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January 15, 1986

U. S. Nuclear Regulatory Commission
ATTN: Dr. Thomas E. Murley
Regional Administrator
631 Park Avenue
King of Prussia, PA 19406

Reference: Beaver Valley Power Station - Unit No. 1
Docket No. 50-334, License No. DPR-66
Response to SALP Report 85-99

Gentlemen:

This letter provides written comments on the Systematic Assessment of Licensee Performance (SALP) Report 50-334/85-99 dated December 12, 1985, related to the operation of Beaver Valley Power Station - Unit No. 1 for your consideration in preparing the final SALP package. These comments place on record the principle items of discussion which we presented at the SALP meeting conducted at the Region I offices on December 19, 1985.

Duquesne Light Company believes that the SALP process provides a comprehensive and important process in which NRC and licensees can discuss and adjust basic philosophies and our performance in achieving our mutual goals of nuclear safety. With this belief in mind, the Company has thoroughly reviewed and analyzed the SALP report as a basis for adjusting our programs, where necessary, to fully achieve these goals.

In general, we found NRC's conclusions to be accurate in most areas. In particular, however, we find it necessary to comment on the area of Radiological Controls and to provide additional information related to Refueling and Outage Management. Our specific comments related to these two sections of the SALP report are included as Attachments 1 and 2 respectively.

We note that NRC commented in several areas of the SALP report that the recently completed corporate reorganization and specifically those organizational changes and assignments which are ongoing in preparation for the preoperational phase and commercial operation of Unit 2 have had, in NRC's view, a deleterious effect on the operation of Unit 1. We believe that

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the organizational and training activities which we have undertaken in preparation for the operation of Unit 2 have been properly planned and implemented sufficiently in advance of Unit 2 operation so as to minimize the impact on Unit 1 operation while providing fully competent personnel for Unit 2. We believe that we have taken the most reasonable actions which we could to properly address nuclear safety at both units. This includes providing an ample number of licensed personnel and providing them an opportunity to gain operating experience at an operating unit well in advance of the required dates.

We request that you consider the information provided herein in arriving at your final assessment of our performance, and we appreciate the opportunity to have had open and sincere dialogue on the details of your conclusions as presented in the SALP report.

Very truly yours,

J. J. Carey
Vice President
Nuclear Group

Attachment

cc: Mr. W. M. Troskoski, Resident Inspector
U. S. Nuclear Regulatory Commission
Beaver Valley Power Station
Shippingport, PA 15077

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ATTACHMENT 1

Comments on Section IV, B, "Radiological Controls"

In general, we believe NRC's assessment of our performance in this section requires additional comment or amplification.

In an effort to describe the basic direction toward which we are structuring our Radiological Controls program, the following represents our view as to the objectives which a good radiological control program should meet. The approach which we have fostered during this SALP period addresses the basic precepts of what we believe results in an effective program; namely:

- Minimize the external and internal radiation dose to the worker.
- Minimize in-plant contaminated areas.
- Minimize production and disposal of solid radioactive waste.
- Minimize the quantity and activity of radioactive effluents.
- Train the employee to be a knowledgeable radiation worker.
- Exercise strict and conservative controls on plant postings and barriers.
- Address technical issues in a knowledgeable, professional and comprehensive manner.

We believe that this basic approach, embodied in the above listed philosophy, provides a true measure of program effectiveness and, based upon the industry data available to us and taking into account the age and type of plant, Beaver Valley has been successful in making progress toward these goals.

We further believe that the text of the Radiological Controls section of the SALP report deserves some clarification.

1. The last paragraph on page 13, the first full paragraph on page 14 and the first paragraph on page 15 appear to identify the recent corporate reorganization as a root cause of some of the problems cited in the report. It is our opinion that the impact of the reorganization on the Radiological Control Department was minimal, in that:

1) There was no reduction in personnel.

2) The functions of the various sections remained essentially constant with a minimal increase in scope of organizational responsibilities. Where responsibilities were increased, additional personnel were provided to address these increases.

The reorganization had a positive effect in that its design was based upon its functional mission and the responsibility for programs was more clearly defined. The internal organization of the Radiation Control Department was altered to provide characteristics more similar to a line organization, rather than a matrix organization. We believe these changes have resulted in a positive improvement in the operation of the Department.

2. The first full paragraph on page 14 states, "The licensee was among the last in Region I to implement a thorough and comprehensive respiratory protection program in the spring of 1985." We believe that it is important to consider that a respiratory protection program is not required by regulation and that if protection factors are taken, a respiratory protection program must meet the intent of NUREG 0041. Duquesne Light has always provided respiratory protection devices to its radiation workers at Beaver Valley. We did not apply to the NRC for permission to take protection factors until February 25, 1985 on the basis that 1) our airborne radiological conditions at the facility did not require protection factors to remain within the limits of 10 CFR 20, and 2) the Company desired to establish its program without outstanding items which would call into question the degree of compliance or the effectiveness of the program. We believe that our approach is consistent with the intent of ALARA as embodied in 10 CFR 20.103. It should further be noted that only one radiation worker exceeded 1 percent MPOB (but less than 2 percent MPOB), exclusive of tritium, in the entire history of the facility, and that exposure occurred in 1981.

3. The first full paragraph on page 14 neglects to discuss the facts that NRC tests of our in-plant body counter demonstrated compliance with applicable standards, that the counter is used as a screening device and that detailed whole body measurements made under our program are conducted at the Presbyterian University Hospital under contract to us. The equipment and methods we use meet regulatory requirements and standards.

4. The first full paragraph on page 14 discusses the study which we performed to evaluate beta immersion doses in closed-subatmospheric containments. We take issue with the statement indicating "widely available literature already provides several methods to calculate these exposures." At the beginning of this project, our review of the literature indicated that, while basic calculational methods did exist in the literature, none specifically dealt explicitly with a finite cloud at sub-atmospheric pressure. Further, we did not believe that beta immersion dose was a significant source of exposure requiring extraordinary protection methods, and therefore undertook a comprehensive analysis of the issue as opposed to a "quick fix" approach. Our conclusions based upon a year's use of the computer code developed to evaluate skin doses to every radiation worker who entered containment in 1985 is that skin dose from immersion in beta emitting atmospheres is trivial. However, we believe that the study illustrates our capability to perform "state of the art" analysis.

5. The third sentence in the second full paragraph on page 14 states that "sample cartridges for iodine were assumed to be face loaded, but actual NRC measurement indicated homogeneous distribution." The SALP report fails to indicate that our laboratory was able to count these samples within the ± 20 percent accuracy used by the NRC regardless of the geometry assumptions. It is worth noting that the majority of charcoal samples taken at Beaver Valley are grab samples and are face loaded. Beaver Valley has developed new geometry for counting homogeneously loaded samples, however.

6. The sixth sentence in the second full paragraph of page 14 states, "There is a program to split samples as a quality control check of the laboratory analytical procedures, but the data was not analyzed in a manner currently accepted as good industry practice." We believe that the method that we used to analyze the split sample data was conservative compared to industry standards. However, we have adopted the industry standards upon the recommendation of the NRC.

7. The last paragraph on page 14 indicates that Technicians perform assignments on a rotating basis. The Company negotiated two agreements with the union representing our radiation technicians to stabilize rotation in the TLD and radwaste shipping areas. This problem was identified by the Company, and the Company took appropriate steps to remedy this problem.

8. The first paragraph of page 15 discusses record-keeping. The Company is aware that the record-keeping system is predominantly manual in nature and has evaluated various changes necessary to automate records while retaining their value as legal documents. In our opinion, the purchase of an entire automated record keeping system will result in major problems during the transition; and therefore, we have elected to perform the automation task in-house on a piecemeal basis to minimize its impact. We believe that the late termination notice problem is licensee-identified and that the general improvements which could be made to the records system were fully recognized by the Company.

9. The eighth sentence in the third paragraph on page 15 states, "The 'official' file of procedures in the chemistry office contained expired and unsigned procedures." We note that the manual referred to here was actually located in the turbine plant chemistry laboratory. No radioactive samples are processed in the turbine plant laboratory and therefore, this condition does not have any effect on the Radiological Control program. However, we do not condone a practice of having expired or unsigned change notices in any controlled manual and therefore, this deficiency has been corrected.

10. The third paragraph on page 15 identifies "one semi-annual effluents report failed to estimate the dose to the public, <u>while</u> <u>another</u> (emphasis added) omitted the strontium analysis." Both discrepancies occurred on the same report (first half of 1983), were licensee identified and a corrected report was submitted to the NRC by the end of 1983. The corrective actions which we established have been fully effective and the item was closed out by inspection report 85-13. Since the initial problem and our corrective action occurred prior to this SALP period, this item should not be a part of this SALP evaluation.

11. The third paragraph on page 15 states, "Also, the <u>licensee</u> <u>found</u> (emphasis added) that for the 10 year period of 1976 to 1985, the calculation of tritium releases was low by a factor of 1000. More review or management oversight of records and routine reports is needed." The fact that this error is licensee identified would indicate that licensee review and management oversight of records is in fact occurring.

In our review of the Radiological Controls section of the SALP report, we believe that the Radiological Control Program at Beaver Valley is functioning at a sufficiently high level to merit a SALP level 1 rating. We are fully aware that no program at any plant is without some minor flaws. We believe that we are as dedicated as any licensee toward self improvement and the development of an excellent program. We have taken initiatives to improve this program and we believe that our accomplishments should be considered when evaluating a licensee's program. We have attached for your review a supplement 2 to this Attachment which outlines some of our recent achievements.

In consideration of the comments offered above related to your report and the additional information which we have provided, we request that the SALP Board reconsider its evaluation in light of this information.

DUQUESNE LIGHT COMPANY
Nuclear Group
Nuclear Services Unit

Attachment 1
Appendix 1

BV Radiological Achievements

Following is a brief summary of 1985 Beaver Valley radiological achievements. (•• indicates "state-of-the-art" equipment utilization.)

Exposure And Dose Control

- The 1985 annual station dose total will approximate 60 rem. This is the lowest annual station dose since 1976. The current 3 year station dose average is approximately 427 rem (1983 - 717 rem, 1984 - 505 rem, 1985 - 60 rem). No individual exceeded 1000 mrem.

- Although 1985 was an operating year (no major outages), the annual station dose would have been approximately 78 rem higher if dose reduction techniques were not implemented as required by station ALARA procedures.

- •• Approximately $700,000.00 was expended to upgrade the external personnel monitoring program. This included: procurement of Panasonic TLD equipment, program development and personnel training. The program was awarded accreditation by the National Bureau of Standard's National Volunteer Laboratory Accreditation Program (NVLAP) on October 1, 1985.

- During 1985 there were no indications of chronic intakes/uptakes of radioactive materials by station Rad Workers as monitored in accordance with the Bioassay Program. Personnel lung and thyroid count data indicated no individual cases >1% MPOB. There was only 1 individual that exceeded 1% MPOB (1.9% MPOB) during the operating history at Beaver Valley.

- •• The Respiratory Protection Program, that enabled credit for protection factors, was implemented during 1985. A computer is utilized to maintain records of: respirator qualified personnel, devices an individual is qualified to wear, quantitative fit test data, respirator physical exam data, etc. A quantitative fit test booth and respirator leak test head are also used to support the program. Approximately $12,000.00 was expended for test head equipment, installation and training.

- The number of 1985 personnel skin contamination cases are approximately 65% lower than the 1984 total (62 to 22). All were minor and required minimum decontamination effort.

- Station contaminated areas (square feet) were reduced ~32% (16,874 ft^2 to 11,449 ft^2).

Radwaste Reduction

- The volume of radwaste shipped in 1985 approximated the volume shipped in 1984 (1984 - 5493.5 ft^3, 1985 - 5521.4 ft^3). The volume shipped in 1984 and 1985 was the lowest since 1976. The current 3 year volume average for BVPS is 6374.6 ft^3/yr. The 3 year average reported by INPO, for all plants, is 27,586 ft^3/yr.

- Computer programs have been developed to classify radwaste as required by 10CFR61.

Radioactive Effluents

- The plant has made significant reductions in radioactive effluents as noted by the table below:

(LIQUIDS)	Gallons	Fission/Activation Products (Curies)	Tritium (Curies)
1984	2.05E6	2.03E-1	4.12E2
1985	5.75E5(1)	1.08E-1(1)	1.33E2(2)

(1) Through November 1985
(2) Through September 1985

(GAS)	Liters Ground	Liters Elevated	Fission/Activation Products (Curies)	Particulate (Curies)
1984	6.48E8	4.23E5	1.16E3	9.78E-4
1985	1.80E8(1)	2.88E5(1)	3.61E1(2)	1.02E-3(2)

(1) Through the 3rd quarter
(2) Through the second quarter

- Approximately $15,000.00 was expended to purchase a 160 megabyte disc drive to function with the in-house computerized counting system to provide file space for implementation of computer programs for ODCM compliance and management of radwaste discharge records including generation of reports required by Reg. Guide 1.21.

- Approximately $60,000.00 was expended to purchase a gamma counting system (multichannel analyzer with an intrinsic germanium detector) for analyzing liquid, gaseous, iodine cartridge and filter paper samples. This system supplements existing plant counting equipment.

ARERAS - Atmospheric Radioactive Effluent Release Assessment System

•• The ARERAS encompasses redundant computer hardware and software based around two identical DEC VAX 11/750 computers which run PLG MIDAS (Meteorological Indication and Data Acquisition System) software. The computer hardware includes support terminals, printers, and interface equipment. The ARERAS serves to continuously collect, record, and upon request, display effluent radiation monitor readings and meteorological parameters as measured at a site meteorological tower. The ARERAS also performs emergency offsite dose projections and assessments prior to and following an uncontrolled or unintentional release of radioactive material using near real-time meteorological and radiological data and provides the capability for generating meteorological and effluent reports as required by regulation.

The ARERAS hardware and software costs were approximately $2,300,000. Additional engineering support, installation and testing labor, and equipment costs were an additional $1,900,000, for a total expenditure to-date of $4,200,000.

Calculation Packages
Completed and Approved Since 4/1/84

No.	Description
84-01	Revision to DOSEFACTOR II code (ORNL) to make useable on VAX.
84-02	Hand calculations performed to verify operation of MIDAS for EPP/IP 2.6.8 "Dose Assessment Based on Environmental Measurements and Samples."
84-03	Documents the derivation of the radionuclide database and the RADFILE computer code.
84-04	Provides a tabulation of the photon energy per disintegration versus energy groups for numerous radionuclides.
84-06	Establishes and documents a particle size range for effluent radiological monitoring.
84-07	Documents justification for use of single sample points in SLCRS representation analysis.
84-08	Dose calculations for increased ESF leakage outside of containment and its impact on LOCA offsite dose calculations.
84-10	Documents the derivation of disintegration energies for beta emitters of interest in emergency preparedness planning and in gaseous releases.
84-13	Skin dose assessment in a radioactive noble gas environment.
84-14	Calculations for assessing skin dose to a contaminated individual.
84-15	Determination of dose factors for noble gas release from primary grade water system deareator vent.
84-16	Development of graph relating radiation monitor readings to radioactive gas release rates for use by Control Room personnel.
84-17	Derivation and documentation of computer code for calculating doses due to contaminated skin.
84-18	Determination of ERF to Control Room transit dose during LOCA.
84-19	Calculations for upgrading ODCM to add dose factors for additional nuclides: Co-57, Nb-97, Sb-124, Sb-125, Te-134, and I-129.

84-20	Calculations for revising ODCM to change from the maximum organ calculation to calculations for seven organs, and to revise age group from infant to child.
84-21	Documents revisions to ODCM in accordance with calculation packages 84-19 and 84-20.
84-23	Continuation of 84-18; further calculations on ERF to Control Room transit dose during severe LOCA.
84-24	Dose rate calculations for fuel building and reactor cavity from uncovered spent fuel assemblies.
84-25	Derivation of "Group Isotopes by Energy" code which aids users in applying various information related to a source term.
84-26	Derivation of line source shielding computer program.
84-29	Derivation of computer code for solving simultaneous equations.
84-30	Evaluation of environmental impact of a fuel handling accident.
84-34	Calculation of dose rate from fuel assembly in manipulator tube with reactor cavity drained.
84-35	Extension of 84-24. Calculation of dose rate as a function of depth of water above fuel assembly.
84-37	Comparison test results of Harshaw versus Panasonic TLDs exposed in primary side of IA steam generator.
84-40	Calculations of exposure rates to be encountered in collecting SPING samples following a LOCA
85-02	Revised computer program for low-privileged MIDAS users that permits reading, but not editing, entries made by EA&DP personnel.
85-03	Documentation of data in MIDAS site specific parameter files.
85-08	Derivation of curie content calculation method for rectangular laundry containers.
85-09	Documentation of method for applying corrections to effluent tritium calculations for period from May, 1976 through June, 1984.
85-17	Derivation of curie content calculation method for high integrity radioactive waste containers.

85-21	Tables of average and total Mev/disintegration for gamma and beta emissions. Derived from BVPS Radionuclide data base.
85-22	Documentation of testing of several MIDAS code modules following software revisions.
85-25	Derivation of curie content calculation method for fiberglass reinforced polyethylene radioactive waste containers.
85-26	Radioactive waste estimating procedures based on calculation packages 85-08, 85-17, and 85-25.
85-28	Development of computer code for assessment of routinely recorded meteorological data in ARERAS.
85-29	Development of computer code for improving display and simplifying interpretation of meteorological data.
85-31	Documentation of nuclide specific instrument efficiencies for the gaseous effluent radiation monitors.
85-32	Derivation of emergency action levels for gaseous radiation monitors.
85-33	Derivation of conversion factors used in worksheets of EPP/IP 2.6.1, "Dose Projection - General Methods." Incorporates results of calculation package 85-31.
85-34	Documents computer code developed as a temporary means of obtaining meteorological data from the secondary instrumentation train on ARERAS with minimal training. To be used until training is completed on the permanent code.
85-37	Descriptions of revisions made to two principal MIDAS programs to facilitate usage; e.g., display units were converted from meters and meters/second to more common units of feet and miles/hours.
85-39	Documents derivation of data in MIDAS files edited by MIDEK routines. MIDEK routines enable user to transfer discharge permit data for each release pathway into accident calculations.
85-40	Documentation of minor improvements to MIDAS routines. Changes initiated by observations at 7/29/85 Mini-Drill.
85-41	Revisions to computer code used to test RASMOS datalink and software. Results in a display of data consistent with monitor designation.

85-42	Documentation of the code routine used to test RASMOS.
85-44	Documents MIDEI file. MIDEI file enables editing of site specific parameter files related to the configuration of the BVPS radiation monitors.
85-46	Revision of ARERAS codes to prevent identical accident types being run simultaneously (from different terminals). This eliminates confusion that has been encountered in training and practice.

Most of the missing sequence numbers are projects that are in stages of development, review, or revision. A few are cancelled projects.

ATTACHMENT 2

Refueling and Outage Management

We believe that the assessment in this category was based upon three events which occurred during the recovery phase from the fourth refueling outage. We share NRC's concern for these events. Our response to the violation indicated the importance with which we regard the basic operating principles involved. We committed to extensive and thorough corrective action in response to these incidents. We have gone beyond our commitments in this area to upgrade our operations and outage management programs.

We believe that the additional steps we have taken have made a substantial improvement to our overall operating capability, and we believe that it is appropriate that we place on record the results of the progress we have made. A summary of this progress is attached as Attachment 2, Supplement 1.

In view of the significant progress we have made, and in view of the fact that recovery from 1985 mini-outages was well controlled, demonstrating our intent to properly manage outage recovery techniques, we believe that our performance in this category is improving.

ATTACHMENT 2 - Supplement 1

Summary of Programs and Noted Performance Improvements

1. Plant availability as of mid-December exceeded 90%, which is the highest since commercial operation.

2. There have been no violations, attributable to an action or in-action of an operator or operations supervisor during 1985. The two violations associated with overall plant operation were due to:

   1. A construction worker bumping a valve and causing a spill which operations rapidly identified and corrected.

   2. An inadequate procedure which permitted taking credit for a non-safety related source of borated water in complying with the technical specifications. Regardless, the inventory was not used by Operations or needed to comply with the requirements as determined by a review of past OSTs, therefore, no actual violation occurred but we elected not to oppose it.

3. Operations has made major housekeeping and equipment cleaning efforts that have been favorably noted by the Resident Inspector, ANI and a group of professional engineers hired to audit Operations for CAPCO interests.

4. Operations has made significant reductions in radioactive effluents as noted by the table below:

(LIQUIDS)	Gallons	Fission/Activation Products (Curies)	Tritium (Curies)
1984	2.05E6	2.03E-1	4.12E2
1985	5.75E5(1)	1.08E-1(1)	1.33E2(2)

(1) Through November 1985
(2) Through September 1985

(GAS)	Liters		Fission/Activation Products (Curies)	Particulate (Curies)
	Ground	Elevated		
1984	6.48E8	4.23E5	1.16E3	9.78E-4
1985	1.80E8(1)	2.88E5(1)	3.61E1(2)	1.02E-3

(1) Through the 3rd quarter
(2) Through the second quarter

5. Control Room congestion and "startup anxiety" have been avoided during recovery from all mini-outages this year and noted by the Resident Inspector.

6. Quality checks have been instituted to verify the acceptability for all major maintenance work performed during plant outages with the Pre-Requisites for Plant Startup List.

7. The daily plant operator logs have been converted to a 7-day format such that subtle trends are easily recognized to ensure appropriate actions are taken at the earliest possible time.

8. A Balance of Plant performance program has been implemented to monitor and test a number of non-safety related components and trend temperatures of key pumps and motors.

9. Dedicated (Licensed) System Managers have been assigned to improve the quality of all procedures and to review test data, maintenance histories, incident reports and all system-based information to provide a means of continued upgraded system performance and monitoring.

10. Post-maintenance testing and other miscellaneous administrative requirements which were previously only required on safety related equipment are being extended to non-safety equipment to insure consistent operating practices.

11. Prescriptive review criteria for all tagging and log reviews is being issued to assure compliance with administrative requirements.

12. Annual schedules for the performance of all administrative periodic functions have been issued to insure that the requirements are carried out and documented.

13. Area supervisors have been assigned with specific checklists to ensure that housekeeping, tagging requirements, equipment cleanliness and periodic inspections are conducted in all accessible plant areas.

14. Field tagging of deficient equipment material conditions has been implemented to reduce the potential for errors in maintenance and provide assurance that off-normal field conditions are identified appropriately.

15. A large volume of temporary operating procedures have been revised and incorporated into permanent procedures to minimize the procedures in this category.

16. The operations experience review program has been upgraded through:

    a. Pre-shift briefings and Unit Off-Normal Report reviews.

    b. Presentations to all operators by the Operations' Supervisor during training.

    c. Information and update letters to <u>all</u> operating personnel.

17. A low-level incident report system has been instituted to report off-normal plant conditions, human performance problems and minor safety problems to ensure that proper attention is brought to all conditions that depart from expected performance standards.

18. Four additional personnel have been temporarily assigned to the procedures group to assist in program development and rewrite of procedures.

19. A Master Clearance procedure will be utilized during outages to reduce the number of smaller clearances on the major systems. This will minimize the potential for errors during restoration.

20. Outage logic diagrams have been completed to condense the requirements of the technical specifications for use during Modes 5 and 6. This will insure a higher level of visibility for outage related safety system assessments.

21. Procedures are being developed to tag certain safety related flow paths in position during outages to reduce the potential for error due to operator, maintenance and/or testing problems.

22. A comprehensive Reactor Trip Reduction and Reliability Improvement Program program is being implemented. The Reactor Trip data base has been completed and evaluated with 17 specific actions targeted at reducing trips in 1986.

23. Three Operations Training Programs have been accredited by INPO.