SALP BOARD REPORT

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

50-282/89001; 50-306/89001
Inspection Report Nos.

Northern States Power Company
Name of Licensee

Prairie Island Nuclear Generating Plant
Name of Facility

December 1, 1987, through April 30, 1989
Assessment Period

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I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) program is an integrated NRC staff effort to collect available observations and data on a periodic basis and to evaluate licensee performance on the basis of this information. The program is supplemental to normal regulatory processes used to ensure compliance with NRC rules and regulations. SALP is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful feedback to the licensee's management regarding the NRC's assessment of their facility's performance in each functional area.

An NRC SALP Board, composed of the staff members listed below, met on June 15, 1989, to review the observations and data on performance, and to assess licensee performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." The guidance and evaluation criteria are summarized in Section III of this report. The Board's findings and recommendations were forwarded to the NRC Regional Administrator for approval and issuance.

This report is the NRC's assessment of the licensee's safety performance at Prairie Island Nuclear Generating Plant for the period December 1, 1987, through April 30, 1989.

The SALP Board for Prairie Island was composed of:

Name	Title
C. J. Paperiello	Deputy Regional Administrator
*C. E. Norelius	SALP Board Chairman, Director, Division of Radiation Safety and Safeguards (DRSS)
*E. G. Greenman	Director, Divison of Reactor Projects (DRP)
*H. J. Miller	Director, Division of Reactor Safety (DRS)
*W. L. Axelson	Chief, Reactor Projects Branch No. 2
**L. R. Greger	Chief, Reactor Programs Branch
***R. W. Cooper, II	Chief, Engineering Branch
****G. C. Wright	Chief, Operations Branch
B. L. Burgess	Chief, Projects Section 2A
*J. E. Hard	Senior Resident Inspector, Prairie Island
*L. A. Yandell	Acting Project Director, Project Directorate III-1, NRR
*D. C. DiIanni	Project Manager, NRR
M. P. Phillips	Chief, Operational Programs Section
D. H. Danielson	Chief, Materials and Processes Section
M. C. Schumacher	Chief, Radiological Controls and Chemistry Section
T. E. Vandel	Reactor Inspector, DRS
M. A. Kunowski	Radiation Specialist, DRSS
R. N. Sutphin	Project Inspector, DRP

C. D. Pederson	Reactor Engineer, DRP
P. L. Hartman	Senior Resident Inspector, Monticello
M. J. Smith	Emergency Preparedness Specialist, DRSS
D. Funk	Security Specialist, DRSS
J. L. Belanger	Security Specialist, DRSS
T. J. Madeda	Security Specialist, DRSS
M. Moser	Operations Engineer, NRR
T. Tella	Reactor Inspector, DRS

*Denotes voting members.
**Denotes voting member for Radiological Controls, Security and Emergency Preparedness.
***Denotes voting member for Maintenance and Surveillance.
****Denotes voting member for Engineering and Technical Support.

II. SUMMARY OF RESULTS

A. Overview

This assessment period is from December 1, 1987, through April 30, 1989. During this period, both units at Prairie Island operated continuously, indicative of the licensee's effort and commitment to the trip reduction program.

The areas of Radiological Controls, Emergency Preparedness and, Maintenance and Surveillance each received a SALP Category 1, remaining at a consistent level of good performance. Overall performance in the Maintenance area was determined to be stronger than the performance observed in the Surveillance area. The area of Plant Operations improved to a SALP Category 1, primarily due to the improvement in management oversight of this area. Two new areas were rated this SALP period; Engineering/Technical Support and Safety Assessment/Quality Verification, receiving SALP 2 and SALP 1 ratings respectively. Security was rated a SALP 2, a decline from the previous assessment period. The decline in this area was attributed to a lack of timely corrective action to address equipment aging problems and a decline in enforcement history.

The performance ratings during the previous assessment period and this assessment period according to functional areas are given below:

Functional Area	Rating Last Period	Rating This Period	Trend
Plant Operations	2	1	
Radiological Controls	1	1	
Maintenance/Surveillance	1/1	1	
Emergency Preparedness	1	1	
Security	1	2	
Engineering/Technical Support	NR	2	
Safety Assessment/Quality Verification	NR	1	

NR - Not Rated

B. Other Areas of Interest

None.

III. CRITERIA

Licensee performance is assessed in selected functional areas. Functional areas normally represent areas significant to nuclear safety and the environment. Some functional areas may not be assessed because of little or no licensee activities or lack of meaningful observations. Special areas may be added to highlight significant observations.

The following evaluation criteria were used to assess each functional area:

1. Assurance of quality, including management involvement and control;

2. Approach to the resolution of technical issues from a safety standpoint;

3. Responsiveness to NRC initiatives;

4. Enforcement history;

5. Operational events (including response to, analyses of, reporting of, and corrective actions for);

6. Staffing (including management); and

7. Effectiveness of training and qualification program.

However, the NRC is not limited to these criteria and others may have been used where appropriate.

On the basis of the NRC assessment, each functional area evaluated is rated according to three performance categories. The definitions of these performance categories are as follows:

Category 1: Licensee management attention and involvement are readily evident and place emphasis on superior performance of nuclear safety or safeguards activities, with the resulting performance substantially exceeding regulatory requirements. Licensee resources are ample and effectively used so that a high level of plant and personnel performance is being achieved. Reduced NRC attention may be appropriate.

Category 2: Licensee management attention to and involvement in the performance of nuclear safety or safeguards activities are good. The licensee has attained a level of performance above that needed to meet regulatory requirements. Licensee resources are adequate and reasonably allocated so that good plant and personnel performance is being achieved. NRC attention may be maintained at normal levels.

Category 3: Licensee management attention to and involvement in the performance of nuclear safety or safeguards activities are not sufficient. The licensee's performance does not significantly exceed

that needed to meet minimal regulatory requirements. Licensee resources appear to be strained or not effectively used. NRC attention should be increased above normal levels.

The SALP report may include an appraisal of the performance trend in a functional area for use as a predictive indicator if near-term performance is of interest. Licensee performance during the last quarter of the assessment period should be examined to determine whether a trend exists. Normally, this performance trend should only be used if both a definite trend is discernible and continuation of the trend may result in a change in performance rating.

The trend, if used, is defined as:

Improving: Licensee performance was determined to be improving near the close of the assessment period.

Declining: Licensee performance was determined to be declining near the close of the assessment period, and the licensee had not taken meaningful steps to address this pattern.

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

Evaluation of this functional area was based on the results of 12 inspections by the resident inspectors and two inspections by regional inspectors.

Enforcement history in this functional area during the assessment period was excellent with no violations identified. During the previous assessment period, five violations were identified.

No reactor trips were experienced by either unit during the 17-month assessment period. The last reactor trip occurred prior to the beginning of the SALP period in July 1987. During the previous assessment period, there were four reactor trips and in the period before that one, there were six trips. Thus, continuous improvement has been made regarding this area over the past three years.

Plantwide housekeeping continues to improve. Paint crews were active continually, especially in the auxiliary building. Improvement was seen in the rate of cleanup following outages. During the regional fire protection inspection, a walkthrough of the screenhouse and the turbine and auxiliary buildings determined that the presence of combustibles and other fire hazards were kept to a minimum. Also witnessed during the fire protection inspection were two firefighting training evolutions that were conducted, in part, to satisfy the NRC annual fire brigade training requirements. This type of training was viewed as very realistic and was conducted in a professional manner by knowledgeable fire instructors.

Staffing for plant operations continues to improve. At the end of the assessment period, the operations staff numbered 107, up from 99 at the end of the last period. Also, new employees were hired into Operations only after satisfactorily passing comprehensive psychological and aptitude examinations, which is a procedure that was instituted during the period. Although the total number of licensed reactor operators (ROs) and senior reactor operators (SROs) remained about constant, the number of operator license candidates more than tripled from 6 to 19 during the period. This interest in obtaining licenses ultimately will relieve, to some extent, the amount of overtime currently being worked by the licensed operators. Of the 24% overtime expended during the assessment period, 63% is outage related and 37% non-outage. Another improvement instituted was

the full implementation of the Shift Manager program on September 1, 1988. With this program, each crew has assigned to it a degreed Shift Manager in addition to the Shift Supervisor for each unit.

During the assessment period, five SRO and six RO replacement examinations were given. Three SRO and four RO candidates passed the examinations for a passing rate of 64%. As these results were below the industry average, the licensee closely analyzed the examination results, reviewed the training practices, and established more rigorous standards for candidates in training for NRC examinations.

The licensee was generally very responsive to NRC initiatives. The following are examples of licensee's responsiveness; improvements in the control room arangements per human factors engineering recommendations; modernization of work stations for reactor operators; incorporation of Westinghouse Owners Group Emergency Response Guidelines 1A (ERG-1A) into updated Emergency Operating Procedures; installation of continuous monitoring of thermal reactor power and meetings with the operations staffs of other 2-loop Westinghouse designed plants.

During the assessment period, Licensee Event Reports (LERs) were written for three events involving errors by Operations personnel. All of these were relatively minor events: the automatic start of a diesel-driven cooling water pump when an improper valving sequence was used, the failure to log one reactor parameter over a 2-hour period when the plant process computer was temporarily inoperable, and the automatic start of the D1 diesel generator as the result of missing a step in a test procedure. In the previous assessment period, there were five such events involving personnel error.

The operating crews continue to perform in a professional manner. New signs have been posted in the control room that direct all control room visitors to obtain permission before entering the operators' area. This control of visitors helps to minimize distractions to the operators. Another example of good professional performance was the discovery by operators of Foxboro controllers that were not performing their intended safety function. The controllers in question monitor axial flux tilt and are to initiate protection system action when a tilt becomes severely pronounced. During a period of severe flux tilt, the operators noted that one of four such controllers was not responding as it should. This observation led to the detection of an installation error that had been in existence for several years. Another positive attribute that has been noted is that senior Operations management is closely involved with plant operation and interacts with the operating crews nearly daily.

Unit availabilities at Prairie Island during the assessment period were 92.1% and 85.6% respectively for Units 1 and 2. Forced outage rates for the two units were 0.4% and 0.78% for the period.

2. Performance Rating

The licensee's performance is rated Category 1 in this functional area. The licensee's performance was rated Category 2 in the previous assessment period.

3. Recommendations

None.

B. Radiological Controls

1. Analysis

Evaluation of this functional area was based on the results of three inspections by regional inspectors and observations by the resident inspectors.

Enforcement history in this functional area remained excellent with no violations in the current 17-month assessment period and none during the previous 18-month assessment period.

Staffing continues to be a licensee strength. The radiological control staff is well-trained, experienced, with low turnover. Strained labor management relations in the chemistry group were noted early in the SALP period; however, work performance does not appear to have been affected and the problems were essentially resolved by the end of the SALP period. An experienced, professionally certified health physicist was added to the radiation protection staff late in this assessment period. Although the radiological control staff is relatively small, it communicates well internally and with other departmental staffs.

A total of five LERs related to this functional area were submitted during the assessment period. Only one of these, a late analysis of the contents of the gas decay tanks, was the result of personnel error. One licensee event was reported in this functional area during the previous assessment period.

Management involvement in ensuring quality was good during this period. The strained labor/management relations in the chemistry area revealed some management weaknesses, however, licensee-initiated corrective actions were comprehensive and appeared to have

resolved the issues. During non-outage times, there are frequent short discussions with the staff on current work activities, future plans and improvement items.

Licensee responsiveness to NRC concerns was good. The licensee improved laundry equipment and monitoring techniques and significantly reduced the number of personnel contaminations resulting from laundered protective clothing. Good performance also included prompt correction of NRC-identified errors in effluent release reports and a licensee commitment to evaluate and correct, as appropriate, the air cleaning systems' charcoal absorber testing program.

The licensee's approach to resolution of technical issues continues to be good. Collective person-rem doses for the last two years (1987-1988) were 134 and 199 respectively. These were very low cumulative doses which reflect the effectiveness of the as-low-as-is-reasonably-achievable (ALARA) program and an experienced plant staff. The licensee's contamination control program continues to be very effective in maintaining the clean areas of the plant, keeping the contamination in contaminated areas very low, and minimizing the number of personnel contaminations. No problems were identified with solid radwaste or the radioactive waste transportation programs. Liquid and gaseous releases continue to be very low with resulting offsite doses generally less than 0.1% of allowed limits. Good performance also included increased use of computer technology to generate radiation work permits, calculate air sample data, improve oversight of the gaseous and liquid radioactive effluent release program, schedule work, and trend data. It was noted, however, that certain chemistry records were maintained only on electronic media without hard copy backup and were not protected from deletion or change. This practice is a weakness and is inconsistent with normally accepted quality assurance (QA) practices.

Revision 9 to the Northern States Power Company (NSP) Offsite Dose Calculation Manual (ODCM) has been reviewed and 13 discrepancies were identified, most of which were of a technical nature and should have been addressed by the licensee in the original submittal. This report has been transmitted to the licensee with a request to consider the comments and suggestions made, and to revise the ODCM as appropriate.

The effectiveness of the licensee's training and qualification program has been good. Appropriate continuing training is provided for the staff.

The quality of radiological confirmatory measurements is very good with 45 agreements in 47 comparisons. The licensee's

counting room quality control (QC) program was instrumental in detecting an irregularity in one of the monitored gamma spectroscopy parameters and effecting an investigation into the cause.

2. Peformance Rating

The licensee's performance is rated Category 1 in this functional area. The licensee's performance was rated Category 1 during the previous assessment period.

3. Recommendations

None.

C. Maintenance/Surveillance

1. Analysis

Evaluation of this functional area was based on the results of 12 inspections conducted by the resident inspectors and seven by regional inspectors. Maintenance and surveillance were separate functional areas in the previous assessment period but have been combined as one functional area for this assessment period.

Enforcement history in this functional area during this assessment period indicated a decline. Seven Severity Level IV violations were issued, compared to a total of three Severity Level IV violations in the maintenance and surveillance areas in the previous assessment period.

All of the violations were in the surveillance area. Four of the violations resulted from the inspection of Unit 1 containment integrated leak rate testing in 1988. The violations involved failure to perform required local leak rate testing of selected penetrations (electrical penetrations going back to 1983), improper calibration of the flow meters, lack of required capability to perform data reduction calculations, and improper valve lineup. One violation was the result of engineered safety features (ESF) bus relay testing which momentarily disabled the bus while one of the emergency diesel generators (DG) was out of service. Other violations were for routine testing not being performed on the double doors to the shield building and on the auxiliary building special ventilation zone, and failure to perform testing of a containment airlock door. These violations, related to surveillance activities during the assessment period, are not indicative of a significant generic weakness in the administration of the program. Routine surveillances are generally performed on schedule and the results carefully

reviewed by cognizant personnel to assure that regulatory and performance requirements are met.

Operational events in this area did not indicate any pervasive problems in the licensee's control of maintenance or surveillance activities affecting plant operations. Of the 18 LERs issued during this period, six involved this functional area. Four were in the maintenance area including one due to equipment failure. Two LERs involving missed surveillances were the result of personnel error. The reported events were not considered to be safety significant except for the failure to close of the Unit 2 emergency DG output breaker. None of these events resulted in a reactor trip. The licensee's performance in this area was slightly better than the previous SALP period, during which nine LERs were issued and two reactor scrams occurred.

Management involvement to assure quality in the maintenance area was very good. The maintenance program was effective and properly implemented during this assessment period, although some procedures for motor operated valve (MOV) maintenance were noted as needing improvements. Work backlogs remained very low as in previous assessment periods. At the end of this period, only one week's backlog of safety-related and balance-of-plant maintenance was outstanding. Additionally, none of the preventive maintenance items (PMs) was overdue and very little rework (less than 0.5%) was required during this assessment period.

In the area of surveillance, plant management was actively involved in assuring water quality. Water chemistry data was reviewed daily by laboratory management and weekly by plant management. Corporate management committed to the Pressurized Water Reactor (PWR) Owners Group Guidelines and overall quality was generally maintained well below action levels. However, in the area of leak rate testing, the licensee's performance during the early part of the assessment period required improvement, since the licensee's consultant did not have the capability to perform all the required data reduction calculations that resulted in improper implementation of the Type B and C leak rate testing program. Improvement was noted in this area during the performance of leak rate testing in the latter part of the assessment period. As mentioned previously, routine surveillances were conducted in accordance with regulatory and performance requirements.

Plant staffing in the areas of maintenance and surveillance, including inservice inspection (ISI) and chemistry appeared to be adequate. One exception noted was during the Unit 1 leak rate test. The engineer in charge of the test had to cover other areas of work. This problem was corrected during the leak rate test of Unit 2 conducted during the latter part of

the assessment period. The engineers assigned to the leak rate tests had a good knowledge of the equipment used but only a fair knowledge of the regulations (10 CFR 50, Appendix J).

The maintenance and surveillance staffs including ISI and chemistry staff appeared to be qualified and adequately trained in their fields. The effectiveness and experience of the craftsmen at Prairie Island were reflected in the excellent overall performance of the plant. Forced outage rates were very low and the plant experienced no reactor trips during the period. Emergency DG availability was also good.

Overtime hours for the craftsmen assigned to Prairie Island remained low. Overtime worked at the plant amounted to about 7% of the regular hours for these individuals. Of this 7%, 65% was outage related and 35% non-outage. Turnover rates of staff were very low.

The licensee's responsiveness to NRC initiatives was generally good. Some examples were the licensee's actions in providing a continuous pre-lube for the Fairbanks-Morse engines of the DGs, improvements in Limitorque valve maintenance program, and prompt corrective actions for the problems identified during Unit 1 containment leak rate tests. The licensee joined the Westinghouse Owner's Group and also promptly instrumented the Unit 2 surge line with resistance temperature detectors during the April 1989 refueling outage.

The licensee's identification and resolution of technical issues in this area was generally timely and adequate. The system engineer concept has worked well at this station. The system engineers were involved in all phases of maintenance activities including review of completed maintenance. The engineering group was involved in failure trending and predictive maintenance, which has contributed well to the goals of low equipment unavailability and reduction in forced outage rate.

Several plant improvements made during the assessment period were expected to improve the plant availability. The improvements included a pre-lube system for the DGs, improved seals for the charging pumps, and Unit 1 steam generator tube sleeving.

2. Performance Rating

The licensee's performance is rated Category 1 in this area. The licensee's performance was rated Category 1 in both Maintenance and Surveillance in the previous assessment period.

3. Recommendations

None.

D. Emergency Preparedness

1. Analysis

Evaluation of this functional area was based on the results of one emergency preparedness (EP) exercise evaluation and one routine inspection conducted by regional inspectors.

Enforcement history in this functional area remained the same, with no violations identified during this or the previous assessment period. All concerns identified during the previous assessment period were resolved in a timely manner.

No inspection concerns were identified during the 1988 routine inspection; however, one concern identified during the 1988 exercise remained open for evaluation during the next annual exercise.

Management support of the EP program remains excellent at this facility and various program requirements remain part of daily plant surveillances and operations. Plant management has approved and developed several EP program enhancements during this assessment period. The Technical Support Center (TSC) was evaluated by an outside human factors consulting firm. This evaluation led to the relocation of emergency response system computers, the development of a command and control area, enlargement of the NRC work area and the addition of telephone jacks in the command and control area for NRC use. As a result of the most recent emergency exercise, concerns remain relative to the noise level in the TSC and the physical size of the EOF to adequately accommodate a large response of licensee, State, County and Federal personnel during an actual emergency.

The licensee's resolution of technical issues from a safety standpoint was good as evidenced by the timeliness and thoroughness of corrective actions of all NRC and self-identified concerns. Tracking systems were used effectively to track corrective actions taken on items identified during previous inspections and also on items identified by a strong plant audit program.

Events that resulted in the activation of the emergency plan were properly identified and classified. Offsite notifications, including those to the NRC, were made within the required time frame. The prompt notification system was upgraded to prevent operational problems that were encountered during ice storms. This upgrade was accomplished within four weeks of self-identification of the problem and was considered timely in view of the amount of research and procurement that was necessary to solve this concern.

Staffing of the Emergency Response Organization (ERO) has remained excellent throughout the assessment period. The licensee has maintained a current roster of qualified personnel to fill key positions in the emergency organization. A strong offsite liaison program that supports the States of Minnesota and Wisconsin and their respective counties is maintained by corporate management. The licensee assisted offsite support groups in their efforts to improve their 1989 performance in several ways. A questionnaire was distributed to all offsite groups to assess their needs, joint workshops were held to coordinate work efforts, and cross training with each State was conducted quarterly in an effort to improve communications between utility personnel and offsite support groups.

Training and drill records indicated an excellent level of staff participation in training and drills. Interviews with various ERO personnel indicated a good awareness of their emergency responsibilities. These results indicate an excellent in-depth training and drill program and strong management support for the EP program. The licensee also successfully used the training center simulator for emergency plan drills and exercises. The simulator was programmed to drive actual displays in the TSC and emergency offsite facility to enhance the realism of the drills and exercises. This program includes the capability to run the EOPs on the plant simulator. The exercise performance was very good, although the scenario was of average difficulty.

2. Performance Rating

The licensee's performance is rated Category 1 in this area. The licensee's performance was rated Category 1 in the previous SALP assessment period.

3. Recommendations

None.

E. Security

1. Analysis

Evaluation of this functional area was based on the results of three routine security inspections by regional inspectors and on routine observations of security force activities by the resident inspectors.

A decline in the licensee's enforcement history was noted during the assessment period. One Severity Level III and three Severity Level IV violations were identified compared

with no violations identified during the previous assessment period. The Severity Level III violation involved the premature granting of unescorted access to an unauthorized individual as a result of a corporate administrative error. The civil penalty for this violation was mitigated in its entirety because of the licensee's prompt and extensive corrective action and past excellent performance in the area of security. Although the violation was discovered and logged by the licensee, the licensee failed to recognize the reportability of the issue.

Management's role in assuring quality was mixed. Both corporate and plant management were supportive of the security program as evidenced by the allocation of additional personnel and material resources. In response to an NRC identified weakness, the licensee, with the assistance of a security consultant, conducted an assessment of the protected area barrier and intrusion alarm system which resulted in the installation of several upgrades. The exterior barrier upgrade project resulted in an innovative and effective deterrent to prevent penetrations of the perimeter. In contrast, concerns identified in the previous assessment period, for the Secondary Alarm Station (SAS) relocation and computer replacement still remain open.

The licensee's security event reporting program was generally adequate and reports were timely and accurate. There was one security event report made during the assessment period. As noted previously, one security event was not reported as it should have been which detracted from an otherwise sound program. This action resulted in a violation and a procedural modification to the licensee's security reporting program. In general, security-related records were complete, adequately maintained, and available for NRC review.

The licensee's approach to the resolution of technical issues was good. The perimeter alarm system is aging but with frequent attention, generally continues to provide the necessary detection capability. Maintenance support was closely monitored and a consultant was retained to conduct a complete component evaluation of the system. The technical support to the computer replacement project has been excellent. The implementation of the miscellaneous safeguards amendments were technically sound and timely.

The licensee's responsiveness to NRC initiatives was excellent. Security management, both at a corporate and site level, is cognizant of and responsive to security findings. The licensee's response to enforcement issues, licensing matters, and inspection findings were generally technically sound and timely. The security superintendent's reviews of five published NRC

Information Notices were comprehensive. However, the SAS issue identified by the Regulatory Effectiveness Review (RER) team has remained open since 1985. Although extensive, the project has gone beyond the established schedule and the licensee failed to notify the NRC of having exceeded the commitment date. Additionally, the computer replacement project has continued for two years. The licensee is in the early stage of developing a performance monitoring program, which should improve licensee response in this area.

Security staffing levels are adequate to ensure a level of performance that meets regulatory requirements. The site security staff was increased in order to address a problem similar to a problem identified at Monticello. Although the contractor providing uniformed security services was changed during the assessment period, the transition was smooth and without impediments as a result of close coordination with various levels of licensee management. Security force training continues to be good. The tactical contingency training drill involving FBI, local law enforcement and site security exceeded the licensee's commitment.

2. Performance Rating

The licensee's performance is rated Category 2 in this area. The licensee's performance was rated Category 1 in the previous SALP assessment period. This decline in performance was due to lack of timely corrective action to address equipment aging problems and a decline in enforcement history.

3. Recommendations

None.

F. Engineering/Technical Support

1. Analysis

This is a new functional area and consequently was not rated in previous SALPs. Evaluation of this functional area was based on the results of eight routine inspections, including an EOP inspection by regional inspectors, a procurement inspection by the Office of Nuclear Reactor Regulation (NRR) and several inspections by the resident inspectors.

Enforcement history during this SALP period included three severity level IV violations. Since this area was not rated during previous assessment periods, no prior enforcement history is available for comparison. Confirmatory Action Letter (CAL) RIII-87-013 relating to operator licensing issues in the previous SALP period was satisfactorily closed during this period.

Two events requiring the submittal of LERs in this functional area occurred during this assessment period. One resulted from an incorrect change made to a surveillance procedure and the other involved incorrect bolting materials on the secondary side steam generator manways. The latter event stemming from an initial construction error was of limited safety significance.

Management involvement to ensure quality in this functional area was mixed. The system engineer concept utilized by the licensee contributed significantly to the plant's ability to routinely conduct refueling and maintenance outages in 30 to 35 days. Examples of system engineer contributions included identifying the wrong bolting material for steam generator secondary manways before installation and a special analysis of a Unit 2 extraction bellows that identified a fatigue failure design weakness. For IE Bulletin (IEB) 79-14, there was consistent evidence of prior planning and assignment of priorities for activities, and the activities were controlled by well-stated and explicit procedures. NSP corporate management has been actively involved in improving the training program and has maintained interaction to address operator licensing problems in the performance of operator exams.

On the negative side, the results of the NRR Vendor Inspection Branch inspection indicate that weaknesses existed in the areas of procurement and dedication of commercial grade items and interfaces between NSP and its vendors. The inspection team identified significant deficiencies in the procurement of commercial grade items for eventual use in safety-related applications. The deficiencies included the failure to properly dedicate and provide documentation for commercial grade items procured for use in safety-related applications. NSP failed to perform documented technical evaluations to identify attributes such as the components' safety functions and critical characteristics, verifications of design and manufacturing/material changes, and receipt inspection requirements beyond, generally, a part number verification and a check for physical damage and cleanliness. This resulted in the utilization of numerous components of indeterminate quality and qualification in safety-related applications.

The review of the vendor interface program also identified a weakness in which certain vendor communications received at NSP describing potential safety concerns were improperly and incompletely assessed for their applicability. The inspectors also identified several assessments that lacked the necessary level of documentation to permit clear understanding of the disposition. For example, NSP failed to perform documented

assessment of 17 Colt/FMED Services Information Letters (SILs) for their applicability to the emergency diesel generators.

The licensee's resolution of technical issues was mixed. The backlog of safety-related plant modifications remained manageable. About 150 modifications were in process at the end of the period. Of this amount, 47 were considered significant based on cost or regulatory impact. Reevaluations of as-built safety-related piping systems, performed by the licensee as a result of discrepancies identified by the vendor regarding weight and center of gravity with Copes Vulcan valves, in some cases exceeded USAS B.31.1.0 1976 allowable stresses. As a result, the licensee was requested to submit to the NRC a justification for continued operation (JCO) including acceptance criteria when encountering similar stress level discrepancies. The licensee's initial response was found to be unacceptable, and revised criteria were proposed and ultimately accepted by the NRC. All post-fire safe shutdown capability (10 CFR Part 50, Appendix R) technical issues were resolved during this period. Technical support for those resolved issues was excellent. One nontechnical issue remains open.

During the SALP period, many examples of good quality engineering work were evident in the management and resolution of licensing issues. A licensee submittal in response to 10 CFR 50.62 anticipated transient without scram requirements, a Technical Specifications (TS) change request based on the new 10 CFR Part 50, Appendix K evaluation model for upper plenum injection, a submittal involving the periodic surveillance requirement for turbine valve testing, and the high flux range monitor low setpoint submittal were all examples of high quality engineering.

The licensee's responsiveness to NRC initiatives was generally good. Resident inspector questions related to the plant design maximum cooling water inlet temperatures raised during the 1988 summer drought were researched and satisfactorily answered in just a few days. Prairie Island was one of the first plants to be audited by the NRC EOP inspection team that had incorporated the Westinghouse Owners Group Emergency Response Guidelines 1A (ERG-1A). In anticipation of this inspection, the licensee conducted in April 1988 an audit of their EOP program, procedures and activities. An action plan to correct the numerous program and operations deficiencies was developed. Additional concerns identified during the NRC EOP inspections were subsequently added to those licensee items identified for resolution. The licensee has implemented a very thorough and technically sound approach to resolve the recent IEB 79-14 related issues. Major weaknesses in the requalification examinations results were addressed during this SALP period

and partially through program provisions the CAL was closed subsequent to an inspection performed in January 1988. Since that time, further inspection of the current requalification program has been conducted. The licensee has now begun to successfully implement the requalification program.

Staffing for engineering and technical support was good. For complex plant modifications, significant reliance is placed on consultants to conduct design and analytical efforts. Examples of such modifications are the digital feedwater control system, the new plant computer, and the revised control room panels for both units. Staffing considerations for the configuration management program are in progress and, with the Superintendent and the Lead Design Engineer on board, activities are commencing.

Training and qualification effectiveness was mixed. Although the training and qualifications program did not ensure a high degree of success in passing NRC administered operator licensing examinations, the licensee's evaluation and proposed corrective actions appear to be appropriate. In addition, although the effectiveness of the new requalification program has not yet been evaluated, the licensee's developmental efforts and implementation of the revised requalification program are progressing very well.

The licensee has demonstrated a generally conservative approach to the engineering resolution of technical problems. However, there are indications that thorough, aggressive engineering/technical evaluation is not being conducted within all elements of the licensee engineering organization. Vendor interface, commercial grade dedication, and proper disposition and response to industry information notices are areas of concern that require management attention.

2. Performance Rating

The licensee's performance is rated Category 2 in this area. Since this is a new functional area, it was not rated in the previous assessment period.

3. Recommendations

None.

G. Safety Assessment/Quality Verification

1. Analysis

This is a new functional area and consequently was not rated in previous SALPs. Evaluation of this area was based on results of 12 inspections conducted by the resident inspectors, one inspection by a Region III EOP team, and reviews by the NRR Licensing Project Manager.

One Severity Level IV violation was noted during the assessment period for failure to perform planned and periodic audits of the EOPs. During the previous assessment period, no violations were identified in the functional area of Quality Programs and Administrative Controls Affecting Quality.

One licensee event was assigned to this functional area for the procedural inadequacy noted when the licensee was reviewing the applicability of Information Notice No. 87-63, "Inadequate Net Positive Suction Head in Low Pressure Safety Systems," to Prairie Island. During this review, it was discovered that in one of the EOPs, under certain conditions, the residual heat removal pumps could not support the flow demands that might be placed on them. The licensee responded to this discovery immediately by issuing a Special Order that provided guidance on this subject to the operating crews.

Audits for quality are performed formally by two organizations: the plant Quality Engineering (QE) group and the corporate QA group. Results of audits by these two groups were promptly brought to the attention of plant management. Immediate action was frequently taken by plant groups when an unsatisfactory condition is pointed out by the auditors. In some instances, written responses were required regarding corrective actions that have been or were to be taken. This system appeared to be effective in tracking items raised by the auditors although the plant QE organization reported some problems with the timeliness of the 30-day responses required by plant procedures. Both QE and QA were judged to be very effective in the performance of their duties. For example, plant QE auditors uncovered failures to meet company brazing requirements, incomplete modification packages being turned over to Operations, mislabeled and improperly fused electrical panels, damaged safety-related instrumentation (during an outage), mispositioned process valves, an improperly rebuilt governor for a diesel-powered cooling water pump, and many other items. Similarly, examples of corporate QA effectiveness included the following: protection system instrumentation and circuits were found not to be response-time tested as required by TS (this area is still being examined by the NRC), QA performed significant research on the

historical sequences that resulted in Foxboro controllers being improperly installed for monitoring axial flux tilts, and full-time auditors have been assigned directly to the Prairie Island site, one in April 1988 and the other in March 1989. One of these auditors had significant knowledge of the plant, having worked in Operations for many years.

The onsite safety committee (Operations Committee or OC) continued to be very involved in the review of significant plant activities, including plant events. As evidence of the OC's active participation, this committee met 194 times during the assessment period, an average of 2.8 meetings per week. Safety evaluations required by 10 CFR 50.59 in general have been carefully prepared and received close scrutiny by the OC before approval. Minutes that summarize the OC discussions improved during the period regarding the amount of detail included.

The offsite safety committee (Safety Advisory Committee or SAC) also operated during the period in a generally effective manner. All areas required by plant TS to be reviewed by SAC appear to have been appropriately discussed. Membership of the SAC, though of individuals very experienced in the nuclear industry, did not change on any regular basis. For example, there has not been a new member of SAC from outside the licensee's organization for more than 10 years. A lack of new individuals on the committee is a potential concern which the NRC feels the licensee should consider.

Some minor weaknesses in the membership of the SAC regarding the balance of NSP versus non-NSP members and the lack of detail in the minutes of the SAC meetings were noted. Also, records of the experience and qualifications of the SAC members were not uniform, maintained current, nor responsive to the need to clearly establish the basis for the members' level of expertise.

An area in which the licensee can improve is keeping the NRC better informed of plant activities and management concerns. Several examples of failures to keep the NRC fully informed on matters of interest were noted during the assessment period. Many discussions were held with the plant manager and others on this subject in an attempt to improve these communications. Examples included: station blackout project planning and policy decisions; untimely notification of occurrences such as the 345kV breaker failure, fire protection audit findings and a security violation; changes in radiation protection practices; and an allegation the licensee received relevant to radiochemistry issues. The latter example was significant in that the allegation was also received in the Region III Office. This caused duplication of efforts and coordination problems for the NRC.

During the SALP assessment period, the licensee's management actively supported licensing actions and their participation indicated an indepth knowledge of the issues. The licensee's submittals were maintained at a high quality level and did not require significant rework. In the upper plenum injection case, the licensee took the initiative and assumed a lead role in resolving long standing technical issues in conjunction with industry groups. The licensee's submittal, describing the evaluation model, was well-prepared and the information was adequate to prepare a safety evaluation requiring only minor additional input. The licensee worked closely with the staff in resolving various safety issues related to the TS upgrade that were initiated as a result of our requesting modifications to the licensee's proposed change. Answers to questions raised during the course of preparing the safety evaluation were technically sound and served to resolve the NRC's safety concerns. These activities resulted in six license amendments for each unit and an exemption to Appendix J of 10 CFR 50.

In most cases, the licensee has responded to the generic letters and bulletins in a timely manner and an examination of the responses indicated that the quality is generally adequate and the responses are complete. These responses are currently under review by the staff. One exception noted was the licensee's response to Bulletin 85-03 which was not thorough; and some inconsistencies were found in the documentation during a field verification. Regarding NRC Information Notices, the licensee has in place a system for receiving, logging, assigning, and tracking actions taken on every Information Notice received. This system is working properly and effectively.

During this assessment period, the licensee submitted changes to the Plant Security Plan in response to the rule change pertaining to 10 CFR 73.55, Miscellaneous Amendments and Search Requirements. The licensee also submitted a plan change addressing vital equipment. Review of these submittals indicated that the licensee had a clear understanding of the Commission's security regulations, demonstrated by the quality of the submittals received, and that there was clear evidence of prior planning in developing the proposed changes.

Several areas of self-improvement were initiated by the licensee during the assessment period such as the "Pursuit of Excellence" program. Some examples from that program include the following: week-long visits are being made by all operating crews to other operating nuclear plants; plant managers have begun meetings with managers of other 2-loop Westinghouse plants; a Configuration Management program that includes Safety System Functional Inspection efforts is under way; and an Error

Reduction Task Force is active in the investigation of all events in which personnel error may have been involved.

Another self-improvement effort, that also was partly initiated in response to NRC observations on the reduction of reactor trips, is the installation of a digital feedwater control system. Unit 2 now has such a system which was installed and tested during the April 1989 outage.

Another voluntary improvement being made partly in response to NRC interest is the installation of two new emergency DG. These DGs are scheduled for installation in late 1991 or early 1992 and will satisfy current NRC requirements for reliability of the onsite power supply system.

The Prairie Island staff also has taken the lead in resolving questions raised by NRC regarding the reliability of Fairbanks-Morse opposed-piston diesels. Units of this manufacture are used to drive the existing emergency generators. Specifically, a Fairbanks-Morse owners' group has been organized by NSP. The initial meeting of this owners' group was held in mid-May 1989.

Recently the staff issued Generic letter 89-04 establishing guidance for obtaining the required approval for implementation of the inservice testing (IST) of pumps and valves program relief requests for those plants that do not have an NRC approved program. Prairie Island is one of the few plants in the country that has IST relief approved by the NRC. Specifically Prairie Island had its first ten-year period as well as the present second ten year period approved by the staff. The second ten-year period will end on December 16, 1993, for Unit 1 and December 21, 1994, for Unit 2.

An area of weakness was identified regarding the licensee's resolution of allegations forwarded by the NRC. An allegation was investigated by the licensee following receipt by the NRC, and the licensee reported its investigation results to the NRC. However, the agency staff was unable to make a judgement on the corrective actions taken from the contents of that report, so supplemental information had to be obtained from the licensee. Improvements need to be made in the area of allegation handling.

2. Performance Rating

The licensee's performance is rated Category 1 in this area. Since this is a new functional area, it was not rated in the previous assessment period.

3. Recommendations

None.

V. SUPPORTING DATA AND SUMMARIES

A. Licensee Activities

1. Unit 1

Prairie Island Unit 1 began the assessment period operating at routine power levels up to 100%. On August 23, 1988, the unit was shut down for its annual refueling and maintenance outage (Cycle 12-13). The unit operated routinely with no major reactor outages or significant load reductions through the end of the SALP assessment period.

Unit 1 experienced four ESF actuations and no reactor trips.

Significant outages and events that occurred during the assessment period are summarized below.

Unit 1 Significant Outages and Events

a. During March 10-12, 1988, Unit 1 shut down from 80% power to repair a reactor coolant leak that resulted from a corroded canopy seal weld on an instrument column in the reactor head.

b. During July 26-28, 1988, Unit 1 experienced a forced outage and remained shutdown to repair generic problems with the flux tilt controllers.

c. During August 23 - September 28, 1988, Unit 1 was shut down for its Cycle 12-13 refueling and maintenance outage. Activities included installation of new fuel assemblies, eddy current tests, fuel shuffle, replacement of the control room 'E' panel, snubber testing, integrated leak rate testing (ILRT) of containment, and inspection of all steam generator (SG) tubes.

2. Unit 2

Prairie Island Unit 2 began the assessment period coasting down in preparation for its Cycle 11-12 refueling and maintenance outage, which began on January 5, 1988. On February 13, 1988, Unit 2 resumed routine operation, but was subsequently taken off line briefly to allow closure of transformer disconnects. The unit operated as load demands dictated at power levels up to 100%. On March 28, 1989, Unit 2 began its Cycle 12-13 refueling and maintenance outage and returned to service on April 29, 1989. The assessment period ended with the unit operating routinely.

There were no ESF actuations or reactor trips of Unit 2 during the assessment period.

Significant outages and events that occurred during the assessment period are summarized below.

Unit 2 Significant Outages and Events

a. During January 5-February 13, 1988, Unit 2 was shut down for its Cycle 11-12 refueling and maintenance outage. Activities included a fuel shuffle, a feedwater piping inspection, replacement of source range detectors, eddy current test of all SG tubes, containment ILRT, testing of Limitorque valve operators, and measurement of thimble tube wear.

b. On February 13, 1988, Unit 2 was taken off line to allow closure of the transformer disconnents.

c. During November 8-11, 1988, Unit 2 was shut down for condenser repairs. Activities included repairs to a feedwater line leak and a condenser tube leak.

d. During March 28-April 29, 1989, Unit 2 was shut down for its Cycle 12-13 refueling and maintenance outage. Activities included a fuel shuffle, eddy current test of SG tubes, inspection of the installed SG tube plugs, feedwater piping inspection, replacement of the feedwater control system, and installation of anticipated transient without scram mitigating circuitry.

B. Inspection Activities

Thirty-eight inspection reports are discussed in this SALP report (December 1, 1987, through April 30, 1989) and are listed in paragraph 1 of this section, "Inspection Data." Table 1 lists the violations per functional area and their severity levels. Significant inspection activities are listed in paragraph 2 of this section, "Special Inspection Summary."

1. Inspection Data

a. Unit 1
Docket No.: 50-282
Inspection Reports Nos.: 87017, 87018, 88001 through 88023, 88025, 88200, 89002, 89003, 89007 through 89012, and 89014.

b. Unit 2
Docket No.: 50-306
Inspection Reports Nos.: 87016, 87017, 88001 through 88014, 88016 through 88023, 88025, 88200, 89002, 89003, 89007 through 89013, and 89015.

Table I

Number of Violations in Each Severity Level

Functional Areas	Unit 1			Unit 2			COMMON		
	III	IV	V	III	IV	V	III	IV	V
A. Plant Operations	-	-	-	-	-	-	-	-	-
B. Radiological Controls	-	-	-	-	-	-	-	-	-
C. Maintenance/Surveillance	-	1	-	-	-	-	-	6	-
D. Emergency Preparedness	-	-	-	-	-	-	-	-	-
E. Security	-	1	-	-	-	-	1	2	-
F. Engr/Tech Support	-	-	-	-	1	-	-	2	-
G. Safety Assessment/ Quality Verification	-	-	-	-	-	-	-	1	-

	Unit 1			Unit 2			Common		
	III	IV	V	III	IV	V	III	IV	V
TOTALS	-	2	-	-	1	-	1	11	-

2. Special Inspection Summary

a. During January 20-February 10, 1988, a special inspection was conducted on the corrective actions taken regarding the Operator Requalification Program, as described in CAL-87-013-010A (Inspection Report Nos. 282/88003, 306/88002).

b. During June 22-24, 1988, the annual EP exercise was conducted (Inspection Report Nos. 282/88006, 306/88006).

c. During June 6-21, 1988, a special inspection was conducted to verify that the EOPs were technically correct (Inspection Report Nos. 282/88010, 306/88010).

d. During September 1-16, 1988, an ISI inspection was conducted (Inspection Report No. 282/88015).

e. During September 16-October 26, 1988, an ILRT/local leak rate testing inspection was conducted (Inspection Report Nos. 282/88016, 306/88016).

f. During October 25-November 4, 1988, a vendor inspection was conducted relating to the interface of procurement program (Inspection Report Nos. 282/88200, 306/88200).

C. Escalated Enforcement Actions

A Severity Level III violation was issued for a security event involving improper access authorization and inadequate screening of individuals; however, no civil penalty was levied (Inspection Report Nos. 282/88023, 306/88023; Enforcement Case No. EA-88-292).

D. Confirmatory Action Letters

None.

E. License Amendments Issued

Amendments No.	Description	Date
82/75	Aministrative Control change, Figure TS 6.1-2	4/18/88
83/76	High Flux Power Range Low Set Point changed	5/31/88
84/77	Change F_Q and $F\Delta_H$ Using The New Evaluation Model for Appendix K	9/16/88
85/78	Security Plan Revision 10 CFR Part 73	1/5/89
86/79	Reduction in Turbine Valve Testing	2/7/89

F. Review of Licensee Event Reports

Unit 1 LER Nos.: 87020, 88001 through 88011, 88013, 89001 and 89002.

Unit 2 LER Nos.: 88001, 88002, and 89001

Collectively, 18 LERs were issued in accordance with NUREG-1022 guidelines during this assessment period and are addressed in this SALP 8 report.

Table 2
Licensee Event Reports

Causes	Unit 1	Unit 2
Personnel Errors	4	2
Design Deficiencies	7	0
External	0	0
Procedure Inadequacies	2	0
Equipment/Component	1	1
Other/Unknown	1	0
Totals	15	3

Table 3 shows a cause code comparison of SALP 7 and SALP 8.

Table 3
LERs Comparison

Cause Areas	(18-MO) SALP 7	(17-MO) SALP 8
Personnel Errors	16 (57.0%)	6 (33.3%)
Design Problems	3 (11.0%)	7 (38.9%)
External Causes	1 (4.0%)	0 (0.0%)
Procedure Inadequacies	4 (14.0%)	2 (11.1%)
Equipment/Component	2 (7.0%)	2 (11.1%)
Other/Unknown	2 (7.0%)	1 (5.6%)
TOTALS	28*	18
FREQUENCY (LERs/MO)	1.6	1.16

* Includes 4 voluntary LERs

NOTE: The above LER information was derived from a review of LERs performed by NRC resident staff and may not completely coincide with the licensee's cause code assignments.