SALP BOARD REPORT

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

REPORT NO. 50-397/89-16

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WNP-2

JUNE 1, 1988 THROUGH MAY 31, 1989

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I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) is an NRC staff integrated effort to collect available observations and data on a periodic basis and evaluate licensee performance based on this information. The program is supplemental to normal regulatory processes used to ensure compliance with NRC rules and regulations. It 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 members listed below, met in the Region V office on July 11, 1989, to review the observations and performance data in accordance with Chapter NRC-0516, "Systematic Assessment of Licensee Performance," dated June 6, 1988. 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 WNP-2 for the period June 1, 1988 through May 31, 1989.

The SALP Board for WNP-2 was composed of:

**R. P. Zimmerman, Acting Director, Division of Reactor Safety and Projects, Region V (Board Chairman)
**G. W. Knighton, Director, Project Directorate V, NRR
**R. A. Scarano, Director, Division of Radiation Safety and Safeguards
**A. E. Chaffee, Deputy Director, Division of Reactor Safety and Projects
**J. L. Crews, Senior Reactor Engineer
**D. F. Kirsch, Chief, Reactor Safety Branch
**P. H. Johnson, Chief, Reactor Projects Section 3
*M. D. Schuster, Chief, Safeguards Section
*R. F. Fish, Chief, Emergency Preparedness Section
*E. M. Garcia, Acting Chief, Facilities Radiological Protection Section
**R. B. Samworth, NRR Project Manager
**C. J. Bosted, Senior Resident Inspector
**C. W. Caldwell, Project Inspector
**R. C. Sorensen, Resident Inspector
*G. R. Cicotte, Radiation Specialist

*Denotes voting member in functional area of cognizance.
**Denotes voting member in all functional areas.

A. Licensee Activities

WNP-2 restarted from its third refueling outage on June 19, 1988. During the restart from that outage, the licensee encountered a problem with main steam isolation valve (MSIV) MS-V28-A, which failed to open during stroke testing. The licensee investigated the cause of the failure and found a defective hydraulic dashpot.

The component was replaced and startup was resumed. During the ensuing plant heatup, the Technical Specification heatup limit was exceeded. A subsequent investigation by the licensee found that the heatup and cooldown limits had been exceeded a number of times prior to this event (before this SALP period), but that effective corrective actions had not resulted.

The plant had operated for approximately one month when drywell unidentified leakage increased from its normal value of 1 - 2 gpm to 3 - 4 gpm. The licensee determined that the increase in unidentified leakage was due to safety relief valve (SRV) seat leakage concurrent with leakage through partially open SRV tailpipe vacuum breaker valves. The unidentified leakage increased suddenly on August 25, 1988 to greater than 5 gpm and the plant had to be shut down. An Unusual Event was declared due to the high unidentified leakage. Subsequent inspection of drywell components revealed that a packing leak had occurred on reactor core isolation cooling (RCIC) valve V-63. The leak on RCIC V-63, combined with the SRV and vacuum breaker leakage, caused the high unidentified leakage condition. The plant remained shut down for eleven days to repair V-63 and the leaking vacuum breaker valves. The three most accessible SRVs were also lapped to reduce seat leakage.

The plant was restarted on September 6, and shut down the following day as a result of a failed acoustic monitor on one of the SRVs. The monitor was repaired and the plant restarted on September 9. However, during the return to service, liquid nitrogen was introduced into the supply piping for the drywell purge system while inerting the containment. The piping was damaged as a result of the cryogenic temperatures applied, and had to be repaired. Full power operation was resumed on September 13, 1988.

A non-isolable steam leak developed in one main steam line and the plant was shut down on October 28. The reactor was restarted the next day after repairs were made to a steam line valve. Full power was again achieved on November 2. The plant remained at power until November 21, when Technical Specification 3.0.3 was entered and reactor shutdown was initiated due to a determination that the degraded voltage sensing relays for vital bus SM-7 had not been tested since initial startup. Full power operation resumed after completion of testing. On November 30, drywell vacuum breaker CSP-V-9 failed its local leak rate test (LLRT) and the plant was shut down for repairs. Several cracks were found on the "Viton" seat material in CSP-V-9 and a companion valve, CSP-V-5. As a result of the deficiencies found, the licensee inspected all of the containment valves that contained Viton seat material. Restart of the Unit was delayed until December 8, 1988 so that the supply System could also make repairs to a main steam isolation valve, MS-V-28A, that was found to be galled.

The plant operated at full power until a condenser tube leak forced an outage on January 7, 1989. Repairs were made and the Unit was returned to service on January 14. A reactor trip then occurred on January 30, due to a load rejection caused by a 500 KV line

insulator fault. During plant restart on February 1, MS-V-28A again failed to open. Due to a severe local need for power, the licensee decided to isolate the main steam line and proceed with plant operation on three main steam lines. Power level was limited to 78% with the valve shut, and the plant remained in that configuration until the annual refueling outage.

On April 22, 1989, a reactor recirculation pump was inadvertently tripped during anticipated transient without scram (ATWS) testing. This caused reactor power to decrease to 35%. The pump was restarted and power was restored to 78% until April 29, when the plant was shut down for a refueling outage which continued through the end of the SALP period. During the outage, a 2000 R/hr hot spot was successfully removed from the reactor water cleanup drain line at the bottom of the reactor vessel. Main steam isolation valves on lines "A" and "D" were overhauled and modified with a new type of valve disk in an attempt to improve reliability of the MSIVs. In addition, cracked blades were found and replaced on one last stage of the "C" low pressure turbine. During the outage, a number of inadvertent isolations of shutdown cooling occurred. Although the isolations did not present a safety concern, the number and frequency of occurrences raised concern regarding the adequacy of corrective actions and control of outage work activities.

B. Direct Inspection and Review Activities

Approximately 3900 onsite inspection hours were spent in performing a total of 35 inspections by resident, region-based, headquarters, and contract personnel. Inspection activity in each functional area is summarized in Table 1.

II. SUMMARY OF RESULTS

A. Effectiveness of Licensee Management

Licensee achievements were observed during this SALP period, including extended periods of power operation and the occurrence of only one reactor scram. Actions by the licensee in response to the 1988 SALP report provided improved performance in several areas. However, continued weaknesses observed in other areas merit prompt attention by the Supply System.

Noteworthy improvements in organization and staffing were made during this SALP period in most functional areas. There was a noticeable increase in management presence in the plant, which was starting to show improvement in areas such as professionalism, training, and plant performance. In addition, more Supply System managers were interfacing directly with plant personnel to relate their expectations for personal performance and the conduct of plant activities. However, nonconservative judgments were made on two occasions regarding the operability of safety-related equipment, with the involvement of senior plant management and key members of the technical staff. Both of these instances involved inappropriate delay in initiating a plant shutdown as required by the Technical

Specifications. Effective corrective maintenance was also deferred on some occasions in favor of resuming or continuing plant operation, in some cases resulting in later operational curtailments.

Improved operator attentiveness and operational control appear to have resulted in less significant and fewer plant events. A number of significant operational and maintenance activities were carried out with little or no difficulty. One notable activity was the removal of a 2000 R/hr hot spot from a reactor vessel drain line, involving effective coordination among several plant and headquarters departments. However, personnel and/or procedure errors involving other operations, maintenance, or surveillance activities resulted in a number of events which impacted on plant operations, particularly near the end of the period. Management should carefully evaluate the lessons learned from 11 shutdown cooling isolations which occurred during the refueling outage, indicating a need for improved control of plant activities. Additional emphasis should also be given to ensure proper individual attention, by personnel in all departments, to radiation protection practices and procedures.

The Board noted that a significant procedure improvement effort has been in place for Operations procedures, but perceived a need for a similar effort to improve maintenance, surveillance, and other procedures. The recent safety system outage management inspection (SSOMI) also observed weaknesses in the amount of control and guidance provided in maintenance work requests (MWRs). Particular concern was expressed by the SSOMI team (and by the licensee's own safety system functional inspection) regarding the use of, and quality of work instructions provided with vital MWRs. It also appeared to the Board that unwarranted reliance was being placed on individual proficiency to compensate for weaknesses in procedures and MWRs. Additional management attention is also needed to ensure that procedures are followed more explicitly and that surveillance tests are performed within the required interval.

Actions initiated by Supply System management near the end of the previous SALP period appear to have effected significant improvements in the design engineering area, as evidenced in the quality of design work for the 1989 refueling outage. An update of the plant's design data base was effectively initiated during this SALP period. The original five-year schedule was extended one year by the licensee after careful consideration of available resources, but deserves senior management attention to ensure that additional extensions do not occur. Enhancements in the Safety Assessment/ Quality Verification area, including a new Engineering Assurance group and other organizational improvements, also appear to have been appropriately defined. Safety oversight groups were providing an improved level of support to plant activities, although the QA organization was in need of additional expertise in some disciplines. The Supply System's efforts in establishing a dedicated root cause assessment group were recognized by the SALP Board, although additional improvements are needed to make this function fully effective.

Although improvement was noted during this SALP period, the Board noted that additional attention is needed to address the Supply System's weakness in the preparation of licensing submittals. Some submittals required repeat requests for additional information, and some included information determined by NRC review to be incorrect.

The NRC acknowledges the licensee's efforts to define and initiate necessary program improvements, which were yielding improved performance during this SALP period. The timeliness and effectiveness of corrective actions should receive continuing emphasis. Supply System management should ensure that ongoing improvement programs are completed, and that the results are effective and lasting. Appropriate mechanisms should be employed to verify the completion and effectiveness of these efforts, and to confirm that they do in fact lead to improved performance.

B. Results of Board Assessment

Overall, the SALP Board found that the performance of NRC licensed activities by the licensee was acceptable and directed toward safe and improved operation of WNP-2. The SALP Board has made specific recommendations in most functional areas for licensee management consideration, as presented in the individual functional analyses. The results of the Board's assessment of the licensee's performance in each functional area, along with the performance rating for the previous period, are as follows:

	Functional Area	Rating Last Period	Rating This Period	Trend*
A.	Plant Operations	3	2	
B.	Radiological Controls	2	2	
C.	Maintenance/Surveillance	2	2	
D.	Emergency Preparedness	2	1	
E.	Security	1	2	
F.	Engineering/Technical Support	3	2	
G.	Safety Assessment/ Quality Verification	2	2	

* The trend indicates the SALP Board's appraisal of the licensee's direction of performance in a functional area near the close of the assessment period such that continuation of this trend may result in a change in performance level. Determination of the performance trend is made selectively and is reserved for those instances when it is necessary to focus NRC and licensee attention on an area with a declining performance trend, or to acknowledge an improving trend in licensee performance. It is not necessarily a comparison of performance during the current period with that in the previous period.

C. Changes in SALP Ratings

The licensee's ratings in the Plant Operations and Engineering/ Technical Support functional areas improved to Category 2 compared with Category 3 for the previous period. These improved ratings resulted from significant actions taken in both areas to strengthen staffing, stress personal attention in the conduct of licensed activities, improve the quality of procedures and administrative controls, and provide improved communications and management effectiveness. The rating for Emergency Preparedness improved from Category 2 to Category 1 as a result of improved management support and improved assessment of plant events. The decline in the Security area from Category 1 to Category 2 resulted primarily from delays in implementation of security program enhancements and a more comprehensive Fitness for Duty Program.

III. CRITERIA

Licensee performance is assessed in selected functional areas. Functional areas normally represent areas significant to nuclear safety and the environment. Special areas may be added to highlight significant observations.

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

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

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

3. Responsiveness to NRC initiatives.

4. Enforcement history.

5. Operational events (including licensee response, analysis, reporting, and corrective actions).

6. Staffing (including management).

7. Effectiveness of training and qualifications 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 was 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.

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

Approximately 1250 inspection hours were devoted to the Plant Operations area by resident and region-based inspectors and headquarters personnel. In general, this assessment period saw fewer operational events, and the licensee's performance was considered to have improved. Measures were taken by plant management to address longstanding problems, and there were many indications that management was more committed to achieving superior performance, as evidenced by problem-free core reload in record time during the 1989 refueling outage. However, despite many enhancements, several events (particularly near the end of the SALP period) indicated that additional effort is still needed to overcome deficiencies rooted in the past. Some of these events demonstrated that management was not taking a sufficiently conservative approach to effect solutions for problems encountered.

An increase in management involvement was evident during the assessment period. Plant and corporate management personnel were often seen in the control room observing normal and off-normal evolutions. Management began to take an active role in operator training and periodically monitored operator performance at the simulator. Shift managers were assuming more personal responsibility for the performance of their crews, and a number of initiatives were implemented to improve the conduct of operations. The "Conduct of Operations" procedure was revised to promote improvements in control room formality and professionalism, preshift briefings were

implemented on a routine basis, and the "Clearance Order" procedure was strengthened to require independent verification for installation of danger tags. Noteworthy in the new "Conduct of Operations" procedure was a Code of Ethics to which all Operations personnel subscribed.

Operations department staffing and composition changed significantly during the assessment period. Notable personnel changes included the Operations Manager and Assistant Operations Manager. These changes strengthened the on-shift experience and operations background of Operations management. One shift manager was assigned to the Training Department to coordinate requalification training. Operations staffing was changed from six to five rotating crews to enhance on-shift strength, and additional equipment operators were hired. Staffing was considered adequate to ensure safe facility operation without reliance on excessive overtime. The knowledge and experience possessed by the bulk of the operations staff was considered to be one of the licensee's strong points.

Only one scram was experienced, compared with six during the previous assessment period. This resulted from a fault on a 500 KV transmission line, and was handled by the operators without complication. Improved control of operational activities was also indicated during the assessment period by the conduct of several startups and shutdowns with few problems.

Two conditions that occurred during this assessment period were considered to have been handled by plant management in a nonconservative manner. These events, as further discussed in Engineering/Technical Support, Section F, involved delay in declaring equipment inoperable because of delinquent surveillance tests. In November 1988, the degraded voltage sensing relays for vital electrical bus SM-7 were found not to have been tested since initial plant startup, and in January 1989, the diesel generator trip bypass feature was found not to have been properly tested.

Several LERs submitted during the period described events that were attributable to personnel error. While the number and significance of personnel errors was noted to have decreased compared to the previous SALP period, LERs indicated a need for additional improvement in this area. Eleven shutdown cooling isolations were experienced during the 1989 refueling outage (including two which occurred after the end of the SALP period). Five of these resulted from personnel error (principally involving Maintenance/Surveillance activities, as discussed further in Section C) and six were due to mechanical problems. Although the safety significance of the isolations was minimal, the frequency of shutdown cooling isolations indicated a need for additional control of plant activities.

One Plant Operations-related violation of NRC requirements occurred early in the assessment period. This involved improper corrective action in that operators exceeded the 100 degree per hour Technical Specification limit for plant heatup, in spite of previous similar observations by QA. Management took positive steps to prevent recurrence after this violation was cited.

Resolution of technical issues from a safety standpoint was considered good. The licensee recognized weaknesses in emergency operating procedures (EOPs) and accompanying flow diagrams. Steps were taken to correct these weaknesses by dedicating one licensed individual full time to rewrite the EOPs and flow diagrams. Three licensed operators were also dedicated full time to upgrading operating procedures. Procedure revisions accomplished as a result of the events described above were considered adequate. However, the standard periodic procedure reviews by the licensee did not appear to be totally effective. This was identified by the licensee as a contributing factor in missed surveillances, as reported in related licensee event reports (LERs).

Several events occurred within the assessment period that involved insufficient care in the conduct of plant activities. These included the following:

* During an outage in August, while realigning shutdown cooling lineup, the pump discharge piping for the "B" residual heat removal (RHR) pump started to drain back through the pump when the suction valve was opened, causing the pump to rotate in the reverse direction. Operators started the pump while it was spinning backwards, which resulted in a pressure surge in the discharge piping. This event also was not properly logged in the shift logs. This event is discussed further under Engineering/Technical Support, Section F.

* While inerting the primary containment with nitrogen in September 1988, liquid nitrogen was introduced into the containment purge system, causing cracking of the piping. The event was precipitated by filling of the nitrogen supply tank concurrently with the inerting evolution, and by the assignment of one equipment operator, without adequate procedures for guidance, to manually control nitrogen temperature and pressure while also overseeing refilling of the supply tank.

* Thirty-four control rods drifted into the core during an event in March 1989. This resulted from repeated and excessive resetting of erratic half scrams by operators, resulting in a low scram air header pressure. This event

illustrated a need to more promptly correct anomalous conditions, in that similar erratic behavior had been observed several hours earlier. It also revealed a lack of clarity and consistency among pertinent response procedures, which contributed to improper operator actions during the event.

The Supply System's responsiveness to NRC initiatives was improved over the previous period. Several initiatives were presented to the licensee, often during management meetings that occurred during the assessment period. One initiative discussed was the benefit of independent verification of danger tags after two near-electrocutions during the 1988 refueling outage. Other NRC initiatives to which the licensee responded included the creation of a separate work control center in the control room to minimize distractions to the operators, and a program to improve and upgrade operating procedures.

The licensee's training and qualification program contributed to an understanding of work and adherence to procedures by plant operators. It was also effective in preparing personnel for NRC license examinations, as evidenced by the 100% pass rate during the SALP period. The licensee committed during this period to replace the current simulator (by the summer of 1991) with one that will more accurately model plant responses. As an interim measure, the Supply System also committed to limited upgrading of the existing simulator. An experienced senior reactor operator (SRO) was assigned to the Training Department, and operations and training management personnel appeared to work more effectively as a team during this SALP period toward a common goal of more effective operator training. Operations, plant, and corporate management also became more actively involved in operator training and used training periods as an opportunity to meet with each crew for a brief information and feedback session.

2. Performance Rating

Category 2

3. Recommendations

While improved control of plant activities was noted during this period, several events illustrated a need for improved procedures and additional alertness by the Operations staff. Special attention should be given to significantly decreasing inadvertent engineered safety features actuations as a result of procedure or personnel errors. The Operations organization should continue to emphasize a more questioning attitude in the conduct of plant activities.

B. Radiological Controls

1. Analysis

The licensee's overall performance in radiological controls continued to be satisfactory. The licensee made improvements in the planning of radiological work during outages, in the root cause analysis process, and in the trending and analysis of radiological occurrences. The licensee made a number of improvements in the occupational exposure program. Minor weaknesses were exhibited in the control of offsite releases and in the timeliness of resolution of safety issues. The licensee's radiochemical measurements were found by confirmatory NRC measurements to be satisfactory.

During the SALP period, 495 hours of direct inspection effort were applied in the Radiological Controls area. Licensee activities were observed under both operational and outage conditions. Health Physics Technician (HPT) staffing remained adequate, with improved outage staffing compared to previous periods.

The licensee has maintained an aggressive program for plant water chemistry control, with improving trends in water purity and decreased chemistry transients. The positive effects of this program are believed to have contributed significantly to the overall dose reduction noted below.

Total occupational dose in 1988 was 353 rem, which was less than the 1987 value of 406 rem, ending an upward trend experienced in the previous three years. The licensee's commitment to ALARA was exemplified by their efforts to remove sources of high radiation, such as the removal of a hot spot in a reactor vessel drain line and decontamination of the reactor water cleanup (RWCU) pumps. These activities have contributed to reduction in personnel radiation exposure.

During the SALP period, the NRC staff completed its review of the licensee's offsite dose calculations manual (ODCM). Although the manual was found to be of high quality, the licensee did not provide an adequate explanation of the basis for changes to the ODCM, as called for in the Technical Specifications.

Management's approach to the resolution of safety issues was generally sound, but slow. One exception to the soundness of resolutions dealt with the licensee's Technical Specification (TS) interpretation process, which on one occasion resulted in inadequate sampling of releases due to the use of inappropriate sampling criteria. This interpretation differed from that recommended by the licensee's Nuclear Safety Assurance Group (NSAG) and Corporate Nuclear Safety Review Board

(CNSRB). One unresolved item has remained open since 1985, related to determining applicable iodine sampling plateout factors following an accident. During the SALP period, the licensee proposed a date for resolution of this issue.

Many of the licensee's radiological controls procedures have been modified in an effort to improve programmatic controls. Most of the changes were in response to NRC or other external inputs rather than self initiated.

Inspection activities during the SALP period identified seven Severity Level IV violations associated with the Radiological Controls area. These involved failure to post radiation areas, unauthorized high radiation area entries, missed effluent samples, and an unlocked entry to a very high radiation area. This represents an increase over the last period, in which two violations were identified. Five of the seven violations involved posting and control of radiation or high radiation areas. Most of the violations were identified early in the SALP period, and the rate of occurrence appeared to have decreased by the end of the assessment period.

While improvements were observed in the training provided to radiation protection and supervisory personnel, the effective implementation of radiological control program requirements was not always demonstrated by individuals working in controlled areas. This weakness was apparent from the nature of NRC findings in the area of radiological work practices observed during the SSOMI and other recent inspections.

During this SALP period, two LERs were issued in the Radiological Controls area. One was a 10 CFR Part 21 report regarding a potentially unmonitored release path which resulted from improper engineering work by the architect-engineer. The other was related to a forced shutdown after the licensee discovered calculational errors involving dose to control room personnel in the event of an accident.

One voluntary report, in the Plant Operations area, addressed an in-plant spill of radioactive resins (discussed in the previous SALP report) which was due to personnel error. This voluntary LER did not identify radiological problems later discovered by NRC.

The licensee's Health Physics staff training program exhibited some improvements, particularly in its emphasis on adherence to radiological work rules. The licensee also improved the selection criteria for HPTs hired during outages.

2. Conclusion

Performance Assessment - Category 2.

3. Board Recommendations

The Board recommends that the licensee continue to emphasize the importance of adherence to good radiological work practices and more aggressively incorporate recommendations resulting from internal assessments and management oversight groups. The licensee should take a more proactive role in making improvements in training, procedures, and programs. Additional attention should be given to monitoring of effluents, posting of radiation areas, and retraining of plant personnel in the radiological control program.

C. Maintenance/Surveillance

1. Analysis

Over 640 hours of direct inspection effort were devoted to this functional area during the assessment period by resident and regional staff. During this period, the licensee made efforts to enhance the accomplishment of maintenance activities. For example, progress was made in emphasizing the importance of attention to detail during the performance of work activities. Organizational changes were made which included assignment of a new Maintenance Manager and addition of another level of maintenance supervision. Individuals were increasingly held responsible for their own actions, and improved performance was encouraged by Supply System management. Scheduling of maintenance activities also improved. However, despite these efforts, a number of problems experienced during the performmance of maintenance and surveillance activities indicated a need for continued improvement in procedure quality and in individual attention and inquisitiveness in the implementation of the procedures.

Significant staffing changes were made during the assessment period, especially in management and supervisory positions. Most maintenance management assignments were changed early in the SALP period. Several of the positions were filled from the technical staff or other organizations outside the maintenance department. New supervisory positions were created within the work control and maintenance engineering groups in an effort to provide more positive control over maintenance activities. Scheduling of plant maintenance was enhanced by enlarging the planning and scheduling staff and by the creation of a Planning and Scheduling Manager position. Effective planning and coordination among several departments were demonstrated during the 1989 refueling outage by the removal of a 2000 R/hr hot spot from a reactor vessel drain line, which was completed without significant difficulty.

The staffing level was considered adequate to accomplish tasks without excessive use of overtime, though staffing was frequently supplemented by the use of contract personnel. It

appeared that adequate expertise was available within the maintenance staff (in conjunction with the technical staff) to resolve most problems that were encountered. Consultants and vendor advisors were also used at times; however, outside help was not obtained in all appropriate cases. Early in the SALP period, for example, safety relief valve (SRV) vacuum breakers were found to be leaking excessively, but the licensee did not initially consult the O-ring vendor concerning this problem. Upon consultation with the vendor, the Supply System was advised of an effective method for correcting the leakage. In another instance, certain vendor recommendations found in the emergency diesel generator (D/G) vendor technical manual were not incorporated into surveillance or maintenance procedures.

The licensee's response to NRC initiatives was considered to be favorable. A concerted effort was made by the new maintenance management to reduce the backlog of maintenance work requests (MWRs) and preventive maintenance tasks (PMs). Although initially considered overly optimistic by the NRC, the effort to reduce the backlog appears to have been somewhat successful. Additional work remains to be done in this regard. NRC questions and concerns provided to Maintenance Department management were generally responded to in an enthusiastic manner and received timely followup action.

Maintenance management displayed support for improved performance programs throughout the assessment period. Management policies and expectations were being communicated to the staff in a more effective manner, as recommended by the Board in the previous SALP report, and appeared to be increasingly understood by those personnel. During this SALP period, effective corrective action was usually implemented for problems that arose. However, there were instances of repetitive events. Root cause analyses and critical self-assessments were evident, and often resulted in improvements, but were not performed in all appropriate cases. For example, in June 1988, RHR pump "A" tripped and no root cause evaluation was done since it was assumed that the pump trip could be attributed to work on valve RHR-V-9 (even though the work on the valve was completed the day before).

Control of maintenance work activities has been an ongoing problem at WNP-2 throughout the assessment period. In particular, there were a number of instances in which technicians and craft personnel did not follow procedures or the work procedures were vague or incomplete (this concern was also identified in the last SALP report). In addition, the Safety System Outage Modifications Inspection (SSOMI) conducted by the NRC near the end of the assessment period identified concerns with the level of detail provided in maintentenance work requests (MWRs). This was particularly true for vital MWRs, but also applied to regular MWRs. The SSOMI team also

expressed concern that discipline supervisors could change work instructions provided in MWRs without review by those who initially prepared the instructions. The work control program appeared to place an unjustified reliance on "skill of the craft" to compensate for weaknesses in procedures. Procedure quality or procedure compliance problems resulted in recirculation pump trips on two separate occasions while operating at power, and caused five shutdown cooling isolations (including two which occurred shortly after the end of the SALP period) during the 1989 refueling outage.

Also noted at times during the assessment period was deferral of effective long-term corrective maintenance by plant management, which appeared nonconservative and at times affected subsequent plant operations. In particular, continued SRV and SRV vacuum breaker leakage (as noted above), led to an eventual forced outage early in the period. Also, repeated difficulty in opening main steam isolation valves (MSIVs), due to galling, limited the plant to approximately 78% power during the last three months of the cycle, since one MSIV had to remian closed. In addition, the SSOMI team noted an absence of technical criteria for procurement and receiving inspection, especially for commercial grade items to be dedicated to safety-related service.

Several reportable events during this period involved missed surveillances. Other reportable events occurred that revealed discrepancies between Technical Specification surveillance requirements and the implementing procedures (e.g., control room emergency filtration system verification, diesel-generator (DG) trip bypass surveillance, and degraded voltage circuitry surveillance). These events implied that either there was inadequate familiarity with the Technical Specification requirements, or there was a lack of verification on the part of the licensee to ensure that required surveillance tests were properly identified, scheduled, and completed. Several reportable events occurred as a result of vague or inadequate work instructions, as documented in LERs. Maintenance Work Request (MWR) instructions were sometimes found to have been written in too vague a manner, based upon assumptions that craft personnel were more familiar with the task than they actually were. Other instances were identified in LERs in which a vendor manual was referenced in the work instructions, but the manual did not adequately cover the task to be performed.

Six violations of NRC requirements were identified in this functional area during the assessment period. One topic that exhibited recurring deficiencies was the control of measuring and test equipment (M&TE). Although a significant number of violations were identified, they were not considered of major importance and did not represent a programmatic breakdown.

Training for maintenance personnel was expanded and enhanced during this period. A well defined program was implemented for most of the site training activities, and inadequate training was rarely a causal factor for events that occurred.

2. Performance Rating

Category 2.

3. Recommendations

Substantial effort is needed to improve the overall quality of procedures for work control and surveillance activities to decrease relaince on the "skill of the craft." The quality of guidance given to workers by maintenance work requests also needs to be improved to reflect current industry standards. In particular, management should carefully assess the use of vital MWRs and the quality of work instructions provided in them. Management needs to ensure that technicians and craft personnel follow procedures more explicitly and that surveillances are performed within the required interval. In addition, the Board considers that the generic implications of nonconservative interpretation of Technical Specifications requirements should be evaluated based upon problems encountered. Many of these recommendations have been provided in the past and the licensee is strongly encouraged to focus additional attention on maintenance and surveillance activities.

D. Emergency Preparedness

1. Analysis

The Emergency Preparedness (EP) functional area was the subject of three inspections, including observation of the annual exercise that occurred during this SALP period. These inspections represented approximately 194 hours of direct inspection effort. No violations or deviations were identified during this inspection effort. Inspections during this SALP period indicated a significant improvement in management's support of the EP program. The licensee has also improved its assessment of EP problems, including a better effort in root cause determination. The technical capability of the EP staff also improved and no significant weaknesses were identified in the EP area.

Management support of the emergency preparedness program has improved significantly. Corporate management was frequently and effectively involved in site activities during this SALP period. For example, the Managing Director for Operations personally addressed the entire plant work force and emphasized the importance of the NRC findings during the previous emergency preparedness exercise. Upper level management was in attendance at emergency preparedness exit interviews and

corporate personnel participated extensively in both drills and exercises.

Management appeared to strive to enhance its capability to identify and assess problem areas. As part of that effort, the quality assurance (QA) surveillances of the emergency program were significantly improved. Outside consultants and EP specialists from a neighboring plant were included as members of the audit team. The scope of the audit in process was broadened to include a review of the EP program, training and retraining of EP response personnel, program organization, facilities and equipment, procedures, dose assessment, observations of applicable drills, and review of the interfaces with State and local agencies. In addition, the EP staff reviewed all events to ensure that the proper emergency classification and response was made. NRC inspectors examined three such events and confirmed that the EP staff was identifying items in need of corrective action.

Responses to NRC initiatives were technically sound and thorough in cases reviewed. This was supported by the licensee's response to NRC concerns, in which they committed to perform four major drills per year (in addition to the annual exercise) and to staff the emergency preparedness division with qualified scenario developers, dedicated to developing challenging and realistic scenarios for drills and exercises. This was in response to NRC concerns regarding the licensee's performance during the previous EP exercise. During major drills performed to date, the licensee's performance has significantly improved.

There were no reportable events or violations of NRC requirements involving the EP program during this SALP period.

Experience levels for EP personnel exceeded those observed during the previous SALP period. As mentioned above, the licensee added two full-time professionals from the Health Physics and Operations disciplines to develop challenging scenarios for drills and exercises. In addition, a full-time EP instructor was transferred to the staff from the training department. All positions in the EP organization were identified, and authorities and responsibilities were well defined.

Training in the functional area of EP was considered to be excellent. The training program was well defined and implemented with dedicated resources that included a means for feedback of experience into the program. As mentioned above, the licensee also committed significant resources to hands-on training, which was accomplished during retraining and the four major annual drills. The quality of the drill scenario was noted to have improved during the last exercise. During that exercise, several potential problems were identified by the licensee which may not have been found had a less challenging scenario been used.

2. Performance Rating

Category 1

3. Board Recommendation

The Board recommends that continued senior management emphasis be placed on the self-identification and assessment of EP problem areas, with timely corrective action(s) taken as appropriate.

E. Security

1. Analysis

Region-based inspectors conducted two inspections dealing with physical security during the SALP period. The resident inspectors also monitored implementation of the security program as part of their routine inspection activities. Areas inspected included the licensee's compliance with the safeguards requirements of 10 CFR Parts 50 and 73, the licensee's approved physical security and guard training and qualification plans, and the implementing procedures related thereto. More than 130 hours of inspection effort were expended in the area of physical security. The licensee's security program exceeded regulatory requirements in most areas evaluated.

With regard to management's involvement in assuring quality, corporate security management continued to review the implementation and operation of the security program. Major program upgrades identified in the previous SALP report (personnel and package search and security radio communications) have, to a great extent, been completed and appear to have been successful. During this SALP period the licensee successfully lobbied county government for a strengthened ordinance related to possession of firearms. The presence of firearms in a vehicle on company property now represents a criminal violation subject to prosecution by the county, as well as a violation of the licensee's rules.

Technical evaluation and improvement of onsite security radio communications, though fraught with delays, were generally sound and thorough, although there are some minor communications deadspots. The long-standing difficulty of vital area doors which do not close against a variable air pressure differential was documented in a 1987 NRC inspection report and continues to challenge the credibility of the licensee's system for assuring positive vital area access control. Evaluation of this problem is continuing, as are the recently initiated programs to consider an upgrade of protected area barriers and the closed circuit television (CCTV) camera system.

The previous SALP report encouraged licensee management to evaluate the findings of the Regulatory Effectiveness Review (RER) at other nuclear sites for applicability to WNP-2. Licensee management initiated feasibility studies for upgrades of the CCTV alarm assessment system and a second fence to supplement the present protected area barrier. These were also areas of concern to the RER team. Other studies of potential security improvements have also begun. Implementation of some of these program improvements, (e.g., anti-passback access controls and in-house preparation of blind standards for Fitness for Duty quality control) would exceed current regulatory requirements.

In response to the August 1986 NRC policy statement on Fitness for Duty of Nuclear Power Plant Personnel and subsequently proposed rule changes, corporate and plant management continued to evaluate the established Fitness for Duty Program. While improvements were being considered, this program (as currently implemented) requires only pre-employment screening and testing for cause. The licensee's current Fitness for Duty Program does not follow the industrial standards published by Edison Electric Institute; i.e., random or periodic testing of regular employees is not included.

Enforcement issues during this SALP period included one Severity Level IV violation and one Severity Level V violation related to inadequate detection aids and failure to properly record a safeguards event as required.

Two safeguards events were reported during the SALP period. The events related, in one case, to an inattentive compensatory guard, and, in the other, to failure to test a vital area detection aid as required. The licensee's immediate as well as long term remedial actions were reviewed and found to be appropriate. The events were reported in the Licensee Event Report (LER) format, meeting both content and timeliness expectations.

With respect to staffing, key positions were identified and responsibilities were generally well defined. Instructor expertise was usually available within the staff and the security force manning level was maintained at a level which provided a training squad for requalification training. The licensee engaged in a cooperative program with another power reactor licensee to exchange security compliance inspectors. This novel approach to introduce independent but knowledgeable security expertise into the quality assurance program can be expected to effect further improvements in program operations and equipment upgrades.

The licensee's guard training and qualification program continued to significantly exceed regulatory requirements. While 10 CFR Part 73, Appendix B, identifies training requirements

for rank-and-file guards, the licensee's program included courses in interpersonal skills for supervisors, as well as training courses and a certification program for instructors.

2. Performance Rating

Performance assessment - Category 2.

3. Recommendation

Licensee management is encouraged to expedite security program and Fitness for Duty upgrades, with particular attention to identified deficiencies such as communication deadspots, protected area detection aids, recording of security events, vital area door closers, CCTV cameras, and protected area barrier delay.

F. Engineering/Technical Support

1. Analysis

During the assessment period, the resident staff routinely observed the licensee's engineering and technical support organizations, and region-based inspectors periodically observed these organizations, resulting in approximately 290 hours of inspection effort. The NRR staff also conducted numerous technical reviews. From these observations, it was considered that several changes made to correct deficiencies in the engineering/technical area (as noted during the last SALP assessment) were effective. Additional resources and management attention were devoted to the Engineering and Technical staffs. Improvements in the design change process yielded overall improvement in the quality of design engineering work, provided better quality design change packages, and reduced the number of required field change requests for plant modifications. The overall quality of Plant Technical activities improved over the previous period, although several weak technical evaluations indicated a need for further improvement. Another weakness involved the technical staff's interpretations of Technical Specification requirements, which were found to be nonconservative on a few occasions. In addition, four violations were issued in this functional area involving failure to report occurrences to the NRC.

Improvements were noted in this functional area during the assessment period, including actions to address deficiencies identified in the last SALP assessment. Corporate management was involved in restructuring of the engineering organization and in technical solutions to problems that were encountered during this assessment period. The design process was strengthened by a significant increase in the number of engineering supervisors and by the allocation of more time for design work and required reviews. Process improvements, including the

establishment of a Modification Review Committee and a Design Review Board, further strengthened the design change process. The program was also changed to provide feedback to engineering management on the number and type of field change requests needed during the installation of modifications. Training on the improved design process has been given high priority, and management's expectations appeared to be well understood by department personnel. The addition of an Enginering Assessment group to the quality assurance process provided a needed feedback input that allowed an independent review of engineering work.

Another enhancement initiated during this period was the process of compiling an updated design data base (DDB). A safety system functional inspection (SSFI) was completed for the low pressure core spray (LPCS) system, the first system to have an updated design data base compiled, to validate the process used to update the data base. This SSFI and related NRC observations indicate that the design data base update effort, with some improvements, should provide effective results. The licensee has also completed a draft data base for the second system, onsite electrical distribution. The licensee's original objective of completing the DDB update in five years was recently extended one year by management, after apparently deliberate evaluation, because of resource constraints.

Generation Engineering was observed to be more involved in plant activities during this SALP period, with sound technical work evident throughout most of the period. The number of working engineers was also increased. For example, an evaluation of the control room essential ventilation system identified a potential single failure, and good technical work was observed on a root cause determination for the failure of a diesel generator air start motor. The licensee made an appropriate operability determination and initiated a plant shutdown on November 30 when containment supply valve CSP-V9 did not pass its local leak rate test. The problem involved failure of the valve's resilient seat material, which was the same as that used in many other valves. Although the licensee exhibited some initial hesitancy to pursue the generic implications of the failure, it was acted upon in an aggressive manner once the history of valve seat failures was known.

Late in the SALP period, the licensee discovered that initial design calculations performed by the architect/engineer were in error, and that the control room ventilation system was not within the design basis. This could have resulted in an excessive post-accident thyroid dose to control room operators. To resolve the discrepancy, the engineering department undertook extensive efforts to recalculate exposures and safe operating power levels, and appropriate actions were taken to limit plant power output pending resolution of the issue.

An effective training program for the Generation Engineering staff was implemented as part of the Engineering Improvement Program. On the other hand, training for the plant technical staff appeared to meet minimum requirments (with some special training in root cause assessment), but included little system or other routine training. Plant staff engineers appeared to be knowledgeable; however, on several occasions technical evaluations or Technicial Specification evaluations were considered weak. Several operating events demonstrated that the technical staff sometimes needs to be more insightful or conservative in its evaluations of plant conditions and/or interpretations of Technical Specifications requirements. Examples observed during this SALP period were as follows:

* The discharge check valve for the "B" residual heat removal (RHR) pump failed to shut in August 1988. This caused the pump discharge piping to drain back through the pump, resulting in reverse rotation. Upon subsequent starting of the pump, before the problem was understood, a pressure surge was produced. Although the licensee was slow to investigate this concern, subsequent investigation and inspection of the discharge check valves for the other two RHR pumps revealed a generic problem which could have resulted in the check valves failing to close, permitting draining of the discharge piping.

* The technical staff did not actively recommend an appropriate inoperability determination and initiation of a plant shutdown (as directed by Section 3.0.3 of the Technical Specifications) when the degraded voltage sensing relays on vital bus SM-7 were found in November 1988 not to have been tested as required by Technical Specifications.

* An appropriate inoperability determination and initiation of a plant shutdown were similarly not recommended to management in January 1989, when it was determined that the diesel generator emergency trip bypass relays had not been tested in accordance with the Technical Specification requirements.

* Excessive nitrogen was allowed to leak into containment (apparently for years), resulting in excessive venting of containment. The technical staff was aware of this situation, but took little action to correct the problem until concerns were raised by the NRC.

* The technical staff made inappropriate recommendations regarding charcoal sampling frequency for the control room essential ventilation system, and containment atmosphere sampling prior to purging or venting.

Several concerns were identified late in the assessment period involving the procurement and dedication of commercial grade products for safety related applications; enforcement actions are still pending. Seven violations of NRC requirements were noted during the assessment period. Four of these involved a failure to report occurrences to the NRC. One violation was issued for failure to perform charcoal sampling as required by Technical Specifications after 720 hours of operation of the control room essential ventilation system. One severity level V violation was noted (Notice not issued) for failure to include required information with the semiannual effluent report.

2. Performance Rating

Category 2

3. Recommendation

Engineering/Technical awareness of plant conditions needs to be improved. Both the technical and engineering staffs need to be in the plant more often, and these personnel should constantly question and examine how well the plant is performing. The pursuit of excellence (emphasized by Supply System management) should be the hallmark for these organizations. Strict conservatism should be the focus in their attitude towards all conditions encountered in the plant and in reporting of events to the NRC. The design database and electrical drawing improvments need to be expedited. Technical Specification interpretations need to be performed in a stricter and more conservative manner. Training for the plant Technical staff should also be improved.

G. Safety Assessment/Quality Verification

1. Analysis

During this SALP assessment period, over 890 hours of direct inspection effort were expended in resident and region-based inspection of quality assurance (QA), quality control (QC) Nuclear Safety Assurance Group (NSAG), Plant Operations Committee (POC), licensing group, and Corporate Nuclear Safety Review Board (CNSRB) activities. The overall effectiveness of these quality oversight groups was perceived to have improved during the period, and their involvement with plant activities appeared to be more aggressive than in the past. The safety assessment and quality oversight organizations made significant changes to correct weaknesses identified in the last SALP assessment. However, efforts are still needed to further enhance the aggressiveness of these oversight groups. Although improvement was noted, continued weakness remained in the quality of licensing submittals, the effectiveness of the root cause assessment program, and the expeditious correction

of identified problems. As discussed in the previous section, concern was also expressed on two occasions regarding the nonconservative determination of equipment operability by senior plant management.

In response to weaknesses identified during the last SALP, the licensee created and staffed some new organizational groups and made several organizational and personnel changes within the existing departments to enhance the effectiveness of the oversight groups. These changes, along with staffing increases, have added additional technical strength in this functional area. New groups that were created include Engineering Assurance, Event Cause Analysis, and separate Quality Assurance (QA) and Quality Control (QC) groups. Separate managers were assigned to the QA and QC groups (instead of a common manager for both) in order to increase management attention to the QA and QC areas. Additional Supply System management attention was devoted to, and actively involved in site activities. Senior management was also involved in obtaining first-hand information from QA inspectors in the field. Members of the Supply System Board of Directors have increased their attention and that of the CNSRB to the operating activities of the plant. Board members took a more active role during this period in keeping aware of plant problems and NRC actions through their monthly meetings. The CNSRB has also taken a more active role and members have increased their efforts to follow plant activites in a timely fashion and to be involved at the time of decisions instead of performing the more common after-the-fact review.

The plant problem reporting system was overhauled in January 1989 in order to provide increased staff sensitivity to plant problems. The focus of the new system is the Problem Evaluation Request (PER), which can be completed by any staff member to identify a problem or safety concern. This action lowered the problem threshhold and resulted in more direct site management involvement in problem followup and resolution, including the establishment of a Management Review Committee (MRC) which meets each morning to review all PERs submitted since the previous day. The members of the MRC are composed from the members of the plant operations committee (POC). This has also improved the POC members' awareness of current plant situtations. The POC's effectiveness has increased, partly through this awareness and partly because of membership changes that have occurred.

The newly established Engineering Assurance group functioned very effectively during this period, identifying significant issues which helped to improve performance in the Engineering area. This group was responsible for the performance of a safety system functional inspection (SSFI) of the low pressure core spray (LPCS) system, as discussed briefly in the previous section. This effort was extensive and resulted in a large

number of significant findings. The licensee has taken steps, using these findings, to improve the methods used to complete the design basis update. During this period the licensee also initiated an onsite self-assessment of quality oversight activities (similar to assessments conducted by NRC inspections).

With the reorganization of the various safety and assurance groups, formal training was undertaken to ensure that policies and management expectations were well understood. Management was sensitive to the concerns of the NRC and other outside auditing agencies, as evidenced by the above changes to the organization. However, obtaining personnel with plant experience and with various other technical skills was found to be difficult. The number of individuals with specific backgrounds in critical areas has improved, although weaknesses remain. The QA staff includes two individuals with an operations background, including one person who holds a current senior reactor operator license for WNP-2. However, it was noted that no one on the QA staff has had actual operations experience at WNP-2. Additional expertise still appears to be needed by the QA organization in operations, health physics, chemistry, engineering/technical activities, and plant management.

Recent trends have been to involve the plant QA organization in plant activities in a more pro-active manner. Members of the QA and NSAG groups were observed in the control room during all major plant evolutions. For example, during the recently completed annual outage, a member of the QA staff followed each major work activity. When problems were identified by line organizations, QA and NSAG were aggressive in insisting that a conservative solution be found. This was evident, although with limited effectiveness, in the instances (discussed in the previous section) in which the plant staff was slow to respond to Technical Specifications operability issues.

The conduct of audits and surveillances was considered to have improved during this SALP period. Audit packages were found to present more in-depth assessments with more significant findings than those conducted in the past. Audit and surveillance reports were directed to the most senior manager in the audited organization, with a copy of all audit reports forwarded to senior licensee management. QA expectations and staff responses to audit findings appeared to have improved during this assessment period.

One violation was issued in this functional area, for failure to prepare a nonconformance report (NCR) for an identified problem.

A problem that carried over from the last assessment period was the timely resolution of QA-identified deficiencies. This backlog increased during the early portion of the SALP period, as a result of improved effectiveness of safety oversight groups in identifying problems. This was addressed by plant management during the latter portion of the assessment period. Timely and effective resolution of NRC-identified concerns was also a problem that has been ongoing for a lengthy period of time. Actions were slow during the early portion of the assessment period, but more timely resolution was observed after concern was expressed by NRC management. Findings of the self-performed SSFI have generally been corrected in a timely manner. Timliness to correct problems identified by groups other than NRC or QA has been slow. Deficiencies identified by the radiation protection department have not been corrected as responsively as the findings of other organizations.

In spite of the improvements discussed above, several significant weaknesses were still evident in this functional area. A few major operational events occurred during the assessment period, and evaluations were performed on these and other events by the Event Cause Analysis group. It is noteworthy that the licensee has assigned a dedicated staff to this function; however, this group was not as effective as expected because of a high turnover rate in personnel and limited experience of those remaining. This was evident in the group's evaluation of the March 1989 rod drift event, for which the root cause analysis process was extended beyond what was considered to be reasonable timeliness. An inspection report also documented several NRC concerns regarding the thoroughness of the assessment.

The quality of NSAG reports also declined during the assessment period. NSAG reports were previously considered to be technically oriented assessments with corrective actions proposed for various issues affecting the plant. However, in recent months NSAG reports appear to have degenerated into a status keeping document for backlogged issues on the plant tracking log (PTL) and for other corrective actions. Although the NRC was aware that NSAG provided detailed technical recommendations for improvement (via the operating experience issue forms), this has not been reflected in the monthly reports to corporate management.

The SALP report for the previous period noted the need for improvement in the quality of licensing submittals. Improvement was noted during this SALP period; however, all technical submittals were not thorough. Examples were as follows:

* Licensee submittals during the previous SALP period, regarding the need to provide a thrust block for a fire main, did not present a sound basis for resolving the

technical issue. Supplemental information provided by the licensee during this SALP period also contained technical deficiencies.

* A December 1988 Technical Specification change submittal regarding diesel generator trips which did not contain all of the information necessary for staff review. The staff questioned the documentation, Technical Specification interpretation, and the licensee's ability to understand and control plant design. A drawing subsequently submitted for staff review contained an uncontrolled change.

* The submittal to permit Cycle 5 operation was complicated by the licensee's uncertainty regarding the number of new fuel bundles to be utilized in the reload. Additionally, the fuel vendor used erroneous Techncial Specification values for the reload analysis, indicating a lack of communication between the licensee and the fuel vendor.

2. Performance Rating

Category 2

3. Recommendation

Conservative managment decisions on all aspects of problem resolutions and Technical Specifications interpretations are required. Recognizing that such actions set an example for other members of the staff, management must also insure that this policy is implemented down through the organization. Management attention is recommended to ensure continued improvement in the performance of safety oversight activities. Management action is also recommended to ensure improved licensing submittals, more timely and thorough root cause assessments, and more timely resolution of deficiencies identified by safety oversight groups and the NRC.

V. SUPPORTING DATA AND SUMMARIES

A. Enforcement Activity

Two NRC resident inspectors were on-site during the 1988 SALP period. Thirty-five inspections were conducted, including a team inspection in August 1988 that reviewed the material condition, performance, maintenance, design modifications and operating procedures as related to two safety related systems (emergency diesel generators and nuclear steam supply shutoff system). A total of more than 3700 inspector hours of direct inspection took place during the SALP period. A summary of inspection activities is provided in Table 1 along with a summary of enforcement items from these inspections. A description of the enforcement items is provided in Table 2. During this SALP period, no escalated enforcement items were identified.

B. Confirmation of Action Letters

No confirmation of action letters were issued during this SALP assessment period.

C. Other

An Office for Analysis and Evaluation of Operational Data (AEOD) review of licensee events at WNP-2 is included as Attachment 1. The AEOD reviewed the LERs and significant operating events for quality in reporting and effectiveness of corrective actions identified.

TABLE 1

INSPECTION ACTIVITIES AND ENFORCEMENT SUMMARY

Functional Area		Inspection Hours	Percent of Effort	Enforcement Items* Severity Level I	II	III	IV	V
A.	Plant Operations	1247	32				1	
B.	Radiological Controls	495	13				7	
C.	Maintenance/ Surveillance	644	17				4	2
D.	Emergency Prep.	194	5					
E.	Security	132	3				1	1
F.	Engineering/ ** Technical Support	290	7				6	1
G.	Safety Assessment/ Quality Verif.	898	23				1	
	Totals	3900	100				20	4

* Severity levels are discussed in 10 CFR 2, Appendix C. One deviation was also identified during this SALP period in the Maintenance/Surveillance functional area.

** Notice of Violation pending on equipment qualification issues identified in inspection report 50-397/88-39.

This information is current through inspection report 50-397/89-15.

TABLE 2

ENFORCEMENT ACTIVITY

INSPECTION REPORT No.	SUBJECT	SEVERITY LEVEL	FUNCTIONAL AREA
88-17	Inadequate protected area detection aids	4	E
88-17	Failure to record safeguards event	5	E
88-21	Plant heatup rate exceeded Technical Specification limits	4	A
88-21	Licensee event report not submitted within 30 days of discovery	4	F
88-22	Unauthorized entry into a high radiation area	4	B
88-22	Failure to lock a high radiation area	4	B
88-24	Licensee not reporting reactor protective system trips per 10CFR 50.72 requirements	4	F
88-24	Failure to use a determination/ retermination sheet in a work request	4	C
88-24	Failure to followup on M&TE which was found to be out of calibration	4	C
88-27	Procedures not established to provide for installation and replacement of air filters for emergency diesel generators	4	C
88-32	Failure to prepare a nonconformance report for hydraulic control unit discrepancies	4	G
88-32	Deviation - Failure to complete calibration of diesel generator tank level instruments per commitment date		C
88-33	Failure to continuously sample main plant vent release	4	B
88-36	Failure to post a radiation area	4	B
88-37	M&TE found overdue for calibration	5	C

TABLE 2 -- ENFORCEMENT ITEMS (Cont'd)

INSPECTION REPORT No.	SUBJECT	SEVERITY LEVEL	FUNCTIONAL AREA
88-37	Combustibles not removed from vital areas after completion of work	5	C
88-39	Equipment qualification concerns regarding Limitorque valve operators	*	F
88-40	Failure to sample control room charcoal after 720 hours of operation as required by Technical Specifications	4	F
88-40	Timely actions not taken for delinquent surveillance on degraded voltage protection	4	C
88-41	Grab samples not obtained and analyzed prior to each vent or purge of containment	4	B
88-41	Entry into high radiation area without without proper dose rate monitoring	4	B
89-04	Failure to verify Division 3 diesel incomplete starting sequence trip was bypassed during loss of coolant accident testing	4	F
89-04	Failure to report Division 3 diesel inoperable in accordance with Technical Specification 4.0.3	4	F
89-04	Failure to report Division 3 diesel trip bypass problem in accordance with 10 CFR 50.73	4	F
89-08	Failure to include information required by Technical Specifications in the semi-annual radioactive effluent report	5	F
89-09	Failure to post a radiation area	4	B

* NOV pending on equipment qualification issues identified in inspection report 50-397/88-39.

This information is current as of inspection report 50-397/89-15 (with the exception of several reports still being reviewed).

TABLE 2 -- ENFORCEMENT ITEMS (Cont'd)

Functional Areas:

A - Plant Operations
B - Radiological Controls
C - Maintenance/ Surveillance
D - Emergency Prep.
E - Security
F - Engineering/ Technical Support
G - Safety Assessment/ Quality Verif.

TABLE 3

SYNOPSIS OF LICENSEE EVENT REPORTS (LERs)

Functional Area		SALP Cause Code* A	B	C	D	E	X	Totals
A.	Plant Operations	11	2	3	2	3		21
B.	Radiological Controls	1	1					2
C.	Maintenance/ Surveillance	10			3	1		14
D.	Emergency Prep.							
E.	Security	2						2
F.	Engineering/ Technical Support		5		1	1		7
G.	Safety Assessment/ Quality Verif.	2						2
	Totals	26	8	3	6	5		48

* Cause Code
A - Personnel Error
B - Design, Manufacturing or Installation Error
C - External Cause
D - Defective Procedures
E - Component Failure
X - Other

Functional Areas
A - Plant Operations
B - Radiological Controls
C - Maintenance/ Surveillance
D - Emergency Prep.
E - Security
F - Engineering/ Technical Support
G - Safety Assessment/ Quality Verif.

The above data are based upon LERs 88-10 through 89-19. Note: LER 89-12 not issued.

ATTACHMENT 1

AEOD Input to SALP Review for WNP, Unit 2

Washington Public Power Supply System submitted about 37 reports, not including revisions, for WNP Unit 2, during the assessment period from June 1, 1988 through May 31, 1989. Our review included LERs numbers as follows:

88-010 to 88-038
89-001 to 89-009

The LER review followed the general instructions and procedures of NUREG-1022. The specific review review criteria and our findings follow.

Significant Operating Events

There were three reported events at Washington Nuclear Plant Unit 2, that were identified as particularly significant events by the AEOD screening and review process in the assessment period. Each of these events were considered appropriate for potential further action by the NRC offices. The three significant events were:

1. LER 50-397/88-011 "Reactor Protection System Low Level Actuation During Shutdown Cooling System Lineup Change - Personnel Error/Inadequate Design." During a routine shift of the Residual Heat Removal (RHR) Shutdown Cooling (SDC) system lineup, the operator inadvertently opened a suction valve in RHR SDC Loop "B' and a suction valve in the Suppression Pool causing drainage from the Reactor Pressure Vessel (RPV) to the Suppression Pool. This resulted in low water level in the RPV which in turn actuated the Reactor Protective System. Subsequently, the Licensee added an interlock to prevent the opening of the Suppression Pool suction valve when the associated RHR SDC valve was open.

2. LER 05-397/88-017 "Limitorque Motor Operator Potential Safety Hazard Caused by Torque Switch Cam Binding and Torque Switch Lug Failure Due to Cause Unknown." A total of 21 Limitorque Model SMB-000 and SMB-00 Valve Motor Operators have been identified to have defective torque switches. These defective switches were made from Melamine. Limitorque has issued a 10 CFR Part 21 Notification letter, dated November 3, 1988, suggesting replacement of all Melamine torque switches by torque switches made from Fiberite. The Licensee has replaced all Melamine torque switches in safety related motor operators by Fiberite torque switches.

3. LER 50-397/88-030 "RPS Actuation Caused by Loss of Power on Both RPS Divisions - due to misapplication of Switch Type." A Reactor Protective System (RPS) actuation occurred due to a momentary loss of power to both divisions of RPS caused by overtravel of RPS Power Supply Selector Switch, GE Model Number SBM. Subsequently, the Licensee has placed a caution tag on the switch to serve as a reminder that the switch is not mechanically prevented from overtraveling.

AEOD Technical Study Reports

No deficiencies were identified in this assessment period at WNP Unit 2, that were considered sufficiently serious to merit an in-depth technical study review by AEOD.

PNs Issued in Assessment Period

Five Preliminary Notices of Events or Unusual Occurrences were issued for WNP-2 during this assessment period.

PNO-V-88-63	Failure to perform Surveillance Test on 4.16 KV degraded voltage time delay relay.
PNO-V-88-64	Leakage from Suppression Pool Vacuum Breaker Valve.
PNO-V-89-05	Condenser Tube Leakage.
PNO-V-89-09	Reactor Trip Due to Flashover of Step-up Transformer 500 kV Bushing.
PNO-V-89-15	Failure of Suppression Pool Suction Valve.

The licensee has submitted one LER for each of PNO-V-88-63, PNO-V-88-64 and PNO-V-89-09. Thus far, the licensee has not issued any LER against PNO-V-89-15 even though the licensee has reported it as an unusual event on February 10, 1989. The event in PNO-V-89-05 is not required to be reported as LER.

LER Quality

The LERs adequately described all the major aspects of the event, including component or system failures that contributed to the event and the significant corrective actions taken or planned to prevent recurrence. The reports were thorough, detailed, well written and easy to understand. The narrative sections typically included specific details of the event such as valve identification numbers, model numbers, numbers of operable redundant systems, the date of completion of repairs, etc., to provide a good understanding of the event. The root cause of the event was clearly identified in most cases.

The LERs presented the event information in an organized pattern with separate headings and specific information in each section that led to a clear understanding of the event information. Previous similar occurrences were properly referenced in the LERs as applicable. The update LERs were adequate.

Effective Corrective Action

A review of the LERs does not indicate a large number of recurring events. However, there does appear to be a pattern of personnel errors or procedure errors with different events. Several of the errors seemed to occur either as personnel failing to correctly follow a procedure or the procedure was

inadequate (too general, insufficient detail, not complete, vague, etc.). A total of 22 of 37 LERs were related to personnel or procedure error. The LERs are 88-10, 11, 15, 19, 20, 21, 22, 25, 27, 28, 29, 32, 33, 35, 36, 38, and 89-003, 004, 007, and 009. In the previous SALP report for the period between June 2, 1987 and May 31, 1989, similar deficiency was reported for 17 LERs out of a total of 29 LERs issued during that period.