numerous findings. The review found that this approach should support the identification of safety culture related issues when they are present. It also found that different aspects of a single green finding could be linked to more than one safety culture element.

<u>Cross-Cutting Issues – Current Approach</u>

An NRC presenter described how under the current ROP program, the Inspection Manual Chapters (IMC) are routinely revised. There are several feedback mechanisms for internal and external stakeholders, including the internal feedback form process, ROP monthly public meetings, and internal and external surveys that are captured in the annual ROP SECY paper. There are two IMCs that contain guidance in the area of cross cutting issues. The first is IMC 0612 which provides guidance to the inspectors on documenting the results of their inspections. IMC 0612 was revised on September 30, 2005. A change to IMC 0305 is currently under development and will provide greater details on the process and incorporate lessons learned from the last mid-cycle and end-of-cycle review meetings.

The current proposed approach uses only findings as discussed in IMC 0612. Minor issues are not documented and therefore not considered in assessment when determining whether a substantive cross-cutting issue exists. The three cross-cutting areas are currently Problem Identification and Resolution (PI&R), Human Performance, and Safety Conscious Work Environment (SCWE). "Binning" is a term used when discussing the assessment or roll-up of findings with cross-cuttings aspects. "Binning" is taking findings with PI&R or Human Performance cross-cutting aspects and placing them in pre-defined bins to help determine whether there is a common cause. The criteria for determining whether a substantive

cross-cutting issue exists is stated in IMC 0305 as "multiple (>3) findings with a common theme across cornerstones with a significant level of concern with the licensees approach." This criteria only applies to the Human Performance and PI&R cross-cutting areas. The determination of a substantive cross-cutting issue is performed by the NRC regional offices, with headquarters participation, in preparation for the mid-cycle and end-of-cycle review meetings. The NRC has issued one substantive cross-cutting issue in SCWE, which was for the Salem and Hope Creek plants. This determination was based on the results of a special review of Salem and Hope Creek plants to assess the environment for raising and addressing safety issues. The NRC took this action in light of information in various allegations and NRC inspections.

Along with a variety of other assessment information, the mid-cycle and end-of-cycle assessment letters may include a description of 1) a new substantive cross-cutting issue and how the NRC plans to follow-up through the baseline inspection program, and/or 2) the status an existing substantive cross-cutting issue, (i.e., closed or still open with a summary of the NRC's assessment of progress in addressing the issue. The letter may include some additional follow-up actions if a substantive cross-cutting issue has been raised in at least two consecutive assessment letters. These options include requesting that 1) the licensee provide a response at the next annual public meeting, 2) the licensee provide a written response, or 3) a separate meeting be held with the licensee.

Regarding the table, some of the elements may be gathered only through supplemental inspections (e.g., organizational safety accountability). One of the approaches staff is considering would be to make an incremental change to the three cross-cutting areas to include additional bins to more fully capture safety culture elements. The staff would also need to decide if there are changes to what defines a substantive cross-cutting issue. For example, one of the criteria is currently greater than three findings in a bin. If the number of bins changes, the appropriateness of this criteria should be reviewed. Also, consideration should be given to some of the information in the table that are not documented in inspection reports, such as allegations information.

In summary, in developing the proposed approach, the staff sought to be consistent with the principles under which the ROP was developed: objective, understandable, predictable, and risk-informed. In the current inspection process, cross-cutting aspects of findings are already documented and evaluated. Therefore the proposed approach would involve incremental changes to the ROP to sharpen the focus on safety culture.

Overview of the Safety Culture Attributes Table

An NRC presenter explained how the proposed table was developed, the types of comments received on the table from internal and external stakeholders since the last public meeting and how these comments were resolved, the criteria developed to screen the information in the table, and how the staff envisioned that the table would be used. The staff presented a chart of the proposed safety culture attributes and elements. The presenter explained how the "attribute" and "element" were defined and how several elements provide information about an attribute. A column of the table headed "proposed Inspection information" was described as qualitative and provides information to assess the elements and attributes, while "proposed measures" listed in the fourth column, were described as quantitative and could be acquired through an inspection. The staff incorporated information into the table from both the U.S. industry and international

groups including information from the Institute of Nuclear Power Operations (INPO), International Atomic Energy Agency (IAEA), and IAEA's International Safety Advisory Group (INSAG).

The presenter explained that internal and external stakeholder comments were taken into consideration in the development of the table, and provided examples of the types of comments that were received. The comments related to the measures in the table, the table itself, and how the table would be implemented. For example, with regard to measures, many of the commenters indicated that the potential inspection information and measures are subjective in that they use the terms "appropriate" or "effective." Also some of the measures may have unintended consequences or are manipulable. Information, when taken out of context, may yield an inaccurate perception (due to refueling outages, etc.) for some, an increase or decrease may indicate a problem; there is variation between plants. In response to these comments, the working group rescreened the table for objectivity and replaced words such as "effective" with more objective terms when possible, removed measures that are manipulable, and measures that have unintended consequences; and revised some measures to make them less manipulable, i.e., by including *trends* rather than absolute numbers, deleting the measure, or including the measure as an NRC finding rather than something that the licensee tracks. In addition, the working group intends that the information gained with respect to safety culture is taken in context, with consideration of other plant activities and other information. As such an increase *or* decrease could indicate a problem; there are no set thresholds for acceptable criteria for the measures; and information is not expected or planned to be compared between plants. There is some recognition that inspectors will need to be trained on how to implement the table. With regard to implementation, some stakeholders expressed concern that the table would be used to systematically assess safety culture or to assess safety culture based on one inspection. The presenter noted, that as pointed out during the presentation on the NRC's proposed approach, relevant aspects of the table would be used only in developing a finding rather than as a tool during a systematic assessment. Also, an assessment of a site's safety culture would not be based on one inspection, but would be assessed as other cross-cutting issues currently are, during mid-and end-of-cycle assessments in the context of other information and findings.

The presenter also listed and explained the criteria that were used to screen items out of the table; for example, "manipulable" was taken to mean, "Cannot be altered so as to mislead," and "unintended consequences" was defined as, "Outcome can not have a negative influence on performance or undermine performance." Examples were provided of how these criteria were used; for example, measure for requalification exam failures was removed because of unintended consequences. The presenter explained how the table would be implemented, stressing that no one piece of information can define safety culture by itself, that the information in the table would be viewed as a whole and in the context of other plant activities, and that the proposed measures are *not* performance indicators and as such there are no associated thresholds. Also, there was no intention that the table would be used in its entirety to assess one finding and some information in the table would not be used at all during baseline inspections. Other information in the table would only be assessed during the mid-and end-of-cycle assessments.

The presentation concluded asking participants to comment on the content of the Table, focusing on ensuring that it captured:
(1) what is important to safety culture

(2) consistency with NRC/industry practices
(3) attributes, elements, and information that are indicative of safety culture.

B. Stakeholder Comments

The stakeholders comments during the public meeting related to: the proposed approach, the Safety Culture Attributes Table, and the time frame for the activities and/or stakeholder interactions. Below is a summary of the comments and NRC responses at the meeting.

General

Comment: There was some discussion among the stakeholders about what is the definition of safety culture and what are the effects of a poor safety culture.
Response: The NRC uses the definition from INSAG-4. The NRC and industry need to agree on what is important to safety culture and then focus on implementation.

Comment: Some stakeholders expressed difficulty in discerning recommendations from SECY 04-0111, SRM 04-0111, and proposed activities. In particular, one industry representative said that he heard from a number of industry stakeholders that they were unable to follow the thread between: (1) the options the staff proposed in SECY-04-0111, (2) the Commission direction in SRM 04-0111, and (3) what NRC staff proposed at the meeting.
Response: A recommendation was made for stakeholders as well as NRC staff to review the SECY and SRM again to better understand what the Commission directed in preparation for the next public meeting.

Current Proposed Approach

Comment: One stakeholder was concerned that the criteria for tagging findings with cross cutting aspects would not be clear and that green findings would be aggregated.
Response: Under the proposed approach, green findings will not be rolled up to greater than green findings. However, to recognize cross cutting issues, NRC needs to look across findings. If no actions are taken when a site has many green findings, plant performance may further decline. NRC recognizes that clear definitions and guidance on tagging findings appropriately and assessing cross cutting issues need to be developed for inspectors.

Comment: Several stakeholders stated that not every finding has cross cutting aspects and are concerned that if a plant is determined to have poor performance, findings may be more likely to be determined to have cross cutting issues. Other stakeholders had similar concerns about the potential for every finding to have a cross cutting aspect under the proposed approach, or some inspectors being under the impression that every finding must have cross cutting aspects and force fitting.
Response: Having cross cutting issues is a function of facility performance. If a plant is performing well, there is likely to be fewer findings and therefore fewer cross cutting issues. For plants with more findings, there would likely be a higher percentage of findings having cross cutting issues due to the likelihood of more underlying issues. At the Regulatory Information Conference (RIC), there was a discussion on increasing number of findings getting tagged with cross cutting issues. The staff has been reviewing the issue of when to tag findings with cross cutting aspects. In every finding, there has been a performance deficiency, and guidance would

need to be developed under the proposed approach for the inspectors to determine when there is a nexus to safety culture. Regarding the concern about every finding having a cross cutting issue, the staff recognizes the concern, and clear guidance will be needed on the threshold for determining when a substantive cross cutting issue exists based on the information from findings.

Comment: A stakeholder stated that the limit with the proposed approach is if there is not a finding, then safety culture is not evaluated. This allows for the risk of another Davis Besse type event.
Response: The staff has discussed whether findings that are less than green should be considered. The staff recognizes that the industry has made progress in many areas, and the proposed approach supplements what industry has accomplished. For example, there are areas (e.g. operational decision making) reviewed by INPO that NRC does not assess. The staff realizes the need to tie activities related to the cross cutting issues to the oversight of the site. As regulators, when the threshold to a green finding is reached, then NRC will become involved.

Comment: One Stakeholder expressed concern that the approach would place additional burdens on inspectors and limit their time on inspection activities.
Response: Inspectors deal with cross cutting issues under the current program, so the proposed approach should not add a significant burden. The proposed approach would better mine the information available in findings for common themes. Assessment of the cross cutting issues will be done by managers, who will consider all inputs in making the determination on whether there is a substantive cross cutting issue and what agency actions to take. The goal is to obtain an accurate picture of plant performance and to involve the "front line people" (e.g. inspectors and their supervisors).

Comment: A stakeholder suggested that the NRC consider unintended consequences of the proposed approach and conduct a pilot study to collect more information. There was also a comment made to consider how to communicate a finding with safety culture implications.
Response: These comments will be considered as the staff continues the development of activities.

Comment: Several stakeholders felt that there could be approaches other than the table and the proposed approach. For example, one stakeholder suggested that the cross cutting issues should not be redefined. Instead, safety culture implications should be considered after cross cutting issues are developed already, as currently done. Another stakeholder suggested that NRC should issue an improved policy statement, take safety culture out of the ROP, and instead rely on licensees to do safety culture assessment, with NRC oversight. This would be similar to the current approach to the training process.
Response: The staff and stakeholders will independently review all available options and discuss the results at the next public meeting. The staff reminded the stakeholders that the Commission directed the staff to enhance the ROP to address safety culture and did not approve the option to rely on industry initiatives with NRC oversight. In developing and evaluating potential approaches, the staff asked the stakeholders to consider the following: 1) the definition of safety culture, 2) what is important to safety culture, and 3) how to identify and measure what is important.

Comment: One stakeholder stated that competent leadership is fundamental to safety culture,

that short targeted personnel surveys are the most effective way to get a snapshot of leadership, and that the NRC should use (or oversee the use of) safety culture surveys. The commenter stressed that something as important as leadership should be just left up to INPO.
Response: The Commission in SRM 04-0111 specifically directed the staff not to use surveys.

Comment: One stakeholder stated that NRC staff and stakeholders should first discuss what the industry is already doing, what INPO is already doing, and what the NRC needs to touch on for oversight, as a starting point to discuss different approaches to NRC's safety culture oversight.
Response: Candidate approaches will be discussed at the next public meeting.

Comment: One stakeholder asked why doesn't the NRC do the planned Phase 2 first, and the phase 1 activities second, because the for-cause piece of the work should be easier, and a risk-informed perspective indicates a need to look at degraded plant assessments first.
Response: The top priority is to prevent the next Davis Besse, i.e., discover plants that may have declining safety culture while the Performance Indicators (PI) look good. Thus the focus has been on completing the baseline piece first.

Safety Culture Attributes Table

Comment: Some stakeholders were not clear on the purpose of the table. Several stakeholders made negative comments on the usefulness of the table. Some believed that inspectors may not understand how to use the table and that some of the information from the table may not be readily available. Some stakeholders stated that some items from the table can be subjective and that for some of the measures, increasing or decreasing trends can be indicative of either improving or declining performance. One stakeholder was concerned that the table may not provide a true picture of a site's safety culture.
Response: The table is a way to organize and communicate what the staff believes to be important to safety culture. It is not an inspection procedure or an assessment process. The table is not the end product; it is the first step. Not all data from the table may give insights to a site's safety culture, and not all attributes from the table may apply to a finding. NRC would need to discern which data gives insights to safety culture and if there are concerns about a site's safety culture based on the data. These determinations need to be developed. The staff agrees that increases or decreases for some measures may be indicative of improving or declining safety culture and some of the items from the table have the potential for subjectivity. Guidance on these issues would need to be developed for inspectors. In general, items from the table will be reviewed in conjunction with other inspection information and measures and in context of other plant activities to provide an accurate view of safety culture. Staff articulated that the table was simply a vehicle to answer the first couple of fundamental questions of the safety culture initiative work, with respect to safety culture: (1) definition; (2) what is important and why is it important? (3) how do you know it when you see it? And (4) how does the NRC oversee it, implementation, etc.

Comment: Several stakeholders felt that the measures column should be eliminated. One stakeholder said there were too many measures in the table.
Response: These comments will be considered by the staff.

Comment: Some stakeholders felt that their previous comments had not been incorporated into the table.

Response: The staff reviewed all comments and incorporated them into the table where appropriate. The discussion on consideration of the comments in the development of the table provided specific examples to illustrate how comments were used.

Comment: One stakeholder stated that the table is fundamentally flawed and that it should be thrown away. Another stakeholder stated that the table is very similar to the INPO principles, and simply the table can be replaced by the INPO principles. Other stakeholders wanted to know the relationship between the table and elements from INPO and the IAEA.
Response: These comments will be considered by the staff. NRC staff agreed to prepare a cross-walk between the table entries and INPO and IAEA safety culture documents. (Also see response below about relationship to INPO.)

Comment: One stakeholder expressed concern and confusion at being asked to provide comments on the table without an understanding of how the information will be used. This stakeholder and others also cautioned that licensees tend to align their programs with NRC oversight because everyone "wants a gold star" from the NRC, and hence the NRC must be careful about their approach because of the ramifications.
Response: This is the "chicken or egg" problem – do we answer the "what" or the "how" first? These comments will be considered by the staff.

Comment: One stakeholder felt that the elements in the table were at a higher level than what is necessary to get at safety culture – that characteristics that yield insights into broken safety culture reside at one level below what is in the table.
Response: This comment will be considered by the staff.

Stakeholder interactions

Comment: Several stakeholders stated that they did not have enough time to review and develop meaningful comments on the table. Some stakeholders expressed concern that they were not given the opportunity to be involved early enough in the development of the approach and that the staff made the decision to develop the table unilaterally. There were also comments from stakeholders that they wanted to be more involved in developmental activities, and that their involvement should not be affected by the tight schedule. Some stakeholders expressed that March 2006 seemed like an arbitrary deadline.
Response: The staff recognizes this issue. The major portion of the activities has to be completed by March 2006, so comments are needed as quickly as possible. The staff will hold two more public meetings before the end of the year. At the next meeting, the staff will discuss and evaluate with stakeholders other potential approaches. Stakeholders can submit additional comments on the table (content or implementation) and are requested to do so as soon as possible. March 2006 is partly in response to heightened congressional and commission interest in this issue, and strong messages to make demonstrable progress on this issue that had been raised originally 3 years ago in 2002 after the Davis Besse incident.

Comment: Some stakeholders felt that the industry has safety culture attributes and inspections that are fundamentally different from what NRC is proposing. They do not believe there should be any misalignment between what industry is doing and what the NRC is doing. Several stakeholders commented that the NRC should learn more about industry efforts (e.g., INPO specifically assesses safety culture), and then capitalize on them and fill in gaps where needed.

Response: In developing the table, the staff used a variety of sources. For example, industry representatives participated on a RIC panel and provided information that the staff used as the starting basis for the table. Also, the staff has become familiar with INPO documents related to safety culture and have observed two INPO Safety Culture Plant Evaluations. Most of the content from the INPO documents related to safety culture are included in the table, with a few exceptions of areas that are more appropriate for the industry to review (e.g., trust). The staff agrees that there are some differences in terminology, and this will be reviewed further. Other sources of information used in developing the table included documents from the Electric Research Power Institute (EPRI), the IAEA, the Nuclear Energy Agency's Committee on the Safety of Nuclear Installations (CSNI), and individual countries including Canada, Switzerland, and Spain.

Comment: Several stakeholders expressed confusion on the two phases and the activities involved because they were not aware of the them before the meeting.
Response: The two phases are described in SECY-05-0187, "Status of the Safety Culture Initiatives and Schedule for Near-Term Deliverables," which became publicly available at the NRC website soon after the public meeting.

C. Topic for the Next Public Meeting

NRC staff summarized the various approaches that were discussed during the meeting, and suggested that stakeholders come to the next public meeting prepared to discuss their views of the different approaches listed below. NRC staff reminded participants that we need to stay within the bounds of the ROP and Commission direction, and agreed to revisit the specific Commission direction to the staff in the relevant SRM's and determine which of the approaches the Commission had provided direction on.

The candidate approaches are the following:
(1) *Full Diagnostic*, i.e, NRC staff (blue ribbon experts) would go to the plants periodically to take a comprehensive look at safety culture.
(2) *Training Model*, i.e., NRC oversight of safety culture would be analogous to NRC's current scheme of oversight of training.
(3) *Short Survey,* i.e., NRC would oversee the administration of periodic survey that contains a few questions that yield deep insights into plant safety culture.
(4) *Revise Individual Inspection Procedures,* i.e., NRC would enhance existing ROP baseline and supplemental inspection procedures with information relative to the Table.
(5) *Survey by Senior Resident Inspectors,* i.e., NRC senior resident inspectors would conduct periodic safety culture surveys at their plants.
(6) *ROP Findings*, i.e., the approach proposed by safety culture working group members at this meeting, where inspectors would look for safety culture aspects while developing green-and-greater ROP findings.
(7) *Post Identifying Cross-Cutting Aspects*, i.e., NRC would delve deeper into the question of safety culture aspects of ROP inputs *if* and *after* a substantive cross-cutting issue is identified.
(8) *Safety Culture Insights by Walking Around,* i.e., expert NRC inspectors who are attuned to plant indications of safety culture would visit plants and gain safety culture insights while walking around.
(9) *Performance Indicator Approach*, i.e., PI's for safety culture would be developed and tracked, and industry would report on them similar to existing PI's in the ROP.

(10) *Safety Culture Topical Report,* i.e., similar to NRC audits of Quality Assurance/Quality Control (QA/QC) under 10 CFR §50 Appendix B Criterion XVIII, NRC would audit and report plant activities on safety culture.