Report No. 50-334/84-13

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

DUQUESNE LIGHT COMPANY

BEAVER VALLEY POWER STATION, UNIT 1

MAY 14, 1984

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ATTACHMENTS

I. INTRODUCTION

1.1 Purpose and Overview

The Systematic Assessment of Licensee Performance (SALP) is an integrated NRC staff effort to collect the available observations on an annual basis and evaluate licensee performance based on those observations with the objectives of improving the NRC Regulatory Program and licensee performance.

The assessment period is December 1, 1982 through March 31, 1984. The prior SALP assessment period was December 1, 1981 through November 30, 1982. Significant findings of this assessment are provided in the applicable Performance Analysis Functional Areas (Section IV).

Evaluation criteria used during this assessment are discussed in Section III. Each criterion was applied using the "Attributes for Assessment of Licensee Performance" contained in NRC Manual Chapter 0516.

1.2 SALP Board

R. Starostecki, Director, Division of Project and Resident Programs (DPRP)
T. Martin, Director, Division of Engineering and Technical Programs (DETP)
S. Varga, Chief, Operating Reactors Branch No. 1, NRR
L. Tripp, Chief, Reactor Projects Section 3A, DPRP
P. Tam, Licensing Project Manager, NRR
W. Troskoski, Senior Resident Inspector

Other Attendees

K. Murphy, Technical Assistant, DPRP
G. Meyer, Project Engineer, Reactor Projects Section 3A, DPRP
D. Johnson, Resident Inspector

1.3 Background

a. Licensee Activities

The plant had no major unplanned outages during the assessment period. It generally operated at power except for the following trips and shutdowns.

Three unrelated malfunctions from main switch yard relays resulted in a partial loss of offsite power (unusual events) on January 7 and 14, and March 28, 1983. The first and third events involved isolation of the No. 1, 138 KV supply through the 1A Station System Service Transformer to 4 KV buses, 1A and 1B. This power interruption caused reactor trips as the normal bus supply through the 1C

Unit System Service Transformer was out of service. The second event involved the temporary isolation of the No. 2, 138 KV supply, and did not result in a power interruption to the 4 KV system.

A safety injection actuation due to low steam line pressure occurred while at power on February 12, 1983. A sweated fitting on the air supply line to the B main steam line trip valve failed, allowing actuator air to bleed off and the valve to close. The unusual event (ESF actuation) was terminated a short time later after the plant was stabilized.

The licensee shut down the plant on June 10, 1983, for a fourteen week refueling and modification outage, which included snubber modifications and inservice inspection and testing, replacement of control rod guide tube split pins, steam generator inspections, Emergency Response Facility tie-ins, and TMI related modifications.

During installation of the reactor upper internals package, new fuel assembly K-2 was damaged by a misaligned guide tube that crushed the RCCA spider nozzle. The misalignment was not identified during split pin QC checks and resulted in a partial core offload in order to inspect for damage. Reactor startup and low power physics testing began on September 23, 1983.

Throughout the assessment period, the reactor was manually shutdown or tripped ten additional times; one through an inadvertent manual safety injection on January 25, 1984. Several significant power reductions were undertaken by the licensee to repair main feedwater regulator valves and to correct secondary water chemistry problems caused by main condenser tube leaks.

b. Inspection Activities

One NRC Resident Inspector was assigned until October, 1983, at which time the incumbent was assigned as the Senior Resident Inspector. A second resident inspector was later assigned to the site on February, 1984. Total NRC inspection hours for the period was 2,851 hours (resident inspector and region-based), with a distribution in the assessment functional areas as shown on Table 3.

NRC inspection activities and violations issued during the period are tabulated in Tables 4 and 2, respectively. Specific enforcement data is presented in Attachment 1.

An NRC Emergency Preparedness Inspection was conducted during the licensee's annual emergency exercise held on February 16, 1983. The states of West Virginia, Pennsylvania, and Ohio participated.

II. SUMMARY OF RESULTS

		BEAVER VALLEY POWER STATION, UNIT 1		
	FUNCTIONAL AREAS	CATEGORY 1	CATEGORY 2	CATEGORY 3
1.	Plant Operations		X	
2.	Radiological Controls Radiation Protection Radiation Waste Management Transportation Effluent Control & Monitoring	X		
3.	Maintenance	X		
4.	Surveillance (Including Inservice and Preoperational Testing)		X	
5.	Fire Protection		X	
6.	Emergency Preparedness	X		
7.	Security and Safeguards	X		
8.	Refueling/Outage Activities		X	
9.	Licensing Activities	X		

Overall Summary

The overall safety performance of BVPS Unit 1 has continued to improve during this assessment period. For those safety problems that did occur, including an unplanned exposure of 1.7 Rem to an operator, an inoperable residual heat removal system and inoperable river water subsystem, corrective actions undertaken by the licensee were unusually prompt, thorough, and technically sound. They should prevent recurrence. This was due in large part to the onsite presence and involvement of Corporate level management in plant operations.

Increased emphasis on procedure adherence and control of shift turnover activities during the assessment period should be effective in improving future performance. Continued attention to operating detail and conduct of operations from the Control Room is still needed to achieve sustained high level performance. Current management programs that are planned or already in place are expected to contribute to this goal.

During the past year, foreman and engineering staffing levels have increased enabling a better distribution of the work load. The number of licensed reactor operators and senior reactor operators have increased significantly alleviating

previous serious shortages. In-plant implementation for fire protection controls improved over that noted in the last assessment period. Improvements were also noted in the licensee's emergency response capabilities. Continuing strong performance was observed in the licensing and security functional areas.

III. CRITERIA

The following evaluation criteria were applied to each functional area:

1. Management involvement in assuring quality.
2. Approach to resolution of technical issues from a safety standpoint.
3. Responsiveness to NRC initiatives.
4. Enforcement history.
5. Reporting and analysis of reportable events.
6. Staffing (including management).
7. Training effectiveness and qualification.

To provide consistent evaluation of licensee performance, attributes associated with each criterion and describing the characteristics applicable to Category 1, 2, and 3 performance were applied as discussed in NRC Manual Chapter 0516, Part II and Table 1.

The SALP Board conclusions were categorized as follows:

Category 1: Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used such that a high level of performance with respect to operational safety or construction is being achieved.

Category 2: NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and are reasonably effective such that satisfactory performance with respect to operational safety or construction is being achieved.

Category 3: Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appeared strained or not effectively used such that minimally satisfactory performance with respect to operational safety or construction is being achieved.

IV. PERFORMANCE ANALYSIS

4.1 Plant Operations (41%)

Continuous coverage by the resident inspector, with periodic assistance from a region-based project engineer and four inspections by region-based specialists, provide the basis for this analysis. Functional activities inspected were: compliance with license, technical specifications, and procedure requirements; facility modifications and start-up testing of NUREG-0737 TMI Action Plan Items; refueling activities; Quality Assurance and Quality Control; IE Bulletin Followup; licensed and non-licensed training.

General operating performance improved during the assessment period, especially after the September, 1983 events involving an inoperable residual heat removal system and an inoperable river water system. This is due in a large part to the commitment and onsite presence of corporate management. The licensee is successfully fostering a good attitude toward safety at all levels of the operations staff which should result in further improvement through the next assessment period.

Present management involvement in plant operations is strong. Identified problem areas receive appropriate attention and follow through. Resolutions are thorough and technically sound as evidenced by the in-depth corrective actions undertaken in response to the September, 1983 events. The licensee has demonstrated good initiative and resolve to prevent recurrence of similar events. Shift turnover procedures are unusually comprehensive and thorough.

Continued management attention toward conduct of operations from the Control Room is necessary. Prior to and during the third refueling outage, the Control Room was cluttered and often excessively noisy due, in part, to the amount of work and number of people present. This condition detracted from the atmosphere needed to carry out operational activities in an orderly, disciplined and safe manner, and partially contributed to the two events of September, 1983, that resulted in an Enforcement Conference (50-334/83-27) and subsequent Level III Violation (no CP). First line supervision must receive continued encouragement to exercise firm control over the conduct of operations in the Control Room. Also, methods to identify and direct unnecessary congestion during periods of high activity must receive further consideration.

During 1983, 11 new reactor operator and 12 senior reactor operator licenses were obtained, alleviating the previous assessment concerns over the ability of the licensee to meet training commitments while meeting NRC guidelines on shift overtime. However, this led to the identification of two weaknesses in the training program for licensed operators.

The first item was identified as a common link in the Severity Level III problems. Prior to assuming duties, newly licensed personnel did not adequately understand their responsibilities and authorities in regard

to the conduct of operations. In the past, the practice of placing a new individual on an experienced shift crew had been adequate in providing on-the-job training. However, this informal system did not function adequately when several new operators were placed on the same shift, and were expected to coordinate their activities with minimal guidance. The second problem, identified by an NRC License Examiner, concerned on-the-job training. Personnel assigned to a shift for such training prior to taking an NRC license exam, did not actively participate in operational activities. These two areas indicate that better communication between the Operations and Training departments is needed to assure each understands and carries out its assigned role in qualifying new licensed operators.

Attention to operating detail needs further improvement. Personnel errors led to an inadvertent manual safety injection, interruption of an offsite power source, an SI accumulator fill line containment isolation valve being left open after use, and an inoperable river water pump due to improper circuit breaker racking. In separate events, supervisory inattention to basic plant conditions allowed an inoperable residual heat removal system and river water subsystem to each go undetected for two shifts prior to discovery by outside sources. Station management is addressing this problem by implementation of a progressive discipline program to hold personnel accountable for their individual performance.

The licensee has a good problem identification system in place. Reportable and non-reportable events receive reviews by appropriate plant groups. Corrective actions have been well implemented. Over the past two assessment periods, the number of repetitive or causually linked events continued to trend down. NRC/AEOD review of LERs for informational content and compliance with reporting criteria identified no significant deficiencies.

Licensee response to NRC initiatives is generally timely, technically sound and reasonable. The previous SALP identified a concern over personnel deviating from approved procedures. Aggressive management involvement in disseminating procedure adherence requirements has been effective in reducing this problem. Other examples of licensee responsiveness to NRC initiatives include review of the post trip procedures, testing and valving in the reactor head vent system prior to the date required (fourth refueling outage), and prompt actions on numerous inspector concerns during the assessment period.

The Duquesne Light Company is currently in the midst of planning a company-wide reorganization with the objective of running with a leaner, more efficient management organization. The reorganization would gradually take effect through 1984 and would bring all responsibility for the Beaver Valley Power Station, Units 1 and 2 under a single Vice President, while reducing the number of managers reporting to him. Because of the planned continued corporate presence on site, no deletion of management oversight capability is expected.

Licensee performance in the area of committees improved during this assessment period. Committee and sub-committee interfaces and the manner of accomplishing their respective tasks have recently been clearly delineated in much improved administrative procedures. Both the Onsite (OSC) and Offsite (ORC) committees are composed of members with excellent qualifications. Management involvement and control in assuring quality through the Onsite and Offsite Review committees is evident. This is especially evident by the quality of the technical reviews performed by the various ORC sub-committees. Solutions and proposed actions are in keeping with a good safety philosophy.

Conclusion

Category 2

Board Recommendations

Continue normal inspection coverage. See board recommendation in Section 4.8, Refueling.

4.2 Radiological Controls (16%)

Resident inspector review of on-going radiological control activities and eight inspections by region-based specialists, includuing one special inspection, form the basis of this assessment. One report of a receipt inspection by a state representative at a disposal site was received for in-office review and appropriate action. Program areas examined included radiation protection, radioactive waste management, effluent monitoring and control, and transportation. Three violations were identified.

As in the previous SALP, the Radcon Department continued to perform well in meeting various radiation protection program requirements. Personnel are aggressively involved with all aspects of plant operational activities that could impact radiological conditions. No violations indicative of a programmatic problem or trends that are adverse to safety occurred. This is indicative of the continued high level of importance that DLC attaches to radiological safety.

One Level III violation was issued when an operator received an unplanned 1.7 Rem exposure while working in solid waste. This was caused by the failure of a radcon technician to perform a pre-job survey and provide meter coverage of the job in a posted high radiation area, as required by established procedures. Management recognition of the potential hazards was evident by the immediate notification to the resident inspector, and the unusually prompt and rigorous corrective actions taken to prevent recurrence.

The responsibilities and authorities of the various positions in the radcon organization are well defined in the Radiological Controls Manual. In turn, these positions are staffed with individuals who have received good initial training, and meet established qualification criteria. This includes the contracted radiation protection personnel used to augment the station organization during outages. Formalization of the contractor training program and inclusion of new and revised procedures in the existing training format are underway. This is evidence of a willingness on the licensee's part to commit the resources necessary to assure that well qualified personnel are available to carry out program requirements.

Corrective action systems related to radiological concerns have functioned well. Actions in response to Quality Assurance audits, operational events and NRC concerns are taken in a timely manner with acceptable resolution. This is evidenced by the ongoing evaluation of the effluent ventilation monitoring system due to be completed by December 31, 1984. As a result, only four NRC identified open items remain unresolved.

The licensee's radiation protection facilities and equipment are adequate to support normal operations. Calibration and issuance of instrumentation is adequately controlled. Posting and access control of radiation and high radiation areas and control of radioactive and contaminated material was implemented per program requirements.

Through lessons learned from overexposure incidents at other facilities (such as in the reactor instrumentation pit) and past events at BVPS (unplanned operator exposure in solid waste), rigorous requirements have now been built into the radcon program to prevent similar events from occurring. This is typified by the full time assignment of a radcon foreman and technician to cover any work activities in the solid waste area. These actions effectively reduce the risk to personnel working in areas that have had a high incidence of events associated with them.

A comprehensive review of the licensee's As Low As Reasonably Achievable (ALARA) Program was performed. Major tasks were adequately planned and scheduled. Documentation of ALARA reviews indicated prior planning for steam generators, control rod drive split pin and snubber removal operations. With regard to routine man-rem tasks, ALARA reviews were generally timely, but criteria for performing on-job review and criteria for post-job reviews was not documented, and there is no effective measurement system to determine the degree of success of the ALARA program. Management pursued development of a corporate ALARA procedure by December 31, 1983, with full program implementation expected by September, 1984. This should result in further ALARA program improvements beyond the current acceptable level.

The licensee is implementing an effective radioactive waste management program. Requirements were developed and implemented, on schedule, to meet 10 CFR 61, Land Disposal of Radioactive Waste. Routine resident inspections of the liquid waste system identified no deficiencies and no unplanned releases occurred. BVPS effluent technical specifications were amended to bring them in line with the NRC's standard radiological effluent technical specifications. The transition was smooth and all requirements were rigorously adhered to.

The inspection conducted by the state representative in November, 1982, identified free-standing liquid in one drum of a shipment of seventy 55-gallon drums. NRC Region I issued a violation for the occurrence, and the licensee took adequate corrective action. There were no problems indicative of a programmatic breakdown in the transportation area. Routine resident inspections indicate that adequate resources are directed to this area.

An effective effluent monitoring and control program is being implemented at BVPS. No deficiencies were identified during resident inspections of ongoing activities or by a region-based specialist review of the program. Operations are conducted as prescribed.

Conclusion

Category 1

Board Recommendations

None.

4.3 Maintenance (3%)

Resident inspector observations of safety-related maintenance activities provide the basis for this assessment.

The previous assessment identified concerns attributed to personnel errors and procedure adherence. Strong management action in assuring the development and dissemination of plant policies in this area has been effective. The emphasis on assuring procedure compliance led to a reduction in the number of plant events attributed to maintenance personnel errors. There was only one inadvertent reactor trip during the past 16 month assessment period caused by technician error. No other reportable events or violations occurred. Resident inspector observations indicated that a high regard toward administrative and procedure requirements has developed.

The attitude of individual mechanics and technicians toward safety is good. The licensee has instituted a systems training program for non-licensed personnel that should provide the dual benefits of reinforcing an overall positive safety attitude and of further reducing the likelyhood of personnel error.

Currently, there is no backlog in the preventive maintenance program. The number of outstanding corrective maintenance work requests remains at about the same moderate level as last year, with adequate resources allocated to the high priority items. This indicates that an adequate staffing level of mechanics, foreman and engineers is being maintained. Future demands for experienced personnel to support Unit 2 startup efforts are not expected to have an adverse impact during the next assessment period.

The quality and level of detail contained in both the corrective (CMP) and preventive (PMP) maintenance procedures is good. Activities are well controlled and new procedures are developed as needed. Operational experience is routinely factored into the preventive maintenance program as part of DLC's corrective action system to identify causally linked component failures. PMPs are scheduled and tracked by a computerized system.

Quality Control involvement in the maintenance program is also good. QC routinely reviews all maintenance work requests, PMPs and CMPs. All safety related maintenance activities receive some level of independent QC review and/or field inspection, including verification of procedure adherence.

During the past assessment period, the licensee consistently demonstrated adequate prior planning and good control of all maintenance activities. Events that occur at other facilities, such as the Salem reactor trip breaker failures, have received prompt attention that preceeded utility notification by the NRC. For long term improvement, the licensee ac-

tively participates with industrial groups to upgrade their program with identified good maintenance practices. No programmatic weaknesses are evident. The conduct of the maintenance program at BVPS has become a strong point.

Conclusion

Category 1

Board Recommendation

Reduce routine inspection coverage. Monitor effect of impending QC organizational changes.

4.4 Surveillance (12%)

The analysis of this functional area is based on four inspections performed by region-based specialists and routine observations by the resident inspector. Activities covered in those inspections included: refueling startup testing, calibration, inservice inspection (ISI) and testing (IST) programs, surveillance program control and test implementation.

The overall surveillance program remained sound throughout the assessment period. Management is strongly involved in correcting identified deficiencies and in taking prudent actions to ensure that all commitments are adequately addressed in their program.

In recognition of several NRC identified concerns related to technical specification surveillance test scheduling, the content of the procedures used to implement those tests, and the adverse experiences of other licensees in this area, an in-depth program was instituted to review all surveillance requirements and identify applicable procedures in matrix form. This matrix will then be updated as amendments are issued. The program is expected to be complete by mid-1984, and should provide the basis for simplifying the current test program by removing redundant test requirements and providing a verification that all revisions to the BVPS Technical Specifications are addressed in appropriate procedures or logs. This detailed review demonstrates a commitment by the licensee to assure that thorough, technically sound solutions are imposed for potential problems, and should result in excellent program schedule control.

Problems were encountered in scheduling non-routine tests needed to meet such off-normal requirements as special refueling mode tests and increased ASME Section IX tests of pumps and valves. The cause was due to poor indoctrination of the Shift Technical Advisory personnel appointed to serve as the surveillance scheduling coordinator. To effectively correct the situation, an experienced senior reactor operator was appointed to the position. No further difficulties have since been encountered.

Management oversight and control of the ISI and IST program was found to be weak. Administrative controls were not developed to explicitly define the responsibilities and authorities necessary to effectively implement these programs. This resulted in the 10 year ISI Program documents not being distributed in a controlled manner, nor reviewed or approved by authorized personnel. Additionally, the IST program did not always identify and appropriately implement those relief requests that were granted, modified or denied by the NRC. Increased attention from corporate management was directed to this area.

Past QA involvement in auditing surveillance activities has not been effective in either identifying the depth of the above problems or in expeditiously resolving them. Ample evidence existed in past audits that should have indicated a more detailed review of the areas was warranted.

The previous SALP identified a weakness in implementing approved surveillance procedures. In particular, initial conditions necessary to perform surveillance tests were not always being met. Strong, direct management involvement was successful in correcting this deficiency. Overall procedure adherence is now good.

During this assessment period, several problems were encountered concerning the adequacy of some surveillance procedures. Refueling frequency tests lacked guidance for restoring normal system alignments, which contributed to the Level III Violation issued for the September, 1983 events. ESF loss-of-power relay test procedures lacked steps to positively assure compliance with technical specification action statements. Also, some ECCS valves were not stroke tested on the frequency specified by either the technical specifications or IST program. Each violation was promptly corrected. Comprehensive procedure reviews by the licensee have not indicated that the adequacy of surveillance procedures is a generic problem.

Other than the above problems, the surveillance test procedures, including those used for Cycle 4 startup physics testing, were generally well written, and continued to improve through the normal review process. Test data received adequate review from knowledgeable personnel. The testing program is successful in identifying component problems, both individual failures and long term component degradation, which, in turn, receive appropriate attention.

The overall performance in this area is similar to the previous SALP assessment; however, actions taken in response to the above problems should be effective in addressing them. No other programmatic problems are evident and mechanisms are currently in place to improve performance.

Conclusion

Category 2

Board Recommendation

Continue normal inspection coverage.

4.5 Fire Protection and Housekeeping (4%)

This assessment is based on one region-based inspection and routine resident inspector tours of the plant.

During the current assessment period, the licensee continued to implement the corrective actions initiated at the end of the previous SALP period. The majority of these corrective actions are already completed, and the remainder are either in progress, or are scheduled to be completed shortly. The two full-time fire protection engineers are actively involved in the followup of these actions on an on-going basis. Final implementation should improve the plant's fire protection and safety features during the next assessment period.

Licensee actions in improving or maintaining other aspects of the plant overall fire protection posture were noted in the following areas: strong management involvment and support for the fire protection effort by devoting considerable resources for upgrading or maintaining fire protection equipment and facilities; improvements in administrative controls by way of timely revision and updating of fire protection implementing procedures to reflect current status of equipment and facility; fire protection engineers' involvement in day-to-day fire protection activities including reviewing plant procedures and modifications affecting fire protection; tracking and timely performance of maintenance and surveillance tests of fire protection equipment; generally complete and thorough annual, biennial and triennial quality assurance audits as required by Technical Specifications; generally complete and well maintained fire protection records; accurate and timely reporting of events; adequate staffing and training; good understanding and resolution of fire protection issues from a safety standpoint; and progress made in complying with NRR Branch Technical Position 9.5-1 and 10 CFR 50 Appendix R.

The licensee continued to maintain emphasis on good general plant cleanliness and appearance during the assessment period. During the third refueling outage, housekeeping and tool control were maintained at acceptable levels inside containment and around the spent fuel pool. The licensee also adopted a good practice of identifying equipment that could be left inside containment prior to establishing containment integrity. When the outage was concluded, additional effort was directed toward returning plant housekeeping to normal. Appropriate concern over the impact that housekeeping practices could have on safety related equipment is evident in the river water intake structure, where Unit 2 tie-in work is underway. Construction activities are closely monitored to maintain acceptable conditions for Unit 1 equipment. These actions demonstrate an understanding of the necessity to closely monitor and maintain plant cleanliness conditions that could impact safety.

Conclusion

Category 2

Board Recommendation

None.

4.6 Emergency Preparedness (12%)

This assessment is based upon one NRC team inspection of the full scale emergency exercise conducted on February 16, 1983, two routine inspections by region-based specialists and routine observations by the resident inspector.

As a result of the exercise, the licensee demonstrated that within the limitations of the exercise scenario, their emergency response capabilities would provide adequate protection of public health and safety. In addition, the licensee's emergency response organization demonstrated acceptable implementation of their Emergency Plan and Emergency Implementing Procedures. This is indicative of the high level of management involvement, adequate allocation of human resources and the dedication of the licensee's organization. Throughout the past year, all levels of the licensee's staff have received extensive training and participated in drills. Personnel are well versed in their responsibilities to fulfill specific functions within the Emergency Plan.

An emergency preparedness inspection conducted on July 25-28, 1983, verified installation of the Prompt Public Notification/Warning System. This system provides administrative and physical means for alerting and promptly instructing the public within the plume exposure pathway EPZ. A second emergency preparedness inspection conducted on January 31 - February 3, 1984, evaluated the emergency program. Additional hardware installation of pole mounted sirens and mini-sirens was verified to be complete in the counties of Pennsylvania, Ohio, and West Virginia. The new and upgraded emergency response facility was completed and required equipment for the EOF and TSC was installed. All related systems are scheduled to be fully functional by the fourth refueling outage. It was noted that appropriate emergency organization personnel had received training regarding the changes in location and equipment for the TSC and EOF. From these findings, it is evident that the licensee is continuing to strengthen their overall emergency preparedness program.

The licensee was responsive to NRC initiatives and acceptable resolutions were proposed and implemented on a timely basis. Specifically, the licensee had implemented the following:

- A lesson plan for eight hours of training on Emergency Action Levels including work shops and testing.

- A data system for tracking deficiencies observed during drills, audits, and the annual exercise including commitment items resulting from NRC inspections. These items cannot be closed until Nuclear Safety and Licensing has reviewed the documentation and concurred with the corrective measures.

- The Emergency Planning Group also has a data system for tracking the status of program improvement items identified during the performance of their job functions.

In summary, the licensee has dedicated sufficient management and hardware resources, and demonstrated the ability to perform effectively during an emergency event. No programmatic weaknesses or significant individual problems are evident.

Conclusion

Category 1

Board Recommendation

None.

4.7 Security and Safeguards (4%)

Two unannounced physical protection inspections were performed during the assessment period by region-based inspectors. Routine resident inspections continued throughout the assessment period. No violations were identified by these inspections. The licensee submitted one security event report pursuant to the requirements of 10 CFR 73.71 during the assessment period. The description of the event was clear and the corrective actions taken were adequate.

Licensee management resources were adequate and effective in administering the security program. Corporate management involvement in site activities was evident, as exhibited through the annual corporate security audit, diligent oversight of the daily records and activities of the contract security force, and improvement in various aspects of the security program. Audits were comprehensive and timely, and effective corrective actions were taken for audit findings.

Security management conducted a review of their various plans and submitted to NRC Region I an excellent consolidation of the Physical Security Plan, which included the Contingency Plan and the Training and Qualification Plan.

As evidence of management's awareness and prior planning, a larger and more efficient entry facility was provided as the primary site access point to alleviate overcrowding conditions. The improved facility enabled the licensee to close one of two other access portals. A complete new security radio system was installed in August, 1983, to enable the licensee to use additional portable radios, establish a base station and eliminate transmission dead spots on the site. The program was demonstrated during a major refueling and modification outage which was completed with no significant security problems. The security force contractor provided their supervisors with a 40-hour course in supervisory management with the expectation that it will enhance operation of the security program. A firearms range has been established that is closer to the site and features increased safety and improved facilities. A low 7.3% attrition rate is an indication of job satisfaction. Key licensee positions were identified and their duties and responsibilities are well defined. Good personnel stability, good morale, and a well defined and implemented security personnel training and qualification program contributed to a security program that improved during this reporting period.

Conclusion

Category 1

Board Recommendation

None.

4.8 Refueling and Modification (6%)

The assessment of this area is based on routine resident inspections conducted during the third refueling and modification outage (June 11 to September 22, 1983), and a one week maintenance outage (March 10, 1984).

The licensee exercised adequate management control over the modification work and refueling activities. Major undertakings includes inservice inspection of steam generators (and retrival of several loose parts on the secondary side), modification and testing of shock suppressors and snubbers, replacement of the control rod guide tube split pins, and emergency response center instrumentation tie-ins.

This was the first plant where the split pins were replaced using the Westinghouse supplied method. While replacing the core upper internals package, a new fuel assembly was damaged due to a misaligned guide tube. The misalignment occurred because quality control checks specified in the vendor's procedures were not adequate to always detect such a condition. A feeler gage checked only one position of the tube and a second check 180° from the first is necessary to assure alignment. The problem was self-identifying and not indicative of a programmatic breakdown. It received prompt attention from management and the Engineering Department. Technical resolution, which included a second partial off-loading of the core and a reshuffle of several assemblies to replace the damaged one was sound and timely.

Control of contractor personnel was generally adequate throughout the refueling outage. Problems that did occur included work on an uncleared emergency electrical bus, misidentification and attempted removal of an expansion joint on the river water header which was required to be operable, and incorrect use of maintenance surveillance procedures. Each event involved unrelated errors by personnel from the Construction Department (CDN). In each case, CDN Management became quickly involved in assessing the cause, implementing corrective action and insuring that all craft personnel were aware of plant policies and requirements. Measures taken to ensure that proper electrical clearances were in place prior to performing work under applicable design packages were effective in preventing any recurrences. Corrective actions for the other two unrelated events were also appropriate. Throughout the outage, NRC concerns were promptly addressed by CDN.

Coordination of outage activities among work groups continued to be satisfactory. Identification and control over systems and equipment removed from service for maintenance and testing was good during the refueling outage. Administrative controls were understood and followed by the responsible personnel.

During the March, 1984 maintenance outage at the end of the assessment period, the licensee experienced two problems with potential safety significance to personnel. The first resulted from the misidentification

of a leaking flange in the reactor coolant system and subsequent attempt to perform maintenance on a pressurized 3" line. Though the flange was not broken, a serious potential for personnel injury and an unisolable primary coolant leak existed. The second problem concerned industrial safety for work inside a subatmospheric containment. After a minor personnel contamination incident, all personnel entering containment were required to wear plastic suits in addition to chem-ox packs (devices used to increase the available oxygen to the lungs). This resulted in several people suffering heat exhaustion. In both instances, the potential consequences were immediately recognized by the licensee as evidenced by the level and depth of management involvement in the ongoing investigation of the events. This demonstrates that high level management is close to, and involved with plant operations.

Conclusion

Category 2

Board Recommendation

Perform inspection of Safety Parameter Display System and Appendix R acitivites now and during the fourth refueling outage.

4.9 Licensing Activities (2%)*

This assessment was based on input from NRR personnel who have had substantial contact and involvement with licensing personnel at Beaver Valley, Unit 1, and from Region I personnel who have been assigned various licensing actions.

The licensing program is well managed. The staff consistently demonstrates a willingness to work with NRC on significant activities in a constructive manner. Responsiveness in all aspects of licensing is impressive, and it is obvious that management capability is strong.

Throughout the year, there has been no need for the staff to issue Technical Specification amendments under emergency conditions. Only a few licensing actions necessitated direct management input through meetings and telephone calls. From these experiences, it is evident that decisions were promptly made at an appropriate level and that prior planning and assignment of priorities was effective in ensuring that licensing activities are addressed in a timely manner.

The overall technical competence of the licensee staff in dealing with licensing issues is good. Sound technical bases and conservatism are generally provided to support the licensee's positions. These attributes were demonstrated in response to the actions on the rod position indication, N-1 loop operation and NUREG-0737 TMI required Technical Specification changes. In particular, items submitted to the Region for action have been completed ahead of schedule and without a need for additional information. For other actions, responses were always on time and advance notice was invariably provided to the project manager.

The licensee is aggressive in pursuing the closeout of open issues and in maintaining constant open dialogue with the NRC project manager. Verbal commitments were always ahdered to and followed up in writing, as underscored by placement of the reactor head vent system in operation in advance of the date approved by the staff.

The licensing organization, under the Superintendent of Licensing, is well staffed with qualified technical personnel who have an adequate understanding of the regulatory requirements and technical issues. The licensee further supplements its licensing capability by active participation in various nuclear industry groups and committees.

In summation, the licensee continued to demonstrate the same high level of performance in this functional area as they did during the last assessment.

*This percentage refers to man-hour expenditure by Region I personnel only. The evaluation of Licensing Activities is primarily based on observations by NRR personnel.

Conclusion

Category 1

Board Recommendation

None.

V. SUPPORTING DATA AND SUMMARIES

5.1 Licensee Event Reports

Tabular Listing

A.	Personnel Error	8
B.	Design/Mfg/Constr/Install	6
C.	External Cause	1
D.	Defective Procedures	3
E.	Component Failures	21
X.	Other	8
	TOTAL	47

Licensee Event Reports Reviewed

Unit 1: Reports 82-59 through 84-02 (83-21 was cancelled).

Causal Analysis

Four sets of causally-linked events were identified.

-- 4 LERs (82-59, 83-14, 83-18, and 83-36) involved missed surveillance testing of pumps and valves. Two events resulted from improper test scheduling, and two from inadequate surveillance procedures that omitted several valves.

-- 4 LERs (82-61, 83-27, 83-33, and 84-02) were caused by operator error. Each involved failure to follow established procedures.

-- 3 LERs (83-12, 83-24, and 83-41) concerned ongoing reliability problems with the core subcooling monitor.

-- 6 LERs (83-02, 83-04, 83-15, 83-16, 83-20, and 83-27) were the result of interruption of normal power. Four events concerned a partial loss of offsite power (1 of 2 sources), while the other two challenged an emergency diesel generator. Personnel error was responsible for three of the above events and unrelated relay failures caused the other three.

5.2 Investigation Activities

None.

5.3 Escalated Enforcement Actions

3.1 Civil Penalties

None.

3.2 Orders

None.

3.3 Confirmatory Action Letters

None.

5.4 Management Conferences

(Enforcement Conferences, SALP Meetings, etc.)

SALP Cycle III Management Meeting at Beaver Valley Power Station on February 15, 1983.

Enforcement Conference at NRC Region I Office, September 1, 1983, regarding a special radiation protection inspection.

Enforcement Conference at NRC Region I Office, October 11, 1983, regarding plant operations.

TABLE 1

TABULAR LISTING OF LERs BY FUNCTIONAL AREA

BEAVER VALLEY POWER STATION - UNIT 1

	Area	Number/Cause Code					Total
1.	Plant Operations	2/A	3/B	1/C	10/E	3/X	19
2.	Radiological Controls					1/X	1
3.	Maintenance				1/E		1
4.	Surveillance	5/A	2/B	2/D	10/E	4/X	23
5.	Fire Protection		1/B	1/D			2
6.	Emergency Preparedness						
7.	Security and Safeguards						
8.	Refueling	1/A					1
9.	Licensing Activities						
						TOTAL	47

Cause Codes:

A - Personnel Error

B - Design, Manufacturing, Construction, or Installation Error

C - External Cause

D - Defective Procedures

E - Component Failure

X - Other

TABLE 2

VIOLATION (12/1/82 - 3/31/84)

BEAVER VALLEY POWER STATION - UNIT 1

A. Number and Severity Level of Violations

Deviations	0
Severity Level I	0
Severity Level II	0
Severity Level III	2
Severity Level IV	8
Severity Level V	2
TOTAL	12

B. Violations Vs. Functional Area

FUNCTIONAL AREAS	Severity Levels I	II	III	IV	V
1. Plant Operations			1	1	1
2. Radiological Controls			1	1	
3. Maintenance					
4. Surveillance				5	
5. Fire Protection					
6. Emergency Preparedness					
7. Security and Safeguards					
8. Refueling				1	1
9. Licensing Activities					

TABLE 3

BEAVER VALLEY POWER STATION - UNIT 1

INSPECTION HOURS SUMMARY

December 1, 1982 - March 31, 1984

		Hours	% of Time
1.	Plant Operations	1154	41
2.	Radiological Controls	460	16
3.	Maintenance	95	3
4.	Surveillance	349	12
5.	Fire Protection	110	4
6.	Emergency Preparedness	329	12
7.	Security and Safeguards	122	4
8.	Refueling/Outage Activities	180	6
9.	Licensing	52*	2
	TOTAL	2851	100.0

*This refers to inspection of licensing activities performed by Region I personnel only. Time expended by Headquarters personnel on licensing matters are not included here.

TABLE 4

INSPECTION REPORT ACTIVITIES

BEAVER VALLEY POWER STATION - UNIT 1

REPORT	INSPECTOR	AREAS INSPECTED
82-29	Resident	Routine
82-31	Specialist	Radioactive Waste - Confirmatory Measurements
83-01	Resident	Routine
83-02	Specialist	Waste Burial
83-03	Specialist	Emergency Preparedness
83-04	Resident	Routine
83-05	Specialist	Health Physics
83-06	Specialist	Environmental
83-07	Resident	Routine
83-08	Resident	Routine
83-09	Specialist	Security and Safeguards
83-10	Resident	Routine
83-11	Specialist	Health Physics
83-12	Resident	Routine
83-13	Specialist	Health Physics
83-14	Resident	Routine
83-15	Specialist	Emergency Preparedness Inspection
83-16	Specialist	Health Physics Event Followup
83-17	Specialist	Health Physics
83-18	Specialist	Quality Assurance/Quality Control

REPORT	INSPECTOR	AREAS INSPECTED
83-19	Resident	Routine
83-20	Resident	Routine
83-21	Specialist	IE Bulletin Followup
83-22	Specialist	Security and Safeguards
83-23	Resident	Special Event Followup
83-24	Specialist	Startup Testing
83-25	Resident	Routine
83-26	Specialist	Fire Protection
83-27	Resident	Enforcement Conference
83-28	Specialist	Training
83-29	Resident	Routine
83-30	Specialist	Health Physics
83-31	Specialist	Quality Assurance
84-01	Resident	Routine
84-02	Specialist	Inservice Inspection Program
84-03	Specialist	Emergency Preparedness
84-04	Resident	Routine
84-05	Specialist	Non-Radiological Chemistry
84-06	Specialist	Inservice Testing Program
84-07	Specialist	Surveillance and Calibration
84-08	Resident	Routine

ATTACHMENT 1

ENFORCEMENT DATA
BEAVER VALLEY POWER STATION - UNIT 1
DECEMBER 1, 1982 - MARCH 31, 1984

Inspection Number	Date	Subject	Req.	Sev.	Area
83-02	2/18/83	Transfer of by-product material in a form the recipient was not authorized to receive.	10 CFR 30.41	IV	2
83-07	4/20/83	Failure to provide supplemental LER information.	TS	V	1
		Failure to use an approved procedure for inspection of new fuel assemblies.	TS	V	8
83-08	5/23/83	Failure to demonstrate ECCS valve operability within the specified surveillance interval.	TS	IV	4
83-14	8/23/83	Failure to obtain equipment clearance prior to removing the A river water header from service.	TS	IV	8
83-16	8/19/83	Failure to conduct a survey of radiological conditions in a high radiation area.	TS	III	2
83-23 (19)	10/3/83	Failure to follow administrative and managerial controls specified by TS 6.8.1 and Reg Guide 1.33.	TS	III	1
83-27	10/11/83	Enforcement Conference to discuss the inoperable RHR system and an inoperable river water pump while the reactor was in Mode 3. (Inspection Nos. 83-19 and 83-23.)			
83-29	1/16/84	Failure to perform ISI required stroke tests of selected valves.	TS	IV	4
		Failure of ESF relay surveillance test to specify limiting conditions.	TS	IV	4
84-01	2/14/84	River water pump inoperable due to failure to follow procedure for racking 4 KV breakers.	TS	IV	1

Inspection Number	Date	Subject	Req.	Sev.	Area
84-02	3/13/84	Failure to control the Ten Year In-service Inspection Plan.	TS	IV	4
84-06	2/17/84	Failure to control certain aspects of the Inservice Testing Program.	TS	IV	4