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1982 Evaluation

Prairie Island Nuclear Generating Plant

Northern States Power Company

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INPO

EVALUATION

of

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

Northern States Power Company

December 1982

SUMMARY

INTRODUCTION

The Institute of Nuclear Power Operations (INPO) conducted an evaluation of Northern States Power Company's Prairie Island Nuclear Generating Plant during the weeks of August 23 and 30, 1982. The Prairie Island Plant consists of two 507 megawatt (net electrical) Westinghouse pressurized water reactor plants. The plant is located on the Mississippi River in Southeast Minnesota. Unit 1 began commercial operation in December 1973 and Unit 2 in December 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 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 in excellent material condition and is being operated in a safe manner by an experienced and competent staff.

The following beneficial practices and accomplishments were noted:

The professional attitude and motivation of plant personnel are impressive.

The manner in which plant engineers are utilized to support operations and maintenance is particularly effective.

The management of personnel resources and the control of contract personnel are effective.

The overall results of the radiological protection program are excellent.

The interest and attention of the corporate structure in support of the station are evident.

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

The initial training and qualification program for Apprentice Plant Attendants needs upgrading.

The control of Work Request/Authorization (WRA) status needs improvement.

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 Northern States Power Company 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 Northern States Power Company management at an exit meeting on September 2, 1982. Findings, recommendations, and responses were reviewed with Northern States Power management on October 28, 1982.

To follow the timely completion of the improvements included in the responses, INPO requests a written status by June 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 Northern States Power Company.

Northern States Power Company

Response Summary

NSP concurs with INPO's conclusion that the Prairie Island Station "is in excellent material condition and is being operated in a safe manner by an experienced and competent staff." The results of INPO's latest evaluation provide helpful guidance to the plant in maintaining the standards of excellence INPO holds for the nuclear industry.

NSP recognizes that there are areas for improvement at Prairie Island and is pleased to provide positive responses to the INPO recommendations, as presented herein.

ORGANIZATION AND ADMINISTRATION

ON-SITE NUCLEAR SAFETY REVIEW COMMITTEE

PERFORMANCE OBJECTIVE: Review of station nuclear activities by a knowledgeable interdisciplinary group should ensure achievement of a high degree of nuclear safety.

Finding (OA.7-1)	**The formal tracking system for action items identified by the Operations Committee needs to be re-established.** Presently, action items identified by the Committee are not entered into the system. The last entry on the list of action items is dated April 1980.
Recommendation	Re-establish the formal tracking system for action items identified by the Operations Committee.
Response	A formal tracking system for Operations Committee action items and other commitments is being developed. This system will be in place by April 1, 1983.

OPERATIONS

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)

Several assistant plant equipment operators and plant attendants were not aware of the maximum or minimum values of monitored plant parameters. Since these values were not specified on round sheets, these operators were unsure whether readings required corrective action.

Recommendation

Establish a means for assistant plant equipment operators and plant attendants to determine maximum or minimum values for selected parameters on operating equipment.

Response

Maximum and minimum values will be added to log sheets for selected parameters on operating equipment by June 1, 1983.

Finding (OP.3-2)

The removal and subsequent replacement of hold tags for the temporary activation of equipment is not effectively controlled. Instances were noted where hold tags were moved without control room operator knowledge. Hold tags are allowed to be cleared for equipment testing by verbal authorization.

Recommendation

Revise the current equipment control procedure to include formal authorization and documentation requirements for hold cards removed and replaced during the temporary activation of equipment.

Response

An addition to the administrative control directive will be made that requires documentation if a temporary release of tagged equipment occurs. A note will be added to the active Work Request/Authorization which originated the placement of equipment tags. Such notes will be included for review in the shift supervisor's turnover procedure. This change will be made by June 1, 1983. This subject will be discussed in safety meetings with all personnel before January 1, 1983.

Finding (OP.3-3) **Several plant alarms and abnormal indications were not actively pursued and corrected.** Operators appeared to treat some alarm conditions as normal indications.

Recommendation Emphasize the need to actively investigate plant abnormalities and to take prompt corrective action where necessary.

Response The need to actively investigate plant abnormalities and to take prompt corrective action where necessary has been emphasized to operators.

Finding (OP.3-4) **The following Good Practice was noted: An effective method is used for controlling valve and circuit breaker lineups required for reactor protection.** The system includes the following:

a. durable and distinctive safeguards hold cards attached to selected valves and circuit breakers that identify the components and associated controlling devices

b. monthly verification that the components are properly aligned and cards are in the correct location

c. use of a log to maintain status of valve and circuit breaker positions

d. locking or securing (with a cable and snap hook) components in the required positions

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OPERATIONS FACILITIES AND EQUIPMENT

PERFORMANCE OBJECTIVE: Operational facilities and equipment should effectively support plant operation.

Finding (OP.6-1) **The labeling of plant components needs improvement.** Many instances were noted where equipment was not labeled. It is recognized that most plant valves and instruments are properly labeled.

Recommendation Review the current identification of plant components. Label those items not readily identifiable by other means.

Response

A survey will be taken to identify which additional plant components should be labeled. Based on the results of this survey, appropriate action will be taken to label equipment. The survey will be completed by April 1, 1983.

MAINTENANCE

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 system for determining the status of outstanding work requests needs improvement. Plant personnel cannot readily determine the status of outstanding work requests. Responsibility for maintaining overall status of work requests is not assigned.

Recommendation

Establish an effective means for determining the status of outstanding work requests. Responsibility for maintaining up-to-date status of outstanding work requests should be assigned.

Response

The system for maintaining work control status will be reviewed and necessary changes made. It is planned to hire another person for this area with responsibilities in the work control system by April 1, 1983.

PREVENTIVE MAINTENANCE

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

Finding (MA.5-1)

The following Good Practice was noted: The newly established preventive maintenance program for welding machines and rod ovens is comprehensive and effective. It covers all such equipment on site including portable welding machines and rod ovens. Effective functional tests are conducted to ensure proper equipment operation.

MAINTENANCE FACILITIES AND EQUIPMENT

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

Finding (MA.8-1)

Improved facilities are needed for the electrical maintenance department. The present area is congested and does not have adequate work space for large components. The supervisory work area is inadequate for performing administrative assignments.

Recommendation

Evaluate the electrical department shop and office facilities, and initiate action to provide adequate space for the conduct of electrical maintenance and for supervisory personnel to more efficiently carry out their responsibilities.

Response

A building addition is planned that will provide additional maintenance shop area. Expansion of the electric shop area is planned upon completion of the addition in December 1983.

TECHNICAL SUPPORT

TECHNICAL SUPPORT ORGANIZATION AND ADMINISTRATION

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

Finding (TS.1-1)

The following Good Practice was noted: The plant has an effective program for utilizing knowledgeable engineers to support plant operations. System engineers are involved in activities affecting their assigned systems, including surveillance, maintenance, modifications, reliability and performance monitoring, in-service inspection coordination, and outage planning. Other knowledgeable engineers serve in key functional roles such as radiation protection, quality assurance, and chemistry.

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.

SOER STATUS

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

Number of Recommendations	Action Taken
86	Satisfactory
32	Not applicable
18	Pending
1	Further review needed

The following recommendations are pending action:

SOER Number	Recommendation Number
81-15	3
81-17	2
82-6	1,2a,2b,3,4,5
82-7	1,2,3,4a,4b,4c,4d,4e,4f,5

The following recommendation needs further review:

SOER Number	Recommendation Number
81-6	2

An update on the status of each recommendation listed in the "pending action" or "need further review" categories shown 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.

Finding (TS.3-1)

The process for review of operating experiences needs improvement in the following areas:

a. In-house operational assessment corrective actions are not identified and implemented in a timely manner.

b. Personnel responsible for reviewing industrywide operating experience information do not receive all relevant information.

Recommendation

Improve the operating experience review program to ensure that corrective actions for Prairie Island Significant Operating Events are implemented without undue delay. Ensure that Nuclear Technical Services receives all relevant information, including Westinghouse technical bulletins, data letters, RADAR responses, and NRC industry event related documents.

Response

A formal tracking system for action items and commitments is being developed and will be in place by April 1, 1983. This will help improve the timeliness of corrective actions associated with plant Significant Operating Events.

The Nuclear Technical Services Department has been on informal distribution of vendor technical material. To ensure all relevant information is received, the department will be placed on formal distribution by December 1, 1982.

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)

Control of plant equipment setpoint changes needs improvement. The current method of documenting setpoint changes is not reflected in the procedure. Controlled documents that reflect setpoints are not always updated in a timely manner.

Recommendation

Review the current method of documenting plant equipment setpoint changes and revise the procedure accordingly. Ensure that controlled documents that reflect setpoints are updated in a timely manner.

Response The existing operating procedure will be replaced by administrative control procedures that properly control and expedite documentation of setpoint changes. The process for updating controlled documents that reflect setpoints will be modified to improve timeliness. This will be completed by October 1, 1983.

PLANT EFFICIENCY AND RELIABILITY MONITORING

PERFORMANCE OBJECTIVE: Performance monitoring activities should optimize plant thermal performance and reliability.

Finding (TS.6-1) **The program for monitoring plant performance needs improvement.** The performance of some individual systems is routinely evaluated by system engineers; however, the effect on overall plant thermal performance is not routinely analyzed and reported to plant management or used to improve overall plant performance.

Recommendation Determine, on a routine basis, the efficiency losses associated with systems contributing to overall plant thermal performance. Take appropriate measures to improve thermal performance, and report results to plant management.

Response The primary system calorimetric will be compared with plant gross electrical output, and any deviations from expected values will be reported to plant management. Corrective actions that result from evaluation of individual plant systems by the system engineers will be pursued. These measures will be implemented by January 1, 1983.

TRAINING AND QUALIFICATION

NON-LICENSED OPERATOR TRAINING AND QUALIFICATION

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

Finding (TQ.2-1)

Improvements are needed in the method used to qualify Apprentice Plant Attendants. The existing method does not ensure that newly qualified watchstanders possess adequate knowledge of their watchstations.

Recommendation

Upgrade the Apprentice Plant Attendant qualification program to ensure that required knowledge of plant systems is adequate for proper conduct of watchstation rounds. Knowledge requirements should include items such as system functions, major component locations, significance of log readings, and watchstation responsibilities. Ensure that Apprentice Plant Attendants' system knowledge is evaluated against the required knowledge prior to performing independent watchstation duties. The INPO document "Guidelines for Non-Licensed Operator Qualification Programs" (GPG-04) could be of assistance in this effort.

Response

The Apprentice Plant Attendant qualification program is being reviewed; corrective action will be initiated by April 1, 1983.

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)

Improvements are needed in the training provided for plant engineers on administrative and regulatory requirements. The training conducted in the current QA Training Program, which is designed to address administrative and regulatory topics, does not always provide useful information for plant personnel.

Recommendation

Provide plant-specific training for plant engineers on administrative and regulatory requirements including standards, regulations, and administrative procedures and controls. The "Regulatory and Corporate Requirements" portion of the proposed engineer training program, described in Northern States Power Production Training Program Policy #21, could be used as a framework for this training.

Response It is intended to develop the plant-specific training outlined in Policy #21 within six months and, by June 1, 1983, to provide this training to plant personnel including plant engineers.

TRAINING FACILITIES AND EQUIPMENT

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

Finding (TQ.8-1) **The following Good Practice was noted: Mockups and simulators are used effectively to enhance operator training.** Examples include a full-scale control room mockup used for training operators in systems and procedures and an electrical switching simulator used for training operators in switching procedures.

Finding (TQ.8-2) **Insufficient progress has been made in the program for updating plant system descriptions used for training to reflect as-built conditions.** Only two of approximately forty system descriptions have been updated.

Recommendation Provide additional resources and management emphasis as necessary to ensure program goals are met.

Response Additional resources will be provided to write system descriptions. It is intended to complete all system descriptions for training purposes by April 30, 1984.

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)

The following Good Practice was noted: An effective program has been established to collect, document, and trend radiological occurrences such as personnel skin and clothing contamination, violation of radiological protection practices, and high radiation exposures. All cases are investigated and documented with probable cause and other pertinent information. Data is compared to yearly radiological protection performance goals.

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 scope of the annual general employee retraining program in radiological protection needs to be expanded. Updated information such as changes in radiological protection procedures, appropriate radiological incidents and trends, and performance of practical skills are not included in the program.

Recommendation

Expand the general employee retraining program to provide a review of fundamental subjects, radiological protection procedures, appropriate radiological incidents, and performance of practical skills. Feedback from actual job performance should be included in the program to improve training effectiveness and usefulness.

Response

General employee retraining will reflect expanded emphasis on these topics by June 1, 1983.

PERSONNEL DOSIMETRY

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

Finding (RP.8-1) **Quality control checks on the thermoluminescent dosimeter (TLD) vendor for personnel dosimetry have shown consistently low values for TLD readings for several years.** The causes have not been identified and corrected, and the impact on personnel dosimetry records has not been determined.

Recommendation Perform an evaluation to determine the causes for the consistently low values obtained by the vendor on quality control TLDs. Then, take the necessary corrective actions, including a determination of the impact on personnel dosimetry records.

Response We have evaluated the TLD program and, after reviewing the results of calibration tests between Eberline, Battelle, and the University of Michigan, are satisfied with Eberline's results, particularly with mixed energy photon and beta results. We have also performed our own QA checks with Eberline using a Co^{60} source, and the results were satisfactory. Actions with the vendor have been completed. We will, however, continue to monitor the performance of the vendor.

RADIOACTIVE CONTAMINATION CONTROL

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

Finding (RP.9-1) **Personnel are not required to frisk after exiting posted low level contaminated areas.** This could result in low level contamination of personnel not being detected.

Recommendation Establish requirements for performing whole-body frisking after exiting posted contaminated areas with removable surface contamination levels greater than 1000 dpm/100cm^2. Ensure that workers are aware of the personnel frisking requirements.

Response We have reviewed the frisking requirements at Prairie Island and have come to the following conclusions:

a. The plant history and policy of maintaining low contamination levels (90 percent of posted areas at less than 2000 dpm/100 cm^2) minimizes the likelihood of personnel contamination that would be detectable with conventional frisking techniques.

b. The National Nuclear Gamma-10 portal monitors sometimes find contamination that cannot be detected by slow careful frisking with a pancake probe. These monitors are more effective than friskers in determining contamination spread over an area, as opposed to single spots of contamination.

c. Experience has shown that the likelihood for personnel contamination significantly increases when area contamination levels are above 10,000 dpm/100 cm^2. Therefore, we have required frisking when exiting these areas.

d. Our history of personnel contamination and whole-body counting results indicates the present program to be satisfactory.

Based on the above, we feel that the present frisking policy is appropriate and sufficient for the radiation safety of the workers at the plant; however, our personnel contamination control policies will be reviewed in depth, and corporate policies will be established by March 31, 1983.

INPO COMMENT The present frisking policy at the Prairie Island Nuclear Plant that requires personnel to perform a whole-body frisk at the exit of posted contaminated areas only if removable surface contamination levels are greater than 10,000 dpm/100 cm^2 is not consistent with best industry practices and is contrary to INPO's "Performance Objectives and Criteria for Plant Evaluations," January 1982. In addition, INPO's experience indicates that the majority of skin contaminations in the industry are single spots in the range of 3000-5000 dpm/100 cm^2 that are not detectable by the most sensitive portal monitors currently available.

CHEMISTRY

CHEMISTRY CONTROL

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

Finding (CY.3-1)

The following Good Practice was noted: The station maintains coolant lithium concentration high in the range of vendor specifications. This practice minimizes plant radiation levels caused by crud build-up.

Finding (CY.3-2)

Some chemistry analytical procedures need improvement. For example, the current procedure for iron does not measure soluble iron in the feedwater train, and the procedure for determining reactor coolant pH does not require temperature correction.

Recommendation

Review chemistry procedures for completeness, accuracy, and conformance to approved standards.

Response

Chemistry procedures for iron and pH will be reviewed for completeness, accuracy, and conformance to standards by January 1, 1983. The chemistry manual is reviewed on a regular and periodic basis.

Finding (CY.3-3)

Silica analysis is not performed on the reactor coolant or on the contents of the boric acid storage tanks. An analysis performed at the request of the evaluator indicated levels at or above plant specifications.

Recommendation

Determine the silica concentration in the reactor coolant system and the boric acid storage tanks on a regular basis. Assess the potential effects of high silica concentration, and take corrective action if necessary.

Response

Silica analysis will be performed on the reactor coolant system and boric acid storage tanks on a periodic basis. Based on discussions with Westinghouse concerning silica, appropriate limits and controls will be established by January 1, 1983.

LABORATORY ACTIVITIES

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

Finding (CY.4-1)

Emphasis is needed on procedural adherence and radiological protection work practices in chemistry laboratory activities. Good radiological protection work practices are not always followed. Additionally, analytical procedures are not always adhered to, and analytical results are sometimes in error.

Recommendation

Emphasize to all chemistry personnel the importance of adhering to good radiological work practices and of following analytical procedures precisely.

Response

The importance of adhering to good radiological work practices and of following analytical procedures precisely has been emphasized to all radiation protection specialists. This item is considered complete.

APPENDIX I

Summary of Outstanding Response Action from Previous Evaluation (1981)

(INPO Procedure MA-405, Revision 3)

Finding (Reference Criterion A)

Comprehensive guidelines or procedures are not available to describe the methods and responsibilities for implementing the Maintenance Department maintenance history program.

Recommendation

A written policy and suitable guidelines should be developed to describe the maintenance history program. The guidelines should be sufficiently comprehensive to describe history record format, responsibilities, access, and methods to evaluate and trend equipment performance.

Response

The machine history program description will be rewritten to better reflect present activities and the responsibilities for accomplishing program objectives by January 1, 1982.

Status

The revised completion date is April 1, 1983.

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.3.1 Management Assessment

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

OA.3.2 Quality Programs

Quality programs should ensure the effective performance of activities important to nuclear safety.

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.

OA.7 On-site Nuclear Safety Review Committee

Review of station nuclear activities by a knowledgeable interdisciplinary group should ensure achievement of a high degree of nuclear safety.

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.