

Evaluation  
Report

October 1981

Cooper  
Nuclear Station  
Nebraska Public  
Power District



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EVALUATION  
of  
COOPER NUCLEAR POWER STATION

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Nebraska Public Power District

October 1981

## SUMMARY

### INTRODUCTION

The Institute of Nuclear Power Operations (INPO) conducted its first evaluation of the Nebraska Public Power District's (NPPD) Cooper Nuclear Power Station (CNS) during the weeks of August 10 and 17, 1981. Cooper uses a 778 MW Net General Electric boiling water reactor. The site is located on the Missouri River, approximately 23 miles south of Nebraska City, Nebraska. The unit began commercial operation in July 1974.

### 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 station documents.

The INPO evaluation team examined station organization and administration, training, operations, maintenance, radiological and chemistry activities, and on-site technical support. 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 six areas examined; these were applied and evaluated in light of both the experience of team members and INPO's observations of good practices within the industry.

INPO's goal is to assist member utilities in achieving the highest standards of excellence in all phases of nuclear plant operation. Accordingly, the conditions found in each area were compared to best practices, rather than to minimum acceptable conditions or requirements.

### DETERMINATION

Within the scope of this evaluation, the team determined that the plant is in excellent physical condition and is being operated in a safe manner by qualified personnel.

Certain beneficial practices and accomplishments were noted:

Cooper has been an industry leader in minimizing accumulated personnel radiation exposure.

The physical condition and cleanliness of the station are excellent.

Very few control room control panel alarms were activated.

The station has an impressive safety record, with no lost time accidents in over two years.

Station management exercises positive management controls throughout all levels.

A positive commitment to maintaining fuel clad integrity combined with fixing system leaks immediately has resulted in minimizing contamination and radiation levels throughout the station.

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

The need to fill the seven technical vacancies in the 22-man Engineering Department.

The need to thoroughly implement station training programs in order to improve the overall effectiveness of the training effort.

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

Findings and recommendations are listed under the PERFORMANCE OBJECTIVES to which they pertain. Particularly noteworthy conditions which contribute to meeting PERFORMANCE OBJECTIVES are identified as Good Practices. Other findings describe conditions which detract from meeting the PERFORMANCE OBJECTIVES. It would not be productive to list as Good Practices those things that are commonly done in the industry since this would be of no benefit to NPPD 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.

The findings listed herein were presented to Nebraska Public Power District management at an exit meeting at the plant on August 20, 1981. Findings, recommendations, and responses were reviewed with Nebraska Public Power District management on October 1, 1981. Nebraska Public Power District responses are considered satisfactory.

To follow the timely completion of the improvements included in the responses, INPO requests written notification of status six months from the date of this report.

The evaluation staff appreciates the excellent cooperation received from the personnel of the Nebraska Public Power District.

E. P. Wilkinson  
President

**NEBRASKA PUBLIC POWER DISTRICT**

Response Summary

Nebraska Public Power District is pleased to have had INPO perform an evaluation of our Cooper Nuclear Station. We agree that the findings will serve to improve the management of operation of the station, and the District will strive toward timely implementation of the improvements recommended. Each of the findings has been responded to in as much detail as possible at this time.

The District was aware of many of the recommendations which were identified, but INPO's focus confirms and stimulates efforts toward improvement. The District has benefited from all of the INPO discussions leading up to these findings, and is especially pleased by the INPO recognition of a number of "Good Practices" at Cooper Nuclear Station.

We are concerned about the technical manpower shortage that exists in the industry and the challenge facing the District to recruit and maintain an adequate technical staff. To this end we are actively evaluating all of the different approaches to this problem which may be available to the District. INPO is urged to continue its efforts to assist the industry in achieving a practical and reasonable solution to this problem.

Targeted completion dates for specific items have been noted in the details section where possible. A written status report will be provided to INPO six months from the date of this report. INPO is invited to assess the effectiveness of our actions as they are implemented.

## TRAINING AND QUALIFICATION

### TRAINING ORGANIZATION

**PERFORMANCE OBJECTIVE:** Provide a clearly defined training organization staffed with qualified personnel capable of accomplishing all assigned training tasks.

**Finding (TQ.1-1)**                      **The training staff is not of sufficient size to fully meet all assigned responsibilities.**

**Recommendation**                Examine the training programs which station personnel are responsible for conducting to determine the total manpower necessary to perform all required training activities (including program and material development and upgrading, instructor preparation, and instructor professional development). Establish full-time, permanent positions to accomplish these activities and fill these positions with appropriately qualified individuals.

**Response**                            The training programs that must be carried out will be examined to determine necessary training staff requirements. Appropriately qualified personnel will then be assigned from each department to conduct these training programs. This objective will be accomplished prior to September 1, 1982. The need for adding personnel to the training staff for activities such as instructor preparation and instructor professional development will be considered.

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### NON-LICENSED OPERATOR TRAINING

**PERFORMANCE OBJECTIVE:** Develop and maintain the skills and knowledge necessary for non-licensed operators to perform their assigned job functions.

**Finding (TQ.4-1)**                      **The station operator (non-licensed) initial qualification program needs improvement.** The on-the-job training station operators now receive is unstructured and not fully implemented.

**Recommendation**                Develop a structured on-the-job training phase as part of the qualification program for station operators. The program should identify job functions to be performed, observed, or discussed during this training phase. Classroom training in power plant fundamentals should also be included in the initial training program for station operators.

**Response**                      The station operator initial qualification program will be fully implemented by July 1, 1982. The on-the-job training will be conducted as recommended.

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#### LICENSED OPERATOR TRAINING

**PERFORMANCE OBJECTIVE:** Develop the skills and knowledge necessary for licensed operators to perform their assigned job functions.

**Finding (TQ.5-1)**                      **The licensed operator training program should include a structured program for training senior reactor operator (SRO) trainees.** The program does not identify job functions and technical information to be covered during on-the-job or classroom training. Trainee participation in selected plant evolutions and review of selected procedures is not required.

**Recommendation**                      Develop structured on-the-job and classroom training phases as part of the qualification program for SROs. The program should identify job functions to be performed, observed, or discussed, and should include coverage of technical, administrative, and supervisory skills and knowledge required of the SRO. An INPO document titled "Guidelines for Qualification Programs at Operational Units" (INPO #GPG-03) provides guidance in this area.

**Response**                      INPO document #GPG-03 will be reviewed to determine the modifications required in the training program for senior reactor operators by March 1, 1982. Identified modifications will be completed by July 1, 1982.

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#### LICENSED OPERATOR REQUALIFICATION TRAINING

**PERFORMANCE OBJECTIVE:** Maintain the skills and knowledge necessary for licensed operators to perform their assigned job functions.

**Finding (TQ.6-1)**                      **The recommendations of the training staff's evaluation of the licensed operator requalification program are not always implemented.**

**Recommendation** Implement the recommendations of the training staff's evaluation of the licensed operator requalification program. Also develop a management review system to ensure that future recommendations are reviewed by station personnel.

**Response** Increased emphasis will be placed on the requalification program to ensure that necessary training is conducted. A management review system will be established such that the Operations Supervisor and the Station Superintendent are aware of the status of the requalification program, the training staff's recommendations, and any deficiencies, so that corrective action can be taken.

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#### SHIFT TECHNICAL ADVISOR TRAINING

**PERFORMANCE OBJECTIVE:** Develop and maintain the skills and knowledge necessary for Shift Technical Advisors (STA) to perform their assigned job functions.

**Finding (TQ.7-1)** The STA training program should be expanded to include training in several technical areas not currently covered.

**Recommendation** Expand the scope of the STA training program. The INPO document #GPG-01, "Recommendations for Position Description, Qualifications, Education and Training," provides guidance in this area.

**Response** The current STA program and INPO document #GPG-01 will be reviewed and the program expanded to include identified areas by July 1, 1982.

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**Finding (TQ.7-2)** STA retraining requirements are needed.

**Recommendation** Establish an STA retraining program. The INPO document titled "Recommendations for Position Description, Qualifications, Education and Training" (INPO #GPG-01) provides guidance in this area.

**Response** An STA retraining program will be established prior to March 1, 1982.

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### MAINTENANCE PERSONNEL TRAINING

**PERFORMANCE OBJECTIVE:** Develop and maintain the skills and knowledge necessary for maintenance personnel to perform their assigned job functions.

<b>Finding</b> (TQ.8-1)	The instrumentation and control, electrical, and mechanical maintenance personnel initial training programs should include plant systems training. The training section has not developed plant systems training material for the maintenance personnel trainees.
<b>Recommendation</b>	Develop systems training material and establish a systems training program to familiarize maintenance personnel with plant systems as a part of their qualification program.
<b>Response</b>	Systems training will be incorporated as a part of the maintenance personnel training program. It is planned to have this completed by September 1, 1982.

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OPERATIONS

## CONDUCT OF SHIFT OPERATIONS

PERFORMANCE OBJECTIVE: Ensure that shift operations are conducted in a safe and reliable manner.

Finding  
(OP.3-1)

The following Good Practice was noted: The number of annunciators in the alarmed condition on the control room front panels has been significantly reduced through a joint effort of operators and plant engineering personnel to determine and correct the cause of the alarmed condition.

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Finding  
(OP.3-3)

The following Good Practice was noted: An effective method is used to identify abnormal conditions or parameters requiring special attention. Red arrows affixed to magnetic white plastic plates are used on the control boards to alert operators to ongoing activities or conditions that are not normal during routine operations.

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## PLANT OPERATIONS PROCEDURES

PERFORMANCE OBJECTIVE: Provide timely, effective guidance to operators in the form of written procedures.

Finding  
(OP.4-1)

Emergency and abnormal procedures are not uniquely identified. The color of the binders for emergency and abnormal procedures is identical to other binders. The first volume of procedures contains the only index for the procedures. In addition, insufficient tabbing is used to separate individual procedures.

Recommendation

Provide a more effective means for assisting operators in the timely identification of emergency and abnormal procedures.

Response

The control room emergency and abnormal procedures have now been placed in red binders. An index is also now placed in the front of each book.

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Finding (OP.4-2)	The emergency procedure that provides for shutdown from outside the control room omits some important steps that should be taken before the operator is directed to leave the control room.
Recommendation	Review the current procedure and include, as a minimum, steps that direct the operator to scram the reactor, check all rods in, and ensure that the turbine is tripped before exiting the control room.
Response	The Emergency Procedure 5.2.1 is being revised to include steps directing the operators to, if possible, scram the reactor, check all rods in, and ensure the turbine is tripped before exiting the control room.

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#### PLANT STATUS CONTROLS

**PERFORMANCE OBJECTIVE:** Maintain plant status in a condition that ensures equipment and system availability as necessary for safe and reliable plant operations at all times.

Finding (OP.5-1)	<b>Formal controls for the use of caution tags are needed.</b> Caution tags are considered as an "information only" card and are placed on equipment by operations and maintenance personnel on an informal basis to identify unique conditions or abnormal situations. Caution tags bear no identification number for documentation, and no formal audit is required or periodic assessment made of their continued need.
Recommendation	Provide necessary instructions for the use and control of caution tags. Include requirements for periodic review of tags in use to ensure their validity.
Response	The use and control of caution tags will be reviewed. Necessary instructions for the use and control of these tags will be provided and will include periodic review of tags in use for validity. This action will be completed by January 1, 1982.

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Finding (OP.5-2)	<b>Controlled drawings and drawings listed "for information only" are mixed on the same print holder.</b> These drawings are used for clearance tagging and other control room information as required. Placing both types of drawings on the same print holder could result in the use of prints which differ from the as-built system.
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**Recommendation** Determine why "for information only" and controlled drawings are contained on the same print holder in the control room and take corrective measures to prevent recurrence.

**Response** The Records Administration Department (RAD) personnel had incorrectly stamped these drawings marked "For Information Only" and sent them directly to the control room in response to a request. The methods of handling drawings have been revised so that RAD sends requested drawings to the CNS Engineering Department and that department checks and distributes them.

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**Finding**  
(OP.5-3) **Uncontrolled notes, graphs, portions of procedures, labels, and drawings of a temporary nature used as operator aids are attached to the unit control board panels.** A method is needed for approving, updating, or verifying these temporary messages.

**Recommendation** Evaluate the need for this material and remove material not considered necessary. Develop a system to control the use of approved and dated notes, graphs, and drawings and periodically review these documents for removal or retention.

**Response** The control room panels have been examined to ensure that material attached to the panels is necessary, valid, and current. An administrative procedure will be prepared to control such material including periodic review of the material on the panels.

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#### SHIFT TURNOVER

**PERFORMANCE OBJECTIVE:** Ensure a continuous and correct understanding of plant conditions at all shift operating positions through proper shift turnover.

**Finding**  
(OP.6-1) **Shift turnover procedures are needed for control room and station operators.** Operators use a variety of informal methods to discuss equipment status during shift change including logs, rounds sheets, random notes, and memory. The informality of shift turnover could result in inadequate information exchange on equipment status.

<b>Recommendation</b>	Develop shift turnover procedures for each watch station. Instruct all operators in the proper use of turnover procedures and periodically assess the effectiveness of the turnover procedures. The turnover procedures should include a checklist for each operating shift station to guide the turnover process.
<b>Response</b>	The shift turnover procedures for each watch station will be reviewed and modifications made to incorporate the above recommendation as necessary. This action will be completed by January 1, 1982.

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### TAGOUT PRACTICES

**PERFORMANCE OBJECTIVE:** Protect personnel and equipment by implementing effective tagout practices.

<b>Finding</b> (OP.7-1)	<b>A periodic review and audit of tagouts should be conducted.</b> Although shift supervisors are required by their shift turnover checklist to review the clearance log, this review does not suffice as an audit of tagouts.
<b>Recommendation</b>	Develop and implement a program for periodic review of the status of tagouts. Instruct supervisory personnel in its implementation. The program should include performance checks, as follows, on a periodic basis: <ul style="list-style-type: none"> <li>o Conduct review of the tag index.</li> <li>o Verify the adequacy of tagouts.</li> <li>o Check the condition of posted tags.</li> <li>o Verify proper attachment of tags and position of tagged equipment.</li> <li>o Check for presence of unauthorized tags.</li> <li>o Check for tagouts remaining in effect beyond their need.</li> </ul>
<b>Response</b>	The Quality Assurance Department currently performs a "systems operational status" audit as a part of QAP-200. A section of this audit is dedicated to clearance orders (tagouts). This audit procedure will be reviewed and modified as required to include the above performance checks.

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- Finding**  
(OP.7-2)      **The size of clearance tags is too large for control board use.** Tags are of a size that can obscure labels, indicating lights, and control switch positions. As an example, a hold tag on a battery room exhaust fan obscures two sets of indicating lights and one switch handle.
- Recommendation**      Correct current conditions where tags are obscuring lights and switches. Investigate the use of smaller tags which will not obscure control board lights or switches.
- Response**      An investigation of small tag use on control boards is being conducted. Until these smaller tags are available, tags will be rolled to prevent obscuring other pertinent components on control boards.
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MAINTENANCE

WORK CONTROL SYSTEM

PERFORMANCE OBJECTIVE: Provide an administrative control system within which equipment problems can be identified and reported, and safely and efficiently dispositioned and documented.

Finding  
(MA.3-1)

The following Good Practice was noted: Computer terminals with CRT displays, located in the instrument and control, electrical and mechanical shops, provide local access to component data, parts information, maintenance history, and preventive and corrective maintenance. This practice makes valuable information readily available to key people and eliminates time-consuming drawing and file searches.

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Finding  
(MA.3-2)

The following Good Practice was noted: Management's aggressive approach to correcting all material problems as soon as practicable has led to a minimum number of outstanding maintenance items and an overall excellent material condition of the station.

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MAINTENANCE PROCEDURES

PERFORMANCE OBJECTIVE: Ensure that adequate station maintenance procedures exist and are utilized to achieve quality by the safe and reliable conduct of maintenance activities.

Finding  
(MA.4-1)

The test equipment section of Maintenance and Surveillance Procedures does not always include the range of the test instrument to be used.

Recommendation

Review Maintenance and Surveillance Procedures and, where appropriate, provide a more detailed description, including the range of the test equipment to be used.

**Response** A more detailed description of test equipment will be added to the maintenance and surveillance procedures, where appropriate, during the next scheduled review of these procedures. This review is now planned for completion by September 1, 1982.

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**Finding (MA.4-2)** **Some maintenance procedures specified by the preventive maintenance printout need more effective management control of the work to be performed.** In reviewing these procedures, the following items were noted:

- o Vendor manuals and some procedures prepared by maintenance personnel for essential equipment preventive maintenance are not approved by station management.
- o Some of the referenced vendor manuals are not held by the shop assigned to perform the preventive maintenance.
- o Vendor manuals are referenced for the preventive maintenance procedure when a more comprehensive station procedure exists.

**Recommendation** Review preventive maintenance procedures to ensure that they are properly approved, are the most appropriate procedures for the prescribed work, and are readily available to the workers.

**Response** The preventive maintenance procedures will be reviewed to ensure they are appropriate for the work to be performed. The proper reference to vendor manuals will be checked and those referenced manuals will be made available to the shop performing the work. Appropriate station management will then review and approve these procedures. It is expected that this activity will be completed by September 1, 1982.

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#### MAINTENANCE HISTORY

**PERFORMANCE OBJECTIVE:** Provide a complete and functional maintenance history supporting an evaluation program which contributes to improvements in equipment performance.

**Finding (MA.5-1)** The maintenance history program should be described by an approved procedure or guideline. The station has recently changed



from a handwritten maintenance history to a computerized system. Key station personnel were not familiar with all aspects of the new system.

**Recommendation** Issue an approved procedure that describes all aspects of the existing maintenance history program and provides training to ensure key personnel are familiar with its use.

**Response** A work item tracking/equipment history procedure will be developed and approved by station management. This procedure will describe the maintenance history program. Appropriate training will then be performed such that necessary personnel are familiar with the system. The procedure is to be completed and approved by March 1, 1982 and personnel trained by July 1, 1982.

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## RADIATION PROTECTION AND CHEMISTRY

### RADIOLOGICAL PROTECTION TRAINING

**PERFORMANCE OBJECTIVE:** Ensure that personnel on the site have the knowledge and practical abilities necessary to effectively implement radiological protection practices associated with their work.

<b>Finding</b> (RC.2-1)	Examinations are needed to verify the knowledge level and practical ability of the following: <ul style="list-style-type: none"><li>o radiological protection and chemistry technicians during initial qualification or subsequent retraining</li><li>o personnel receiving general employee training</li><li>o reactor operators who receive radiological protection training for radiological protection coverage on back shifts.</li></ul>
<b>Recommendation</b>	Develop written and practical examinations to evaluate the knowledge level and practical ability of radiological protection and chemistry technicians. Develop written examinations and practical exercises for general employee and reactor operator radiological protection training.
<b>Response</b>	The radiological protection training program will include written examinations and other techniques to evaluate knowledge level and practical ability and will be factored into the ongoing training program for radiological protection technicians, chemistry technicians and reactor operators by April 1, 1982. Written examinations for general employee radiological protection training are now in use.

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### PERSONNEL DOSIMETRY

**PERFORMANCE OBJECTIVE:** Accurately determine and record radiation exposures.

<b>Finding</b> (RC.3-1)	The station radiological protection staff has identified discrepancies in equipment used to monitor beta exposures.
<b>Recommendation</b>	Identify the reasons for and the extent of discrepancies in the beta exposures indicated by different thermoluminescent dosimeters

(TLDs) and reasons for the low beta exposures on TLDs exposed at known radiation levels. Identify and implement a beta dosimetry system that provides consistent results.

**Response**

Discussions are currently being conducted with the TLD vendor to resolve identified discrepancies and to develop a satisfactory technique for exposing TLDs to a known beta source. CNS will continue to evaluate the beta monitoring program and review any forthcoming advancements in beta monitoring research and changes in standard practices.

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### EXTERNAL RADIATION EXPOSURE

**PERFORMANCE OBJECTIVE:** Minimize personnel external radiation exposure.

**Finding  
(RC.4-1)**

The station has developed and used several good practices to maintain personnel exposures among the lowest in the industry. Continuation of these good practices could be ensured by developing a formal ALARA program for documenting good techniques and establishing, tracking, and evaluating exposure goals for individuals, specific jobs, and total cumulative exposures.

**Recommendation**

Develop a formal ALARA program to document good techniques; establish exposure goals for individuals, specific jobs, outages, and total yearly cumulative exposures; and track and evaluate actual exposures as compared with the goals.

**Response**

A formal ALARA program incorporating the above recommendation will be implemented by July 1, 1982.

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### INTERNAL RADIATION EXPOSURE

**PERFORMANCE OBJECTIVE:** Minimize internal exposure due to radioactivity associated with the plant.

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

Initial whole body counts to provide a base level should be performed for new personnel who will be working in radiologically controlled areas.

**Recommendation**

Utilize the whole body counting equipment to obtain a base level count for all new personnel who will be working in radiologically controlled areas.

**Response** As of September 1, 1981, the whole body counting equipment has been used to obtain an entry base level for incoming personnel who will be working in radiologically controlled areas.

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**Finding (RC.5-2)** Whole body count records indicate a large number of personnel with low levels of Co-60 radioactivity. Although the levels are only a small part of the established limits, the large number of people involved indicates the need to improve contamination control or respiratory protection.

**Recommendation** Identify the reasons for indications of low levels of radioactivity from whole body counts. Take appropriate actions to reduce the indicated levels of radioactivity.

**Response** CNS is confident that the low levels, which are well below any prescribed action levels, are not a respiratory protection problem and that it may be related to protective clothing and laundry control. This problem is being evaluated and will be pursued to resolution.

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#### RADIOACTIVE EFFLUENTS

**PERFORMANCE OBJECTIVE:** Minimize releases of radioactive effluents to the environment.

**Finding (RC.6-1)** The following Good Practice was noted: Radioactive effluent discharges have been reduced by processing the effluents to allow recovery and reuse.

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#### SOLID RADIOACTIVE WASTE

**PERFORMANCE OBJECTIVE:** Minimize solid radioactive waste volumes.

**Finding (RC.7-1)** Although radioactive solid waste volumes are low, further reduction could be achieved by utilizing more effective compacting equipment and segregating clean from radioactive waste coming from radiologically controlled areas.

- Recommendation** Determine if the use of compacting discs can significantly increase barrel weights through increased compaction. Implement procedures to segregate radioactive and clean trash.
- Response** CNS will procure and evaluate the compaction discs in an effort to increase the barrel weight, hence the amount of waste per container. In addition, procedures in use will be reviewed in an attempt to provide improved segregation of clean and radioactive trash.
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### RADIOACTIVE CONTAMINATION CONTROL

**PERFORMANCE OBJECTIVE:** Minimize contaminated equipment and areas in the station and minimize personnel contamination.

- Finding (RC.9-1)** Records of personnel skin contaminations should be kept.
- Recommendation** Maintain records in personnel exposure files to identify skin contamination incidents. The use of such records facilitates the identification, and reduction or elimination, of the cause of repeated contaminations.
- Response** Records of skin contamination are now being maintained in personnel exposure files.
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- Finding (RC.9-2)** The following Good Practice was noted: Prompt repair of leaks and immediate decontamination have minimized contamination in the reactor building and allowed maximum personnel access without the use of protective clothing.
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TECHNICAL SUPPORT**ON-SITE TECHNICAL SUPPORT ORGANIZATION AND ADMINISTRATION**

**PERFORMANCE OBJECTIVE:** Have a clearly defined on-site technical support organization that is adequately staffed, assigns responsibility, and delegates adequate authority for the accomplishment of required tasks.

**Finding (TS.1-1)**                      **The on-site technical support staff is currently manned to 68 percent of the authorized manning level.** This reduced manning prevents the staff from completing assigned work.

**Recommendation**              Improve efforts to fill the vacant engineering staff positions.

**Response**                              Two of the vacant engineering positions have been filled since the INPO evaluation. CNS plans to continue efforts to adequately staff the on-site technical support organization. CNS is concerned about the technical manpower shortage that exists in the industry and the challenge facing the District to recruit and maintain an adequate technical staff. To this end the District is actively evaluating all of the different approaches to this problem which may be available.

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**Finding (TS.1-2)**                      **Training to enhance and develop skills and knowledge of the on-site technical support personnel needs improvement.**

**Recommendation**              Evaluate the training needs of personnel within the Engineering Department and provide additional training as required. Consider the need for training in these areas:

- o plant systems and components
- o areas requiring specialized engineering knowledge or skills
- o effective management techniques.

Implement the training on a department level to ensure that uniform training is provided to all personnel in the station engineering group.

**Response**                              The training needs of personnel in the Engineering Department have been evaluated. Engineers in the Engineering Department will receive plant systems training and will continue to be sent to special schools as required to obtain and maintain proficiency in certain areas.

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**PLANT EFFICIENCY AND RELIABILITY**

**PERFORMANCE OBJECTIVE:** Optimize plant thermal efficiency and reliability.

<b>Finding</b> (TS.2-1)	<p><b>More management attention is needed in efforts to optimize plant thermal efficiency.</b> For example:</p> <ul style="list-style-type: none"> <li>o Specific responsibilities and assignments for monitoring balance-of-plant thermal efficiency have not been made.</li> <li>o Computer programs available to help optimize the balance-of-plant thermal efficiency are not routinely used.</li> <li>o The unit load is frequently cycled to meet system electrical demand.</li> </ul>
<b>Recommendation</b>	<p>Supplement the existing efforts in plant performance monitoring by implementing a more comprehensive program. Provide for the use of available computer programs, systematic evaluation of pertinent plant systems and components, and trending of key plant parameters. Specify responsibility for implementing each portion of the program.</p> <p>A study should be made by corporate management to evaluate methods of improving the load factor for Cooper Nuclear Station with the overall objective of improving the plant operating efficiency.</p>
<b>Response</b>	<p>An engineer is currently being trained to fill the Performance Engineer position that has been vacant. Twelve rows of blades have been missing from the turbine low pressure rotors for over a year. New rotors are currently being installed and additional attention will be given to plant thermal efficiency during the upcoming operating cycle. Corporate management and system dispatchers will continue efforts to improve the CNS load factor while meeting the system load requirements.</p>

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**NUCLEAR OPERATING EXPERIENCE EVALUATION PROGRAM**

**PERFORMANCE OBJECTIVE:** Ensure industrywide and in-house operating experiences are evaluated and appropriate actions are taken to improve personnel awareness and equipment reliability.

<b>Finding</b> (TS.3-1)	<p>The review of in-house events should include a provision for prompt notification to other utilities, via NOTEPAD, of significant events with possible generic implications.</p>
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**Recommendation** Review the existing station policy regarding dissemination of information concerning significant events with possible generic implication. Use this review as the basis for revising station procedures to include placing information into the NOTEPAD system.

**Response** The existing station policy regarding dissemination of information concerning significant events with possible generic implications will be reviewed and station procedures revised to include procedures for placing pertinent information of possible generic significance into the NOTEPAD system.

**Finding (TS.3-2)** Some recommendations included in INPO Significant Operating Experience Reports (SOERs) have not been completed. SOER recommendation status for 80-1 through 80-6 and 81-1 through 81-13 is as follows:

<u>Recommendations</u>	<u>Action Taken</u>
24	Satisfactory
26	Not applicable
27	Pending

The recommendations pending action are as follows:

<u>SOER No.</u>	<u>Recommendation No.</u>
80-1	1, 2
81-2	1 through 6
81-9	1, 2(a), 2(b), & 2(c)
81-13	1 through 15

**Recommendation** Establish a method to ensure that SOERs are processed in a timely manner. Provide information on the action taken or planned with regard to each pending SOER in the response to this report.

**Response** The method used for review and action for GE SILs is now being used to ensure timely processing of SOERs. The review of SOERs 80-1, 81-2, and 81-9 has been completed and necessary actions completed or scheduled on these SOERs. CNS will complete a review of SOER 81-13 prior to November 15, 1981.



Finding  
(TS.3-3)

The following Good Practice was noted: The method for review and action for General Electric Service Information Letters (GE SILs) is excellent. Consideration should be given to implementing the same structured format for the review of Significant Event Reports and SOERs.

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#### PLANT MODIFICATIONS

**PERFORMANCE OBJECTIVE:** Provide a program to implement plant modifications in a timely manner while maintaining the quality of plant systems and components.

Finding  
(TS.4-1)

The following Good Practice was noted: Station design changes are normally designed and installed under the responsibility of the same engineer. Station design changes that are designed by off-site engineers are installed by these same engineers under the control of station personnel and procedures.

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#### ON-SITE REACTOR ENGINEERING

**PERFORMANCE OBJECTIVE:** Optimize nuclear reactor operations without compromising design or safety limits and control nuclear fuel handling activities to ensure safety of personnel and equipment.

Finding  
(TS.5-1)

The following Good Practice was noted: Cooper Nuclear Station personnel have a strong commitment to maintain the highest achievable fuel integrity. This is evident in the on-site reactor engineering program and the outstanding fuel performance record that has been achieved. The commitment has also paid dividends through lower than normal personnel radiation exposure over the years.

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## ORGANIZATION AND ADMINISTRATION

### ORGANIZATIONAL OBJECTIVES

**PERFORMANCE OBJECTIVE:** Establish mission, goals, and objectives for the organizational units that improve station activities or maintain them at high levels of safety and reliability, and establish the process to achieve the mission, goals, and objectives.

<b>Finding</b> (OA.1-1)	Specific goals and objectives should be defined for the station or any of its organizational units.
<b>Recommendation</b>	Prepare and issue short-term and long-term goals and objectives for the station. A method of reporting goal achievement should be developed to note program success and to implement personnel accountabilities.
<b>Response</b>	Formal goals and objectives will be issued by September 1, 1982.

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### MANAGEMENT QUALITY PROGRAMS

**PERFORMANCE OBJECTIVE:** Provide management with accurate indication of the extent of adherence to policies, administrative controls, codes, regulations, and effectiveness in meeting station mission, goals, and objectives.

<b>Finding</b> (OA.5-1)	The quality assurance/quality control programs (QA/QC) should extend to important non-safety-designated balance-of-plant equipment.
<b>Recommendation</b>	Expand the QA/QC program to include important non-safety balance-of-plant equipment.
<b>Response</b>	The QA/QC program will be modified to include important balance-of-plant equipment. This effort will be completed by September 1, 1982.

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**INDUSTRIAL SAFETY**

**PERFORMANCE OBJECTIVE:** Provide an orderly working environment in which station personnel may carry out their work activities safely.

<b>Finding</b> (OA.7-1)	<b>Work practices and safety considerations peculiar to the station that affect industrial safety should be promulgated to all site personnel.</b> The "Safety Rule Book" prepared by the Nebraska Public Power District and issued to each station employee is not site-specific. Site-specific information contained in "Recommended Work Practices" is not disseminated to each new employee.
<b>Recommendation</b>	Prepare a site-specific industrial safety manual and distribute it to each station employee. Institute methods to ensure that workers on site are familiar with company industrial safety requirements.
<b>Response</b>	The "Safety Rule Book" will be reviewed as related to site specific industrial safety practices. By September 1, 1982, a method will be implemented to provide all employees with the information. In addition, CNS will increase efforts to ensure that workers on site are familiar with company industrial safety requirements and that they follow these requirements.

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## APPENDIX A

### I. Performance Objectives Reviewed

#### TRAINING AND QUALIFICATION

- TQ.1 Training Organization  
Provide a clearly defined training organization staffed with qualified personnel capable of accomplishing all assigned training tasks.
- TQ.2 Training Administration  
Ensure that activities necessary to initiate and control personnel qualification programs are accomplished in a well-defined, coordinated, and effective manner.
- TQ.3 Training Facilities and Equipment  
Provide the training facilities, equipment, and materials for development and evaluation of knowledge and skills needed by nuclear plant personnel.
- TQ.4 Non-Licensed Operator Training  
Develop and maintain the skills and knowledge necessary for non-licensed operators to perform their assigned job functions.
- TQ.5 Licensed Operator Training  
Develop the skills and knowledge necessary for licensed operators to perform their assigned job functions.
- TQ.6 Licensed Operator Requalification Training  
Maintain the skills and knowledge necessary for licensed operators to perform their assigned job functions.
- TQ.7 Shift Technical Advisor Training  
Develop and maintain the skills and knowledge necessary for Shift Technical Advisors (STA) to perform their assigned job functions.
- TQ.8 Maintenance Personnel Training  
Develop and maintain the skills and knowledge necessary for maintenance personnel to perform their assigned job functions.

OPERATIONS

OP.1 Operations Organization and Administration

Provide a clearly defined operations organization that is adequately staffed, assigns responsibilities, and delegates adequate authority for the accomplishment of required tasks.

OP.2 Operations Facilities and Equipment

Provide plant facilities and equipment that are operated and maintained at a level to support safe and efficient operation.

OP.3 Conduct of Shift Operations

Ensure that shift operations are conducted in a safe and reliable manner.

OP.4 Plant Operations Procedures

Provide timely, effective guidance to operators in the form of written procedures.

OP.5 Plant Status Controls

Maintain plant status in a condition that ensures equipment and system availability as necessary for safe and reliable plant operations at all times.

OP.6 Shift Turnover

Ensure a continuous and correct understanding of plant conditions at all shift operating positions through proper shift turnover.

OP.7 Tagout Practices

Protect personnel and equipment by implementing effective tagout practices.

MAINTENANCE

MA.1 Maintenance Organization and Administration

Provide a clearly defined maintenance organization that is adequately staffed, assigns responsibilities, and delegates adequate authority for the accomplishment of required tasks.

- MA.2 Maintenance Facilities and Equipment  
Support the performance of maintenance activities by providing adequate facilities and equipment.
- MA.3 Work Control System  
Provide an administrative control system within which equipment problems can be identified and reported, and safely and efficiently dispositioned and documented.
- MA.4 Maintenance Procedures  
Ensure that adequate station maintenance procedures exist and are utilized to achieve quality by the safe and reliable conduct of maintenance activities.
- MA.5 Maintenance History  
Provide a complete and functional maintenance history supporting an evaluation program which contributes to improvements in equipment performance.
- MA.6 Preventive Maintenance (PM)  
Optimize equipment reliability and performance to enhance plant safety and availability.
- MA.7 Control of Measurement and Test Equipment (M&TE)  
Control the use and calibration of measurement and test equipment to ensure the necessary accuracy for calibrated devices.
- MA.8 Control of Special Processes  
Ensure that the control and performance of special processes yields quality results.

#### RADIATION PROTECTION AND CHEMISTRY

- RC.1 Management of Radiological Protection  
Provide effective management of the radiological protection program.
- RC.2 Radiological Protection Training  
Ensure that personnel on the site have the knowledge and practical abilities necessary to effectively implement radiological protection practices associated with their work.

- RC.3 Personnel Dosimetry  
Accurately determine and record radiation exposures.
- RC.4 External Radiation Exposure  
Minimize personnel external radiation exposure.
- RC.5 Internal Radiation Exposure  
Minimize internal exposure due to radioactivity associated with the plant.
- RC.6 Radioactive Effluents  
Minimize releases of radioactive effluents to the environment.
- RC.7 Solid Radioactive Waste  
Minimize solid radioactive waste volumes.
- RC.8 Transportation of Radioactive Material  
Meet the requirements for transportation of radioactive material.
- RC.9 Radioactive Contamination Control  
Minimize contaminated equipment and areas in the station and minimize personnel contamination.
- RC.10 Chemistry  
Ensure accurate measurement and effective control of chemistry parameters.

#### TECHNICAL SUPPORT

- TS.1 On-site Technical Support Organization and Administration  
Have a clearly defined on-site technical support organization that is adequately staffed, assigns responsibility, and delegates adequate authority for the accomplishment of required tasks.
- TS.2 Plant Efficiency and Reliability  
Optimize plant thermal efficiency and reliability.

TS.3 Nuclear Operating Experience Evaluation Program

Ensure industrywide and in-house operating experiences are evaluated and appropriate actions are taken to improve personnel awareness and equipment reliability.

TS.4 Plant Modifications

Provide a program to implement plant modifications in a timely manner while maintaining the quality of plant systems and components.

TS.5 On-site Reactor Engineering

Optimize nuclear reactor operations without compromising design or safety limits and control nuclear fuel handling activities to ensure safety of personnel and equipment.

ORGANIZATION AND ADMINISTRATION

OA.1 Organizational Objectives

Establish mission, goals, and objectives for the organizational units that improve station activities or maintain them at high levels of safety and reliability, and establish the process to achieve the mission, goals, and objectives.

OA.2 Organizational Structure

Provide an organizational structure that supports the effective management of nuclear power plant operation.

OA.3 Manpower Resources

Ensure that qualified individuals are available to fill all job positions supporting plant safety and reliability.

OA.4 Administrative Controls

Provide well-defined, organized, and effective administrative controls to direct the tasks, responsibilities, and practices within the organization to meet the specified mission, goals, and objectives.

OA.5 Management Quality Programs

Provide management with accurate indication of the extent of adherence to policies, administrative controls, codes, regulations, and effectiveness in meeting station mission, goals, and objectives.



OA.6 Surveillance Program

Provide surveillance programs to accomplish coordinated monitoring, inspection, and testing to ensure safe, reliable operation of station equipment and facilities.

OA.7 Industrial Safety

Provide an orderly working environment in which station personnel may carry out their work activities safely.

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