August 12, 2010

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	Docket Nos. 50-282-LR
Northern States Power Co.	)	50-306-LR
	)	
(Prairie Island Nuclear Generating Plant, Units 1 and 2)	)	ASLBP No. 08-871-01-LR

REBUTTAL TESTIMONY OF SCOTT D. NORTHARD, KURT W. PETERSEN AND ED M. PETERSON II ON SAFETY CULTURE CONTENTION

I. WITNESS BACKGROUND

Q1. Mr. Northard, please state your full name.

A1. (SDN) My name is Scott D. Northard.

Q2. By whom are you employed and what is your position?

A2. (SDN) I am employed by Northern States Power Company, a Minnesota corporation ("NSPM") as Recovery Manager – Prairie Island.

Q3. Mr. Petersen, please state your full name.

A3. (KWP) My name is Kurt W. Petersen.

Q4. By whom are you employed and what is your position?

A4. (KWP) I am employed by NSPM as the Business Support Manager responsible for the corrective action program at the Prairie Island Nuclear Generating Plant ("PINGP").

Q5. Mr. Peterson, please state your full name.

A5. (EMP) Edward M. Peterson II.

Q6. By whom are you employed and in what capacity?

A6. (EMP) I am employed as Ombudsman by the Wolf Creek Nuclear Operating Company.

II. PURPOSE OF TESTIMONY

Q7. Gentlemen, have you previously provided written testimony in this proceeding?

A7. (SDN, KWP, EMP) Yes. On July 29, 2010 we provided direct written testimony entitled "Testimony of Scott D. Northard, Kurt W. Petersen and Ed M. Peterson II on Safety Culture Contention" ("Joint Direct Testimony").

Q8. What is the purpose of your testimony at this time?

A8. (SDN, KWP, EMP) The purpose of our testimony is to address certain matters contained in the "Direct Testimony of Christopher I. Grimes" ("Mr. Grimes' testimony") and the "Prairie Island Indian Community Initial Statement of Position on Safety Culture Contention" ("PIIC SOP"), both submitted by the Prairie Island Indian Community ("PIIC") in this proceeding.

Q9. What aspects of Mr. Grimes' testimony and the PIIC SOP will you address in your Rebuttal Testimony?

A9. (SDN) I will address two aspects of the operating experience of PINGP that have been cited in Mr. Grimes' testimony and in the PIIC SOP as indicative of the existence of a weak safety culture at the plant: (1) the issuance of "White" Findings by the U.S. Nuclear Regulatory Commission ("NRC") against PINGP with respect to radioactive material shipment deficiencies (both PINGP units), improper valve positioning (Unit 1), and design of the

component cooling water system (Unit 2); and (2) the existence of "cross-cutting" issues in the area of Human Performance.

(KWP) I will address the claim in Mr. Grimes' testimony and in the PIIC SOP that there are concerns with the Corrective Action Program ("CAP") at PINGP that are indicative of the existence of a weak safety culture at the plant.

(EMP) I will address some references in Mr. Grimes' testimony and the PIIC SOP to an assessment of safety culture at PINGP performed in June 2008 by a team of experts under the auspices of the Utilities Service Alliance ("USA"). I will also address the requests in Mr. Grimes' testimony and the PIIC SOP that the NRC direct the performance of an independent third-party assessment of the PINGP safety culture, and that the Atomic Safety and Licensing ("Board") deny NSPM's license renewal application until the safety culture inadequacies at PINGP have been "fixed."

Q10. Did you address these matters in your Joint Direct Testimony?

A10. (SDN, KWP, EMP) Most of them. The allegations in Mr. Grimes' testimony and the PIIC SOP are for the most part similar, if not identical, to those contained in the "Prairie Island Indian Community's Submission of a New Contention on the NRC's Safety Evaluation Report" (Nov. 23, 2009) and the "Declaration of Christopher I. Grimes" of the same date. We have responded to most of these allegations in the Joint Direct Testimony and will not repeat here the statements made in that testimony but will cross-reference them as appropriate.

III. REBUTTAL TO WHITE FINDINGS TESTIMONY

Q11. In Mr. Grimes' testimony at A23 at 9-10, Mr. Grimes refers to an incident at PINGP in which the instrument manifold isolation valve for the discharge

pressure switch of the 11 turbine-driven auxiliary feedwater pump was left out of position (closed instead of open), which caused the pump to trip on a low discharge pressure. This incident resulted in the issuance of a White Finding by the NRC against PINGP. Mr. Grimes cites NRC Information Notice 2009-11, in which the NRC states that "[t]he recent events show that component mispositionings have occurred or remained undetected due to one or more of the following causal factors" and, after quoting those factors, Mr. Grimes concludes: "The conclusions in the NRC Information Notice are further evidence that there is a safety culture at Prairie Island that potentially fails to achieve four of the ten elements of an effective [aging] management program (items 7 through 10 above)." Is Mr. Grimes' conclusion about the status of safety culture at PINGP supported by the discussion in Information Notice 2009-11?

A11. (SDN) No, for a number of reasons. First, as I discussed in the Joint Direct Testimony at A96, NRC Information Notice 2009-11 (Northard Exhibit 41) mentions several factors as potentially being the causes of configuration control errors, but does not state that any of the factors was involved in the incident at PINGP. In fact, the causal factors to which Mr. Grimes refers appear in a section of the Information Notice discussing mispositioning events at eighteen other plants (see Northard Exhibit 42). Therefore, associating any of the factors with the incident at PINGP is incorrect.

Also, Mr. Grimes refers to four of the elements of an effective license renewal program defined in the Standard Review Plan for License Renewal (NUREG-1800). None of those elements were violated in the switch mispositioning incident. To the contrary, NSPM's corrective actions were thorough and prompt and were verified to be complete and effective (see Joint Direct Testimony at A34 and Northard Exhibit 15 at 18-19); a comprehensive root cause evaluation was promptly made (see id. at A33 and Northard Exhibit 15); no failure to provide formal reviews and approvals was identified among the root causes of the incident (see Northard

Exhibit 15 at 6-7); and no operating experience was cited as being relevant to the incident.

In reality, PINGP has programs and procedures in place to satisfy the ten elements of an effective license renewal program defined by NUREG-1800. These programs and procedures were presented in the License Renewal Application and were reviewed and confirmed by the NRC to be adequate. (See SER Section 3.0.4, attached as Northard Exhibit 43).

Q12. Mr. Grimes's testimony (A32 at 15) states that PINGP knew of the high energy line break ("HELB") issue for many years but limited its evaluation of the issue to the auxiliary building and missed the turbine building. Is that characterization of the event correct?

A12. (SDN) No. PINGP knew of the need to perform a HELB evaluation for the turbine building for several years, but did not sufficiently prioritize performing such an evaluation, partly because of the non-safety related nature of the equipment in the turbine building and the lack of expectation that a HELB there would have adverse safety consequences. While this expectation was erroneous, PINGP did not "miss" the potential for a HELB but failed to act on it expeditiously. See Joint Direct Testimony at A53 and Northard Exhibit 19 at 6-7.

Q13. In PIIC's SOP at 7, PIIC states that the White Finding on the Component Cooling Water ("CCW") system vulnerability "was due to the failure of the Applicant to design the component cooling water system ("CCWS") such that it would be protected from a high-energy line break ("HELB"), or seismic or tornado events. A high-energy line break would result in flooding effects, which could lead to the failure of redundant safety systems." Similarly, Mr. Grimes' testimony (A44 at 20) concludes that the "failure to effectively manage the plant design and effectively resolve potentially the safety-significant flooding issues identified 20 years ago, [is] indicative of a weak safety culture at PINGP." Does the White Finding on the Unit 2 CCW system vulnerability to a HELB in the turbine building involve flooding events?

A13. (SDN) No, it does not. The condition leading to the issuance of a White Finding was that a postulated failure of a turbine building high energy piping line could sever the adjacent CCW piping, thereby impacting the continued operability of the Unit 2 CCW system. See Joint Direct Testimony at A49 and Northard Exhibit 19 at 18. The White Finding has nothing to do with designing the CCW piping to withstand seismic or tornado events, and the White Finding does not relate to flooding effects.

The NRC has subsequently identified a preliminary, potentially greater-than-Green Finding regarding the protection of safety-related systems from flooding effects in the turbine building. This potential Finding arises from the potential severance of Cooling Water piping as a result of an HELB, but is separate from the White Finding to which Mr. Grimes refers and is still under consideration by the NRC Staff. It is NSPM's position that the PINGP has always been and remains in compliance with all NRC regulations regarding internal flooding in the turbine building, and the plant is also in compliance with its licensing basis. See Northard Exhibit 44 at 5-7. Nonetheless, NSPM has implemented a series of measures to improve the plant's ability to address beyond-design-basis flooding events. See Northard Exhibit 45. The NRC has not made a final determination whether there should be a Finding associated with the potential flooding issue and, if so, whether it should be a Green or greater-than-Green Finding.

In any case, it is clear that the references to "flooding" in Mr. Grimes' testimony and in the PIIC SOP are incorrect.

Q14. In Mr. Grimes' testimony (A33 at 15) the witness refers to the recent NRC White Findings against PINGP and also states that "[d] uring the Mid-cycle review for PINGP in 2009, the NRC identified an open substantive cross-cutting issue in the area of human performance, with cross-cutting themes in the aspects of systematic process, conservative assumptions, procedural adequacy, and

procedural compliance," implying that the issuance of the White Findings is indicative of a substantive cross-cutting issue in the area of human performance. The same implication is made in Mr. Grimes' testimony (A34 at 16). Is there any relationship between White Findings and human performance issues?

A14. (SDN) No. As I made clear in my direct testimony, the issuance of a White Finding only refers to an event's perceived safety implications and is not in itself indicative of the existence of human performance issues or of a deficiency in the safety culture at the facility involved. See Joint Direct Testimony at A29. The fact that the NRC September 21, 2009 mid-year assessment letter (Northard Exhibit 21) mentions both the White Findings that had been issued and the existence of a substantive cross-cutting issue in the area of human performance is a happenstance. The determination made in that letter of the existence of a substantive cross-cutting issue in the area of human performance related to the existence of "25 findings documented with cross-cutting aspects in the HP area," and not to the White Findings as such. See Northard Exhibit 21 at 2. To the extent that some of the PINGP White Findings included human performance issues as part of their as their cause, those issues were adequately addressed as part of the corrective actions to address the Findings. See Joint Direct Testimony at A45, A46 and A54-A57.

Q15. Mr. Grimes' testimony (A27 and A28 at 12-13) indicates that the White Findings resulted in PINGP being placed in the Regulatory Response column of the NRC Action Matrix. Does this indicate a deficient safety culture or lack of reasonable assurance that NSPM will meet its regulatory commitments?

A15. (SDN) Absolutely not. Mr. Grimes notes that about 10 to 20 percent of all operating reactors are in the Regulatory Response column. If being in the Regulatory Response column reflected a situation where the NRC lacked reasonable assurance of safe operation or regulatory compliance, these plants would be shut down. In point of fact, since the reactor oversight process

("ROP") began in 2000, approximately 90% of all operating units have been in the Regulatory Response column at some point. Further, over a third of the operating units have been in the Degraded Cornerstone column or the Multiple/Repetitive Degraded Cornerstone column. PINGP Units 1 and 2 have never been in the Degraded Cornerstone column or the Multiple/Repetitive Degraded Cornerstone column.

Q16. Mr. Grimes' testimony (A34 at 15-16) asserts that the NRC's determination that substantive cross-cutting issues ("SCCI") existed at PINGP is indicative of a weak safety culture and casts doubts on NSPM's ability to resolve potentially risk-significant deficiencies associated with long-term, age-related degradation. Are these assertions correct?

A16. (SDN) No. Based on the NRC's reactor oversight program information on the NRC website (http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/prevqtr.html), which only goes back to the End of Cycle 2006, the NRC has found SCCI at about 45% of all operating units over this period. If this finding indicated a lack of reasonable assurance that a licensee would operate its plant safely or fulfill its regulatory commitments, then 45% of the plants operating in the U.S. would have been ordered to be shut down by the NRC in the last five years. Obviously, that is not the case.

IV. REBUTTAL TO TESTIMONY ON HUMAN PERFORMANCE ISSUES

Q17. Mr. Grimes' testimony (A42 at 18-19) references certain statements in the March 2010 Annual Assessment Letter issued by the NRC (Northard Exhibit 14) as indicating that "NSPM has yet to demonstrate to the NRC inspectors that the human performance weaknesses have been corrected." What is your response to the inference drawn by Mr. Grimes from the Assessment Letters?

A17. (SDN) The 2009 mid-year performance assessment by the NRC (Northard Exhibit 21) noted that the agency had identified a substantive cross-cutting issue in the area of human performance with cross-cutting themes in the aspects of systematic process,

conservative assumptions, procedural adequacy, and procedural compliance. In response to this assessment, NSPM took a series of actions intended to improve human performance. See Joint Direct Testimony at A66 – A71. While the NRC recognized that measures to improve human performance had been instituted, their results had not been entirely evident by the time the NRC made the inspection on which the 2010 Annual Performance Assessment is based.

After the Annual Performance Assessment was issued in March 2010, we continued to implement the human performance measures we had instituted in 2009 and took a series of additional steps in response to the Annual Assessment. See id. at A74. These measures have resulted in human performance improvements whose effectiveness can be assessed based on several objective performance indicators, including a reduction in the frequency and severity of human performance-related events, an improving trend in the number of NRC violations, and other favorable metrics. See id. at A72, A75.

Q18. Mr. Grimes' testimony (A42 at 19) quotes a portion of the summary from the minutes of the March 17 and 18, 2010 meeting of the PINGP Management Safety Review Committee, which states that "[m]oving Prairie Island solidly forward with the large scope of work on its plate will be determined by the strength and consistency of Station leadership. The leadership team – senior executives through first line supervisors – must continue stepping up the level of engagement with the workforce. Much of what ails Prairie Island is deeply imbedded in its culture. Actions taken at both site and Fleet levels to strengthen the leadership team are vital and will be followed closely by the Committee." What is the significance of the quoted statement in these minutes?

A18. (SDN) The PINGP Management Safety Review Committee ("MSRC") meets three times a year to gather work force perspectives on the plant's performance, challenges and attitudes that affect the safe operation of the plant. The March 2010 meeting referenced in Mr. Grimes' testimony concluded that the

plant continues to operate safely, but that additional engagement by management personnel is necessary to continue to improve performance. Although the minutes identify a number of areas where senior management attention was required, the MSRC did not indicate that the overall safety culture at PINGP is defective. See Northard Exhibit 46.

In fact, the MSRC minutes are a good indication of the importance that NSPM places on human performance and culture. The MSRC is chaired by former NRC Regional Director Hub Miller, and includes former NRC Executive Director of Operations Joe Callan as a member, as well as other senior NSPM and industry executives. The MSRC's reviews provide probing advice that helps PINGP in performance improvement initiatives and pursuit of excellence. This advice includes being very blunt in identifying those areas that deserve continued management attention.

Q19. Mr. Grimes' testimony expresses the opinion (A44 at 19) that "[t]here is a pattern of cultural performance issues revealed by the continuing human performance (HP) and problem identification and resolution (P&IR) issues at Prairie Island that go too deep to be addresses [sic] by a simple follow-up inspection. As described in the NRC's most recent Annual Assessment Letter, the Applicant must demonstrate that the cultural corrective measures are both effective and sustainable." Do you agree with that opinion?

A19. (SDN) No. As I indicated earlier, human performance issues at PIGNP have been addressed through a variety of initiatives which, in total, are producing measurable improvements in human performance. Those improvements demonstrate that the actions taken by NSPM are effective and will result in sustained human performance gains.

V. REBUTTAL TO TESTIMONY ON 2008 SAFETY CULTURE ASSESSMENT

Q20. Mr. Grimes' testimony (A36 at 16-17) references an August 2008, USA safety culture assessment which found that a culture of prevention has not been embraced, and cites the assessment as reporting that "[p]lant employees interviewed as part of the assessment indicated that they do not have time to be proactive and as a result always seem to be in the reactive mode. Being in the reactive mode prevents focusing on backlog, improving cumbersome processes, and monitoring low level indicators to identify precursors before they reveal themselves as events." Mr. Grimes adds that "[a]s noted by the USA 'self-assessment' team, 'prevention' is an item that provides a foundation for much of nuclear safety culture." Is Mr. Grimes' description of the August 2008 USA assessment's conclusions accurate?

A20. (SDN) No. The 2008 USA Assessment team apparently recognized that "prevention" is not in itself an element of safety culture, although it "correlates" with INPO Principle 7 ("organizational learning is embraced"). Northard Exhibit 47 at 34.

(SDN) With respect to INPO Principle 7, the 2008 Assessment Team found that "[o]verall performance under Principle 7 was adequate" (id. at 32) and that operating experience ("OE") OE is valued and utilized. Additionally, OE is accessed from many different sources." (Id.).

(SDN) More significantly, the overall conclusion of the 2008 USA Assessment was: "Overall, the assessment team concluded that PINGP personnel have a healthy respect for nuclear safety and nuclear safety is not compromised by production priorities. In addition, PINGP overall met expectations in each of the eight Principles for a Strong Nuclear Safety Culture." (Id. at 2).

(SDN) Several specific backlog reduction efforts were initiated since 2009 at the station. These include reducing the corrective maintenance work order backlog from 42 to 3, reducing the

elective maintenance work order backlog from 964 to 865, and reducing the CAP backlog from 2331 to 2173 since the beginning of 2010. Similar backlog reduction efforts are underway for Procedure Change Requests and Engineering Change Requests. See Northard Exhibit 48. These backlog reduction efforts evidence our growing focus on prevention.

(EMP) No evaluation of a plant's safety culture of which I am aware has concluded that the plant's safety culture is perfect and there are no areas for improvement. Deficiencies in particular areas, such as prevention, are important in identifying where the plant's management and staff should concentrate their future efforts, but do not signify that a plant's overall safety culture is deficient.

Q21. Mr. Grimes' testimony (A36 at 16-17) also states that plant employees interviewed as part of the 2008 USA assessment indicated that they do not have time to be proactive and as a result always seem to be in the reactive mode. Being in the reactive mode prevents focusing on backlog, improving cumbersome processes, and monitoring low level indicators to identify precursors before they reveal themselves as events. Are these employee perceptions currently accurate?

A21. (KWP) No. The 2008 employee comments essentially boil down to a concern that they have too much to do and do not have time to do it all. This concern is based on the fact that PINGP employees are, by the very nature of working in the commercial nuclear power industry, driven to fix all identified problems. As I made clear in my earlier testimony, PINGP uses a graded approach to its evaluation of identified problems. See Joint Direct Testimony at A76, A84 and A94. That is to say, problem evaluations are prioritized on the basis of their significance and the scheduling of individual responses will reflect that prioritization. The particular issue that an employee identifies

may not be addressed as early or in as detailed a fashion as those with greater significance.

(KWP) As mentioned in my earlier testimony, to address this perception we provided increased training on both Root Cause and Apparent Cause Evaluations. The training provided and reinforced the requirement to analyze and prioritize the development of corrective actions to resolve identified problems. The 2008 employee comments were based on past practices and do not reflect the increased management oversight of the CAP process, particularly in the review of evaluations and corrective actions.

(KWP) The employee concerns over their ability to be proactive have been addressed in two ways. First, PINGP has focused on work schedule stability, and has achieved greater than 80% stability for the past four months. This is an indicator that PINGP employees can have more predictability in their execution of work activities, which provides more opportunities to be proactive. Additionally, the Site Vice President has provided direction on what are the areas into which station activities should be focused. This focusing also results in improving the employees' ability to be proactive.

(EMP) The 2010 NSCA did identify employee's concerns with some processes including issues with efficiencies, timeliness, and effectiveness. The assessment also identified that employees desire better communication and interaction with the leadership team. However, from a nuclear safety culture perspective, the assessment concluded that the PINGP nuclear safety culture supports all of the INPO *Principles for a Strong Nuclear Safety Culture* and has a healthy respect for nuclear safety. Additionally,

interviews conducted during the assessment demonstrated that Prairie Island personnel feel that they can raise any nuclear safety concern, without fear of retaliation. The Pre-assessment Survey demonstrated strong engagement by the workforce in that 88% of the population participated in providing feedback to the survey questions. The 2010 survey response rate is a significant improvement over the 2008 response rate, which was 40%. Based on the Pre-assessment Survey and the Interviews with employees, three positive observations were identified that relate to current employee perceptions of nuclear safety culture as follows:

- Most employee responses in both vertical and horizontal demographics from both the pre-assessment survey and the interviews strongly supported that responsibility and authority for nuclear safety are well established.

- The interview and survey results demonstrated that on an individual level, most plant employees have a healthy respect for nuclear technology and nuclear safety. They understand their role in promoting nuclear safety and how their actions impact nuclear safety. In many instances, personnel could directly describe how their job responsibilities impacted nuclear safety.

- Most station personnel believe that nuclear safety culture has improved over the last two years.

Q22. Mr. Grimes' testimony (A38 at 17) references a "Stand-Down" held by NSPM management on January 5, 2009 and a "Required Briefing by Department Managers." What was the reason for the required briefing?

A22. (SDN) As the document cited by PIIC indicates (Northard Exhibit 49), the purpose of the briefings to be given by department

managers to their employees was to describe the results of the 2008 USA Safety Culture Assessment and to "communicate and reinforce the importance and relevance of the corporate nuclear safety policy (CP0017), the Principles of a Strong Nuclear Safety Culture and expectations for all site employees." Once more, this briefing is in fact a very good example of the importance that NSPM management places on safety culture, and its efforts to ensure that guiding principles are continuously communicated and reinforced.

Q23. What is your understanding of the goals that NSPM management sought to accomplish by directing that such briefings be given?

A23. (SDN) Management wanted to make employees aware of the strengths and weaknesses of the PINGP safety culture that were identified by the 2008 USA Safety Culture Assessment; the plant's commitment to maintaining a strong safety culture program; and the actions that employees should take to enhance the plant's safety culture.

(KWP) Management communications such as this one are a routine part of the PINGP safety culture. The briefing also included information sharing on configuration management, reactivity management, organizational effectiveness, the results from the Management Safety Review Committee, INPO mid-cycle Assessment and an independent human performance assessment. Routine communication of the results from external evaluations is a vital feedback mechanism to our employees that allows PINGP to continually improve performance.

Q24. Mr. Grimes' testimony (A38 at 17) cites the NSPM management directive to hold such briefings as a recognition of the safety culture weaknesses that exist at PINGP. Is that the correct interpretation of NSPM's management directive?

A24. (SDN) No. The briefings would report the positive and negative findings reported in the 2008 USA assessment as a way to inform the plant personnel of the results of the assessment, and would seek to increase the awareness of all plant personnel of the actions that they should be taking to enhance safety culture. This is an appropriate activity for plant management to undertake to satisfy INPO Principle No. 2, that is: "Leaders demonstrate commitment to safety." It is also an activity taken by an organization which is always seeking to improve its safety culture, regardless of where it currently lies. In fact, striving towards continuous improvement is a sign of a strong safety culture.

Q25. The PIIC SOP states at 8: "In the Nuclear Oversight Assessment that the Applicant performed in the first quarter of 2010, the report noted '[t]he station has two Cultural Behaviors that are challenging the station from reaching industry excellence in performance. They are a culture of recovery rather than prevention and a culture of informality with processes, procedures, and plant evolutions.' In terms of the culture of recovery, the assessment went on to explain the 'the mindset that the station can fix or detect an adverse condition after it occurs has been reinforced and in some cases rewarded.'" Do these quoted statements relate to the status of safety culture at PINGP, and if so, how?

A25. (SDN) The Nuclear Oversight Assessment identified some behaviors that may prevent the station from achieving levels of industry excellence, but did not state that the station suffers from a deficient safety culture. Consistent with NSPM's strong commitment to nuclear safety and safety culture, when such behaviors (or any weakness) are identified, NSPM communicates them in a very blunt, self-critical manner, so that they get the corrective action that they deserve. This ability to be extremely self-critical, and to identify and communicate areas for improvement in no uncertain terms, is in fact a fundamental characteristic of a strong safety culture.

Several initiatives have been taken or are underway to make a shift in station practices from recovery to prevention. These

include rewarding employees for "Risk Prevention," a station "Good Catch" program, and a monthly recognition luncheon for employees who are nominated by their supervisors for exemplary performance, including finding and fixing adverse conditions.

(KWP) The quoted statements do not relate to the status of the safety culture at PINGP. One of the functions of the Nuclear Oversight Department is to identify what gaps exist between PINGP performance, even if acceptable, and industry leading (i.e. excellent) performance. PINGP recognizes that in order to continually improve performance goals must be set at levels of excellence rather than at just meeting expectations. The Nuclear Oversight department performs the function of identifying the best industry practices and communicating them to the employees.

(KWP) It should be pointed out that notable improvements in the CAP program have been recognized by Nuclear Oversight. Statements to that effect include:

- "Significant initiatives have been leveraged in the area of the Corrective Action Program. These have mostly been changing the process, changing representation at meetings, challenging the previous standards and training. These have resulted in improvements in the program, especially with PARB [Performance Assessment Review Board] and TRP [(Technical Review Panel] holding to higher standards than previously achieved." Northard Exhibit 50 at 31.

These statements by the Nuclear Oversight Department demonstrate several characteristics of a positive safety culture, as the term is defined in the draft NRC statement (see Joint Direct Testimony at A14):

  - Personnel demonstrate ownership for nuclear safety in their day to day work activities.

- The organization ensures that issues potentially impacting safely are promptly identified, fully evaluated and promptly addressed and corrected commensurate with their significance.

- The organization maintains a continuous learning environment in which opportunities to improve safety are sought out and implemented.

VI. REBUTTAL TO TESTIMONY ON CORRECTIVE ACTION PROGRAM

Q26. Mr. Grimes' testimony (A35 at 16) references an NRC December 21, 2007 Problem Identification and Resolution ("PI&R") Inspection Report as noting a common theme during the last four PI&R inspection reports, i.e., that the licensee tended to focus on detecting problems rather than preventing problems. Does this observation by the NRC reflect negatively on PINGP's safety culture?

A26. (SDN) No. The NRC December 21, 2007 PI&R Report (Northard Exhibit 51) concludes that the licensee "has made progress in effectively using operating experience at the station to prevent problems. In addition, nuclear oversight department personnel's insights and assessments results have been instrumental in improving station performance and reflected a positive presence in the further enhancement of station's performance." Northard Exhibit 51 at 2. These conclusions support a finding of strength in the safety culture at PINGP rather than a weakness.

(KWP) As mentioned earlier, the safety culture assessment process is a continuum rather than a point in time. Using this model PINGP is never "done" with improving either the processes or their execution. The 2007 NRC comments reflect where PINGP was at that point in time on that continuum. Since then, PINGP has made progress in addressing the issue of prevention vs. recovery as part of the evaluation of issues. The NRC noted this in its 2009 PI&R inspection report, stating:

> Most issues, including operating experience, were properly evaluated commensurate with their safety significance; and corrective actions were generally implemented in a timely manner, commensurate with the safety significance. Northard Exhibit 36 at 1.

The in-depth evaluation of issues requires explicit consideration of the Extent of Condition and the Extent of Cause. These extent evaluations are defined as:

> **Extent of Condition**
> Determine where the same or similar condition/problem exists within other plant processes, equipment or organizations and may be unknown, setting up the potential for latent errors to cause another event.
>
> **Extent of Cause**
> Determine where the cause could have had an impact within other plant processes, equipment or organizations that is yet unknown.

Northard Exhibit 35 at 12, 16.

The extent of condition and extent of cause evaluations provide the forcing function that permits implementing a preventative approach to analysis rather than performing narrow evaluations of the specific conditions and the required corrective actions to address them.

Q27. Mr. Grimes' testimony (A40 at 17-18) states that in the NRC's September 25, 2009 PI&R Inspection Report (Northard Exhibit 36) the NRC noted that the Corrective Action Program at PINGP was "functional" but implementation was lacking in rigor resulting in inconsistent and undesirable results, and that the NRC inspectors also noted that "the backlog of corrective actions was large and growing." Is that a fair characterization of the NRC's 2009 PI&R Report?

A27. (KWP) Not entirely. As I discussed in the Joint Direct Testimony at A84, the NRC's September 2009 PI&R Report also presented a number of favorable conclusions regarding the PINGP CAP,

supporting the overall determination that "in general, problems were properly identified, evaluated, and corrected." Northard Exhibit 36, cover letter at 1. Thus, the concerns cited in Mr. Grimes' testimony are only part of the overall picture and do not represent the NRC's total assessment of the CAP program at the time of the 2009 PI&R inspection.

The cited concerns refer to issues that had previously been recognized by PINGP, and two Action Requests had been generated in May 2009 to address them (Northard Exhibits 37 and 38). A root cause evaluation ("RCE") of the CAP problems had also been issued (Northard Exhibit 34) and corrective actions were being taken to address its recommendations. The NRC inspectors agreed with the conclusions in the RCE and acknowledged that PINGP has implemented improvement programs and efforts toward improving the CAP, although recognizable improvement in most areas had not been observed. This is attributable to the fact that at the time the inspection was performed (August 2009) implementation of the improvement programs was only in its initial stages.

Q28. On A442 at 20, Mr. Grimes' testimony concludes, based on the NRC's PI&R Report, that "the serious concerns identified by NRC inspectors with the applicant's corrective action program . . . are indicative of a weak safety culture at PINGP." Do you agree with Mr. Grimes' conclusion?

A28. (KWP) No. First of all, as noted earlier, the NRC's PI&R Report found that the CAP was acceptable. Also, the NRC inspectors reviewed the 2008 USA safety culture assessment and commented favorably on PINGP's Employee Concerns Program based on that assessment (Northard Exhibit 36 at 17). Other than that, the inspectors made no observations regarding PINGP's safety culture.

Moreover, the conditions that the NRC identified in its September 25, 2009 report represented a backwards look into the CAP program. These conditions do not represent the current situation at PINGP. The station has taken actions that demonstrate recognition of the importance of the corrective action program and have strengthened the program. These actions are enumerated in my prior testimony. See Joint Direct Testimony at A87.

Q29. The PIIC SOP (at 8-9) refers to an assessment of the CAP in 2009 conducted by PINGP (the CAP RCE, Northard Exhibit 34) that found that the station was adequately implementing the CAP but reached the conclusion that "[t]he site believes that failure to achieve effective and timely problem resolution is due to inadequate program management and a weak safety culture." Would you please address the cited quotation from the CAP RCE?

A29. (KWP) The cited quotation does not exactly appear in the referenced Root Cause Evaluation. There are two quotes from the CAP RCE (Northard Exhibit 34) that are similar but not identical to the PIIC quotation. The first quote is:

> "The team concluded that failure to achieve effective and timely problem resolution is due to inadequate program management and a weak nuclear safety culture." Northard Exhibit 34 at 23.

The reviewing team's concern expressed in that quote was that the program management was not adequately enforcing the CAP program, which therefore could impact PINGP's nuclear safety culture. We acknowledged this comment and took prompt, definitive action through management engagement, reinforcement and feedback of not only the value of the CAP program, but enforcing a quality product (both evaluation and corrective actions). Additionally, one of the PINGP Focus Areas for 2010 is the Corrective Action Program. See Northard Exhibit 52.

This observation in the CAP Root Cause Evaluation demonstrates PINGP's implementation of two of the INPO Principles for a Strong Nuclear Safety Culture: Principle 7 (Organizational learning is embraced) and Principle 8 (Nuclear safety undergoes constant examination). PINGP, through the Root Cause Evaluation process, self-examined our performance and suggested appropriate responsive actions. This sequence of events shows a strength in PINGP's nuclear safety culture.

The second quote is:

> The team concluded that the lack of integrated priorities results in "C" level items done at the expense of "A" and "B" level items which is indicative of a weak safety culture. Id.

This quote references the deficiencies in sequencing or prioritization of corrective actions, which do not take into account the issues' significance. As discussed earlier, actions were developed and executed to address this concern, which is no longer current.

VII. REBUTTAL TO TESTIMONY ON REQUIRED ACTIONS ON SAFETY CULTURE

Q30. Mr. Grimes' testimony (A45 at 20) recommends that the NRC "direct the applicant to conduct a third party assessment of safety culture as described in Section 10.02 of NRC Inspection Manual Chapter 0305. After the review of this third party assessment, the NRC can address what corrective actions by the applicant are necessary before the renewal should be granted." Would an NRC-directed third party assessment of safety culture at PINGP be appropriate?

A30. (SDN) No, it would not. In its Inspection Manual Chapter 305, the NRC states that, if a licensee has been placed in the "multiple/repetitive degraded cornerstone column" (Column 4) the licensee would be "*expected to perform a third-party*

assessment of their safety culture." Northard Exhibit 20 at 22, emphasis in original. PINGP is not now, and has never been, in the "multiple/repetitive degraded cornerstone" column, which is defined as "repetitive degraded cornerstone; multiple degraded cornerstones, multiple yellow inputs, or a red input." Therefore, the NRC Inspection Manual neither requires nor expects that such an assessment be made at PINGP.

(SDN) In addition, Section 13.05.g of the Inspection Manual (Northard Exhibit 20 at 44) states: "In the third consecutive assessment letter identifying the same substantive cross-cutting issue with the same cross-cutting aspect, the regional office would typically request that the licensee perform an assessment of safety culture. The regional office could conclude a safety culture assessment request is not warranted if the licensee has made reasonable progress in addressing the issue but has not yet met the specific closure criteria for the issue. Typically, this safety culture evaluation would consist of a licensee independent assessment." Having a third consecutive assessment period with the same SCCI with the same cross-cutting aspect has not occurred at PINGP.

(EMP) In addition, a USA assessment of safety culture at PINGP was performed in 2010. As described in the Joint Direct Testimony at A92, this recent assessment concluded that "the PINGP nuclear safety culture supports all of the INPO *Principles for a Strong Nuclear Safety Culture* and has a healthy respect for nuclear safety. Additionally, . . . Prairie Island personnel feel that they can raise any nuclear safety concern, without fear of retaliation." Therefore, the remedy that PIIC asks for, performance of a safety culture assessment, has already been provided.

Q31. Mr. Grimes' testimony (A44 at 19-20) provides the following opinion: "[T]he safety culture weaknesses associated with the causal factors described in Information Notice 2009-11, the series of White Findings associated with one or both of the PINGP units, the identification of substantive cross-cutting issues in the area of human performance, the serious concerns identified by NRC inspectors with the applicant's corrective action program, and failure to effectively manage the plant design and effectively resolve potentially the safety-significant flooding issues identified 20 years ago, are indicative of a weak safety culture at PINGP." Is Mr. Grimes' opinion correct?

A31. (SDN, KWP) No. As discussed in the Joint Direct Testimony at A99, all the issues that Mr. Grimes cites have been addressed and programs have been set in place to improve the aspects of plant performance relating to those issues. Significant improvement in performance is indicated in the various metrics used to track organizational and individual performance, including both nuclear and industrial safety. Employees have continually shown a willingness to identify and correct performance deficiencies, and to change their behaviors as needed to improve work task execution. And, finally, PINGP has demonstrated that a reduction in the number and significance of employee errors is continuing.

We have also demonstrated though various independent assessments, audits, surveys, causal evaluations and through examination of the performance history that there is a strong safety culture at PINGP.

Q32. The PIIC SOP states at 9-10: "The Community would ask the Board to deny the application for license renewal until the Applicant can demonstrate that the safety culture inadequacies have been fixed – not that they will be fixed, but they have been fixed." What is your response to the PIIC's request for relief from the Board?

A32. (SDN) PIIC's request for relief ignores that safety culture is not a static concept but, as defined by the NRC, is an "assembly of characteristics, attitudes, and behaviors in organizations and individuals, which establishes that as an overriding priority,

nuclear safety and security issues receive the attention warranted by their significance." Because safety culture is dynamic and unquantifiable, it is impossible to try to demonstrate at any point in time that the safety culture at a facility has been "fixed."

(SDN) I also note that PIIC's Safety Culture Contention, and the testimony that supports it, totally ignore the role of the NRC in continuously monitoring NSPM's performance in areas that have a bearing on PINGP's safety culture. The NRC's constant supervision of activities at the PINGP through the reactor oversight process assures that if any plant performance deficiencies with safety culture implications develop, the NRC will require that the deficiencies be corrected and their safety culture implications be addressed.

(EMP) Nuclear safety culture is defined by both the NRC and INPO. Consistent in these definitions is the fact that culture is a set of organizational values, behaviors, and attitudes that collectively result in the establishment of nuclear safety as an overriding priority. It is these values, behaviors and attitudes that influence the performance of a worker, a group of workers, an organization, and the entire work force. Nuclear safety culture then can be measured by collectively determining the values and attitudes of the workers through surveys and interviews and by evaluating various elements of station performance. Behaviors and attitudes influence and are reflected in performance, which is measured at the individual level, the group level, the organizational level, and the station level. Continuous improvement in pursuit of excellence is a standard expected by both the regulatory and industry oversight agencies. INPO 05-005, "Guidelines for Performance Improvement at Nuclear Power Stations," August 2005 (Northard Exhibit 53) provides a basic

model for continuing performance improvement. This model includes three primary actions:

- Performance Monitoring
  - Trending
  - Performance Assessment
  - Performance Indicators
  - Benchmarking
  - Self Assessments
  - Industry OE
  - Independent Oversight
  - Behavior Observations
  - Problem Reporting
  - Standards
  - Effectiveness Reviews
- Analyzing, Identifying and Planning Solutions
  - Action Planning
  - Problem Analysis
  - Management Review & Approval
  - Business Planning Considerations
- Implementing Solutions
  - Organizational Accountability
  - Management Oversight/Reinforcement
  - Resource Management
  - Action Tracking
  - Task Assignment

These actions are continuous. For example, Performance Monitoring identifies an issue which is moved to Analyzing, Identifying and Planning Solutions. The plan for correcting this issue is developed and moves to Implementing Solutions. The actions are implemented and the issue is fixed, but to make sure of the fix the issue and corrective actions fall back into the Performance Monitoring part of the model. It is an ongoing, continuous circle. It is recognized that not all corrective actions are effective (either on a short-term or long-term basis) and continuous checking and adjustment are necessary.

(EMP) Moreover, demonstrating that the safety culture of a plant has been "fixed" at this point in time would be of little value in predicting the culture's status years into the future. There are many external and internal factors that may change the safety culture over time. The occurrence and impact of these factors are difficult to predict, thus it is unlikely that the PINGP's current safety culture can serve to accurately predict its future performance.

(EMP) In summary, PINGP cannot demonstrate that all inadequacies "have been fixed," but the station has demonstrated that programs and processes are in place which meet the NRC regulations for correction of non-conforming and degraded items and for correction of conditions and significant conditions adverse to quality. Additionally, the station implements a continuous process similar to the INPO model that provides ongoing performance monitoring, solution development and implementation of all issues identified, including safety culture inadequacies.

Q33. Does that conclude your testimony?

A33. (SDN, KWP, EDP) Yes.