Nuclear Oversight 1st Quarter of 2010 Assessment Report for Prairie Island

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Signature

Site Exit: 10 June 2010

Date

Table of Contents

Executive Summary

Effectiveness Statements

Quality Assurance Program Implementation

Based on assessment results during the 1st quarter of 2010, Nuclear Oversight has concluded that Prairie Island was operated in accordance with the Quality Assurance Program requirements, with two (2) exceptions resulting in the following Adverse Assessment Findings:

1. Radioactive sources loss of accountability (CAP 01214190)
2. Significant Keys control loss of accountability (CAP 01214773)

Noteworthy Site Performance:
The station has shown some improvement for the 1st Quarter in Station clock resets and Industrial Safety events. While the absolute numbers are not meeting goals nor where the station wants to be, they are improving. The Corrective Maintenance Backlog has been reduced for online work orders from thirty (30) to nine (9). This has been a coordinated effort between the Fix it Now (FIN) team, Planning, Maintenance and Operations to meet the goal of less than five (5) Corrective work activities per unit.

Performance Effectiveness

Nuclear Oversight further concluded that overall site performance was *below expectations*.

Assessment:
The Station performance for the first quarter of 2010 was evaluated as *below expectations*. The basis for this evaluation is a reflection of the departmental performance during this reporting period. The following departments were assessed as below expectations: Operations, Maintenance, Radiation Protection, Engineering, Emergency Planning and Corrective Action Program. The performance of the station for the 1st Quarter of 2010 can be summarized with less than adequate performance for the 1st half of the Quarter and an improving trend for the 2nd half of the Quarter. Events in this quarter can be categorized into three (3) areas:

1. Latent events.
2. Organizational events.
3. Human performance (HU) events.

Latent events Latent issues are events that have already occurred but have not been identified. Many of these latent issues have revealed themselves to the station due to: a) the behavior/standard existed in the past and due to current higher standards the latent issue is uncovered and b) the latent issue is uncovered by an independent review. Most of these events are surfacing due to identification by independent organizations. These latent issues will only become self identified when there is a stronger questioning attitude by the station to challenge anytime they hear "that is the way we have always done this before." Examples:

- There were insufficient controls applied by the station for radioactive sources which uncovered a lost source greater than the reportable quantity in table C of 10CFR20.2201 (CAP 01214190).
- A near miss event with respect to tracking Unavailability and Mitigating System Performance. The near miss event was a loss of margin to MSPI and Maintenance Rule unavailability which pointed out to station management that multiple departments, including Planning, Operations and Work Control, had a knowledge gap for tracking, minimizing risk, and understanding consequences of exceeding preset milestones for Maintenance Rule, Unavailability, and Mitigating System Performance Indicators (MSPI) (CAP 01217075).
- During an NOS assessment, it was noted there were instances of personnel not writing CAPs when events or conditions required a CAP due to a variety of incorrect assumptions. (CAP 01211532)
- As a result of an NRC plant walk down, it was noted that the Fuel Oil Storage Tanks transfer pumps motor starters in support of the Diesel Driven Cooling Pumps where located in an area susceptible to an internal flooding event, thus requiring an unplanned entry into Technical Specification 3.8.3.a. This condition had existed for a number of years. (CAP 01217275)
- And finally, the Emergency Action Level scheme for Remedial Action Schemes RA 1.1 and RA 1.2 required reading instruments for ALERT classification which was beyond their meter capabilities. The condition existed since 2006 and has resulted in an NRC violation with a severity of potentially a "White" finding. (CAP 01183937, 01159643, and 01221036)

Organizational Events Organizational events for this quarter were the result of insufficient coordination by staff between programs or processes. These programs or processes do not fix problems by themselves; staff personnel working with other staff outside of their department fix problems. These organizational events indicate the need for better intra-departmental coordination. Examples:

- The D3 diesel caught fire during surveillance testing and required off-site fire department response to suppress. Inadequate Preventative Maintenance (PMs) for the turbocharger and inadequate Operating procedures for warm up and cool down of the D3 are the preliminary causes. (CAP 01214547)
- An unplanned entry into Technical Specification LCO was made due to inadequate surveillance testing methodology for Component Cooling check valve CC-5-2. (CAP 01215434)
- The 122 Diesel Cooling Water Oil Storage Tank Pump failed due to burned out motor capacitors. The capacitor failure was due to age related degradation, which was caused by the absence of any PM in place to replace these capacitors. These capacitors were in place for fifteen (15) years and the guidance in FP-E-CAP-01 is for replacement every ten (10) years. (CAP 01215266)

Human Performance events

The Human Performance events that have occurred in the 1st Quarter 2010, demonstrate that some Prairie Island staff still have a deeply imbedded cultural belief that informality with Processes, Procedures and Plant evolutions is acceptable. This culture and the resultant behaviors have been realized in the 1st Quarter with Significant Station events and NRC violations. Examples:

- The most poignant example of this was the Level 3 Reactivity event. Less than adequate Place Keeping, Procedure Use, Procedure Adherence, Pre-Job Brief, Verification and Validation, and Supervisory Oversight were only some of the "Enablers of Excellence" which did not meet Management's expectations. It is also apparent from this event that this was not the first time these behaviors were applied and it was not the first time they were accepted by supervision.

- D1 Diesel Generator was declared inoperable because the oil fill container hose extension fell into the lube oil sump. This was due to inadequate verification that the hose extension was snugly fitted to the oil fill can. (CAP 01222649)

- During new fuel receipt a fully loaded canister was inadvertently lifted and returned to the ground. Less than adequate communication between the lead rigger and the hoist operator was the cause of this near miss event; however this human performance error was compounded by delayed communication of this event to station management. (CAP 01222106)

Departmental Performance:

Summary of Operations Performance: The Operations department had a significant Human Performance event during this reporting period; i.e. a Level 3 reactivity event due to failure to use the Human Performance tools during an I&C surveillance procedure. This should have been a watershed event for the department and the station; however there have been consequential events due to failure to use Human Performance tools later in this reporting period. An example of this occurred when adding oil to the D1 diesel generator which resulted in an Unplanned LCO and extended unavailability for this diesel generator. Operations leadership needs improvement, specifically: a) formality of configuration control, b) demanding stronger procedures and c) ownership of work products that require License holder approval.

Summary of Maintenance Department Performance: The Maintenance department has had success in reducing the backlog of Corrective Maintenance activities to reach the Fleet goal. Prior to 2R26, the department had reduced the rework for the department from 1.2% to 0.8% again meeting the Fleet goal of less than 1%. However, Human Performance events continue to challenge Maintenance supervision and craft. Also, procedure use and compliance with work instructions are a continuing adverse trend with less than adequate performance for the department. Work order walk downs to meet the T-week schedule are another continuing trend which did not meet expectations during this reporting period. Compliance with the fatigue rule for the staff and supervision has not been successful and has resulted in regulatory concerns.

Summary of Radiation Protection Performance: While the overall performance of the Radiation Protection department improved during the latter part of this reporting period, two (2) Station significant events, Loss of Radioactive Sources and Inadequate Controls over Very High Radiation Area keys overshadowed this performance. While some aspects of these events were legacy conditions, especially with respect to programmatic controls, some current behaviors within these events, specifically, not submitting CAPs when a loss of radioactive sources became apparent and not recognizing when an NRC reportable condition existed is disturbing. With changes in the management structure of the Radiation Protection department, a key opportunity exists to set new and higher standards of performance to address these behaviors.

Summary of Engineering Performance (Includes: Modifications, Accident Analysis and Q-list): The Engineering department currently is understaffed to their budgeted headcount. This, in combination with significant current issues and pending inspections, has required re-allocation of resources to address these challenges. These challenges have contributed to quality issues for products that Engineering supplies. An example of this is the NRC violation received by the station regarding repeat issues with Operability Recommendations. There is a knowledge gap at the station for tracking, minimizing risk, and understanding the consequences of exceeding preset milestones for Maintenance Rule, Unavailability, and Mitigating System Performance Indicators that has contributed to current lower quartile performance.

Summary of Corrective Action Program Performance: Significant initiatives have been leveraged in area of the Corrective Action Program. These have mostly been changing the process, changing the representation at meetings, challenging the previous standards and training. These have resulted in improvements in the program, especially with PARB and TRP holding to higher standards than previously achieved. Behaviors of the staff were expected to be changed by training, feedback from the PARB, TRP and coaching. This change in behavior for the staff has not been realized in this reporting period. The station has had repeat events which have required additional causal evaluations and rework. The station is losing ground on the CAP backlogs despite efforts to turn these around.

Summary of Emergency Planning Performance: Emergency Planning has had some significant challenges in this reporting period. An example of this would be a potential "White" finding from the NRC due to an inadequate EAL scheme. The station received a violation for this event and has been preparing for a Regulatory Conference to challenge the "White" finding. Other current station issues are:

- Assuring there is a timely response for manning the required thirty (30) and sixty (60) minute responders, this is also a Unresolved Issue (URI) with the NRC
- Evaluation and application of Operating Experience from Fermi Station to address inadvertent siren activations.

Insights:

The station has two Cultural Behaviors which are challenging the station from reaching industry excellence in performance. They are:

- **A Culture of Recovery rather than Prevention**
- **A Culture of Informality with Processes, Procedures and Plant evolutions**

Culture of Recovery rather than Prevention: The mindset that the station can fix or detect an adverse condition after it occurs has been reinforced and in some cases rewarded. The difficult activity of planning in advance with formal processes and procedures, thus placing the station in a prevention mode has not yet been embraced by all of the station's staff.

Culture of Informality with Processes, Procedures and Plant evolutions: The disciplined use of procedures and the meticulous adherence to those procedures as the only means of doing business at the station has not been fully internalized either. Compounding the negative aspect of this behavior is that it has been exhibited by some of the most experienced personnel at the station. Some examples of this are:

- Unplanned Orange Risk condition. The station had no checklists for the Operations staff to make a positive determination that the RCS was "Intact." The current procedures led the operations staff to wait until the pressurizer reached 30% level and then with no leaks noted, the Operations staff could now call the RCS "Intact." If leaks were found at 30% in the pressurizer the station would be in a **Recovery mode** to determine the source of the leak and repair. A **Prevention mode** would have had continuous positive checks and controls over all the RCS boundary valves.
- Loss of accountability for Radioactive Sources The programmatic controls and formality of process did not exist for the control of radioactive sources at the station. The process allowed for up to six (6) months to complete accountability and had no checks for meeting reportability requirements with loss of accountability of radioactive sources. This **Informality of process** laid the ground work for this type of event to occur at the station. Unavoidably the station was challenged with the required actions of **Recovery** for these sources and in fact, had to report that one source could not be accounted for. Elements of this same interaction between **Informality of process** and placing the station in a **Recovery mode** was seen with the control of Very High Radiation Area (VHRA)/Station significant keys and previously with the DOT limits exceeded for Radioactive Shipments.

- Unplanned INOP of both RHR systems Surveillance procedure SP 2369 "Exercising 21 and 22 RHR pump suction line check valves" was written to test both trains of RHR (21 and 22) at the same time. A failure of this Surveillance procedure would not tell the staff if just one or both check valves failed, thus the station was forced to assume that both check valves had failed and this required declaring both RHR systems inoperable. A failure of this surveillance put the station in a **Recovery mode** to discovery which one or both check valves that failed.
- FME FME procedures have been benchmarked with other stations and they are comparable. Behaviors with respect to FME demonstrate a bias toward **Recovery** methods in preventing damage to equipment rather than a bias to **Preventing** FME from occurring. These behaviors include, protecting the upper threads of the Reactor head studs but not protecting the lower threads, adding oil to the Diesel Generator with an unsecured tube, not securing bolts before unthreading them from man-way covers, failure to plug or cover all hose ends before moving or lifting, attaching lanyards to all equipment before entering inside FME, conducting pre-job briefs emphasizing the **Prevention** techniques rather than the contingency plans.
- Level 3 Reactivity events Station Operators failed to follow the continuous use procedure requirements of signing off each step as it was performed. The Human Performance practices that did not meet expectations were improper peer checks, reader doer practices, no pre-job brief and less than adequate supervisory oversight. This **Informality with procedure use and Informality with Reactivity evolutions** caused an unplanned power change which required immediate operator action to terminate.
- Potential "White" Finding. The station received a potential "White" finding for revisions done to the Emergency Action Levels (EALs) and EALs schemes. The guidance for making these changes was found in existing 50.54(q) procedures, but the procedure guidance to develop, validate, verify and approve these significant changes was non existent. Changes in the past were done with high reliance on individual talent and very little institutionalized processes. This **Informality with processes** placed the station into a **Recovery mode** with the preparations required of a Regulatory Conference with the NRC.
- Unplanned LCO While performing a system line up for Fan Coil Units, a station operator proceeded to the job location without a copy of the procedure needed to complete a system line up. Procedure use for this activity required the procedure to be at the job location and steps marked off after completion of a section. Familiarity and overconfidence with the task challenged the better judgment of the operator and they performed the system line up without any procedure at the job site. Two required open manual valves were missed. This **Informality with procedure use** requirements resulted in a loss of one half of containment cooling, an Unplanned LCO and the required **Recovery mode** efforts of priority one maintenance activities.

Until the station challenges these cultural based behaviors of Informality and Recovery, there will continue to be events like these. The staff time and effort to recover from events described here is significant. The challenges these events present to Operations staff and the attention required for resolution are error likely situations. This same time and effort could be applied to equipment improvement initiatives, reduction in backlogs and strengthening the corrective action process.

NOS Findings:
During this reporting period the following Adverse Assessment Findings and NOS findings were noted.

Safety Culture:

1. There was a potentially chilled work environment that was identified where personnel stated they are reluctant to write CAPs for project issues (e.g., missed milestones, schedule slippages, cost control issues) due to the concern of repercussions from their management, however, no specific examples of staff not writing CAPs for concerns was identified.

Adverse Assessment Findings:

1. Radioactive sources loss of accountability (CAP 01214190)
2. Significant Key control loss of accountability (CAP 01214773)

Findings:

1. Fuel oil testing discrepancies at Chestnut services (CAP 01218437)
2. Insufficient action taken to correct ERO augmentation times (CAP 01219975)
3. Potential Chilled work environment (CAP 01220975)
4. Conditions Adverse to Quality closed without action taken (CAP 01222143)
5. Previous Usage Evaluations for M&TE issues (CAP 01225414)

Adverse Trend:

1. Adverse Trend in Procedure Change Process (CAP 01214810)

Nuclear Oversight 1st Quarter 2010 Assessment for Prairie Island

This table reflects NOS performance rating of areas assessed for the past six Quarters. Areas rated below expectations for two consecutive periods require recovery plans approved by the site Vice President and reviewed by the Performance Assessment Review Board (PARB).

Performance Rating Trends

Exceeds Expectations *Meets Expectations* ***Below Expectations***

		4Q08	1Q09	2Q09	3Q09	4Q09	1Q10	Trend
Quarterly	Site	Site	Site	Site	Site	Site	Site	→
	Operations	Operations	Operations/ Equipment Control	Operations/ Refueling	Operations	Operations	Operations/ Equipment Control	→
	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	→
	Radiological Protection	Radiological Protection	Radiological Protection	Radiological Protection/ Environmental Monitoring	Radiological Protection	Radiological Protection	Radiological Protection	→
	Training	Training	Training/Staff Qualifications	Training	Training	Training	Training/Staff Qualifications	→
	Corrective Actions	Corrective Actions	Corrective Actions	Corrective Actions	Corrective Actions	Corrective Actions	Corrective Actions	→
	Engineering	Engineering	Engineering	Engineering	Engineering	Engineering	Engineering	→

------ Annual Assessments -------

Annually	Miscellaneous	System Engineering	Modification	Inservice Inspection	Core Design	System Engineering	Modification	→
		Surveillance Testing	Q List / Accident Analysis	Special Processes	Inservice Testing / Engineering Programs	Surveillance Testing	Q List / Accident Analysis	→
		Operating Experience / Self Assessment	Emergency Planning	Access Authorization/ Fitness For Duty	Security / Records	Operating Experience / Self Assessment	Emergency Planning	→
		Procurement	Software Quality Assurance		Document Control	Procurement	Software Quality Assurance	→
		Fire Protection	PORC	Production Planning / Scheduling / Chemistry	ISFSI	Fire Protection / Material Control	PORC	→
		Materials Control	M & TE/IPI	Post Modification Maintenance Testing			M & TE/IPI	→
		Reg Affairs		Industrial Safety		Reg Affairs		→

ASSESSMENT RESULTS SUMMARY

Assessments Results Summary

Plant Operations

Plant Operations (includes Equipment Control) performance was assessed as *below expectations*.

Plant Operations is assessed quarterly and has been below expectations since the 4th Quarter of 2006. Equipment Control is assessed annually and has been below expectation since 1st Quarter of 2009.

An **Adverse Assessment Finding** (AAF) was issued due to the site key control program lacking ownership and adequate procedural controls. Procedural Compliance with existing procedures is less than adequate. As a result, the station has had improper controls for Radiological and Operationally significant keys with the potential for improper access to protected areas and equipment.

Summary of Operations Performance: The Operations department had a significant Human Performance event during this reporting period; i.e. a Level 3 reactivity event due to failure to use the Human Performance tools during an I&C surveillance procedure. This should have been a watershed event for the department and the station; however there have been consequential events due to failure to use Human Performance tools later in this reporting period. An example of this occurred when adding oil to the D1 diesel generator which resulted in an Unplanned LCO and extended unavailability for this diesel generator. Operations leadership needs improvement, specifically: a) formality of configuration control, b) demanding stronger procedures and c) ownership of work products that require License holder approval.

The basis for the *below expectations* evaluation is less than adequate performance in the areas of INPO Performance Objective **(OP.1) Criteria # 8** "Activities that change reactivity are performed in a deliberate and controlled manner. Detailed procedures are followed, human error prevention techniques are used, and increased supervisor oversight is provided to minimize the probability and consequences of a reactivity management event." INPO Performance Objective **(OF.2) Criteria #** 3 "The scope, consequences, and significance of the condition are clearly defined and alternative decision paths are evaluated thoroughly. Evaluations include a thorough review of in-house and industry operating experience. Personnel with necessary knowledge, skill, and experience are included in the review." **(OP.1) Criteria #25** "Operations personnel monitor and control the plant in a manner that results in safe, reliable operation. Operators use human error prevention, radiological protection, and industrial safety techniques while conducting plant activities.

NOS Assessment:

1. Noteworthy Performance:

Clearance and tagging events have been reduced and a new EPRI-based performance indicator was established to measure performance. Operations is writing more low level CAPs to identify clearance issues in the preparation and review phase to learn from them and prevent unprotected workers or equipment damage. While a few human performance errors have led to events, the overall trend in the operations department is improving with respect to the frequency of human performance errors. This can be attributed to supervisory reinforcement of standards.

2. Areas for concern:

OP.1 Criteria # 8 "Activities that change reactivity are performed in a deliberate and controlled manner. Detailed procedures are followed, human error prevention techniques are used, and increased supervisor oversight is provided to minimize the probability and consequences of a reactivity management event."

Examples of this are events where Human Performance tools were not utilized correctly resulting in a Level 3 Reactivity event which required operator intervention to prevent a more significant power transient.

Reactivity Transient

A level 3 reactivity event occurred during surveillance testing of Turbine First Stage Turbine Pressure (PT-485) in accordance with SP 1003, "Analog Protection Functional Test." when control rods unexpectedly began to automatically insert. Operators' response required that they take manual control of control rods to stop the transient which resulted in a reduction in Reactor Power from 100% to 94.3%, a reduction in RCS average temperature of approximately 6F and a reduction in margin to Technical Specification Safety Limits. This event was a result of a step to place the control rods in manual, which would have prevented uncontrolled rod motion, was signed off as completed in the procedure by operations personnel but, in fact, had not been performed. The Human Performance tools of pre-job brief, procedure use, place-keeping, and the peer check all were all inadequate. Duty operations personnel were requested by I&C personnel to perform steps to place Steam Dump in Steam Pressure mode in accordance with steps in SP 1003. These steps to be performed place Steam Dump in Steam Pressure, and place Control Rods to Manual. One operator read the steps to be performed to another operator performing the steps. The reader only read three (3) of the steps pertaining to aligning steam dumps, but did not read the 4th step to place control rods in manual. The reader then signed off all four (4) steps as complete. The performer completed the steps exactly as the reader stated, but was not reading them from the procedure. I&C held a pre-job brief for this activity and had marked these steps as critical steps; however, control room operators were not present. This event resulted in a NRC violation, specifically: Self Revealing Green NCV of 10CFR 50, Appendix B, Criterion V, Mitigating Systems Cornerstone with a cross-cutting aspect in Human Performance, Work Practices, Human Error Prevent Techniques (H.4.a).

OF.2 Criteria # 3 "Operational decisions are reached using a systematic and thorough method that supports safe, reliable plant operation. The scope, consequences, and significance of the condition are clearly defined and alternative decision paths are evaluated thoroughly. Evaluations include a thorough review of in-house and industry operating experience. Personnel with necessary knowledge, skill, and experience are included in the review."

Operational Decision Making

There is an adverse trend in the quality of the Operability Recommendations approved by Operations. This has evidenced itself by the number of Operability recommendations which have required revision after approval. These revisions are, for the most part, occurring after the OPR has been approved by Operations Management with comments that are received from NRC, NOS or Station Management. While the Operability Recommendations from Engineering are less than adequate, the final decision and responsibility for Operability Determinations lie with the Senior Reactor License holder on shift. This is an ownership behavior for the Operations Department that may require an increase in the number of barriers, at least in the near term, and sustainable changes to prevent recurrence in the long term. Examples of this are:

- "CR Chiller room Operability determination incorrect." (CAP 01225847) This CAP was the result of the station's failure to respond to previous input from NOS that the Operability Determination for the Main Control room Chiller Room under CAP 01223375 was incorrect. The Operability determination under this CAP was based upon the use of GOTHIC software. This GOTHIC software is not a USAR approved methodology (i.e. Software) for the Chiller rooms. It is approved for other areas in the plant but it was NOT for the Chiller rooms. As such the Operability determination of "Operable" was based upon an unapproved methodology.

- The Operability recommendation completed for D5 diesel generator as a result of a sharp increase in engine number two (2) crankcase pressure contained an erroneous statement in several places that was contrary to the operability conclusion of the document. Specifically; for an Operable but Degraded determination the OPR stated that:

  "In its present condition, it is unclear whether D5 could satisfactorily complete all of its TS surveillance requirements as written (specifically the requirements specified in the 24 hour load run SP 2334, if no maintenance were to be performed ."

  Although, this sentence had been identified by the approving manager during the approval process and provided to the preparer for correction, the removal of the sentence was missed and was not challenged by Operations when approved. This also resulted in a NRC violation, specifically: NRC Identified Green NCV of 10CFR 50, App B, Criterion V (Instructions, Procedures, and Drawings), Mitigating Systems Cornerstone with a cross-cutting aspect in the area of Human Performance, Decision Making, Systematic Process (H.1.a).

Human Performance Tools

OP.1 Criteria #25 "Operations personnel monitor and control the plant in a manner that results in safe, reliable operation. Operators use human error prevention, radiological protection, and industrial safety techniques while conducting plant activities.

Two (2) examples where the use of Human Performance tools would have assisted the Operations staff in preventing equipment damage and unplanned Safety System Unavailability. They are:

- Operators were adding approximately twenty (20) gallons of lube oil to D1 Diesel Generator using new "Oilsafe"© containers prior to the scheduled run. After a container of oil was poured into the sump, the seven (7) inch long and one (1) inch diameter "Tygon"© hose extension and nozzle detached from the container and fell through the plug hole into the diesel sump. D1 was declared inoperable due to the foreign material concern and a Priority one (1) work order to recover the material was planned and executed. This resulted in approximately twenty six (26) additional hours of unavailability on a system already in a RED status for Maintenance rule availability. The Human performance tool that could have prevented this condition was Verification and Validation. The oil sump is a HIGH FME zone. The FME procedure, "Foreign Material Exclusion Program Description" (5AWI 8.7.0 section 5.2) charges the worker with the responsibilities to include: "Inspecting tools that will be used in or around open or breached systems to verify they will not be a source of FM." The hoses were not physically checked for attachment prior to use. (01222649)

- To support removal of foreign material from the D1 lube oil sump, clearance order isolation was developed to prevent the engine from starting while retrieving the foreign material. In an effort to minimize out of service time, the clearance order was written to keep the air receivers pressurized while the FME retrieval was in progress. The clearance order directed closing the air supply valves to the air start motors. This had the unintended consequence of isolating a pressure switch which caused the air compressors to start on low pressure signal with no feedback signal to stop the compressors. This resulted in over pressurizing the air receivers. As a result, the Relief Valve lifted which necessitated its replacement. The Human Performance tools that could have prevented this condition were: 1. Job Planning and Preparation failed to recognize the effect of the isolation on the air compressor and Verification and Validation; in that an independent Operator missed this in their review of the Clearance order steps.

3. Observation Reports:

NOS assessed the Operations Department during the fourth quarter of 2009 with the following scope:

- Conduct a plant walk down of Locked valves. Are the valves properly positioned, logged, labeled and controlled?
- Configuration control events and miss-positioning events. Are they communicated via the D-15, required reading, to other departments?
- Observe the Use of "Flagging" by the Operations staff. What methods are being used to flag (i.e. post-its, tape, tie wraps)? Is flagging performance consistent across the crews?
- Observe tag-outs. Are vents and drains red tagged IAW procedure? Are Tags plus being used? This will require looking at already hanging tag outs. Are EPRI guidelines being followed? Is the electrical expert review being implemented IAW the CAP 01130406, 01169735, & 01176836?
- Review the Equipment status log. Is all OOS equipment in the plant logged into this Log? What are the exceptions? And are they allowed exceptions IAW procedure?

- Areas that met Expectations:
  - Valves were properly positioned, logged, labeled and controlled.
  - Flagging performance was consistent across the crews.
  - Vents and drains are danger tagged per fleet tagging procedure.
  - Tags plus is being used. EPRI guidelines and the electrical expert review are being implemented.

- Areas that need Improvement:
  - A radiologically significant key for Sump "C" Unit 2 was not controlled in accordance with procedure requirements.
  - Operationally significant keys (E-Series Master Keys) were not controlled in accordance with procedure requirements.
  - The station was missing the opportunity and requirement to share Department Clock reset learning across the site.
  - Several expected alarm lists provided to Operations for several surveillance procedures existed informally in a Maintenance department database instead of being controlled to ensure any applicable plant changes would result in changes to these lists.
  - Some equipment entries in the OOS Log were not completed as required.

4. Issues identified by site/outside organizations and self revealing events:

1. FME inside of D1 Lube Oil Sump 01222649 (self revealing)
2. STOP work order- FME in spent Fuel pool 01224873 (self revealing)
3. 13 CFCU High Vibes 01212310 (self revealing)
4. Steam exclusion Temperature failed off scale low 01212325 (self revealing)
5. 121 CR chilled water pump vibes in alert range 01212897 (self revealing)
6. 1A RTHR Drain tank level transmitter failing 01213245 (self revealing)
7. D3 fire, generator trip and lock out 01214547 (self revealing)
8. 122 Diesel cooling water pump oil storage tank pump failure 01215266 (self revealing)
9. Unplanned LCO for CC-5-2 check valve 01215434 (self revealing)
10. Breaker 211C control switch failed to trip breaker 01217202 (self revealing)
11. D5 lockout 01217274 (self revealing)
12. Unplanned LCO for 121 Safeguards screen 01217738 (self revealing)
13. Found 121 Motor driven cooling pump area temperature controller in manual 01219191 (self revealing)
14. Unplanned LCO for 1R11/1R12 failure 01222564 (self revealing)
15. Unplanned LCO for D2 out of service due to Lube oil leak 01225077 (self revealing)
16. 22 Containment gravity vacuum breaker will not open 01225183 (self revealing)

Maintenance

Maintenance performance (including M&TE) was assessed as *below expectations*.

Maintenance is assessed quarterly and has been evaluated as below expectations since the 4th Quarter of 2006. M&TE is assessed annually and has been evaluated as below expectations since the 1st Quarter 0f 2009.

Summary of Maintenance Department Performance: The Maintenance department has had success in reducing the backlog of Corrective Maintenance activities to reach the Fleet goal. Prior to 2R26, the department had reduced the rework for the department from 1.2% to 0.8% again meeting the Fleet goal of less than 1%. However, Human Performance events continue to challenge Maintenance supervision and craft. Also, procedure use and compliance with work instructions are a continuing adverse trend with less than adequate performance for the department. Work order walk downs to meet the T-week schedule are another continuing trend which did not meet expectations during this reporting period. Compliance with the fatigue rule for the staff and supervision has not been successful and has resulted in regulatory concerns.

The basis for this conclusion is the less than adequate performance in the areas of INPO Performance Objective **(MA.1)** Criteria 19 "Maintenance work is properly authorized, controlled, and documented; and work activities are performed in accordance with controlled procedures, instructions, manuals, and drawings." This is a repeat performance concern from NOS 4th Quarter 2009. Criteria 9 **(OR.3)** "Assigned personnel are technically qualified for the task and are physically and mentally ready to perform the work." **(MA.1)** Criteria 13 "Maintenance workers use proper human error prevention, radiological protection, and industrial safety techniques while conducting plant and shop activities," This is a repeat performance concern from NOS 4th Quarter 2009.

NOS Assessment:

1. Noteworthy Performance:
The Corrective Maintenance Backlog has been reduced for online work orders from thirty (30) to nine (9). This has been a coordinated effort between the Fix it Now (FIN) team, Planning, Maintenance and Operations to meet the goal of less than five (5) Corrective work activities per unit. Maintenance Rework and Maintenance avoidable rework have both improved in the reporting period and both currently exceed Fleet goals.

2. Areas for concern:

Procedure/Work Instruction Use and Adherence

MA.1 Criteria 19 "Maintenance work is properly authorized, controlled, and documented; and work activities are performed in accordance with controlled procedures, instructions, manuals, and drawings."

Repeat of 4th Quarter Concern: Maintenance activities are not consistently performed in accordance with procedures, instructions or management's expectations. As a consequence of this performance the station: received an NRC violation for no compensatory actions with an inoperable fire barrier (01197554), had an NRC reportable event for less than adequate control of regulatory significant keys (01214773). Other examples of failure to use procedures/ work instructions were when an unapproved revision of a PM was provided by the supervisor to the craft to perform work (01218777), and due to inadequate planning an failure to obtain a Steam Exclusion Boundary (SEB) permit the station had a near miss for Technical Specification non-compliance to the Control Room ventilation boundary (01222419).

Examples of this are:

- The work activity to replace a control board with the 12 Battery Charger had multiple errors with planning, review and execution procedures for this activity. The review of this work did not specify the use of temporary cables from the Turbine Building, through the A Train Battery Room, and into the B Train Battery Room. The Maintenance Craft walk down was unsuccessful at identifying shortcomings in the planning process with respect to the temporary cable routing. During execution, when it was discovered the appropriate detail was not included in the package for breaching the fire boundary between 11 and 12 Battery room, no actions were taken to resolve. And during implementation of a Temporary Fire Seal construction, no actions were taken for the implementation of these compensatory measures. **Result:** The station received an NRC violation for failure to establish required compensatory measures for an inoperable fire barrier between 11 and 12 battery rooms. (01197554)

- The management and controls for the station's key control program was less than adequate and major deficiencies existed and were tolerated for several years. Although the station classified this Site Clock reset for failure to control significant Radiation Protection keys and Operations Department keys, the program owner was the maintenance department and has been clarified further to be Maintenance with corrective actions from the root cause for this event. The procedure requirements of 5AWI 5.3.0. "Key and Seal Control" were not being implemented due less than adequate management of the Key Control Program and major deficiencies had existed and were tolerated for several years. **Result:** The station received an NRC violation for of 10CFR20.1602 in that the station did not maintain adequate control of very high radiation area keys.

Fatigue Rule Compliance

OR.3 Criteria 9 "Assigned personnel are technically qualified for the task and are physically and mentally ready to perform the work."

The Maintenance department has had multiple examples of failure to properly implement the new 10CFR26 "Work Hour Fatigue Rule." While the station had a change management program for the implementation of the "Fatigue Rule," many departments had failures by their supervision to correctly enter the proposed hours of covered workers into the Work Force software before extending overtime, calling in staff or contacting them at home. These have resulted in multiple department clock resets and adverse trends for the maintenance department and the station.

Examples of this are:

- In March, a Maintenance Supervisor was entering the time for the previous day's work activity for his staff. When the overtime was entered into the Work Force software it showed that there was a violation of the Fatigue Rule restrictions. When the overtime requested was posted there was not drop dead date for the craft and an assumption was made that everyone was eligible. **Result:** A 10CFR26 Fatigue Rule violation and a Department clock reset for maintenance. (01222751)

- A Mechanical Maintenance Supervisor entered into the Work Force software the expected hours for the covered worker being offered overtime. Due to less than adequate communications between the supervisor and covered worker, there was not a clear understanding as to how many hours the covered work would be working. The covered worker hours caused his six week average to require additional days off and as this resulted in a violation of the "12 days off in a 42 days period." **Result:** A 10CFR26 Fatigue Rule violation and a Department clock reset for maintenance. (01221472)

Human Performance

MA.1 Criteria 13 "Maintenance workers use proper human error prevention, radiological protection, and industrial safety techniques while conducting plant and shop activities,"

Repeat of 4th Quarter Concern: The use of human error prevention tools have not been fully ingrained into the daily work activities of the maintenance personnel. As a result, events have occurred which challenged the individual craft working in the field and required supervisory/management intervention to resolve.

Examples of this are:

- During fuel canister handling, the open throated rigging hook used to lift new fuel canisters got caught on the edge of a fuel canister cover flange. The crane operator relied upon a verbal "OK" from an unknown source as a signal to raise the hoist. Due to Less than adequate communications between the crane operator and the rigger in charge this caused the fuel canister to be lifted approximately 4"to 6" off of the ground. Workers performing the work did not stop to inform their supervisors of the inadvertent lifting after the equipment was placed in a safe condition. The shift manager and work week manager were also not informed of this event. A decision was made by those involved in the event to continue transporting the remaining new fuel canisters, and to document the lift with a CAP when they returned to the shop. The Human error prevention tools that were not used:

1. No Supervisory oversight.
2. STOP when unsure was not employed
3. Job planning and preparations were not employed
4. Communications were less than adequate.
5. Verification and Validation were not employed
    - **Result:** Department clock reset and department stand down for the maintenance department. (0122106)

- During cooling tower maintenance, the fiberglass cooling tower rain cover was being lowered to the ground. The rain cover lifting points which were two eye-bolts installed as rigging points tore through the cover. The cover fell 60' to the ground. The cover was 5' in diameter and weighed approximately 60 pounds. This was a near miss for personal injury. Less than adequate Job Planning and Preparation, and inadequate verification of the rigging points were the principle barriers that failed in this event. **Result:** A near miss for personal injury and a Department Clock reset. (01218633)

- Other examples of the failure to use Human error prevention tools were:
    - NRC security logable events (01220092, 01221312, and 01221728)
    - Contamination in a clean area of the RCA (01221803)
    - Near misses for personal injury (01218203)

3. Observation Reports:

NOS assessed:

1. Cask 26 Activities including pre-job briefs, loading, and transporting to the ISFSI Pad.
    - Areas that met expectations
        - Pre Job Briefs were held at the beginning of each workday January 12 – 15, 19, & 28-29 for the activities that were to be performed that day. The daily briefs met the requirements of 5AWI 1.11.6, Pre-Job Brief, including the Job Hazards Analysis form and Are You Ready checklist
        - The critical steps that were discussed in the PJB were stamped in the procedure.
        - The human performance (HU) tools to be used for the critical step were written in the procedure.
        - Lifting and rigging activities, including adherence to designated safe load paths were discussed.
        - The required crane inspections were performed daily.
        - FME controls were in accordance with 5AWI 8.7.0, Foreign Material Exclusion Program Description.

    - Areas for Improvement
        - Two individuals were observed not wearing life vests in the Spent Fuel Pool (SFP) Enclosure area during Cask 26 activities.
        - A step in D95.3, TN-40 Cask Removal and Storage Procedure, was signed as complete before all requirements for completion were met during installation of Cask monitoring system at the ISFSI.

2. Control of Maintenance and Test Equipment:
   - Areas that met Expectations:
     - Installed plant instrumentation was verified to be properly labeled and within calibration frequency required in 5AWI 3.14.0.
     - Reference standard instruments and M&TE were verified to be within calibration frequency required in 5AWI 3.14.0.

   - Areas for Improvement:
     - Per 5AWI 3.14.0, previous usage evaluations are to be documented on a PINGP 1684 form. In the past year, 11 such evaluations have been performed without being documented on the PINGP 1684.
     - Inconsistencies in process used by RP personnel to label instruments that require repair. Yellow sticky notes are affixed to some, while "Work Requested" tags are affixed to others. This presents an error likely situation for the repair technician.
     - RP instrument previous use evaluations are not fully documented inside the Action Request process as required by FP-RP-ICC-01.
     - Survey instruments were identified by NOS inside the RP calibration lab as having no calibration stickers affixed and/or no labeling or tag to identify their current status. FP-RP-ICC-01 states a label showing the calibration status should be applied to each instrument. The numerous instruments identified without calibration stickers present an error likely situation for RP Technicians

3. Maintenance Performance:
   - Areas that met expectations:

     - Peer Verifications are being performed per the requirements in FP-NO-QC-02. Maintenance and Production Planning personnel are working together to identify areas for Peer Verification in work package development.
     - The conduct of walk downs by Maintenance Craft is in accordance with site expectations to support the Online Schedule. The verification of parts in the warehouse and clearance order boundaries was performed during the walk downs observed.
     - Drawings are being provided electronically in SharePoint and printed if requested by the Craft. The use of SharePoint to retrieve drawings has been made easier with the issuance of a Job Aid for Passport and SharePoint.
     - Maintenance Planners understand the use of Peer Checks in work packages. Recent training conducted by the group has increased the awareness of the need for Peer Verifications vice Peer Checks in work packages.
     - Pre Job Briefs are being conducted in accordance with site requirements and expectations.
     - The work request screening process is effective in identifying the proper level of priority as required by Operations to prevent challenges to the operating units.
   - Areas for Improvement:

     - Peer Verification tracking and documentation for completion lacks consistency as the Maintenance Department and Production Planning personnel have begun to properly utilize the inspections.

     - Maintenance Craft expectations for what documents are to be provided to them for walk downs were not consistent with the commitment made by the Site in response to an escalated issue.

4. Issues identified by site/outside organizations and self-revealing events:

1. Boric acid batch add tank mixer failed after PMT-Rework 01213284 (Self Revealing)
2. Septic system 3 tank leak requires report to State-Rework 01213477 (Self Revealing)
3. Inadequate clearance order for WO 332623. 01214394 (Self Identified)
4. Incorrect Strainer installed on SV-33134. 01215113 (Self Revealing)
5. 122 DDCLP O-ring damaged during re-assembly 01215123 (Self Revealing)
6. 122 DDCLP oil storage tank pump failure-Unplanned LCO 01215266 (Self Revealing)
7. Adverse Trend in Maintenance Department walk downs 01215929 (Self Identified)
8. Adverse Trend in Corrective and Elective Work Orders 01215933 (Self Identified)
9. 122 DDCLP oil pump rework due to missing lock washers 01217125 (Self Revealing)
10. 121 Traveling screens found not rotating 01217630 (Self Revealing)
11. Cooling tower rain cover fell 01218633 (Self Revealing)
12. Bus 26 Load sequencer power supply mounting screws 01219639 (Self Revealing)
13. Violation of 10 CFR 26 fatigue rules 01221472 (Self Revealing)
14. Loaded nuclear fuel canister inadvertently lifted by hook 01222106 (Self Revealing)
15. Violation of 10 CFR 26 fatigue rules 01222751 (Self Revealing)
16. Violation of 10 CFR 26 fatigue rules 01224709 (Self Revealing)

Radiation Protection

Radiation Protection program performance was assessed as *below expectations*.

Radiation Protection is assessed quarterly and has been evaluated as below expectations since the 3rd Quarter 2008.

Two (2) NOS **Adverse Assessment Findings** were identified during this reporting period, one for the Loss of Radioactive Source Control and one for Inadequate Control over Very High Radiation Keys.

Summary of Radiation Protection Performance: While the overall performance of the Radiation Protection department improved during the latter part of this reporting period, two (2) Station significant events, Loss of Radioactive Sources and Inadequate Controls over Very High Radiation Area keys overshadowed this performance. While some aspects of these events were legacy conditions, especially with respect to programmatic controls, some current behaviors within these events, specifically, not submitting CAPs when a loss of radioactive sources became apparent and not recognizing when an NRC reportable condition existed is disturbing. With changes in the management structure of the Radiation Protection department, a key opportunity exists to set new and higher standards of performance to address these behaviors.

The basis for the evaluation of *below expectations* is the less than adequate performance in the INPO Performance Objectives **RP.1** Criteria 39 "Monitoring and controls are in place to prevent inadvertent release of detectable radioactive material from radiologically controlled areas." **RP.1** Criteria 12 "High radiation areas are posted properly, and access is restricted through administrative and physical controls."

Noteworthy Performance:

- Prairie Island continues to maintain a top quartile performance in the annual collective radiation exposure when compared with other nuclear utilities

NOS Assessment:

Areas of Concern:

Adverse Assessment Finding "Source Control"

RP.1 Criteria 39 "Monitoring and controls are in place to prevent inadvertent release of detectable radioactive material from radiologically controlled areas."

The programmatic controls and supervisory oversight of the radiation protection source control program was inadequate. The alignment of the program to industry standards, to fleet procedures and even to Monticello's process controls was not done. These lacks in controls surfaced with a significant station event in January.

- During the 2009 radioactive source inventory at Prairie Island Nuclear Generating Plant (PINGP), radiation protection (RP) personnel determined that two sources were missing that are greater than 10 times the quantity specified in 10 CFR 20 Appendix C. These two sources included a 0.07 micro curie (uCi) U-234 source installed in a radiation monitor detector and a 2 uCi mixed gamma standard that contains 0.09 uCi of Am-241. Four additional sources that do not exceed ten times any quantity specified in 10 CFR 20 Appendix C were also determined to be missing. After extensive search of the site and shipments made off site the investigation concluded that the detector containing the missing U-234 source was most probably shipped offsite as low level radioactive waste in the period between September 2008 and September 2009. Additional concerns with this event were that RP personnel and supervision lacked the sensitivity to this issue and did not recognize the immediate reportability requirements and the procedure requirement to submit a CAP for management involvement. The reportable nature of this event and the requirement to get a CAP written on this event was driven by the Nuclear Oversight Organization. **Result:** The station received a licensee identified violation of 10CFR20.2201 for failure to report the loss of a radioactive source that has ten (10) times the quantity as described in Appendix C, a Station Site Clock reset with CAP 01214773 and an Adverse Assessment Finding (AAF) from the Nuclear Oversight department.

Additionally, after controls were put in place to correct this station significant event, the Radiation Protection Department had a subsequent loss of controls for a radioactive source, this occurred on February 18 when the on shift Radiation Protection Specialist (RPS) determined that a source Am-241, # SRS 22243-18, 0.0185 micro curies) was not in its expected storage location (source box in Access Calibration Room). After contacting RP Supervision about the missing source, it was determined that the source was in the locked source drawer in the Access Calibration Room. The source was then returned to the source box. The RPS who placed the source in the source drawer after use, assumed that relocating the source in an adjacent locked source drawer was acceptable. The RPS did not realize that relocating a source required a form entry and RP Supervisor notification. Finally, RP Management did not implement timely procedure changes to ensure compliance with the new source accountability expectations. Result: Department Clock reset and near miss for another NRC Reportable event. (01218792)

Adverse Assessment Finding "VHRA Key Control"

The procedural controls for station significant keys were not being implemented. The management of the Key Control Program was less than adequate, primarily associated with the Facilities Key Room. Major deficiencies existed and were tolerated for several years. This resulted in identified deficiencies such as; inadequate procedure (5AWI 5.3.0), no master index for keys, no periodic inventory was performed, turnover from key custodian to program owners i.e. Radiation Protection, Security and Maintenance was less than adequate.

RP.1 Criteria 12 "High radiation areas are posted properly, and access is restricted through administrative and physical controls.

- During an NOS audit on site key control, an inspection of a closet in the New Administration Building revealed several keys to sensitive areas were not properly controlled. These keys included:
    - Key to the Unit 2 containment Sump C. Sump C is a posted VHRA and requires strict administrative controls for keys to the locks for entry to this area.
    - Master keys to emergency core cooling system ECCS locked systems,
    - the resident NRC inspector's office,

10CFR20.1602 states; "In addition to the requirements in 20.1601 (LHRA) the licensee shall institute additional measures to ensure that an individual is not able to gain unauthorized or inadvertent access to areas in which radiation levels could be encountered at 500 rads or more in 1 hour at 1 meter from a radiation source..." i.e. VHRA's. Since sump C key was not controlled per site key control procedure 5AWI 5.3.0 "Key and Seal Control", a violation of this regulation and a Performance Indicator occurrence associated with the NEI 99-02 Occupational Radiation Safety Cornerstone occurred. **Result:** The station received a licensee identified violation of 10CFR20.1602 "Control of Access to Very High Radiation Ares" for failure to properly control or inventory in accordance with station procedures as this VHRA key was available for use by unauthorized individuals, a Station Site Clock reset with CAP 01214773, and an Adverse Assessment Finding (AAF) from the Nuclear Oversight department.

Observation Reports:

NOS assessed:

- Based on a review of a representative sample of completed work orders, are differences in actual dose and planned dose evaluated to determine why the disparity exist? (This includes both over-estimates and under-estimates.) Are actions taken to promote more accurate predictions for future work?
- Shipping:
    - Are correct containers used for shipment of material?
    - Are all Shipments being made under a specific work order task that has been evaluated under the Integrated Risk Management program? If not, are the exceptions in accordance with procedures and Management expectations?
- OE29219 – Evaluate RP Supplemental Workforce qualifications:
    - Is it consistent with the NRC's Positions for applying experience and qualifications?
    - What program changes need to be implemented?
- Review a sample of ALARA planned work (i.e., past status 30 work orders)
    - Was a walk down by ALARA planners completed to obtain the dose estimate?
    - Was a walk down completed by the craft for ALARA? (i.e., risk assessment at the job site IAW procedure?)
    - If yes, will it be representative of the dose when the job is implemented.

Areas that met expectations:

- Shipping procedures direct the use of closed or open transport based upon contents and risk associated with shipment. All radioactive shipments are currently being made under a specific work order as required by both D11.7 & D11.11.
- Review of supplemental RP workforce revealed no deficiencies. RP supplemental staff positions and qualifications are in line with NRC guidance.
- Discussion with ALARA planners and supervision revealed that walk downs of work orders occur when complex and/or infrequent tasks are planned.

Areas that need improvement:

- Deficiency was noted in that the CAPs for dose variance were not utilized as a tool to improve performance, but rather closed without action. This deficiency is that CAPs are currently initiated for dose estimate variances where the total dose for the job is less than 500mrem are closed to trend or to actions taken. In cases where the dose estimate varied due to changing plant conditions or old survey data, a benefit to the ALARA planners would be to have actions assigned out of the CAP. The trending can still be accomplished while actions to investigate the cause of the variance are carried out.
- Chemistry OE investigation incorrectly closed an OEER. The issue was whether to use ZINC in primary chemistry for shutdown minimization of dose. The actions under this CAP all show it would save dose and would be industry leading; however, the CAP was closed without actions or documentation as to why the recommendations would not be implemented. Further discussion with Chemistry General Supervisor reveals it would be a good action. However, a business decision was made to not use zinc due to large costs associated with its implementation. Discussion with Chemistry General Supervisor revealed he had given direction to the "assigned to" to place additional notes in the CAP action stating why it was being closed to no action. Review of the assigned actions indicates no reason for not taking action.

Issues identified by site/outside organizations and self-revealing events:

1. Septic system 3 tank leaks, reportable to State 01213477 (Self Revealing)
2. Random Checks find Radiation material entering RCA 01215887 (Self Indentified)
3. RPC DRUM- Adverse trend in inventory control 01216153 (Self Identified)
4. RPC DRUM- Adverse trend in contaminations 01216349 (Self Identified)
5. Sea-Land shipping container damaged by Fork Lift 01216359 (Self Revealing)

Engineering

Engineering (also includes Design control/Modifications, Accident Analysis and Q-List) performance was assessed as *below expectations.*

Engineering is assessed quarterly and has been evaluated as below expectations since 3rd Quarter 2009. Design Control/Modifications, Accident Analysis and Q-list are evaluated annually and have been below expectations since the 1st Quarter of 2009.

Summary of Engineering Performance (Includes: Modifications, Accident Analysis and Q-list): The Engineering department currently is understaffed to their budgeted headcount. This, in combination with significant current issues and pending inspections, has required re-allocation of resources to address these challenges. These challenges have contributed to quality issues for products that Engineering supplies. An example of this is the NRC violation received by the station regarding repeat issues with Operability Recommendations. There is a knowledge gap at the station for tracking, minimizing risk, and understanding the consequences of exceeding preset milestones for Maintenance Rule, Unavailability, and Mitigating System Performance Indicators that has contributed to current lower quartile performance.

The basis for this evaluation of *below expectations* is less than adequate performance in the INPO Performance Objective areas (EN.1) Criteria #7 "Engineering products, including evaluations that support technical decisions, and design information are accurate and complete and are of high quality," This is a repeat performance concern from NOS 4th Quarter 2009 (EN.1) Criteria #9 Engineering personnel identify, analyze, and resolve conditions that can affect the plant design basis and safety analyses and (CM.1) Criteria #5 The operational impact of reduced margins is communicated to the plant operators. As a result of events in these performance areas the station received two (2) NRC violations in the 1st quarter 2010.

NOS Assessment:

1. Noteworthy performance:

Engineering has funded additional resources to support resolution of design-related regulatory issues. These resources are also being applied to backlog items such that full-time station personnel can focus on core business and emergent operational challenges.

2. Areas of Concern:

OPRs Adverse Trend

EN.1 Criteria #7 "Engineering products, including evaluations that support technical decisions, and design information are accurate and complete and are of high quality"

Repeat of 4th Quarter Concern: There is a continuing adverse trend with quality and accuracy of Operability Recommendations (OPR) from the 4th Quarter 2009 NOS that has challenged the Operations and Engineering department. This has cumulated with an Operability Recommendation (OPR) for the D5 diesel that was challenged by the NRC for deficient language in an approved OPR (01222084). As a result of this event the Engineering department decided to re-open the NOS identified adverse trend in OPRs 01204735. This apparent cause evaluation reaffirmed that since January 2009 eighty eight (88) OPRs have been performed by Engineering in support of Operations department. Of these eighty eight (88) OPRs, twenty four (24) required revision for procedure compliance or technical errors. This corresponds to 27% of the OPRs required revision. From this analysis, it was clear that the causes were

in the areas of: methodology used, assumptions made during process, inputs used for OPRs, and clear procedural guidance. These OPRs are important to the station because they support the Operability Determination required to be made by Operations department While it was clear to all departments that OPRs needed to be correct the first time, the NRC opined that Operations did have the requisite ownership of this product as the License Holder for the station. Engineering thus should provide the support function and their quality of product needed improvement. Examples of this were:

- During the D5 Lockout event due to relays 51V, 51M and 47H input to the 86 lockout relay, an OPR was requested by Operations to determine the Operability of the D5 diesel. The original OPR did not address the effect of the potential failure on each of the safety functions described by the Current License Basis for the Unit 2 Emergency Diesels, as required by FP-OP-OL-01 "Operability Determination/Recommendation" procedure. This was identified by the NRC in their review of this Operability Determination after being approved by the SRO. (CAP 01218971)

- During a normal monthly run of the D5 diesel, a higher than expected value for crankcase backpressure was observed (CAP 01221675). As a consequence, the Operations Department requested an Operability Recommendation from Engineering. During the review process, multiple errors were noted that required correction. One of the statements identified to be removed, did not get removed. That was: "In its present condition, it is unclear whether D5 could satisfactorily complete all of its TS requirements as written (specifically the requirements specified in the 24-hour Load Run Surveillance, SP 2334, if no maintenance is performed." This statement conflicted with the overall determination of the D5 diesel to be Operable. This error was noted by the NRC, again, after the SRO had reviewed and approved the Operability determination. (CAP 01218971)

In response to these concerns, Engineering has taken the action to re-address the previously identified Adverse Trend by NOS for OPR preparation, review and approval (CAP 01222084). **Result:** NRC non cited violation of Criterion V for failure to follow the procedural requirements of FP-OP-OL-01 Operability Determination/Recommendation.

Flooding impacts on Fuel Oil availability

EN.1 Criteria #9 Engineering personnel identify, analyze, and resolve conditions that can affect the plant design basis and safety analyses.

During a plant walk down of the screen house, the NRC indentified that the location of the Fuel Oil Storage Tanks pump motor starters were below the apparent flood line in the screen house. They are located adjacent to the Circulating water pumps and piping in the lower level of the screen house below ground level. These motor starters are used to start the Fuel Oil Storage Tank pumps so that fuel oil from the Diesel Driven Cooling Pump (DDCLP) storage tanks can be transferred to the DDCLP day tanks. As a result of the investigation to respond to the NRC's question, Prairie Island determined that the motor starters would not support full qualification of the DDCLP, and as a result compensatory measure were established through procedure revisions to ensure that the combined fuel volume levels would remain above the Technical Specification limits. This condition has existed for the life of the plant; however, in 1998 the station had an opportunity to correct this condition with analysis that would have occurred to support a letter from Prairie Island to the NRC on flooding effects caused by a Circulating Water line break in the screen house. The response was inadequate in that it only addressed the manual actions needed to supply fuel oil to the DDCLP, not the actions that would assure compliance with the Technical Specification requirements for volume of fuel oil. Prairie Island did not fully resolve this condition and as a **Result:** The station received an NRC violation for failure to implement design control measures to ensure that the DDCLP and the fuel oil system were provided with sufficient

performance capability to accommodate any single failure of an active component, and that internal flooding in the plant screen house would be isolated prior to losing the safety related equipment functions for the DDCLP or the fuel oil system.

CM.1 Criteria #5 The operational impact of reduced margins is communicated to the plant operators.

The operational impact of reduced margins to Mitigating System Performance Indicator (MSPI) and Maintenance Rule Unavailability (MR) is not well understood by the station management and staff. This has resulted in multiple challenges to the operating staff and the station. Less than adequate understanding, planning or communication resulted in the following concerns:

- The station hung clearance orders hours in advance of the actual work starting on a Red Maintenance Rule system with low margin to Mitigating System Performance Indicator MSPI color change
- Scheduled work on 22 AFWP for 8 hours of unavailability but actual unavailable time was 21.12 hours, which was likely caused by inadequate planning and execution (CAP 01231026)
- An additional week of unavailability was accumulated on 22 DDCLP due to less than adequate sensitivity to this risk during emergent plant activities and less than adequate prioritization of work activities (CAP 01215995)
- 123 Air compressors unavailability exceed the limit of Less than 100 hours per quarter of unavailability. 123 Air Compressor was already a Maintenance Rule a(1) system (CAP 01214375)
- D1 which is a Maintenance Rule a(1) system had its scheduled work activity that was tied to an a(1) action reschedule past is required due date. (CAP 01229304)
- The MSPI indicator for Unit 2 cooling water is greater than 50% of the NRC threshold for receiving a white finding. (CAP 01228551)
- The following systems are now in Maintenance Rule a(1) status: 22 Inverter 809% unavailability time, 121 Cooling water pump 176% unavailability time, D1 diesel generator 133% unavailability time, D2 diesel generator.

The investigation to date by the Engineering organization has been extensive to address the scheduling aspect of this issue and to insure that the production planning staff understands the implications of Maintenance Rule unavailability and Mitigating System Performance Indicator work activities (CAP 01217075). The outstanding Gap to Excellence is the involvement of the Operation's Department in this effort and their understanding of these risk avoidance tools. This is evident from the coordination meeting held for resolving this issue that did not have any Operations Department involvement. The other outstanding Gap to Excellence is the overall Performance Objective (CM.1) "System and component margins are understood, considered in decision-making, and managed consistent with design and licensing requirements. " Without an understanding and communication of the margins to the station management, this Gap will not be closed. **Result:** The Knowledge and understanding of these risk avoidance tools is not well understood by Operations.

3. Observation Reports:

NOS programmatically assessed:

- **Design Control (Modifications and Accident Analysis)**
  - Has the external design authority trended the quality of deliverables and implemented effective corrective action for negative trends?
  - Has the design appropriately considered installation requirements?
  - Has a walk down been performed to ensure appropriate space is available to fit the component as fabricated?
  - Has appropriate consideration been made for plant operating conditions to allow pre-startup testing and connection to plant systems?
  - Does Engineering provide valuable input into WR screening process?
  - Is Engineering represented at the WR screening meeting?
  - Based on a review of at least five 50.59 screenings and evaluations in the past year, are these activities being performed in accordance with site/Fleet and regulatory requirements?
  - Are personnel who are performing 50.59 screenings and evaluations task qualified and know how to verify their qualification status?
- **Projects**
  - Does the Project Status Report accurately grade the status of the project?
  - Does the plant believe interface between the Calculation Reconstitution and Improvement Project (CRIP) project and the plant staff is timely, and are the shared work assignments overloading the plant staff?
  - For current projects challenging the sites:
    - Has a workable schedule been established for meetings at critical stages of the design review process?
    - Will the plant be able to support the number of design review meetings required in this time frame?
    - Is the work schedule in the production planning schedule?
    - Does the project manager trend the quality of deliverables?
    - Are CAPs written for negative trends?
    - Are CAPs written for missed milestones
    - Are CAPs written for significant vendor issues?

- Areas that met expectations:
  - The external design authority has trended the quality of deliverables, and effective corrective actions for negative trends.
  - Based on document review and interviews, design does consider installation requirements, walk downs are performed to ensure appropriate space is available to fit components as fabricated, and considerations are made for plant operating conditions to allow pre-startup testing and connection to plant systems.
  - Engineering is represented at the work request (WR) screening meetings and does provide valuable input into the WR screening process.
  - 50.59 screenings are performed in accordance with procedures and regulatory requirements. All screenings reviewed were performed by qualified personnel, and individuals interviewed were familiar with how to verify qualification status.
  - No examples of untimely interfaces between the Calculation Reconstitution and Improvement Project (CRIP) and plant staff were identified. Plant staff currently has minimal involvement in the CRIP and did not indicate this involvement was overloading.
  - A review of the ECs scheduled for the 2R26 outage revealed that the site is on track to support all aspects associated with the currently scheduled ECs.

- Areas that need improvement:
  - An enhancement opportunity exists to clarify the fleet procedure to indicate which engineering discipline should be involved in the WR Screening Committee.
  - During the review of selected ECs, it was identified that incorrect Design Input Consultation forms were being used.
  - Review of Project Status Reports revealed that the reports do not accurately grade the status of the project and that an incorrect template is being used to complete the reports.
  - A communication gap exists between the CRIP project and plant staff. CRIP project management and the plant Design Engineering Manager have previously identified this and are taking actions to address the gap.
  - A potentially chilled work environment was identified where personnel stated they are reluctant to write CAPs for project issues (e.g., missed milestones, schedule slippages, cost control issues) due to the concern of repercussions from their management. Although no specific examples were identified where a CAP was not written for a concern.

4. Issues identified by site/outside organizations and self-revealing events:

1. Adverse Trend not identified for CL pump gear oil coolers 01212774 (NRC identified)
2. Cooling system response to a Seismic event 01212778 (Self Identified)
3. Potential HELB pipe whip impact on Appendix R doors 01213357 (Self identified)
4. DDCLP pump air receivers do not have Manual lift levels 01213669 (Self Identified)
5. Designated Helium for Cask 26 was not used 01214028 (Self Identified)
6. HELB/CL interactions on CL discharge piping 01215068 (Self Identified)
7. SR Battery SPs not aligned with IEEE guidance 01215614 (Self Identified)
8. Adverse Trend in loss of MSPI and MR SSC margin 01217075 (Self Revealing)
9. Breaker 211-C Control Switch failure 01217202 (Self Revealing)
10. Flooding affects on DDCLP FOST xfer pumps 01217275 (NRC Identified)
11. Battery inter rack cables not included in analysis 01219281 (Self Identified)
12. Bus 26 load sequencer mounting screws in contact with board 01219639 (Self Revealing)
13. Non SR SV installed in the CR chiller purge unit 01220658 (Self Revealing)
14. Air leak into after cooler from turbo charger 01221481 (Self Revealing)
15. D5 Engine 2 Crankcase pressure Hi 0122675 (Self Revealing)
16. Adverse Trend in OPRs 0122084 (NOS identified)
17. No analysis for Control Room Chiller heat up 01223375 (Self Identified)

Corrective Action Program

Corrective Action Program performance was assessed as *below expectations*.

Corrective Action Program is assessed quarterly and has been evaluated as below expectations since 3rd Quarter of 2005.

Summary of Corrective Action Program Performance: Significant initiatives have been leveraged in area of the Corrective Action Program. These have mostly been changing the process, changing the representation at meetings, challenging the previous standards and training. These have resulted in improvements in the program, especially with PARB and TRP holding to higher standards than previously achieved. Behaviors of the staff were expected to be changed by training, feedback from the PARB, TRP and coaching. This change in behavior for the staff has not been realized in this reporting period. The station has had repeat events which have required additional causal evaluations and rework. The station is losing ground on the CAP backlogs despite efforts to turn these around.

The basis for this evaluation of *below expectations* is less than adequate performance in the INPO Performance Objective areas of **(PI.2) Criteria #3** "Problem reports are reviewed promptly for safety, reliability, operability, and reportability concerns," **(PI.2) Criteria #10** "Problem and corrective action backlogs are kept low enough to avoid impeding management's ability to determine and respond to issues of safety and reliability significance in a timely manner," This is a repeat performance concern from NOS 4th Quarter 2009. And **(PI.2) Criteria #8** "Corrective actions are timely, commensurate with the significance of the problems. Effectiveness reviews are conducted on corrective actions intended to prevent recurrence of significant problems." This is related to performance concern PI.2 Criteria #9 from the 4th Quarter 2009.

1. Noteworthy performance:

Technical Review Panel (TRP) has set standards for quality of apparent cause evaluations, and corrective action closeout and enforced them. Their performance is challenging the staff performance and feedback is showing improving results. This action by TRP was leveraged after Apparent Cause Evaluation (ACE) training was provided to all personnel who would be qualified to perform apparent cause evaluations. Likewise, Performance Assessment Review Board (PARB) has become more intrusive with the Root Cause Quality, set higher standards for close out of Conditions Adverse to Quality (CAPR) and "A" level actions.

NOS Assessment:

2. Areas of Concern

PI.2 Criteria #3 "Problem reports are reviewed promptly for safety, reliability, operability, and reportability concerns."

Action request written by station personnel have, in some cases: not been initiated in a timely fashion, incorrectly evaluated for reportability or incorrectly evaluated for operability. This has resulted in violations 10CFR20.2201, NRC violations, Site Clock resets, and rework by Operations/Engineering Departments to correctly classify the plant conditions. The station initiates a relatively large number of CAPs (~900/month average for the last year); the Gap to Excellence is in the making the correct reportability and operability determination without re-work or intervention by independent agencies. Example of this are:

- The annual inventory of radioactive sources commenced with a task initiated by a Radiation Protection staff member in July of 2009. One source was unaccounted for in July and additional four sources were unaccounted for in November. No report of this disparity was made in the Corrective Action Program, nor was Radiation Protection supervision made aware of this until January 2010. At that time the Radiation Protection personnel made an incorrect determination that this was not a reportable event. On January 18, 2010, NOS identified this issue needed to be documented in the Corrective Action Program and notified the Shift Manager that this was a potentially reportable event. This event demonstrated less than adequate behaviors by Radiation Protection personnel for initiation of timely corrective action requests and incorrect reportability evaluations. **Result:** Violation of 10CFR20.2011, NRC violation and a Site Clock reset for the station. (CAP 01214190)

- The Calculation Reconstitution Project (CRIP) team identified that the Main Control Room Chiller room did not have any heat up analysis. This was discovered by research into High Energy Line Break (HELB) calculations in support of replacing the current software analysis program "HEATSINK" with the newer "GOTHIC" model. (CAP 01223375) The initial screening for severity by the Screen team and the initial operability determination by the Operations Department was a "C" level and fully operable. This was challenged by the NOS organization because the fully operable determination was made using the newer GOTHIC software that was not a USAR approved methodology for the Chiller rooms. As such the Operability determination of "Operable" was based upon an unapproved methodology. It was recommended that this CAP 01223375 should be a "B" level based upon this condition being Operable but Non-conforming (OBN) until GOTHIC is approved for this application. After NOS held multiple meetings and communications with Engineering, Operations, Business Support and Plant Management it was clear that no actions were going to be taken to correct this condition. This resulted in NOS escalating this issue through a new Action Request (CAP 01225847) and communications with Senior Management requesting their intervention. **Result:** The original Action Request (CAP 01223375) was rescreened to the correct severity level of "B" and the Operability determination was revised to "Operable but Non-conforming."

- The NRC during a plant walk down noted that the Fuel Oil Storage Tanks for the DDCLP had motor starters for the Fuel Oil Transfer pumps located in an area susceptible to internal flood. It was determined that these motor starters were impacted by a potential internal flooding hazard and the station entered TS LCO 3.8.3.a and raised level in 121,122, 123, and 124 Emergency Diesel Generator Fuel Oil Storage tanks to satisfy the TS LCO 3.8.3.a requirements. (CAP 01217275) The initial reportability evaluation completed for this event determined that this was not a reportable condition but both the Operability Determination (OPR) and Reportability evaluation relied upon Operator Manual actions to maintain Operability and that the past operability did not consider non-compliance with the Technical Specifications. This reportable condition was self identified at a later date by the Regulatory Affairs department. **Result:** Required report to the NRC for past non-compliance with Technical Specifications.

PI.2 Criteria #10 "Problem and corrective action backlogs are kept low enough to avoid impeding management's ability to determine and respond to issues of safety and reliability significance in a timely manner,

Repeat of 4th Quarter Concern: During the 4th Quarter 2009 reporting period, the Performance Improvement department implement a CAP recovery plan. This plan addressed the NOS "A" level CAP, SCAQ, and AAF (CAP 01166830) "Corrective action program failure to resolve Significant Issues" and the NOS "A" level CAP, SCAQ, and AAF (01187837) "Governance and Oversight of PARB and Performance Improvement is LTA." Actions from these CAPs were to reduce the station backlogs. The initial effort reduced the number of open assignments from ~2000 to ~1700. Efforts were not sustainable as the number of open action items has increased beyond initial levels with the current backlog of action items at ~2100. It is expected that this adverse trend will continue without Station Management intervention. The basis of this conclusion is that the number of new assignments has out paced the number of closed assignments every month for the previous four months.

This adverse trend is evident in other metrics for the Corrective action program.

- Total number of Open CAPs has increased from ~2100 to ~2300 since January
- Total number of Open evaluations has increase from ~200 to ~400 since January

An additional concern with these increasing backlogs in the Corrective action system is that the number of actions that have been overdue has resisted all station efforts to drive this number to zero. For over a year, there has not been a single month without an overdue action item.

PI.2 Criteria #8 Corrective actions are timely, commensurate with the significance of the problems. Effectiveness reviews are conducted on corrective actions intended to prevent recurrence of significant problems.

Performance Assessment Review Board (PARB) and Technical Review Panel (TRP) are challenging the standard of the quality of Root Cause Evaluations, Apparent Cause Evaluations, adequacy of closure of Corrective Actions to Prevent Recurrence (CAPRs) and adequacy associated with actions from "A" and some "B" level action requests. Between PARB and TRP they have rejected over fifty (50) of these work products for multiple reasons in this 1st Quarter 2010. While on the surface this represents two successful barriers for preventing less than adequate performance and a continued improvement for these two barriers from the 4th quarter, the behavior by station personnel to submit a less than adequate product for approval and in some cases multiple times, represents a disturbing trend which needs to be overcome. The Management and Safety Review Committee noted these "behavior" challenges that the station needs to address in its March report; "Much of what ails Prairie Island is deeply imbedded in its culture."

The quality of product and "doing what we said we were going to do" within the Corrective Action Program has yet to be fully embraced by all levels of station personnel. This has been demonstrated even for the most significant level of evaluations and actions items within the program. **Result:** "Shots on goal" have been rejected by NOS, the "Owed To," TRP, and PARB for various reasons of non-compliance. Examples include:

PARB/NOS/TRP rejected

- "A" level action closed without completing task (CAP 01219246) (PARB identified)
- NOS Finding action extended without NOS concurrence (CAP 01216288) (PA identified)
- Closure actions inadequate and rejected by PARB (01220313) (PARB identified)
- "A" level action rejected by PARB (CAP 01221534)(PARB identified)
- Two NOS Finding actions not complete as required (CAP 01224094)(NOS identified)
- Completed "A" level assignment 01189176-17 rejected by TRP (CAP 01217445)(TRP identified)
- ACE assignment rejected by TRP (CAP 01222496)(TRP identified)

This performance by the individual assigned the action items and the manager assigned as the "Owed To" represents a failure by these individuals to correct the most important issues for the station to prevent recurrence and in the ownership of the Corrective Action Program as a whole.

3. Observation Reports:

NOS assessed:

- If Effectiveness Review (EFR) Plans are completed in a timely manner or are they extended or closed to another EFR.
- If Effectiveness Review Plans contain enough description to know exactly what needs to be measured.
- Evaluate 25% of the Apparent Cause Evaluations (ACEs) assigned in the previous quarter and interview the assigned personnel. Determine if the Owed To/Supervisor provided an adequate pre-job brief and discussed expectations for completing the ACE.
- Are Corrective Action Recovery Plan due dates being met or extended?
- Based on a sample of actions from the Corrective Action Recovery Plan, assess if the corrective actions are achieving the desired results; and what changes need to be implemented to strengthen these corrective actions?

Areas that met expectations:

- A review of ten Effectiveness Reviews (EFRs) revealed EFRs are being completed in a timely manner and are not being extended or closed to another EFR.
- Effectiveness Review plans that are required by Corrective Actions to Prevent Recurrence (CAPRs) contain enough description to know exactly what needs to be measured.
- For ACEs assigned in the previous quarter, the Owed To/Supervisor provided an adequate pre-job brief and discussed expectations for completing the ACE with the assigned individual. In addition, interviews provided positive comments on the benefits of the recent ACE training.
- Two Corrective Action Recovery Plan action items are still open and the due dates are scheduled to be met or had received proper extension approval.

Areas that need Improvement:

- Review of ten recent EFRs, within the last seven months, indicated that EFRs are being used to evaluate action effectiveness; however, they are not being utilized in accordance with procedural guidance.
- The review of EFRs performed for some Type-2 Operational Decision Making Issue (ODMI) did not contain enough description to know exactly what needs to be measured.
- CAP Backlog Reduction Plan is showing no signs of progress. The planned actions are behind and are currently in the implementation phase.
- Two CAP Recovery Plan actions were not performed as requested. There was inadequate justification for non-performance as procedurally required.

4. Issues identified by site/outside organizations and self-revealing events:

1. CAPR EFR effectiveness has declined for three (3) consecutive months (CAP 01221472) (Self Identified)
2. 2009 Site DRUM Adverse Trend in action completion quality (CAP 01223919) (Self Identified)

Emergency Planning

The Emergency Planning Program was assessed as *below expectations.*

The Emergency Planning Program is assessed annually in the 1st Quarter. The program has been *below expectations* since 1st Quarter of 2008.

Summary of Emergency Planning Performance: Emergency Planning has had some significant challenges in this reporting period. An example of this would be a potential "White" finding from the NRC due to an inadequate EAL scheme. The station received a violation for this event and has been preparing for a Regulatory Conference to challenge the "White" finding. Other current station issues are:

- Assuring there is a timely response for manning the required thirty (30) and sixty (60) minute responders. This is also a Unresolved Issue (URI) with the NRC.
- Evaluation and application of Operating Experience from Fermi Station to address inadvertent siren activations.

The basis for the *below expectations* evaluation is less than adequate performance in the areas of INPO Performance Objective **(EP.1) Criteria #6** "Practices and procedures enable the emergency organization to recognize and classify emergencies correctly, assess the consequences, notify emergency response personnel, and recommend appropriate protective actions to off-site agencies," **(EP.1) Criteria #1** "Station management clearly communicates expectations for responses to emergencies, with responsibilities clearly assigned for on-site and off-site radiological emergency response preparedness. The station emergency response organization implements and controls emergency preparedness and emergency response activities effectively." and **(PI.3) Criteria #1** "Managers establish and reinforce expectations for using lessons learned from operating experience to prevent events and improve job performance."

NOS Assessment:

1. Noteworthy Performance:

Success for Emergency Preparedness:

- Completed a Training material upgrade project for the nine (9) key EP positions
- Received an assist visit from the Utilities Services Alliance EP Managers with positive comments.
- Re-negotiated the Letter of Agreement with the City of Red Wing
- Added human performance coaches to EP drills.
- Enhanced line ownership of EP with IPAD performance metrics for site supervisors and managers.
- Enhanced Ownership of EP equipment with the EP coordinator attending plant health committee meetings.

2. Areas for Concern:

EP.1 Criteria #6 "Practices and procedures enable the emergency organization to recognize and classify emergencies correctly, assess the consequences, notify emergency response personnel, and recommend appropriate protective actions to off-site agencies"

Prairie Island revised the Emergency Action Level (EALs) scheme utilizing a threshold value for declaring an Alert for Radioactive Release when a radiological release was 200 times the Technical Specification (TS)/Off Site Dose Manual (ODCM) limits for fifteen (15) minutes or longer. However, the emergency plan "Alert" emergency action levels (EALs) RA1.1 and RA1.2 specified instruments whose threshold values were beyond the indicated ranges of the effluent radiation monitors. The root cause of this event was that existing procedures did not provide adequate guidance for changing EALs or EAL schemes. A contributor to this was the use of existing procedure for conducting 50.54(q) evaluations did not adequately address the development and validation activities associated with changes to EAL schemes. **Result:** Inspection of these actions by the NRC indicated that undue delay in classifying an ALERT based upon the EALs was a violation of 10CFR50.47 (b). This was cited as potential "White" finding with a Regulatory Conference pending.

EP.1 Criteria #1 "...The station emergency response organization implements and controls emergency preparedness and emergency response activities effectively."

Prairie Island has been challenged by NOS to address concerns with staffing the Emergency Response Organization (ERO) with adequate staff and within the required response times. The NRC identified this as an Unresolved issue (URI). This URI will not be cleared until the station conducts a "Drive in" drill that is observed by the NRC. In September 2009, NOS identified a number of personnel whose ability to meet the thirty (30) and sixty (60) minute response time was in question and that the station should perform a response time test prior to the "Drive In drill" in 2010 (CAP 01198073). With insufficient action taken in response to these concerns, NOS escalated this issue to an "NOS Finding" (CAP 01219975). Amongst the actions taken from this NOS Finding was a response time test which is being evaluated for any follow on actions necessary to ensure that the station is successful with its upcoming "Drive In drill." The Management Safety Review Committee (MSRC) also voiced its concern over the actions and urgency the station was taking to address this concern.

PI.3 Criteria #1 "Managers establish and reinforce expectations for using lessons learned from operating experience to prevent events and improve job performance."

The station has had three (3) inadvertent siren activations/failures (CAP 01176005, 01211742). The Emergency Planning department conducted an Apparent Cause Evaluation (ACE) to address these and other events (CAP 01176005). Industry Operating Experience from Fermi station OE18789 noted that siren failures/activations could be caused by ant infestations. Investigation revealed, the ants are attracted to the adhesive used to attach the weather stripping for these control cabinets. In response to an inadvertent activation at Prairie Island in March, this OE was reviewed and considered, but not all of the actions from this OE were taken by Prairie Island, specifically, the weather stripping was not inspected or replaced to prevent moisture intrusion and no pesticide was sprayed to deter the ant infestation. **Result:** Inadvertent Siren Activation on December 24 2009. The principle action taken by Prairie Island to address the cause was to clear the plugged holes caused by ant infestation, but no actions were taken to address the weather stripping or to prevent future ant infestation. (CAP 01220019)

3. Observation Reports:

NOS assessed:

1. February 2010 Emergency Preparedness Drill.

- Activities observed:
  - Drill Brief
  - Drill Performance
  - Conduct of the Drill
  - Drill Critique

Areas that met expectations:

- Drill Performance
- Drill Critique

Areas that need improvement:

- Not all Participants arrived on time for the brief. (CAP 01217795)
- Not all participants were aware a release was in progress. (CAP 01217537)
- In one instance a drill controller incorrectly provided information leading participants to believe no release was in progress. (CAP 01217543)

2. Prairie Island Emergency Preparedness required assessment (10CFR50.54 (t)).

- Areas assessed:
  - Are proper and timely event notifications, event classifications and upgrades, and protective action recommendations and changes being made?
  - Assess the validation performed by departments to assure that drive times, distances, and overall response times were accurate.
    - Do this through a sample of those members of the ERO team who furthest from the plant or have the most circuitous route to get to the plant.
  - Observe the Work request screening meeting when EP related equipment is screened.
    - Are the WRs screened for their EP impact IAW work management matrix?
    - Does the SM ever increase the priority of WRs based upon impact to Operations within his authority?
  - Topics determined from the Technical Specialist review to meet 10CFR50.54t requirements.
    - Drill and Exercise Performance
    - Emergency Plan Support Activities
    - Interface and Communication
    - Additional Scoping Questions
  - Are plans in place and progress being made to convert the ERO training program to a SAT-based program?
  - Security and Operations are developing common "language" for EAL classification.
    - Assess the training conducted for both the Operations EDs and Security staff.
    - Quiz/Interview a sample of EDs/security staff to ensure they will be able to perform this activity

- Areas that met expectations:
  - Observation of Control Room simulator activities on three separate occasions revealed that in all instances event notifications, classification, upgrades and PARS (if applicable) were made in an accurate and timely manner.
  - The work requests screened with impact on EP were given a management priority consistent with the Prioritization Guidance Matrix in Attachment 1 of FP-WM-WOI-01, Work Identification, Screening, Validation, and Cancellation.
  - EP drill and exercise commitments were fulfilled during 2009, and that these activities were adequately critiqued to sufficiently identify weaknesses in goals, objectives, and performance.
  - Based on review of CAPs and Drill Critiques, CAPs are being entered at the appropriate level of importance.
  - Re-entry/recovery plan contain the position/title, authority, and responsibilities of individuals who will fill key positions in the facility recovery organization.
  - The ERO augmentation process currently supports timely activation of the Emergency Response Facilities (ERF)[Based upon quarterly surveillance testing- Drive in times still challenging]. The Emergency Plan Implementing Procedures fully describe the functions, equipment and personnel responsibilities.
  - Minimum on-shift staffing requirements for staffing Emergency Plan required positions are verified by ensuring minimum technical specification required and fire brigade positions are met for Operations and Radiation Protection personnel.
  - Training provides for initial and annual retraining of personnel with emergency response responsibilities.
  - The TSC, OSC, and EOF were determined to meet NUREG 0696's basic criteria regarding their functions, locations, size, habitability provisions, communications equipment, technical data availability, and the availability of relevant reference documents, procedures, and forms.

- Areas that need improvement:
  - Some site personnel assigned to the ERO (Emergency Response Organization) are not able to respond at all times (night and day) within the time required by the Site's E-Plan. (CAP 01220019)
  - Documentation could not be provided to show that all Drill & Exercise (DEP) objectives were demonstrated to satisfy the 6 year cycle schedule (2001-2006) (CAP 01220021)
  - A discrepancy was noted where the Plant Manager at Prairie Island is not the designated Emergency Director as required by the PINGP Emergency Plan. (CAP 01219626)
  - Corrective actions and process changes for the six siren related reportable events relevant to the Prairie Island Plant were appropriate and adequately addressed the issues, with the one exception noted previously in this report. (CAP 01215857)

4. Issues identified by site/outside organizations and self-revealing events:

1. NRC Open item EP/EAL potential finding (CAP 01221036) (NRC identified)

Training

The Training (Objectives 1, 4 including Staff Qualifications) department performance was assessed as *meeting expectations.*

Training is assessed quarterly.

The basis for this evaluation is the solid performance of the leadership team and staff. Noteworthy amongst this is the self critical analysis of the training organization performed with the NRC Initial License Exam question which was required to be withdrawn from the exam due a human performance error by the exam team.

Noteworthy performance: The station received ten (10) new licensed operators from the recent Initial License Training (ILT) class. The Chief examiner debriefed the station during the exam administration. The Chief examiner stressed that the exam team felt the RO candidates were very well prepared for the operating exam and they performed well on the control boards. In addition, the SRO candidates performed very well on the control boards, they had good diagnostic skills, were able to locate all of the required components, and had the knowledge and ability to operate the systems properly. The Chief examiner said this performance is not typical performance for SRO instant candidates. This is the 4th consecutive ILT class for PI with 100% pass rate. Based upon industry Operating Experience, these results are representative of good performance.

1. NOS Assessment;
The training department continues to demonstrate good performance and strong leadership. This is supported by observations during the Licensed Operator Requalification observations:

NOS assessed the Operating Experience Evaluations assigned to Training department for lessons learned by other stations and incorporation of these into Prairie Island's training program. The specific checklists questions with the results of the assessment were:

- Did we do what we said we were going to do in the corrective actions from each of the following Operating Experience Evaluation Requests (OEERs) assigned to Training:
    - 01187851, ILT NRC Written Exam Failure Rate
        - No corrective actions were required as a result of this OEER. The NSPM Fleet Initial License Training (ILT) Training Program Description already covers the areas that were lacking in the training program at Sequoyah where the OE28726 event occurred.
        - The station has received a "Strength" in the area of ILT exam development process from the 2009 Institute of Nuclear Power Operations (INPO) Accreditation Team and the 2009 INPO Plant Evaluation & Assessment Team.
    - 01195231, Shortfalls Identified in the Oversight of Initial Non-Licensed Operating Training Classes
        - No corrective actions were required as a result of this OEER. Fleet procedures FP-T-SAT-50, Evaluation Phase, and FP-T-SAT-60, Systematic Approach to Training (SAT) Overview, contain requirements that were lacking in the oversight of the initial Non-Licensed Operator training classes at Waterford 3 where the OE29341 event occurred.

- 01199185, Licensed Operator Medical Exams Not Being Performed as Required.
  - No corrective actions were required as a result of this OEER. The fleet process for Licensed Operator medical exams already contained information that was missing from the process at Fermi 2 where OE29639 event occurred. The process at Prairie Island is administered per FP-T-SAT-74, NRC Operator License Application and Renewal Requirements, and associated forms: QF-1074-01, QF-1074-02, QF-1074-03 and QF-1074-04.

- Are there written plans in place to recover the Red programs for Initial License Training (ILT) Objective 2 and Engineering Support Personnel (ESP) Objective 3?

- Are there enhancements or further corrective actions required to achieve the desired results from these plans?
  - ILT Objective 2 was identified during the 3rd Quarter 2009 Training Program Effectiveness Report (TPER) as Red and has remained Red during the 4th Quarter 2009 due to two vacant instructor positions. Per the TPER, Objective 2, if Question 1, "Is instructional staff for this program meeting established staffing levels?" is answered "No" the section is marked as Red. The instructor position has been posted and the hiring process is currently in progress. Training has documented this in CAPs 01200838 and 01211875. No further corrective actions are required.

  - ESP Objective 3 was identified as Red during the 3rd Quarter 2009 TPER, but returned to Green during 4th Quarter 2009. Per the TPER, Objective 3, if Question 3, "Did personnel complete designated initial training and qualification requirements prior to being assigned to work independently?" is answered "No" the section is marked as Red. It was Red during 3rd quarter because an Engineer performed the system owner functions of collecting MSPI data without having completed the required qualification. Engineering performed a Human Performance Event Investigation (HUEI) and took a department clock reset under CAP-01192792, "Unqualified engineers performing system owner functions." Engineering also withdrew the MSPI data that was submitted and had it revalidated by a qualified Engineer. No additional actions or evaluations were taken for CAP-01192792.

  - The event was also discussed at the ESP Training Advisory Committee (TAC) meeting in December 2009. An action was taken to distribute an expectations letter to the Engineering department stating that the System Turnover process using QF-0548 as required by FP-E-SE-04, Conduct of System Engineering, will be used as well as completion of mentoring guide FL-ESP-SYS-009M as required. The Director of Engineering has distributed a letter to the Engineering organization outlining the expectations as discussed at the TAC meeting.

  - This event was further analyzed during the Effectiveness Review (EFR) for CAP-01164912, PI Maint/Tech Training Focused Self Assessment AFI 3.1. The EFR failed in part as a result of the Engineer who performed a task they were not qualified to perform. The EFR failure was documented in CAP-01211272, B Level CAP EFR Found Actions Ineffective. The completion notes for the condition evaluation state if there are any qualification violations the positive discipline process will be used to ensure the appropriate level of accountability is applied to address the behavioral aspects of the issue. An additional EFR for worker qualifications was also added to CAP-01164912 and will be conducted in July 2010.

Areas that met expectations:

- No corrective actions were necessary from the OEERs that were assigned to Training. The fleet training program and processes already contained the information that was lacking from the stations where the OE events occurred.
- Plans are in place and actions have been taken to recover the Red programs in ILT Objective 2 and ESP Objective 3.

Areas that need improvement:

- No areas noted.

2. Area of Concern

During NRC Initial License exam, one of the questions on the exam was compromised due to a human performance error by the Training staff. In an effort to give the Initial License applicant's timely clarification to a question on the exam, an error occurred which was undetected by subsequent reviews and the question had to be withdrawn from the exam. While this event is a singular event in the overall good performance of the Training staff, it does highlight the need for discipline and error performance during this highly regulated and long prepared for exam. **Result:** Exam question was withdrawn from the exam and a Department clock reset for the Training department.

Issues identified by site/outside organizations and self-revealing events:

1. Ineffective Supervisor training for Configuration Management (CAP 01224124) (Self Identified)

Software Quality Assurance

The Software Quality Assurance program was assessed as *meeting expectations*.

The Software Quality Assurance program is assessed annually.

The basis for this evaluation was the satisfactory assessment of these programs through the Assessment Decision Worksheet for 1Q2010 by NOS.

NOS Assessment:

Observation Reports
NOS programmatically assessed:
Activities associated with the Cyber Security program at Monticello and Prairie Island (including Marquette Plaza) were evaluated and performed through observations, interviews with personnel, and document reviews. The following scoping questions were assessed:

- Is the Cyber Security project per NEI 04-04 on track for scheduled implementation?
- Are change management principles being followed to promote effective implementation?

Areas that met expectations:
Based on interviews and document reviews, the Cyber Security (CS) Projects per NEI 04-04 were on track for scheduled implementation at Prairie Island and Monticello with some issues noted.

Areas that need improvement:
None

Plant Operating Review Committee (PORC)

The Plant Operating Review Committee (PORC) was assessed as *meeting expectations.*

The Plant Operating Review Committee (PORC) is assessed annually.

NOS Assessment

Observation Reports

NOS assessed this committee through meeting observations, interviews and document reviews. The scope included:

- Are PORC action items tracked and acted upon?
- Is documentation for review by PORC members being received within the required 48 hours to allow time to review before the meeting?

Areas that met expectations:

- PORC action items are tracked and acted upon.

Areas with opportunities for improvement:

- A PORC Primary Member, located in the Old Admin Building (OAB), indicated he did not receive the PORC review package until after the PORC meeting was over.

"Q" List Program

The "Q" list program is assessed as *meeting expectations.*

The "Q" list program is assessed annually.

NOS Assessment

Observation Reports

The scope of the assessment of the Q-List Project was:

- Does the plant believe interface between the Q-List project and the plant timely, and are the shared work assignments overloading to the plant staff.
- Does Q-List adequately address the concerns of the 2001 NRC White Finding?
- Is the Q-List ready to complete the project as scheduled?
- Does the Q-List project get the information it requires from the plant?
- Do the plant stakeholders get the Q-List project deliverables they need?

Areas that met expectations:

- Discussion with plant personnel revealed that the interface between the Q-List project and the plant is timely and that the shared work assignments are currently not overloading the plant staff.
- Based upon review of documents and interviews, the Q-List project adequately addresses the concerns of the 2001 NRC White Finding.
- Discussions with the Q-List Project Manager (PM) and Q-List Electrical Engineer did not reveal any examples of plant personnel not providing necessary information to the Q-List project.
- Discussion with plant stakeholders revealed that they receive the deliverables they need from the Q-List project.

Opportunities for improvement:

- Based upon review of documents and interviews conducted, the Q-List project will not be completed as currently scheduled. (CAP 01221613)

Quarterly Results Review

Closed issues:
One NOS-tracked issue was closed since 4Q2009 Quarterly Results Review. All corrective actions and corrective actions to prevent recurrence for these issues were completed as documented.

- CAP-01184607, Self Assessment Programmatic Weaknesses Initiated 06/05/2009. No NOS review was conducted as required by FP-PA-ARP-01, nor were the actions sufficient for closure. NOS initiated CAP-01223762. This action was closed due to sufficient corrective actions taken.

Open issues:
Eight NOS-tracked issues were open at the time of this assessment in which closure measures had been established and alignment achieved. These Open Issues are open due to outstanding corrective actions that have not been completed.

- CAP-01146430, Potential Adverse Trend in Manifold Valve Operation Initiated 08/04/2008. Closed to Level A CAP-01146005. No CAs were closed during 1Q2010. One Corrective Action to Prevent Reoccurrence (CAPR) and one CA remain open. No discrepancies were noted.

- CAP-01171797, Adverse Assessment Finding: M&TE Programmatic Breakdown Initiated 03/04/2009. No CAs were completed during 1Q2010. One CAPR remains open. No discrepancies were noted.

- CAP-01187837, Adverse Trend in Governing & Oversight of PARB & Performance Improvement Initiated 07/01/2009. There were 4 action items completed in 1Q2010. One CA remains open. No discrepancies were noted.

- CAP-01211532, Safety culture issue related to the CA program Initiated 12/22/2009. "A" level - (Safety culture issue related to the CA program) Initiated 12/22/2009, was identified by NOS as an Adverse Assessment Finding (AAF). One CAPR is currently assigned to this CAP. No discrepancies were noted.

- CAP-01214190, RP Source(s) missing w/o Site MGMT notification & adequate action Initiated 01/18/2010. Per the "N" notes this issue is being handled under two separate ARs. The issue of not writing a CAP is being addressed under CAP 01211532, and the issue of Source control is being addressed under CAP-01214773. No discrepancies were noted.

- CAP-01214773, "Key Control for Safety Significant Keys Less Than Adequate" Initiated 01/21/2010. RCE completed 03/12/10 and one CA complete. No discrepancies were noted.

- CAP-01219975, Insufficient action taken for ERO augmentation times. No actions taken. Ace to be performed by 04/01/2010. No discrepancies were noted.

- CAP-01222143, CAQs closed w/o action No actions taken. ACE to be performed by 04/15/2010. No discrepancies were noted.