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1982 Evaluation

La Crosse  
Boiling  
Water Reactor  
Dairyland  
Power Cooperative



**EVALUATION**  
*of*  
**LA CROSSE BOILING WATER REACTOR**

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Dairyland Power Cooperative

October 1982

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## SUMMARY

### INTRODUCTION

The Institute of Nuclear Power Operations (INPO) conducted an evaluation of Dairyland Power Cooperative's (DPC) La Crosse Boiling Water Reactor (LACBWR) during the weeks of July 19 and 26, 1982. The station is located on the east bank of the Mississippi River, in Vernon County, Wisconsin, approximately one mile south of the village of Genoa, Wisconsin, and approximately nineteen miles south of the city of La Crosse, Wisconsin. The plant was built as a demonstration boiling water reactor by Allis-Chalmers. It was turned over to the Atomic Energy Commission for commercial operation in November 1969. Title to the plant was transferred to DPC in August 1973.

### PURPOSE AND SCOPE

INPO conducted an evaluation of site activities to make an overall determination of plant safety, to evaluate management systems and controls, and to identify areas needing improvement. Information was assembled from discussions, interviews, observations, and reviews of documentation.

The INPO evaluation team examined station organization and administration, operations, maintenance, technical support, training and qualification, radiological protection, and chemistry. The team also observed the actual performance of selected evolutions and surveillance testing. Corporate activities were not included in the scope of the evaluation, except as an incidental part of the station evaluation. As a basis for the evaluation, INPO used performance objectives and criteria relevant to each of the areas examined; these were applied and evaluated in light of the experience of team members, INPO's observations, and good practices within the industry.

INPO's goal is to assist member utilities in achieving the highest standards of excellence in nuclear plant operation. The recommendations in each area are based on best practices, rather than minimum acceptable standards or requirements. Accordingly, areas where improvements are recommended are not necessarily indicative of unsatisfactory performance.

### DETERMINATION

Within the scope of this evaluation, the team determined that the station is being operated in a safe manner by well qualified and experienced personnel.

The following beneficial practices and accomplishments were noted:

Rotation of operators through all watchstations contributes to a high degree of qualification.

The volume of radwaste has been reduced below last year's low level.

Improvements were recommended in a number of areas. The following are considered to be among the most important:

Watchstanding formality and proper use of procedures by station personnel need to be emphasized and improved.

Radiological protection practices and the plant chemistry program need to be upgraded.

In each of the areas evaluated, INPO has established PERFORMANCE OBJECTIVES and supporting criteria. All PERFORMANCE OBJECTIVES reviewed during the course of this evaluation are listed in APPENDIX II.

Findings and recommendations are listed under the PERFORMANCE OBJECTIVES to which they pertain. Particularly noteworthy conditions that contribute to meeting PERFORMANCE OBJECTIVES are identified as Good Practices. Other findings describe conditions that detract from meeting the PERFORMANCE OBJECTIVES. It would not be productive to list as Good Practices those things that are commonly done properly in the industry since this would be of no benefit to DPC or to INPO's other member utilities. As a result, most of the findings highlight conditions that need improvement.

The recommendations following each finding are intended to assist the utility in ongoing efforts to improve all aspects of its nuclear programs. In addressing these findings and recommendations, the utility should, in addition to correcting or improving specific conditions, pursue underlying causes and issues.

As a part of the second and succeeding evaluations of each station, the evaluation team will follow up on responses to findings in previous reports. Findings with response actions scheduled for future completion have been carried forward in APPENDIX I to this report. In areas where additional improvements were needed, a new finding that stands on its own merit has been written. Thus, this report stands alone, and reference to previous evaluation reports should not be necessary.

The findings listed herein were presented to DPC management at an exit meeting on July 29, 1982. Findings, recommendations, and responses were reviewed with DPC management on September 8, 1982. Responses are considered satisfactory.

To follow the timely completion of the improvements included in the responses, INPO requests a written status by April 30, 1983. Additionally, a final update will be requested six weeks prior to the next evaluation.

The evaluation staff appreciates the cooperation received from all levels of Dairyland Power Cooperative.

## DAIRYLAND POWER COOPERATIVE

### Response Summary

DPC appreciates the evaluation completed by INPO. The 1982 audit of the facility was very intensive in nature and supportive in findings. The suggested improvements are constructive and intended clearly to upgrade LACBWR performance both from a regulatory and operational standpoint. The examples provided to LACBWR management are particularly useful in evaluating the magnitude of needed improvements.

The concern expressed by INPO regarding informality in watchstanding is recognized. While the small size of our staff can accommodate a certain degree of informality, no question must arise as to who is in charge of a watchstation. Watchstanding practices and the proper use of procedures by station personnel will be emphasized.

The need to upgrade radiological protection practices and the plant chemistry program is recognized at DPC. Emphasis will be placed on personnel adherence to radiological protection practices.

ORGANIZATION AND ADMINISTRATION

**STATION ORGANIZATION AND ADMINISTRATION**

**PERFORMANCE OBJECTIVE:** Station organization and administrative systems should ensure effective implementation and control of station activities.

**Finding**  
(OA.1-1)

The organizational structure, including current manning in certain areas, should be evaluated. Problems exist in the following areas:

- a. the wide span of control of the plant superintendent
- b. the difficulty of the radiation protection engineer to concentrate his time in matters related to health physics
- c. the large workload in the mechanical engineering area
- d. the inability of the Health and Safety Department to effectively implement the radiation protection and chemistry programs and to evaluate and improve the standards of the program
- e. the continuing need for administrative support in various areas

**Recommendation**

Perform an evaluation of the current organizational responsibilities, management controls, and staffing levels including the areas listed above. Establish an appropriate plan of action after reviewing the results of this evaluation.

**Response**

LACBWR will conduct an overall review of the organizational structure and will specifically address the following by the date indicated:

- a. the span of control of the plant superintendent (February 1983)
- b. the difficulty of the radiation protection engineer to concentrate his time on matters related to health physics (November 1982)
- c. the ability of the Health and Safety Department to effectively implement the radiation protection and chemistry programs and to evaluate and improve the standards of the program (December 1982)

The following items have been addressed since the INPO evaluation:

- a. The workload of the mechanical engineer has been reviewed; an additional person of this discipline will be obtained. Recruitment will start by October 1982.

- b. The administrative section workload has been analyzed. The position of administrative assistant has been created and filled. A replacement secretarial position is being reviewed. Recruitment will begin by October 1982.

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### INDUSTRIAL SAFETY

**PERFORMANCE OBJECTIVE:** Station industrial safety programs should achieve a high degree of personnel safety.

**Finding**  
(OA.5-1)

The industrial safety program is not routinely administered or implemented. As a result, safety deficiencies and failures to adhere to safety requirements are not always identified and corrected.

**Recommendation**

Upgrade the current industrial safety program with emphasis on the following areas:

- a. identification and correction of safety deficiencies
- b. supervisory enforcement of safety rules
- c. implementation of the safety and fire prevention inspection program
- d. frequency, content, and consistency of safety information meetings

**Response**

The following measures will be implemented to upgrade the industrial safety program:

- a. The program of safety deficiency, identification, and correction will be reviewed and reinforced by January 1983.
  - b. Supervision will be encouraged to provide day-to-day corrective action when safety rules are ignored. A meeting to retrain supervisory personnel will be held by December 1982.
  - c. A program to ensure weekly fire and safety inspections are conducted each week and findings corrected will be implemented by November 1982.
  - d. A policy to ensure safety information meetings are held and adequate information is available for this training has been implemented.
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OPERATIONS

## CONDUCT OF OPERATIONS

**PERFORMANCE OBJECTIVE:** Operational activities should be conducted in a manner that achieves safe and reliable plant operation.

**Finding**  
(OP.2-1)

The following Good Practice was noted: Operators are frequently rotated through all shift positions. This practice allows licensed operators to stay familiar with the plant and provides unlicensed operators with control room experience under instruction.

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**Finding**  
(OP.2-2)

Personnel frequently operate controls and acknowledge annunciators in the control room without notifying or receiving permission from the reactor control board operator or shift supervisor. These personnel include relief shift operators not on shift, auxiliary equipment operators, instrument technicians, and mechanics.

**Recommendation**

Formalize guidance regarding personnel authorized to operate controls and acknowledge annunciators. Supervisors should routinely monitor control room activities to ensure that only authorized personnel operate the controls.

**Response**

A formal policy that directs that no one is permitted to operate controls without the express permission of the operations person assigned that watch will be prepared and implemented by November 1982.

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## PLANT STATUS CONTROLS

**PERFORMANCE OBJECTIVE:** Operational personnel should be cognizant of the status of plant systems and equipment under their control, and should ensure that systems and equipment are controlled in a manner that supports safe and reliable operation.

**Finding**  
(OP.3-1)

Special information tags (SIT) posted throughout the plant are not periodically reviewed for applicability or need. Several were posted prior to 1976, and many are lying unattached on plant components. Control room operators could not determine where SITs were posted, what information they contained, or if they were current.



**Recommendation** Review outstanding SITs on a periodic basis for applicability, readability, and proper placement.

**Response** An administrative control procedure covering SITs that requires logging every tag in the book and a review for applicability, readability, and proper placement at least quarterly will be prepared by January 1983. All tags will identify the individual placing them and the original date placed.

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**Finding**  
(OP.3-2) **Current shift turnover practices should be improved to ensure a complete and comprehensive transfer of information.** Pertinent information is sometimes missed because operators rely primarily on memory to guide the turnovers.

**Recommendation** Revise the turnover procedure and associated practices to ensure a more complete transfer of information. The revised procedure should include the following:

- a. turnover sheets for each shift position that will guide operators through pertinent information that should be discussed
- b. review of records and round sheets appropriate to each shift position
- c. walkdown of applicable control boards

INPO's Good Practice OP-201, "Shift Relief and Turnover," could be of assistance in this area.

**Response** LACBWR will review the current shift turnover procedures and implement appropriate recommendations by November 1982.

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## OPERATIONS PROCEDURES AND DOCUMENTATION

**PERFORMANCE OBJECTIVE:** Operational procedures and documents should provide appropriate direction and should be effectively used to support safe operation of the plant.

**Finding**  
(OP.5-1) **Uncontrolled notes, checksheets, drawings, and graphs of a temporary nature used as operator aids are attached to control boards and walls throughout the plant.** No method is in use for updating, verifying, or reviewing these for continued applicability.

**Recommendation** Periodically review posted operator aids to ensure they are authorized, current, and posted in the proper locations. The number of temporary operator aids in the plant should be minimized.

**Response** No instrument check sheets, drawings, graphs, or notes of a temporary nature shall be posted in LACBWR unless they are dated, authorization identified, and the condition of applicability specified. This policy shall be implemented as a procedure by October 1982. Existing material will be brought into conformance by December 1982.

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**Finding  
(OP.5-2)** The following Good Practice was noted: The station operating manual provides a comprehensive central source of information pertaining to each plant system. Each subdivision of the manual includes system and component descriptions, operating procedures, and valve checklists. This detailed, controlled source of information is utilized for control room activities and training.

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MAINTENANCE**MAINTENANCE ORGANIZATION AND ADMINISTRATION**

**PERFORMANCE OBJECTIVE:** The maintenance organization and administrative systems should ensure effective control and implementation of department activities.

**Finding (MA.1-1)**            **A backlog of administrative tasks exists in the mechanical maintenance section.** Repetitive reports, incomplete documentation of accomplished work, and the performance of routine administrative tasks by the maintenance supervisor contribute to the backlog.

**Recommendation**      Evaluate and adjust the administrative workload of the mechanical maintenance section. Particular attention should be given to repetitive reports and delegation of administrative tasks to appropriate personnel.

**Response**              An assistant mechanical maintenance supervisor position has been created and has been filled effective September 13, 1982. This new position will oversee record maintenance and assist in documentation update and administration tasks, thus relieving the maintenance supervisor for closer job supervision. The assistant mechanical maintenance supervisor will also assist on job supervision.

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**WORK CONTROL SYSTEM**

**PERFORMANCE OBJECTIVE:** The control of work should ensure that identified maintenance actions are properly completed in a safe, timely, and efficient manner.

**Finding (MA.3-1)**            **The scheduling and coordination of maintenance activities needs to be improved.** Advance planning is not performed for some jobs, and key organizations are not always coordinated to accomplish the desired task. As a result, manpower and equipment are not always utilized effectively.

**Recommendation**      Implement scheduling and coordination techniques for maintenance activities that will improve the coordination of radiation protection, operations, and other functions required to support maintenance. Periodic management information meetings, improved schedules, and more effective use of back-shift personnel should be considered.

**Response** A computer program for planning needs is being developed to coordinate outages well in advance of scheduled start dates. Routine staff meetings will be held to provide more day-to-day coordination outside of outage periods. This effort will be started by November 1982.

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### CONDUCT OF MAINTENANCE

**PERFORMANCE OBJECTIVE:** Maintenance should be conducted in a manner that ensures efficient and effective plant operation.

**Finding (MA.4-1)** Adherence to maintenance procedures needs to be improved. Current practices sometimes result in omission of procedural notes, cautions, and steps intended to ensure the efficient performance of complex maintenance tasks.

**Recommendation** Ensure through periodic observation by supervisory personnel that procedures are used properly. Emphasize to mechanical, instrument, and electrical personnel the importance of adhering to procedures.

**Response** The concern of not utilizing procedures on the job is under review and, if deemed necessary, will be resolved by additional personnel training. The quality assurance department will perform an audit to determine the degree of procedure utilization by January 1983. The need for supervisory control on a day-to-day basis will be reemphasized by the superintendent in a meeting with key supervisors. This will be accomplished by November 1982.

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### MAINTENANCE FACILITIES AND EQUIPMENT

**PERFORMANCE OBJECTIVE:** Facilities and equipment should effectively support the performance of maintenance activities.

**Finding (MA.8-1)** The following Good Practice was noted: The plant has developed a test bench to electrically and hydraulically test control rod drive mechanisms (CRDM) prior to installation. This allows early detection of problems and minimizes radiation exposures that would otherwise result if CRDMs were installed and removed several times.

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**Finding**  
**(MA.8-2)**

**The following Good Practice was noted: The majority of the parts stored in the warehouse are in heat-sealed polyethylene tubing. Small parts are packaged according to the normal unit of issue. Each package contains a typed label that indicates part number, source documents, shelf life (if applicable), and cure date. "Q" items are marked as such on the tag. This practice provides extra protection for parts, enhances part recognition, and improves stores control.**

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TECHNICAL SUPPORTOPERATING EXPERIENCE REVIEW PROGRAM

**PERFORMANCE OBJECTIVE:** Industrywide and in-house operating experiences should be evaluated and appropriate actions undertaken to improve plant safety and reliability.

SOER STATUS

The status of Significant Operating Experience Report (SOER) recommendations is as follows:

<u>Number of Recommendations</u>	<u>Action Taken</u>
58	Satisfactory
62	Not applicable
17	Pending
0	Further review needed

The following recommendations are pending action:

<u>SOER Number</u>	<u>Recommendation Number</u>
80-4	1, 2, 3
81-2	1, 6
81-3	1
81-16	1
82-7	1, 2, 3, 4a, 4b, 4c, 4d, 4e, 4f, 5

An update on the status of each recommendation listed in the "pending action" category shown above is requested in the six-month follow-on response to this report. In addition, the status of each immediate action (red tab) SOER recommendation received subsequent to this evaluation should be included in the six-month follow-on response. A tabular summary, similar to that above, is requested.

OPERATING EXPERIENCE REVIEW PROGRAM

**PERFORMANCE OBJECTIVE:** Industrywide and in-house operating experiences should be evaluated and appropriate actions undertaken to improve plant safety and reliability.

<b>Finding</b> (TS.3-1)	Existing plant procedures do not address receipt and handling of INPO operating experience information such as SOERs, Significant Event Reports (SER), Operations and Maintenance Reminders (O&MR), or vendor and architect engineer reports.
<b>Recommendation</b>	Incorporate provisions into plant procedures for receipt and processing of operating experience information, including INPO SOERs, SERs, O&MRs, and vendor and architect engineer reports.

**Response** ACP 2.10 will be modified to include the reviews and routing of applicable INPO, architect engineer, and vendor information by October 1982.

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**Finding (TS.3-2)** SERs and O&MRs are not routinely distributed for review in a timely manner.

**Recommendation** Establish a system to accomplish a timely receipt and review of SERs and O&MRs.

**Response** NOTEPAD is being established at LACBWR. The review and dissemination of applicable information as covered in ACP 2.10 will be implemented by November 1982.

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**Finding (TS.3-3)** Provisions do not exist to provide timely notification to other utilities of potentially significant events with possible generic implications that might occur at LACBWR.

**Recommendation** Establish a method to provide timely notification to other utilities of potentially significant events with possible generic implications that may occur at LACBWR.

**Response** All incident reports will be sent to INPO. Those with possible generic implications will be flagged. Also, NOTEPAD will be used starting no later than January 1983.

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#### PLANT MODIFICATIONS

**PERFORMANCE OBJECTIVE:** Plant modification programs should ensure proper review, control, implementation, and completion of plant design changes in a safe and timely manner.

**Finding (TS.4-1)** The program for drawing control and use needs improvement in the following areas:

- a. Some drawings in the control room operating manual are not up to date.

- b. Uncontrolled drawings are available for operator use in certain areas of the plant.
- c. The quality of some drawings in the control room files is poor.
- d. Piping and Instrument Diagrams (P&IDs) do not always reflect the as-built status of the plant.

**Recommendation** Improve the drawing control program to ensure operators have current drawings of acceptable quality in the control room to perform plant evolutions and that uncontrolled drawings are removed from use or upgraded to controlled status.

**Response** A program of purging and establishing new and controlled drawing files is underway. This program will address the concerns noted in the finding. Eventually all drawings will indicate either controlled or non-controlled. This task is estimated for completion by July 1983.

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**Finding (TS.4-2)** Some design changes have been made to the plant without a formal facility change request. As a result, technical review and appropriate document updates have not been performed.

**Recommendation** Follow the established facility change procedure to ensure that all design changes to the plant receive an appropriate technical review.

**Response** The concerns noted by INPO are currently being reviewed and addressed. The LACBWR staff is continually reviewing systems and documents for revisions and upgrading or updating, as necessary, and the INPO examples will be included in this effort. All future design changes will be governed by the Facility Change Procedure and receive a technical review and appropriate document update.

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**Finding (TS.4-3)** Current procedural controls that govern stress loading of piping and mechanical systems should be consistently implemented. Lead shielding is sometimes installed on system pipes and equipment without a technical review prior to installation.



**Recommendation** Complete an engineering evaluation of lead shielding currently in place, and ensure that existing procedural controls are followed for any additional installations.

**Response** Increased emphasis and training will be implemented to ensure future evaluations are performed per the existing procedures. A survey of the need for the lead shielding currently in place and an engineering evaluation of the lead shielding will be completed by February 1983.

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TRAINING AND QUALIFICATION

## MAINTENANCE PERSONNEL TRAINING AND QUALIFICATION

**PERFORMANCE OBJECTIVE:** The maintenance personnel training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions.

**Finding (TQ.5-1)**                      **Structured plant-specific training in systems and administrative requirements needs to be developed for mechanical maintenance personnel.** The apprentice training program provides classroom training in skill-related topics, but does not include plant-specific information.

**Recommendation**                Develop and implement structured training in plant systems and administrative requirements for mechanical maintenance personnel. INPO document GPG-05, "Guidelines for Mechanical Maintenance Personnel Qualification," could be of assistance in this effort.

**Response**                            LACBWR will develop and implement a training program covering plant-specific systems and administration requirements for all mechanical maintenance personnel, all instrument and electrical personnel, and all quality assurance personnel. This program will be started by February 1983.

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**Finding (TQ.5-2)**                      **Additional guidance is needed in the on-the-job training program for new instrument technicians and electricians.** The existing Equipment Training Lists lack information on the knowledge and skills a trainee must demonstrate to successfully complete each item.

**Recommendation**                Expand the existing Equipment Training Lists to include statements of the knowledge and skills that must be demonstrated to successfully complete training on each item.

**Response**                            LACBWR will review the need for more detailed guidance in on-the-job training programs for instrument technicians and electricians by November 1982, and complete necessary modifications to the programs by March 1983.

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RADIOLOGICAL PROTECTION

**RADIOLOGICAL PROTECTION ORGANIZATION AND ADMINISTRATION**

**PERFORMANCE OBJECTIVE:** The organization and administrative systems should ensure effective control and implementation of the radiological protection program.

**Finding (RP.1-1)**                      **Adherence to radiological protection procedures and requirements needs to be reemphasized to plant personnel.** Examples of problem areas include improper wearing and removal of protective clothing, improper handling of personnel dosimetric devices, and failure to follow approved methods of monitoring for personnel contamination.

**Recommendation**              Ensure that all supervisory personnel are made aware of their responsibility to enforce radiological protection procedures and practices. Stress the need to adhere to radiological protection procedures and practices in the training and retraining of plant personnel.

**Response**                              Plant personnel have been reinstructed to comply with radiological protection procedures and requirements. A continuing program of ensuring adherence to radiological requirements by all personnel will be implemented by January 1983. This program will include a method of documenting observed deviations and reporting these problems to the appropriate department supervisor for corrective action.

A timer has been added to the portal monitor to ensure that individuals stand in it the required ten seconds or receive an audible alarm.

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**Finding (RP.1-2)**                      **Many special work permits (SWP) do not provide sufficient detail to ensure that workers are aware of radiological conditions. Examples include the following:**

- a. The SWPs provide the worker with the highest and general area radiation levels only and not necessarily those of components on which he is working.
- b. In many cases, the SWP does not provide the worker with the contamination and airborne radioactivity levels.
- c. Beta radiation dose rates are not included on the SWP for work where high beta radiation levels could be expected.

**Recommendation** The SWP system should be reviewed and upgraded as appropriate. The changes should address the points discussed above.

**Response** LACBWR will revise the SWP system to include the examples cited and will review the SWP system for additional improvements by November 1982. Plant personnel will be trained in SWP system changes by November 1982.

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**Finding**  
(RP.1-3) Improvements are needed in the reporting and resolution of problems and trends in the radiological protection program. Radiological protection problems such as SWP deficiencies, personnel skin/clothing contaminations, and personnel contamination monitoring deficiencies are not always reported to managers and supervisors and evaluated to prevent recurrence.

**Recommendation** Develop and implement a system to ensure that radiological protection program problems are brought to the attention of plant management. Trending of these problems should be conducted to assist in identifying timely corrective measures.

**Response** LACBWR staff will ensure that all observed violations of radiation protection procedures and personnel contamination are documented and logged as appropriate in the Personnel Contamination Log Book. These problems will be reviewed and evaluated periodically for trends. Plant management will be informed of corrective actions to prevent recurrence of these problems.

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#### GENERAL EMPLOYEE TRAINING IN RADIOLOGICAL PROTECTION

**PERFORMANCE OBJECTIVE:** General employee training should ensure that plant personnel, contractors, and visitors have the knowledge and practical abilities necessary to effectively implement radiological protection practices associated with their work.

**Finding**  
(RP.3-1) The general employee training in radiological protection (GET-RP) needs improvement. For example, plant employees are not required to demonstrate practical abilities during the GET-RP, and written examinations for GET-RP need improvement.

- Recommendation** Require each employee to perform a satisfactory demonstration of practical radiological protection skills such as donning and removing protective clothing, frisking, using step-off pads, and reading pocket ion chambers. Expand the scope of written tests to provide a more accurate evaluation of employee knowledge of the radiological protection program.
- Response** LACBWR is revising the general employee radiological training, which will include the INPO recommendations. This will be completed by November 1982.
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### EXTERNAL RADIATION EXPOSURE

**PERFORMANCE OBJECTIVE:** External radiation exposure controls should minimize personnel radiation exposure.

- Finding (RP.4-1)** Worker exposures during the calibration of radiological protection instruments and devices could be reduced.
- Recommendation** Perform an investigation to identify methods of reducing worker exposure using the existing facilities. If worker exposures cannot be significantly reduced, consider acquisition of a multiple source gamma calibrator as an alternative.
- Response** LACBWR will investigate the method being used to calibrate instrumentation in order to reduce personnel radiation exposures by December 1982.
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### INTERNAL RADIATION EXPOSURE

**PERFORMANCE OBJECTIVE:** Internal radiation exposure controls should minimize internal exposures.

- Finding (RP.5-1)** The following Good Practice was noted: Whole-body counter (WBC) results are graphed for each worker indicating the isotopes in nanocuries for each count. This innovative method facilitates trend review and analysis of WBC results.
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<b>Finding</b> (RP.5-2)	<b>Verification of the WBC calibration is not performed at a frequency that ensures the accuracy of WBC results.</b>
<b>Recommendation</b>	Implement a program to verify the WBC calibration on an annual or more frequent basis.
<b>Response</b>	The whole-body counter will be calibrated by December 1982. An annual recalibration requirement will be established by December 1982.

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### RADIOACTIVE EFFLUENTS

**PERFORMANCE OBJECTIVE:** Radioactive effluent controls should minimize radioactive materials released to the environment.

<b>Finding</b> (RP.6-1)	<b>Not all absolute filters in the plant ventilation exhaust systems are periodically tested for leakage.</b>
<b>Recommendation</b>	Implement procedures such as dioctylphthalate testing to ensure that high efficiency particulate activity (HEPA) filters are installed correctly in ventilation systems. Perform periodic surveys for radioactivity downstream of HEPA filters to aid in determining if the filter installation is effective.
<b>Response</b>	LACBWR will check the absolute filters identified by INPO and any others in the gaseous effluent line to determine if these are routinely leak tested. A program for periodic testing of all absolute filters in the gaseous effluent lines will be implemented prior to the next refueling outage.

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### PERSONNEL DOSIMETRY

**PERFORMANCE OBJECTIVE:** The personnel dosimetry program should ensure that radiation exposures are accurately determined and recorded.

<b>Finding</b> (RP.8-1)	<b>Although comparisons between thermoluminescent dosimeter (TLD) and pocket ion chamber (PIC) readings are made, significant variances are not evaluated on an individual basis.</b> Current evaluations are limited to an overall review of variances to identify generic program or system problems. Individual problems or questions concerning the validity of an individual's recorded dose are not identified and resolved.
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**Recommendation** Establish criteria and conduct appropriate individual evaluations to detect dosimeter problems or errors in recorded dose. Continue with periodic, overall evaluations of TLD and PIC readings to identify basic problems.

**Response** LACBWR will perform a monthly comparison of individual TLD results and pocket dosimeter results. Differences between these results that exceed a predetermined level will be reviewed by the radiation protection engineer, and an evaluation will be performed and documented. This program will be implemented by December 1982.

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**Finding (RP.8-2)** **Additional guidance is needed for the use and placement of multiple personnel dosimeters.** Presently, multiple dosimeters are not always used in jobs where they may be warranted.

**Recommendation** Establish guidance for the use and placement of dosimeters when detailed radiation surveys indicate that extremity, skin, or multiple whole-body monitoring may be appropriate. Ensure that the point of highest exposure is monitored.

**Response** LACBWR will modify the procedure for the use and placement of extremity and whole body dosimeters and will ensure that the procedure is followed by December 1982.

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### RADIOACTIVE CONTAMINATION CONTROL

**PERFORMANCE OBJECTIVE:** Radioactive contamination controls should minimize the contamination of areas, equipment, and personnel.

**Finding (RP.9-1)** **Conditions exist that could result in spread of contamination.** Examples include the following:

- a. reuse of rubber overshoes in highly contaminated areas
- b. use of vacuum cleaners without HEPA filters in radiologically controlled areas
- c. the present method of removing protective clothing at a central undressing area, rather than at exits from contaminated areas

**Recommendation** Contamination control practices need to be reviewed and upgraded. Changes should address the points discussed above.

**Response** The problems identified in contamination control will be reviewed and corrective action initiated by October 1982:

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**Finding**  
(RP.9-2) **Personnel monitoring for contamination needs improvement.** In most cases, frisking is not performed upon exiting contaminated areas. Hand and foot and portal monitors are the primary means of personnel monitoring. This instrumentation does not have the sensitivity to ensure that station contamination limits are met.

**Recommendation** Establish methods to improve personnel monitoring when exiting contaminated work areas and the radiologically controlled area. Require whole-body frisking when leaving contaminated or potentially contaminated areas.

**Response** The problems with personnel monitoring identified by INPO will be reviewed for corrective action by October 1982. LACBWR will require whole-body frisking of personnel when leaving contaminated or potentially contaminated areas by March 1983.

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CHEMISTRY

**CHEMISTRY ORGANIZATION AND ADMINISTRATION**

**PERFORMANCE OBJECTIVE:** The organization and administrative systems should ensure effective implementation and control of the chemistry program.

**Finding (CY.1-1)**                      **A program for layup of plant systems needs to be developed.** Such a program would reduce the potential for long-term corrosion of systems and components.

**Recommendation**                Develop a program for the chemical layup of plant components and systems. Include applicable portions of the program in station operating procedures.

**Response**                            A program for chemical layup of plant components during shut-downs will be developed by June 1983.

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**Finding (CY.1-2)**                      **A retraining program for health and safety personnel should be formalized and implemented.**

**Recommendation**                Implement a comprehensive retraining program for health and safety personnel. The program should include the following areas as related to chemistry and health physics:

- a. basic technical subjects
- b. plant equipment modifications
- c. procedure changes
- d. applicable industry operating experience
- e. applicable weaknesses identified in the health physics and chemistry program

**Response**                            LACBVR will establish and implement a formal requalification program for health and safety personnel that will incorporate the recommended areas by February 1983.

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### CHEMISTRY CONTROL

**PERFORMANCE OBJECTIVE:** Chemistry controls should ensure optimum chemistry conditions during all phases of plant operation.

**Finding (CY.3-1)** A more effective program for the use, storage, transfer, and disposal of corrosive and hazardous chemicals needs to be developed and implemented.

**Recommendation** Establish a plant program to provide effective controls for storage, use, transfer, and disposal of chemicals. This includes chemicals used both in the laboratories and in the plant by the maintenance group and by the operations group. Consider assigning responsibility for oversight of chemical storage, use, and disposal to the health and safety group.

**Response** LACBWR will develop a plant program for the control, storage, transfer, and disposal of corrosive and hazardous chemicals. LACBWR will assign responsibility for oversight and management of this program, which will be implemented by January 1, 1983.

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**Finding (CY.3-2)** In some cases, auxiliary plant chemistry parameters and sample frequencies have exceeded specified limits without proper notification or timely corrective action. Chemistry limits are not detailed on log sheets to aid in identifying when parameters exceed specifications. Also, chemistry results for the feedwater, condensate, and auxiliary systems are not recorded in a fashion that facilitates trend review.

**Recommendation** Modify chemistry log sheets to include limits for all applicable parameters. Utilize this information when plotting data to facilitate trend analysis.

**Response** LACBWR will review all chemistry and log sheets by December 1982 and make modifications where needed to help ensure timely identification, notification, and corrective action for plant chemistry parameters and sample frequencies that have exceeded specified limits. A system for plotting trends for key parameters will be established by February 1983.

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**LABORATORY ACTIVITIES**

**PERFORMANCE OBJECTIVE:** Laboratory and counting room activities should ensure accurate measuring and reporting of chemistry parameters.

**Finding (CY.4-1)** The quality control program for the chemistry laboratory is not sufficiently comprehensive to ensure that all technicians perform analyses with the required degree of accuracy. Areas where improvements are needed include analysis of unknown spiked samples, analysis of standards in conjunction with samples, and reagent shelf life.

**Recommendation** Expand the quality control program to provide appropriate checks on the quality of analyses. Known standards should be analyzed in conjunction with routine plant samples. Periodically, unknown samples should be substituted for known samples to provide a check on technician performance, laboratory procedures, reagents, and instrumentation. All reagents used in the laboratory should be labeled with expiration dates. Reagents with expired shelf lives should not be used.

**Response** LACBWR will establish a program for quality control in the chemistry lab including, but not limited to, routine analysis of unknown spike samples and use of standards in conjunction with samples by March 1983. LACBWR will be assisted by the DPC central chemistry lab and chief chemist in this effort.

LACBWR will assign a health physics technician to be responsible to ensure that all chemicals having shelf life are so marked and then inventoried monthly in writing and replaced as needed by October 1982.

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**Finding (CY.4-2)** The method used for chloride analysis is not sufficiently sensitive to accurately measure the concentration at the limits specified in plant procedures.

**Recommendation** Discontinue the use of the silver nitrate/Hach Turbidimeter method to detect chloride concentration in the parts-per-billion (ppb) range. The use of the specific ion electrode or mercuric thiocyanate method for analysis in the low ppb range could provide the needed sensitivity.

**Response** LACBWR will modify the water chloride analysis as suggested by INPO by December 1982.

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## APPENDIX I

### Summary of Outstanding Response Action from Previous Evaluation (1981)

#### OBJECTIVES

(INPO Procedure OA-101, Revision 2)

##### **Finding (Criterion A)**

No written mission statement or goals and objectives have been published.

##### **Recommendation**

A station mission statement should be developed to serve as the basis for departmental goals and objectives. The approved mission statement and goals and objectives should be published and distributed throughout the plant so that personnel can properly coordinate their work in support of the plant mission. Periodic checks should be performed to determine timely attainment of goals and objectives.

##### **Response**

A station mission statement will be written to serve as the basis for the development of departmental goals and objectives. The mission statement and departmental goals and objectives will be published prior to October 1, 1981.

##### **Status**

A mission statement has been written. No formal goals and objectives are published, nor does a goals and objectives program exist. The new plant superintendent is reviewing goals and objectives from other stations. An appropriate program for LACBWR will be determined by January 1983 and implemented by March 1983.

#### CONTROL AND CALIBRATION OF TEST EQUIPMENT AND INSTRUMENTATION

(INPO Procedure MA-406, Revision 1)

##### 1. **Finding (Criterion B)**

Some precision equipment is not uniquely identified nor is the status of calibration of the equipment readily apparent.

##### **Recommendation**

A review of all precision equipment should be conducted to ensure that it is uniquely identified and that the calibration status is readily apparent. Either calibration stickers on the equipment or up-to-date records at the storage location are considered readily apparent.

##### **Response**

All test equipment now has a calibration label which defines its status. Each instrument is marked with an identifying number and is listed on a master index of test equipment.

##### **Status**

Electrical test equipment has been properly identified. Some mechanical measuring equipment is not yet uniquely identified. All affected equipment will be identified, including calibration status, by January 1983.

**RADIATION SURVEILLANCE AND CONTROL**  
(INPO Procedure RC-504, Revision 2)

3. **Finding** (General Criterion)

The radiation surveillance program should address the detection and measurement of beta radiation. Quantitative beta radiation surveys should be performed during work that involves the potential for significant beta radiation exposure to personnel.

**Recommendation**

Develop and implement methods and procedures for beta radiation surveys.

**Response**

Methods and procedures for beta radiation surveys will be developed and implemented by September 1, 1981.

**Status**

Interim methods have been implemented to correct the concerns expressed in the finding. The formal procedure for beta radiation surveys is expected to be completed by January 1983.

**RADIOLOGICAL SURVEY EQUIPMENT CONTROL AND CALIBRATION**  
(INPO Procedure RC-506, Revision 2)

1. **Finding** (Criterion C)

Portable radiological survey instruments were not source checked at frequent enough intervals to positively ensure their accuracy.

**Recommendation**

Implement a program to source check portable radiological survey instruments on the scale normally used prior to use or daily, whichever is less frequent.

**Response**

The recommended program will be implemented by September 1, 1981.

**Status**

Portable radiological survey instruments are source checked on a bi-weekly basis. The plant plans to change the frequency to prior to use or daily, whichever is less frequent, by October 1982.

**RADIATION EXPOSURE REDUCTION GOALS**  
(INPO Procedure RC-538, Revision 0)

**Finding** (Criteria B, C, D, E)

Additional planning is required to reduce personnel radiation exposures. The station should utilize formal radiation exposure reduction goals. An administrative control level for individuals of 5 Rem/year is being used as an informal goal. This goal was exceeded by 14% of the station personnel in 1980.

**Recommendation**

- o Expand the ALARA program to include preplanning for specific jobs, following exposure trends, and initiating corrective action if exposure accumulation is excessive.

- o Establish goals for total annual collective exposure and for specific jobs with anticipated significant exposures.
- o The station should increase its effort to meet its administrative control level of less than 5 Rem/year for individuals.

**Response**

The ALARA Program at LACBWR is being formalized. It is estimated that the objectives of the recommendations will be satisfied and procedural controls established as necessary by January 1, 1982.

**Status**

The ALARA program is being formalized. A policy statement and procedures are expected to be issued by October 1982.

APPENDIX II

Performance Objectives Reviewed

ORGANIZATION AND ADMINISTRATION

OA.1 Station Organization and Administration

Station organization and administrative systems should ensure effective implementation and control of station activities.

OA.2 Mission, Goals, and Objectives

Station mission, goals, and objectives should be established and progress monitored through a formal program.

OA.3 Management Assessment and Quality Programs

Management should assess station activities to ensure and enhance quality performance of all aspects of nuclear plant operation.

OA.4 Personnel Planning and Qualification

Personnel programs should ensure that station positions are filled by individuals with proper job qualifications.

OA.5 Industrial Safety

Station industrial safety programs should achieve a high degree of personnel safety.

OA.6 Document Control

Document control systems should provide correct, readily accessible information to support station requirements.

OPERATIONS

OP.1 Operations Organization and Administration

The operations organization and administrative systems should ensure effective control and implementation of department activities.

OP.2 Conduct of Operations

Operational activities should be conducted in a manner that achieves safe and reliable plant operation.

OP.3 Plant Status Controls

Operational personnel should be cognizant of the status of plant systems and equipment under their control, and should ensure that systems and equipment are controlled in a manner that supports safe and reliable operation.

OP.4 Operations Knowledge and Performance

Operator knowledge and performance should support safe and reliable plant operation.

OP.5 Operations Procedures and Documentation

Operational procedures and documents should provide appropriate direction and should be effectively used to support safe operation of the plant.

OP.6 Operations Facilities and Equipment

Operational facilities and equipment should effectively support plant operation.

MAINTENANCE

MA.1 Maintenance Organization and Administration

The maintenance organization and administrative systems should ensure effective control and implementation of department activities.

MA.2 Plant Material Condition

The material condition of the plant should be maintained to support safe and reliable plant operation.

MA.3 Work Control System

The control of work should ensure that identified maintenance actions are properly completed in a safe, timely, and efficient manner.

MA.4 Conduct of Maintenance

Maintenance should be conducted in a manner that ensures efficient and effective plant operation.

MA.5 Preventive Maintenance

The preventive maintenance programs should contribute to optimum performance and reliability of plant equipment.

MA.6 Maintenance Procedures and Documentation

Maintenance procedures should provide appropriate directions for work and should be used to ensure that maintenance is performed safely and efficiently.



MA.7 Maintenance History

The maintenance history should be used to support maintenance activities and optimize equipment performance.

MA.8 Maintenance Facilities and Equipment

Facilities and equipment should effectively support the performance of maintenance activities.

TECHNICAL SUPPORT

TS.1 Technical Support Organization and Administration

The technical support organization and administrative systems should ensure effective control and implementation of department activities.

TS.2 Surveillance Testing Program

Surveillance inspection and testing activities should provide assurance that equipment important to safe and reliable plant operation will perform within required limits.

TS.3 Operations Experience Review Program

Industrywide and in-house operating experiences should be evaluated and appropriate actions undertaken to improve plant safety and reliability.

TS.4 Plant Modifications

Plant modification programs should ensure proper review, control, implementation, and completion of plant design changes in a safe and timely manner.

TS.5 Reactor Engineering

On-site reactor engineering activities should ensure optimum nuclear reactor operation without compromising design or safety limits.

TS.6 Plant Efficiency and Reliability Monitoring

Performance monitoring activities should optimize plant thermal performance and reliability.

TS.7 Technical Support Procedures and Documentation

Technical support procedures and documents should provide appropriate direction and should be effectively used to support safe operation of the plant.

TRAINING AND QUALIFICATION

TQ.1 Training Organization and Administration

The training organization and administrative systems should ensure effective control and implementation of training activities.

TQ.2 Non-Licensed Operator Training and Qualification

The non-licensed operator training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions.

TQ.3 Licensed Operator Training and Qualification

The licensed operator training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions.

TQ.4 Shift Technical Advisor Training and Qualification

The shift technical advisor training program should develop and improve the knowledge and skills to perform assigned job functions.

TQ.5 Maintenance Personnel Training and Qualification

The maintenance personnel training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions.

TQ.6 Technical Training for Managers and Engineers

The technical training program for engineers and managers should broaden overall knowledge of plant processes and equipment as a supplement to position-specific education and training.

TQ.7 General Employee Training

The general employee training program should develop a broad understanding of employee responsibilities and safe work practices.

TQ.8 Training Facilities and Equipment

The training facilities, equipment, and materials should effectively support training activities.

RADIOLOGICAL PROTECTION

RP.1 Radiological Protection Organization and Administration

The organization and administrative systems should ensure effective control and implementation of the radiological protection program.

RP.2 Radiological Protection Personnel Qualification

The radiological protection qualification program should ensure that radiological protection personnel have the knowledge and practical abilities necessary to effectively implement radiological protection practices.

RP.3 General Employee Training In Radiological Protection

General employee training should ensure that plant personnel, contractors, and visitors have the knowledge and practical abilities necessary to effectively implement radiological protection practices associated with their work.

RP.4 External Radiation Exposure

External radiation exposure controls should minimize personnel radiation exposure.

RP.5 Internal Radiation Exposure

Internal radiation exposure controls should minimize internal exposures.

RP.6 Radioactive Effluents

Radioactive effluent controls should minimize radioactive materials released to the environment.

RP.7 Solid Radioactive Waste

Solid radioactive waste controls should minimize the volume of radioactive waste and ensure safe transportation of radioactive material.

RP.8 Personnel Dosimetry

The personnel dosimetry program should ensure that radiation exposures are accurately determined and recorded.

RP.9 Radioactive Contamination Control

Radioactive contamination controls should minimize the contamination of areas, equipment, and personnel.

CHEMISTRY

CY.1 Chemistry Organization and Administration

The organization and administrative systems should ensure effective implementation and control of the chemistry program.

CY.2 Chemistry Personnel Qualification

The chemistry qualification program should ensure that chemistry personnel have the knowledge and practical abilities necessary to implement chemistry practices effectively.

CY.3 Chemistry Control

Chemistry controls should ensure optimum chemistry conditions during all phases of plant operation.

CY.4 Laboratory Activities

Laboratory and counting room activities should ensure accurate measuring and reporting of chemistry parameters.

CY.5 Chemical and Laboratory Safety

Work practices associated with chemistry activities should ensure the safety of personnel.