



Nuclear Management Company, LLC
Prairie Island Nuclear Generating Plant
1717 Wakonade Dr. East • Welch MN 55089

November 16, 2000

Regional Administrator
Region III
US Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

Attn: Emergency Preparedness Section
Thomas Ploski

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22
50-306 DPR-60

Emergency Plan Exercise

Enclosed are two copies of the 2000 Prairie Island Nuclear Generating Plant (PINGP) Emergency Plan Exercise Rerun Objectives and Narrative Summary for the exercise rerun at PINGP. These documents are being submitted in response to your verbal request to provide this information for the emergency plan exercise rerun. State and local governments will partially be participating in this exercise.

If you have any questions regarding this document, please contact Lee Finholm, Drill Exercise Coordinator, at (651) 388-1165 ext. 4035.

Lee Finholm
Drill Exercise Coordinator

encl: 2 (enclosures are only with the copy to Chief, Emergency Preparedness Section)

- c: Chief, Emergency Preparedness Section (with enclosures)
Don Schuelke (w/o enclosures)
Al Johnson (w/o enclosures)
NRC Resident Inspector (w/o enclosures)
File: PITC E-Plan 2000 Exercise File (w/o enclosures)

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**PRAIRIE ISLAND NUCLEAR GENERATING PLANT
EMERGENCY PLAN EXERCISE RERUN**

December 13, 2000

Reviewed By: _____ **Date:** _____
Health Physics/Rad Protection

Reviewed By: _____ **Date:** _____
SRO

Approved By: _____ **Date:** _____
Emergency Plan Coordinator

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SECTION I : INTRODUCTION

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INTRODUCTION

Prairie Island Nuclear Generating Plant (PINGP) conducts periodic emergency preparedness drills and exercises in the interest of assuring that the health and safety of the public is protected in the event of a severe radiological incident at PINGP.

This exercise, scheduled to be conducted on December 13, 2000, will include the mobilization of personnel and resources, such that the capability to respond adequately to a simulated accident at the PINGP can be verified. The exercise should demonstrate that PINGP individuals assigned responsibilities during a radiological emergency are adequately trained to perform according to current plans and procedures.

Exercise participants will not have prior knowledge of the scenario. This emergency plan exercise will be observed and critiqued by PINGP personnel and the Nuclear Regulatory Commission (NRC).

This manual has been prepared to assist the exercise controllers, evaluators and observers in the conduct and evaluation of this exercise. All the information and data necessary to properly conduct the exercise in an efficient and coordinated manner is broken down as follows:

SECTION II: OBJECTIVES AND GUIDELINES - Defines the objectives and sets forth guidelines for the conduct of the exercise to meet those objectives. This section also lists the PINGP and Corporate Emergency Plan Implementing Procedures expected to be implemented during the exercise.

SECTION III: CHALLENGING ASPECTS OF SCENARIO - Identifies the elements of the scenario which exceed the minimum requirements and which present significant challenges to participants. This section also identifies unique aspects of conducting the exercise which are considered to be realistic (such as the use of mock-ups) and add value to the training experience during the exercise.

SECTION IV: PARTICIPANTS - Identifies the PINGP personnel assigned to fill key Emergency Response Organization (ERO) positions participating in the exercise. This section also includes special participant instructions used to brief key PINGP participants in the rules of conduct and restrictions during the exercise.

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SECTION V: CONTROLLERS AND EVALUATORS - Identifies the PINGP controllers assigned to issue messages to exercise participants and to monitor PINGP Emergency Response Facility (ERF) activities. This section also contains special controller/evaluator instructions used to train and guide the controllers and evaluators. Report forms are included to document their observations and recommendations with respect to the objectives and guidelines.

SECTION VI: EXERCISE SCENARIO - Describes the postulated sequence of events occurring at PINGP which will require the various onsite and offsite Emergency Response Organizations to respond. The exercise scenario is divided into the following parts:

- PART 1:** **Narrative Summary** - A brief description of the events and emergency conditions which are postulated to occur at the specified time.
- PART 2:** **Messages** - Information to be issued to specified exercise participants at specified times. Each message informs the appropriate participant of postulated condition or event to which the participant is expected to respond.
- PART 3:** **Simulator Operator Guide** - A narrative summary and timeline for simulator malfunctions, inputs, outputs and overrides to be entered on the simulator by the simulator operator. These inputs will cause the simulator to simulate the accident scenario events.
- PART 4:** **Plant Response Data** - Key reactor plant response data indicating plant parameters vs. time. If the simulator fails, this data is given to the Control Room, TSC, and EOF personnel as requested, including trends of data up to the time of the request. Data beyond the time of the request is not provided. This data will not be produced for this exercise.
- PART 5:** **Process and Area Radiation Monitors** - Data sheets indicating the postulated readings of process and area radiation monitors at specified times. This data is provided to appropriate participants when they simulate the actions of obtaining a reading.
- PART 6:** **Reactor Coolant Activity** - Data sheets indicating the concentrations of significant radioactive isotopes, hydrogen, pH, and chlorides postulated to exist in the reactor coolant at specified times. This data is provided to Chemistry personnel when they simulate analyzing reactor coolant samples.

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- PART 7:** **Containment and/or Steam Generator Activity** - Data sheets indicating the concentration of significant radioactive isotopes postulated to exist in the containment and/or affected steam generator(s) at specified times. This data is provided to Chemistry personnel when they simulate obtaining and analyzing containment and/or steam generator liquid samples.
- PART 8:** **Shield Building Stack Activity** - Data sheets indicating activity released , at specified times, from the Shield Building Stack. This data is provided to the Radiation Protection personnel when they simulate obtaining and analyzing stack samples. This data will not be produced for this exercise.
- PART 9:** **Air Ejector Activity** - Data sheets indicating the activity released, at specified times, through the air ejector. This data is provided to radiation protection personnel when they simulate obtaining and analyzing air ejector samples.
- PART 10:** **Onsite Exposure Levels** - Site layout sheets indicating exposure levels postulated to exist at specified times. This data is provided to onsite survey teams when they simulate onsite surveys at specified locations.
- PART 11:** **Plant Building Exposure Levels** - Floor plan survey sheets of the plant indicating exposure and air contamination levels postulated to exist at specified times. This data is provided to inplant survey teams when they simulate monitoring these areas.
- PART 12:** **Offsite Survey Readings** - Data sheets indicating the instrument readings and resulting concentrations postulated to exist at specified times at downwind locations. The instrument readings are provided to offsite monitoring teams as they simulate obtaining such data. The concentration data is used by the controller to verify that the offsite monitoring team has calculated the proper values to be reported.
- PART 13:** **Meteorological Data** - Data sheets indicating wind speed, direction and ΔT postulated to exist at specified times. This data is to be provided in the TSC, EOF, and Simulator Control Room when real meteorological data is retrieved.
- PART 14:** **Weather Forecasts** - Data sheets indicating the postulated weather forecasts at specified times. This data is provided to the Offsite Dose Assessment personnel when actual Weather Forecast Data is retrieved.

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- PART 15:* **Offsite Sampling** - Data sheets indicating the results of environmental samples for ground or water contamination. This data is provided to the Radiation Protection personnel after they demonstrate obtaining and analyzing the samples. This data will not be produced for this exercise.
- PART 16:* **Ingestion Pathway Data** - Data sheets indicating the results of post-accident environmental samples of foodstuffs from the Ingestion Pathway EPZ. This data will not be produced for this exercise.

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SECTION II : OBJECTIVES AND GUIDELINES

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DRILL OBJECTIVES AND GUIDELINES

Prairie Island Nuclear Generating plant (PINGP) will exercise its Emergency Response Plan on December 13, 2000. The exercise will include mobilization of the organizations named below such that the capability to adequately respond to a simulated accident at PINGP can be verified. State and County agencies will have minimum participate in this exercise.

Objectives and guidelines have been developed for the conduct of this exercise. PINGP's objectives and guidelines are contained in the text of this section.

Exercise participants will include the following organizations:

A. Xcel/Nuclear Management Company (NMC)

1. **PINGP Emergency Response Organization**

- a. Control Room (Simulator)
- b. Technical Support Center
- c. Operations Support Center
- d. Emergency Operations Facility

2. **Headquarters Emergency Center (HQEC) - Communication Only**

- B. Dakota, Goodhue/City of Red Wing, PI Tribe, and Pierce Counties and supporting local agencies, as identified in their Emergency Response Plans for the Prairie Island Nuclear Generating Plant, will provide communication only.
- C. State of Minnesota - Division of Emergency Management and supporting agencies, as identified in the Minnesota Emergency Response Plan for nuclear power plants, will provide communication only.
- D. State of Wisconsin - Division of Emergency Government and supporting agencies, as identified in the Wisconsin Radiological Incident Response Plan for nuclear power plants, will provide communication only.

Active participation in the exercise will only be required of the above listed organizations. If the exercise scenario requires that any other organizations and/or officials be contacted, they shall be contacted only for the purpose of checking communications.

Each objective is followed by guideline statements which define the "extent of participation" by the participants. Plant and NMC Implementing Procedures (EIPs), which may be used to support the objective, are also listed for each objective.

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Summary List of Objectives selected for demonstration.

ANNUAL ELEMENTS

Objective # 1.0	<u>Accident Detection and Assessment</u>	(Selected)
Objective # 2.0	<u>Emergency Classification</u>	(Selected)
Objective # 3.0	<u>Notification of Onsite & Offsite Emergency Responders</u>	(Selected)
Objective # 4.0	<u>Communications</u>	(Selected)
Objective # 5.0	<u>Radiological Exposure Control</u>	(Selected)
Objective # 6.0	<u>Protective Action Recommendations</u>	(Selected)
Objective # 7.0	<u>Staff Augmentation</u>	
Objective # 8.0	<u>Shift Staffing</u>	(Selected)

QUINQUENNIAL ELEMENTS

Objective # 9.0	<u>Off-hours Staffing</u>	
Objective # 10.0	<u>Activation of Emergency News Center</u>	
Objective # 11.0	<u>Use of Fire Control Teams</u>	
Objective # 12.0	<u>Use of First Aid and/or Rescue Teams</u>	
Objective # 13.0	<u>Use of Medical Support Personnel</u>	
Objective # 14.0	<u>Use of Headquarters Support Personnel</u>	
Objective # 15.0	<u>Use of Security Personnel to provide Prompt Access for Emergency Equipment and Support</u>	
Objective # 16.0	<u>Use of Backup Communications</u>	
Objective # 17.0	<u>Rumor Control</u>	
Objective # 18.0	<u>Use of Emergency Power</u>	Not Applicable
Objective # 19.0	<u>Evacuation of Emergency Response Facilities (ERF) and Relocation of Backup ERF's</u>	
Objective # 20.0	<u>Ingestion Pathway</u>	
Objective # 21.0	<u>Field Monitoring</u>	(Selected)
Objective # 22.0	<u>Source Term Analysis</u>	(Selected)
Objective # 23.0	<u>Post-Accident Sampling</u>	
Objective # 24.0	<u>Use of Potassium Iodide</u>	
Objective # 25.0	<u>Assembly and Accountability</u>	
Objective # 26.0	<u>Recovery and Reentry</u>	

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I. ANNUAL ELEMENTS

Objective # 1.0 Accident Detection and Assessment

Given simulated accident conditions, PINGP site personnel shall demonstrate detection and assessment of plant operational parameters and operational data.

Guidelines:

- 1.1 Plant systems and effluents (non-radiological) will be monitored and assessed in the Simulator Control Room, TSC and EOF for accident conditions.
- 1.2 Radiological assessment will include initial and continuing assessment of the accident through evaluation process, area radiation monitors, and process radiation monitors.

The following EPIPs may be used to support the objectives stated above.

PINGP F3-2	Classifications of Emergencies
PINGP F3-6	Activation and Operation of TSC
PINGP F3-7	Activation and Operation of OSC
PINGP F3-8	Recommendations for Offsite Protective Actions
PINGP F3-13	Offsite Dose Calculations
PINGP F3-17	Core Damage Assessment
PINGP F3-20	Manual Determination of Radioactive Release Concentration
PINGP F3-24	Recordkeeping During an Emergency
PINGP F3-26.1	Operation of the TSC ERCS Display
PINGP F3-26.2	Radiation Monitor Data on ERCS
PINGP F8-3	Activation and Operation of EOF
PINGP F8-5	Offsite Dose Assessment and Protective Action Recommendations
PINGP F8-10	Recordkeeping in the EOF

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Objective # 2.0 Emergency Classification

Given simulated accident conditions, appropriate PINGP site personnel shall correctly identify and classify the emergency as an *NUE*, *ALERT*, *SITE AREA* or *GENERAL EMERGENCY* as specified in the Prairie Island EPIP F3-2.

Guidelines:

- 2.1 When given initiating conditions of an emergency action level, the Emergency Director/Emergency Manager will classify the emergency consistent with the PINGP's emergency classification scheme. The postulated plant conditions will necessitate classifications beginning at an *ALERT* and escalating to a *GENERAL EMERGENCY*.
- 2.2 The responsible person will find the initiating conditions of the accident scenario in F3-2 "Classifications of Emergency".

The following EPIPs may be used to support the objectives stated above.

PINGP F3-2 Classifications of Emergencies

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Objective # 3.0 Notification of Onsite and Offsite Emergency Responders

Given simulated accident conditions, PINGP site personnel shall promptly complete accident notifications to the appropriate State, County/City and Tribal agencies (15 minutes), the NRC (1 hour), PINGP personnel and Xcel/NMC Emergency Response Organization (1 hour).

Guidelines:

- 3.1 Notifications of emergency classifications to the States of Minnesota and Wisconsin, the counties of Dakota, Pierce and Goodhue/City of Red Wing and the PI Tribe will be completed within 15 minutes. Initially, these notifications will be made by the Shift Emergency Communicator (SEC) at the plant. Emergency communicators at the Emergency Operations Facility (EOF) will assume these responsibilities as it becomes operational.
- 3.2 The SEC or EOF Communicator will notify and mobilize Xcel/NMC Emergency Response personnel at the **ALERT** level of classification (within 1 hour).
- 3.3 The SEC or Communicator will notify state and local organizations using the plant or EOF Notification Report Form.
- 3.4 The Control Room staff or SEC will notify the PINGP personnel of an emergency classification and changing emergency conditions via the plant page from the TSC as necessary.

The following EPIPs may be used to support the objectives stated above.

PINGP F3-3	Responsibilities During an NUE
PINGP F3-4	Responsibilities During an Alert, Site Area or General Emergency
PINGP F3-5	Emergency Notifications
PINGP F3-5.1	Switchboard Operator Duties
PINGP F8-3	Activation and Operation of EOF
PINGP F8-2	Responsibilities During an Alert, Site Area or General Emergency in the EOF (Sec. 4.5)

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Objective # 4.0 Communications

Given simulated accident conditions, PINGP site personnel shall initiate and maintain communication links with Xcel/NMC Emergency Response Organizations, and state and local Emergency Response Organizations.

Guidelines:

- 4.1 The following communications will be used.
 - 4.1.1 24-hour communication links for notification and activation of state and local EROs, and if appropriate, their alternatives.
 - 4.1.2 Other communication links to state/local EROs as appropriate.
 - 4.1.3 Communication links to Federal Emergency Response Organizations as appropriate.
 - 4.1.4 Communication links among the plant and the EOF, HQEC, Radiation survey teams and JPIC.
 - 4.1.5 Communication links that activate the various emergency organizations.
 - 4.1.6 Communication links with the NRC Region III and NRC Headquarters and the EOF.

NOTE:	<i>The following objective would normally be demonstrated during the annual Emergency Medical Drill.</i>
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- 4.2 The communications link between the plant and the fixed or mobile medical support facilities will not be demonstrated.
- 4.3 Emergency Notification Follow-up Message form will be generated on a periodic basis from either the TSC or EOF, depending on what organization is in charge of communications with State EROs.
- 4.4 Procedures and equipment used to alert, notify and mobilize the Xcel/NMC Emergency Response Organization will be demonstrated.

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4.5 PINGP will demonstrate communications to state/local emergency organizations regarding recommendations for protective actions to the general public within the 10-mile EPZ regarding changes in protective action recommendations.

The following EPIPs may be used to support the objectives stated above.

PINGP F3-5	Emergency Notifications
PINGP F3-6	Activation and Operation of TSC
PINGP F3-7	Activation and Operation of OSC
PINGP F3-8	Recommendations for Offsite Protective Actions
PINGP F3-8.1	Recommendations for Offsite Protective Actions for the On-Shift Emergency Director/Shift Supervisor
PINGP F3-15	Responsibilities of the Radiation Survey Teams during a Radioactive Airborne Release
PINGP F3-16	Responsibilities of the Radiation Survey Teams during a Radioactive Liquid Release
PINGP F4	Medical Support and Casualty Care
PINGP F8-2	Responsibilities During an Alert, Site Area or General Emergency in the EOF
PINGP F8-3	Activation and Operation of EOF
PINGP F8-5	Offsite Dose Assessment and Protective Action Recommendations

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Objective # 5.0 Radiological Exposure Control

Given simulated accident conditions, PINGP site personnel shall initiate and maintain a program of emergency radiological exposure control.

Guidelines:

- 5.1 Emergency Worker and Lifesaving Activity Protective Action Guides may be considered for undertaking corrective actions, performing assessment actions, and performing personnel decontamination.
- 5.2 Procedures for authorizing doses in excess of 10CFR20 may be considered, as appropriate.
- 5.3 Dosimetry shall be issued and read and recorded at appropriate intervals in the various emergency centers.
- 5.4 Decontamination action levels shall be considered and appropriate decontamination completed, as appropriate.
- 5.5 Radiological monitoring of personnel evacuated from the site will not be demonstrated. A local, plant or site evacuation will not be demonstrated.
- 5.6 The need for respiratory protection, protective clothing and radioprotective drugs will be considered, as appropriate.

The following EIPs may be used to support the objectives stated above.

PINGP F3-4	Responsibilities During an Alert, Site Area or General Emergency
PINGP F3-6	Activation and Operation of TSC
PINGP F3-7	Activation and Operation of OSC
PINGP F3-9	Emergency Evacuation
PINGP F3-11	Search and Rescue
PINGP F3-12	Emergency Exposure Control
PINGP F3-18	Thyroid Blocking Agent
PINGP F3-19	Personnel Monitoring and Decontamination
PINGP F3-21	Establishment of a Secondary Access Control
PINGP F3-24	Recordkeeping During an Emergency
PINGP F8-3	Activation and Operation of EOF
PINGP F8-3	Radiological Monitoring and Control at the EOF

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Objective # 6.0 Protective Action Recommendations

Given simulated accident conditions, PINGP site personnel shall develop and promptly communicate protective action recommendations for the protection of the health and safety of the public.

Guidelines:

- 6.1 Recommended protective actions for the general public offsite will be considered and communicated to the appropriate state agencies as appropriate.

The following EPIP's may be used to support the objectives stated above.

PINGP F3-1	Onsite Emergency Organization
PINGP F3-5	Emergency Notifications
PINGP F3-8	Recommendations for Offsite Protective Actions
PINGP F3-8.1	Recommendations for Offsite Protective Actions for the On-Shift Emergency Director/Shift Supervisor
PINGP F3-13	Offsite Dose Calculations
PINGP F8-3	Activation and Operation of EOF
PINGP F8-5	Offsite Dose Assessment and Protective Action Recommendations

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Objective # 8.0 Shift Staffing

Given simulated accident conditions, PINGP site personnel shall demonstrate normal shift staffing as stated in the appropriate Emergency Plan.

Guidelines:

- 8.1 Normal staff personnel will demonstrate adequate shift staffing of emergency organization positions.
- 8.2 The Interim Emergency Director position and his associated responsibilities will be demonstrated.
- 8.3 Turnover from the Interim Emergency Director to the designated Emergency Director will be demonstrated.
- 8.4 Specified positions in the Emergency Plan as stated in the Participant section will demonstrate their assigned duties.

The following EPIPs may be used to support the objectives stated above.

PINGP F3-1	Onsite Emergency Organization
PINGP F3-3	Responsibilities During an NUE
PINGP F3-4	Responsibilities During an Alert, Site
	Area or General Emergency
PINGP F8-3	Activation and Operation of EOF

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II. QUINQUENNIAL ELEMENTS

Objective # 21.0 Field Monitoring

Given simulated accident conditions, PINGP personnel shall demonstrate monitoring of offsite radiological releases through a program of surveying, sampling and analyzing.

Guidelines:

- 21.1 Field Monitoring teams from Prairie Island will be dispatched; Monticello Field Monitoring Teams will **NOT** be dispatched.
- 21.2 Monitoring will include the collection and/or analysis of beta/gamma surveys, contamination surveys and air samples as required.
- 21.3 Monitoring of air will be demonstrated or simulated as appropriate. Monitoring of water and soil will not be demonstrated.

The following EPIPs may be used to support the objectives stated above.

PINGP F3-15	Responsibilities of the Radiation Survey Teams During a Radioactive Airborne Release
PINGP F8-3	Activation and Operation of EOF
PINGP F8-6	Radiological Monitoring and Control at the EOF

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Objective # 22.0 Source Term Analysis

Given simulated accident conditions, PINGP personnel shall demonstrate the capability for determining the magnitude and impact of a radioactive release.

Guidelines:

- 22.1 The Meteorological Information and Dose Assessment System (MIDAS) will be used to estimate the total amount of activity release.
- 22.2 MIDAS will be used to determine projected doses under varying meteorological conditions.
- 22.3 Manual dose projections may be demonstrated in this Drill.
- 22.4 The Radiation Monitoring teams will be dispatched to verify the dose projections.
- 22.5 Iodine sampling will be completed as appropriate by the field survey teams.
- 22.6 Dose projections from MIDAS or actual field data will be used to determine protective action recommendations.

The following EIPs may be used to support the objectives stated above.

PINGP F3-4	Responsibilities During an Alert, Site Area or General Emergency
PINGP F3-8	Recommendations for Offsite Protective Actions
PINGP F3-13	Offsite Dose Calculations
PINGP F3-15	Responsibilities of the Radiation Survey Teams During a Radioactive Airborne Release
PINGP F8-5	Offsite Dose Assessment and Protective Action Recommendations

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SECTION III : CHALLENGING ASPECTS OF SCENARIO

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The E-Plan 2000 Exercise Rerun incorporates several challenging elements which will provide plant personnel the opportunity to demonstrate their ability to detect, assess and mitigate the conditions.

In addition to the challenging makeup of this scenario, several other elements enhance the complexity of the scenario, including the following:

- The operational scenario will be conducted on the training Simulator Control Room (SCR) which will provide data to the Emergency Response Organization (ERO) through the Emergency Response Computer System (ERCS).
- Radiological conditions will challenge radiation protection personnel to demonstrate dose assessment and decision-making capabilities in ALARA for emergency response personnel. This always adds a degree of difficulty for the small-staffed Radiation Protection department.
- Radiological Field Teams will be dispatched in cold weather (winter) conditions.
- The initial challenge will be a security event involving a disgruntled employee who has sabotage some plant equipment, an unauthorized vital area exit, and the commandeering a non-vital area. The initial challenge to operations and the TSC/EOF assessors will be conditions, driven by procedures, indicating a potential of an RCS release into containment; however, they will be given a success path to mitigate this condition. The scenario will then develop into a SGTR with a release to the environment that can not be isolated.
- Repair teams and operators will be dispatched from the OSC for damage assessment and repair.

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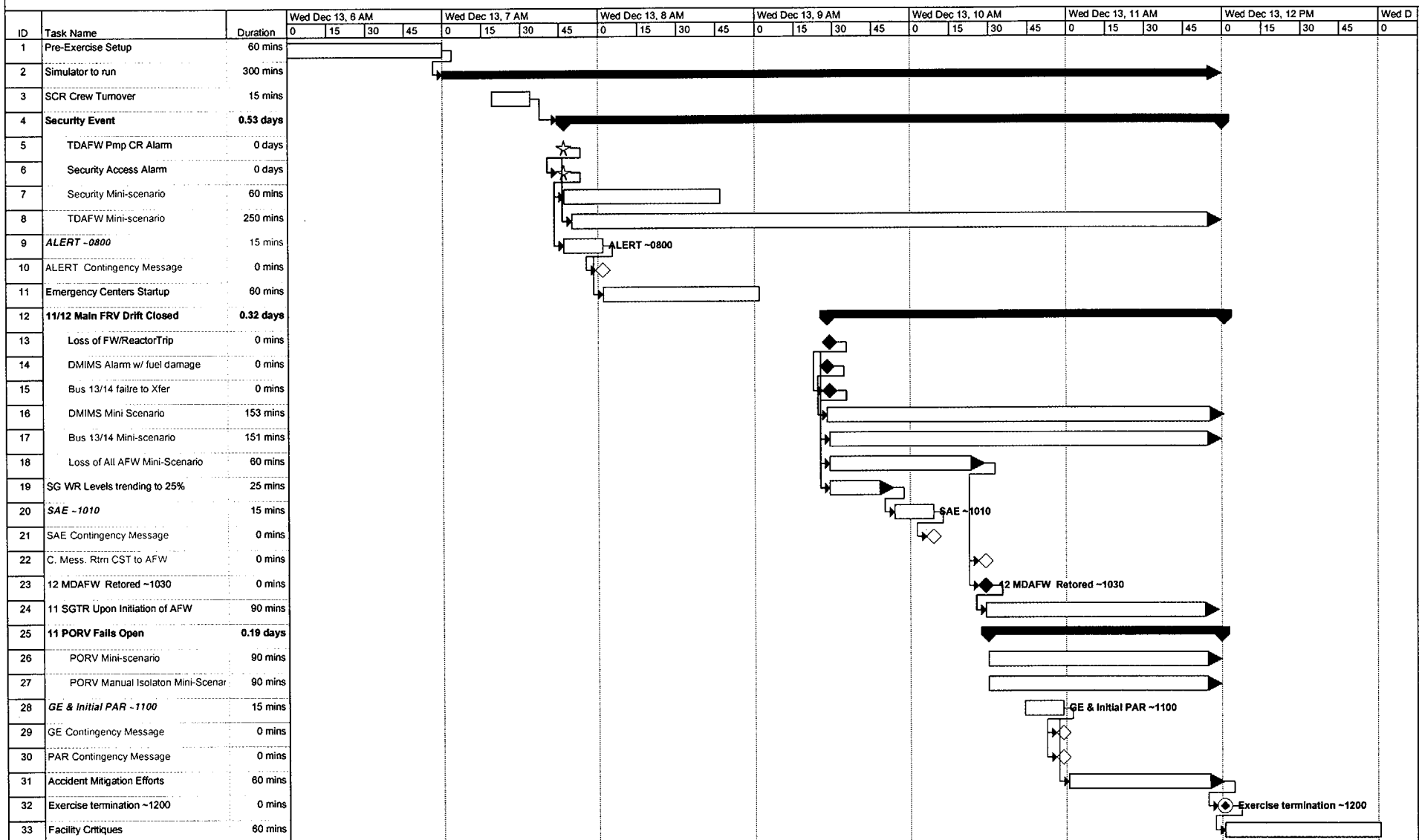
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PINGP 2000 EP EXERCISE RERUN SCENARIO AND TIMELINE



Project: ExRunTimeline
Date: Thu 11/18/00

Task
Split

Progress
Split

Progress
Milestone

Summary
Rolled Up Task

Summary
Rolled Up Task

Rolled Up Split
Rolled Up Milestone

Rolled Up Split
Rolled Up Milestone

Rolled Up Progress
External Tasks

Rolled Up Progress
External Tasks

Project Summary
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SECTION VI Part 1 : NARRATIVE SUMMARY

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Scenario Introduction

This scenario will provide opportunity for the PINGP Emergency Response Personnel to implement the PINGP Emergency Plan. In addition the scenario will provide opportunity for three accurate and timely classifications, one accurate and timely PAR and four accurate and timely notifications.

The scenario is initiated by an annunciator received in the simulated Control Room indicating 11 Turbine Driven Feedwater (TDAFW) Pump overspeed trip while the pump is not running. This is followed by an alarm in the Security Central Alarm Station (CAS) of an unauthorized exit from the West door of the Auxiliary Feedwater Pump/Instrument Air Room. A disgruntled contract employee, prior to the event, had sabotaged the following equipment in the plant:

- 11TDAFW pump trip throttle valve, requiring complete throttle valve replacement.
- 12 and 21 MDAFW pump suction from cooling water system made inoperable.
- Manual outlet valves from the three condensate storage tanks have been shut and tampered with to prevent reopening.
- 11 and 12 main feedwater regulation valves (FRV) control program sabotaged to fail closed at a predetermined time simultaneously.

The disgruntled contract employee commandeers the non-vital D-3/Construction Lunchroom upon leaving the AFW pump and Instrument Air room.

Operations and Security will investigate the cause of the alarms. Security will determine that there is an on going security threat and the Shift Manager will declare an ALERT.

Security will take charge of events associated with the disgruntled contract employee in the non-vital area. Operations and Security will continue to investigate the event and condition of the plant.

Mid-morning 11 and 12 FRV will drift closed causing a trip signal tripping the reactor and turbine. Non-safeguard electrical buses 13 and 14 will attempt to auto-transfer from the 1M transformer to the 1R transformer, but will fail to transfer. Condenser vacuum will decrease eventually resulting in a loss of steam dump to the condenser.

Within one minute of the reactor trip, a Digital Metal Impact Monitoring System (DMIMS) alarm will be received on the Emergency Response Computer System (ERCS) alarm display and printer followed by increased readings on the Chemical and Volume Control System (CVCS) letdown and RCS loop radiation monitors.

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12MDAFW Pump will start and trip due to low suction pressure. If Operations attempts to cross connect 21 MDAFW Pump to Unit 1, it will also trip. Should this happen, Operations should commence Unit 2 shutdown within one hour.

Approximately 25 minutes after the Unit 1 reactor and turbine trip the levels in both Unit 1 SGs will trend to less than 25%. This should result in reclassifying the event to a Site Area Emergency (SAE). The reclassification should be initiated from either the Technical Support Center (TSC) or Emergency Operations Facility (EOF). The operations and maintenance repair crews will be given a success path for restoring suction to the AFW pumps from at least one of the condensate storage tanks.

Operations will reinitiate auxiliary feedwater to both SGs. 11 SG will experience a steam generator tube rupture (SGTR) when auxiliary feedwater is established to 11 SG. 11 SG PORV will be stuck open ~50% providing a radioactive release path to the environment. Safety injection will be required due to RCS low pressure and/or Pressurizer low level. Conditions for a GENERAL EMERGENCY have been met. The re-classification and initial PAR should be initiated from the EOF.

The exercise will be terminated after an appropriate amount of participation time in the GENERAL EMERGENCY.

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TIME

EVENT SUMMARY

NARRATIVE SUMMARY AND TIMELINE

Wednesday, December 13, 2000

INITIAL PLANT CONDITIONS

- System Grid in Condition 7
- Winter season with winds from 23⁰ at 6-10 mph. No precipitation.
- Unit 1
 - 100% power, middle of cycle
 - 218 Steps on Control Rod Bank D, all other banks at 228 steps
 - 812 ppm RCS Boron concentration
 - RO conducting 10 gallon dilutions eight times a shift for T_{ave} control
 - 11 Condensate Pump tagged out for motor replacement.
 - Normal electrical power configuration
- Unit 2
 - 100% power
 - No major equipment out of service
 - Normal electrical power configuration

- 0715 SCR Operators briefing for shift change.
- 0730 SCR Operators takes duty on the simulator.
- 0745 Disgruntled contract employee breaks 11 TDAFW Pump trip throttle valve, causing alarm in the control room:
- Control room will dispatch an operator to investigate.
 - Will determine a 72 hour LCO action per TS 3.4.B.2.a
- 0746 Security CAS will receive an alarm for an unauthorized opening of Unit 2 AFW Pump/Instrument Air Room door.
- Security officer will be dispatched to investigate.
- 0745-0800 Turbine Building Operator will report damage to the 11 TDAFW Pump Trip Throttle Valve.
- SCR Operators may ask for further investigation.
 - Security will identify unauthorized individual. Individual will commandeer non-vital area of plant, D-3 Diesel Generator Room.

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TIME	EVENT SUMMARY
~0800	Security should notify control room of situation. - An ALERT should be declared per EAL-16B, "Ongoing Security Compromise". - Further investigations for sabotage should be initiated and repair teams will be dispatched as appropriate.
0800-0815	An ALERT per EAL-16B, "Ongoing Security Compromise" should be declared.
~0815	Contingency message issued to declare an ALERT if emergency conditions have not been identified.
0900	Plant emergency response facilities ERFs and EOF should be operational within 60 minutes of the ALERT declaration and the turnover between the TSC and EOF completed or nearly completed.
0930	The 11 and 12 FRV fail closed simultaneously. - SCR Operators may attempt to manually open FRVs and/or FRV bypass valves. - Reactor and turbine trip will occur. - When the reactor trips, a part will become loose in the reactor, causing fuel damage. A DMIMS alarm will be received on ERCS. CVCS Letdown Radiation Monitor will alarm and RCS Loop Radiation Monitors R70 and R71 levels will be greater than normal for the plant condition.
0930-0931	- 12 Motor Driven AFW Pump will fail to start due to inadequate condensate water supply. The manual valves from the Condensate Storage Tanks and the Cooling Water to AFW Pump Motor Operated Valves will have been sabotaged. - 30 seconds after the trip, Bus14 will lock out when the automatic transfer from the M-Transformer to the R-Transformer occurs, due to a travelling fault on the bus bar caused by internal fretting wear on the bus bar. The repair of Bus 14 will take several days. This will prevent the 12 and 13 Condensate Pumps from being started.

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EMERGENCY PLAN EXERCISE RERUN REV. 0
2000

TIME	EVENT SUMMARY
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|------------|--|
| | <ul style="list-style-type: none">- 30 seconds after the trip, Bus 13 will fail to automatically transfer from the M-Transformer to the R-Transformer due to a faulty differential current relay on the 1RYBT. The 11 Circulating Water (CW) Pump will lose power, causing condenser vacuum to decrease. This will eventually cause steam dump to be lost, resulting in Steam Generator (SG) Power Operated Relief Valves (PORVs) to open. Once this faulty relay is identified, power will be able to be restored to Bus 13. If power is restored to Bus 13, the 11 CW Pump will lock out if attempts are made to start it.- Investigation and repair teams will be dispatched to investigate DMIMS alarm and Bus 13 and Bus 14. |
| 0935-0940 | <p>The SCR Operators will transition out of 1E-0 at step 4 and identify a Red Path on Heat Sink.</p> <ul style="list-style-type: none">- The SCR Operators will enter procedure 1FR-H.1 "Loss of Heat Sink"- Steam Generator Blow Down from both SG's will be isolated.- After attempts to start AFW fail, the Reactor Coolant Pumps will be tripped. |
| 0945 | <p>If not yet identified, Contingency Message will be given for sabotaged manual valves for the Condensate Storage Tanks.</p> |
| ~0955 | <p>Wide Range (WR) level in both Steam generators will drop below 25%.</p> <ul style="list-style-type: none">- Site Area Emergency per EAL-12H "Complete Loss of any function needed for plant hot shutdown" should be recognize. |
| ~1010 | <p>Contingency message issued to declare an SAE if emergency conditions have not been identified.</p> |
| 1015 -1025 | <p>At least 1 manual valve from the Condensate Storage Tanks to the AFW Pumps will be repaired and opened after WR levels in both SGs are less than 15%, but prior to levels dropping below 9% (which would require initiation of RCS feed and bleed).</p> |
| 1025-1030 | <p>SCR Operators should reestablish AFW to both Steam Generators.</p> |
| ~1030 | <ul style="list-style-type: none">- SCR Operators will transition to ES-0.1, "Reactor Trip Recovery".- SGTR will occur when flow established to 11 S/G. |

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TIME	EVENT SUMMARY
1030-1035	SCR Operators should initiate Safety Injection due to decreasing Pressurizer Pressure and/or level.
1035-1045	SCR Operators should recognize failure of 11 SG PORV to close (it will be stuck ~50% open) and manual isolation valve will not be able to be closed. Conditions have been met to reclassify the emergency.
1045-1100	A GENERAL EMERGENCY should be declared per EAL 6 Case 2 "Loss of clad, SG tube rupture and high potential for loss of containment" and initial PAR for a recommendation to evacuate a 2 mile radius and 5 miles downwind in Sectors HJKLM (5S, 5W)
~1100	Contingency messages issued to declare an GENERAL EMERGENCY and initial PAR if emergency conditions have not been identified.
1045-1200	- SCR Operators should transition to 1E-2, "Faulted Steam Generator" due to 11 SG pressure decreasing in an uncontrolled manner due to stuck open PORV. Attempts to close and/or isolate the PORV will fail. - When attempts to isolate 11 SG in E-2 are complete, the SCR Operators should identify a ruptured SG and transition to procedure 1E-3, "Steam Generator Tube Rupture". - When the RCS has been cooled down to maintain adequate subcooling, using the 12 SG PORV, the SCR Operators should recognize that both SGs are within 250 psig of each other, and transition to procedure 1ECA 3.1, " SGTR With Loss of Reactor Coolant: Subcooled Recovery". - The SCR Operators will remain in 1ECA-3.1 until SI is terminated and Cold Shutdown Conditions are reached. - NOTE: due to simulator fidelity issues, restart of RCPs WILL NOT be allow in 1ECA-3.1, unless Accumulators have already dumped. See contingency message.
~1200	Terminate the exercise.

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**SECTION VI Part 2A : 11 TDAFW PUMP MINI-SCENARIO &
MESSAGES**

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EMERGENCY PLAN EXERCISE RERUN 2000

REV. 0

APPROXIMATED TIME: 0745 & when appropriate

LOCATION: Turbine Bldg. G.5/8.6/695 -Aux. Feedwater Pump Room

SUMMARY OF EVENT:

The following occurs at or near the time of the shift turnover. A disgruntled contract employee breaks the 11TDAFW Pump trip/throttle valve mechanism and associated components beyond repair. This sabotage action results in the total inability for the throttle valve to open without extensive repair and/or replacement of critical parts. With this throttle valve failed close, the 11 TDAFW Pump cannot operate as expected.

This event has a low probability of occurrence at PINGP due to the security provisions afforded safeguards structures, systems and components at PINGP which include: locked and monitored entry doors, regular vital area patrols, security alarms for prohibited entry and exit, and control of personnel granted access to the vital areas. Developmental references used in the preparation of this document are: LER#91-002-00, TDAFW Inoperable...Due to a Possible Inappropriate Action.

REQUIRED SETUP:

A heavy sledge hammer will be placed in the vicinity of the 11 TDAFW.

INITIAL INDICATIONS:

1. Alarm indicated in the Control Room for 11 TDAFW Pump overspeed, although the pump is not running.
2. The ops crew will recognize obvious damage done to the trip/throttle valve, linkage and manual trip lever. Words used to describe the condition of the components are "demolished", "broken to pieces", "twisted heap of metal".

RESTORATION GUIDELINES:

1. Ops will be dispatched to investigate and respond to the alarms.
2. Security will be dispatched to investigate the suspicion of safeguards equipment sabotage.
3. The systems engineer along with the mechanical maintenance crew may be called to perform an assessment to restore the trip/throttle valve to operable status.

CONTROLLERS NOTES:

1. Controller to provide information as earned. Controller to give information from the INITIAL INDICATIONS section above.
2. 11 TDAFW will not return to service before the completion of the Drill.

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ATTACHMENTS: Messages

Prairie Island Nuclear Generating Plant
EMERGENCY PLAN EXERCISE RERUN
2000

REV. 0

MESSAGE NO. 11 TDAFW

TIME: 0745 & when appropriate

TO: OPS, and/or System Engineer, and/or Mechanical Maintenance.

THIS IS A DRILL
DO NOT TAKE ANY ACTION WHICH WILL AFFECT
NORMAL PLANT OPERATIONS

MESSAGE:

1. An alarm was received in the Control Room for 11 TDAFW Pump overspeed, although the pump is not running. You are to inspect for possible causes.
2. There is obvious damage done to the trip/throttle valve, linkage and manual trip lever. Words used to describe the condition of the components include, but are not limited to: "demolished", "broken to pieces", "twisted heap of metal". It appears that the damage was intentionally inflicted with a heavy sledge hammer found nearby.
3. There is no obvious way to overcome the damage to manually operate the trip/throttle valve. It is failed in the closed position. Complete trip/throttle valve replacement is required to return the TDAFW Pump to service.

EXPECTED RESPONSE:

1. Ops will make an initial inspection and earn the three messages.
2. Ops will report the as found condition and the inoperability of the trip/throttle valve to the control room.
3. Control room may dispatch the system engineer and/or mechanical maintenance to further investigate the damage.

CONTROLLER'S NOTE:

1. Controller to provide information as earned.
2. The same messages can be provided to any person dispatched to investigate the 11 TDAFW.
3. 11 TDAFW will not return to service before the completion of the Drill.

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**SECTION VI Part 2B : SECURITY EVENT MINI-SCENARIO &
MESSAGES**

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EMERGENCY PLAN EXERCISE RERUN

2000

REV. 0

APPROXIMATED TIME: After 0745 & when appropriate

LOCATION: 695' Turbine Building, Door 042 U2 AFWP Room
695' Turbine Building, D-3 Lunchroom Door 91

SUMMARY OF EVENT:

The following has occurred: The Security Officer assigned S-2 duties is dispatched by the CAS Operator via the radio to a straight Intrusion Alarm on Door 042. Upon exiting the S-2 Guardshack he observes a male individual running down the corridor carrying a large wrench and entering Door 91 into the D-3 Lunchroom area. While S-2 responds to the alarm, he advises CAS of the strange circumstances of his observation. The CAS Operator dispatches S-10 to investigate.

S-10 responds to Door 91 and discovers that the individual has barricaded himself in the D-3 Lunchroom. The individual is contacted via the phone at X4301 but he refuses to allow entry or discuss the situation. S-1 is dispatched to Door 92 and the individual is contained in the D-3 Room. A track of badges & door transactions [TRK/DTL] is run on Doors 042 & 043 via the Security Computer and all door/badge transactions are cross-referenced & accounted for by the Duty Captain. Contingency Plan Implementing Procedures [CPIP-W-01], Notifications and [CPIP-O-07], Employee Disturbance On Site are initiated. The CAS Operator requests assistance via the telephone to the Red Wing Police Department and is advised of an ETA of approximately twenty minutes. The CAS Operator then notifies the Control Room that an "unauthorized individual has commandeered an area within the Protected Area".

S-2 enters the AFWP Room via Door 42 to check personnel and conducts a cursory search of the area. During this search he encounters an operator responding to a 11 TDAF Overspeed Trip Alarm received in the Control Room. Upon further search they find that the 11 TDAF Pump Trip Throttle Valve has been broken. S-2 notifies CAS with the information and an investigation is initiated.

While the individual is contained and an investigation is progressing, the Control Room notifies security that an Alert per EAL-16B, "Ongoing Security Compromise" has been declared.

Upon the simulated arrival of a Red Wing Police Department Squad Car (LLEA), they are immediately processed and directed to the D-3 Lunchroom. After further discussions the individual agrees to leave the area upon guarantee of legal representation. He is identified as John Q Doe, Badge # 0007, a contract employee with Protected Area access only ("O"), and admits to having broken the trip throttle valve but will say nothing further until he "speaks with a lawyer". CPIP-R-06, "Sabotage and Sabotage Attempt" is implemented. The Security Manager declares "Heightened Security Awareness", [CPIP-W-02] and the appropriate actions are initiated, and assistance from the proper investigative agencies is requested.

The initial investigation will continue with the addition of sabotage to the 11 and 12 Feedwater Regulating Valves and the manual valves from the Condensate Storage Tanks.

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Prairie Island Nuclear Generating Plant

EMERGENCY PLAN EXERCISE RERUN

2000

REV. 0

REQUIRED SETUP:

Security will initially participate by providing an individual to act as the insider and/or disgruntled employee through his apprehension after of which the remainder of the scenario will be "table-top" or simulated. The Controller will provide the proper message or prompts as may be required.

INITIAL INDICATIONS:

1. 0745 Following Alarm received in the Control Room:
" 11 TDAF Overspeed Trip "
Control Room dispatches Operator to investigate.
2. 0746 Following Alarm received Security Central Alarm Station:
" Alarm ### Door 042 INTRUSN U2 AFWP Room "
CAS dispatches S-2 to investigate.
3. 0746 S-2 advises CAS that he has observed an individual running down the corridor carrying a large wrench and entering Door 91 into the D-3 Lunchroom. S-10 Dispatched.
4. 0746-0800 Turbine Building Operator will report the condition of the trip throttle valve. Crew may ask for further investigation.

Security simulates TRK/DTL on Badges/Doors 042 & 043, cross references the data, and accounts for all transactions on the doors. Security will identify an unauthorized individual. S-10 notifies CAS that the individual has barricaded himself in the D-3 Lunchroom.

CAS instructs S-10 to remain at Door 91 and S-1 is dispatched to Door 92 and the individual is contained in the D-3 Lunchroom. CPIP-O-07, "Employee Disturbance On Site" and CPIP-W-01, "Notifications" are initiated. A request to the Red Wing Police Department for assistance is made. An investigation of the broken equipment is implemented.
5. 0800 Security notifies the Control Room that "an unauthorized individual has commandeered an area within the Protected Area", namely the D-3 Lunchroom. CONTROLLER UTILIZE MESSAGE #1.
6. 0800-0815 Control Room should declare an ALERT per EAL-16B, "Ongoing Security Compromise".

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7. 0800-0830 Upon simulated arrival of the Red Wing Police Department Squad, they are immediately processed and escorted to the D-3 Lunchroom. The individual is contacted at X4301 and eventually agrees to exit upon a guarantee of legal representation. He is positively identified as John Q Doe, Badge # 0007, a contract employee with Protected Area (0) Access only. He admits to having broken the trip throttle valve but will say nothing further until he talks to a Lawyer. CPIP-R-06, "Sabotage and Sabotage Attempt" is initiated. The Security Manager declares "Heightened Security Awareness", CPIP-W-02, and the appropriate actions are initiated. Assistance from the proper investigative agencies is requested.
8. 0845 The Technical Support Center (TSC) should be operational.
9. 0830-0915 Equipment investigation & Heightened Awareness Continues.
10. 0915-0916 FYI ONLY The 11 and 12 Feedwater Regulating Valves fail closed simultaneously [Sabotage]. 12 MDAFW Pump will fail to start due to inadequate condensate supply. The manual valves from the Condensate Storage Tanks will have been sabotaged.
11. 0945 If not yet identified, Contingency Message will be given for sabotaged manual valves for the Condensate Storage Tanks. CONTROLLER WILL RECEIVE A REQUEST TO INITIATE CONTINGENCY MESSAGE #2.
12. 1000-1200 Security will be involved with sabotaged equipment investigation and Heightened Security Awareness until termination of the Exercise.

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EMERGENCY PLAN EXERCISE RERUN
2000

REV. 0

RESTORATION GUIDELINES:

1. Security would remain involved in Heightened Security Awareness until conditions are no longer favorable or a threat no longer exists for covert activities, acts of vandalism, threats or other deviant behavior at the PINGP.
2. Investigation into the sabotage and attempted sabotage related activities would remain open and on-going as stipulated by the various investigating agencies.
3. Work with site personnel to evaluate and determine importance:
 - Safety Significance
 - Overtness
 - Intent
 - Sophistication of Method
 - History of Similar incidents
 - Prompt Questioning of Witness
 - Resolution of the Significance
 - Implementation of an Appropriate Strategy to Mitigate Consequence
 - Determine Appropriate Investigative Agency Jurisdiction
4. Coordinate appropriate:
 - Manning Levels
 - Shift Schedules
 - Additional Posts
 - Patrol frequencies
 - Special Operations
 - LLEA Instructions
 - Gatehouse Operations
 - Management Oversight
 - Investigation Liaison

CONTROLLERS NOTES:

1. Controller to provide information as earned. Controller to give information from the INITIAL INDICATIONS section above.

ATTACHMENTS:

Messages

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Prairie Island Nuclear Generating Plant
EMERGENCY PLAN EXERCISE RERUN
2000

REV. 0

MESSAGE NO. 01

TIME: At 0800 & when appropriate.

TO: Control Room

THIS IS A DRILL
DO NOT TAKE ANY ACTION WHICH WILL AFFECT
NORMAL PLANT OPERATIONS

MESSAGE:

1. Be advised that an unauthorized individual has commandeered an area within the Protected Area, namely the D-3 Lunchroom.
2. The individual has barricaded himself within the lunchroom and refuses to come out.
3. There are armed security officers outside both doors 91 & 92 and he is contained within the lunchroom and unable to gain access into any vital areas. We are attempting to communicate with the individual but he refuses to exit or discuss the situation.
4. We have requested assistance from the Red Wing Police Department. Estimated time of arrival -- twenty minutes.

EXPECTED RESPONSE:

1. Acknowledge receipt of message & advise to keep them updated.
2. Eventual request for the Duty SEC to report to the Control Room.
3. Declaration of an ALERT per EAL - 16B, "Ongoing Security Compromise"

CONTROLLER NOTE:

1. Controller provide this message to the CAS Operator at 0800 for communication to the Control Room.

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EMERGENCY PLAN EXERCISE RERUN
2000

REV. 0

CONTINGENCY MESSAGE

TIME: Upon Request Should It Be Required

TO: Control Room

THIS IS A DRILL
DO NOT TAKE ANY ACTION WHICH WILL AFFECT
NORMAL PLANT OPERATIONS

MESSAGE:

1. While on rounds the Patrol Officer found the lock and chain to the manual valves from the Condensate Storage Tanks cut and laying on the ground.
2. The valve packing gland follower studs appear to be badly damaged.

EXPECTED RESPONSE:

1. That the Control Room will dispatch an Operator to the scene to assess the situation.

CONTROLLER NOTE:

1. The Controller will present this contingency message to the CAS Operator for communication to the Control Room only when requested to do so.

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SECTION VI Part 2C : LOSS OF AFW PUMP SUCTION
MINI-SCENARIO & MESSAGES

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Prairie Island Nuclear Generating Plant

EMERGENCY PLAN EXERCISE RERUN 2000

REV. 0

APPROXIMATED TIME: 0800 & when appropriate

LOCATION: Condensate Storage Tanks Outside of Turbine Bldg.:
▪ K/17/695 for 22 CST
▪ K/16/695 for 21 CST
▪ F/1/695 for 11 CST
Auxiliary Feedwater Pump Room: F/9/695

SUMMARY OF EVENT:

A saboteur has thwarted security and effectively closed the manual outlet valves on each condensate storage tank (11, 21, and 22 CST respectively). These valves are normally open (by administrative control and physically chained) and control the primary water supply to the AFW pumps. This apparent sabotage action results in the total inability for the outlet valve to open without extensive repair of critical parts. Upon investigation, the following damage will be identified: security chain link cut and then repositioned, packing follower tightly compressed into the gland with the stud threads severely buggered, and the hand-wheel free spins on the rising stem. Extensive repairs and/or alterations will be required to open any one of these valves. With these outlet valves failed close, the AFW Pumps cannot operate as expected.

Cooling Water (CL) is the secondary supply source for the AFW Pumps and these supply valves will also have been tampered with. Motor driven valves (MOV'S) which connect the AFW Pumps to CL are normally closed. If, in an attempt to restore a supply source to the AFW Pumps using CL, the CL supply MOV'S (Nos. 32027, 32026 respectively for the MDAFW Pumps) will fail to open upon control room signal or manual actuation. Upon investigation, the MOV gearboxes are seized and no valve stem movement can be made in any manner. Sabotage of the MOV's was conducted by pumping an industrial adhesive directly into the gearboxes to mechanically bind the operating mechanism. They will have to be replaced. With these supply valves failed close, the AFW Pumps cannot operate as expected.

Maintenance work is expected to establish a supply source to the AFW Pumps using any means possible. The success path is to repair and open at least one outlet valve on the CST to establish suction supply to the AFW Pumps within 1 ½ hours.

This event has a low probability of occurrence at PINGP due to the security provisions afforded safeguards structures, systems and components at PINGP which include: locked and monitored entry doors, regular vital area patrols, security alarms for prohibited entry and exit to vital areas, and control of personnel granted access to the vital areas. Developmental references used in the preparation of this document are: SER 6-92, Valve Mispositioning Events; LER# 90-005-00, Inoperability of AFW System Results From Error During Replacement of Backup Nitrogen Station Following Bottle Replacement; SER 56-84, Mispositioning of Valves and Controls Disabled Safety Systems.

REQUIRED SETUP: NONE

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EMERGENCY PLAN EXERCISE RERUN 2000

REV. 0

INITIAL INDICATIONS:

1. Possible alarm indicated in the Control Room for 12 MDAPW Pump locked out.
2. The personnel sent to investigate the AFW supply sources will recognize that all three CST outlet valves are mispositioned closed. Initial attempts to open the valves will be unsuccessful. They may also determine that the CL MOV's are inoperable and cannot be opened.

RESTORATION GUIDELINES:

1. Ops will be dispatched to investigate and respond to the alarms.
2. Security will be dispatched to investigate the suspicion of safeguards equipment sabotage.
3. The systems engineer along with the mechanical maintenance crew will be called to perform an assessment to restore the CST and/or CL suction supply valves to operable status. They will correctly identify the success path to reestablishing AFW supply by concentrating their efforts on opening one CST outlet valve.

CONTROLLERS NOTES:

1. Controller to provide information as earned. Controller to give information from the **INITIAL INDICATIONS** section above.
2. At least one of the three CST outlet valves will return to service to reestablish AFW to both Steam Generators before the completion of the drill.

ATTACHMENTS: Messages

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EMERGENCY PLAN EXERCISE RERUN
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REV. 0

MESSAGE NO. AFW Supply 1

TIME: 0800 - 0930 & when appropriate

TO: OPS, and/or System Engineer, and/or Mechanical Maintenance. If/when assigned to perform a plant walkdown after the security event.

THIS IS A DRILL
DO NOT TAKE ANY ACTION WHICH WILL AFFECT
NORMAL PLANT OPERATIONS

MESSAGE:

**The following messages will be earned *if* personnel are
directed to perform an AFW Pump valve line-up walkdown.**

1. The CST outlet valves (2CD-54-1 and 2CD -27-1 and C-27-1 respectively) are in the closed position. The hand-wheel free spins on the valve stem when turned. The packing follower is tightly compressed into the gland. There is obvious damage done to the packing follower stud threads on each valve. The valves will not open using normal actions.
2. The CL MOV's (Nos. 32027 and 32026 respectively for the MDAFW Pumps) are in the closed position. The valve operators will not work upon control room signal, nor when placed in manual. The gearbox is seized and will not allow any hand-wheel movement at all. There is no visible damage done to the units. The valves will not open no matter what is tried.
3. Judging by the extent of the damage done to both systems and the inoperability of each, it appears that the success path to reestablish AFW Pump suction supply will be to open at least one CST outlet valve.

EXPECTED RESPONSE:

1. Ops may make an initial inspection of the CST and/or CL supply source valves to the AFW and earn the messages in no particular order.
2. Ops will report the component condition and the inoperability of the valves to the control room.

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3. Control room may dispatch the system engineer and/or mechanical maintenance to further investigate the damage done to the valves.
4. Engineering and mechanical maintenance will work to restore at least one CST valve to the open position.

CONTROLLER'S NOTE:

1. Controller to provide information as earned.
2. The same messages can be provided to any person dispatched to investigate the AFW Pump supply sources.
3. The CL MOV's will not return to service before the completion of the Drill.
4. At least one CST outlet valve will be successfully opened and returned to service.

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EMERGENCY PLAN EXERCISE RERUN
2000

REV. 0

MESSAGE NO. AFW Supply 2

TIME: 0930 & when appropriate.

TO: OPS, and/or System Engineer, and/or Mechanical Maintenance.

THIS IS A DRILL
DO NOT TAKE ANY ACTION WHICH WILL AFFECT
NORMAL PLANT OPERATIONS

MESSAGE:

1. An alarm was received in the Control Room for 12 MDAFW Pump locked out.

**The following messages will be earned *if* personnel are
directed to perform an AFW Pump valve line-up walkdown.**

2. Breaker 16-3 (12 MDAFW) has no overcurrent or Ground Fault Relay Flags.
3. Only a small trickle of water comes out of the suction vent when opened (per C28 AOP4 procedure prior to AFW Pump start-up)
4. The CST outlet valves (2CD-54-1 and 2CD -27-1 and C-27-1 respectively) are in the closed position. The hand-wheel free spins on the valve stem when turned. The packing follower is tightly compressed into the gland. There is obvious damage done to the packing follower stud threads on each valve. The valves will not open using normal actions.
5. The CL MOV's (Nos. 32027 and 32026 respectively for the MDAFW Pumps) are in the closed position. The valve operators will not work upon control room signal, nor when placed in manual. The gearbox is seized and will not allow any hand-wheel movement at all. There is no obvious damage done to the units. The valves will not open no matter what is tried.
6. Judging by the extent of the damage done to both systems and the inoperability of each, it appears that the success path to reestablish AFW Pump supply will be to open at least one CST outlet valve.

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2000

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EXPECTED RESPONSE:

1. Ops will notify the Control Room of Breaker 16-3 status.
2. Ops may make an initial inspection of the CST and/or CL supply source valves to the AFW and earn the messages in no particular order.
3. Ops will report the component condition and the inoperability of the valves to the control room.
4. Control room may dispatch the system engineer and/or mechanical maintenance to further investigate the damage done to the valves.
5. Engineering and mechanical maintenance will work to restore at least one CST valve to the open position.

CONTROLLER'S NOTE:

1. Controller to provide information as earned.
2. The same messages can be provided to any person dispatched to investigate the AFW Pump supply sources.
3. The CL MOV's will not return to service before the completion of the Drill.
4. At least one CST outlet valve will be successfully opened and returned to service before the completion of the drill.

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MESSAGE NO. AFW Supply 3

TIME: ~1025 & when appropriate as directed by the Simulator Lead Controller

TO: OPS, and/or System Engineer, and/or Mechanical Maintenance.

THIS IS A DRILL
DO NOT TAKE ANY ACTION WHICH WILL AFFECT
NORMAL PLANT OPERATIONS

MESSAGE:

1. The efforts made to open at least one of the CST outlet valves is successful.

EXPECTED RESPONSE:

1. Ops and/or Mechanical Maintenance and/or System Engineer will notify the control room that one of the CST outlet valves has been opened.
2. Ops will verify that the 12 AFW Pump has a suction source and ready the pump for starting.

CONTROLLER'S NOTE:

1. Controller to provide information as earned.
2. The same messages can be provided to any person dispatched to restore the CST outlet valve to operability.

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SECTION VI Part 2D : BUS 14 & 1RTYBT LO RELAY FAILURE
ELECTTRICAL MINI-SCENARIO & MESSAGES

Prairie Island Nuclear Generating Plant

EMERGENCY PLAN EXERCISE RERUN 2000

REV. 0

APPROXIMATED TIME: 0930 & when appropriate

LOCATION: Turbine Bldg. C.0/8.5/715

SUMMARY OF EVENT:

The following occurs at the time of the turbine trip. Bus 14 locks out on fault which is cleared by a ground current relay actuation. The fault impacted on a faulty differential current relay for BKR 1RYBT and locked out that BKR resulting in the loss of 1RY source (Bus 1RY-N) power to Bus 13 for fast-bus transfer. The restoration of the Bus 14 will take several days (remove damaged busbars and replace). Restoration of power to Bus 13 is possible as soon as it is realized that a faulty relay caused the lockout of the 1RY-N Bus. This event has a low probability of occurrence at PINGP due to the clean environment of our switchgear rooms and the required periodic maintenance to all PINGP switchgear Busses & BKR's based on the guidance obtained through participation the EPRI/NMAC ABB Switchgear users group. Developmental references in the preparation of this document are: NE-40005 sh. 9, 13, 16, 18, 19, 20.1, 20.2, 36 & 49, NE-40405 sh. 17.4 and 1C20.5 AOP3 (Reenergizing Non-Safeguard Buses Unit 1).

REQUIRED SETUP: NONE

INITIAL INDICATIONS:

1. "47005-0105, BUS 14 4.16KV LOCKED OUT"
"47005-0206, 1RY-N BUS LOCKED OUT"
"47005-0203, BUS 13 1R AND 1M BREAKERS TRIPPED"
"47005-0205, BUS 14 1R AND 1M BREAKERS TRIPPED" alarms are received in the CR.
2. All source BKR's on Busses 13 & 14 are OPEN in the Bus 13/14 Room.
3. The Lockout (Cub 14-4), Overcurrent (A, B & C phases) and Ground Relay (Cub 14-9) on Bus 14 all have visible flags.
4. There are no relay actuations for any relays on Bus 13.
5. A light acrid smoke smell is present in the Busroom.
6. If an inspection on top of the Busses is done, no flash burns around the switchgear vent are visible.
7. On Cub 1RYBT, Bustie Bus 1RY-S/Bus 1RY-N, the BKR indicates OPEN and the Differential current B phase Relay has a flag

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RESTORATION GUIDELINES:

1. Ops will be dispatched to investigate and respond to the alarms.
2. The Lockout (Cub 14-4), Overcurrent (A, B & C phases) & Ground Relays (Cub 14-9) on Bus 14 all have visible flags.
3. The 1RY-N Bus B phase Differential Current relay on Cub 1RYBT has a flag along with its associated lockout relay.
4. No Lockouts or Relay flags are visible on the Bus 13 cubicles.
5. Electrical Maintenance (EM) and/or Electrical Engineering (EE) personnel may be dispatched to investigate the Lockout of Bus 14 & Bus 1RY-N. Upon inspection the EM personnel will find no indications of flash burns on the front of any Bus 14 Cubicle or on the top of Bus 14 switchgear. The fault was a result of internal fretting wear of the bus bracing material.
6. If OPS/EM personnel are directed to Rack BKR's 13-1, 13-9, 14-4, 14-9 and/or 1RYBT to DISCONNECT, this will be successful.
7. If EM performs a Hipot or Megger of Bus 13 or Bus 1RY-N the tests will pass (Hipot ≈ 10 microamp Capacitance and the Megger will indicate >10 GigOhms).
8. If EM performs a Hipot or Megger of Bus 14 the tests will fail (Hipot can't be done due to the ground and the Megger will indicate <10 Ohms).
9. If EE directs to restore Buses 1RY-N and 13 from 1RY XFMR, EE should recognize that use of 1C20.5 Section 5.12 requires a TCN to get BKR 1RYBT CLOSED as not all of the conditions of the procedure are met "as is". Either that or EE should write a WO procedure to get BKR 1RYBT CLOSED. Restore Bus 13 via 1C20.5 AOP3 Section 2.4.7.
10. If EE recommend to OPS to restore Busses 13 & 1RY-N via BKR 1RYBT per 1C20.5 and 1C20.5 AOP3 this will be successful, but time/resource consuming. (Be sure to call 4001 if Buses 1RY-N and 13 are to be repowered.)

CONTROLLERS NOTES:

1. Controller to provide information as earned. Controller to give information from the **INITIAL INDICATIONS** section above.
2. Bus 14 will not return to service before the completion of the Drill.

ATTACHMENTS: Messages

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EMERGENCY PLAN EXERCISE RERUN
2000

REV. 0

MESSAGE NO. Bus 14 LO-1

TIME: 0930 & when appropriate

TO: Electrical Maintenance(EM), Electrical Engineering (EE) and/or OPS.

THIS IS A DRILL
DO NOT TAKE ANY ACTION WHICH WILL AFFECT
NORMAL PLANT OPERATIONS

MESSAGE:

1. The Lockout (Cub 14-4), Overcurrent (A, B & C phases) & Ground Relays (Cub 14-9) on Bus 14 all have visible flags.
2. The 1RY-N Bus B phase Differential Current relay on Cub 1RYBT has a flag along with its associated lockout relay.
3. No Lockouts or Relay flags are visible on the Bus 13 cubicles.
4. An light acrid smoke smell is present in the Busroom.
5. Upon inspection the EM personnel will find no indications of flash burns on the front of any Bus 14 Cubicle or on the top of Bus 14 switchgear. The fault was a result of internal fretting wear of the bus bracing material.

EXPECTED RESPONSE:

1. EM/EE personnel may inspect the accessible sections of the switchgear. Inspection should be done with flashgear worn if opening any cubicle doors. Removal of relay access covers does not require safety gear.
2. OPS/EM personnel may attempt to isolate/tag out Bus 13, 14 & 1RY-N which will be successful. Isolation would be BKR 13-9 & BKR 13-1 (Bus 13), BKR 14-9 & BKR 14-4 (Bus 14), BKR 1RYBT & BKR 12RYBT (Bus 1RY-N), Bus Pot fuses behind 13-8, 13-9, 14-4 & 14-9 and cabinet next to BKR 1RYBT.
3. EE may recommend to OPS to restore Busses 121 & 122 via the Unit 2 Alternate feeds per 1C20.6 (although priority in the performance may be low).

CONTROLLER NOTE:

1. Controller to provide information as earned.

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2000

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MESSAGE NO. Bus 14 LO-2

TIME: 1000 & when appropriate

TO: Electrical Maintenance(EM)/Electrical Engineering(EE)

THIS IS A DRILL
DO NOT TAKE ANY ACTION WHICH WILL AFFECT
NORMAL PLANT OPERATIONS

MESSAGES:

1. Upon troubleshooting of Bus 14 a Hipot of the Bus can't be done due to a ground and Megger readings are <1 Ohm.
2. If EM performs a Hipot or Megger of Bus 13 or Bus 1RY-N the tests will pass (Hipot $\approx$ 10 microamp Capacitance and the Megger will indicate >10 GigOhms).

EXPECTED RESPONSE:

1. If EE/EM attempt to perform a Hipot or Megger of any of the busses, the results will be as specified above.
2. EM/EE personnel will request assistance from Chestnut EM&P personnel in the repair/restoration of Bus 14 to service.
3. EE may recommend to OPS to restore Busses 1RY-N & 13 via 1RY XFMR per 1C20.5 Section 5.12 and 1C20.5 AOP3 respectively (EE will have to TCN 1C20.5 Section 5.12 due to initial conditions or write a one time procedure to BKR 1RYBT CLOSED). (Be sure to call 4001 if Busses can be restored to 1RY Source.)

CONTROLLER NOTE:

1. Controller to provide information as earned.

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EMERGENCY PLAN EXERCISE RERUN 2000

REV. 0

SECTION VI Part 2E : DMIMS ALARM MINI-SCENARIO & MESSAGES

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EMERGENCY PLAN EXERCISE RERUN 2000

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MINI-SCENARIO: DMIM Event

The Digital Metal Impact Monitoring System (DMIMS) detects the presence of metallic debris in the RCS when the debris impacts against the internal parts of the RCS. A metallic impact within the RCS generates a pressure wave within the coolant. The wave is detected as acceleration by the accelerometers that are part of the DMIMS. Other sources of pressure waves within the RCS are pumps starting and control rods moving.

The DMIMS differentiates between these pressure waves and those caused by metallic impacts by comparing the detected acceleration to a typical signature of a metallic impact. Pressure waves that are not caused by metallic impacts are ignored. Pressure waves caused by metallic impacts are recorded on the system's event recorder and initiate an alarm condition.

The system consists of two accelerometers mounted 180° apart on the incore instrumentation conduit and two accelerometers mounted on each SG. One SG accelerometer is mounted 30 inches above the tubesheet centerline and the other is mounted 30 inches below the tubesheet centerline. Each accelerometer signal is transmitted to a control cabinet outside of Containment, which is shared by both units.

APPROXIMATED TIME:

At 0915 December 13, 2000

LOCATION:

Auxiliary Building Ja.0/5.0/715

SUMMARY OF EVENT:

On December 13, 2000 a small metal object that was jammed in the lower part of the reactor vessel breaks loose. This object causes the following:

- Alarms are received in the control room at 0915 December 13, 2000: DMIMS channel alarm.
- Alarms are received at the DMIM panel at 0915 December 13, 2000: DMIMS channel alarm.

REQUIRED SETUP:

Tape player and tape of impacts in the reactor vessel.

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EMERGENCY PLAN EXERCISE RERUN 2000

REV. 0

INITIAL INDICATIONS:

1. Following alarms are received on Emergency Response Computer System (ERCS):
" The DMIMS alarm ".
2. The following alarms are received at the DMIM panel: DMIMS channel alarm.

RESTORATION GUIDELINES:

1. The lead RO should notify the aux bldg operator to investigate the DMIMS panel for a monitor alarm.
2. The Auxiliary Building Operator should contact the control to inform them that the DMIMS panel is in alarm indicating loose part in the Reactor Vessel.
3. The Shift Supervisor should notify I&C engineer about the DMIMS monitor alarm. The DMIMS monitor panel is located at the perpetration cabinet in the aux bldg. A controller should then accompany the engineer to ensure that he/she is familiar with the operation of the DMIMS monitor and printed recordings.

CONTROLLERS NOTES:

1. Controller to provide information as earned. Controller to provide appropriate information from the INITIAL INDICATIONS section above.

ATTACHMENTS: NONE

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Prairie Island Nuclear Generating Plant

EMERGENCY PLAN EXERCISE RERUN 2000

REV. 0

MESSAGE NO. DMIMS

TIME: After 0915 & when appropriate

TO: AUX BLDG OPS

**THIS IS A DRILL
DO NOT TAKE ANY ACTION WHICH WILL AFFECT
NORMAL PLANT OPERATIONS**

MESSAGES:

INVESTIGATE DMIMS MONITOR

1. "Channel 750, 753 and 755 in alarm.
2. Channel 750 operator hears events
Channel 753 operator hears events
Channel 755 operator hears events

EXPECTED RESPONSE:

1. Acknowledge alarm panel.
2. Report findings to SS/SM/CROs.

CONTROLLER NOTE:

1. Controller to provide information as earned.
2. The Shift Supervisor should notify I&C engineering about the DMIMS monitor alarm. The DMIMS monitor panel is located at the perpetration cabinet in the aux bldg. A controller should accompany the technician to ensure that he/she is familiar with the operation of the DMIMS monitor and tape recordings.
3. The I&C engineer should gather the necessary data for the event from the DMIMS monitor.
4. Data information received from the DMIMS Monitor is located on the next page.

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EMERGENCY PLAN EXERCISE RERUN 2000

REV. 0

DMIMS Panel Data

LOCN: RVI MAX AMPL: 6.6 DATE: 12/13/00
CH # 750 AVG AMPL: 2.4 TIME: 09:15:00
SEPT: 5.0 MAX RATE 3.0 M EVENT TIMES
#>SP: 6.0 AVG RATE: 4.5 FIRST: 09:15:00
#<SP: 4.0 EV ELSWR: 2.0 LAST: 09:30:00
#EV PERIODS (MIN): 32 AMPL: 6.6

LOCN: GII MAX AMPL: 2.6 DATE: 12/13/00
CH # 753 AVG AMPL: 0.4 TIME: 09:15:00
SEPT: 5.0 MAX RATE 0.1 M EVENT TIMES
#>SP: 2.0 AVG RATE: 1.5 FIRST: 09:15:00
#<SP: 4.0 EV ELSWR: 1.0 LAST: 09:30:00
#EV PERIODS (MIN): 12 AMPL: 2.6

LOCN: G12 MAX AMPL: 2.4 DATE: 10/13/00
CH # 755 AVG AMPL: 0.3 TIME: 09:15:00
SEPT: 5.0 MAX RATE: 0.1 M EVENT TIMES
#>SP: 2.0 AVG RATE: 1.2 FIRST: 09:15:00
#<SP: 4.0 EV ELSWR: 1.0 LAST: 09:30:00
#EV PERIODS (MIN): 9 AMPL: 2.4

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EMERGENCY PLAN EXERCISE RERUN
2000**

REV. 0

**SECTION VI Part 2F : 11 SG PORV & MANUAL ISOLATION STUCK
OPEN MINI-SCENARIO & MESSAGES**

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Prairie Island Nuclear Generating Plant

EMERGENCY PLAN EXERCISE RERUN 2000

REV. 0

APPROXIMATED TIME: 1030 & when appropriate

LOCATION: 1A SG PORV, P4/6/735

SUMMARY OF EVENT:

The following occurs at or near the time AFW flow is reestablished to both Steam Generators (SG). The 1A SG Power Operated Relief Valve (PORV), which was opened to assist in reducing SG pressure, fails to fully close on demand and is stuck 50% open. This valve is air operated, direct acting (air to open/spring to close), and equipped with reverse acting trim. The failure to fully close is attributed to a guide bushing that was made of the wrong material and/or to the wrong dimensions. Thermal expansion of this bushing, during its prior steam relieving operation, has galled the valve stem to the point of seizing it in the 50% open position. The manual handwheel operator likewise does not have enough force to close the valve as needed. Extensive repairs and/or alterations will be required to fully close this valve. With this PORV failed open, a direct path from the secondary side of the SG to atmosphere exists, unless it can be isolated.

A manually operated isolation valve (RS-4-1) is installed directly next to the SG PORV inlet. Once the failed SG PORV is detected, attempts may be made to close this normally open valve to block the SG release path to atmosphere. These attempts will be unsuccessful due to a broken valve stem at the gate connection. This apparently occurred due to excessive backseat force placed on the gate and stem made of the wrong material. The gate subsequently rotated and wedged in the seat during attempts to close the valve. Repeated attempts to close the valve only exasperated the valve's inability to close by ramming the gate sideways into the seat. With this block valve failed open, and the SG PORV stuck 50% open, a path to atmosphere is maintained.

It is expected that maintenance work will attempt to fully close the SG PORV and/or inlet blocking valve using any means possible. These attempts will be unsuccessful for the duration of the exercise. Other factors impacting the maintenance work are as follows: The location of these valves is in a relatively small, partially enclosed area susceptible to high temperatures. Prolonged work in the area may induce worker heat stress that may limit stay times. Elevated radiation shine is expected in the area of these valves and will be a concern for personnel responding to the equipment failures. ALARA practices will impact the work and may hinder opportunities to freely access the location.

This event has a low probability of occurrence at PINGP due to the regular preventative maintenance and surveillance procedure manipulation afforded these valves according to established plant procedures. Developmental references used in the preparation of this document are: SER 45-84, Undetected stem failure on Residual Heat Removal Isolation Valve; SER 10-82, Steam Generator Tube Rupture with Primary Relief Valve Stuck Open; Copes-Vulcan D-100 Valves Technical Manual.

REQUIRED SETUP: NONE

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EMERGENCY PLAN EXERCISE RERUN 2000

REV. 0

INITIAL INDICATIONS:

1. Possible mid valve position indicator lights energized for the A ATM STM Relief (power op) CV31804 display in the Control Room.
2. The personnel sent to investigate the stuck SG PORV will recognize that it is in mid-position. Initial attempts to close the inlet block valve will be unsuccessful.

RESTORATION GUIDELINES:

1. Ops may be dispatched to investigate and respond to the 1A SG PORV mid-position valve indication.
2. The systems engineer along with the mechanical maintenance crew will be called to close either the 1A SG PORV or the inlet valve. They will be restricted in their work for ALARA and high area temperature conditions. The valves will not close no matter the extent of work performed.

CONTROLLERS NOTES:

CAUTION

HEAT STRESS CAN CAUSE DECREMENTS IN WORK PERFORMANCE, LOST TIME ACCIDENTS, DAMAGE TO EQUIPMENT AND FATALITIES. OBSERVE THE PINGP SAFETY MANUAL CONCERNS AND POLICIES FOR WORKING IN A HOT ENVIRONMENT.

1. Controller to provide information as earned. Controller to give information from the **INITIAL INDICATIONS** section above.
2. The 1A SG PORV and the inlet valve RS-4-A will not be restored to service before the completion of the exercise.
3. Close attention must be paid to the reported radiation levels for this location in the exercise handbook. A thermometer is located on the wall adjacent to the valves to continually monitor personnel stay times.

ATTACHMENTS:

Messages

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EMERGENCY PLAN EXERCISE RERUN
2000

REV. 0

MESSAGE NO. 1A SG PORV

TIME: 1030 & when appropriate

TO: OPS, and/or System Engineer, and/or Mechanical Maintenance.

THIS IS A DRILL
DO NOT TAKE ANY ACTIONS WHICH WILL AFFECT NORMAL PLANT OPERATIONS.

MESSAGE:

1. The 1A SG PORV failed to fully close on the demand signal from the control room. It is stuck in the 50% open position. The valve will not close using the hand manipulator. Extreme maintenance work will be required to return the valve to operable service.
2. The SG 1A Power Operated Relief Inlet valve RS-4-1 is stuck open. Any attempt to move the valve stem into the body by any means meets a definite hard stop. The valve will not close no matter what is tried.

EXPECTED RESPONSE:

1. Ops may make an initial inspection of the two valves and try to close the inlet block valve. They will earn the messages in no particular order. Ops will report the component condition and the inoperability of the valves to the control room.
2. Control room may dispatch the system engineer and/or mechanical maintenance to further investigate the damage done to the valves. Engineering and mechanical maintenance will work to close one of the valves with no success before the completion of the exercise.

CONTROLLER'S NOTE:

CAUTION

HEAT STRESS CAN CAUSE DECREMENTS IN WORK PERFORMANCE, LOST TIME ACCIDENTS, DAMAGE TO EQUIPMENT AND FATALITIES. OBSERVE THE PINGP SAFETY MANUAL CONCERNS AND POLICIES FOR WORKING IN A HOT ENVIRONMENT.

1. Controller to provide information as earned in no particular order.
2. The same messages can be provided to any person dispatched to investigate the 1A SG PORV and inlet block valve.

(CONTINUED ON NEXT PAGE)

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3. Be aware of high radiation shine levels and elevated room temperatures at the location.
Monitor the participants actions in regards to these concerns.
4. The valves will not return to service before the completion of the exercise.

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EMERGENCY PLAN Exercise RERUN 2000

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NORTHERN STATES POWER COMPANY

SECTION VI Part 3 : SIMULATOR OPERATOR GUIDE

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EMERGENCY PLAN Exercise RERUN 2000

REV. 0

File Number: 00-02 Rev: 0	Title: E-Plan Exercise
Lesson Plan: P7400	Duration: 4 Hours
Author: Mark Loosbrock	Approved by: _____ Date: _____

OBJECTIVES:

1. Diagnose and respond to a loss of secondary heat sink by establishing Auxiliary Feedwater per FR-H.1
2. Diagnose and respond to a faulted and ruptured Steam Generator per E-2, E-3, and ECA-3.1.
3. Properly classify emergency IAW F3-2.

RELATED LER's, SER's, SOER's, etc.:

None

RELATED PRA INFORMATION (See PITC 2.3):

Initiating Events with Core Damage Frequency:

Loss of Main Feedwater (4.4%)
Steam Generator Tube Rupture (7.1%)

Important Components:

11 & 12 AFW Pumps/11, 12 Safety Injection Pumps

Important Operator Actions with Task Number:

See task to training matrix

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EMERGENCY PLAN Exercise RERUN 2000

REV. 0

Assumptions for Exercise:

- Fire brigade will not be activated during the scenario.
- No medical emergencies are planned for this scenario.

Initial plant status:

- Unit 1:
- 100% full power.
 - 11 Condensate Pump OOS for motor replacement.
 - Normal at power electrical configuration exists.
- Unit 2:
- 100% Power.
 - No major equipment OOS.
 - Normal at power electrical configuration exists.

Exercise Timeline:

<u>Time</u>	<u>Event</u>
0730	The crew assumes the duty on the simulator.
0745	Disgruntled employee breaks the 11 Turbine Driven Auxiliary Feed Water (TDAFW) Pump trip throttle valve, causing alarm in the control room. This will cause the 11 TDAFW Pump to be unavailable for the duration of the event. - Control room will dispatch an operator to investigate. - The crew should determine they are in a 72 hour LCO action exists per TS 3.4.B.2.a.
0746	The Central Alarm Station (CAS) will get an alarm at for unauthorized opening of the Unit 2 side of AFW Pump Room door. -A Security officer will be dispatched to investigate.
0745-0800	The Turbine Building Operator will report the condition of the 11 TDAFW Pump trip throttle valve. - Crew may ask for further investigation. - Security will identify unauthorized individual. The individual will commandeer a non-vital area of plant (D-3 Room).
~0800	- Security should notify the control room of the situation. - Further investigations for sabotage should be initiated
0800-0815	Crew should declare an ALERT per EAL-16B, "Ongoing Security Compromise"
0815	If the crew has not yet declared the ALERT, they will be prompted. (EAL- 16B)
0845	The Technical Support Center (TSC) should be operational
0930	The 11 and 12 Feedwater Regulating Valves (FRV's) fail closed simultaneously (sabotage) - The crew may attempt to manually open the FRV's and/or FRV bypass valves from the Control Room. - The crew should identify failure FRV's to open, initiate a manual reactor trip, and enter procedure 1E-0 "Reactor Trip or Safety Injection".

Prairie Island Nuclear Generating Plant

EMERGENCY PLAN Exercise RERUN 2000

REV. 0

- 0930-0931 Within 1 minute of reactor trip, the following will occur:
- When the reactor is tripped, a part will become loose in the reactor, causing fuel damage. A Digital Metal Impact Monitoring System (DMIMS) alarm will be received on the Emergency Response Computer System (ERCS). Loop Radiation Monitors R70 and R71 will also alarm.
 - 30 seconds after the trip, Bus 14 will lock out when the automatic transfer from the M-Transformer to the R-Transformer occurs, due to a travelling fault on the bus bar caused by internal fretting wear on the bus bar. The repair of Bus 14 will take several days. This will prevent the 12 and 13 Condensate Pumps from being started.
 - 30 seconds after the trip, Bus 13 will fail to automatically transfer from the M-Transformer to the R-Transformer due to a faulty differential current relay on the 1RYBT. The 11 Circulating Water (CW) Pump will lose power, causing condenser vacuum to decrease. This will eventually cause steam dump to be lost, resulting in Steam Generator (SG) Power Operated Relief Valves (PORV's) to open. Once this faulty relay is identified, power will be able to be restored to Bus 13. If power is restored to Bus 13, the 11 CW Pump will lock out if attempts are made to start it.
 - 12 Motor Driven AFW Pump will fail to start due to inadequate condensate water supply. The manual valves from the Condensate Storage Tanks and the Cooling Water to AFW Pump Motor Operated Valves will have been sabotaged.
- 0935-0940 The crew will transition out of 1E-0 at step 4 and identify a Red Path on Heat Sink.
- The crew will enter procedure 1FR-H.1 "Response to Loss of Secondary Heat Sink"
 - Steam Generator Blow Down from both SG's will be isolated.
 - After attempts to start AFW fail, the Reactor Coolant Pumps will be tripped.
- ~0955 Wide Range (WR) level in both Steam Generators will drop below 25%.
- The crew should recognize a Site Area Emergency per EAL-12H "Complete Loss of any function needed for plant hot shutdown"
- 1000 If not yet identified, a Contingency Message will be given for sabotaged manual valves for the Condensate Storage Tanks.
- 1010 If the crew has not yet declared the Site Area Emergency, they will be prompted (EAL-12H).
- 1015-1025 After WR levels in both SG's are less than 15%, but prior to levels dropping below 9% (which would require initiation of RCS feed and bleed), at least 1 manual valve from the Condensate Storage Tanks to the AFW Pumps will be repaired and opened.
- 1025-1030 The crew should reestablish AFW to both Steam Generators
- ~1029
- The crew will transition to procedure 1ES-0.1, "Reactor Trip Recovery"
 - A Steam Generator Tube Rupture (SGTR) will occur on the 11 Steam Generator when AFW flow is established.

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EMERGENCY PLAN Exercise RERUN 2000

REV. 0

- 1030-1035 The crew will initiate Safety Injection due to decreasing Pressurizer Pressure and/or level.
- 1035-1045 The crew should recognize failure of 11 Steam Generator PORV to close (It will be stuck ~50% open).
- 1045-1100 A GENERAL EMERGENCY should be declared per EAL 6 Case 2 "Loss of clad, SG tube rupture and high potential for loss of containment."
- ~1100 If The crew has not declared the GENERAL EMERGENCY, they will be prompted (EAL 6 Case 2).
-
- 1045-1130
- Crew should transition to procedure 1E-2, "Faulted Steam Generator Isolation" due to the 11 SG pressure decreasing in an uncontrolled manner due to stuck open PORV. Attempts to close and/or isolate the PORV will fail.
 - When attempts to isolate the 11 SG in 1E-2 are complete, the crew should identify a ruptured SG and transition to procedure 1E-3, "Steam Generator Tube Rupture".
 - When the Reactor Coolant System (RCS) has been cooled down to establish adequate subcooling, using the 12 SG PORV, the crew should recognize that both SG's are within 250 psig of each other, and transition to procedure 1ECA-3.1 "SGTR With Loss of Reactor Coolant: Subcooled Recovery"
 - The crew will remain in 1ECA-3.1 until SI is terminated and Cold Shutdown Conditions are reached.
 - NOTE: due to simulator fidelity issues, DO NOT allow restart of RCP's in 1ECA-3.1, unless Accumulators have already dumped.. See contingency message.
- 1130-1200 Termination of exercise.

ASPECTS OF MINI DRILLS:

Unauthorized Individual (Security)

Security will respond to unauthorized individual in the AFW Pump Room and attempted sabotage

11 AFW Pump (Mechanical)

Maintenance/engineering/operations will attempt to repair 11 TDAFW Pump Trip throttle valve

Bus 13 and 14 failure (Electrical)

Electricians/engineers/operators will attempt to repair bus 14 and/or 13.

AFW Suction from CST's (Mechanical)

Maintenance/engineering/operations will attempt to repair manual valves on the line to more Condensate Storage Tanks (2CD-54-1, 2CD-27-1, and/or C-27-1). Attempts may also be made to repair the Motor Operated Valves for Cooling Water to AFW Pumps Suction (MV-32025, MV-32026 and MV-32027).

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DMIMS (I&C or Ops)

I&C/Operations will verify DMIMS alarm

11 SG PORV and Manual Isolation Valve (Mechanical)

Maintenance/operations/engineering will attempt to repair and close the 11 SG PORV and/or its manual isolation valve

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NOTE: No outplant action should be performed on the simulator until a field team controller calls and verifies the outplant operator has simulated the action.

INSTRUCTOR GUIDE

1. Initialize simulator to the E-Plan IC-81. Verify the following conditions:
 - a. RCS boron display = 812 ppm.
 - b. MOC ΔI curve displayed.
 - c. CBD at 218 steps, all others at 228.
 - d. All charts advanced and adequate paper and pens.
 - e. ERCS on-line and functional with alarms acknowledged.
 - f. Place the simulator in run.
 - g. Have Simulator group line up the simulator ERCS to the EOF.
 - h. Ensure the simulator phones are connected to the plant paging system..
 - i. Place SECURE CARD on the control switch for the 11 Condensate Pump.
 - j. Update the Reactivity Plan magnetic display on RO desk (10 Gal dilutions – eight/shift)
2. Place a copy of the turnover sheet in the turnover book and verify all logs are on clean pages. The simulator is now ready for turnover.
3. Crew will be briefed and on the simulator floor for a start time of **0715**:
 - a. *The RO has been conducting 10 gal dilutions eight times a shift for Tave control.*
 - b. *Ensure the CR start all communications with "THIS IS A DRILL."*
4. Allow the crew to familiarized themselves with the plant for about 15 minutes before initiating the first event.
5. **AT 0745:** With the Chief Controller's concurrence, insert the 11 TDAFW Pump Overspeed Alarm (**Relative Order 1, Trigger 1**). A Turbine Building Operator will be dispatched to investigate.
 - a. Several seconds after the alarm, the Central Alarm Station should receive an alarm for unauthorized entry to the AFW Pump Room, and dispatch a guard.
 - b. Security will discover an individual fleeing the area and provide chase to the D3 Room, where the individual will secure the door and commandeer the room.
6. **At ~0800:** Security should notify the Control Room of their situation. The Turbine Building Operator should report the condition of the trip throttle valve.
7. **AT 0930:** With the Chief Controller's concurrence, fail the Feedwater Regulating Valves **CLOSED (Relative Order 2, Trigger 2)**.

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8. The crew should respond and initiate a manual reactor trip. The crew will enter 1E-0.
9. When the reactor is tripped, the loose part and fuel failure will be activated (**Relative Order 3, Trigger 3**).
10. When the M to R transformer auto transfer occurs, ensure Bus 14 Locks Out (**Relative Order 4, Trigger 4**).
11. If/when Bus 13 is re-energized, ensure the 11 CW Pump failure to start will be enabled (**Relative Order 5, Trigger 5**).
12. Upon exiting 1E-0, the crew will notice a Red path on Heat Sink, and transition 1FR-H.1.
13. When the crew realizes inability to establish AFW flow, the RCP's will be tripped.
14. **AT ~ 0955:** EAL 12H will be met when level in both Steam Generators decreases to <25% as indicated on wide range level indication.
15. IF the crew decides to re-energize the Group B Pressurizer Heaters, THEN do so when outplant actions completed (**Relative Order 6, Trigger 6**).
16. **AT ~1025:** Indicated Wide range level on both Steam Generators will be 10% - 15%, when the crew will be informed that at least one AFW Suction valve has been repaired and opened. **Delete Malfunction FW35 (Relative Order 7)**.
17. WHEN 11 SG PORV reaches 50% open, THEN verify it sticks at 50% open **Relative Order 8, Trigger 8**
18. **1025-1030:** The crew will re-establish AFW to both Steam Generators.
19. **AT ~1029:** (to match expected radiological data) WHEN flow has been restored to the 11 SG, THEN enter the SGTR (**Relative Order 9, Trigger 9**). Once 200 gpm AFW has been established, the crew should transition to 1ES-0.1.
20. WHEN outplant reports actions completed, THEN isolate Unit 1 MSR's per Attachment J (**Relative Order 10, Trigger 10**)
21. **1030-1035:** The crew should actuate SI due to decreasing Pressurizer Pressure and/or level, and transition back to 1E-0.
22. **1040-1045:** Crew should identify failure of 11 SG PORV to CLOSE. Crew will transition to 1E-2 due to 11 SG pressure decreasing in an uncontrolled manner.
23. **1045-1055:** Crew should recognize a SGTR and transition to 1E-3.
24. **1105-1115:** Crew should transition to 1ECA-3.1, due to a faulted and ruptured SG.

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25. If necessary, and when outplant action complete, then re-power Accumulator outlet MOV's (**Relative Order 11 and 12, Triggers 11 and 12**)
26. At the discretion of the Chief Controller, place the simulator in **FREEZE**.
27. At the discretion of the Chief Controller, terminate the drill.

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Simulator Input Summary

Relative Order	Comment	TYPE	CODE	Severity or Value	Event Trigger	TIMING	DESCRIPTION
0		Malfunction	ED02C				Bus 13 Fail to transfer on M to R
0		Malfunction	FW35				Inadequate Condensate to AFW Suction
0		Malfunction	FW34A				11 AFW Pump fails to start
0		DI-Override	DI46438A Auto	ON			Prevent manual start of 11 AFW Pump
0		DI-Override	DI46433C Close	ON			Fail MV for CL to 11 AFW Pump Suct closed
0		DI-Override	DI46433O Open	OFF			"
0		LO-Override	LO46433G	ON			"
0		LO-Override	LO46433R	OFF			"
0		DI-Override	DI46434 Close	ON			Fail MV for CL to 12 AFW Pump Suct closed
0		DI-Override	DI46434 Open	OFF			"
0		LO-Override	LO46434G	ON			"
0		LO-Override	LO46434R	OFF			"
0		DI-Override	DI46450T Trip	OFF			Manual Rx Trip Switch
0							
1		Annun Malf	M47010:0206W	Cry Wolf	1		11 AFW Pump Overspeed Alarm
2		Malfunction	FW27A		2		Train A FRV fails closed
2		Malfunction	FW27B		2		Train B FRV fails closed
3	Auto trigger on	ERCs Pt ovrd	1Y9080D	Reset	3		DMIMS Alarm
3	Rx Trip Switch	Malfunction	CR01	100%	3	120 sec ramp	1% Clad failure
4	Auto trigger on M->R transfer	Malfunction	ED09D		4		Bus 14 Lock Out
5	Auto trigger If/ when Bus 13 re- energized	Malfunction	CW02A		5		11 CW Pump L.O. if started
6	If necessary	Remote	RX100	Bus 122	6		Przr Heater Group B Xfer
7		Malfunction	FW35	Delete			Inadequate Condensate to AFW Suction
8	Auto trigger when 11 SG PORV opens to 50%	Remote	MS121		8		11 SG PORV Fails to 50% open
8		Remote	MS122		8		11 SG PORV Fails to 50% open
9		Malfunction	SG02A	8%	9	60 sec ramp	11 Steam Generator Tube Rupture

<i>Relative Order</i>	<i>Comment</i>	<i>TYPE</i>	<i>CODE</i>	<i>Severity or Value</i>	<i>Event Trigger</i>	<i>TIMING</i>	<i>DESCRIPTION</i>
10		Remote	MS108		10		Isolate Unit 1 MSR's per Attachment J
10		Remote	MS109		10	60 sec delay	Isolate Unit 1 MSR's per Attachment J
10		Remote	MS110		10	120 sec delay	Isolate Unit 1 MSR's per Attachment J
10		Remote	MS111		10	180 sec delay	Isolate Unit 1 MSR's per Attachment J
11		Remote	SI112	NRML	11		11 Acc outlet MV-32071 (1LA1-D3)
12		Remote	SI113	NRML	12		12 Acc outlet MV-32072 (1LA2-C4)

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CHAMPS FORM KTF-D 2
RETENTION: 7 DAYS

UNIT 1 LPEO / PEO TURNOVER

DATE:
TIME: N(1800-0600)

SFGDS EQUIP OOS/LCO'S: 1 : 2 : 3 :	
RAD MONS OOS:	ANNUNC'S OOS:
OUTSTANDING SP'S:	FIRE DET/PROT EQUIP IMPAIRMENT:
OTHER EQUIP OOS / STATUS: 1 : Water Treatment: Train A for special Regen, Train B for resin replacement 2 : 11 CD Pump for motor replacement WO 0013380 3 : Oxygen to 121 Cat H2 Recombiner, needs cell replacement 4 : 121 SFP IX for Resin Sluice, 11 RWST to be put on purification following 5 : sluice 6 : 7 : SYSTEM CONDITION 7 8 : 9 : 10 : 11 : 12 : 13 : 14 : 15 : 16 : 17 :	
MAJOR EQUIPMENT REPAIRED/RETURNED TO SERVICE: 1 : 13 Charging Pump 2 : D2 3 : 4 : 5 :	
OPERATIONAL PLANS FOR COMING SHIFT: 1 : 1GT HAS OIL LEAK---BAD INDICATION DUE TO A FAULTY BLADDER-- SEE TI 2 : 12 RCP SEAL INJ FLTR INSERVICE & HAS A 1 MICRON FLTR INSTALLED 3 : 4 :	
NEW PROCEDURES / INSTRUCTIONS: 1 : DO NOT OPEN MV-32041 COULD CAUSE ALL AFWP'S TO BE OOS. 2 : 3 :	
WATCHSTANDERS LPEO: LPEO RELIEVED BY: _____ TIME: _____ DATE: _____ PEO RELIEVED BY: _____ TIME: _____ DATE: _____ CB WALKDOWN --> LPEO: _____ TIME: _____ --> PEO : _____ TIME: _____	

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SECTION VI Part 13 : METEOROLOGICAL DATA

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**PRAIRIE ISLAND NUCLEAR GENERATING PLANT
EMERGENCY PLAN EXERCISE RERUN
2000**

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**METEOROLOGICAL DATA (MIDAS)
15 MINUTE AVERAGE SUMMARY**

TIME	SENSOR	WIND SPEED (MPH)	WIND DIR'N FROM	TEMP (DEG. F)	AFFECTED SECTORS	60A DT (DEG. F)	STABILITY CLASS	RAIN
07:15	10A	8.4	22.6	23.7	HJKLM	-0.8	D	NO
	60A	8.0	22.8	22.9	HJKLM			
07:30	10A	8.1	23.0	23.8	HJKLM	-0.8	D	NO
	60A	7.8	23.1	23.0	HJKLM			
07:45	10A	9.0	23.3	24.1	HJKLM	-0.8	D	NO
	60A	8.5	22.8	23.3	HJKLM			
08:00	10A	8.6	22.7	24.6	HJKLM	-1.0	D	NO
	60A	8.4	23.3	23.6	HJKLM			
08:15	10A	8.1	23.2	25.3	HJKLM	-0.8	D	NO
	60A	8.5	22.8	24.4	HJKLM			
08:30	10A	8.0	23.4	25.4	HJKLM	-1.0	D	NO
	60A	8.7	22.7	24.4	HJKLM			
08:45	10A	9.3	23.3	26.4	HJKLM	-0.8	D	NO
	60A	7.7	23.4	25.6	HJKLM			
09:00	10A	8.2	23.0	26.2	HJKLM	-0.8	D	NO
	60A	9.0	23.2	25.4	HJKLM			
09:15	10A	9.2	22.6	27.1	HJKLM	-0.9	D	NO
	60A	8.5	23.1	26.2	HJKLM			
09:30	10A	8.0	23.3	27.1	HJKLM	-0.8	D	NO
	60A	8.8	23.0	26.3	HJKLM			
09:45	10A	9.1	23.1	27.5	HJKLM	-1.0	D	NO
	60A	8.1	22.8	26.6	HJKLM			
10:00	10A	8.8	23.2	27.9	HJKLM	-0.9	D	NO
	60A	8.1	23.3	27.0	HJKLM			
10:15	10A	9.0	22.9	28.3	HJKLM	-0.9	D	NO
	60A	7.7	22.8	27.4	HJKLM			
10:30	10A	8.5	24.6	28.7	HJKLM	-0.9	D	NO
	60A	8.2	25.2	27.8	HJKLM			
10:45	10A	8.3	25.5	29.6	HJKLM	-1.0	D	NO
	60A	7.4	24.6	28.6	HJKLM			
11:00	10A	8.3	24.7	29.5	HJKLM	-0.9	D	NO
	60A	7.8	25.4	28.6	HJKLM			

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**PRAIRIE ISLAND NUCLEAR GENERATING PLANT
EMERGENCY PLAN EXERCISE RERUN
2000**

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**METEOROLOGICAL DATA (MIDAS)
15 MINUTE AVERAGE SUMMARY**

TIME	SENSOR	WIND SPEED (MPH)	WIND DIR 'N FROM	TEMP (DEG. F)	AFFECTED SECTORS	60A DT (DEG. F)	STABILITY CLASS	RAIN
11:15	10A	7.5	25.1	29.9	HJKLM	-0.8	D	NO
	60A	7.6	24.7	29.1	HJKLM			
11:30	10A	7.5	25.3	31.0	HJKLM	-1.0	D	NO
	60A	8.5	24.6	30.1	HJKLM			
11:45	10A	8.3	25.3	31.4	HJKLM	-0.9	D	NO
	60A	8.3	25.1	30.5	HJKLM			
12:00	10A	7.2	25.3	31.7	HJKLM	-0.8	D	NO
	60A	8.1	25.0	30.9	HJKLM			
12:15	10A	8.1	25.4	32.3	HJKLM	-0.8	D	NO
	60A	7.2	24.9	31.5	HJKLM			
12:30	10A	8.4	25.5	32.4	HJKLM	-1.0	D	NO
	60A	7.3	25.4	31.5	HJKLM			
12:45	10A	7.6	25.3	32.3	HJKLM	-0.9	D	NO
	60A	7.9	24.5	31.5	HJKLM			
13:00	10A	8.3	25.1	33.0	HJKLM	-0.9	D	NO
	60A	8.0	24.9	32.1	HJKLM			
13:15	10A	7.6	25.2	33.3	HJKLM	-0.9	D	NO
	60A	7.6	25.5	32.4	HJKLM			
13:30	10A	7.6	24.9	33.8	HJKLM	-0.9	D	NO
	60A	8.7	25.5	32.9	HJKLM			
13:45	10A	8.5	25.5	34.2	HJKLM	-1.0	D	NO
	60A	7.9	25.3	33.3	HJKLM			

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