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Programs

1982 Evaluation



Nuclear Plant  
Consumers  
Power Company

SL

Inspection - April 1982

INPO

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PDR FOIA  
TOTTENB4-44 PDR

EVALUATION

of

PALISADES NUCLEAR PLANT



Consumers Power Company

## SUMMARY

### INTRODUCTION

The Institute of Nuclear Power Operations (INPO) conducted an evaluation of Consumers Power Company's Palisades Nuclear Plant during the weeks of April 12 and April 19, 1982. The plant is located on the eastern shore of Lake Michigan about 18 miles north of Benton Harbor, Michigan and has a 798 MW Combustion Engineering pressurized water reactor. The plant began commercial operation in March 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

The evaluation staff appreciates the cooperation received from all levels of Consumers Power Company.

## CONSUMERS POWER COMPANY

### Response Summary

Consumers Power Company concurs with INPO's conclusion that the Palisades Nuclear Plant is being operated in a safe manner by qualified people. Consumers Power appreciates the recognition by INPO of several good practices and improvements described in the evaluation report. The results of the INPO evaluation also confirm the substantial progress that has been made in the development and conduct of training. The increases in training staff, facilities, programs, and procedures ensure continued progress in this essential area.

Consumers Power also recognizes that there are areas that can be improved, and is committed to meeting, or exceeding, the applicable INPO performance objectives. Those items identified by INPO as requiring additional attention will be addressed as summarized below.

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)

Recommendation

Response

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MANAGEMENT ASSESSMENT AND QUALITY PROGRAMS

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

Finding  
(OA.3-1)

Recommendation

Response

OPERATIONS

OPERATIONS ORGANIZATION AND ADMINISTRATION

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

Finding  
(OP.1-1)

Finding  
(OP.1-2)

Recommendation

Response



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)

Recommendation

Response

Finding  
(OP.3-2)

Recommendation

Response

**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)

Recommendation

Response

MAINTENANCE

PLANT MATERIAL CONDITION

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

Finding  
(MA.2-1)

Recommendation

Response

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)

Recommendation

Response

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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)

Recommendation

Response

Finding  
(MA.4-2)

Recommendation

Response

Finding  
(MA.4-3)

Recommendation

Response

#### MAINTENANCE FACILITIES AND EQUIPMENT

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

Finding  
(MA.8-1)

Recommendation

Response

Finding  
(MA.8-2)

Recommendation

Response

Finding  
(MA.8-3)

Recommendation

Response

TECHNICAL SUPPORT

SURVEILLANCE TESTING PROGRAMS

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

Finding  
(TS.2-1)

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.

Finding  
(TS.3-1)

Recommendation

Response



Finding  
(TS.3-2)

Recommendation

Response

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)

Recommendation

Response

Finding  
(TS.4-2)

Recommendation

Response



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)

Recommendation

Response

TECHNICAL TRAINING FOR MANAGERS AND ENGINEERS

PERFORMANCE OBJECTIVE: 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.

Finding  
(TQ.6-1)

Recommendation

Response

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)

Recommendation

Response

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)

Recommendation

Response

**SOLID RADIOACTIVE WASTE**

**PERFORMANCE OBJECTIVE:** Solid radioactive waste controls should minimize the volume of radioactive waste and ensure safe transportation of radioactive material.

Finding  
(RP.7-1)

Recommendation

Response

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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)

**Recommendation**

**Response**

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**Finding**  
(RP.9-2)

**Recommendation**



Response

Finding  
(RP.9-3)

Recommendation

Response

CHEMISTRY

CHEMISTRY CONTROL

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

Finding  
(CY.3-1)

Recommendation

Response

Finding  
(CY.3-2)

Recommendation

Response

LABORATORY ACTIVITIES

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

Finding  
(CY.4-1)

Recommendation

Response

Finding  
(CY.4-2)

Recommendation

Response

Finding  
(CY.4-3)

Recommendation

Response

Finding  
(CY.4-4)

Recommendation

Response

APPENDIX I

Summary of Outstanding Response Action from Previous Evaluation (1981)

**ADMINISTRATIVE CONTROLS**  
(INPO Procedure OA-103, Revision 1)

Finding (Ref. Criterion E)

Recommendation

Response

Status

**PREVENTIVE MAINTENANCE**  
(INPO Procedure MA-402, Revision 1)

3. Finding (Ref. Criterion G)

Recommendation

Response

Status

**MAINTENANCE PROCEDURES**  
(INPO Procedure MA-403, Revision 2)

1. Finding (Ref. Criterion A)

Recommendation

Response

Status

1

2. Finding (General Criterion)

Recommendation

Response

Status

**MAINTENANCE HISTORY**  
(INPO Procedure MA-405, Revision 2)

3. Finding (Ref. Criterion D)

Recommendation

Response

Status

**TECHNICAL SUPPORT ORGANIZATION AND ADMINISTRATION**  
(INPO Procedure TS-701, Revision 1)

1. Finding (Ref. Criteria B and E)

Recommendation

Response



Status

**ENGINEERING SUPPORT**  
(INPO Procedure TS-702, Revision 2)

1. Finding (Ref. Criterion A)

Recommendation

Response

Status

**NUCLEAR OPERATING EXPERIENCE EVALUATION PROGRAM**  
(INPO Procedure TS-703, Revision 1)

Finding (Ref. Criteria D and E)

Recommendation

Response

Status

**TRAINING ORGANIZATION AND ADMINISTRATION**  
(INPO Procedure TQ-211, Revision 2)

4. Finding (General Criterion)

Recommendation

Response

Status

**RADIATION PROTECTION AND CHEMISTRY ORGANIZATION  
AND ADMINISTRATION**  
(INPO Procedure RC-501, Revision 1)

3. Finding (General Criterion)

Recommendation

Response

Status

ALARA PROGRAM  
(INPO Procedure RC-502, Revision 1)

Finding (Ref.

Recommendation

Response

Status

## 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.