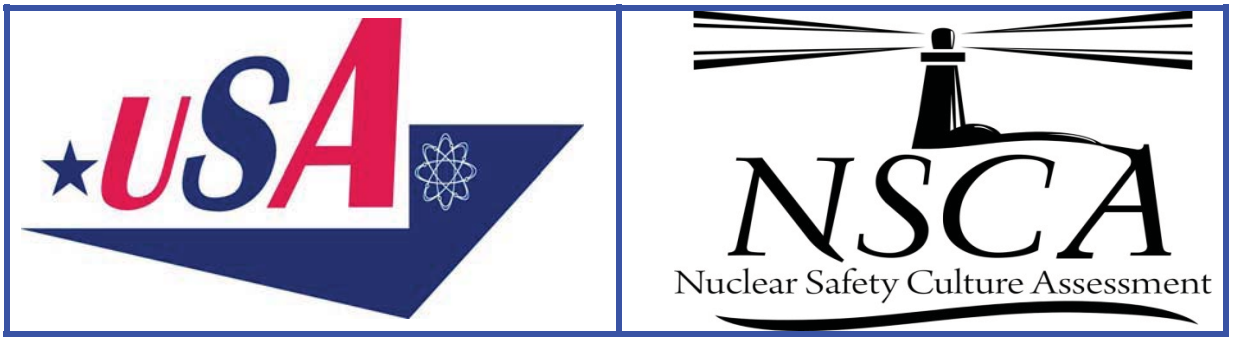

Xcel Energy
Prairie Island Nuclear Generating Plant

June, 2010

Ed Peterson — **Team Lead**

July 23, 2010 — **Date**

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I. Executive Summary

A nuclear safety culture assessment (NSCA) was conducted at Prairie Island Nuclear Generating Plant (PINGP) June 21 -25, 2010. This report documents the results of that assessment. The purpose of the assessment was to determine to what degree the station has a strong nuclear safety culture, a healthy respect for nuclear safety, and that nuclear safety is not compromised by production priorities. The assessment's model of safety culture, the structure of the assessment process, and the results of the assessment are expressed in terms of INPO's *Principles for a Strong Nuclear Safety Culture*[1] *(PSNSC).* Additionally, this assessment meets the guidance provided in NEI 09-07, *Fostering A Strong Nuclear Safety Culture*[2]. The assessment results are based on a pre-assessment survey of station personnel, a site assessment involving direct interviews with randomly selected station personnel, and observations of selected site meetings and activities. The methodology and background of the USA NSCA process are provided in *Attachment 4*.

Overall, the assessment team noted 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, it should be noted that interviews conducted during the assessment week demonstrated that Prairie Island personnel feel that they can raise any nuclear safety concern, without fear of retaliation. The team identified no Strengths, six Positive Observations, five Weaknesses, six Negative Observations, and three General Observations. Details of these findings and additional comments are provided in Section II of this report. The team recommends use of the station's corrective action program to document the evaluation and resolution of issues identified during this assessment.

Additionally, a review was performed of issues identified in the station's previous assessment of nuclear safety culture performed in August of 2008. The 2008 assessment identified four weaknesses. This review determined that some of the issues have been fully resolved, some have been partially resolved with additional attention needed, and some have not been resolved. A more detailed discussion is provided in Section III of this report.

The assessment team composition is provided in *Attachment 5*.

Strength

No strengths were identified.

Positive Observations

Attribute P1a – 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.

Attribute P1b - 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.

Attribute 2G - Informal opinion leaders in the organization are having a positive impact at Prairie Island.

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1 Building on the Principles for Enhancing Professionalism, *Principles for a Strong Nuclear Safety Culture*, Institute of Nuclear Power Operations, November, 2004.

2 NEI 09-07, Industry Guideline, *Fostering a Strong Nuclear Safety Culture*, Rev. A., Nuclear Energy Institute.

Attribute P3a - During interviews it was evident that the training department exhibits a very positive attitude that is engaged with the priorities of the station. These personnel articulated the station priorities and were strong supporters of nuclear safety. Interviews indicated strong leadership, teamwork and communication.

Attributes 5A, 5B, and 5C - Prairie Island personnel firmly believe that reactivity control and the design features and margins associated with protection of critical safety functions are well implemented.

Attribute P8a - Most station personnel believe that nuclear safety culture has improved over the last two years.

Weaknesses

Attribute 1C - Management is not viewed by some employees as respecting and valuing the contributions of individuals to site performance. Primary drivers are management's response to staffing issues and personnel errors.

Attribute 3F – Some employees indicated that the organization is ineffective at communicating changes, either organizational or program related, such that there is a lack of trust and understanding of the impending changes.

Attribute 4A – Some employees are concerned that with pending attrition and retirements, there is no visible legacy plan to address knowledge transfer and retention at the station. High turnover is challenging the stations ability to perform timely and effective work.

Attribute 5D – Some employees are concerned that long-standing and repeat equipment issues persist at the station. Examples of contributing causes to this belief are ineffective application of rigorous problems solving, root cause analysis, and project management.

Attribute 7D – Some employees do not believe that the Root Cause Analyses provide consistent resolution to prevent problems from recurring.

Negative Observations

Attribute 1H - Some employees are not aware of how the rewards and recognition system supports desired nuclear safety behaviors. When rewards are provided, they are not tied specifically to nuclear safety.

Attribute 2A – Many employees believe that Managers and Supervisors are not spending enough time in the field coaching and observing work activities.

Attribute 2E - Some employees indicate that production priorities lead decision-making. The primary negative response themes to this attribute reflect employee's perceptions regarding site alignment of priorities, equipment reliability and maintenance, and production priorities (most noteworthy in responses discussing outage performance).

Attribute 2F – Some employees indicate that operations decisions and their bases are infrequently and inconsistently communicated.

Attribute 6B/6D – Most employees believe that management encourages the use of the Condition Report System however, some do not believe the CAP system is effectively resolving problems in a timely manner. Therefore, they may not use the system consistently to resolve issues unless it is a nuclear safety significant issue. Overall, most employees indicated that problem identification is good however, some employees believe that problem resolution lacks accountability and rigor to drive issues to completion.

Attribute 7E - Most employees believe that there are sufficient processes to identify organizational weaknesses however, some employees believe these processes are not effectively utilized and implemented to resolve these weaknesses.

General Observations

Attribute 5H – Some employees indicated station work control process does not fully utilize workers to correct Maintenance items as scheduled. Some employees are concerned that work packages are not of adequate detail to complete job assignments without errors.

Attribute 8B – Some employees do not believe the results of previous safety culture assessments were communicated or used to drive improvement.

Attribute 8C – Some employees believe that Key Performance Indicators and Program Health Reports are not being effectively used to detect trends and initiate action prior to self revelation of issues.

Additional information on the results, assessment interview data, and pre-assessment survey data is provided in this report. The Prairie Island Senior Leadership Team was briefed on these results on 6/25/2010.

II. Assessment Results

Results included in this report

- A graphical representation of the positive, neutral, and negative survey answers documented in the pre-assessment survey is provided in *Figure A*. This graph provides a visual representation of the relative rankings of the 8 Principles for a Strong Nuclear Safety Culture that was developed through analysis of the survey responses and scores. Insights from the survey data are used by the team to apply attention to applicable areas of interest during the assessment week. Specific bar charts developed from the pre-assessment survey data are included for each Principle's Attributes in *Attachment 2*.
- A chart presenting the top and bottom rated Principle/Attribute based on the pre-assessment survey question answers and comments is provided in *Figure B*.
- A graphical representation of the positive, neutral, and negative interview responses and behavior observations documented during the site assessment week is provided in *Figure C*. This graph provides a visual representation of the relative rankings of the 8 Principles for a Strong Nuclear Safety Culture. Additionally, specific graphs are included for each Principle's Attributes in *Attachment 1*. These graphs are developed and updated throughout the assessment week and provide a reference standard for the team to contrast and compare the themes that develop during the interviews and observations. These graphs can help to provide balance and check of the data as the team develops themes or issues during the assessment.
- A data distribution chart for Principles/Attributes for both the assessment week and the pre-survey data is provided as *Attachment 3*. Both are used during the assessment to provide the team guidance in the selection of questions and observation areas as the assessment week progresses. The intent is to assure that the team includes a balanced approach to interview question selections so that all attributes are explored during the assessment interviews.

  Note: *The numeric/alpha reference system used in the NSCA process is based on the INPO Principle number followed by an alpha designator to describe the specific attribute noted in the INPO document as a bullet. For example, "1F" would describe the reference to Principle 1 – "Everyone is personally responsible for nuclear safety", sixth bullet - "All personnel understand the importance of adherence to nuclear safety standards. All levels of the organization exercise health accountability for shortfalls in meeting standards." The reference system used for the general definition of the principles (immediately preceding the attributes) is designated by the Letter P followed by the Principle, and then a lower case alpha designator. For example, "P1a", would describe the reference to Principle 1 – "Everyone is personally responsible for nuclear safety", first sentence following the Principle – "Responsibility and authority for nuclear safety are well defined and clearly understood."*

Pre-assessment Survey

A 73-question electronic, pre-assessment survey was distributed to 707 station personnel prior to the assessment week. 624 responses were received with an overall response rate of 88%. From these responses 46,100 data points were gathered about the station's perceptions of the eight principles and 57 attributes. The pre-assessment survey data was evaluated by the USA team prior to the site visit. The rankings, scores, and written comments from the survey were used to inform the team prior to the site visit and are used in conjunction with the comments received during the interviews and team observations. In addition to the survey question answers, comments provided by employees were also rated as positive, neutral / as-expected, or negative and the combined results of the answers and comments were developed into a table of the highest scores (most positive) and the lowest scores (most negative).

Figure A depicts data collected from the pre-assessment survey. The bars represent the magnitude of positive, neutral / as-expected, and negative responses for all questions relative to the responses per each principle statement. For example, 6,414 total responses were received to questions relative to Principle 1. Of these, 3,511 responses were positive, 1,893 responses were neutral / as-expected, and 1,010 responses were negative. During the pre-assessment survey, the ratings are determined by each individual survey respondent. To provide a healthy balance when interpreting graphical results, the positive responses (green bars) and neutral responses (yellow bars) should be summed and compared to the negative responses (red bars) to greater understand the proportion of "healthy" responses to negative responses.

Figure A - Pre-Assessment Survey Overall Results: 8 Principles Roll-up

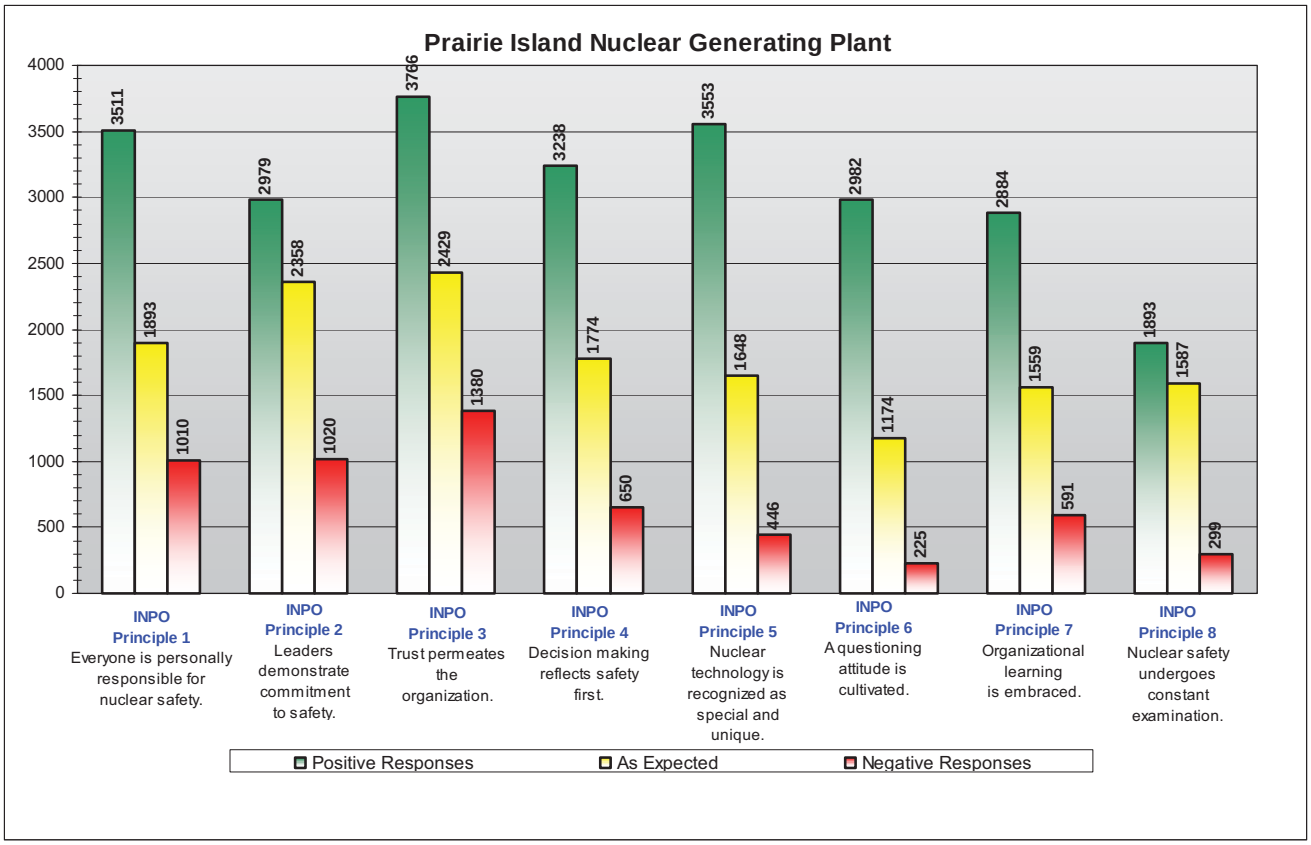


Figure B provides the highest and lowest scores obtained during the pre-assessment survey. The results displayed in this table include collective feedback from both the survey questions and all associated comments. The survey automatically scores the question answers. Each comment was then manually scored by the respondent as positive, neutral / as-expected, or negative behavior / response. The "Top and Bottom" scores were referred to frequently by the team during the assessment week to aid in the analysis of the interview and observation data. The average number of write-in comments for all 73 survey questions was 53 and the median was 48.

Figure B - "Top" and "Bottom" rated scores on Survey Questions and Comments

QUESTIONS WITH THE HIGHEST POSITIVE RESPONSE	QUESTIONS WITH THE HIGHEST NEGATIVE RESPONSE
97% firmly believe they are personally responsible for nuclear safety practices that contribute to the overall plant nuclear safety culture Q2 – P/A P1b.	40% do not believe the employees are viewed as the most valuable asset of the nuclear organization. Q5 – P/A 1C
87% firmly believe there is a very high respect for critical safety functions such as core cooling and reactor safety. Q44 – P/A 5B	39% do not believe that managers spend enough time in the work areas talking with people to know what really goes on around here. Q22 – P/A P3b Note 1
82% firmly believe the employees understand and adhere to nuclear safety standards. Q8 – P/A 1F	37% do not believe the effects of upcoming changes are managed to build organizational trust. Q29 – P/A 3F
81% firmly believe they are taught to be vigilant to changing conditions and to be comfortable in challenging their own ideas and those of others as they do their work Q51 – P/A P6a.	28% do not believe A knowledgeable workforce is maintained to support operational and technical decisions. Q35 – P/A 4A
80% firmly believe any activities affecting core reactivity are handled with the utmost care. Q43 – P/A 5A	26% do not believe Management incentive programs focus on long-term plant performance and nuclear safety. Q30 – P/A 3G
80% firmly believe personnel do not proceed in the face of uncertainty Q54 – P/A 6D	26% do not believe rewards and recognition are tied to strong nuclear safety. Q10 – P/A 1H
75% firmly believe authority and responsibility for nuclear safety is clearly defined. Q3 – P/A 1A	25% do not believe the background for operational decisions is promptly communicated to workers. Q18 – P/A 2F
73% firmly believe full disclosure is provided to oversight, audit and regulatory organizations. Q31 – P/A 3H	24% do not believe their supervisor has personally recognized them for supporting nuclear safety. Q12 – P/A P2b

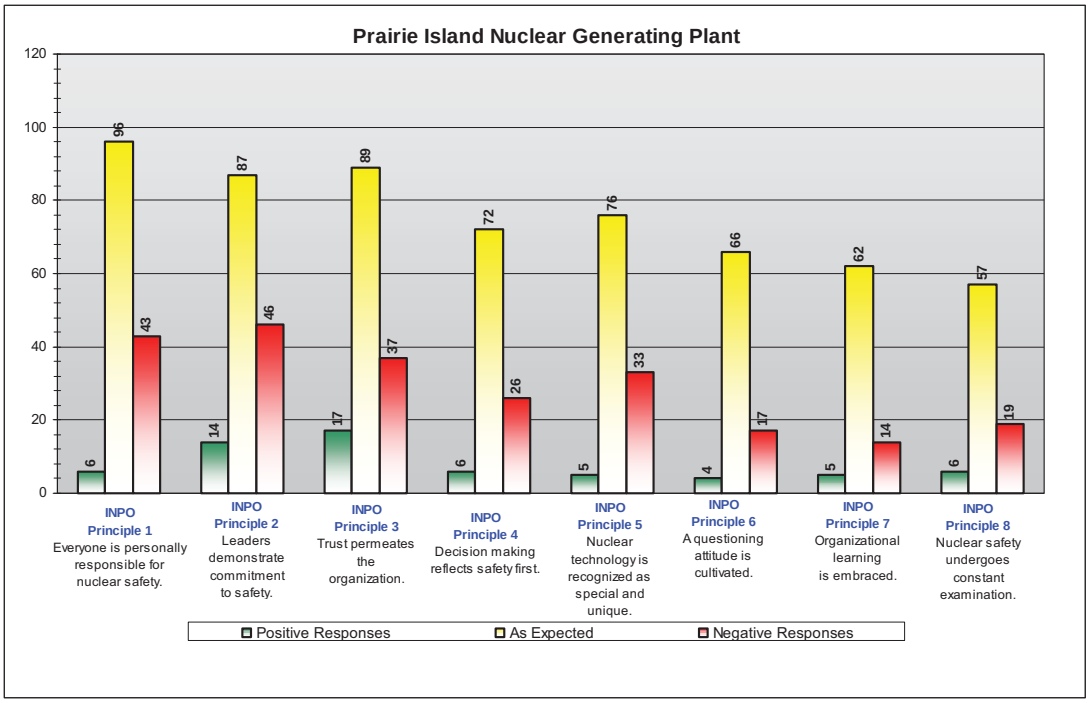
Note 1: Survey question twenty-two is based on Principle/Attribute P3b which states "There is a free flow of information in which issues are raised and addressed." The survey question states "our managers spend enough time in the work areas talking with people to know what really goes on around here". This survey question is more appropriately associated with Principle/Attribute 2A which states "Managers and supervisors practice visible leadership in the field by placing "eyes on the problem," coaching, mentoring, and reinforcing standards. Deviations from station expectations are corrected promptly." This was considered by the team during the evaluation of the assessment data.

Interviews and Observations

During the assessment week, a combination of 62 interviews and 6 meeting observations resulted in the collection and recording of 912 specific data inputs which were used in conjunction with the pre-survey assessment data to develop the results and conclusions of the assessment.

Figure C depicts data collected during the on-site interviews and observations. The bars represent the number of collective data inputs that were positive, neutral / as-expected, or negative in response to the question(s) associated with the applicable principle.

Figure C - Site Assessment Overall Results: 8 Principles Roll-up



As stated previously, positive responses (green bars) and neutral responses (yellow bars) should be summed and compared to the negative responses (red bars) to understand the balance of "healthy" responses with respect to those that fall short of meeting attributes as defined in the INPO PSNSC document. It is expected that the pre-assessment survey results (*Figure A*) should differ slightly from the site assessment (*Figure C*) due to differences in sampling methodology and interview dynamics. In most self-reporting systems such as the pre-assessment survey, respondents may rate an attribute differently as they answer survey questions individually compared to how they respond to similar questions asked in an interview. Additionally, the interview process asks interviewees to answer with examples that support the principle and the process of descriptive, behavioral interviewing reveals greater depth and detail than the pre-assessment survey data. The NSCA process utilizes both the pre-assessment survey data and the team's interview data to provide contextual cues in developing findings during an assessment.

Data distribution for each principle and attribute developed during the assessment week is provided in *Attachment 1*. These tables are used during the assessment to support a balanced approach to data collection among all eight principles and their attributes and provide a quick look at the distribution of negative responses as compared to the total responses for each applicable principle and attribute.

Principle 1: Everyone is Personally Responsible for Nuclear Safety

Data Review & Analysis

Interview data was collected through observations and interviews with a cross section of personnel including Senior Managers, Middle Managers, First Line Supervisors, and Individual Contributors. 145 data points gathered for this principle were compared and contrasted with 6414 data points gathered from the pre-assessment survey. All attributes were reviewed in detail for strengths, weaknesses, positive, and negative areas. Interview results generally validated the survey data.

This assessment identified two Positive Observations, one Weakness, and one Negative Observation for Principle 1. A specific breakdown of data collected for this principle is provided as *Attachment 1*. Details of the team's findings for Principle 1 are provided below.

Strengths (none identified for Principle 1)

Positive Observations

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.

P1a - Responsibility and authority for nuclear safety are well defined and clearly understood.

Survey Question 1 - Nuclear safety is discussed at every meeting where plant work activities are planned or reviewed

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute P1a resulted in high combined positive/neutral response rates of 92% (591 of 645) and 29% (2 of 7) respectively. The pre-assessment survey included 68 write-in comments of which 50 were positive or neutral. The five negative interview responses dealt with concerns about staffing levels which is addressed in the finding for attribute 1C.

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.

P1b - Reporting relationships, positional authority, staffing, and financial resources support nuclear safety responsibilities. Corporate policies emphasize the overriding importance of nuclear safety.

Survey Question 2 - I clearly understand that I am personally responsible for nuclear safety practices that contribute to the overall plant nuclear safety culture.

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 1F resulted in high combined positive/neutral response rates of 99.7% (646 of 688) and 88% (7 of 8) respectively. The pre-assessment survey included 24 write-in comments of which 17 were positive/neutral and 7 were negative.

Weakness

Management is not viewed by some employees as respecting and valuing the contributions of individuals to site performance. Primary drivers are management's response to staffing issues and personnel errors.

1C – People and their professional capabilities, values, and experiences are regarded as the nuclear organization's *most valuable asset. Staffing levels are consistent with the demands related to maintaining safety and reliability.*

Survey Question 5 - The employees are viewed as the most valuable asset of the nuclear organization.

Supporting Data:

- The pre-assessment survey for attribute 1C resulted in a negative response rate of 40% (255 of 640). Additionally, of the 129 write-in comments 119 were rated as negative. The pre-assessment survey data for this attribute reflects a strong sentiment of concern for a significant slice of the plant employees.
- The site has experienced a high turnover rate due to changes in the site management organization, terminations, and retirements. The most recent Staffing Review indicates 29 open positions with only 5 planned to be filled. The remaining 24 are on budget hold.
- Open positions in some functional areas are not allowed to be filled due to budget concerns. Resulting work load and job responsibilities are being transferred to remaining personnel who feel overloaded.
- Qualified personnel need to be "forced" (overtime) to work in order to perform required fuel handling, RP, operating, and chemistry activities.
- Some minimum required shift complement of operating positions are filled by routinely forcing operators.
- Security officers routinely cover vacancies on other teams which has impacted personal and family life.

Some employees believe Management addresses personnel errors in a punitive manner where the punishment does not fit the error. Some employees are afraid of receiving significant time off or of being terminated for what are perceived as lesser errors. While the details of each event may not be captured, the perception of these events by the employees is that any error will result in harsh punishment.

Supporting Data:

- An individual who coached others for improper radworker practices, was given time off for not stopping the job (behavior discovered when individual wrote a CAP to document the coaching). (Provided to PI ECP)
- An operator was performing an evolution without a procedure (procedure did not exist) when a valve broke. Individual was given significant time off, but not before he was required write a procedure to maintain system in operation. Individual was considered the system expert. (Provided to PI ECP)
- When control room operators have acted to correct Tech Spec violations as quickly as possible UPPER management (without PI experience) have acted to remove them from duty because they did not understand the actions taken rather than to ask questions first. This leads personnel to be "gun shy" to taking actions because others have been blamed / accused of making Human Performance errors, only to have the punishment retracted when it was determined that the actions taken were justified and due to equipment problems.
- Security officer was dismissed for reporting an injury. As a result security officers are reluctant to report minor injuries. (Provided to PI ECP)

- An employee received 2 weeks off for missing a step in a procedure and improperly oiling a motor.

Negative Observations

Some employees are not aware of how the rewards and recognition system supports desired nuclear safety behaviors. When rewards are provided, they are not tied specifically to nuclear safety.

1H – The system of rewards and sanctions is aligned with strong nuclear safety policies and reinforces the desired behaviors and outcomes.

Survey Question 10 - Rewards and recognition are tied to strong nuclear safety.

Supporting Data:

- During interviews, a number of employees could not articulate how rewards and incentives are linked to nuclear safety principles. Stated there is a much clearer tie to KPIs, budget, and outage duration.
- The Attitude Is Marvelous (AIM) program was considered a positive approach to recognition, however its use and prominence has significantly diminished recently.
- Employees believe that some recognition that is provided for nuclear safety (good catch, CAP certificates, mention in Team Notes) are considered weak.

Other Insights

Review of the pre-assessment survey data and the interview data for Attributes 1A and 1B indicates that station personnel believe these attributes are reflected in behaviors and performance. No issues were noted.

Attribute 1D, "Board members and corporate officers periodically take steps to reinforce nuclear safety, including visiting sites to assess management effectiveness first-hand." - Responses to both the pre-assessment survey and interviews for attribute 1D resulted in higher negative response rates of 20% (126 of 643) and 33% (5 of 15) respectively. The pre-assessment survey included 88 write-in comments of which 53 were negative. The primary response theme dealt with a negative perception by some employees regarding Corporate Management.

Attribute 1E, "The line organization, starting with the chief executive officer, is the primary source of information and the only source of direction. Other parties, such as oversight organizations and committees, review boards, and outside advisors, who provide management information essential to effective self-evaluation, are not allowed to dilute or undermine line authority and accountability." - Responses to both the pre-assessment survey and interviews for attribute 1E resulted in higher negative response rates of 24% (154 of 641) and 22% (2 of 9) respectively. The pre-assessment survey included 81 write-in comments of which 44 were negative. The primary response theme dealt with a negative perception by some employees regarding information from both Site and Corporate Management.

Attribute 1F, "All personnel understand the importance of adherence to nuclear safety standards. All levels of the organization exercise healthy accountability for shortfalls in meeting standards." - Responses to both the pre-assessment survey and interviews for attribute 1F resulted in high combined positive/neutral response rates of 92% (620 of 638) and 67% (12 of 18) respectively. The pre-assessment survey included 40 write-in comments which were equally distributed between positive, neutral, and negative. The six negative interview responses dealt with concerns about knowledge retention, budget, and staffing.

Attribute 1G, "Relationships among utilities, operating companies, and owners are not allowed to obscure or diminish the line of responsibility for nuclear safety." - Responses to both the pre-assessment survey and interviews for attribute 1G resulted in higher negative response rates of 22% (140 of 639) and 19% (3 of 16) respectively. The pre-assessment survey included 67 write-in comments of which 52 were negative. The primary response theme dealt with a negative perception by some employees regarding the relationship between the site and corporate.

Principle 2 – Leaders Demonstrate Commitment to Safety

Data Review & Analysis

Interview data was collected through observations and interviews with a cross section of personnel including Senior Managers, Middle Managers, First Line Supervisors, and Individual Contributors. 147 data points gathered for this principle were compared and contrasted with 6357 data points gathered from the pre-assessment survey. All attributes were reviewed in detail for strengths, weaknesses, positive, and negative areas. Interview results generally validated the survey data.

This assessment identified one Positive Observation and three Negative Observations for Principle 2. A specific breakdown of data collected for this principle is provided as *Attachment 1*. Details of the team's findings for Principle 2 are provided below.

Strengths (none identified for Principle 2)

Positive Observations

Informal opinion leaders in the organization are having a positive impact at Prairie Island.

2G – Informal opinion leaders in the organization are encouraged to model safe behavior and influence peers to meet high standards.

Survey Question 19 - Informal leaders from the work group (non-supervisors) model safe behavior to meet high standards.

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 2G resulted in higher combined positive/neutral response rates of 96% (612 of 635) and 89% (8 of 9) respectively. The pre-assessment survey included 25 write-in comments which were split evenly between positive, neutral, and negative.
- Employees stated that this is a huge strength for PINGP – the longtime employees are very good at trying to do the right thing. In addition, this was noted a strong point in the engineering groups. It was stated that some engineers are class acts and know the plant well. It is also good to have a previous SRO certified engineer in the organization in addition to a retired shift manager
- Employees stated that at times they have been coached by the workers concerning various issues. I appreciate the coaching and it makes me feel like the workers are looking out for my safety as well.
- Employees stated that there are many leaders at PINGS who, regardless of their position, provide a positive example for other and coach other when necessary. This is supported by the site wide expectation that everyone here is responsible for safety and can freely coach anyone else. The expectation when being coached is to acknowledge in a positive manner and express appreciation. This has been affirmed in my personal experience.

Weaknesses (none identified for Principle 2)

Negative Observations

Many employees believe that Managers and Supervisors are not spending enough time in the field coaching and observing work activities.

2A - Managers and supervisors practice visible leadership in the field by placing "eyes on the problem," coaching, mentoring, and reinforcing standards. Deviations from station expectations are corrected promptly.

Survey Question 13 - Managers and supervisors are visible in the plant while they coach, mentor and reinforce standards.

P3b - There is a free flow of information in which issues are raised and addressed.

Survey Question 22 - Our managers spend enough time in the work areas talking with people to know what really goes on around here.

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 2A resulted in higher negative response rates of 17% (110 of 639) and 53% (8 of 15) respectively. The pre-assessment survey included 91 write-in comments of which 56 were negative.
- Responses to both the pre-assessment survey and interviews for attribute P3b resulted in higher negative response rates of 39% (247 of 635) and 20% (4 of 20) respectively. The pre-assessment survey included 110 write-in comments of which 80 were negative.
- Personnel indicated they don't see much of their management or some supervision in the field as their time is consumed with meetings most of the day which leaves very little time for face-to-face communications.
- The only time coaching is provided is when something has been done wrong.
- Many of the survey responses indicate that managers have little time to spend in the field coaching and mentoring due to administrative tasks and meetings.
- Some employees indicated that face-to-face time with their supervisor is limited to job performance appraisals.
- Personnel indicated that they see more of their supervision but little of their management.

Some employees indicate that production priorities lead decision-making. The primary negative response themes to this attribute reflect employee's perceptions regarding site alignment of priorities, equipment reliability and maintenance, and production priorities (most noteworthy in responses discussing outage performance).

2E - Leaders recognize that production goals, if not properly communicated, can send mixed signals on the importance of nuclear safety. They are sensitive to detect and avoid these misunderstandings.

Survey Question 17 - Production goals do not take priority over nuclear safety.

Supporting Data:

- Responses resulted in higher negative response rates of 21% (135 of 639) and 36% (8 of 22) respectively. The pre-assessment survey included 59 write-in comments of which 40 were negative.
- Recurring comments from the survey and interviews included concerns in the following areas:
    - Refueling outage scope reduction in support of schedule goals,
    - Concerns with how the RCP Seals were addressed,
    - Progress of the ZX modification,
    - Progress of the Instrument Air modification.

Some employees indicate that operations decisions and their bases are infrequently and inconsistently communicated.

2F - The bases, expected outcomes, potential problems, planned contingencies, and abort criteria for important operational decisions are communicated promptly to workers.

Survey Question 18 - The background for operational decisions is promptly communicated to workers.

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 2F resulted in higher negative response rates of 25% (162 of 637) and 27% (2 of 22) respectively. The pre-assessment survey included 62 write-in comments of which 39 were negative.
- Communication of operational decisions and other important station decisions are less than adequate. Operations often must ask repeatedly to get information on decision bases. The ODMI process is used so no one owns any operational decisions.
- Follow-up to the site is not always prompt or done at all. Very little is communicated voluntarily.
- When operational decisions are made it may be days before the bases for the decisions are explained. Typically with issues regarding a deficiency that is declared acceptably resolved. Employees are left wondering how they were able to declare the issue resolved as issues still appears unresolved and unsafe to the employees.
- Site notices/updates, including the background for operational decisions, used to be sent via email to all plant employees when events affecting the operation of the plant occurred, but those types of updates are no longer provided.
- Communications from management is very poor. There have been many instances where management has made a decision and did not consult with the employees, who may have more knowledge or management has made a commitment that involved employees without letting the employee know they were committed.

Other Insights

Attribute P2a, "Executive and senior managers are the leading advocates of nuclear safety and demonstrate their commitment both in word and action." Responses resulted in moderately higher negative response rates of 21% (135 of 639) and 36% (8 of 22) respectively. The pre-assessment survey included 59 write-in comments of which 40 were negative. The primary response themes dealt with negative employee's perceptions regarding site alignment of priorities, equipment reliability and maintenance, and visibility of upper management.

Attribute P2b, "Executive and senior managers are the leading advocates of nuclear safety and demonstrate their commitment both in word and action." Responses resulted in moderately higher negative response rates of 24% (156 of 638) and 30% (8 of 27) respectively. The pre-assessment survey included 43 write-in comments of which 16 were negative. Two minor themes were noted with effective CAP results and recognition of workers by their supervision.

Review of the pre-assessment survey data and the interview data for Attributes 2B, 2C, 2D, and 2H indicates that station personnel believe these attributes are reflected in behaviors and performance. No issues were noted.

Principle 3 – Trust Permeates the Organization

Data Review & Analysis

Interview data was collected through observations and interviews with a cross section of personnel including Senior Managers, Middle Managers, First Line Supervisors, and Individual Contributors. 152 data points were gathered for this principle which were compared and contrasted with 7,575 data points gathered from the pre-survey. All attributes were reviewed in detail for strengths, weaknesses, positive, and negative areas. Interview results generally validated the survey data.

This assessment identified one Positive Observation and one Weakness for Principle 3. A specific breakdown of data collected for this principle is provided as *Attachment 1*. Details of the team's findings for Principle 3 are provided below.

Strengths (none identified for Principle 3)

Positive Observations

During interviews it was evident that the training department exhibits a very positive attitude that is engaged with the priorities of the station. These personnel articulated the station priorities and were strong supporters of nuclear safety. Interviews indicated strong leadership, teamwork and communication.

P3a – A high level of trust is established in the organization, fostered, in part, through timely and accurate communication.

> *Survey Question 21 - My supervisor periodically observes me working and gives me useful feedback about how to improve my performance*

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute P3a resulted in generally higher combined positive/neutral response rates of 84% (533 of 633) and 81% (13 of 16) respectively. The pre-assessment survey included 56 write-in comments of which 27 were rated as positive/neutral.

Weaknesses

Some employees indicated that the organization is ineffective at communicating changes, either organizational or program related, such that there is a lack of trust and understanding of the impending changes.

3F – The effects of impending changes (such as those caused by sale or acquisition, bargaining unit contract renegotiations, and economic restructuring) are anticipated and managed such that trust in the organization is maintained.

> *Survey Question 29 - The effects of upcoming changes are managed to build organizational trust.*

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 3F resulted in higher negative response rates of 37% (231 of 631) and 67% (14 of 21) respectively. The pre-assessment survey included 89 write-in comments of which 79 were rated as negative.
- Some employees have a lack of trust for changes that affect them based on not understanding "why" the changes are being made.
- Some employees have a lack of trust for changes that appears to have been implemented without the appropriate input into the decision-making process.

- Some employees know that a Change Management process exists, but is not being implemented properly or at all.
- Decisions have been made by management without apparent consideration for the effects the decision will have on personnel/resources. For example, when Passport was implemented, it was done in 1 year as opposed to the normal 3 year implementation. We did complete the implementation in 1 year however, we (the sites) spent the next 3 years recovering and fixing the problems that were created. Another example: A decision was made that we would not operate any component if it was not labeled. This decision caused a huge resource loading issue and work slowed down because of the added time required to go put a temporary label on a component, get a component ID created, cut permanent tag and go and hang the permanent tag. All of this is in addition to the normal work load. It appears that initiatives are put in place without due consideration for the effects they will have on personnel resources. (I.e. If I add this initiative, those initiatives, and this other initiative, are the personnel going to have adequate time to do all of these things in addition to their normal job.) Will the time added cause people to take shortcuts to get the job(s) done and thus impact safety?
- Upcoming changes are not prepared for at all. For instance, PI knew about the new NRC work hour rules 2 years prior to when they needed to take affect but waited until the very last day to implement the changes.
- Upcoming changes are often not communicated and when communicated are often incorrect or slow to implement. Examples of this include decisions (made by Xcel as communicated through site senior management) about cuts to training. Requests to attend user's group meetings were for the most part denied at PINGP, however, it was communicated in an All Hands meeting that there has been no denial of any requests to attend user's group meetings which was incorrect.
- The site has a process for Change Management, which requires change management plans, etc. Unfortunately, the process is seldom used, or if being used is not communicated as such. Change Management and the associated plans should be more visible.
- The reactive nature of the site to emergent issues does not allow the proper planning and change management is often not effective.
- Many changes are applied to the fleet regardless of whether or not they are a good idea for both Prairie Island and Monticello. These changes sometimes only benefit one site and are resented at the other.

Negative Observations (none identified for Principle 3)

Other Insights

Attribute P3b, "There is a free flow of information in which issues are raised and addressed." Responses resulted in higher negative response rates of 39% (247 of 635) and 20% (4 of 22) respectively. The pre-assessment survey included 110 write-in comments of which 80 were negative. The primary response theme dealt with negative employee's perceptions regarding visibility of management and supervision in the field. This issue is discussed further in the Negative Observation assigned to attribute 2A.

Attribute P3c, "Employees are informed of steps taken in response to their concerns." The responses to this attribute were primarily positive to neutral. No themes were noted in this area.

Attribute 3A, "People are treated with dignity and respect." Responses resulted in moderately higher negative response rates of 23% (142 of 629) and 14% (1 of 7) respectively. The pre-assessment survey included 78 write-in comments of which 54 were

negative. The primary response theme dealt with employee concerns of punishment associated with making a mistake.

Attribute 3B, "Personnel can raise nuclear safety concerns without fear of retribution and have confidence their concerns will be addressed." Responses to both the pre-assessment survey and interviews for this attribute resulted in generally higher combined positive/neutral response rates of 91% (566 of 625) and 84% (5 of 6) respectively. The pre-assessment survey included 56 write-in comments of which 27 were rated as positive/neutral. Overall, this feedback from the workforce represents a healthy safety conscious work environment. However, this is off-set by the specific concerns noted in the 31 negative write-in comments to the pre-assessment survey.

Attributes 3C, "Employees are expected and encouraged to offer innovative ideas to help solve problems" and *3D, "Differing opinions are welcomed and respected. When needed, fair and objective methods are used to resolve conflict and unsettled differing professional opinions"*. The responses to both the pre-assessment survey and the interviews for these two attributes were generally positive to neutral. However, the negative write-in comments to the pre-assessment survey Identified themes in the areas of Continuous Improvement, plant equipment, budget, and resources.

Attribute 3E, "Supervisors are skilled in responding to employee questions in an open, honest manner. They are recognized as an important part of the management team, crucial to translating safety culture into practical terms." Responses to both the pre-assessment survey and interviews for this attribute were more positive to neutral. No issues were noted.

Attribute 3G, "Senior management incentive programs reflect a bias toward long-term plant performance and safety." Responses resulted in moderately higher negative response rates of 26% (167 of 635) and 38% (3 of 8) respectively. The pre-assessment survey included 98 write-in comments of which 69 were negative. The primary response theme dealt with employee's belief that incentives are primarily associated with production goals.

Attribute 3H, "Complete, accurate, and forthright information is provided to oversight, audit, and regulatory organizations." Responses to both the pre-assessment survey and interviews for this attribute were more positive to neutral. No issues were noted.

Attribute 3I, "Managers regularly communicate to the workforce important decisions and their bases, as a way of building trust and reinforcing a healthy safety culture. Worker understanding is periodically checked." Responses resulted in moderately higher negative response rates of 16% (100 of 630) and 25% (3 of 12) respectively. The pre-assessment survey included 46 write-in comments of which 29 were negative. The primary response theme dealt with the communication aspect of this attribute.

Principle 4 – Decision-Making Reflects Safety First

Data Review & Analysis

Interview data was collected through observations and interviews with a cross section of personnel including Senior Managers, Middle Managers, First Line Supervisors, and Individual Contributors. 104 data points were gathered for this principle which were compared and contrasted with 5662 data points gathered from the pre-assessment survey. All attributes were reviewed in detail for strengths, weaknesses, positive, and negative areas. Interview results generally validated the survey data.

This assessment identified one Weakness for Principle 4. A specific breakdown of data collected for this principle is provided as *Attachment 1*. Details of the team's findings for Principle 4 are provided below.

Strengths/Positive Observations (none identified for Principle 4)

Weaknesses

Some employees are concerned that with pending attrition and retirements, there is no visible legacy plan to address knowledge transfer and retention at the station. High turnover is challenging the stations ability to perform timely and effective work.

4A - The organization maintains a knowledgeable workforce to support a broad spectrum of operational and technical decisions. Outside expertise is employed when necessary.

> *Survey Question 35 - A knowledgeable workforce is maintained to support operational and technical decisions.*

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 4A resulted in higher negative response rates of 28% (178 of 633) and 36% (8 of 22) respectively. The pre-assessment survey included 130 write-in comments of which 113 were rated as negative.
- Temporary supervisor since January 2010, no supervision training and manager is too busy to mentor or coach. Since plant meetings take priority the managers does not meet face to face with temporary supervisor but expects an e-mail at end of day to let him know what is going on.
- A turnover rate in engineering departments has led to a loss of experience and knowledge and is straining the more experienced individuals.
- There is high turnover of maintenance supervisors, leaving a gap in nuclear experience and knowledge.
- Operational experience outside of the Operations department is lacking.
- Scheduling group is staffed but planners are down 6 positions specifically in I&C and electrical planners. Not enough planners to meet milestones for daily or the outage.
- There is a lot of turnover in Engineering. Not sure the new engineers that come from outside of Nuclear industry are being mentored well enough on the significance of decisions they make in the small jobs like evaluating OE, ensuring PMs are up to date, etc.
- The engineering group has very few knowledgeable people because, in part, of the high turnover rate. This in addition to the fact that the engineers are no longer encouraged to walk down their systems and truly understand all the issues. There is no longer a single point of contact for questions about systems. There are very few system experts left.
- No operations background in NOS.

Negative Observations (none identified for Principle 4)

Other Insights

Attribute P4a, "Personnel are systematic and rigorous in making decisions that support safe, reliable plant operation." Responses to both the pre-assessment survey and interviews for this attribute resulted in generally higher combined positive/neutral response rates of 90% (567 of 632) and 100% (8 of 8) respectively. The pre-assessment survey included 72 write-in comments of which 31 were rated as positive/neutral. However, these positive/neutral write-in comments were offset by 41 negative write-in comments. The primary themes of the write-in comments dealt with procedure use and adherence and production pressures, especially during refueling outages.

Attribute P4b, "Operators are vested with the authority and understand the expectation, when faced with unexpected or uncertain conditions, to place the plant in a safe condition. Senior leaders support and reinforce conservative decisions." Responses to both the pre-assessment survey and interviews for this attribute resulted in generally higher combined positive/neutral response rates of 94% (593 of 633) and 83% (10 of 12) respectively. The pre-assessment survey included 25 write-in comments of which 21 were rated as positive/neutral.

Attribute 4B, "Managers, supervisors, and staff clearly understand and respect each other's roles in decision-making." Responses resulted in moderately higher negative response rates of 21% (134 of 629) and 9% (1 of 11) respectively. The pre-assessment survey included 41 write-in comments of which 34 were negative. The primary response theme of the negative comments dealt with individual contributors belief that their inputs into decisions are not solicited or respected.

Attribute 4C, "Plant personnel apply a rigorous approach to problem-solving. Conservative actions are taken when understanding is incomplete." Responses to both the pre-assessment survey and interviews for this attribute resulted in generally higher combined positive/neutral response rates of 91% (574 of 629) and 85% (11 of 13) respectively. The pre-assessment survey included 51 write-in comments of which 21 were rated as positive/neutral. However, these positive/neutral write-in comments were offset by 30 negative write-in comments. The primary themes of the negative comments dealt with troubleshooting processes and less than full understanding of issues evaluated in root causes.

Attribute 4D, "Single-point accountability is maintained for important safety decisions, allowing for ongoing assessment and feedback as circumstances unfold." Responses to the pre-assessment survey for this attribute resulted in generally higher combined positive/neutral response rate of 88% (553 of 625). On the other hand, the interviews for this attribute resulted in higher negative response rate of 75% (6 of 8). The primary theme of the six negative responses dealt with specific accountability for assuring that corrective actions are completed.

Review of the pre-assessment survey data and the interview data for Attributes 4E, 4F, and 4G indicates that station personnel believe these attributes are reflected in behaviors and performance. No issues were noted.

Principle 5 – Nuclear Technology is Recognized as Special and Unique

Data Review & Analysis

Interview data was collected through observations and interviews with a cross section of personnel including Senior Managers, Middle Managers, First Line Supervisors, and Individual Contributors. 114 data points were gathered for this principle which were compared and contrasted with 5647 data points gathered from the pre-assessment survey. All attributes were reviewed in detail for strengths, weaknesses, positive, and negative areas. Interview results generally validated the survey data.

This assessment identified one Positive Observation, one Weakness and one General Observation for Principle 5. A specific breakdown of data collected for this principle is provided as *Attachment 1*. Details of the team's findings for Principle 5 are provided below.

Strengths (none identified for Principle 5)

Positive Observations

Prairie Island personnel firmly believe that reactivity control and the design features and margins associated with protection of critical safety functions are well implemented.

5A – Activities that could affect core reactivity are conducted with particular care and caution.

> *Survey Question 43 - Any activities affecting core reactivity are handled with the utmost care.*

5B - Features designed to maintain critical safety functions, such as core cooling, are recognized as particularly important.

> *Survey Question 44 - There is a very high respect for critical safety functions such as core cooling and reactor safety.*

5C - Design and operating margins are carefully guarded and are changed only with great thought and care. Special attention is placed on maintaining fission product barriers and defense-in-depth.

> *Survey Question 45 - Design and operating margins are carefully guarded and are changed only with great care.*

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 5A resulted in high positive/neutral response rates of 98% (619 of 629) and 92% (12 of 13) respectively. The pre-assessment survey included 20 write-in comments which were evenly distributed between positive, neutral, and negative..
- Responses to both the pre-assessment survey and interviews for attribute 5B resulted in high positive/neutral response rates of 99% (618 of 626) and 100% (10 of 10) respectively. The pre-assessment survey included 12 write-in comments which were evenly distributed between positive, neutral, and negative.
- Responses to both the pre-assessment survey and interviews for attribute 5C resulted in high positive/neutral response rates of 95% (592 of 624) and 100% (10 of 10) respectively. The pre-assessment survey included 33 write-in comments which were evenly distributed between positive, neutral, and negative.

Weaknesses

Some employees are concerned that long-standing and repeat equipment issues persist at the station. Examples of contributing causes to this belief are ineffective application of rigorous problems solving, root cause analysis, and project management.

5D – Equipment is meticulously maintained well within design requirements.

Survey Question 46 - Safety related equipment is meticulously maintained well within design requirements.

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 5D resulted in higher negative response rates of 16% (100 of 627) and 77% (17 of 22) respectively. The pre-assessment survey included 69 write-in comments of which 51 were rated as negative.
- Per interviews, about half of the top ten list is safety related and have been on the list a long time. (e.g., R11 R12 since 2003)
- AFW pump bearing issues have not been resolved.
- Continuing problems exist with Unit 2 Emergency Diesel Generator Engines.
- Continuing problems with Unit 1 and 2 Safeguards Load Sequencers.
- Instrument Air project not being done even though the plant needs it for safe operation and reliability.
- Operator workarounds and burdens backlogs are high.
- The FIN is not fully manned and therefore not fully utilized.
- Continuing problems with the D5/D6 fuel oil issue.
- Continuing problems with the Turbine Drive Auxiliary Feedwater Pump.
- Continuing problems with the Reactor Coolant Pump seals. The root cause had been identified as debris; however, there are reoccurring performance problems.

Negative Observations (none identified for Principle 5)

General Observations

Some employees indicated station work control process does not fully utilize workers to correct Maintenance items as scheduled. Some employees are concerned that work packages are not of adequate detail to complete job assignments without errors.

5H – A systematic process is used to prepare the plant for startup and maintenance. Work is properly planned and performed in accordance with established schedules, processes and procedures to achieve clarity of direction and quality of performance. Note: 5H Attribute was added to the INPO Principles document based on the revised Utilities Service Alliance (USA) Safety Culture Assessment Process and IAEA TECDOC-1329

Survey Question 50 - The work management practices used by all employees support a strong nuclear safety culture.

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 5H resulted in higher negative response rates of 16% (100 of 627) and 77% (17 of 22) respectively. The pre-assessment survey included 69 write-in comments of which 51 were rated as negative.
- Not done well at all. Planners aren't getting out and looking at the job and understanding what needs to be done. Current job - parts not available and weren't even noted on the MR (Material Request)

- Packages I get are okay, there is room for improvement. Biggest issue is getting the work groups together, too much waiting time (on average may work 3 hours a day) Believe you should work for 8 hours for 8 hours pay.
- Yes, but could be better. Focusing more on OE. Getting better through recently changing procedure. Created a new checklist about what to look for. Ops planning giving more emphasis to reactivity management.

Other Insights

Review of the pre-assessment survey data and the interview data for Attributes P5a and 5E indicates that station personnel believe these attributes are reflected in behaviors and performance. No issues were noted.

Attribute 5F, "Plant activities are governed by comprehensive, high-quality processes and procedures." Responses resulted in moderately higher negative response rates of 16% (102 of 629) and 36% (5 of 14) respectively. The pre-assessment survey included 84 write-in comments of which 54 were negative. No specific themes were noted in the negative write-in comments. Workers do believe that the processes are solid but have varying concerns with the procedures.

Attribute 5G, "Employee mastery of reactor and power plant fundamentals, as appropriate to the job position, establishes a solid foundation for sound decisions and behaviors." Responses resulted in moderate negative response rates of 12% (73 of 630) and 36% (4 of 11) respectively. The pre-assessment survey included 55 write-in comments of which 50 were negative. The primary theme of the negative write-in comments dealt with employee concerns of workers that are leaving the plant due to impending retirements.

Principle 6 – A Questioning Attitude is Cultivated

Data Review & Analysis

Interview data was collected through observations and interviews with a cross section of personnel including Senior Managers, Middle Managers, First Line Supervisors, and Individual Contributors. 87 data points were gathered for this principle which were compared and contrasted with 4381 data points gathered from the pre-assessment survey. All attributes were reviewed in detail for strengths, weaknesses, positive, and negative areas. Interview results generally validated the survey data.

This assessment identified one Negative Observation for Principle 6. A specific breakdown of data collected for this principle is provided as *Attachment 1*. Details of the team's findings for Principle 6 are provided below.

Strengths and Positive Observations (none identified in Principle 6)

Weaknesses (none identified in Principle 6)

Negative Observations

Most employees believe that management encourages the use of the Condition Report System however, some do not believe the CAP system is effectively resolving problems in a timely manner. Therefore, they may not use the system consistently to resolve issues unless it is a nuclear safety significant issue. Overall, most employees indicated that problem identification is good however, some employees believe that problem resolution lacks accountability and rigor to drive issues to completion.

6B – Anomalies are recognized, thoroughly investigated, promptly mitigated, and periodically analyzed in the aggregate.

Survey Question 53 - Operational anomalies are promptly investigated and resolved.

6D - Workers identify conditions or behaviors that have the potential to degrade operating or design margins. Such circumstances are promptly identified and resolved.

Survey Question 55 - - Employees identify conditions having a potential to degrade operating or design margins

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 6B resulted in high positive/neutral response rates of 95% (593 of 626) and 73% (11 of 15) respectively. The pre-assessment survey included 37 write-in comments of which 22 were rated as negative primarily on the basis that while issues are being identified, they are not being resolved in a timely manner.
- Responses to both the pre-assessment survey and interviews for attribute 6D resulted in high positive/neutral response rates of 99% (618 of 627) and 73% (8 of 11) respectively. The pre-assessment survey included 26 write-in comments of which 15 were rated as negative primarily on the basis that while issues are being identified, they are promptly resolved.
- There are a significant number of Operator Burdens and Work Orders open on Control Room associated equipment. Issues might be investigated promptly, but then not fixed for many months or many years.
- Work requests are often canceled when the problem does not repeat itself. One WR written and after the alarm on ERCS was taken out of service due to it being deemed a distraction, the WR was canceled since the alarm was not 'coming in' anymore.
- Head vent anomalies with RX vessel level indications in 2R26 is an example of an issue that was not driven to resolution and continued to cause delays.

Other Insights

Review of the pre-assessment survey data and the interview data for Attributes P6a, 6A, 6C, and 6E indicates that station personnel believe these attributes are reflected in behaviors and performance. No issues were noted.

Attribute 6F, "Group-think is avoided through diversity of thought and intellectual curiosity. Opposing views are encouraged and considered." Responses to both the pre-assessment survey and interviews for attribute 6F resulted in low negative response rates of 13% (79 of 622) and 0% (0 of 8) respectively. The pre-assessment survey included 27 write-in comments of which 24 were negative. The primary theme of the negative write-in comments dealt with employees belief that opposing views are not encouraged or considered.

Principle 7 – Organizational Learning is Embraced

Data Review & Analysis

Interview data was collected through observations and interviews with a cross section of personnel including Senior Managers, Middle Managers, First Line Supervisors, and Individual Contributors. 81 data points were gathered for this principle which were compared and contrasted with 5034 data points gathered from the pre-assessment survey. All attributes were reviewed in detail for strengths, weaknesses, positive, and negative areas. Interview results generally validated the survey data.

This assessment identified one Weakness and one Negative Observation for Principle 7. A specific breakdown of data collected for this principle is provided as *Attachment 1*. Details of the team's findings for Principle 7 are provided below.

Strengths and Positive Observations (none identified in Principle 7)

Weaknesses

Some employees do not believe that the Root Cause Analyses provide consistent resolution to prevent problems from recurring.

7D – Expertise in root cause analysis is applied effectively to identify and correct the fundamental causes of events.

Survey Question 63 - Root cause analyses are applied effectively.

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 7D resulted in high negative response rates of 23% (144 of 627) and 38% (5 of 13) respectively. The pre-assessment survey included 86 write-in comments of which 60 were rated as negative.
- Some employees stated that five or six root cause evaluations were performed on the D5/D6 fuel oil issue, which indicates a consistently reoccurring issue.
- Some employees stated that several root causes have been performed on the Turbine Drive Auxiliary Feedwater Pump, and the underlying cause was not identified.
- Some employees stated that several root causes were performed on Reactor Coolant Pump seals. The root cause had been identified as debris; however, there are reoccurring performance problems.
- Some employees stated that there have been Action Requests written that have identified ineffective root cause evaluations.
- An employee stated that a root cause was conducted on an asbestos exposure issue, and less than two months after the root cause was completed, the issue reoccurred.
- Some employees believe that root cause team members are either inexperienced in root cause evaluations or unfamiliar with the equipment they are assessing. This has resulted in ineffective corrective actions to prevent reoccurrence.
- Some employees believe there are several instances in which repeat issues have occurred for reasons that were previously identified in another root cause evaluation.
- Some employees believe there are multiple root cause evaluations that have long-standing open corrective actions that have not been effectively implemented. Since the original root cause evaluations were conducted, repeat events have occurred.

Negative Observations

Most employees believe that there are sufficient processes to identify organizational weaknesses however, some employees believe these processes are not effectively utilized and implemented to resolve these weaknesses.

7E – Processes are established to identify and resolve latent organizational weaknesses that can aggravate relatively minor events if not corrected.

Survey Question 64 - There are processes established to identify and resolve existing organizational weaknesses.

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 7E resulted in high negative response rates of 21% (129 of 625) and 50% (3 of 6) respectively. The pre-assessment survey included 62 write-in comments of which 41 were rated as negative.
- Many of the write-in comments to the pre-assessment survey and responses to the assessment interviews indicate that station personnel believe processes to identify weaknesses exist but the resolutions are not timely and/or effective.
- The Component Cooling HELB issue, which is a legacy issue, was effectively identified; however, it has yet to be effectively resolved.
- The modification process is generally considered to be effective; however, implementation of the process is poor.
- CAPs are written to identify issues but, at times, are closed to trend rather than being resolved (Note: this does not include equipment issues).

Other Insights

Attribute P7a, "Operating experience is highly valued, and the capacity to learn from experience is well developed." The pre-assessment survey question for this attribute states: *"Enough information from a wide variety of sources is shared between work groups to ensure that work is done safely."* Responses to both the pre-assessment survey and interviews for attribute P7a resulted in moderate negative response rates of 14% (85 of 627) and 14% (1 of 7) respectively. The pre-assessment survey included 54 write-in comments of which 34 were negative. The primary theme of the negative write-in comments dealt with employee's belief that site communications are handled through silo's and not effective between groups.

Attribute P7b, "Training, self-assessments, corrective actions, and benchmarking are used to stimulate learning and improve performance." Responses to the pre-assessment survey for this attribute resulted in generally higher combined positive/neutral response rates of 91% (572 of 620) and 100% (9 of 9) respectively. On the other hand, the write-in comments for this attribute were more negative (46 of 64). The primary theme of the negative write-in comments deals with communication of issues and the accountability process.

Attribute 7A, "The organization avoids complacency and cultivates a continuous learning environment. The attitude that 'it can happen here' is encouraged." Responses to the pre-assessment survey for this attribute resulted in generally higher combined positive/neutral response rates of 91% (578 of 632) and 75% (6 of 8) respectively. On the other hand, the write-in comments for this attribute were more negative (23 of 31). A primary theme of the negative write-in comments deals with budget support of off-site conferences and benchmarking opportunities.

Review of the pre-assessment survey data and the interview data for Attributes 7B, 7C, and 7F indicates that station personnel believe these attributes are reflected in behaviors and performance. No issues were noted.

Principle 8 – Nuclear Safety Undergoes Constant Examination

Data Review & Analysis

Interview data was collected through observations and interviews with a cross section of personnel including Senior Managers, Middle Managers, First Line Supervisors, and Individual Contributors. 82 data points were gathered for this principle which were compared and contrasted with 3779 data points gathered from the pre-assessment survey. All attributes were reviewed in detail for strengths, weaknesses, positive, and negative areas. Interview results generally validated the survey data.

This assessment identified two General Observations for Principle 8. A specific breakdown of data collected for this principle is provided as *Attachment 1*. Details of the team's findings for Principle 8 are provided below.

Strengths (none identified in Principle 8)

Positive Observations

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

P8a – Oversight is used to strengthen safety and improve performance. Nuclear safety is kept under constant scrutiny through a variety of monitoring techniques, some of which provide and independent "fresh look".

Survey Question 66 - Nuclear safety culture has improved in the last two years.

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute P8a resulted in high positive/neutral response rates of 89% (559 of 631) and 90% (19 of 21) respectively. The pre-assessment survey included 56 write-in comments which were distributed as follows: positive (11), neutral (21), and negative (24).

Weaknesses and Negative Observations (none identified in Principle 8)

General Observation

Some employees do not believe the results of previous safety culture assessments were communicated or used to drive improvement.

8B – Periodic safety culture assessments are conducted and used as a basis for improvement.

Survey Question 68 - Periodic safety culture assessments are used as a basis for improvement.

Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 7E resulted in moderate negative response rates of 9% (54 of 630) and 33% (4 of 12) respectively. The pre-assessment survey included 52 write-in comments of which 30 were rated as negative.
- One individual indicated that they have been involved in response teams for previous surveys and has yet to see a single change made that directly addressed a concern identified in the surveys. This perception was reflected by several other survey responses.
- Several individuals indicated they have never seen the results or planned corrective actions from any safety culture assessment.

Some employees believe that Key Performance Indicators and Program Health Reports are not being effectively used to detect trends and initiate action prior to self revelation of issues.

8C – The pitfalls of focusing on a narrow set of performance indicators are recognized. The organization is alert to detect and respond to indicators that may signal declining performance.

Survey Question 69 - A broad set of performance indicators is utilized with a focus on early detection of problems.

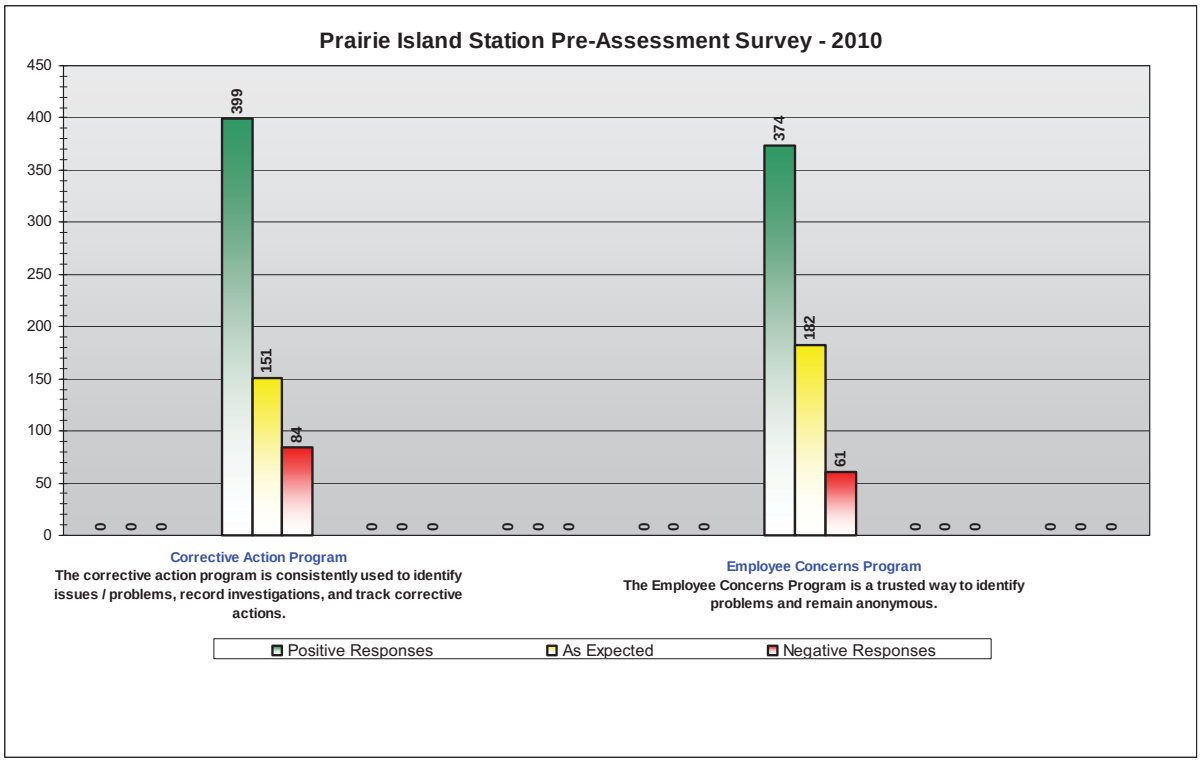
Supporting Data:

- Responses to both the pre-assessment survey and interviews for attribute 7E resulted in moderate negative response rates of 10% (61 of 630) and 38% (6 of 16) respectively. The pre-assessment survey included 60 write-in comments of which 35 were rated as negative.
- One employee indicated supervisors and managers have very limited time to review Program Health reports. Therefore, indications of declining performance from these reports may not be evaluated in aggregate with other indicators to detect declining performance.
- Some employees believe management may be less interested in self-identified issues because of resource constraints.
- Several respondents indicated they were not aware of any corrective action that had been taken based on the evaluation of performance indicators.
- Several employees were concerned that the program includes too many lagging indicators versus leading indicators.
- The current PI's are complex and difficult to understand and are not driving the Station to better performance.

Other Insights

Review of the pre-assessment survey data and the interview data for Attributes 8A, 8D, and 8E indicates that station personnel believe these attributes are reflected in behaviors and performance. No issues were noted.

Corrective Action Program and Employee Concerns Program
Survey Data Results



Corrective Action Program

The pre-assessment survey resulted in a 13% (84 of 634) negative response rate. 93 survey responses included write-in comments. Of these, 65 were negative. The most common theme noted in the negative write-in comments dealt with the time taken to evaluate and implement corrective actions. The second most common theme dealt with the complexity of the process and the overwhelming negative influence of minor issues on the more important issues. A small number of comments noted that the CAP actions are restricted by budget considerations.

Employee Concerns Program

The pre-assessment survey resulted in a 10% (61 of 617) negative response rate. 48 survey responses included write-in comments. Of these, 14 were negative. The most common theme noted in the negative write-in comments dealt with an overall mistrust with management and the previous ECP representatives versus positive comments for the current ECP representative.

III. Follow-up of Weaknesses from Previous NSC Assessment

Another important objective of this assessment was to evaluate the previous weaknesses identified in the 2008 NSCA and to gauge whether station personnel believe performance had improved in those specific areas. The previous nuclear safety culture assessment was performed using the USA NSCA process in August of 2008. Four Weaknesses from the previous NSCA were evaluated for consistency and improvements during the 2010 NSCA, as detailed below.

The following comparisons from the 2008 NSCA, to the 2010 NSCA are noted below. A (+) indicates "no additional concerns", a (-) indicates that it is still a deficiency or has declined, and a (Δ) indicates that the deficient area has improved but does not yet meet the standard.

1. Organizational alignment is challenged.
    - Xcel Energy has a sound Nuclear Safety Culture and Safety Conscious Work Environment (SCWE) corporate policy; however, most PINGP personnel were not familiar or knowledgeable of the policy.
        - ✓ (+) – No issues were noted in this area during the 2010 NSCA. (Principle P1b)
    - Some decisions and the status of key initiatives have not been well communicated within the organization; these include the equipment reliability initiatives, the Work Management Recovery Plan, and historically, the results of the 2001 safety culture assessment.
        - ✓ (-) – Communication of site initiatives and previous NSCA results continue to be an issue as noted in this report. (Principles 2F, 3F, and 8B)
    - Department communication meetings are not always effective in communicating key messages.
        - ✓ (Δ) – This is an area that appears to be improving, however continued attention is required. (Principle 3I)
    - Senior management is not convinced that personnel at the individual contributor level are sufficiently self-aware of their current performance issues.
        - ✓ (+) – This is an area that has improved, however it was noted in the pre-assessment survey write-in comments that some personnel are apprehensive about approaching work due to discipline if an error is made. (Principle 1C, 3A)
    - The plant has a top ten equipment list and a Maintenance Rule a(1) list; however, not all departments are aligned on the relative priorities of the items on these lists.
        - ✓ (Δ) – This is an area that has improved, however station personnel continue to be concerned with the reliability of plant equipment. (Principle 5D)

2. Work force planning has not been fully effective.
    - A number of work groups do not have fully qualified staff to meet current plant needs; the number of open positions are not meeting plant goals for filling staffing vacancies.
        - ✓ (-) – This issue continues to be a concern for many of the station personnel and is addressed in this report. (Principle 1C, 4A)
    - There has been an overall loss of knowledge within Engineering, Operations, and Maintenance that has challenged the efficiency of the organization.
        - ✓ (-) – This issue continues to be a concern for many of the station personnel and is addressed in this report. (Principle 4A)
    - Efforts to transition the station from a System Engineering led organization to an Operations led organization has met with resistance.

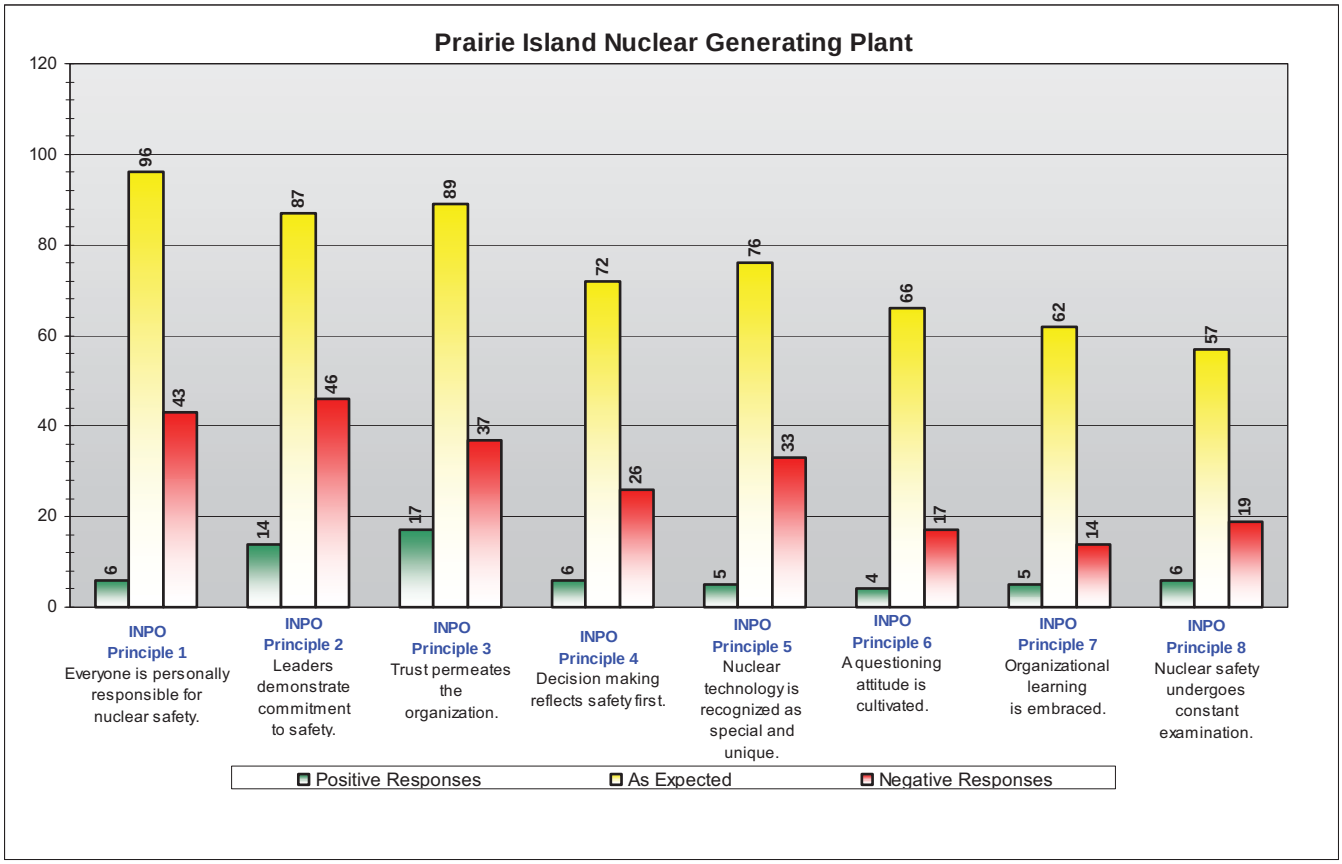
- ✓ (Δ) – This area was not reviewed in detail during the assessment.
- Human Resources processes are perceived as not efficient enough to promptly fill open personnel requisitions.
  - ✓ (+) – No issues relating to Human Resources processes were noted during this assessment. Concerns were noted with the open positions that have not been filled due to budget considerations. (Principle 1C)

3. <u>There is a lack of confidence in station processes.</u>
   - Some personnel perceive that it takes longer and is more difficult to follow a formal process vice informal methods.
     - ✓ (+) – The assessment noted few concerns in this area. The CAP was noted as a significant concern by many employees due to the lack of apparent resolutions to issues. (Principles 6B, 6D)
   - Personnel have not seen the short term results from the Work Management Recovery Plan needed to keep them motivated.
     - ✓ (+) – The assessment noted few concerns in this area.
   - Challenges were noted with implementing the Corrective Action Program in some areas, which could, in the future negatively impact Action Request initiation.
     - ✓ (-) – Station personnel indicated that the CAP is used to document plant issues, however, the evaluation and resolution of issues does not appear to meet high standards. This is a continuing issue. (Principles 6B, 6D)
   - Some station personnel are having difficulty disconnecting from a knowledge based approach to working and transitions to a process based approach.
     - ✓ (-) – Station personnel comments reflect the understanding of the need to establish rule based standards in procedures due in part to new workers entering the industry. Some workers are concerned with procedure quality and worker knowledge. (Principles 5F, 5G)
4. <u>A culture of prevention has not been fully embraced.</u>
   - Management visibility in the field is not sufficient to have an impact on personnel performance.
     - ✓ (-) – This continues to be a concern of station personnel. (Principle 2A)
   - The OSHA recordable rate at the station is industry fourth quartile; industrial safety performance is often a leading indicator of performance shortfalls in other areas; the station has not been successful in preventing injuries.
     - ✓ (-) – This continues to be a concern of the station.
   - The Management Safety Review Committee (MSRC) commented that the station fares better in detection mode, vice prevention mode.
     - ✓ (Δ) – This area was not reviewed in detail during the assessment.
   - Personnel commented that they are often in the reactive mode and do not feel they have the time to be proactive.
     - ✓ (-) – Similar comments continue to be noted in both the pre-assessment survey and the assessment interviews covering various attributes during this NSCA. (Principle 2A)
   - Meeting observations indicated station personnel were better at covering work that was completed rather than what still lay ahead (backward looking versus forward looking). Challenges were noted with implementing the CAP, which could, in the future impact AR initiation.
     - ✓ (+) – This concern was not noted during observations of meetings during the 2010 NSCA.
   - Some personnel perceive the station to be externally driven rather than internal standards driving continuous improvement.
     - ✓ (-) – This continues to be an issue. The perception noted of the employees during the 2010 NSCA was the concern in responding to issues noted in significant CAPs, NRC findings and INPO findings.

For the following graphs, the green (positive) indicates employee's perception of behaviors and values or team observations that were evaluated by the team and considered to be exceeding the INPO Principles. The yellow (neutral) shows employee's perception of behaviors and values or team observations that were found to be in general accordance with the INPO Principles or that there was no strength or weakness identified during the interview or observation. The red (negative) indicates employee's perception of behaviors and values or team observations that were found to be less than the INPO Principles.

The following chart (*Figure C* in the base document) depicts data collected during the assessment interviews and observations. The bars represent the magnitude of positive, neutral, and negative responses for all questions related to the principle statement. For example, 118 interview data points were received from questions relative to Principle 1. Of these, 31 data points were positive, 66 data points were neutral and 21 data points were negative.

Site Assessment Overall Results: 8 Principles Roll-up



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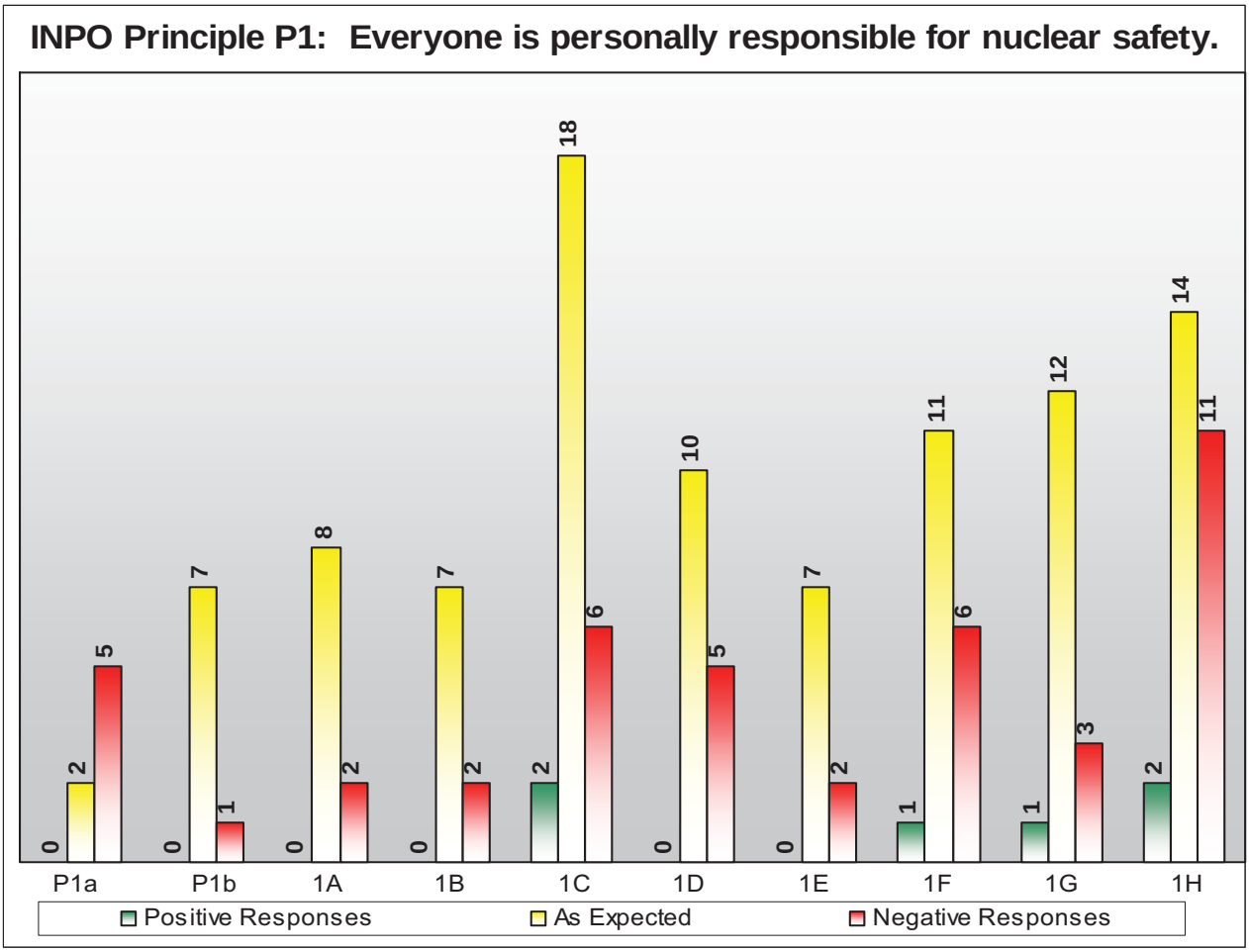
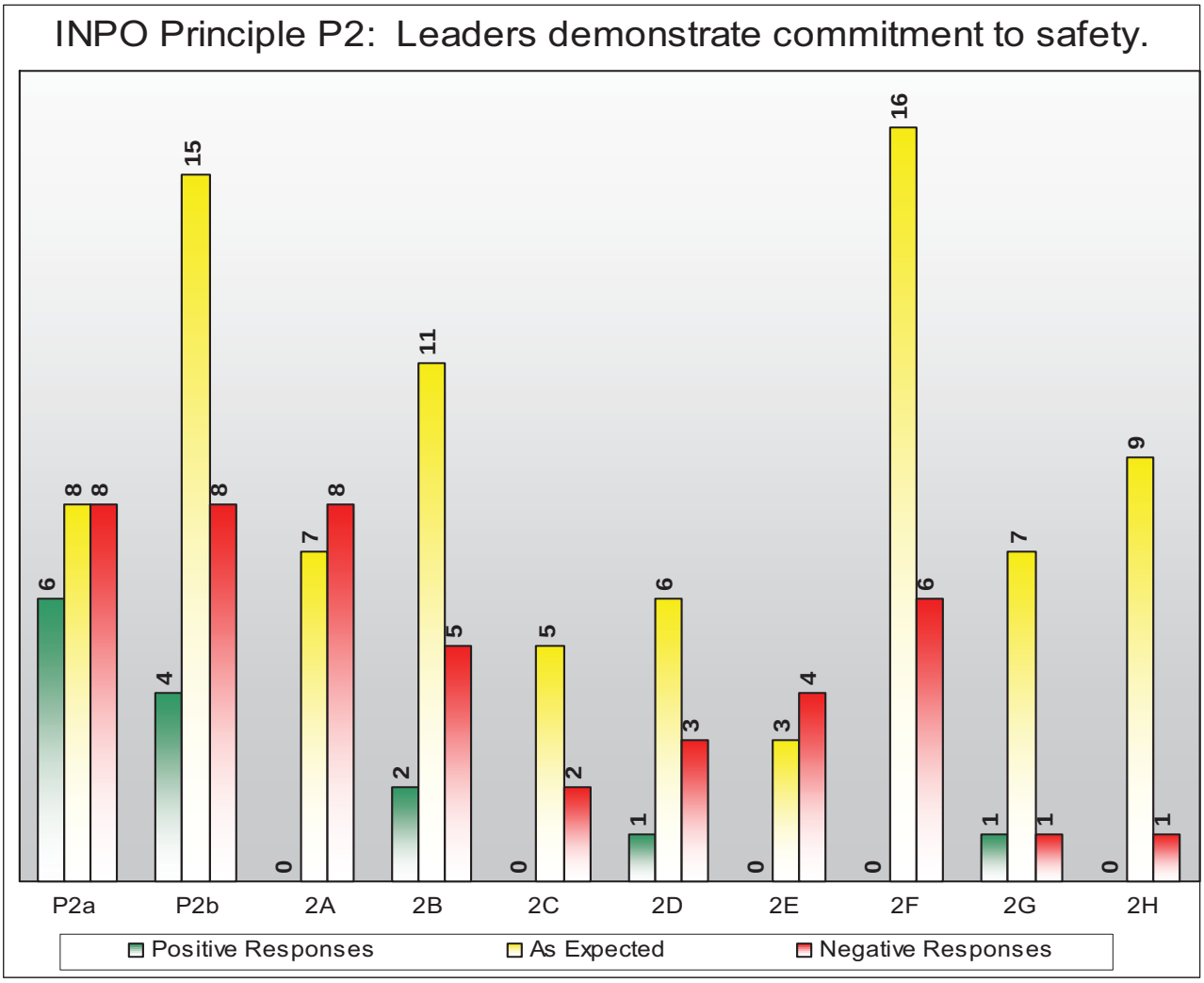


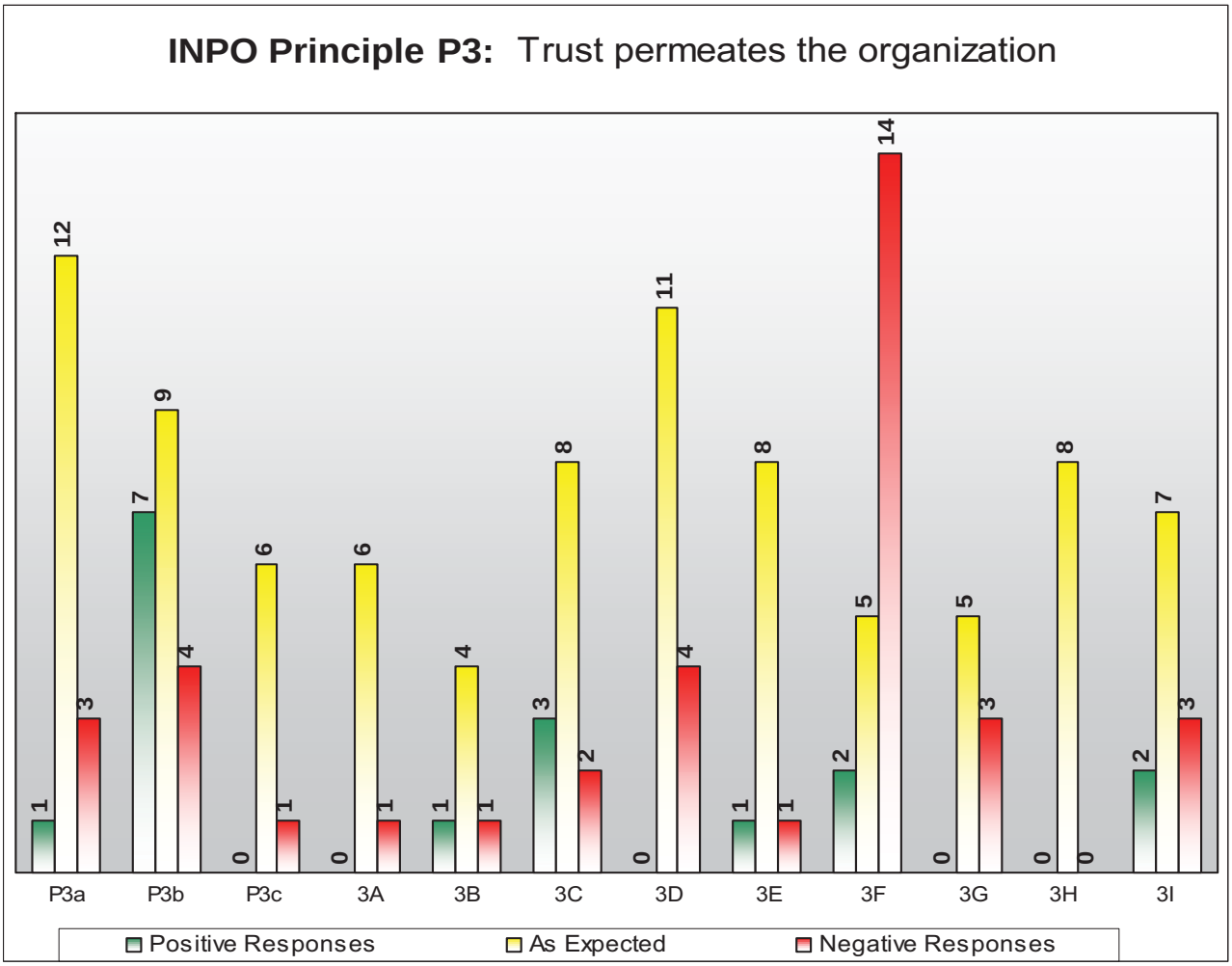
Attributes for Principle 1

P1a	Responsibility and authority for nuclear safety are well defined and clearly understood.
P1b	Reporting relationships, positional authority, staffing, and financial resources support nuclear safety responsibilities. Corporate policies emphasize the overriding importance of nuclear safety.
1A	The line of authority and responsibility for nuclear safety is defined from the board of directors to the individual contributor. Each of these positions has clearly defined roles, responsibilities, and authorities, designated in writing and understood by the incumbent.
1B	Support groups, such as human resources, labor relations, and business and financial planning, also understand their roles in contributing to nuclear safety.
1C	People and their professional capabilities, values, and experiences are regarded as the nuclear organization's most valuable asset. Staffing levels are consistent with the demands related to maintaining safety and reliability.
1D	Board members and corporate officers periodically take steps to reinforce nuclear safety, including visiting sites to assess management effectiveness first-hand.
1E	The line organization, starting with the chief executive officer, is the primary source of information and the only source of direction. Other parties, such as oversight organizations and committees, review boards, and outside advisors, who provide management information essential to effective self-evaluation, are not allowed to dilute or undermine line authority and accountability.
1F	All personnel understand the importance of adherence to nuclear safety standards. All levels of the organization exercise healthy accountability for shortfalls in meeting standards.
1G	Relationships among utilities, operating companies, and owners are not allowed to obscure or diminish the line of responsibility for nuclear safety.
1H	The system of rewards and sanctions is aligned with strong nuclear safety policies and reinforces the desired behaviors and outcomes.



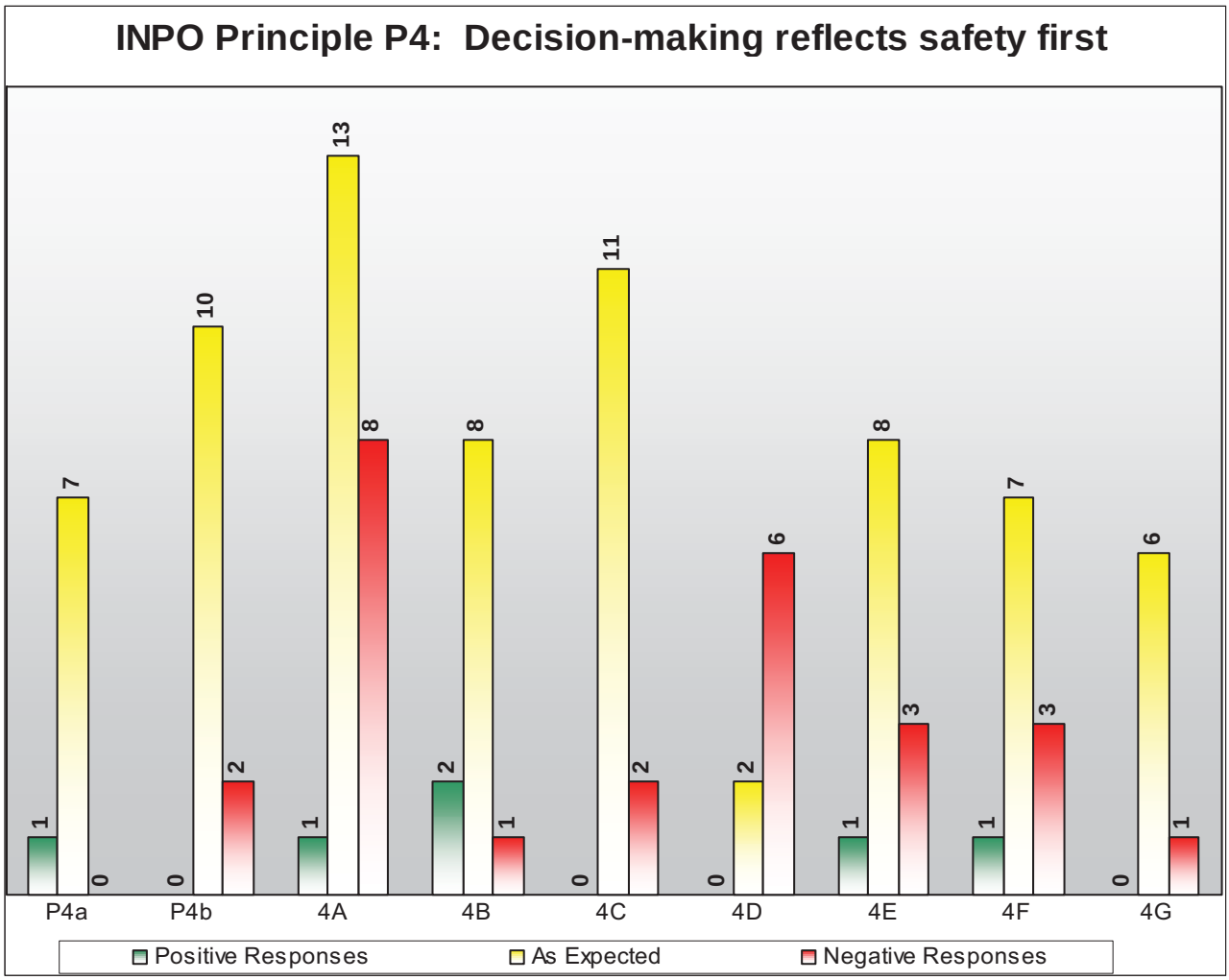
Attributes for Principle 2

P2a	Executive and senior managers are the leading advocates of nuclear safety and demonstrate their commitment both in word and action.
P2b	The nuclear safety message is communicated frequently and consistently, occasionally as a stand-alone theme. Leaders throughout the nuclear organization set an example for safety.
2A	Managers and supervisors practice visible leadership in the field by placing “eyes on the problem,” coaching, mentoring, and reinforcing standards.
2B	Management considers the employee perspective in understanding and analyzing issues.
2C	Managers and supervisors provide appropriate oversight during safety-significant tests or evolutions
2D	Managers and supervisors are personally involved in high-quality training that consistently reinforces expected worker behaviors.
2E	Leaders recognize that production goals, if not properly communicated, can send mixed signals on the importance of nuclear safety. They are sensitive to detect and avoid these misunderstandings.
2F	The bases, expected outcomes, potential problems, planned contingencies, and abort criteria for important operational decisions are communicated promptly to workers.
2G	Informal opinion leaders in the organization are encouraged to model safe behavior and influence peers to meet high standards.
2H	Selection and evaluation of managers and supervisors consider their abilities to contribute to a strong nuclear safety culture



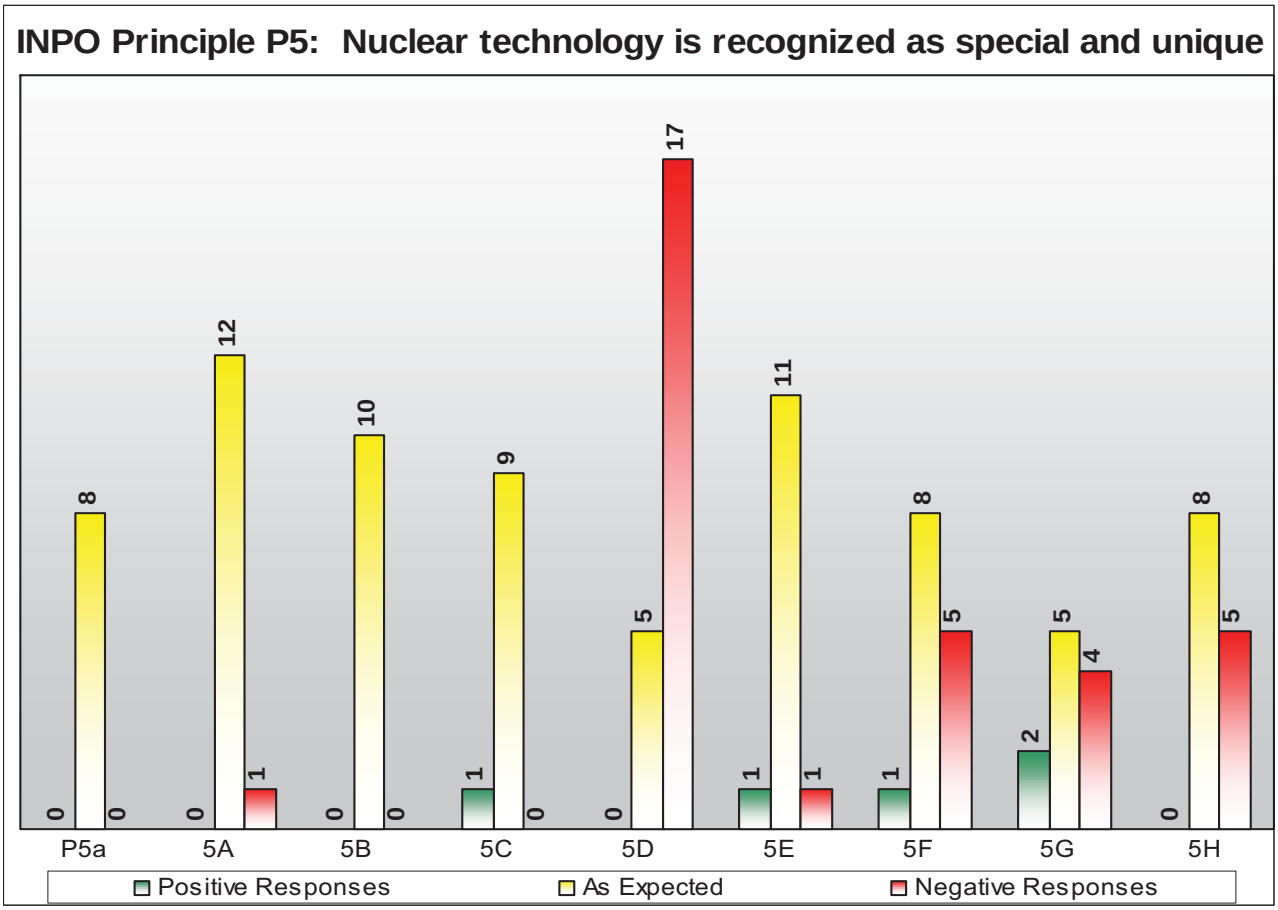
Attributes for Principle 3

P3a	A high level of trust is established in the organization, fostered, in part, through timely and accurate communication.
P3b	There is a free flow of information in which issues are raised and addressed. Employees are informed of steps taken in response to their concerns.
P3c	Employees are informed of steps taken in response to their concerns.
3A	People are treated with dignity and respect.
3B	Personnel can raise nuclear safety concerns without fear of retribution and have confidence their concerns will be addressed.
3C	Employees are expected and encouraged to offer innovative ideas to help solve problems.
3D	Differing opinions are welcomed and respected. When needed, fair and objective methods are used to resolve conflict and unsettled differing professional opinions.
3E	Supervisors are skilled in responding to employee questions in an open, honest manner. They are recognized as an important part of the management team, crucial to translating safety culture into practical terms.
3F	The effects of impending changes (such as those caused by sale or acquisition, bargaining unit contract renegotiations, and economic restructuring) are anticipated and managed such that trust in the organization is maintained.
3G	Senior management incentive programs reflect a bias toward long-term plant performance and safety.
3H	Complete, accurate, and forthright information is provided to oversight, audit, and regulatory organizations.
3I	Managers regularly communicate to the workforce important decisions and their bases, as a way of building trust and reinforcing a healthy safety culture. Worker understanding is periodically checked.



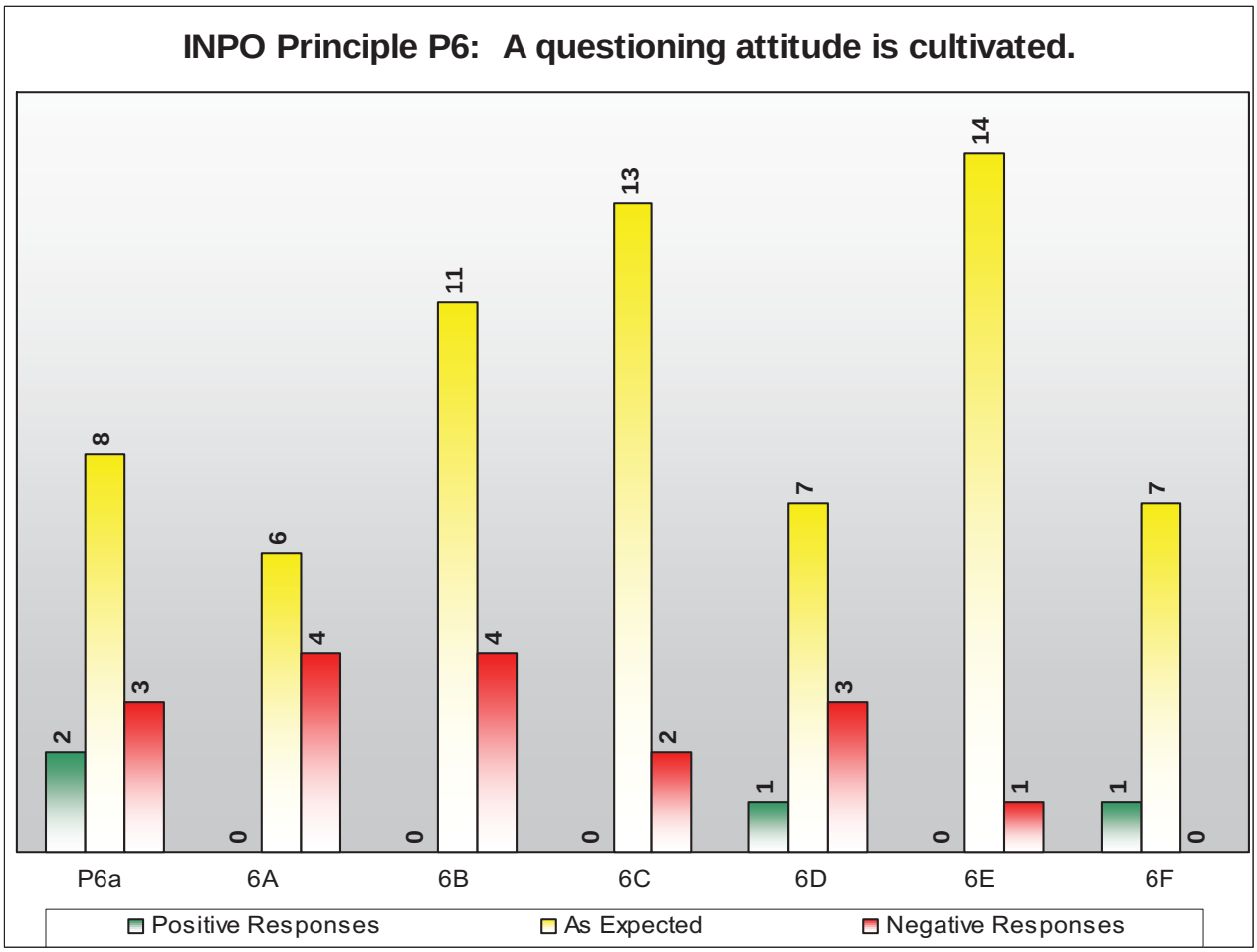
Attributes for Principle 4

P4a	Personnel are systematic and rigorous in making decisions that support safe, reliable plant operation.
P4b	Operators are vested with the authority and understand the expectation, when faced with unexpected or uncertain conditions, to place the plant in a safe condition. Senior leaders support and reinforce conservative decisions.
4A	The organization maintains a knowledgeable workforce to support a broad spectrum of operational and technical decisions. Outside expertise is employed when necessary.
4B	Managers, supervisors, and staff clearly understand and respect each other's roles in decision-making.
4C	Plant personnel apply a rigorous approach to problem-solving. Conservative actions are taken when understanding is incomplete.
4D	Single-point accountability is maintained for important safety decisions, allowing for ongoing assessment and feedback as circumstances unfold.
4E	Candid dialogue and debate are encouraged when safety issues are being evaluated. Robust discussion and healthy conflict are recognized as a natural result of diversity of expertise and experience.
4F	Decision-making practices reflect the ability to distinguish between "allowable" choices and prudent choices.
4G	When previous operational decisions are called into question by new facts, the decisions and associated underlying assumptions are reviewed to improve the quality of future decisions.



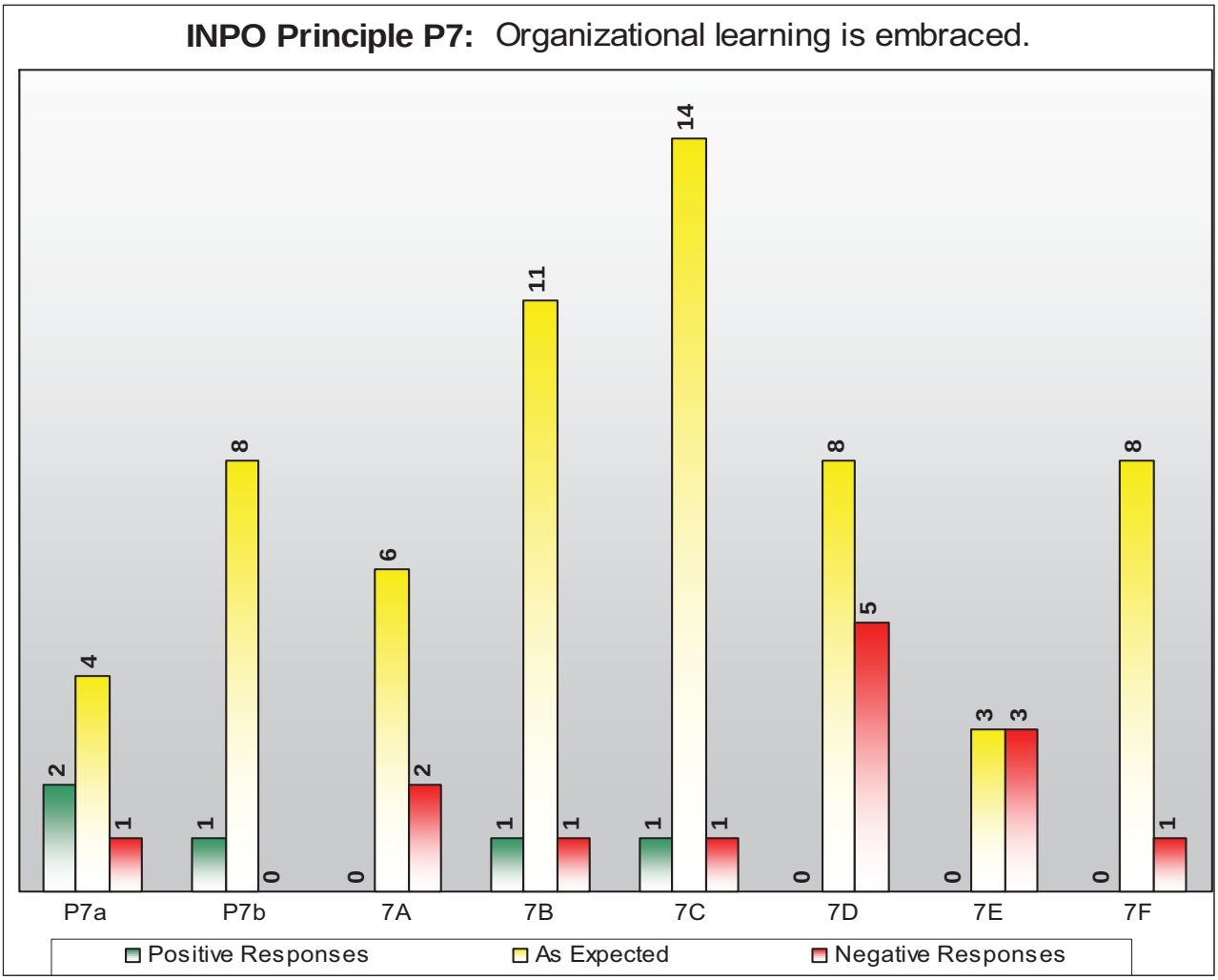
Attributes for Principle 5

P5a	The special characteristics of nuclear technology are taken into account in all decisions and actions. Reactivity control, continuity of core cooling, and integrity of fission product barriers are valued as essential, distinguishing attributes of the nuclear station work environment.
5A	Activities that could affect core reactivity are conducted with particular care and caution.
5B	Features designed to maintain critical safety functions, such as core cooling, are recognized as particularly important.
5C	Design and operating margins are carefully guarded and are changed only with great thought and care. Special attention is placed on maintaining fission product barriers and defense-in-depth.
5D	Equipment is meticulously maintained well within design requirements.
5E	Insights from probabilistic risk analyses are considered in daily plant activities and plant change processes.
5F	Comprehensive, high-quality processes and procedures govern plant activities.
5G	Employee mastery of reactor and power plant fundamentals, as appropriate to the job position, establishes a solid foundation for sound decisions and behaviors.
5H	A systematic process is used to prepare the plant for startup and maintenance. Work is properly planned and performed in accordance with established schedules, processes and procedures to achieve clarity of direction and quality of performance. *Note: 5H Attribute was added to the INPO Principles document based on the revised Utilities Service Alliance (USA) Safety Culture Assessment Process and IAEA TECDOC-1329.*



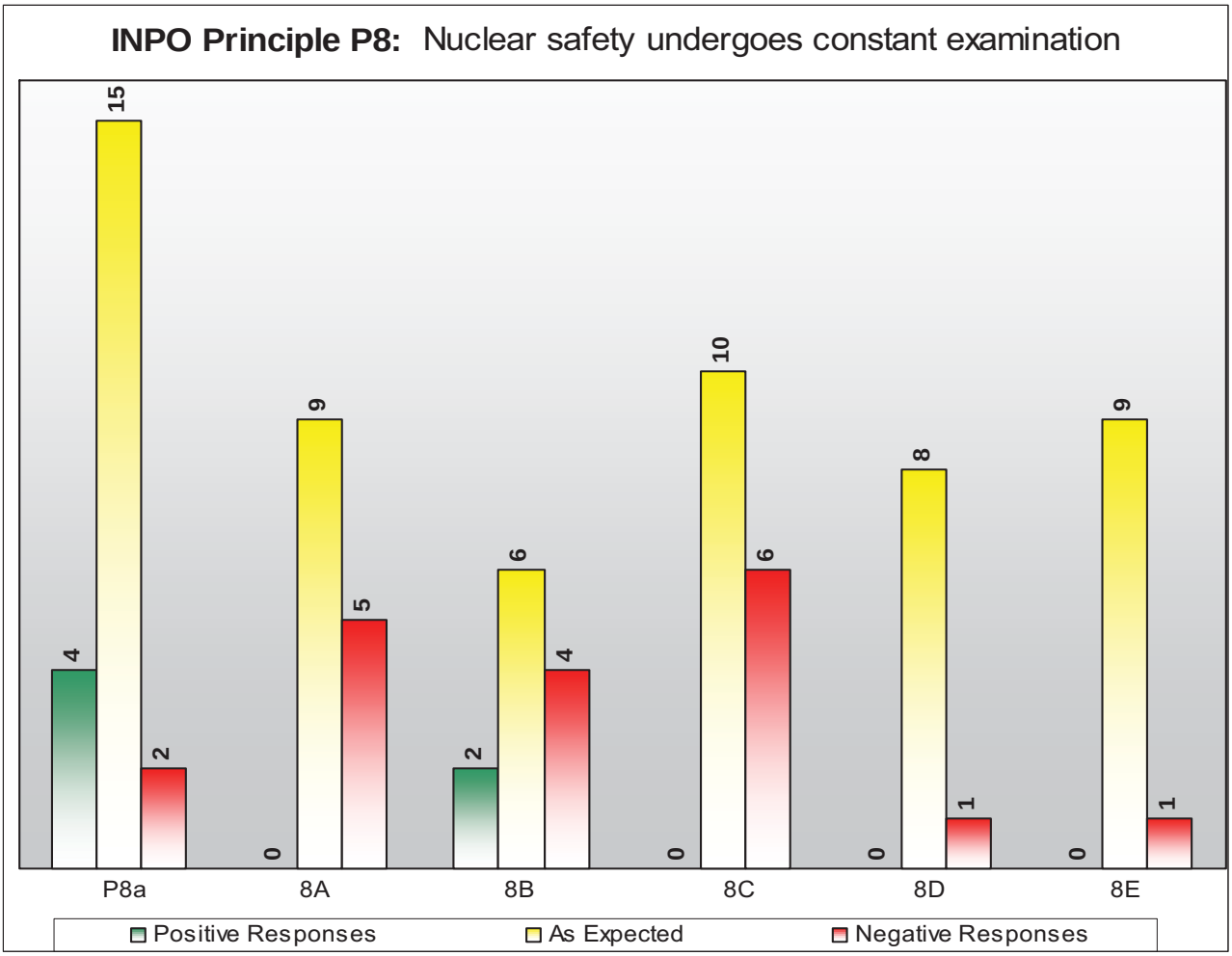
Attributes for Principle 6

P6a	Individuals demonstrate a questioning attitude by challenging assumptions, investigating anomalies, and considering potential adverse consequences of planned actions.
6A	While individuals expect successful outcomes of daily activities, they recognize the possibility of mistakes and worst-case scenarios. Contingencies are developed to deal with these possibilities.
6B	Anomalies are recognized, thoroughly investigated, promptly mitigated, and periodically analyzed in the aggregate.
6C	Personnel do not proceed in the face of uncertainty.
6D	Workers identify conditions or behaviors that have the potential to degrade operating or design margins. Such circumstances are promptly identified and resolved.
6E	Employees understand that complex technologies can fail in unpredicted ways. They are aware that latent problems can exist, and they make conservative decisions considering this potential.
6F	Group-think is avoided through diversity of thought and intellectual curiosity. Opposing views are encouraged and considered.



Attributes for Principle 7

P7a	Operating experience is highly valued, and the capacity to learn from experience is well developed.
P7b	Training, self-assessments, corrective actions, and benchmarking are used to stimulate learning and improve performance.
7A	The organization avoids complacency and cultivates a continuous learning environment. The attitude that "it can happen here" is encouraged.
7B	Training upholds management standards and expectations. Beyond teaching knowledge and skills, trainers are adept at instilling nuclear safety values and beliefs.
7C	Individuals are well informed of the underlying lessons learned from significant industry and station events, and they are committed to not repeating these mistakes.
7D	Expertise in root cause analysis is applied effectively to identify and correct the fundamental causes of events.
7E	Processes are established to identify and resolve latent organizational weaknesses that can aggravate relatively minor events if not corrected.
7F	Employees have confidence that issues with nuclear safety implications are prioritized, tracked, and resolved in a timely manner.



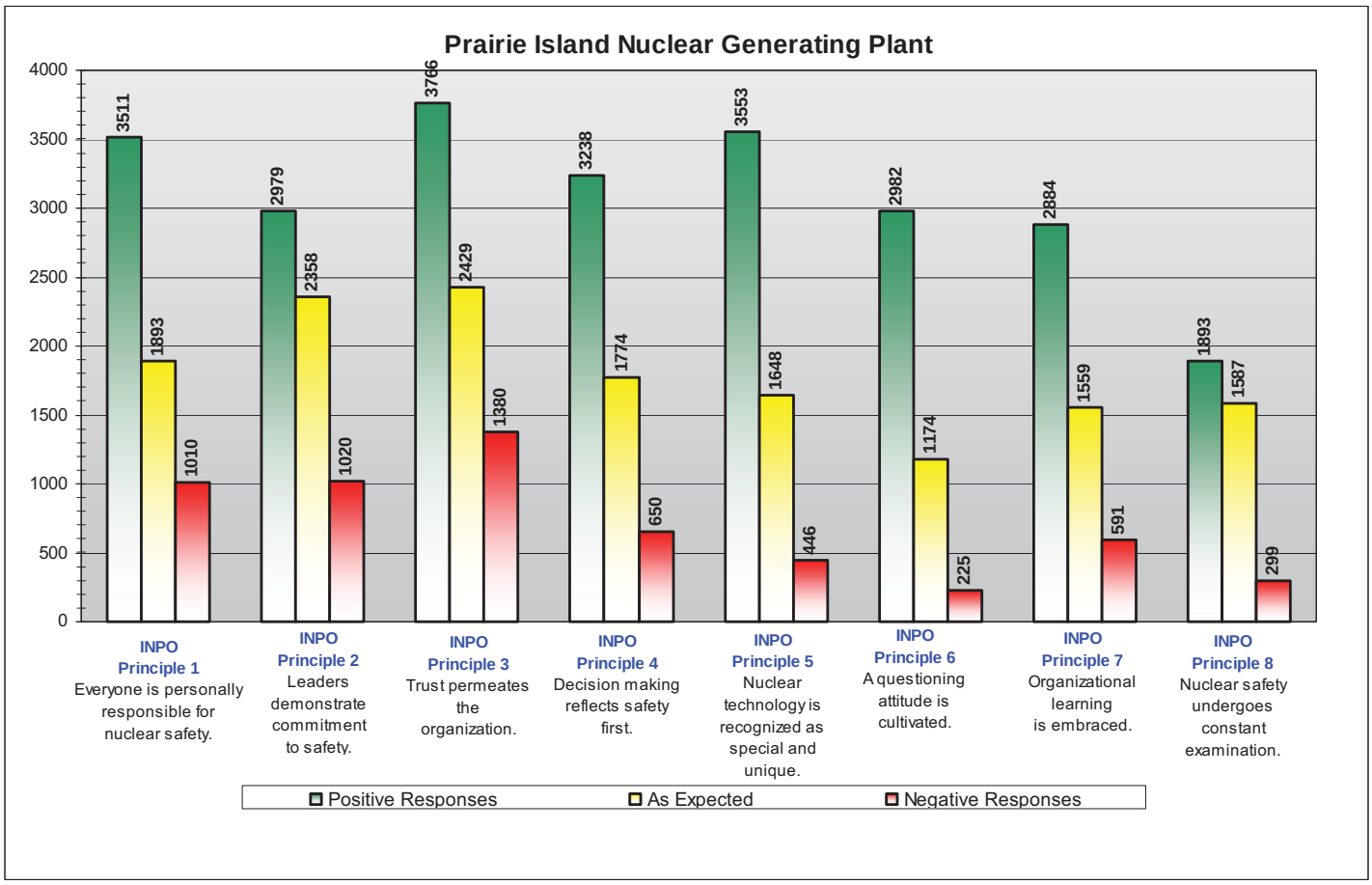
Attributes for Principle 8

P8a	Oversight is used to strengthen safety and improve performance.
8A	A mix of self-assessment and independent oversight reflects an integrated and balanced approach. This balance is periodically reviewed and adjusted as needed.
8B	Periodic safety culture assessments are conducted and used as a basis for improvement.
8C	The pitfalls of focusing on a narrow set of performance indicators are recognized. The organization is alert to detect and respond to indicators that may signal declining performance.
8D	The insights and fresh perspectives provided by quality assurance, assessment, employee concerns, and independent oversight personnel are valued.
8E	Senior executives and board members are periodically briefed on results of oversight group activities to gain insights into station safety performance.

For the following graphs, the green (positive) indicates employee's perception of behaviors and values that were considered to be exceeding the INPO Principles. The yellow (neutral) shows employee's perception of behaviors and values that were found to be in general accordance with the INPO Principles or that there was no strength or weakness noted in responding to the survey question. The red (negative) indicates employee's perception of behaviors and values that were found to be less than the INPO Principles.

The following graph (*Figure A* in the base document) depicts data collected from the Pre-Assessment Survey. The bars represent the magnitude of positive, neutral, and negative responses for all questions related to the principle statement. For example, 6414 total responses were received to questions relative to Principle 1. Of these, 3511 responses agreed with the questions, 1893 responses were neutral / as-expected, and 1010 responses disagreed with the questions. The following pages in Attachment 2 provide the same type of graphs for individual break-downs of each of the 8 Principle's attributes.

Pre-Assessment Survey – 8 Principles Graph



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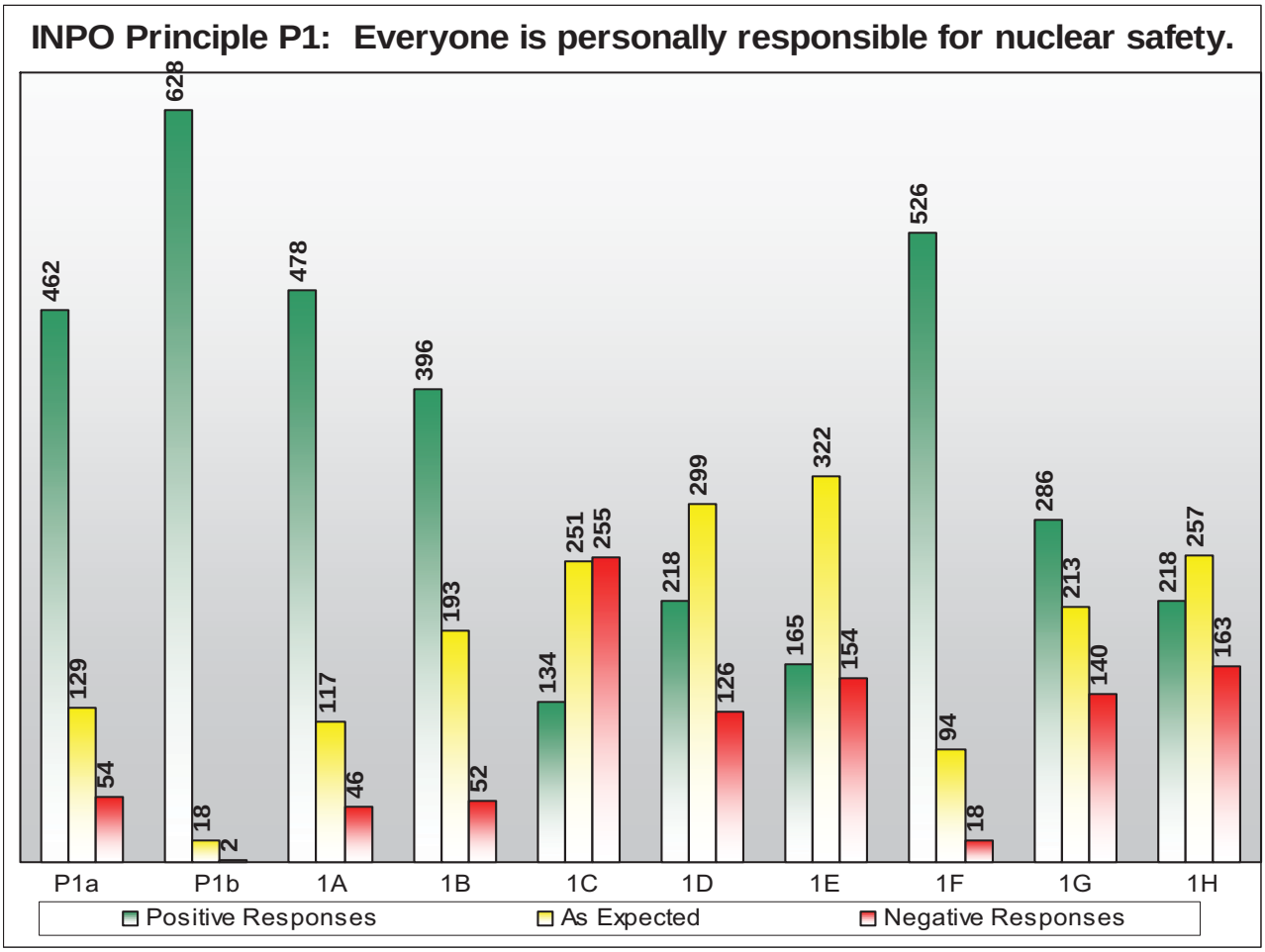

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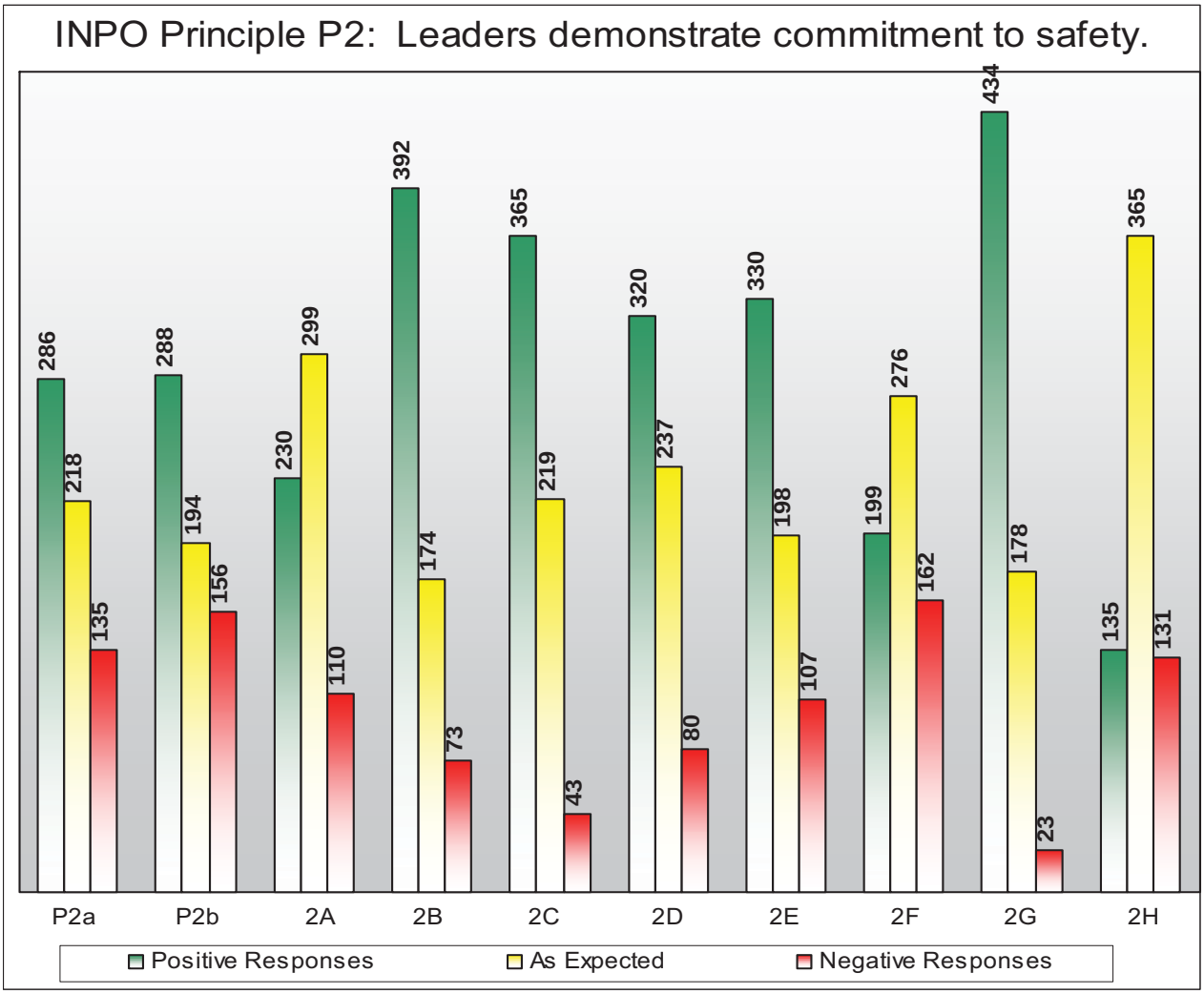

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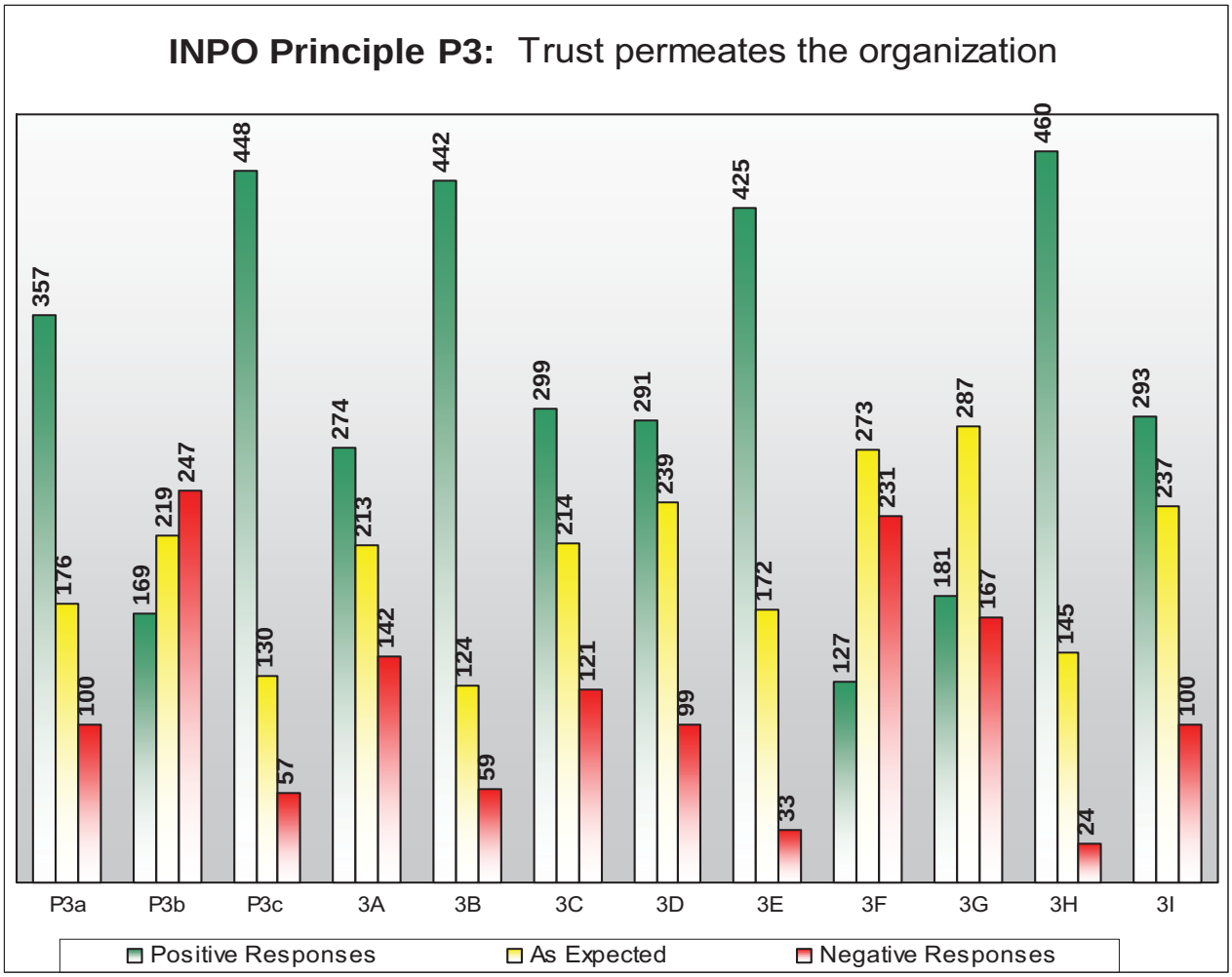

Attributes for Principle 3

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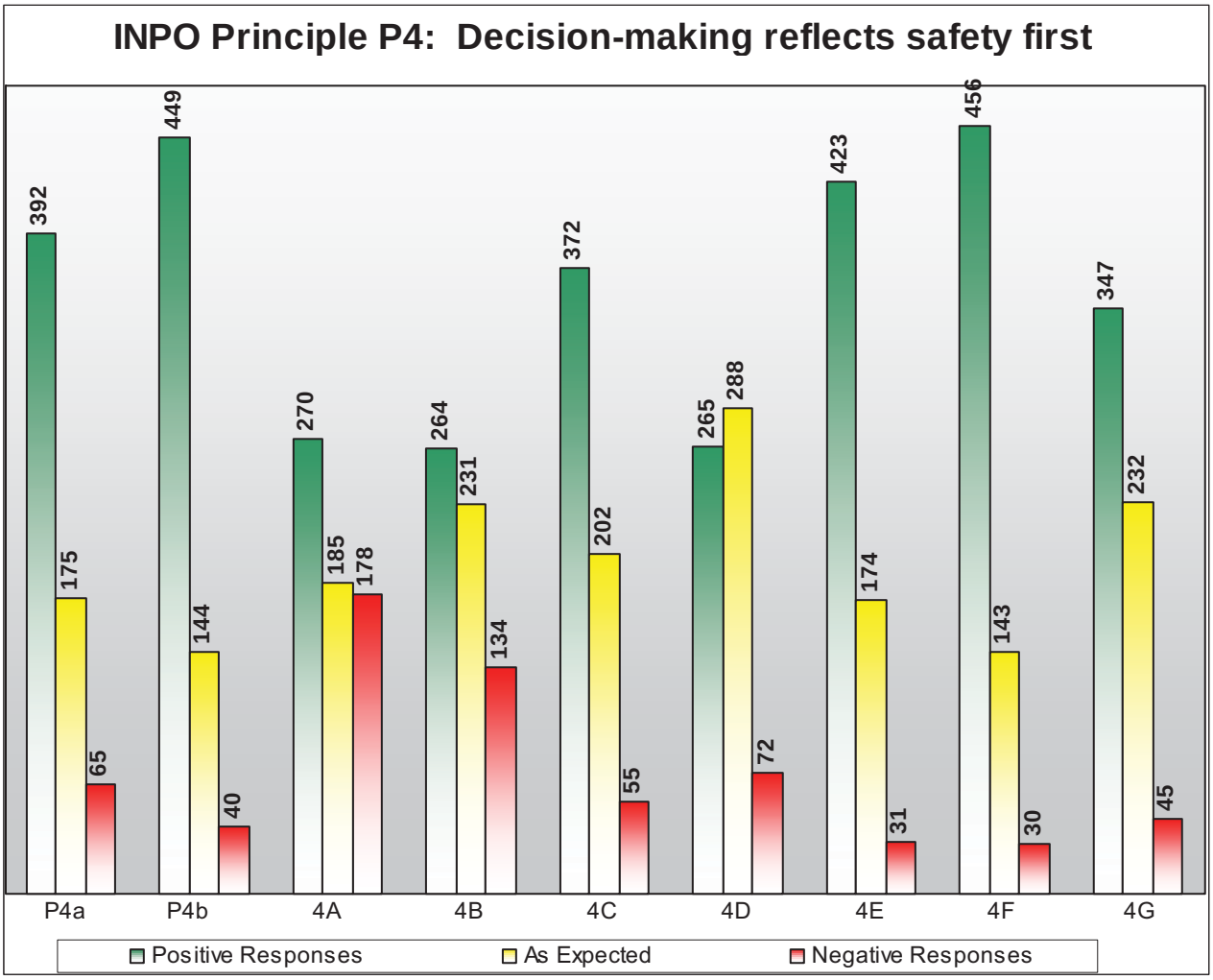

Attributes for Principle 4

P4a	Personnel are systematic and rigorous in making decisions that support safe, reliable plant operation.
P4b	Operators are vested with the authority and understand the expectation, when faced with unexpected or uncertain conditions, to place the plant in a safe condition. Senior leaders support and reinforce conservative decisions.
4A	The organization maintains a knowledgeable workforce to support a broad spectrum of operational and technical decisions. Outside expertise is employed when necessary.
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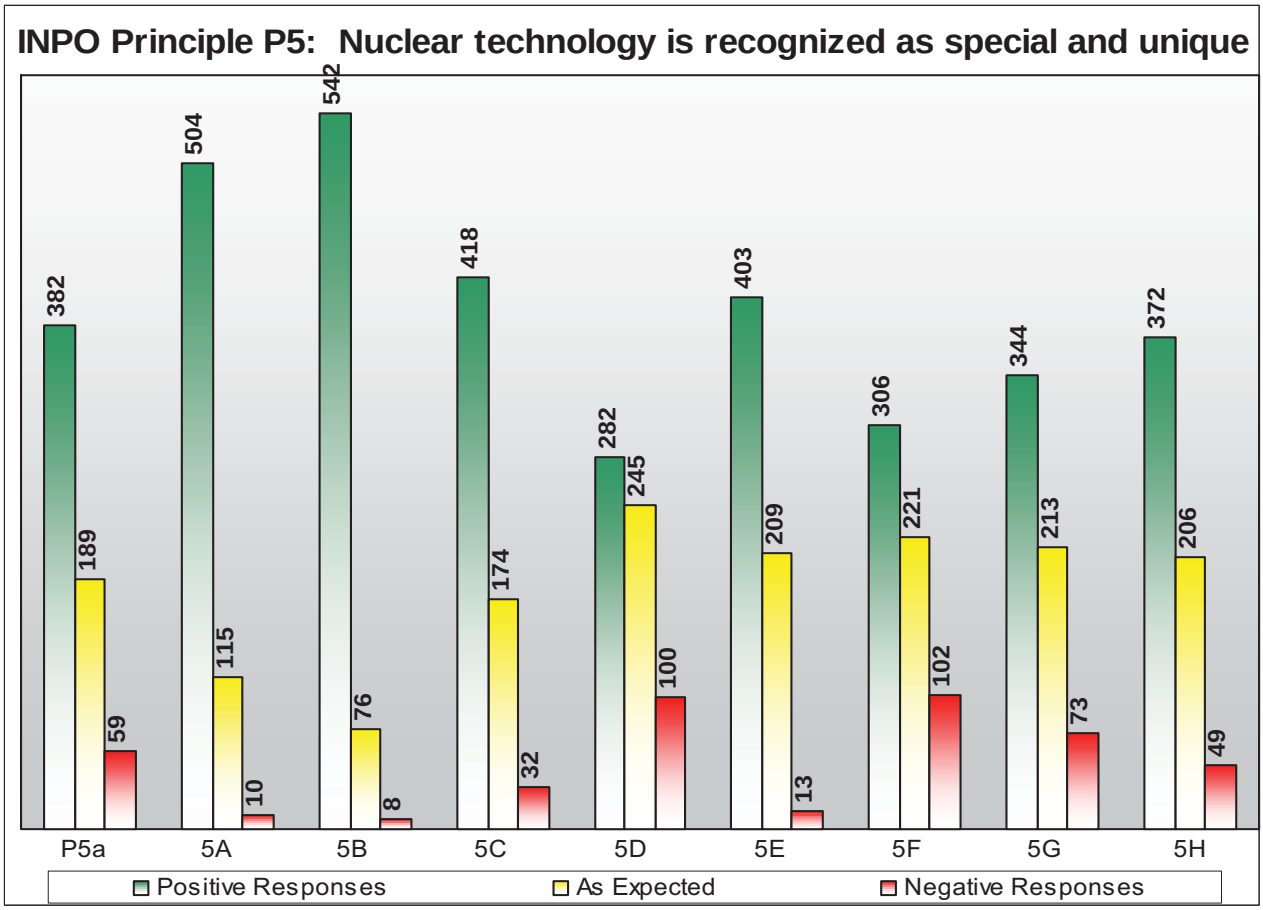

Attributes for Principle 5

P5a	The special characteristics of nuclear technology are taken into account in all decisions and actions. Reactivity control, continuity of core cooling, and integrity of fission product barriers are valued as essential, distinguishing attributes of the nuclear station work environment.
5A	Activities that could affect core reactivity are conducted with particular care and caution.
5B	Features designed to maintain critical safety functions, such as core cooling, are recognized as particularly important.
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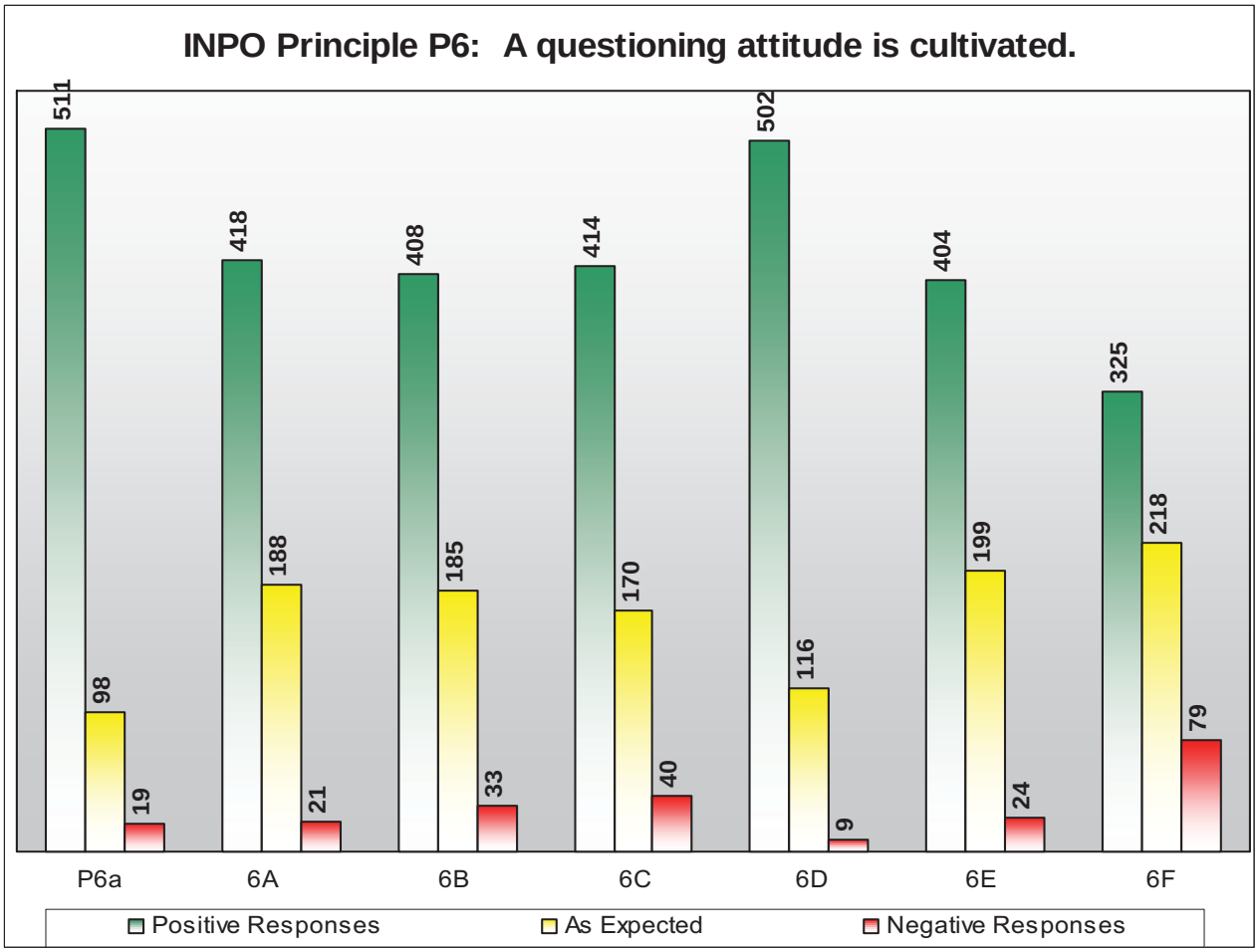
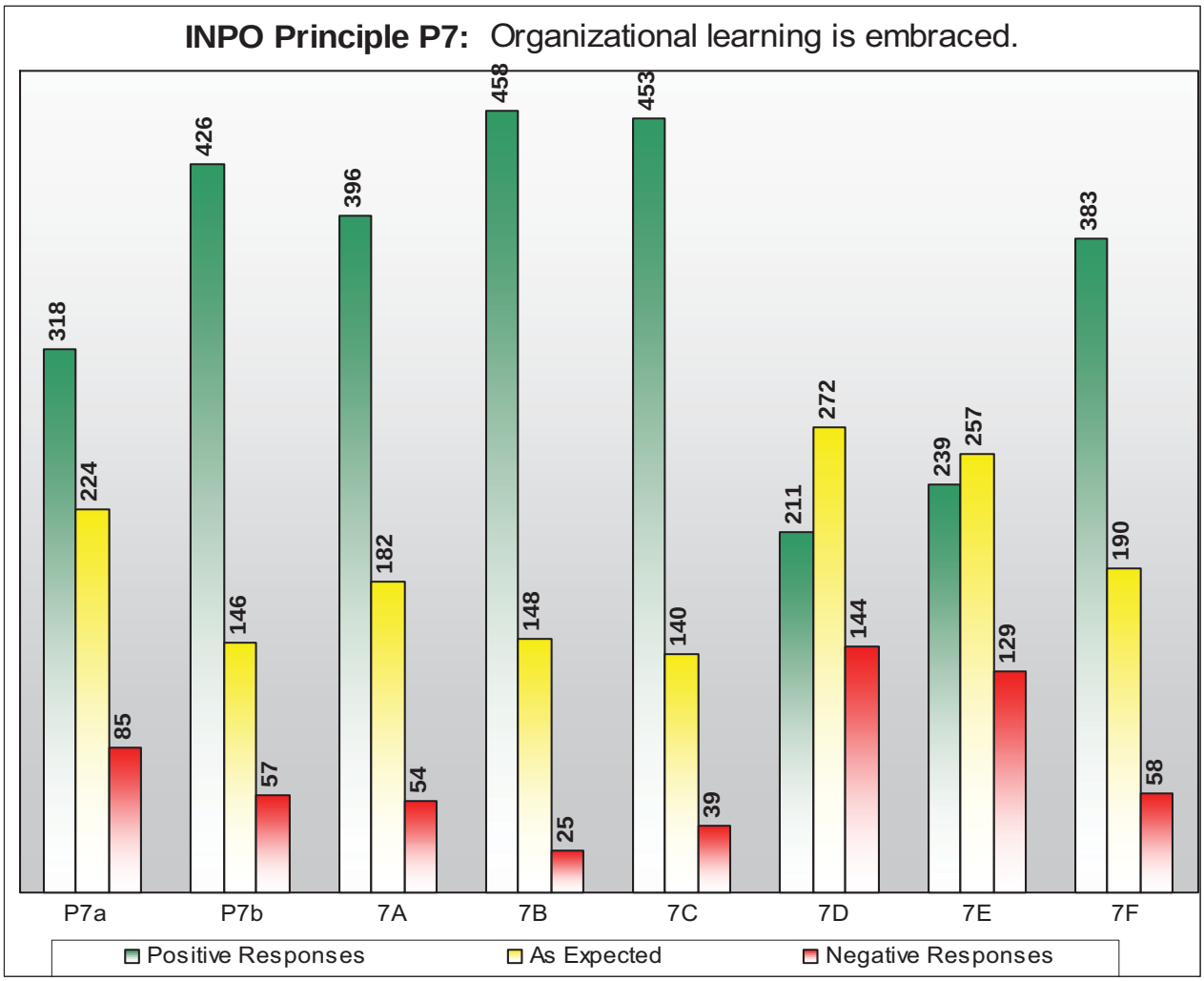


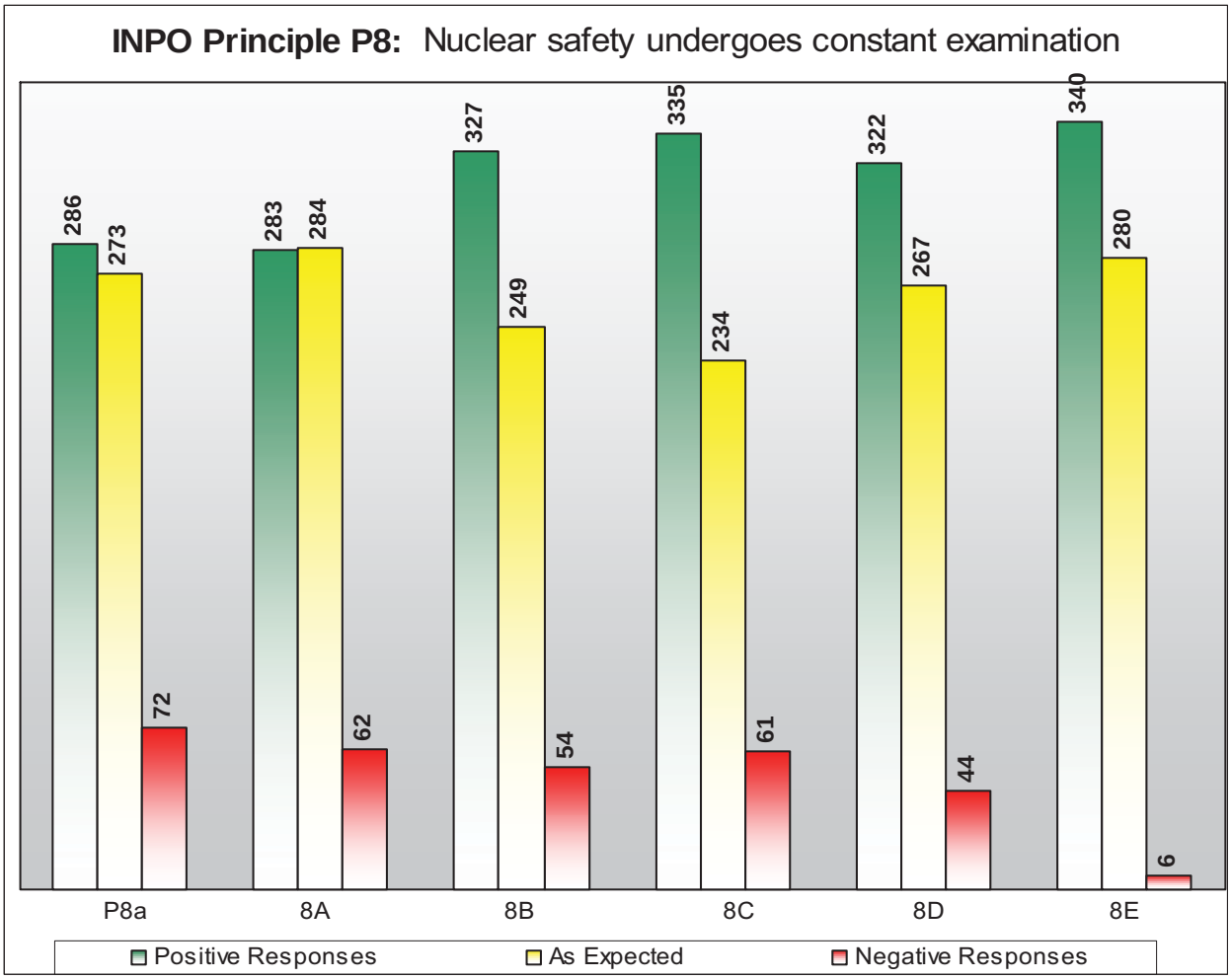
Attributes for Principle 6

P6a	Individuals demonstrate a questioning attitude by challenging assumptions, investigating anomalies, and considering potential adverse consequences of planned actions.
6A	While individuals expect successful outcomes of daily activities, they recognize the possibility of mistakes and worst-case scenarios. Contingencies are developed to deal with these possibilities.
6B	Anomalies are recognized, thoroughly investigated, promptly mitigated, and periodically analyzed in the aggregate.
6C	Personnel do not proceed in the face of uncertainty.
6D	Workers identify conditions or behaviors that have the potential to degrade operating or design margins. Such circumstances are promptly identified and resolved.
6E	Employees understand that complex technologies can fail in unpredicted ways. They are aware that latent problems can exist, and they make conservative decisions considering this potential.
6F	Group-think is avoided through diversity of thought and intellectual curiosity. Opposing views are encouraged and considered.



Attributes for Principle 7

P7a	Operating experience is highly valued, and the capacity to learn from experience is well developed.
P7b	Training, self-assessments, corrective actions, and benchmarking are used to stimulate learning and improve performance.
7A	The organization avoids complacency and cultivates a continuous learning environment. The attitude that "it can happen here" is encouraged.
7B	Training upholds management standards and expectations. Beyond teaching knowledge and skills, trainers are adept at instilling nuclear safety values and beliefs.
7C	Individuals are well informed of the underlying lessons learned from significant industry and station events, and they are committed to not repeating these mistakes.
7D	Expertise in root cause analysis is applied effectively to identify and correct the fundamental causes of events.
7E	Processes are established to identify and resolve latent organizational weaknesses that can aggravate relatively minor events if not corrected.
7F	Employees have confidence that issues with nuclear safety implications are prioritized, tracked, and resolved in a timely manner.



Attributes for Principle 8

P8a	Oversight is used to strengthen safety and improve performance.
8A	A mix of self-assessment and independent oversight reflects an integrated and balanced approach. This balance is periodically reviewed and adjusted as needed.
8B	Periodic safety culture assessments are conducted and used as a basis for improvement.
8C	The pitfalls of focusing on a narrow set of performance indicators are recognized. The organization is alert to detect and respond to indicators that may signal declining performance.
8D	The insights and fresh perspectives provided by quality assurance, assessment, employee concerns, and independent oversight personnel are valued.
8E	Senior executives and board members are periodically briefed on results of oversight group activities to gain insights into station safety performance.

This chart was populated throughout the week to determine which interview areas need additional data and documents the sampling across the various principles / attributes.

Prairie Island Nuclear Generating Plant - Nuclear Safety Culture Assessment - Interviews / Meeting Observations

Date March 2010

INPO Principle 1 Everyone is personally responsible for nuclear safety.	+	-		*INPO Principle 2* Leaders demonstrate commitment to nuclear safety.	+	-		*INPO Principle 3* Trust permeates the organization.	+	-		*INPO Principle 4* Decision making reflects nuclear safety first.	+	-		*INPO Principle 5* Nuclear technology is recognized as special and unique.	+	-		*INPO Principle 6* A questioning attitude is cultivated.	+	-		*INPO Principle 7* Organizational learning is embraced.	+	-		*INPO Principle 8* Nuclear safety undergoes constant examination.	+	-	
P1a	0	2	5	P2a	0	6	8	P3a	0	1	12	P4a	0	1	7	P5a	0	0	8	P6a	0	2	8	P7a	0	2	4	P8a	0	4	15
P1b	0	0	7	P2b	0	4	15	P3b	0	7	9	P4b	0	0	10	5A	0	0	12	6A	0	0	6	P7b	0	1	8	8A	0	0	9
1A	0	0	8	2A	0	0	7	P3c	0	0	6	4A	0	1	13	5B	0	0	10	6B	0	0	11	7A	0	0	6	8B	0	2	6
1B	0	0	7	2B	0	2	11	3A	0	0	6	4B	0	2	8	5C	0	1	9	6C	0	0	13	7B	0	1	11	8C	0	0	10
1C	0	2	18	2C	0	0	5	3B	0	1	4	4C	0	0	11	5D	0	0	5	6D	0	1	7	7C	0	1	14	8D	0	0	8
1D	0	0	10	2D	0	1	6	3C	0	3	8	4D	0	0	2	5E	0	1	11	6E	0	0	14	7D	0	0	8	8E	0	0	9
1E	0	0	7	2E	0	0	3	3D	0	0	11	4E	0	1	8	5F	0	1	8	6F	0	1	7	7E	0	0	3	23%			
1F	0	1	11	2F	0	0	16	3E	0	1	8	4F	0	1	7	5G	0	2	5	20%				7F	0	0	8				
1G	0	1	12	2G	0	1	7	3F	0	2	5	4G	0	0	6	5H*	0	0	8					17%							
1H	0	2	14	2H	0	0	9	3G	0	0	5	25%				29%															
30%				31%				3H	0	0	8																				
								3I	0	2	7																				
								26%																							
TOTAL	0	6	145	TOTAL	0	14	147	TOTAL	0	17	143	TOTAL	0	6	104	TOTAL	0	5	114	TOTAL	0	4	87	TOTAL	0	5	81	TOTAL	0	6	82
	-	96	43		-	87	46		-	89	37		-	72	26		-	76	33		-	66	17		-	62	14		-	57	19

Tan bars = Negative % Overall for Principle
Red bars = Most Negative Survey Response Areas
Green bars = Most Positive Survey Response Areas

62 Interviews
6 Observations

63	Positive Responses
605	As Expected
235	Negative Responses
903	**Total Data Points**

This chart is developed based on the pre-assessment survey data and is used to develop a "Top" and "Bottom" chart to focus the team. A validation is performed throughout the week to evaluate strengths and weaknesses from the pre-assessment survey data.

Prairie Island Nuclear Generating Plant - Nuclear Safety Culture Assessment - Survey Responses

Date March 2010

INPO Principle 1 Everyone is personally responsible for nuclear safety.	+	0	-		INPO Principle 2 Leaders demonstrate commitment to nuclear safety.	+	0	-		INPO Principle 3 Trust permeates the organization.	+	0	-		INPO Principle 4 Decision making reflects nuclear safety first.	+	0	-		INPO Principle 5 Nuclear technology is recognized as special and unique.	+	0	-		INPO Principle 6 A questioning attitude is cultivated.	+	0	-		INPO Principle 7 Organizational learning is embraced.	+	0	-		INPO Principle 8 Nuclear safety undergoes constant examination.	+	0	-	
P1a	462	129	54	645	P2a	286	218	135	639	P3a	357	176	100	633	P4a	392	175	65	632	P5a	382	189	59	630	P6a	511	98	19	628	P7a	318	224	85	627	P8a	286	273	72	631
P1b	628	18	2	648	P2b	288	194	156	638	P3b	169	219	247	635	P4b	449	144	40	633	5A	504	115	10	629	6A	418	188	21	627	P7b	426	146	57	629	8A	283	284	62	629
1A	478	117	46	641	2A	230	299	110	639	P3c	448	130	57	635	4A	270	185	178	633	5B	542	76	8	626	6B	408	185	33	626	7A	396	182	54	632	8B	327	249	54	630
1B	396	193	52	641	2B	392	174	73	639	3A	274	213	142	629	4B	264	231	134	629	5C	418	174	32	624	6C	414	170	40	624	7B	458	148	25	631	8C	335	234	61	630
1C	134	251	255	640	2C	365	219	43	627	3B	442	124	59	625	4C	372	202	55	629	5D	282	245	100	627	6D	502	116	9	627	7C	453	140	39	632	8D	322	267	44	633
1D	218	299	126	643	2D	320	237	80	637	3C	299	214	121	634	4D	265	288	72	625	5E	403	209	13	625	6E	404	199	24	627	7D	211	272	144	627	8E	340	280	6	626
1E	165	322	154	641	2E	330	198	107	635	3D	291	239	99	629	4E	423	174	31	628	5F	306	221	102	629	6F	325	218	79	622	7E	239	257	129	625	8%				
1F	526	94	18	638	2F	199	276	162	637	3E	425	172	33	630	4F	456	143	30	629	5G	344	213	73	630	5%					7F	383	190	58	631					
1G	286	213	140	639	2G	434	178	23	635	3F	127	273	231	631	4G	347	232	45	624	5H*	372	206	49	627						12%									
1H	218	257	163	638	2H	135	365	131	631	3G	181	287	167	635	11%					8%																			
16%					16%					3H	460	145	24	629																									
										3I	293	237	100	630																									
										18%																													
TOTAL	3511	1893	1010	6414	TOTAL	2979	2358	1020	6357	TOTAL	3766	2429	1380	7575	TOTAL	3238	1774	650	5662	TOTAL	3553	1648	446	5647	TOTAL	2982	1174	225	4381	TOTAL	2884	1559	591	5034	TOTAL	1893	1587	299	3779

Tan bars = Negative % Overall for Principle
Red bars = Most Negative Survey Response Areas
Green bars = Most Positive Survey Response Areas

Surveys Sent - 707
Responses - 624
Response Rate 88%

24806	Positive Responses
14422	As Expected
5621	Negative Responses
44849	**Total Data Points**

Background

The foundation for the NSCA Nuclear Safety Culture Assessment process is stated in the INPO's Principles and Attributes of a Strong Nuclear Safety Culture.

> *"Principles for a Strong Nuclear Safety Culture describes the essential attributes of a healthy Nuclear safety culture (hereafter "safety culture"), with the goal of creating a framework for open discussion and continuing evolution of safety culture throughout the commercial nuclear electric generating industry. The principles and associated attributes described have a strong basis in plant events.*
>
> *Basic principles are addressed herein, rather than prescribing a specific program or implementing methods. These principles and attributes, when embraced, will influence values, assumptions, experiences, behaviors, beliefs, and norms that describe what it is like to work at a specific facility and how things are done there. Principles appear in boldface type. Attributes help clarify the intent of the principles.*
>
> *Utility managers are encouraged to make in-depth comparisons between these principles and their day-to-day policies and practices and to use any differences as a basis for improvement."*

And in SOER 02-04:

> *"A major contributor to this event [Davis-Besse's Reactor Vessel Head Degradation] was a shift in the focus at all levels of the organization from implementing high standards to justifying minimum standards. This reduction in standards resulted from excessive focus on meeting short-term production goals, a lack of management oversight, symptom-based problem-solving, justification of plant problems, isolationism, ineffective use of operating experience, and a lack of sensitivity to nuclear safety."*

NEI 09-07, Industry Guideline *Fostering A Strong Nuclear Safety Culture*, was established to provide a framework for nuclear power plant operators to monitor their nuclear safety culture on a continuous and real-time basis. Section 5 of this document, "Nuclear Safety Culture Assessments Including Third Party Assessments" describes the Nuclear Safety Culture Assessment (NSCA) Process. The process described in NEI 09-07 document was developed and implemented by the Utility Service Alliance (USA). The NSCA process is maintained and controlled through a series of documents located on the USA Website.

Assessment Methodology

The NSCA approach is to perform the assessments utilizing a team of approximately eight or more experienced leaders from inside and outside the host plant.

The NSCA process links surveys, documentation reviews, site observations, and interviews to a set of behavioral characteristics that model a strong safety culture. Culturally based characteristics and attitudes are difficult to detect and evaluate during a short self-assessment process. However, discernible symptoms can exist that may indicate flaws in the overall safety culture of the assessed site. The primary goal of the assessment is to identify these symptoms, increase management awareness of the symptoms, and leave the site with a list of observations that the plant leadership team can use to strengthen the safety culture and improve performance.

It should be noted that the NSCA process is not intended to perform detailed technical evaluations of the station's work practices and processes. The elements of safety culture are behavioral in nature; the NSCA process focuses on the evaluation of the perceptions and beliefs that the station's

workforce has regarding nuclear safety and leadership attributes. In cases where technical issues become apparent to the NSCA team, those items were provided for evaluation to the station's management team.

For this assessment, interviewees were selected from the individual contributor ranks and first line supervisors. Additional interviews were also conducted with the senior leadership team.

The NSCA project team has developed a series of Interview, Behavioral, and Field Note Collection Sheets which were used during the assessment week and are based on the PSNSC document. These tools are used to capture results of interviews, observations, and document reviews and provide a means to rate evaluator perceptions based on the INPO principles and attributes.

The scoring of each response is done on a subjective basis by the peer team members and is based largely on a comparison of a received response to the expected organizations value or behavior (industry norm) as defined by the applicable INPO Principle/Attribute. It is for this reason that experienced industry evaluators should be selected to assist in safety culture assessments which rely on the strength and diversity of peer teams in this rating process. Within the scoring process for interviews, a positive (+) response is an interviewee response to a question that provides detailed examples where the station exceeds the expected behavior or value for this attribute. A neutral / as-expected (Ø) score represents an interviewee response that appears to meet the industry norm, where a negative (-) response represents an interviewee response where the station appears to be below the industry norm or details a specific weakness in a principle / attribute. The scored responses are entered into a database and then reviewed in the aggregate by the team for themes and trends. Any PSNSC attribute with a significant amount of negative or positive ratings is validated through further interviews and document reviews. A problem development worksheet is used to fully characterize all weaknesses.

For the purposes of the NSCA methodology the following terms are used exclusively in characterizing the issues and themes in this report:

Strength – A consistently demonstrated belief, action, or process related to the organization's values or behavior which exceeds the industry norm as established in the related INPO principle and attribute.

Positive Observation – Narrowly focused behaviors or attributes that the station is doing well, and may have the opportunity to leverage on a broader scale to improve safety culture or station performance.

Weakness – A consistently demonstrated belief, action, or process; related to the organizations values or behavior, that does not meet the industry norm as established in the related INPO principle and attribute and requires aggressive management attention and correction. In most station self-assessment programs, a Weakness is the equivalent to an Area for Improvement.

Negative Observation – A narrowly focused issue that is confined to a small sample of the population (i.e. a specific workgroup or level in the organization) and which may represent a potential future performance deficiency requiring management attention.

General Observation – In some cases, issues may appear to represent principle or attribute trends in the aggregate, but lacked significant themes or commonality when reviewed by the team (that is, themes that may be precursor issues but the team was either unable to validate with additional information or the data was not directly associated with a principle or attribute).

The process, basis, assumptions, observations and interview forms and information on the pre-assessment survey and other steps are shown in Tabs A to E of the "*Utilities Service Alliance, Nuclear Safety Culture Assessment Process Manual and Source Book Phase II.*"

Team Members	
Names	**Representing**
Mike Crowthers (Executive Sponsor)	PPL Susquehanna
Ed Peterson (Team Lead)	Wolf Creek Nuclear Operation Corp.
Andy Notbohm (Host Peer)	Xcel – Prairie Island
Susie Heironimus	Dominion - Kewaunee
David Gullott	Exelon - Corporate
Norena Robinson	NPPD – Cooper
Chip Calia	Wolf Creek Nuclear Operation Corp.
Bill Ponec	Utility Service Alliance
Jason Tribe	Xcel – Prairie Island
Bill Kappes	Xcel – Prairie Island
Ed Schmidt	Xcel – Prairie Island
John Forsman	Xcel – Monticello
Sherry Schmidt	Xcel – Prairie Island Admin Support
Teresa Dorsey	Xcel – Prairie Island Admin Support
Lynette Sweet	Xcel – Prairie Island Admin Support

NSCA Peer Team Biographies

Mike Crowthers
Mr. Crowthers is the PPL Susquehanna LLC Manager of Regulatory Affairs having responsibility for the NRC interface and emergency planning functions. Mr. Crowthers is also the Vice Chairman of the BWR Owners Group. Mr. Crowthers holds a B.S. in Mechanical Engineering and a Masters in Engineering Management. Prior experience includes nuclear quality assurance and nuclear design engineering.

Ed Peterson
Mr. Peterson is the WCNOC Ombudsman and has filled this position for 3 years. Mr. Peterson holds a B.S. in Human Resources Management. Prior experience includes thirty years in nuclear quality disciplines of Quality Control, Quality Assurance Audits, and Quality Engineering. Fifteen of these years were in supervision. This experience was gained in both construction and operations of nuclear power plants and included audit, surveillance, and inspection of plant maintenance, design, and operation activities. Has participated as a team leader, peer, or site host on twelve NSCA's.

Susie Heironimus
Ms. Heironimus came to the Employee Concerns Program in October 2009 from the Training Department at Kewaunee Power Station where she supported the training staff and had responsibility for the VISION project. She also has previous experience in the Organizational Effectiveness group at KPS. She's a qualified lead for apparent-cause evaluations and holds her Six Sigma Blue Belt. Previous to her employment at KPS, she was involved in the health care industry with Humana Health Insurance Company where she gained extensive experience in the investigation arena investigating insurance fraud. She has earned her Bachelor of Arts degree in English with a minor in Human Development from the University of Wisconsin-Green Bay and holds a Master of Science Degree in Management and Organizational Behavior from Silver Lake College in Wisconsin.

Norena Robinson
Ms. Robinson is the Cooper Nuclear Station Employee Concerns Coordinator and has filled this position for 5 years. Ms. Robinson holds a B.S. in Management. Prior experience includes 23 years in the nuclear industry is various disciplines including Quality Assurance, Engineering, Training, Licensing, and Security. Four of those years were in supervision. Ms. Robinson has participated as a team member or site host on four NSCAs.

Chip Calia
Mr. Calia is the manager Strategic Initiatives and has filled this position for 4 years. Prior experience includes 22 year experience in Operations & Performance Improvement along with 10 years in the US Navy. Ten of these years were in supervision. Experience in Operations included 8 years as a Reactor Operator with supervision in Operations. Mr. Calia has participated as a team member on one other NSCA.

David Gullott
Mr. Gullott is currently the Corporate Licensing Programs Manager at Exelon Nuclear. Prior to returning to Corporate Licensing and Regulatory Affairs, he was the Regulatory Assurance Manager at Exelon's Braidwood Station. In this capacity he is responsible for the site Corrective Action Program, regulatory compliance and interface, and emergency preparedness. Mr. Gullott has nineteen years experience in the nuclear power industry in the areas of Programs Engineering (AOV Programs, Snubber Testing, and Inservice (IST) Testing Programs) and Licensing/Regulatory Compliance. He also has PWR and BWR Senior Reactor Operator (SRO) training.

Bill Ponec
Mr. Ponec is the Manager of Programs and Projects for the Utilities Service Alliance. Prior to joining the Alliance, Mr. Ponec was employed at the Fort Calhoun Nuclear Station when he retired in 2007 after 34 years of service. Mr. Ponec was a member of the team that developed the first phase USA Nuclear Safety Culture Assessment process and has participated in 15 Nuclear Safety Culture Assessments.