

July 30, 2010

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
NORTHERN STATES POWER COMPANY)	Docket Nos. 50-282-LR/ 50-306-LR
)	
(Prairie Island Nuclear Generating Plant,)	
Units 1 and 2))	

NRC STAFF TESTIMONY OF JOHN GIESSNER
CONCERNING THE SAFETY CULTURE CONTENTION AND
THE REACTOR OVERSIGHT PROCESS

Q1. Please state your name, occupation, and by whom you are employed.

A1. John (Jack) B. Giessner, a branch chief and supervisor at the United States Nuclear Regulatory Commission (NRC) and am responsible for oversight of inspections at the Prairie Island Nuclear Generating Plant (PINGP). A statement of my professional qualifications is attached.

Q2. Please describe your current responsibilities.

A2. I am a branch chief and supervisor responsible for the day-to-day inspections and assessment at PINGP, Fermi Nuclear Plant, and Palisades Nuclear Plant. My job is to ensure the operators of these plants operate their plants safely in a manner that complies with the NRC regulations and preserves the health and safety of the public and the environment. Each site, including PINGP, has two dedicated inspectors who are assigned to the plant, live in the area, and report to me directly on a daily basis. In addition, there are staff personnel in the regional office of Lisle, Illinois (Region III), who provide inspection and assessment support. Some of

these personnel report directly to me, others report to branch chiefs who work in a specialized area. However, I am temporarily assigned to the Office of the Executive Director for Operations as an Executive Technical Assistant.

Q3. Please explain your duties in connection with the Staff's ongoing oversight of the PINGP, Units 1 and 2, operated by Northern States Power Company ("NSP") pursuant to License Nos. DPR-42 and DPR-60.

A3. I am the supervisor responsible for the day-to-day inspections and assessment at PINGP. My job is to ensure the operators of this plant operate the plant safely in a manner that complies with the NRC regulations and preserves the health and safety of the public and the environment. I review all inspections performed by the resident inspectors, including Findings and violations at the site; I also approve, and/or concur in, all inspections and their reports for PINGP. I am in contact with plant management several times a month and meet and discuss performance with them every couple months.

Q4. What is the purpose of your testimony?

A4. The purpose of my testimony is to explain how the reactor oversight process (ROP) works, how the ROP fits in with the NRC's mission to ensure safe and secure operation of the plant while preserving the health and safety of the public and the environment, how we assess PINGP in this process, and some of the findings and our current activities.

Q5. Please describe the ROP?

A5. The ROP is a risk-informed objective process for inspecting and assessing licensee performance.

Q6. What is a risk-informed process?

A6. A risk informed process takes into account the risk of not complying with standards or regulations. Thus all non-compliances are not treated equally under the ROP; the ROP finds

some are more significant than others based on the risk posed by those non-compliances. Under the ROP, as explained in greater detail below, the risk of a non-compliance drives the level of response by the NRC.

Q7. Do the licensees have any input into this process?

A7. In addition to inspections, the licensees also provide to the NRC quantitative performance Indicator (PI) information. The PIs provide objective data on conditions at the site and are consistent among plants.

Q8. Please describe what a licensee-provided performance indicator is?

A8. The PI's provided by the licensee are an agreed upon set of indicators all sites voluntarily provide to us to assess plant performance in different performance areas. They are the same for every plant. The inspectors review and validate that the information provided is accurate using a standard procedure. Some of the information is very straightforward; for example, the number of times the plant has to reduce power significantly (>20%). However, some PIs are more complicated and may, for example, assess the impact from the unavailability of certain equipment based on the risk that equipment's unavailability poses to the system it supports.

Q9. Under the ROP, what actions does the NRC take in response to the licensees' performance?

A9. The process gives a graduated series of responses to licensees' performance when our assessment process determines more oversight is warranted. Prairie Island Annual Assessment Meeting (May 20, 2010) (NRC Staff Exhibit No. NRC000007), Slide 14, provides a high level overview of how NRC inspection results and licensee-provided PIs are taken into account in the ROP's assessment of plant performance.

Q10. Why was the ROP developed?

A10. As stated in Inspection Manual Chapter (IMC) 0308, "Reactor Oversight Process (ROP) Basis Document," at ¶ 0501, (June 25, 2004) (NRC Staff Exhibit No.NRC000008)

"On April 2, 2000, the NRC implemented a new ROP at all operating commercial nuclear power plants. The objectives of the staff in developing the various components of this new oversight process were to provide tools for inspecting and assessing licensee performance in a manner that was more risk-informed, objective, predictable, and understandable than the previous oversight processes. The ROP was also developed to meet the four agency performance goals to: (1) maintain safety, (2) increase openness, (3) make NRC activities and decisions more effective, efficient, and realistic, and (4) reduce unnecessary regulatory burden."

IMC 0308 provides a history of the NRC's assessment and actions which led to the ROP.

Q11. What is the purpose of the ROP?

A11. The purpose of the ROP is to provide an objective and risk-informed approach to inspecting licensees and assessing licensee performance and to provide a graduated response to issues that arise in licensee performance. Although the old process had elements of risk incorporated in it, it was not as objective and predictable as the new process is. Risk informed is distinguished from risk-based. This is described in detail in IMC 0308, Reactor Oversight Process (ROP) Basis Document," Attachment 6 "Significance Determination Process Basis Document," (Jul. 28, 2005) (NRC Staff Exhibit No. NRC00009):

The reactor safety [Significance Determination Process] SDP process is considered risk-informed, not risk-based, and supportive of the Commission Policy on Use of Probabilistic Risk Assessment Methods in Nuclear Regulatory Activities (1995). As defined in SRM SECY-98-144 revision 1, dated March 1, 1999, a "risk-based" approach to regulatory decision-making is one in which such decisionmaking is solely based on the numerical results of a risk assessment. Under this definition, the approach taken by the ROP (for both PIs and the SDP, where appropriate) might be considered "risk-based." However, the SDP is considered risk-informed by virtue of the expectation that SDP result bases are sufficiently understood by those technically knowledgeable persons (such as inspectors and technical staff) who are best positioned to critically examine the most influential probabilistic and technical assumptions, as well as by the management decision-makers who ultimately make the decisions. Conversely, if

decisions are made without an understanding appropriate to the objectives of the ROP, they are risk-based.

The risk-informed approach, as discussed in the above mentioned SRM, should also consider other factors. Historically, these other factors can include defense in depth, safety margins, and consideration on reliance of operator actions.

Q12. How often are inspections conducted?

A12. First, inspection frequency is determined using a risk-informed baseline inspection program. These risk-informed baseline inspections are the inspections all operating reactors receive. They are detailed in the inspection manual which provides the inspection policy, IMC 2515, Light Water Reactor Inspection Program-Operations Phase (IMC 2515) (NRC Staff Exhibit No. NRC000010). The inspection policy provides the frequency and approximate times inspections take. Some items are required to be done frequently, for example on a daily basis, such as the action to review adverse conditions, called condition reports, the licensee has written. There are many other inspections that assess the licensee's performance in the strategic performance areas and cornerstones.

Strategic performance areas and cornerstones are different areas that must be inspected to ensure all aspects of plant operations are acceptable. The timing of these will vary depending on the program items. The inspection manual, IMC 0305, Operating Reactor Assessment Program (IMC 0305) (NRC Staff Exhibit No. NRC000011) provides the details of the assessment program and provides the strategic performance areas and cornerstones. The strategic performance areas are reactor safety, radiation safety, and safeguards (i.e. security). The cornerstones are initiating events, mitigating systems, barrier integrity, emergency preparedness, public radiation, occupational radiation safety, and security. Essentially, the strategic performance areas and their associated cornerstones are the key areas that the baseline inspection must cover to ensure we have confidence we can make an accurate

assessment of plant safety based on the ROP. In addition to baseline inspections, other inspections could be performed if conditions exist. These are also covered in IMC 2515 and include: supplemental inspections (if issues of greater than very low safety significance are assessed); reactive inspections (if an actual event at the site has potential safety consequences); and generic safety inspections (if industry wide issues are identified, inspections at sites may be warranted to evaluate a safety issue). These items are shown in Exhibit 2 to IMC 0305. There are approximately two thousand hours of actual inspection at each licensee power reactor per year.

Q13. How are inspection results documented?

A13. All results are documented in inspection reports that are public records with the exception of security inspection reports, which are part of the Safeguards Strategic Performance Area. Because security inspections reports may contain sensitive information related to security issues, they are not made public. Baseline inspections that are performed by the resident inspector staff are reported in quarterly reports. Baseline inspections that are performed by a team with engineering specialty are reported in separate reports. Reactive, generic, and supplemental reports are issued when the inspections are complete. Reports on specific issues of safety significance are issued when their significance is assessed. There are two letters which are assessment summaries: there is one annual assessment letter and one mid-cycle assessment letter.

Q14. What does the ROP cover?

A14. The ROP covers those baseline inspections necessary to ensure the public health and safety as a result of civilian nuclear reactor power operation. The inspections are grouped in strategic performance areas and cornerstones as shown in Exhibit 1 of IMC 0305 (NRC Staff Exhibit No. NRC000011). Other inspections are discussed in below. In addition to inspections,

the NRC has an assessment process to evaluate the performance of licensees as a result of inspections or other activities. The level of oversight (and additional inspections) is based on these assessments in a graded approach.

Q15. Which inspection procedures are under the ROP baseline assessment program?

A15. IMC 2515 Appendix A, "Risk Informed baseline Inspection Program" (NRC Staff Exhibit No. NRC000012), provides the details of the philosophy underlying the program and lists the baseline inspections that need to be performed, and the frequency they need to be performed. Some inspections are performed on an as needed basis; others are performed quarterly, annually, every outage, biennially, and triennially. There are 46 inspection procedures in the ROP.

Q16. How does the ROP baseline inspection program address the licensee's corrective action program?

A16. There are four requirements that are part of the NRC Inspection Manual, Inspection Procedure 71152, Problem Identification and Resolution, (IP 71152) (NRC Staff Exhibit No. NRC000013) and one other requirement in individual inspection procedures:

1. Routine review – the inspectors review all Condition Reports (CRs) and follow up on significant issues and ensure subsequent action is performed, as needed, using other inspections.

2. Semi-annual trend review – inspectors perform a semiannual review to identify trends (either NRC- or licensee identified) that might indicate the existence of a more significant safety issue.

3. The annual follow-up of selected issues – inspectors ensure that the licensee has planned and/or implemented corrective actions commensurate with the significance of identified issues. This is an in depth assessment in a focused area.

4. Biennial team assessment – inspectors assess the program in general. This inspection is the most in-depth of the inspections; and all aspects of the program are reviewed.

5. Finally each of the inspection modules has a section where the inspectors review the CRs in that specific inspection area.

Q17. How do inspection findings fit within the ROP?

A17. There are two inputs directly into the ROP assessment: one is the result of inspection findings the other is associated with the site's PIs.

Q18. What significance levels may the Staff assign to an inspection finding or PI?

A18. The levels of a Finding are very low safety significance (Green), White (moderate safety significance), Yellow (substantial safety significance) and finally Red (high safety significance) based on IMC 0609, "Significance Determination Process" (NRC Staff Exhibit No. NRC000014).

Q19. Describe the Significance Determination Process?

A19. The significance can be based on qualitative and quantitative factors; with some being more complex than others. For example if a performance deficiency did not impact the function of a safety related piece of equipment, the issue would most likely be Green. If the Finding is related to reactor operations and caused the loss of a safety function, then detailed assessments may need to be done including the use of Probabilistic Risk Assessments (PRA). In cases where a detailed PRA is used, the color of the Findings would be based on the probability of a core damage event (minus the baseline event), or change in core damage frequency (CDF), caused by the Finding or a change in the probability of large early release frequency (LERF). In these cases, specific thresholds correspond to the color (e.g. for CDF greater than 1×10^{-6} /year (yr) is White, greater than 1×10^{-5} /yr is Yellow, greater than 1×10^{-4} /yr is Red and for LERF greater than 1×10^{-7} /yr is White, greater than 1×10^{-6} /yr is Yellow, and greater

than $1 \times 10^{-5}/\text{yr}$ is Red).

Q20. What criteria guided the Staff when it established the quantitative thresholds for determining a finding's significance?

A20. The NRC's policy statement on probabilistic risk assessment (PRA) ("Use of Probabilistic Risk Assessment Methods in Nuclear Activities: Final Policy Statement," *Federal Register*, Vol. 60, p. 42622 (60 FR 42622), August 16, 1995) encourages greater use of this analysis technique to improve safety decision-making and improve regulatory efficiency. Commission paper SECY-99-007A, dated March 22, 1999, described a method for assigning a probabilistic public health and safety risk characterization to inspection findings related to reactor safety. This risk characterization tool was the first of a set of tools that became central elements of the Significance Determination Process (SDP) to determine reactor inspection finding significance consistent with the thresholds used for the risk-informed plant PIs. The quantitative basis aligns with the Commission's Safety Goal Policy Statement ("Safety Goals for the Operations of Nuclear Power Plants; Policy Statement," *Federal Register*, Vol. 51, p. 30028 (51 FR 30028), August 4, 1986), Regulatory Guide 1.1740 and the SDP process which assign incremental changes in risk a color assessment.

IMC 0308 (NRC Staff Exhibit No. NRC000008) further describes this process:

In developing the new performance assessment process one of the tasks was to establish risk-informed thresholds for PIs and corresponding thresholds for inspection findings, so that indications of performance degradation obtained from inspection findings and from changes in PI values could be put on equal footing. The basis documents for establishing risk guidelines were Reg Guide 1.174, which bring in the Regulatory Analysis Guidelines, and the Safety Goal Policy Statement. The metrics that have been adopted in RG 1.174 for the characterization of risk are Core damage Frequency (CDF) and Large Early release Frequency (LERF). These are essentially surrogates for health effects, which are the principal metrics in the Safety Goal Policy Statement, and, in addition, they are consistent with the metrics used in the Regulatory Analysis Guidelines. In RG 1.174, acceptance guidelines were established for assessing changes to the licensing basis of a plant. Acceptance is predicated on increases in CDF and LERF implied by the change to the licensing basis being small.

Q21. Once findings are made, how is a plant evaluated?

A21. The NRC uses findings to place the plant in the appropriate column of the Action Matrix. The Action Matrix represents a graded approach to oversight in which the agency actions are based on the assessment inputs. As stated in IMC 0305 (NRC Staff Exhibit No. NRC000011) paragraph 10:

The Action Matrix (Exhibit 4) identifies the range of NRC and licensee actions and the appropriate level of communication for different levels of licensee performance. The Action Matrix describes a graded approach in addressing performance issues and was developed with the philosophy that, within a certain level of safety performance (e.g., the licensee response band), licensees would address their performance issues without additional NRC engagement beyond the baseline inspection program. Agency action beyond the baseline inspection program will normally occur only if assessment input thresholds are exceeded.

Q22. How and why do plants move from one column of the Action Matrix to another?

A22. All issues are assessed during inspections. If the NRC determines that a regulation or standard is not followed and it was reasonable that the licensee should have known or should have foreseen the issue, this is called a performance deficiency ("PD"). An issue that is more than minor in significance is called a Finding and must be documented. All PDs are evaluated in our significance determination process ("SDP") (IMC 0612, Power Reactor Inspection Reports (NRC Staff Exhibit No. NRC000015) and IMC 0609 (NRC Staff Exhibit No. NRC000014)) to determine the risk associated with the issue. The risk can be addressed in a qualitative or quantitative way, depending on the affected cornerstones and the tools we have to evaluate the issues. In addition to Findings, the licensee's PIs are also assessed. Each PI is linked to one of the seven cornerstones, and each has thresholds which have been pre-determined and are common among all power reactors.

The coding of these thresholds for PIs and assessment for Findings are grouped by a color scheme, but each is independently assessed. A PI that crosses a color threshold would

be assigned a color to be evaluated in the Action Matrix. Separately, a Finding that crosses a color threshold would be assigned a color to be evaluated in the Action Matrix.

The PIs in themselves do not impact a Finding and vice versa. In some cases, albeit not often, a significant Finding may exist which was the reason a PI changed from Green to White. In these cases we do not “double count” and assess two White Findings. For example, say the plant had a Finding related to managing certain equipment, and the Finding caused them to shutdown several times, causing the indicator to cross the White threshold. If the Finding is assessed at a White significance based on the SDP, then only one White Finding would count.

The color of the Finding determines the licensee’s column in the Action Matrix. As described in IMC 0305 (NRC Staff Exhibit No. NRC000011) if the licensee has no greater than Green findings it would be in Column I (Licensee response – no additional action other than baseline inspection). About 80% of all plants for calendar year 2009 were in Column I. As the Findings become more significant, so does the engagement and inspections by the NRC. IMC 0305 Exhibit 4 – Action Matrix (NRC Staff Exhibit No. NRC000016). If a licensee has one or two White Findings (not in the same cornerstone), the licensee will be in Column II (licensee response). A licensee with one Yellow or two White Findings in the same cornerstone is in Column III (degraded cornerstone). Placing a plant in Column III indicates that there is a moderate impact to safety performance. One Red or multiple degraded cornerstones puts a plant in Column IV and indicates that there is significant degradation in safety performance.

Q23. When will a Plant move to Column V?

A23. According to IMC 0305 (NRC Staff Exhibit No. NRC000011), a plant’s performance is unacceptable and the plant will be ordered to shut down when:

1. Licensee performance is unacceptable and continued plant operation is not permitted within this column. Unacceptable performance represents situations in

which the NRC lacks reasonable assurance that the licensee can or will conduct its activities to ensure protection of public health and safety. Examples of unacceptable performance may include:

(a) Multiple significant violations of the facility's license, technical specifications, regulations, or orders.

(b) Loss of confidence in the licensee's ability to maintain and operate the facility in accordance with the design basis (e.g., multiple safety significant examples where the facility was determined to be outside of its design basis, either due to inappropriate modifications, the unavailability of design basis information, inadequate configuration management, or the demonstrated lack of an effective PI&R).

(c) A pattern of failure of licensee management controls to effectively address previous significant concerns to prevent recurrence. In general, it is expected, but not required, that entry into the Multiple/Repetitive Degraded Cornerstone column of the Action Matrix and completion of supplemental IP 95003 will precede consideration of whether a plant is in the Unacceptable Performance Column."

Q24. What is the significance of a plant moving from one column to another?

A24. The significance is that the plant is showing degraded safety performance and will require more oversight and additional inspections. These additional inspections are needed to ensure the plant can continue to operate safely. The assessment process is a continuous process which requires looking at issues on a daily, quarterly, semiannual and annual basis. Even in Column IV, the plant can be safely operated because despite the safety performance degradation, additional actions (such as supplemental inspections and perhaps more frequent inspections) will be taken under the ROP to ensure safe operation. For plants in Action Matrix Columns I through IV, the NRC has the reasonable assurance the plant can be operated safely subject to additional inspections and oversight. If the agency determines, at any time, that safety performance is unacceptable, then the plant would be directed to shutdown (if it hasn't already done so) and the licensee would be in Column V. The ROP process is graded in that it requires the agency to respond and become more intrusive to ensure the plant can operate

safely.

Q25. Can a plant move across more than one column at a time?

A25. Yes, for example, if a plant was in Column I or II and a Finding resulted in a Red Finding, the Finding would most likely result in moving the plant to Column IV.

Q26. How and why does a licensee move from one Column to another?

A26. This is discussed in detail above, but in short the shift in Column is based on the significance of Findings discovered during inspections or as a result in PI that have crossed a color boundary. IMC 0305 provides a detailed accounting of how long each Finding is “counted” to determine how many “greater than green” Findings exist at any one time.

Q27. How long will the NRC rely on an inspection Finding or PI to determine the licensee’s column in the Action Matrix?

A27. The inspection guidance provides a detailed accounting of how long each Finding is “counted” to determine how many “greater than green” Findings exist at any one time. But generally the Findings are assessed on a quarterly basis. But if a Finding has been finalized greater than Green in the middle of the quarter, then the Column shift occurs when the Finding was first introduced without waiting for the quarter to end. In general a Finding stays “on the books” (is being counted for in the Action Matrix) for one year or until the NRC supplemental inspection has cleared the Finding – whichever is longer. The Finding is cleared when the supplemental inspection team has verified the licensee has properly evaluated the cause, taken appropriate corrective actions to prevent recurrence, and evaluated the extent to which the problem could exist elsewhere at the site.

Q28. What is the significance of a white finding on a substantive-cross cutting human performance issue?

A28. After a Finding has been established, the inspectors will evaluate the likely cause

for the issue. A cross-cutting aspect is a performance characteristic that is the most significant contributor to a performance deficiency that resulted in a finding. Cross-cutting aspects are so-called because they impact all the cornerstones. Not all Findings have a cross-cutting aspect. For example, the issue may not be indicative of current performance. The aspects that are assigned will be in one of the three cross-cutting areas. Exhibit 1 of IMC 0305 (NRC Staff Exhibit No. NRC000011) identifies the three cross-cutting areas: human performance, problem identification and resolution, and safety conscious work environment.

Cross-cutting aspects are not Findings themselves, but rather are the most significant contributors to an issue. As such they do not change a White Finding in significance. A White Finding is still a White Finding regardless if there is a cross-cutting aspect.

Q29. How does the NRC determine whether to assign a crosscutting aspect?

A29. After a Finding has been established, the inspectors will evaluate the likely cause for the issue. This assessment is discussed in IMC 0612 (NRC Staff Exhibit No. NRC000015). A cross-cutting aspect is a performance characteristic that is the most significant contributor to a performance deficiency that resulted in a finding. A cross-cutting aspect is a characteristic of a Finding, it is not a Finding itself. If the cause of finding is reflective of current performance (the inspectors ask the question: did the performance characteristic described by this potential cross-cutting aspect occur within the last three years) and aligns with one of the aspects listed in IMC 0310, "Components Within the Cross-cutting Areas" (NRC Staff Exhibit No. NRC000017), then the Finding is assigned a cross-cutting aspect.

Q30. How does the NRC determine whether a Substantive Cross-Cutting Issue ("SCCI") exists?

A30. The agency recognized that the cross-cutting areas of human performance, problem identification and resolution, and safety conscious work environment manifest

themselves in the causes of issues. The components of these three areas are attributes of the safety culture. In general, the process works as follows: after a Finding is determined, the inspectors performing the inspection assess whether a cross-cutting aspect should be assigned. During an assessment period if there four or more Findings related to the same cross-cutting aspect, a theme is developed. If the licensee's actions to date have not been effective in addressing the NRC concerns, the licensee is then determined to have a SCCI. The SCCI does not change the Action Matrix Column, nor does it change a Finding's risk determination. As stated in IMC 0308, (NRC Staff Exhibit No. NRC000008) section 05.05, a SCCI means the NRC "has a significant level of concern with the licensee's performance in the cross-cutting area." A licensee may be in Column I and have a SCCI.

A SCCI cannot move a plant in columns. The ROP is built on the philosophy that inspection findings move a plant through the columns of the Action Matrix, as discussed above, because they are indicative of degraded performance. In contrast, SCCIs are potential leading indicators of degraded performance but they do not actually indicate degraded performance. As a result, SCCIs, while an important consideration, can never actually compromise the NRC's reasonable assurance finding because, in and of themselves, they do not reflect degraded performance.

Q31. Does NRC identification of a SCCI-Human performance indicate an inadequate safety culture?

A31. No, it indicates we have significant concerns regarding some of the aspects of the safety culture, but it does not indicate that the NRC believes the safety culture as a whole is inadequate. It should be noted if a plant is in an SCCI for three consecutive six month periods, IMC 0305 then directs the Staff to request that the licensee perform a safety culture assessment. After three periods in an SCCI, the region is directed to work with the Executive

Director's office on what actions to take. The basis is clear: if actions to improve the site are not being effective, other actions (including deviations from the Action matrix) can be considered to ensure the aspects of safety culture are addressed.

Q32. Please explain the basis for the staff's identification of a SCCI-Human performance at PINGP?

A32. During the assessment period there were 4 aspects where there were more than four Findings in the same cross-cutting aspect. A theme was developed. The licensee's actions to date have not been effective in addressing the NRC concerns. The Agency determined the licensee has a Substantive Cross-Cutting Issue (SCCI).

Q33. In the specific case of PINGP, does Staff identification of a SCCI-Human Performance indicate inadequate safety culture?

A33. No, the Agency has significant concerns on certain aspects of the safety culture, but I would not conclude the safety culture is inadequate based on the current information available.

Q34. In your opinion, do findings that resulting in PINGP Units 1 and 2 being placed in Column II indicate poor safety culture at PINGP?

A34. No. IMC 0305, (NRC Staff Exhibit No. NRC000011) defines safety culture as "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." Being in Column II does not imply that a plant's safety culture is poor. In addition, although the site is in a SCCI, which implies we have concerns with attributes of their safety culture, I would not say the assembly of attributes, attitudes, and characteristics of PINGP indicate that safety culture is poor. The NRC has concerns that the site needs to address. Specifically the site needs to implement a strategic plan that addresses

the aspects in human performance in the area causing the Findings. The site's plan needs to reduce the number of Findings with those aspects and the site needs to create a program to ensure there is sustainability for future operations. The NRC will conduct follow-on inspections to validate whether this does or does not occur.

Q35. Describe the Staff's concerns with the Corrective Action Program ("CAP") at PINGP, Units 1 and 2.

A35. The NRC has had concerns with some aspects of the CAP process over the last few years. These items were assessed in the last two Problem Identification and Resolution (PIR) Inspections, with the most recent report being documented September 25, 2009 (NRC Staff Exhibit No. NRC000018) and the previous being documented December 21, 2007 (Applicant Exhibit No. NSP000069). In all cases we noted problems in the CAP process, but concluded it was functioning, and found actions were needed to improve the process. The September 25, 2009 report states in summary: "On the basis of the information reviewed, the team concluded that the corrective action (CA) program at Prairie Island was functional, but implementation was lacking in rigor resulting in inconsistent and undesirable results. In general, the licensee had a low threshold [that is, the licensee generally tended to be conservative and put items in the process] for identifying problems (issue reports called CAPs) and entering them in the CA program; however, some significant issues went unrecognized and therefore CAPs were not issued for these."

Q36. When and how did these concerns originate?

A36. Some items were documented in the PIR inspection report dated December 21, 2007 (Applicant Exhibit No. NSP000069), and others in the recent inspection report dated September 25, 2009 (NRC Staff Exhibit No. NRC000018).

Q37. What regulatory provisions govern the CAP?

A37. The corrective action process is required, in part by 10 CFR 50 Appendix B, notably Criterion XVI:

Corrective Action Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management.

Q38. How does the CAP relate to the ROP?

A38. At its most fundamental level the CAP is the site's process to implement the cross-cutting area called problem identification and resolution. So while the CAP may be in a cross-cutting area, problems in these areas do not cause the licensee to change position on the Action Matrix. A licensee's position in the Action Matrix is based on a Finding's safety significance as determined by the significance determination process (IMC 0609 (NRC Staff Exhibit No. NRC000014)). Problems in the CAP process may be the cause of some performance deficiencies that result in Findings.

Q39. Did the Staff's concerns with the CAP at PINGP lead to any inspection Finding, and, if so, what level of Findings?

A39. The last PIR report (September 25, 2009) (NRC Staff Exhibit No. NRC000018) had three Findings, all of which screened as Green. One was a direct violation of 10 CFR 50 Appendix B, criterion XVI, Corrective Action.

Q40. Why did the Staff classify the findings regarding the PINGP CAP as Green Findings?

A40. Because when it was reviewed using our process (IMC 0609 (NRC Staff Exhibit No. NRC000014)), it was determined to be of very low safety significance. The risk assessment determined that because there was no loss of safety function, the issue had very low safety

significance.

Q41. PIIC asserts that PINGP has failed to promptly and effectively correct deficient conditions, using the licensing response to leakage from the reactor refueling cavity as an illustration. Do you agree?

A41. No. I would say we have concerns and there have been concerns in the past of failing to identify and correct certain issues. But I would not characterize the failure as systemic and thus indicative of a CAP process that is not functioning. Typically the CAP process functions and ensures the issues that are important to safety are identified promptly and correctly commensurate with their safety significance.

With respect to the example of leakage from the refueling cavity, I am not a structural expert, but when I found out about the issue we had our structural personnel review the issue to determine if there was an immediate safety issue. That is, our expert looked for an impact to the structure of the containment, liner, or other required supports. The assessment concluded there was not. The leakage needs to be corrected, but it is not a safety significant item at this time. If the licensee does not take action promptly, it could become a more significant issue. The NRC's most recent inspection findings on this issue are discussed in NRC Inspection Report No. 0500282/2010003; 05000306/2010003 (July 26, 2010) (Staff Exhibit No. NRC000019). This report states that the NRC did not identify any findings of significance, and notes that previous evaluations have not revealed any degradation of the containment pressure vessel, concrete, or rebar due to the refueling cavity leakage. *Id.* at 18.

So the leakage needs to be addressed, but this item does not show me there is an inadequate corrective action process. The licensee has taken action, albeit not totally effective. The NRC has reviewed the issue and has determined there is no Finding at this time. Follow-up action is required by the licensee for license renewal, and the NRC resident is following these

issues during outages as well.

Q42. Describe the condition that led to the Staff's inspection finding in the fourth quarter of 2008 regarding the 11 Turbine Driven Auxiliary Feedwater Pump (TDAFWP).

A42. A valve that was required to be open for the pump to operate to perform its safety function was found out of position. This resulted in the safety related component not being able to perform its safety function to mitigate events.

Q43. How did the Staff first become aware of this condition?

A43. The condition self-revealed. In other words, when the TDAFWP was running, it shutdown due to this PD (failure to have the valve in its required position).

Q44. What regulatory provisions did this condition violate?

A44. The site's Technical Specification 3.7.5.B requires, in part, that if one Auxiliary Feedwater train is inoperable in Modes 1, 2, and 3, the affected train shall be restored to operable status within 72 hours or the plant placed in Mode 3 within 6 hours and Mode 4 within 12 hours. Specifically, the pump was inoperable for greater than 12 hrs (approximately 138 days) due to the discharge low pressure switch being isolated and no actions were taken to restore the pump to operable status or to place the plant in Mode 3 or 4.

Q45. What significance level did the Staff ultimately assign this finding?

A45. White – low to moderate safety significance.

Q46. Why did the Staff classify the failure to adequately control the position of a normally open valve used to isolate the 11 TDAFWP as a White Finding?

A46. The NRC performed a detailed quantitative PRA. The licensee provided information to us which we considered and agreed with, in part. In summary, the NRC considered the licensee's information in the final significance determination with some exceptions. The NRC analysis using the licensee's information, with the modifications, resulted

in a change in core damage frequency of approximately 2×10^{-6} /yr. The dominant core damage sequence was a control room fire which results in abandonment of the control room, followed by the failure of the 11 TDAFWP, and a failure of the operator to recover the pump. With a change in CDF of 2×10^{-6} /yr, this is a White Finding. The NRC's analysis supporting this conclusion is documented in NRC Inspection Report No. 05000282/2008008, (January 27, 2009) (NRC Staff Exhibit No. NRC000020) and NRC Special Inspection Report 05000282/2008008; 05000306/2008008 (November 7, 2008) (NRC Staff Exhibit No. NRC000021).

Q47. In your opinion, does Finding indicate poor safety culture at PINGP?

A47. No. There are aspects of the safety culture that concern me and that they need to address promptly (which they have), but I do not see this Finding as indicative of a weak safety culture.

Q48. Describe the condition that led to the Staff's inspection finding regarding the radioactive material shipment sent on October 29, 2009.

A48. A transportation shipment of low level waste had a radiation reading on the outside of the packaging that was above the Department of Transportation (DOT) limits. When the package arrived at its destination, the detected radiation levels exceeded Nuclear Regulatory Commission (NRC) regulations, which invoke the Department of Transportation requirements limiting the radiation level on the surface of a package shipped in an open transport vehicle to 200 millirem per hour.

Q49. How did the Staff first become aware of this condition?

A49. The NRC was informed by the site who received a call from the recipient of the container informing them of such a condition.

Q50. What regulatory provisions did this condition violate?

A50. This violated DOT rules for shipping waste. Title 10 CFR 71.5, "Transportation of Licensed Material," requires licensees to comply with the Department of Transportation (DOT) regulations in Title 49 CFR parts 170 through 189 relative to the transportation of licensed material. Specifically,

- 1) Title 49 CFR 173.441(a) requires that each package of radioactive material offered for transportation must be designed and prepared for shipment, so that under conditions normally incident to transportation, the radiation level does not exceed 2 millisievert per hour (200 millirem per hour) at any point on the external surface of the package.

Contrary to the above, on October 29, 2008, the licensee shipped a package containing radioactive material that was not designed or prepared to assure that, under conditions normally incident to transportation, the radiation level on the external surface of the package would not exceed 200 millirem per hour.

- 2) Title 49 CFR 172.704, "Training Requirements," requires that individuals involved in the transport of hazardous materials receive function specific training relative to their specific tasks, and that these individuals receive recurrent training at least once every three years.

Contrary to the above, as of October 29, 2008, five people involved in preparing a package for radioactive shipment and transport had not received the required function-specific training.

Q51. What significance level did the Staff ultimately assign this finding?

A51. White.

Q52. Why did the Staff classify PINGP's failure to comply with applicable Department of Transportation regulations when shipping the radioactive material on October 29, 2009, as a White Finding?

A52. The NRC did a qualitative risk assessment using technical assessments. The NRC used the results of the measurements obtained at the receipt of the package and the

relative risk from the point radiation source to develop the significance of the finding. Both radiation detection instruments measured radiation levels that exceeded the regulatory limit, which provides a level of protection to a member of the public that may come into contact with the shipment. Although no exposures to the public resulted from the shipment, the potential consequences could have been greater under less favorable circumstances. Any shipment with radiation levels that exceed regulatory limits can be potentially significant, and in this case the risk was more than minimal. Based on this assessment and after considering the information developed during the inspection, the information provided at the regulatory conference by the site, and supplemental information, the NRC has concluded that the finding is appropriately characterized as White, a finding with low to moderate increased importance to safety that may require additional NRC inspections. The NRC's analysis supporting this conclusion is documented in NRC Inspection Report No. 05000282/2009008; 05000306/2009008, (May 6, 2009) (NRC Staff Exhibit No. NRC000022) and NRC Inspection Report 05000282/2008009; 05000306/2008009 (February 10, 2009) (NRC Staff Exhibit No. NRC000023).

Q53. In your opinion, does this finding indicate a weak safety culture at PINGP?

A53. No. There are aspects of the safety culture that concerned me and they need to address promptly (which they have), but I do not see this as indicative of a weak safety culture.

Q54. Describe the condition that led to the Staff's inspection finding in July of 2009 regarding the design of the PINGP Unit 2 component cooling water (CCW) system.

A54. This White Finding is associated with the licensee's failure to design the component cooling water system such that it would be protected from the impact of a high-energy line break, seismic, or tornado events.

Q55. How did the Staff first become aware of this condition?

A55. The NRC found out when the site wrote a CAP document indicating that while they were performing a walkdown of CCW piping in response to a previous CAP, they discovered this vulnerability.

Q56. What regulatory provisions did this condition violate?

A56. This violated 10 CFR 50, Appendix B, Criteria III which requires that the design basis of safety components be adequately translated into configuration represented in the plant. In this case, the piping was vulnerable to design basis events that it should have been protected from.

Specifically, Title 10 of the Code of Federal Regulations, Part 50, Appendix B, criterion III, "Design Control," requires, in part, that measures be established to assure that the design basis for safety-related functions of structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions. Further, Criterion III requires that the design control measures provide for verifying or checking the adequacy of designs.

Contrary to the above, as of July 29, 2008, the licensee failed to implement design control measures to ensure that the design basis for the component cooling water system was correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee failed to ensure that the safety-related function of the component cooling water system was maintained following a high-energy line break, seismic, or tornado events in the turbine building.

Q57. What significance level did the Staff ultimately assign this finding?

A57. White.

Q58. Why did the Staff classify the inadequate design of the component cooling water

system for PINGP Unit 2 as a White Finding?

A58. The NRC performed a detailed quantitative PRA. The NRC analysis bounded the resulting change in CDF in being less than $1 \times 10^{-5}/\text{yr}$ and greater than $1 \times 10^{-6}/\text{yr}$. This corresponds to a White Finding. The NRC's analysis supporting this conclusion is documented in NRC Inspection Report No. 05000306/2009013 (September 3, 2009) (NRC Staff Exhibit No. NRC000024) and NRC Inspection Report 05000282/2008010; 05000306/2008010 (August 5, 2009) (NRC Staff Exhibit No. NRC000025).

Q59. Does the Finding indicate weak safety culture at PINGP?

A59. No. There are aspects of the safety culture that concerned me and they need to address promptly, but I do not see this as indicative of a weak safety culture.

Q60. As a result of the findings at PINGP, discussed above, have PINGP Units 1 or 2 moved columns in the Action Matrix?

A60. Both units were in Column II for a period of time. The current assessment is Unit 2 is in Column II and Unit 1 has returned to Column I. The transportation and TDAFWP Findings are no longer considered in the Action Matrix. The Findings have been inspected, were assigned in the matrix for a year, and are now removed.

Q61. What Findings are currently open for PINGP Units 1 and 2?

A61. The only Greater-than-Green Finding, which is still open, is the high-energy line break/CCW issue. One other Finding, that is preliminary Greater- than- Green, is failure to protect safety related piping from effects of flooding. No final decision by the agency has been made. A Regulatory Conference was held on July 13, 2010.

Q62. Based on PINGP's position in the Action Matrix, does the Staff currently have reasonable assurance that NSP will operate PINGP in accordance with its licensing basis.

A62. Yes.

Q63. What are the grounds for this conclusion?

A63. The Staff conducts continuous, quarterly, mid cycle and annual assessments. Although the agency has some concerns with site performance; overall we have reasonable assurance the site will continue to operate in accordance with their licensing and design basis. If additional issues occur, the NRC will take action in accordance with the oversight process. The NRC has, and will continue to have, increased oversight until performance is shown to improve and the licensee returns to Column I.