



Palo Verde Nuclear
Generating Station

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Reference: Meeting Summary Discussing Palo Verde Performance Issues, T. W. Pruett (NRC) to G. R. Overbeck (APS), ML052360630, dated 08/24/2005.

Subject: Palo Verde Nuclear Generating Station (PVNGS)
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Public Meeting of August 18, 2005 to Discuss the Results of a Safety Culture Survey

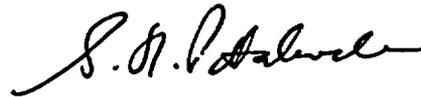
Arizona Public Service (APS) met with the NRC at a public meeting on August 18, 2005 at the Region IV office in Arlington, TX to discuss, among other topics, the results of a safety culture survey.

The executive summary of the safety culture survey, referred in the public meeting, and the meeting summary (Reference 1) as the 2005 Synergy Assessment, is enclosed.

APS makes no commitments in this letter.

Should you have questions regarding this submittal, please contact Ms. Jeanne Copsey at (623) 393-3399.

Sincerely,


for C.D. Mauldin.

CDM/DGM/ca

Enclosure: 1. Executive summary of the safety culture survey

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ENCLOSURE 1

EXECUTIVE SUMMARY OF THE SAFETY CULTURE SURVEY



2005
Palo Verde Nuclear Generating Station
Nuclear Safety Culture Assessment

EXECUTIVE SUMMARY

April 2005



Chapel Hill, NC
Great Falls, VA
Richmond, VA



Executive Summary

Findings & Conclusions: The 2005 Palo Verde Nuclear Generating Station (PVNGS) Nuclear Safety Culture Assessment (NSCA) characterized the current organizational culture, determined areas of relative strength and weakness, identified individual organizations that depart from industry norms (as interpreted by SYNERGY) and/or general performance norms at PVNGS and identified areas where there are opportunities for improvement.

The results confirm that the PVNGS Nuclear Safety Culture (NSC) is “Very Good.” Key elements of the NSC were measured as follows:

- Safety Conscious Work Environment (SCWE) - ‘Very Good to Excellent.
- Nuclear Safety Values, Behaviors and Practices (NS VBP) - “Very Good.’
- Employee Concerns Program (ECP) - “Good to Very Good.”

The General Culture and Work Environment (GCWE) was measured as “Good.” The corresponding metrics for each of the above elements of the overall PVNGS culture were ranked in the *top nuclear industry quartile*. The culture was found to be somewhat more uniform across demographic categories than most nuclear sites, i.e. amongst worker categories, positions and years of service.

PVNGS personnel are strongly committed to Nuclear Safety (NS) excellence as evidenced through their demonstrated willingness to take appropriate actions in response to potential Nuclear Safety (NS) issues or concerns and their supporting behaviors and practices aimed at operational NS and continuous improvement.¹ Employees commented that NS is reinforced and supported by management and supervision who are receptive to inputs on NS issues and who are committed to maintaining high standards and conservative decision-making. Some observed that there is no hesitation to shutdown the plants to investigate or respond to problems. Others expressed the ECP as a strength, particularly in how the ECP has heightened awareness of avenues for raising and addressing concerns and for approachability of the ECP.

The work culture within work groups is generally considered strong. Front line personnel are viewed as exhibiting questioning attitudes, paying attention to details and doing quality work. Employee comments cited the commitment, teamwork and mutual respect within the workforce and also, PVNGS having a good work environment and being a generally “good place to work.”

It is evident that the current PVNGS culture has served well in producing strong NS and business performance results. Similar to others in the nuclear industry, future success will be predicated upon the ability to respond to challenges associated with an increasingly more competitive business environment. Uncertain resource management policies, coupled with concerns about efficiency of business processes are beginning to stress the workforce as evidenced through employee attitudes and perceptions expressed in their write-in comments.

¹ 97.3% believe NS is the first and over-riding priority at PVNGS. If they identified a potential NS issue / concern, 98.5% would inform their supervision and/or document using the corrective action process (CRDR report). If unsatisfied by their supervisor’s response, 96.3% would escalate the matter up the management chain.



PVNGS appears to be at an important 'crossroads' where the culture will likely have to develop greater capacities to change and align with current business needs. While the culture has benefited from several inherent strengths, e.g. high standards, teamwork, trust and dedication of the workforce, emerging pressures appear to be exposing weaknesses in areas which are becoming more critical at a time of change, e.g. communications, change management, recognition and personnel development. These insights are derived from the 'texture' and 'intensity' of the write-in comments and may appear to run somewhat counter to other results. Such feedback can be explained as 'early warning' signals of opportunities for improvement, particularly in certain locales, rather than an urgent call for corrective actions. Accordingly, management attention to this feedback appears prudent to avert future downward trends in cultural metrics and possibly, other business performance measures down the road.²

There appears to be uneasiness about whether or not 'critical' standards will continue to be maintained while PVNGS faces the need to conduct business with fewer resources. In particular, employees are seeking more effective communications and management involvement to address how strong NS performance will be sustained while meeting economic performance expectations. There are growing concerns about the allocation of resources, lost expertise and how the pressures of workload, schedule and meeting goals may be adversely impacting the ability to perform at expected high levels. Given the mandate to do more with fewer resources, employees are rightly questioning situations where they perceive their colleagues are not being held accountable by supervision or management for good work and sharing the workload. Business processes that may have been adequate in the past may now be too overburdened and/or inefficient. Employees are concerned that leadership may not fully appreciate their increasing level of stress and this is beginning to affect morale. Some see growing tension and lack of teamwork amongst people and work groups that had been uncharacteristic in the past. They fear fewer professional opportunities and less emphasis on their development and training.

In order to assure continued success and to maintain top industry performer standards, it is desirable for PVNGS management to continue to focus on the following:

- ◆ **Nuclear Safety Culture:** Continuing to reinforce 'standards' related to NS performance expectations (e.g. how PVNGS will continue to balance priorities and continue to improve in an environment of change); continuing to improve the effectiveness of the CRDR, ECP and self-assessment processes; and addressing locales with SCWE opportunities.
- ◆ **General Culture & Work Environment / Leadership, Management & Supervision:** More effective communications of the bases for decisions on staffing and resource allocation, on work management and on change management practices; increased visibility and involvement of senior management (to enhance trust & confidence); and greater attention to increase effectiveness of personnel management practices (accountability, recognition) and personnel development.
- ◆ **Organizational Initiatives:** Addressing opportunities in the identified organizations.

² SYNERGY has found that the magnitude of the slope of the cultural trend lines correlates with future performance, i.e. changes in the culture typically precede changes in performance. Accordingly, the cultural metrics can be used as forward-looking indicators. Since the 2005 NSCA was an initial baseline assessment, actual trends are unavailable; however, an estimate has been made of a nominally improving NSC trend (refer to footnote 6).



Scope & Methodology: The assessment included coverage of cultural values, behaviors and practices that have shaped and reinforced PVNGS's capabilities, infrastructure and environment for Nuclear Safety (NS) performance. Also, the assessment identified opportunities for improvement associated with the culture, the work environment and critical business processes that are or could be important to PVNGS's NS performance.

The assessment addressed the following scope:

1. Nuclear Safety Culture (NSC)
 - Nuclear Safety Values, Behaviors and Practices (NS VBP) including the Condition Reporting / Disposition Request (CRDR) process
 - Safety Conscious Work Environment (SCWE)
 - Employee Concern Program (ECP) Effectiveness
2. General Culture & Work Environment (GCWE) - including Dimensions such as: High Standards, Focus on Performance / Accountability, Continuous Improvement, Conduct of Work, Teamwork, Employee Involvement, Trust & Respect, General Communications, Change Management, Personnel Development, Performance Recognition, Performance Appraisal and Personal Satisfaction & Morale
3. PVNGS Requested Special Topics
 - Leadership, Management & Supervision Topics³
 - Exhibiting PVNGS Values & Principles
 - Department Leader Communications
 - Senior Management Leadership
 - Management Issues Tracking Resolution Program (MITR) & Differing Professional Opinion (DPO) Process Effectiveness
 - Industrial Safety & Health Program Effectiveness

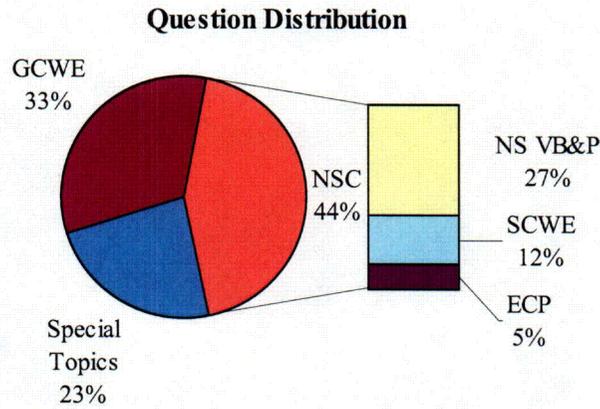
SYNERGY's approach relies heavily upon obtaining employee input as a measure of the values, behaviors and practices that have shaped the culture and performance. A comprehensive questionnaire was used to confidentially survey the workforce's attitudes and perceptions and to solicit ideas for continuous improvement.⁴ All PVNGS personnel were afforded an opportunity to respond to the Survey. SYNERGY's quantitative methodology and cultural models provided the bases for an integrated evaluation of PVNGS 'norms' and differentiation of employee demographic and organizational trends. Appendix I provides a summary of SYNERGY's cultural models & analysis methods and explains how employee feedback is used in developing objective measures of culture. This summary is intended for background on the development of metrics mentioned in this report.

³ SYNERGY's full Leadership, Management & Supervision (LMS) model was not included in the scope.

⁴ The questionnaire included 155 multiple-choice questions and two opportunities for write-in comments.



The following graphic presents the distribution of the 155 survey questions (or topics) devoted to each of the above scope areas.



Noteworthy Initial Environmental Conditions: The Survey process was initiated the week of February 16-17, 2005 and was completed March 11, 2005. The following environmental conditions were found to exist at Palo Verde during the 2003-2005 time period (as summarized by PVNGS personnel). With the exception of the security guard force, Palo Verde is a non-union plant. These conditions are noteworthy because the environment may have affected how employees responded to the Survey.

Palo Verde's 2004 capacity factor (MDC Net) was 83.7% as compared to a capacity factor of 87.4 for 2003 and 94.4 for 2002. The decrease in capacity factor in 2004 as compared to the two previous years is attributable to the following plant events:

- February 3-8 unplanned shutdown of Unit 1 due to safety injection system drain valve leak
- February 19 to March 8 Unit 2 shut down to fix steam generator tube leak
- February 28 to March 7 Unit 3 shut down due to failed component on main generator
- June 7-11 Unit 3 shut down due to turbine control system failure
- June 14, all 3 Units trip due to major grid disturbance. All Units back on-line in 6 days
- July 14-17 Unit 2 shut down following lightening strikes in switchyard
- Fall 2004, Unit 3 outage extended to 66 days to replace pressurizer heater sleeves

Plant events in 2004 also led to increased Nuclear Regulatory Commission (NRC) special inspections in the form of a special inspection team to review the Unit 2 steam generator tube leak, an augmented inspection team to review the June 14 three-unit trip and another special inspection team to review issues associated with a finding in July 2004 that a section of the ECCS piping in all three units had been configured dry, contrary to design since start-up of the units 20 years ago. The plant events discussed above had a significant impact on the Palo Verde organization in 2004. Significant time and resources were required to respond to these events, as well as ancillary issues that resulted from them. This resulted in a backlog of work that the station still is working to reduce.

On January 14, 2004, Arizona Public Service (APS) attended a public meeting with the NRC in Arlington Texas to discuss Palo Verde's Safety Conscious Work Environment (SCWE). The



NRC requested the meeting because the number of allegations that the NRC received about Palo Verde peaked in 2003 at 22, up from 5 in 2002. NRC allegations for 2004 reduced to 12.⁵ At the meeting, APS presented information to the NRC about the increase in allegations and described the efforts taken to ensure that Palo Verde has a healthy SCWE. These efforts included training for supervisors in 2003 on how to address concerns, planned training for all frontline employees in 2004 on Palo Verde's Integrated Issues Resolution Process (IIRP) with a focus on how to raise concerns, and a commitment to conduct a SCWE survey in 2005.

On March 10, 2004, the NRC sent Palo Verde a letter concluding that Palo Verde has an environment in which employees feel free to raise safety concerns. This conclusion was further supported by the NRC as a result of its PI&R inspection conducted in May 2004. In an August 16, 2004 letter, transmitting the results of the PI&R inspection, the NRC concluded that a positive SCWE exists at Palo Verde.

Palo Verde employees achieved a number of noteworthy accomplishments in 2003-2004, including:

- Palo Verde received an INPO 10-year excellence award in November 2004
- Successful INPO evaluation in August 2003
- INPO Re-accreditation of technical programs
- Palo Verde earned a thirteenth consecutive national generation record in 2004
- Successful implementation of the NRC's various security orders
- Loaded first dry cask with spent nuclear fuel in April 2003 and loaded 22 casks overall
- Four successful refueling outages in 2003 and 2004. Highlights of these outages include:
 - Successful bare metal inspections of reactor heads and bottom of reactor vessels in all three units
 - Unit 2 Fall 2003 outage included replacement of two steam generators, low-pressure turbine and pressurizer heater sleeves
 - Unit 3 Fall 2004 outage included replacement of pressurizer heater sleeves

An incentive payout was made to Palo Verde employees in early 2005 pursuant to the Company's incentive plan for Palo Verde. The Palo Verde portion of the incentive plan was adjusted by senior management, and approved by the Board of Directors, during 2004 to remove the impact of the unplanned outages associated with the Unit 2 steam generator tube leak, the June 14, 2005 three unit trip and the additional outage time added to Unit 3 to replace the pressurizer heater sleeves. Palo Verde employees did not receive an incentive payout for 2003 because the Company's earnings did not meet the threshold target for a payout.

In early 2004, a number of members of the senior management team were rotated into new positions for succession planning purposes. As a result of these rotations, it was determined that some departments became siloed. In response, later in the year, the senior management team engaged in a team building session, which included detailed 360 reviews for each leader. The team building was focused on improving communications.

⁵ ECP activity for 2004 increased approx. 100% over 2003 and for 2005 increased approximately 100% over 2004. Human Resources activity also increased significantly during 2004, especially their formal issues.



Survey Response: The overall survey response of 86.6% was very good (see Appendix A for details at the organizational level). Response rates for all Departments have adequate 'confidence / margin of error' for drawing conclusions.

Cultural Metrics Summary: The PVNGS culture is ranked in the *top nuclear industry quartile* across all key metrics. The NSC trend is estimated to be nominally positive.⁶ Note that the NS VBP, SCWE and ECP metrics are components of the NSC metric.

| Cultural Model / Metric | Nuclear Safety Culture (NSC) | NS Values, Behaviors & Practices (NS VBP) | Safety Conscious Work Environment (SCWE) | Employee Concerns Program (ECP) | General Culture & Work Environment (GCWE) |
|---------------------------------------|------------------------------|---|--|---------------------------------|---|
| -Measured Status | Very Good | Very Good | VG-Exc. | Good-VG | Good |
| -Cultural Metric / Trend ¹ | 4.07 +2.9% | 3.95 | 4.47 n/a | 3.77 n/a | 3.70 n/a |
| -2005 Industry Percentile | 86 th percentile | 85 th percentile | 85 th percentile | 76 th percentile | 91 st percentile |

The NSCA also included evaluation of PVNGS requested 'Special Topics.' The status and un-weighted PVNGS composite ratings were as follows:

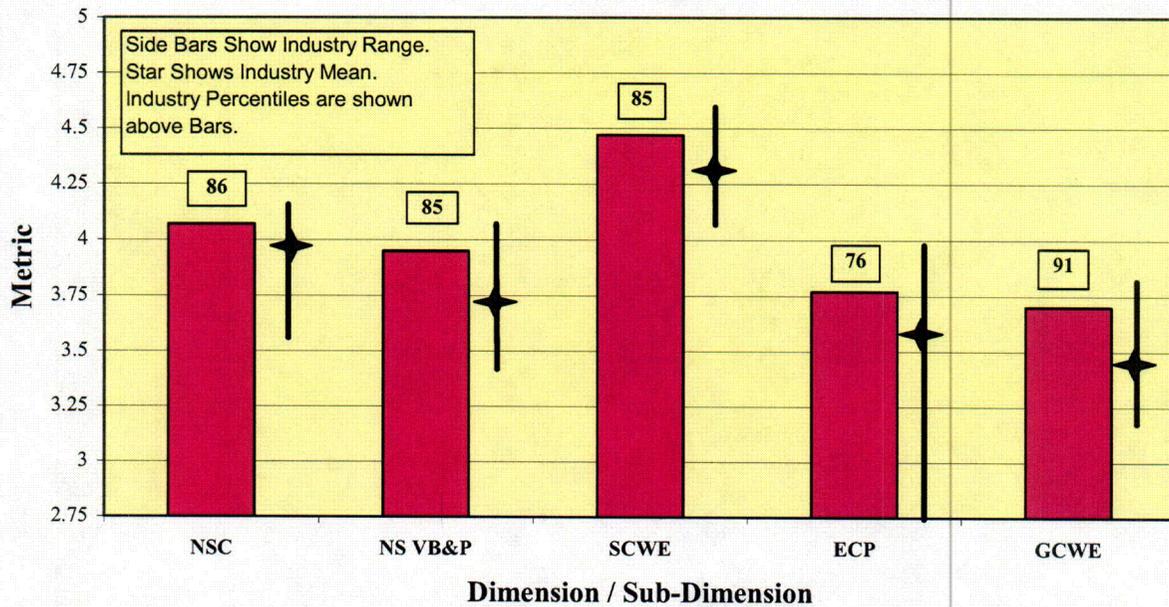
| Special Topic | Status | Ratings (mean / neg. %) |
|--|------------------------|-------------------------|
| <u>Leadership, Management & Supervision Topics</u> | <u>Adequate - Good</u> | <u>3.50 / 16.1%</u> |
| - Exhibiting PVNGS Values & Principles | Good | 3.54 / 15.6% |
| - Department Leader Communications | Good | 3.62 / 12.8% |
| - Senior Management Leadership | Adequate - Good | 3.35 / 19.7% |
| Mgmt. Issues Tracking Resolution Program (MITR) | Good | 3.56 / 12.9% |
| Differing Prof. Opinion (DPO) Process Effectiveness | Good - VG | 3.89 / 6.9% |
| Industrial Safety & Health Program Effectiveness | Good - VG | 3.88 / 6.6% |

⁶ The NSC trend is based upon the Integrated Performance Indicator (IPI) metric that is a less robust indicator of the NSC used when prior trending data are unavailable. The IPI was determined based upon both current and retrospective ratings of 'seven areas of inquiry,' i.e. respondents were asked to rate these areas 'today' and to look back ~1 year.



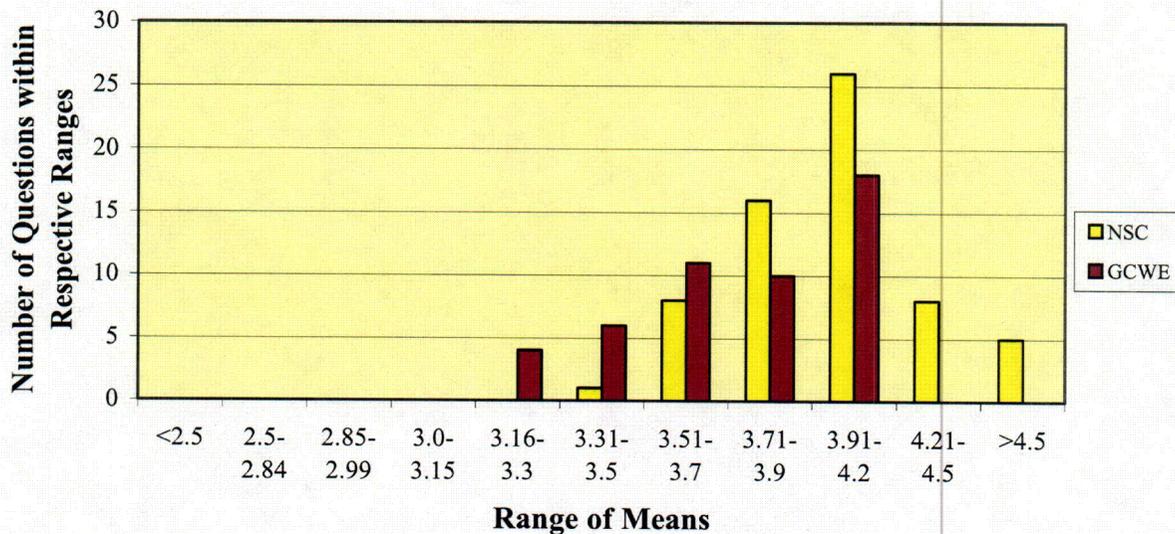
Industry Comparison Summary: The following figure compares the PVNGS cultural metrics and ranking with the range and mean of current nuclear industry data:⁷

PVNGS 2005 Cultural Metrics Summary & Industry Comparison



Question Response Summary: As shown below, 97% of the NSC questions and 78% of the GCWE questions were rated 'Good' or better (>3.51). All questions were 'Adequate' or better.

**Distribution of Question Mean Response Metrics
NSC vs. GCWE**



⁷ SYNERGY has performed more than 150 cultural assessments within the nuclear industry -- including 56 nuclear units, 39 locations and 8 corporate locations. The results from recent cultural assessments, generally performed in 2003-2005 timeframe, were used for the purpose of the industry comparisons.



Demographic Variation Summary: The following table provides a summary showing the NSC and GCWE metrics by demographic categories. Also shown is the percent variation or differential of each demographic category from the PVNGS Composite metrics. The relative variations amongst Worker Categories, Positions and Years of Service were found to be similar to what SYNERGY has measured in other cultural assessments; however, the magnitude of the variation amongst the demographics is lesser, indicating the PVNGS culture is somewhat more uniform than other nuclear sites. This is particularly evident for Non-exempt employees and Craft - Technicians where the corresponding metrics are within ~1.5-2.3% of the PVNGS Composite or 'norm.'

| Demographic Category (No. self-identified) ⁸ | NSC Metric | Percent Variation from Site Composite | GCWE Metric | Percent Variation from Site Composite |
|--|------------|---------------------------------------|-------------|---------------------------------------|
| PVNGS Composite (1,861) | 4.07 | - | 3.70 | - |
| Worker Category | | | | |
| Exempt employees (706) | 4.15 | +1.9 | 3.75 | +1.4 |
| Non-exempt employees (911) | 4.00 | -1.6 | 3.64 | -1.5 |
| Position | | | | |
| Managers (75) | 4.40 | +8.1 | 3.96 | +7.1 |
| First Line Supervisors (187) | 4.27 | +5.0 | 3.88 | +4.9 |
| Administrative Staff (121) | 4.17 | +2.5 | 3.83 | +3.5 |
| Engineers & Technical Staff (669) | 4.03 | -0.9 | 3.66 | -1.0 |
| Craft & Technicians (603) | 3.98 | -2.2 | 3.61 | -2.3 |
| Years of Service | | | | |
| < 1 year (35) | 4.52 | +11.2 | 4.41 | +19.4 |
| 1-10 years (253) | 4.14 | +1.8 | 3.81 | +3.0 |
| 11-15 years (322) | 4.05 | -0.5 | 3.68 | -0.4 |
| >15 years (1,174) | 4.05 | -0.4 | 3.66 | -0.9 |

⁸ Note: Some respondents did not indicate either their Worker Category, Position or Years of Service; therefore these figures do not add to the total number of respondents (1,861).

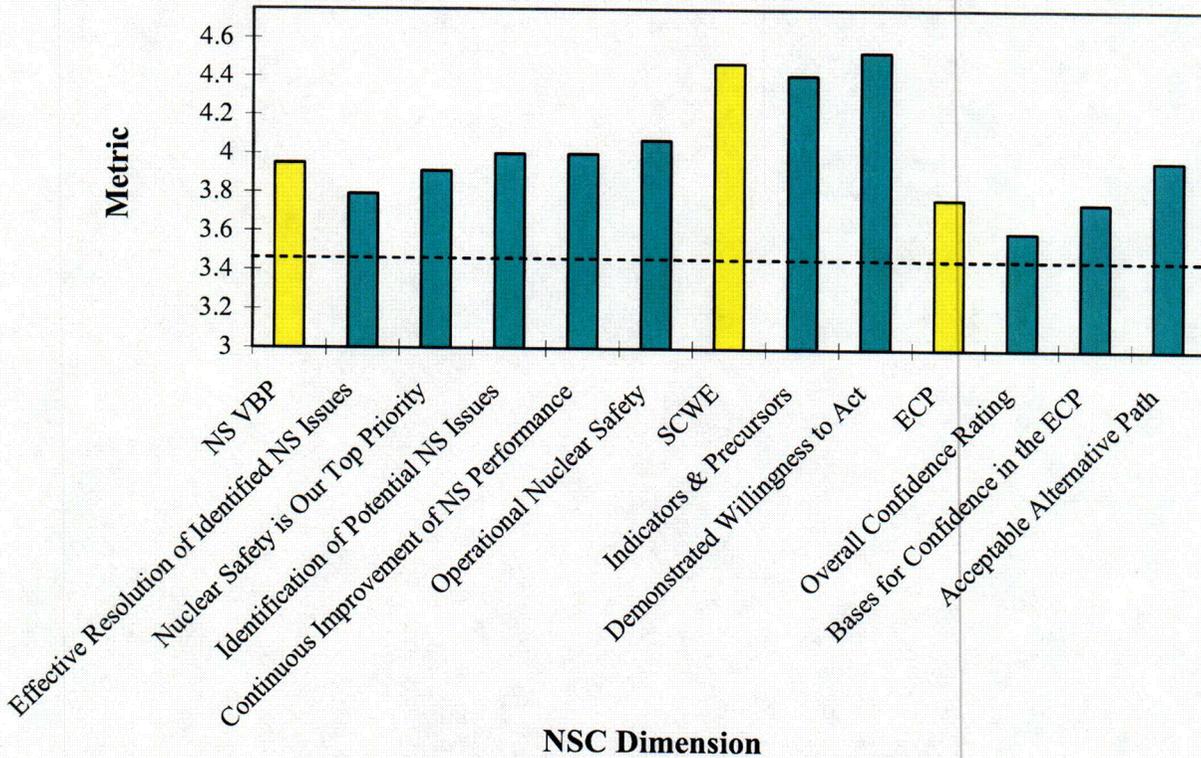


Relative Strengths & Weaknesses Summary:

Nuclear Safety Culture

The following figure summarizes relative Sub-dimension (aqua) strengths for each of the three major Dimensions (yellow) in the NSC model.

**PVNGS Composite NSC Dimensional Summary
(2005 Metrics)**



All of the NSC Dimensions and Sub-dimensions were rated as 'Good' or better (indicated by dashed line).

- NS VBP: 'Operational NS,' 'Continuous Improvement of NS Performance' and 'Identification of Potential NS Issues' are relatively stronger than 'Effective Resolution of Identified NS Issues' and 'NS is Our Top Priority;' however, 'NS is Our Top Priority' is ranked relatively lower than typical; this observation is detailed further in this report.
- SCWE: 'Demonstrated Willingness to Act' (inform, document or escalate) is ranked somewhat higher than 'Indicators & Precursors' (assessment of environmental factors and personal experience). This relationship is typical.
- ECP: 'Acceptable Alternative Path' was rated highest. 'Overall Confidence' was lower than the 'Bases for Confidence' (factors potentially affecting confidence), indicating employees' generalized perceptions are less favorable than their evaluation of key aspects of its execution.



Relative NSC Strengths: The following NSC survey questions were rated > 4.25 ('Very Good to Excellent'):

- Nuclear Safety is the first and over-riding priority at PVNGS (4.26, 97.3% affirmative).
- Raising potential Nuclear Safety issues / concerns being favorably received by ones':
 - Immediate supervision (4.44, 97.6% affirmative).
 - Management (4.29, 96.2% affirmative)
- If one identified a potential Nuclear Safety issue or concern, would:
 - Inform supervision and/or document on CRDR (4.56, 98.5 affirmative); also for any activity that could potentially compromise economic viability or security of PVNGS (4.73, 99.4%).
 - Take up the management chain if unsatisfied by supervisor's response (4.43, 96.3% affirmative); as supported by perceptions of an "open door" to the management chain (4.38, 97.0% affirmative).
- No negative reaction (during the past year) for having raised an issue or concern related to Nuclear Safety by one's:
 - Supervision (4.86, 96.4% affirmative).
 - Peers (4.84, 95.9% affirmative).
 - Management (4.82, 95.4% affirmative).
- Unawareness of someone who, during the past year, had experienced a negative reaction from supervision or management for having raised an issue or concern related to Nuclear Safety (4.43, 85.8% affirmative).

The positive NS VBP write-in comments reinforced the above feedback, indicating NS is viewed as the top priority; NS it is reinforced and supported by management and supervision who exhibit conservative decision-making; there is no hesitation to shutdown the plants to investigate or respond to problems; and front line personnel are committed to identifying and pursuing resolution of potential NS issues, exhibiting questioning attitudes and doing quality work in accordance with procedural requirements. The comments cited the SCWE as a strength, particularly with respect to openness, receptivity and encouragement of management and supervision for raising concerns and the general willingness of the workforce to identify and respond to concerns. The work environment is felt to be "safe" for voicing concerns. Also, there were generalized comments expressing the ECP as a strength, particularly in how the ECP has heightened awareness of avenues for raising and addressing concerns and for approachability of the ECP.

Relative NSC weaknesses: All NSC survey questions were rated > 3.60 ('Good' or better), with the following exceptions:

- Confidence that management is making well thought-out decisions in the allocation of resources to assure that Nuclear Safety is maintained (3.42, 19.4% negative).
- Confidence in the CRDR process ensuring potential Nuclear Safety problems are:
 - Addressed in a timely manner (3.50, 11.5% negative).
 - Resolved in an effective manner (3.55, 11.1% negative).



The most recurring themes expressed in the negative comments on NS VBP centered upon concerns about *maintaining NS as the top priority*, particularly perceptions of putting budget, schedule and productivity priorities above NS; perceptions of *inconsistent messages* being sent by senior management on NS priorities (influence of budget and schedule); concerns about *incentives conflicts* (outage and yearly) with NS priorities; concerns that PVNGS is becoming *less proactive*; concerns related to *impacts of high workload* adversely affecting the NSC (due to resource and staffing constraints); concerns related to various aspects of *work practices* affecting operational NS; and concerns about the *effectiveness of the CRDR* process (being overly burdened with too many insignificant items and concerns about recurring problems and reliability challenges leading some to question the quality and thoroughness of root cause evaluations and the need to conduct better “effectiveness” reviews of corrective actions to find opportunities for process enhancements).

For the SCWE, there were several *generalized concerns about negative reactions*, ridicule, personal remarks, “belittling” or ‘labeling’ from both peers and management for identifying potential NS issues or concerns and a *couple of specific instances* where employees felt pressured / intimidated by their management associated with evaluation of NS issues.

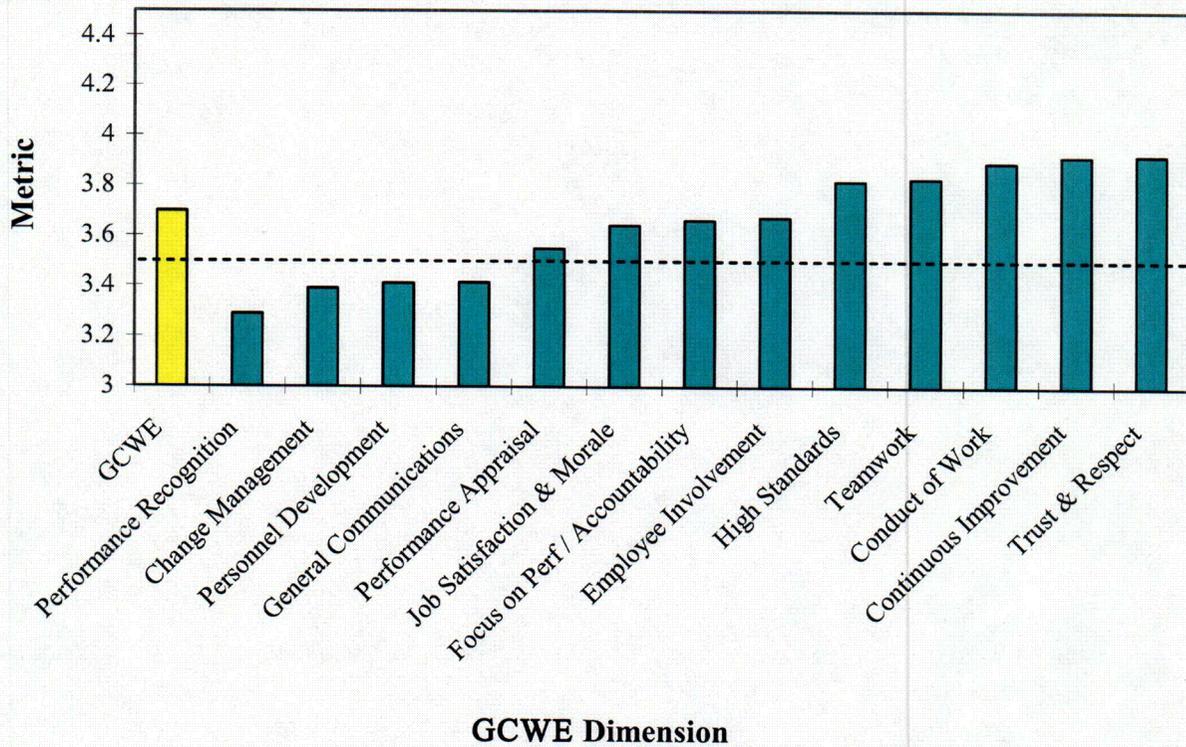
For the ECP, there were a *few generalized concerns* about the ECP having insufficient program independence from management, about program confidentiality and integrity and ECP resolutions not being timely or effective in addressing/correcting the problem.



General Culture & Work Environment

The following figure summarizes relative strengths and weaknesses for each of the thirteen major Dimensions in the GCWE model.

**PVNGS Composite GCWE Dimensional Summary
(2005 Metrics)**



All of the GCWE Dimensions were rated as 'Good' or better (indicated by dashed line) with exception of 'Performance Recognition,' 'Change Management,' 'Personnel Development,' and 'General Communications.' 'Trust & Respect,' 'Continuous Improvement,' 'Conduct of Work,' 'Teamwork' and 'High Standards' were rated as 'Good to Very Good.'

Relative Strengths: The following GCWE survey questions were rated > 4.00 ('Very Good'):

- High performing work culture within work groups:
 - Quality consciousness and attention to details (4.15, 97.6% affirmative).
 - Obtaining supervisory / management input before taking actions on matters beyond normal work procedures / processes (4.13, 97.1% affirmative).
 - Being self-critical and having questioning attitudes (4.09, 96.5% affirmative).
 - Striving to improve performance (4.09, 95.3% affirmative).
 - Identifying one's own problems (4.09, 97.2% affirmative).
 - Holding ourselves accountable for high performance (4.08, 94.3% affirmative).
 - Making conservative, well-balanced decisions (4.02, 96.5% affirmative).



- Within Departments:
 - Having high standards and applying these in the conduct of business (4.10, 95.7% affirmative).
 - Placing importance on performance and results (4.06, 94.6% affirmative).
- Having personal satisfaction in current work assignments (4.01, 93.4% affirmative).

The positive GCWE write-in comments cited the quality, commitment, teamwork and mutual respect of the workforce, a culture of seeking continuous improvement, PVNGS having a good work environment and being a generally “good place to work.”

Relative weaknesses: All GCWE survey questions were rated > 3.50 (‘Good’ or better), with the following exceptions:⁹

- Satisfaction with communications:
 - On priorities as used in decisions and resource allocation (3.29, **21.1%** negative).
 - On future plans for PVNGS (3.47, 14.4% negative).
 - Department management effectively communicating the bases for changes in programs, policies and procedures (3.43, 16.1% negative).
- Concerns about workload having an adverse impact on:
 - Maintaining plant material condition or reliability (3.37, 19.7% negative).
 - Assuring the quality of work products (3.47, 17.4% negative).
- Personnel development and management.
 - Effectiveness in developing people through coaching, training and mentoring (3.23, **24.5%** negative).
 - Supervisors and management holding people accountable for performance and results (3.27, **23.6%** negative).
 - Effectively recognizing performance and accomplishments (3.29, **23.3%** negative).
 - Effectively training on technical / functional aspects of peoples’ jobs (3.37, **20.3%** negative).
- Departmental effectiveness in planning and implementing changes in the way business is done (3.38, 16.6% negative).

The most recurring themes expressed in the negative comments on the GCWE centered upon concerns related to *resource management* (e.g. workload and loss of expertise resulting from aging / retirements, questioning of management’s commitment to replacing lost personnel, the need to do a better job in allocating resources between departments and addressing depleted resources within departments, etc.); concerns related to *accountability* (e.g. concerns about locales within the PVNGS culture where personnel are not being held accountable for their responsibilities and actions, developing complacency amongst some co-workers, etc.); concerns about *declining morale* (e.g. losing pride and ownership of the past - content with “status quo,” concerns some have lost commitment, perceptions about the focus on resource targets, budgets, schedule pressures, increasing workload and generally doing “more with less,” concerns that longer-term (important, but less urgent) projects being neglected will eventually impact performance of PVNGS; perceptions of inadequate “*pay-for-performance*” and lack of

⁹ Negative response percentages greater than 20% are highlighted in bold font.



opportunities for professional growth, etc.); concerns about inadequate **training and learning culture** (e.g. not as actively seeking out new ideas and best-practices as in past, unavailability of budgets for continuing training, etc.); concerns about an inadequate **system and implementation of 'Pay-for Performance' objectives** (e.g. perceptions that the 'system' does not adequately differentiate and reward degrees of performance, incentives are not effective because performance targets are either viewed as unattainable or tied to factors outside an individual's or department's control, etc.); concerns about **high workload** (e.g. practice of not replacing retired personnel is increasing workload, inadequate involvement of leaders in reducing work scope and removing work barriers, growing inability to be proactive due to high workload, etc.); concerns about ineffective **communications** (e.g. "flow" of information on changing plant conditions or problems from top-to-bottom of the organization is variable, some feel expectations from senior management are not effectively communicated by their management and supervision, etc.); perceptions about **employees value and empowerment** (e.g. some personnel feel their ideas are not solicited and when offered, not listened and some feel appropriate people are not always consulted or included in activities where they have expertise, etc.); concerns about the **effectiveness and efficiency of the Work Management process** (e.g. process is not adequately driven by common goals impacting relative work priorities and completion of the most important work, perceptions of a growing number of equipment problems and workarounds resulting from a process that is ineffective, etc.); observations of declining **teamwork** (e.g. citations of a general decline in inter-departmental cooperation, over emphasis on "bean counting" creating silos, reduced teamwork, etc.); and concerns about **process complexity and inefficiency** (e.g. need to get back to "basics" and critically evaluate the effectiveness of site-wide business processes and need to streamline processes).

Overall personal experience and morale (based upon growth opportunities, rewards and the work environment) was measured as declining nominally (18.2% negative response vs. an estimated 16.1% a year ago). Importantly, employees were found to obtain a strong sense of satisfaction from their work (93.4% affirmative), indicating the work itself is fulfilling, but emerging challenges and opportunities for professional growth and rewards are affecting morale. While these ratings remain consistent with current industry norms for high performing organizations, the reasons for the decline as noted above should be monitored to assure employees remain motivated to perform with the high levels of quality, productivity and innovation necessary for success in today's nuclear business environment.



Special Topics

Industrial Safety & Health: The following survey questions were rated > 3.90 ('Very Good'):

- Industrial Safety & Health (ISH) program:
 - Adhering strictly with ISH requirements (4.06, 95.9% affirmative).
 - Department Leaders effectively communicating needs for improving ISH behaviors (3.93, 94.8% affirmative).

The positive comments on ISH cited general observations about the effectiveness of the ISH program including a good ISH culture and safety mindedness of workers, the Company promoting strong ISH behaviors and practices, improving communications towards increasing awareness of risks and precautions, a good safety training program, safety considered prior to work being implemented and effective enforcement of standards and policies.

The negative comments on ISH cited observations / concerns about the *effectiveness of the ISH program* including failures in holding people accountable for wearing personal protection; needs for greater personal ownership, compliance and awareness of hazards; Safety Department needs for greater *visibility, oversight and involvement*; concerns that some management lack *knowledge of OSHA* standards, leading to a lack of focus on ISH; needs for better *recognition and rewards* for safe behaviors and practices; concerns about relaxing ISH standards to facilitate schedule adherence; concerns about attitudes (and effectiveness) associated with *Safety meetings and Safety newsletters*; concerns about the *safety of certain areas*, e.g. weld shop, roads inside protected area, etc.; concerns about lack of availability of equipment leading to injuries, e.g. fork lifts; concerns about the appropriateness of *reactions / responses to various ISH issues*, e.g. eye wash stations, and the need for focusing on matters that will have greater impact; and perceptions of *insufficient budget* to address needed safety improvements.

Management & Leadership: All Special Topic survey questions were rated > 3.50 ('Good' or better), with the following exceptions:

- Departmental supervision and management exhibiting PVNGS Values & Principles:
 - Providing leadership in helping to execute work with maximum effectiveness (3.43, 18.7% negative).
 - Providing leadership in developing plans and processes that are effective and efficient (3.48, 17.2% negative).
- Department Leaders effectively communicating improvement needs associated with:
 - Attaining appropriate staffing levels and expertise in each organization (3.24, 24.9% negative).
 - Management's leadership, personnel management and business management effectiveness (3.47, 16.5% negative).
- Senior Management leadership:
 - Establishing a clear strategy for success (3.45, 15.6% negative).
 - Demonstrating teamwork (3.38, 18.1% negative).
 - Openness and honesty in their communications and interactions with employees (3.34, 20.2% negative).
 - Setting a positive example by practicing what is preached (3.32, 21.9% negative).



- Providing effective leadership in ensuring that necessary changes are being made (3.31, 20.1% negative).
- Being sufficiently visible and accessible to employees (3.30, 22.6% negative).

The positive comments on leadership included general observations about supportive leadership and supervision, management's commitment to maintaining high standards and making PVNGS successful and senior management providing strong leadership, e.g. by "walking-the-talk," being aggressive in attacking 'big' problems, working outages, etc.

The most recurring themes expressed in the negative comments on leadership centered upon concerns related to *confidence in Department Leaders and Directors* (e.g. impacts of the practice of rotating leadership, general and specific concerns about the effectiveness of leadership, observations of increasing competition and lack of teamwork between leaders, perceptions of being unconcerned or 'out-of-touch' about declining morale and expectations for more consistent accountability of leaders); concerns related to *trust and confidence in senior management* (e.g. perceptions of being too concerned about short-term economic performance at the expense of long-term viability of PVNGS, needs for greater presence and interaction, expectations of appropriate level of involvement, handling of staffing issues, perceptions of ineffective empowerment and recognition of employees, concerns about decision-making and perceptions some decisions are perceived as "political" in response to INPO or NRC); concerns related to *supervision* (e.g. not effectively holding employees accountable, a need to be more proactive in responding to problems and suggestions for improvement, perceptions of favoritism and either not informed or not effectively passing on information to employees).

DPO Process: The following survey questions were rated > 3.90 ('Very Good'):

- DPO process effectiveness:
 - Management support for using the DPO process (3.90, 93.7% affirmative).
 - Willingness to use the DPO process for potential Nuclear Safety issues or concerns - based upon the absence of negative reactions (4.05, 94.2% affirmative).

There were too few write-in comments on the DPO process to establish themes.



Organizational Assessment Summary:

The following summary identifies highest and lowest rated Departments and the results of analyses to identify and suggest priorities for organizations that may require further validation, intervention or remediation based upon the 2005 NSCA results.

Higher & Lower Rating Organizations: The following tables show Department-level organizations with mean NSC, SCWE or GCWE metrics either greater than 5% higher or greater than 5% lower than the PVNGS Composite mean (shown for comparison).

PVNGS Higher Rating Departments

| <u>Organization</u> | <u>NSC</u> | <u>SCWE</u> | <u>GCWE</u> |
|----------------------------|-------------------|--------------------|--------------------|
| Other NE&S | 4.39 | 4.70 | 4.15 |
| Info Systems - Technology | 4.35 | | 3.98 |
| Chemistry | 4.34 | 4.73 | 3.96 |
| Nuclear Info. & Rec. Mgmt. | 4.31 | | 3.92 |
| Nuclear Assurance | | 4.78 | |
| Systems Engineering | | 4.69 | |
| Emerg. Serv. Prog. & EP | | | 3.99 |
| Security | | | 3.96 |
| PVNGS Composite | 4.07 | 4.47 | 3.70 |

Lower Rating Departments

| <u>Organization</u> | <u>NSC</u> | <u>SCWE</u> | <u>GCWE</u> |
|----------------------------|-------------------|--------------------|--------------------|
| Operations Support | 3.78 | | 3.32 |
| I&C - Maint. Programs | 3.84 | 4.24 | |
| Project Eng. | 3.85 | 4.10 | |
| Proc.-Stores-Finance | | | 3.31 |
| Valve Services | | | 3.41 |
| RP Operations | | | 3.43 |
| Work Management | | | 3.48 |
| Rad Services | | | 3.50 |



Organizational Analysis: SYNERGY has established and implemented a methodology¹⁰ to identify any specific Department-level organizations that:

- Provided ratings that failed to meet “Industry Norms of Acceptability” -- as interpreted by SYNERGY, or
- Represent, on a relative basis, outliers with respect to “Relative Norms of Performance” based upon comparison with the location’s general performance norms.

This “two-step” methodology provides the ability to differentiate between:

- A situation involving **recommended** investigative or remedial actions to address a targeted organization’s failure to meet industry norms of acceptability; and
- A situation involving **suggested** actions to seek continued improvement in a targeted organization that meets industry norms of acceptability, but is a relative outlier with respect to a site’s general performance norms.¹¹

The methodology also incorporates a capability to identify relative priorities for any recommended or suggested actions.

In applying this methodology, key cultural metrics were evaluated to identify both absolute and relative organizational strengths and weaknesses using complementary analytical techniques and specified selection criteria related to:

- Either low absolute or relative NSC CCI, GCWE CCI and SCWE metric ratings.
- Either high absolute or relative negative response rates (i.e., negative pockets).
- Declining NSC CCI, GCWE CCI or SCWE metric ratings.¹²

Application of “Industry Norms of Acceptability” Criteria

Only one organization, Project Engineering, triggered targeting criteria (Priority Level 3) based upon a high negative response pocket for the SCWE.

**Recommendations for PVNGS Targeted Organizations
Based Upon 2005 NSCA Results – “Industry Norms” Criteria**

| Organization | Priority Level | NSC | SCWE |
|---------------------|----------------|-----|------------|
| Project Engineering | 3 | | 11.8% neg. |

¹⁰ Appendix F provides detailed summaries of the application of SYNERGY’s organizational assessment methodology, selection criteria and ‘targeted’ organizations.

¹¹ Organizations with key cultural metric ratings and/or negative response pockets that are approximately equivalent to the lower quartile of the site’s Department-level Organizations.

¹² Trending data are not available for PVNGS since this NSCA represents an initial baseline assessment



For this Priority Level 3 organization, it is recommended that PVNGS management further evaluate the causative factors for the high negative response pocket in the near-term.

Application of “Relative Norms of Performance” Criteria

The following organizations triggered “Relative Norms” criteria:

**Recommendations for PVNGS Targeted Organizations
Based Upon 2005 NSCA Results – “Relative Norms” Criteria**

| Organization | Priority Level | NSC | SCWE | GCWE |
|-----------------------|----------------|--------------------|--------------------|--------------------|
| Operations Support | 1 | 3.78 12.1% neg. | 7.2% neg. | 3.32 23.9% neg. |
| Project Eng. | 2 | 3.85 14.2% neg. | 4.10 11.8% neg. | |
| I&C - Maint. Programs | 2 | 3.84 9.9% neg. | 4.24 7.9% neg. | |
| Proc.-Stores-Finance | 3 | | | 3.31 23.5% neg. |
| Valve Services | 3 | 8.5% neg. | | 3.41 19.5% neg. |
| RP Operations | 3 | | | 3.43 |
| Work Management | 3 | | | 3.48 18.3% neg. |
| Rad Services | 3 | 9.3% neg. | | 3.50 17.7% neg. |
| Maint. Planning | 4 | 9.6% neg. | | |

For the Priority Level 1 organization, it is recommended that PVNGS management investigate the causative factors for relatively low NSC and GCWE in the near term. For the two Priority 2 organizations, it is suggested that PVNGS management investigate the causative factors for relatively low NSC ratings in the near term. For the five Priority 3 organizations, it is suggested that PVNGS management investigate the causative factors for relatively low GCWE ratings. For the Priority Level 4 organization, in the context of continuous improvement, it is suggested that PVNGS management conduct further evaluation of the causative factors for the relatively high negative response pocket for the NSC.

It is important to note that any actions in accordance with the Priority Levels assigned to individual organizations should be based on the integration of this and other information known to PVNGS management. Such review may result in changes to this initial determination including the deletion or addition of specific organizations from the list.



Opportunities for Continuous Improvement:

There was one issue identified that warrants systematic site-wide attention - with varying degrees of Department-level applicability due to differences in 'texture' and 'intensity.' This summary also highlights opportunities for continuous improvement where the needs are relatively greater in one or more Departments. In most cases, these opportunities are aimed at an objective of continuous improvement, i.e. not necessarily corrective action. Appendix H provides details outlining Departmental outliers from the PVNGS 'norms' for these areas.

Site-wide Opportunities for Continuous Improvement

Reinforcement of 'Standards' in Assuring Nuclear Safety is Maintained as the Top Priority

There is growing uneasiness about whether or not 'critical' standards will continue to be maintained while PVNGS faces competitive business challenges - in particular, standards associated with sustaining strong NS performance while meeting economic performance expectations. Challenges associated with the pressures of workload, allocation of resources, schedule adherence and meeting goals are beginning to impact employee confidence (including the ability to proactively seek continuous improvement through normal work activities and periodic line self-assessments).

The most recurring themes expressed in the negative write-in comments focused on concerns about inadequate resources (staffing levels, aging, lost expertise) and the associated impact on maintaining NS as the top priority in light of continuing pressures associated with budget / cost-control and emphasis on schedule adherence / short outages.

A growing number of employees feel that *workload* is having an adverse impact on their ability to identify (3.69 mean, 13.0% negative response) and effectively resolve (3.67 mean, 12.1% negative response) potential NS issues or concerns and maintain material condition and reliability of the plant (3.37 mean, 19.7% negative response). In certain Departments, the impact of workload is felt to be much higher, i.e. negative responses of greater than 30%.

There are growing perceptions that management needs to do a better job in *allocating resources* (adequate funding, staffing, experience and qualifications) to assure NS is maintained (3.42 mean, 19.4% negative response). To some extent, these challenges may be related to concerns about the quality and quantity of *communications* on priorities as used in decisions and resource allocation (3.29 mean, 21.1% negative response) and on appropriate staffing levels and expertise (3.24 mean, 24.9% negative response). In certain Departments, the perceptions of management's performance in each of these areas are worse than the PVNGS Composite, i.e. negative responses of greater than 30%.

These findings suggest a need for more effective reinforcement of critical Nuclear Safety 'standards' and how these will be maintained, explanation of priorities and the bases for decisions and substantive management involvement in resolving resource and other constraints. These efforts may also include initiatives to reduce low value-added scope and to pursue process streamlining efficiencies, e.g. work management, CRDR and other site-wide processes.



Department-specific Opportunities for Continuous Improvement

Reinforcement of the Safety Conscious Work Environment

The overall PVNGS SCWE is “Very Good to Excellent,” but the assessment identified relatively greater environmental ‘pressures’ within certain Departments that may warrant management attention to assure that the SCWE remains strong. Notwithstanding these environmental challenges, high percentages of employees (98.5%) indicated they would inform supervision or document a potential NS issue or concern and if not satisfied with their supervisor’s response, 96.3% indicated they would take the issue or concern further up the management chain.

Site-wide, 14.2% of respondents indicated they were aware of others who had experienced a negative reaction over the last year from supervision or management for having raised an issue or concern related to NS. In certain Departments, perceptions were more negative, i.e. 20 - 29% for respondents saying they were aware of such negative reactions. Employees’ perceptions associated with this topic can represent a recent event / situation that received high visibility either within a specific organization or across several / many organizations or may represent precursors (leading indicators) of developing problems.

In the write-in comments there were several generalized concerns about negative reactions, ridicule, personal remarks, “belittling” or ‘labeling’ from both peers and management for identifying a potential NS issue or concern and only two instances where employees shared specific circumstances.

These findings suggest a need for more effective local reinforcement of SCWE ‘expectations and standards’ with management, supervision and workers alike. Appendix D provides a detailed summary identifying the affected Departments.

Employee Confidence in the Employee Concerns Program

Employee confidence in the effectiveness of the ECP is ‘Good to Very Good;’ however, this high confidence level is not uniform across the site. While overall confidence is ‘Adequate’ or better in all organizations, there are pockets of negative ratings of over 20% in some Departments. In some cases, this confidence is based upon expectations of greater visibility or management support of the ECP. There were relatively few generalized write-in comments about insufficient program independence from management, program confidentiality and integrity and ECP resolutions not being timely or effective in addressing / correcting the problem.

Accordingly, there is a need to understand and address the local drivers leading to the negative perceptions of the ECP in affected organizations (identified in Appendix H) and more generally, to communicate how the ECP is adding value. Since confidence goes beyond effective administrative stewardship of the program, there may also be a need for line management communications and support that links the ECP as a critical adjunct to the overall NSC.



Confidence in the Effectiveness of the Corrective Action Program (CRDR Process)

The NSCA showed 'Good' or better ratings of the CRDR process overall. *Timeliness* and *effective resolutions* of potential NS problems dominated the most critical survey inputs with just over an 11% negative response overall; however, in some Departments (as noted in Appendix H), the negative ratings were over 20% for these areas as well as for effectively addressing root causes.

The write-in comments cited concerns about the CRDR process being overly burdened with too many insignificant items. There were also concerns about recurring problems and reliability challenges leading some to question the quality and thoroughness of root cause evaluations and the need to conduct better "effectiveness" reviews of corrective actions to find opportunities for process enhancements.

These findings suggest a need to understand and address the local barriers leading to the negative perceptions of the CRDR process in the affected organizations (identified in Appendix H).

Change Management

Several aspects of 'Change Management' were rated relatively lower site-wide, with approximately a third of the Departments providing less-than-adequate ratings: *effectiveness in planning & implementing changes* (3.38 mean, 16.6% negative response), *communications of the bases for changes* (3.43 mean, 16.1% negative response) and *senior management leadership in ensuring necessary changes are made* (3.31 mean, 20.1% negative response). As summarized in Appendix H, the negative response rates for these topics ranged from ~20-40% in the affected Departments.

Given the magnitude of changes likely to be necessary in the future, management attention to the effective use of change management principles within affected Departments is suggested to enhance both the quality / potential for success of such changes and organizational receptivity and support of the changes.

Effective Personnel Management & Development

Almost one quarter of respondents feel that PVNGS is not effective enough in *recognizing performance and accomplishments* (3.29 mean, 23.3% negative response) or *holding people accountable for performance* (3.27 mean, 23.6% negative response). Approximately a third of the Departments provided less-than-adequate ratings of these topics, with negative response rates in the ~30 - 50% range (as noted in Appendix H).

The write-in comments included a relatively high number of concerns about locales where personnel are not being held accountable for their responsibilities and actions, developing complacency amongst some co-workers and perceived failures by some management to hold people accountable for producing and following procedures. This matter contributes to concerns about workload and perceptions of unfairness of shifting work to higher producers.



The comments also addressed perceptions that PVNGS needs to become more effective recognizing and celebrating contributions and successes. Some employees feel they are not valued and effectively empowered. Other personnel feel their ideas are not solicited and when offered, not listened or that appropriate people are not always consulted or included in activities where they have expertise. These factors impact future willingness to contribute to process improvement initiatives. There are also perceptions that the Pay-for Performance incentive 'system' does not adequately differentiate and reward degrees of performance. Some feel incentives are not effective because performance targets are either viewed as unattainable or tied to factors outside an individual's or department's control.

Effectiveness of personnel development was rated relatively low in some organizations: *developing people through coaching, training and mentoring* (3.23, 24.5% negative response) and *training on technical / functional aspects of peoples' jobs* (3.37 mean, 20.3% negative response). Approximately a third of the Departments provided less-than-adequate ratings of these topics, with negative response rates in the ~30 - 50% range (as noted in Appendix H).

The write-in comments expressed concerns about inadequate training, unavailability of budgets for continuing training and less of a learning culture at PVNGS. Some observed that PVNGS is not as actively seeking out new ideas and best-practices as in past and that there is less time to systematically learn from mistakes. Others cited a need for more 'on-the-job' training (Maintenance) and technical / systems training (Engineering). The loss of personnel through attrition and retirements has contributed to concerns about too much reliance on 'tribal' knowledge and the need to build this experience into processes and procedures.

Collectively, these personnel management and development topics, coupled with concerns about workload are beginning to show signs of adversely affecting morale and teamwork. Therefore, it is suggested that affirmative action be taken within affected Departments to enhance day-to-day practices to sufficiently and appropriately recognize the performance and accomplishments of employees, to place increased emphasis and accountability on supervision and management to enhance their effectiveness in coaching / mentoring their staffs and for maintaining substantive levels of accountability and motivation for performance within their organizations.

Trust & Confidence in Senior Management

Approximately 20% of respondents provided less-than-adequate ratings of certain aspects of senior management's leadership: perceived openness & honesty in communications (3.34 mean, 20.2% negative), visibility & accessibility (3.30 mean, 22.6% negative), setting a positive example (3.32 mean, 21.9% negative) and influence promoting NS priorities (3.79 mean, 10.0% negative). Approximately a third of the Departments provided less-than-adequate ratings of these topics, with negative response rates in the ~30 - 40% range (as noted in Appendix H). Perceptions of NS-related involvement of senior management are much stronger. Based upon the write-in comments, the ratings are driven by a variety of general leadership and management concerns (refer to Appendix E for details). It is suggested that senior management place increased emphasis on face-to-face communications with the workforce -- to explain, to clarify, and to obtain the feedback as necessary to make appropriate adjustments in addressing the issues described in this assessment.