NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

EMERGENCY PLAN EXERCISE

SECTION II: EXERCISE OBJECTIVES & GUIDELINES

July 26, 1989

EXERCISE OBJECTIVES & GUIDELINES

Northern States Power Company (NSP) will exercise its Emergency Response Plan on July 26, 1989. The exercise will demonstrate the capability to adequately respond to a simulated accident at the Monticello Nuclear Generating Plant (MNGP).

Exercise participants will include the following organizations:

A. Northern States Power Company

   1. Onsite Emergency Response Organization

   2. Corporate Emergency Response Organization

      a. Emergency Operations Facility Organization

      b. Headquarters Emergency Organization

      c. State Capitol EOC Organization

B. Sherburne and Wright Counties and supporting local agencies, as identified in the Sherburne and Wright County Emergency Response Plans for the Monticello Nuclear Power Plant, will participate in a full-scale support capacity.

C. State of Minnesota - Division of Emergency Management and supporting agencies, as identified in the Minnesota Emergency Response Plan for Nuclear Power Plant, will participate in a full-scale support capacity.

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 for the purpose of checking communications only. All other Federal responses to an emergency, including those of the Interagency Radiological Assistance Plan of the Department of Energy, shall be simulated.

Guidelines have been developed for the conduct of the exercise which reflects capabilities of the various participating organizations to meet the objectives set fourth below. Each objective is followed by a paragraph which defines the "extent of play" by the exercise participants. Plant and Corporate Emergency Plan Implementing Procedures (EPIPs) are also listed which may be used by participants to conduct those actions necessary to satisfy the objective.

MONTICELLO NUCLEAR GENERATING PLANT
EMERGENCY PLAN EXERCISE
JULY 26, 1989

OBJECTIVES AND GUIDELINES SUMMARY

1. The emergency level shall be classified and declared.

   1.1 ALERT
   1.2 SITE AREA
   1.3 GENERAL

2. State, Counties, NRC, & NSP ERO shall be notified.

   2.1 State & Counties within 15 minutes
   2.2 NRC within 1 hour via ENS
   2.3 Plant ERO within 30 minutes (N/A)
   2.4 Plant personnel via page by control room
   2.5 NSP Corporate ERO within 1 hour by SCC
   2.6 All communications links demonstrated (phones, radios, fax)
   2.7 Offsite centers & agencies receive timely and accurate info

3. ERFs shall be activated.

   3.1 Actual startup times and activities
   3.2 TSC and OSC within 30 minutes
   3.3 EOF within 1 hour
   3.4 HQEC within 90 minutes
   3.5 NSP at State EOC within 90 minutes
   3.6 Offsite respon. transfer from TSC to EOF within 2 hours
   3.7 Plant and EOF ERF shift change planning
   3.8 Recovery discussions

4. The accident shall be assessed.

   4.1 Reactor and personnel safety monitoring in ERFs
   4.2 Offsite dose projections via MIDAS or backup
   4.3 Core damage assessment

5. The accident shall be mitigated to the extent allowed.

   5.1 Decision making and problem solving in all ERFs
   5.2 Corrective action formulation unless scenario derails
   5.3 Repair planning and execution

6. Onsite and offsite PARs shall be developed and communicated.

   6.1 Plant evacuation
   6.2 No PARs for the EOF
   6.3 General public PARs of sheltering and evacuation
   6.4 KI as necessary

OBJECTIVES AND GUIDELINES SUMMARY, CONTINUED

7. Post accident sampling and analyis shall be performed.

   7.1 Reactor coolant, containment, and effluent samples

8. Onsite radiological surveys shall be performed.

   8.1 External β and γ, surface contamination, and airborne surveys
   8.2 ERF habitability evaluated

9. Emergency exposure control shall be performed.

   9.1 TLDs and PICs issued in ERFs
   9.2 CAMs and ARMs used in ERFs
   9.3 Exposure and contamination controlled in ERFs
   9.4 Applicable limits maintained, delays minimized, ALARA

10. Offsite releases shall be monitored.

   10.1 Two field teams dispatched from plant
   10.2 Two field teams dispatched from PI
   10.3 Plume search, β and γ, contamination, and airborne surveys
   10.4 Sample analysis in the EOF

11. Accountability shall be done for plant evacuation.

   11.1 Accountability in 30 minutes (except shift operators)

12. Access control shall be maintained.

   12.1 Access controlled by security at ERFs

13. Clear communication shall be demonstrated with outside agencies.

   13.1 Appropriate communication systems used
   13.2 Correct plant conditions commmunicated
   13.3 Offsite radiological conditions communicated to MDH
   13.4 Engineering organizations notified
   13.5 Press releases prepared by NSP Communications Dept.
   13.6 Information provided to news media by NSP spokespersons
   13.7 Messages clearly stated and content understood

FOR THE NSP (LICENSEE) EMERGENCY RESPONSE ORGANIZATION:

1. Identification and Classification of the Emergency

Objective: Given simulated accident conditions, MNGP personnel shall correctly identify and classify the emergency as an ALERT, SITE AREA EMERGENCY, and GENERAL EMERGENCY as specified in MONTI EPIP A.2-101.

Guideline: 1.1 When given initiating conditions of an OBE, the Site Superintendent will classify the emergency as an ALERT within 5 minutes.

1.2 Within ten (10) minutes of the DBE, the Emergency Director/Emergency Manager will classify the event as a SITE AREA.

1.3 Within ten (10) minutes of the Group I isolation, the Emergency Director/Emergency Manager will classify the event as a GENERAL EMERGENCY.

The following EPIP's may be used to support this objective:

PLANT: A.1-101 Classifications of Emergencies

2. Accident Notifications

Objective: Upon emergency level declaration, MNGP and NSP Corporate personnel shall promptly complete accident notifications to the appropriate State and County/City agencies (15 minutes), the NRC (1 hour), MNGP personnel and Emergency Response Organization (30 minutes), and NSP Corporate Emergency Response Organization (1 hour).

Guidelines:

2.1 Notifications of emergency classifications to the State of Minnesota, Wright County and Sherburne County will be completed within 15 minutes. Initially these notifications will be made by the Shift Emergency Communicator (SEC) at the plant. Offsite communicators at the Emergency Operations Facility (EOF) will assume these responsibilities after it becomes fully operational.

2.2 The NRC will be initially notified within one hour by knowledgeable plant staff via the ENS hotline. The extended use of this communication line will be determined by the NRC participant. This communication link may eventually be transferred to a technical support person in the EOF.

2.3 Notification of the MNGP personnel per EPIP procedures within 30 minutes by the SEC is N/A (daytime drill).

2.4 The Control Room staff will notify MNGP personnel of the ALERT classification via the plant page.

2.5 NSP Corporate Emergency Response Organization will be notified within 1 hour by the NSP System Control Center (SCC) Operator per the "Nuclear Emergency Notification List for System Control Center".

2.6 All major NSP emergency communication links will be demonstrated utilizing designated emergency response communication equipment, e.g., telephones, ENS phone, HPN phone, field team radios, and facsimile transceivers.

2.7 Offsite NSP emergency centers will be updated with accurate and timely information.

2. Accident Notifications (Continued)

The following EPIP's may be used to support this objective:

PLANT: A.2-103 Alert
OR
A.2-104 Site Area Emergency
OR
A.2-105 General Emergency
A.2-501 Communication During an Emergency
A.2-503 Record-Keeping During an Emergency

CORPORATE:

EPIP 1.1.1 Corporate Emergency Response Organization
EPIP 1.1.2 Notifications
EPIP 1.1.3 Public Information
EPIP 1.1.8 Communication Equipment and Information
EPIP 1.1.15 Transition Into the Recovery Phase

3. Emergency Response Organization and Facility Activation

Objective: Given simulated OBE (ALERT) accident conditions, MNGP and NSP Corporate personnel shall activate the TSC, OSC, and Access Control within 1 hour and the EOF within 2 hours.

Guidelines:

3.1 Upon notification, the participants will demonstrate actual startup times and activities for each emergency center.

3.2. The TSC and OSC will be fully functional within 30 minutes.

3.3 The EOF will be fully functional within 1 hour. An EOF Coordinator (acting Emergency Manager) will be on duty in the EOF within 1 hour.

3.4 The HQEC will be fully functional within 90 minutes.

3.5 NSP representatives will be present at the MN State EOC within 90 minutes.

3.6 The transfer of appropriate offsite responsibilities (e.g., offsite communications, dose assessment, and offsite protective action recommendations) from the Onsite Emergency Organization to the Corporate Emergency Response Organization (EOF) will be demonstrated within 2 hours.

3.7 The NSP Emergency Organization will demonstrate through discussion and staff-planning the ability to perform a shift change in the TSC, OSC, Access Control, and EOF.

3.8 Activation of the Recovery Phase transition will be considered by involving the Recovery Manager in staff planning and discussion with the Emergency Manager and Emergency Director. Recovery will not be declared.

The following EPIP's may be used to support this objective:

PLANT:

A.2-001	Emergency Organization
A.2-106	Activation of the Technical Support center (TSC)
A.2-107	Activation of the Operation Support Center (OSC)
A.2-108	Access Control During Emergencies
A.2-411	Establishment of Secondary Access Point
F3-22	PI Radiation Protection Response to a MNGP Emergency

3. Emergency Response Organization and Facility Activation (Continued)

CORPORATE:

EPIP 1.1.1	Corporate Emergency Response Organization
EPIP 1.1.5	Startup and Operation of EOF
EPIP 1.1.6	Emergency Organization Shift Turnover
EPIP 1.1.7	Startup and Operation of HQEC
EPIP 1.1.8	Communication Equipment and Information
EPIP 1.1.15	Transition Into the Recovery Phase

4. Accident Assessment

Objective: Given simulated accident conditions, MNGP and NSP Corporate personnel shall demonstrate assessment of plant operational parameters and radiological data.

Guidelines: 4.1 Plant conditions and events important to reactor, containment, and personnel safety will be monitored and assessed in the Control Room, TSC, EOF and HQEC.

4.2 Offsite dose projections will be performed by use of the Meteorological Information and Dose Assessment System (MIDAS).

4.3 Core damage assessment will be performed per EPIP's by TSC support staff.

The following EPIP's may be used to support this objective:

PLANT:

A.1-101	Classifications of Emergencies
A.2-106	Activation of Technical Support Center (TSC)
A.2-107	Activation of Operation Support Center (OSC)
A.2-108	Access Control During Emergencies
A.2-201	Onsite Monitoring and Protective Action Criteria
A.2-204	Offsite Protective Action Recommendations
A.2-208	Core Damage Assessment
A.2-209	Responsibility of the Radiological Emergency
A.2-405	Release Rate Determination
A.2-406	Offsite Dose Projection
A.2-502	Record Keeping During an Emergency
A.2-601	Re-Entry

CORPORATE:

EPIP 1.1.4	Emergency Organization Records and Forms
EPIP 1.1.5	Startup and Operation of EOF
EPIP 1.1.7	Startup and Operation of HQEC
EPIP 1.1.11	Dose Assessment and Protective Action Recommendations

5. Accident Mitigation

Objective: Given simulated accident conditions, MNGP and NSP Corporate personnel shall demonstrate mitigation of the accident.

Guidelines:

5.1 Decision making and problem solving will be demonstrated at the various emergency centers by the appropriate participants, e.g., Control Room Operators, Shift Technical Advisor (STA), and Shift Supervisor in the Control Room; Emergency Director and TSC staff in the TSC; Emergency Manager and EOF staff in the EOF; and Power Production Management in the HQEC.

5.2 Corrective actions will be formulated in an attempt to mitigate the accident; however, unforeseen corrective actions that may defeat the scenario will not be be permitted by the drill controllers.

5.3 Simulated equipment failures will require repair planning and briefings leading to emergency repairs.

The following EPIP's may be used to support this objective:

PLANT:
A.2-103 Alert
OR
A.2-104 Site Area Emergency
OR
A.2-105 General Emergency
A.2-502 Record-Keeping During an Emergency

CORPORATE:

EPIP 1.1.5 Startup and Operation of EOF
EPIP 1.1.7 Startup and Operation of HQEC

6. Protective Action Decision-Making

Objective: Given simulated accident conditions, MNGP and NSP Corporate personnel shall develop and promptly communicate appropriate protective actions for onsite and EOF personnel, and for the protection of the health and safety of the public.

Guidelines:

6.1 Simulated plant conditions will warrant a plant evacuation for nonessential personnel to an onsite assembly point. A site evacuation (partial scale) will also be performed.

6.2 Based on the scenario, no protective actions will be warranted for personnel functioning in the EOF.

6.3 Recommended protective actions for the general public offsite, including evacuation, will be formulated and communicated to the appropriate state agencies within 15 minutes following declaration of a General Emergency. The general direction of the wind will be from the West-Northwest.

6.4 Use of potassium iodide will be correctly evaluated.

The following EPIP's may be used to support this objective:

PLANT:

A.2-201	On-Site Monitoring and Protective Action Criteria
A.2-204	Off-Site Protective Action Recommendations
A.2-209	Responsibilities of Radiological Emergency Coordinator
A.2-304	Thyroid Prophylaxis

CORPORATE:

EPIP 1.1.11	Dose Assessment and Protective Action Recommendations

7. Post Accident Sampling and Analysis

Objective: Given simulated accident conditions, MNGP personnel shall correctly obtain and analyze various inplant liquid and air samples.

Guidelines: 7.1 Inplant post-accident sampling will include sample analysis of reactor coolant, containment atmosphere, secondary containment, and gaseous effluent, as appropriate.

The following EPIP's may be used to support this objective:

PLANT:
- A.2-207 Sampling Priorities During an Emergency
- A.2-404 Emergency Sampling and Analysis
- A.2-408 Sample Coordination During an Emergency
- A.2-413 Small Volume Liquid Sample Obtained at the PASS

OR

- A.2-414 Large Volume Liquid Sample and/or Dissolved Gas Sample Obtained at PASS

OR

- A.2-415 Containment Gas Sample Obtained at PASS

OR

- A.2-416 Containment Iodine and Particulate Samples Obtained at PASS
- A.2-417 Draining the Trap, Sump, and Collector of PASS
- A.2-418 PASS Station Demin Water Tank Fill Procedure
- A.2-419 Liquid Radiochemical Analysis

OR

- A.2-420 Containment Atmosphere Radiochemical Analysis

OR

- A.2-421 Containment Atmosphere Iodine/Particulate Analysis
- A.2-422 Stack Iodine/particulate Sampling and Analysis
- A.2-423 Reactor Building Vents Iodine/Particulate Sampling and Analysis
- A.2-425 Post-Accident Gas Sample Line Heat Trace

CORPORATE:

- EPIP 1.1.18 Control of Radioactive Materials at the EOF

8. Onsite Radiological Monitoring

Objective: Given simulated accident conditions, MNGP personnel shall perform timely, appropriate, and accurate radiological surveys onsite (inplant and out of plant).

Guidelines: 8.1 Onsite radiological monitoring will include, as appropriate, external beta and gamma radiation surveys; direct and loose contamination surveys; and sampling for airborne particulate, iodine, and gas.

8.2 Radiological habitability will be properly evaluated in the TSC, OSC, Access Control, and EOF.

The following EPIP's may be used to support this objective:

PLANT: A.2-201 On-Site Monitoring and Protective Action Criteria
A.2-403 In-Plant Emergency Surveys

9. Emergency Radiation Exposure Control

Objective: Given simulated accident conditions, MNGP and NSP Corporate personnel shall control emergency radiation exposures within applicable limits.

Guidelines: 9.1 Emergency exposure management and control will be demonstrated by the issuance of TLDs and dosimeters in the SCR, TSC, OSC, Access Control, and EOF.

9.2 Continuous air monitors and area radiation monitors will operate in the control room, TSC, and EOF.

9.3 Emergency exposure and contamination controls will be demonstrated at the OSC, TSC, control room, and access control.

9.4 Applicable limits will not be exceeded, unnecessary delays will be minimized, and exposures will be maintained as low as reasonable.

The following EPIP's may be used to support this objective:

PLANT:

A.2-201	On-Site Monitoring and Protective Action Criteria
A.2-401	Emergency Exposure Control
A.2-402	Contamination Control
A.2-407	Personnel and Vehicle Monitoring
A.2-409	SCBA Use During an Emergency
A.2-411	Establishment of Secondary Access Control

CORPORATE:

EPIP 1.1.16	Offsite Personnel and Vehicle Monitoring and Decontamination
EPIP 1.1.17	Personnel Monitoring at the EOF

10. Offsite Monitoring

Objective: Given simulated accident conditions, MNGP and NSP Corporate personnel shall correctly monitor offsite radiological releases through a program of surveying, sampling, and analyzing.

Guidelines:

10.1 MNGP will dispatch at least two field monitoring teams for offsite radiological monitoring.

10.2 Prairie Island Nuclear Generating Plant will assist in offsite monitoring upon notification and arrival at the EOF.

10.3 Offsite radiological monitoring will include plume search, beta/gamma surveys, contamination surveys, and air sampling, as required.

10.4 Offsite samples will be transported to and analyzed in the EOF countroom.

The following EPIP's may be used to support this objective:

PLANT:

A.2-202	Off-Site Monitoring During an Emergency
A.2-410	Out-of-Plant Surveys
A.2-424	EOF Count Room Counting Procedure

CORPORATE:

EPIP 1.1.5	Startup and Operation of EOF
EPIP 1.1.10	Offsite Surveys
EPIP 1.1.11	Dose Assessment and Protective Action Recommendations
EPIP 1.1.18	Control of Radioactive Materials at the EOF

11. Assembly and Accountability

Objective: MNGP personnel shall perform personnel accountability within 30 minutes of the Emergency Director ordering a a plant evacuation.

Guideline: 11.1 Plant evacuation and personnel accountability will be completed within 45 minutes of the DPE. (Note: Shift operations personnel will not be evacuated.) Once on-site assembly and accountability procedures have been completed, most non-participating personnel will be allowed to return to their normal work stations. Some will be involved in a site evacuation.

The following EPIP's may be used to support this objective:

PLANT:
- A.2-205 Personnel Accountability
- A.2-301 Emergency Evacuation
- A.2-302 Assembly Point Activation
- A.2-303 Search and Rescue

12. Access Control

Objective: Given simulated accident conditions, MNGP and NSP Corporate personnel shall maintain control of access into the plant and EOF respectively throughout the emergency.

Guideline : 12.1 Access control will be demonstrated by both NSP and Security personnel at the plant, EOF, and HQEC throughout the simulated emergency.

The following EPIP's may be used to support this objective:

PLANT: A.2-108 Access Control During Emergencies
A.2-411 Establishment of Secondary Access Control Point

CORPORATE:

EPIP 1.1.5 Startup and Operation of EOF
EPIP 1.1.7 Startup and Operation of HQEC
EPIP 1.1.17 Personnel Monitoring at EOF

13. Interfaces with Support Organizations, Representatives of the News Media, and Government Agencies

Objective: Given simulated accident conditions, MNGP and NSP Corporate personnel shall demonstrate clear communication with outside support organizations, news media representatives, and government agencies in a timely manner using appropriate communication channels.

Guidelines:

13.1 The appropriate communication systems will be used (e.g., telephones, ENS phone, HPN phone, and facsimile transceivers).

13.2 Appropriate plant conditions will be communicated to the state's emergency government.

13.3 Field survey data and offsite dose projections will be shared with the State Health Department.

13.4 Plant architectural and design engineering organizations will be notified and kept informed of plant events, depending on the extent of their participation. Advice from these organizations will be considered if so offered.

13.5 Simulated press releases will be prepared by the NSP Communication Department.

13.6 Spokespersons from NSP will be present at the State EOC, and provide information requested by the news media to the maximum extent practical.

13.7 Messages will be clearly stated and the content understood by the recipient.

13. Interfaces with Support Organizations, Representatives of the News Media, and Government Agencies (Continued)

The following EPIP's may be used to support the objective stated above:

PLANT:

A.2-103	Alert
OR	
A.2-104	Site Area Emergency
OR	
A.2-105	General Emergency
A.2-501	Communications During an Emergency

CORPORATE:

EPIP 1.1.2	Notifications
EPIP 1.1.3	Public Information
EPIP 1.1.7	Startup and Operation of HQEC
EPIP 1.1.8	Communication Equipment and Information
EPIP 1.1.14	Vendor and Consultant Services

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SCENARIO NARRATIVE SUMMARY & TIMELINE

Time	Event/Condition
0745	**INITIAL CONDITIONS**
	Reactor has been at full power for 12 months.
	Wind is from the north at 2 mph. Pleasant forecast, with an expected high for the day in the 70s. Winds are forecast to shift around so that they will be from the west.
	Normal reactor coolant leakage rates.
	Reactor Core Isolation Cooling (RCIC) is out of service for repair of turbine bearings. Expected return to service is in 3 days. The 15 day LCO was declared yesterday. High Pressure Coolant Injection (HPCI) was verified operable yesterday and today.
0800	Operational Basis Earthquake (OBE) occurs. Page announcement made of message that participants feel ground motion; a security guard also calls in to the simulator control room (SCR) that he felt what he thinks was an earthquake.
	ALERT CONDITIONS MET.
	Control Rod drive (CRD) pump #11 trips on over current, due to 1 of 3 power leads being pulled out of its splice at the motor. Some metalizing occurred inside the box, and the cover blew off due to gas pressure buildup (a mock-up will be used when repair crews perform corrective maintenance on this casualty).
	Discharge canal sample low flow alarm is received, due to silt buildup in the line from the earthquake.
	A ground occurs on the 125V DC battery system, due to acid tracking on the terminals.
	Offgas recombiner train A trip occurs, due to broken sensing line on high pressure side of steam FT 7500A.
~0805	ALERT DECLARED, by the Site Supt., per Guideline (GL) 22.
	An orderly shutdown should commence, per procedure C.4-B.5.14.A, with reactor recirculation pump manual runback at 7 MWe per minute. Core flow should be about 26 M lbs/hr (the point at which CRD insertion would begin) when the Design Basis Earthquake (DBE) occurs @ 0845.

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SCENARIO NARRATIVE SUMMARY & TIMELINE

Time	Event/Condition
~0805	Individuals should be dispatched to investigate the discharge canal sampler, the offgas recombiner, the 125 V DC battery, and the CRD pump casualties. The purpose of these problems is to give the participants meaningful work activities while at the ALERT. In each case, successful actions taken by participants to correct identified problems will be allowed and should not affect the overall outcome of the exercise.
0800-0845	Contingency message that says "reduce power at 7 MWe/min, per procedure C.3", in case operations intends to do a rapid power reduction or scram.
0810	National Earthquake Service responds (if they are called) that earthquake of 4.2 Richter Scale occurred at latitude 45 degrees 15 minutes and longitude 93 degrees 53 minutes (6 miles SSW of plant), but that they have no information on ground motion g force.
~0820	Operator/engineer team(s) should be assembled to do a plant walkdown.
	Notifications to the State and Counties are completed.
~0840	Contingency event: If operators start inserting CRDs, the CRD flow control valve will cease functioning (due to air line severance). This should delay them long enough to prevent rod motion.
	Teams should be back from CRD pump room, battery room, offgas recombiner, and maybe the discharge canal sample house. The earthquake walkdown team should still be in the plant. CRD pump motor repair planning should be in progress.
	The TSC, OSC, and access control are operational.
084450	If earlier alarms were cleared, the Earthquake alarm is received.
084455	Message that ground motion is felt. If earlier alarms were cleared, OBE alarm is received.
0845	Design Basis Earthquake alarm is received. Messages are issued again via plant page that moderate ground motion is felt for 10 seconds.
	SITE AREA CONDITIONS MET.

SCENARIO NARRATIVE SUMMARY & TIMELINE

Time	Event/Condition
0845	The turbine trips due to the thrust bearing wear detectors sensing high shaft displacement. A SCRAM signal is generated, but Anticipated Transient Without Scram (ATWS) event occurs due to mechanical binding of CRDs. CRD positions hardly change. The reactor remains at power, oscillating around 20% power. Full Emergency Core Cooling System (ECCS) capability exists, and the condenser and feed pumps are available. The bypass valves are dumping 15% steam flow to the condenser; the Safety Relief Valves (SRVs) and/or HPCI maintain reactor pressure, as controlled by the operators, and torus cooling is in service. This is a quasi stable situation, since torus temperature will be decreasing. CRD pump # 12 trips on over current, due to speed increaser gear box binding. Fuel failure begins, with ramp to fission product coolant concentrations a few times normal in 50 minutes, followed by a ramp to 100 times normal in 15 minutes (this should cause a Main Steam Line Radiation Monitor (MSLRM) SCRAM and Group I isolation in about 60 minutes, at ~0945). For the first 30-40 minutes the fuel failure will be virtually transparent to exercise participants.
0845-0855	Procedure C.5-1103 is executed. ATWS is armed and tripped (reactor recirculation pump motor generator set field breakers are tripped, but no control rod motion occurs with Alternate Rod Insertion [ARI]). ATWS and SCRAM are reset (functions properly). Operators wait for 5-B-21 alarm to clear, then a manual SCRAM is tried (still no rod motion). ATWS and SCRAM are reset (functions properly). Scram discharge header vent and drain valves are closed. Individual rod scram test panel switches are tried, but no rod motion occurs. Operators should then prepare for high point venting of the CRD hydraulic lines. Reactor power settles out at ~22%.
~0850	**SITE AREA DECLARED** per GL 22. A plant evacuation will be ordered. The warehouse assembly point will likely be used. If evacuation of site personnel beyond the security Protected Area is ordered (i.e., trailers and NE&C office), the guards will perform the sweep of the Owner Controlled Area, but personnel will not evacuate.

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SCENARIO NARRATIVE SUMMARY & TIMELINE

Time	Event/Condition
~0855	CRD high point venting preparation begins. The National Earthquake Service (NES) responds (if called) that a Richter scale 4.8 earthquake occurred at latitude 45 degrees 17 minutes and longitude 93 degrees 55 minutes (7 miles WSW).
~0915	High point venting has been tried on a few rods and failed to move any (operations personnel may discontinue this activity after a few attempts). This is the soonest possible time they should decide to use Standby Liquid Control (SBLC, or boron injection to the reactor). IF operators decide to inject SBLC, it will not inject (squib valves will fire, but the pump running lights will not come on; cause will be contacts 7 & 8 on pump hand switch 11A-S1 in the control room will not make up due to a broken cam, which should be a problem they can diagnose and repair within ~30 minutes). Contingency preventing use of the SBLC local pump hand switch until electrical troubleshooting is completed.
0845-0940	Contingency preventing a GENERAL EMERGENCY declaration until 0940 to allow time for the State to prepare for congregate care activities at the Fairgrounds (a GENERAL might be declared based on loss of shutdown systems + earthquake, or per GL 28.4, but a strict reading of GL 12 would dictate staying at a SITE AREA due to lack of "core damage"; a GENERAL may also be declared if readouts of the seismic tapes are not available, and the ED becomes concerned that the earthquake was much larger than design basis - in this case a contingency call will be made from the NES stating the earthquake had a ground motion of about 0.085 g's, only slightly above the 0.06 DBE level).
~0920	Accountability has been completed. If the TSC decides to send non ERO staff home soon enough before the stack release at ~1000, the assembled personnel will be released back to work. If the disposition of these people occurs during the release, 20 will participate in an evacuation to the off-site assembly point at the Sherco facility. A decision may be made to inject boron using RWCU. This will be allowed and will not affect the scenario.
~0935	Increased fuel failure ramp rate begins. The stack and vent gaseous effluent, containment, MSLR, and offgas monitors, and Area Radiation Monitor (ARM) A-7, are increasing noticeably.

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SCENARIO NARRATIVE SUMMARY & TIMELINE

Time	Event/Condition
~0940	The MSLRM alarms (3000 mR/hr). GENERAL EMERGENCY might be declared, and will be allowed, because 1) the State has had enough time at the SITE AREA, and 2) Protective Action Recommendations (PARs) should include evacuation (an objective for the State). SBLC will probably be injected if it has not yet been tried.
~0942	HPCI room ARM (20 mR/hr) and ARM A-7 (30 mR/hr) alarms received.
~0945	MSLRM SCRAM setpoint (6000 mR/hr) is reached. The Main Steam Isolation Valves (MSIVs) close (Group I isolation) and a SCRAM signal is received, but the control rods do not move. If the operators intentionally close the MSIVs in anticipation of receiving the Group I, this will be allowed. Safety Relief Valve (SRV) B fails open, sticks open, and its tailpipe ruptures above the torus water line, due to a water slug. Drywell (DW) pressure starts going up quickly, and Group II isolation signals are received (2 psig in the DW). **GENERAL EMERGENCY CONDITIONS MET.** Standby Gas Treatment (SBGT) starts, and secondary containment isolates. The containment monitors begin ramping at about 2300 R/hr per minute from increased fuel failure due to pressure oscillations in reactor. ARMs A-10 through A-18 (these ARMs are in the lower levels of the reactor building) go offscale within 1-4 minutes, due to fission products accumulating in the torus. Very loud noises are heard coming from the torus area. Soonest probable time the SBLC pumps become operable, by bypassing the panel switches using jumpers at 1 of several possible locations (contacts in Motor Control Center 142 in the turbine building, local pump test switches, or panel switches). If this is done, a pump will be allowed to run, but boron will be set at 0% (in the simulator) for 10 minutes, to ensure the reactor will still be at the correct power level during DW venting.

MONTICELLO NUCLEAR GENERATING PLANT
EMERGENCY PLAN EXERCISE JULY 26, 1989

SCENARIO NARRATIVE SUMMARY & TIMELINE

Time	Event/Condition
~0950	GENERAL EMERGENCY DECLARED per GL 28 (1) loss of primary coolant boundary; 2) clad failure - containment monitors should be reading about 10,000 R/hr now, which corresponds to about ~1% of the reactor core Ci inventory being released; and 3) a high potential for loss of primary containment should be judged to be probable).
0950	The work teams in the plant (EQ walkdown, CRD pump jobs) should be ordered back to access control. Doses will be calculated on-the-spot by controllers based on how long they were in the plant and where they were in relation to the torus. For participants in the lower level of the reactor building at 0945, 10CFR20 overexposures are likely; lethal exposures are a remote possibility. Emergency depressurization is performed per Emergency Operating Procedures (EOPs) using 3 Automatic Depressurization Valves (ADS). At the same time, another SRV (F) sticks open and has a broken tailpipe (this helps ensure DW pressure increase occurs before reactor vessel level/power is lost, and should go unnoticed). SBLC is turned on (if it wasn't earlier), but doesn't work (per reasoning above @ 0915). Operators terminate and prevent injection to the reactor vessel per the EOPs. Note: A third SRV (E) with broken tailpipe will also be used to control pressure increase by remote simulator function, along with B & F SRVs, so that DW pressure increase is prolonged as much as possible to allow time for operator actions, but not so long that reactor level/power decrease will prevent drywell pressure from reaching 56 psig. E SRV's opening/closing will be transparent to the operators. Injection to the reactor might occur when Low Pressure Coolant Injection (LPCI) reaches its injection setpoint (~330 psig, when the check valve allows flow). Any injection should only help drive the scenario, due to adding positive reactivity and improving the ability to pressurize the DW.

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~0955	DW pressure should be close to 40 psig. Jumpers for the vent valves should be ordered. Protective Action recommendations (PARs) are being formulated in the EOF. Containment monitors will be reading about 20,000 R/hr. Evacuation should be recommended to the State, by answering "yes" to step 3 of figure 2 of Corporate EPIP 1.1.11. Contingency message that directs the Radiological Protection support supervisor (RPSS) to recommend evacuation in case sheltering only is recommended (due to belief on the part of the RPSS that evacuation is not deemed possible before DW venting puff release plume arrives). Contingency message that says "DW pressure is 58 psig", in case it never makes it to 56 psig.
~1000	All personnel should be verified out of the reactor building. Operators begin intentional venting of the DW per C.5-1203 & 3006. Reactor level is below the top of the fuel, and power begins dropping. Stack gaseous effluent monitors show a sharp increase up to 2 E 9 uCi/sec, which includes significant iodine levels. Reactor building ARMs go offscale due to noble gases being dispersed into it (caused by a rupture of the ventilation ducting between the DW and SBGT). Reactor building dose rates will reach 500 R/hr in 4 minutes.
~1002	Drywell pressure is $\leq$ 50 psig, so venting should stop. The stack release rate will then settle out at about 4 E 7 uCi/sec. A hole ~10 ft2 in area develops near the roof of the Reactor Building due to pressure buildup within it. An unmonitored release starts ejecting forcefully in an upward direction.
~1015	A team should be dispatched to do a structural examination of the Reactor Building.

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~1020	SBLC is returned to service, and injects boron solution normally. The reactor will be in hot shutdown in about 15 minutes. If SBLC failure cause has not been determined, a contingency message will be issued, so that it is returned to service in a timely manner.
1030	The TSC is dealing with dose rates of 10-100 mrem/hr in the administration building, and 500 mrem/hr in the security building, by issuing and reading dosimetry. Contamination monitoring at access control is not possible. Determination of the release rate and dose projection associated with the unmonitored release is in progress. The operators restore reactor water level when 800 gallons remain in the SBLC tank (hot shutdown boron weight). As containment pressure decreases, torus spray is stopped to prevent the torus vacuum breakers from opening. DW cooling is started after the Group I isolation clears. An SRV is opened, Shutdown Cooling breakers are racked in inside the Turbine Building, and a reactor recirculation pump is started to allow Shutdown Cooling to operate.
~1100	The EOF is investigating significant disparities in magnitude and location, between MIDAS predictions and offsite survey results (MIDAS is an offsite dose projection computer program).
1130	Lunches arrive at the security checkpoint near the substation. The lunches are wrapped in large plastic bags and "Handi Wipes" are included, to allow the TSC staff to demonstrate proper food handling for the simulated accident conditions.
~1200	The plant and simulator participants are released, with the exception of the TSC group leaders, who will be asked to do recovery activities (they should consider what conditions must be met to declare recovery, and what information they need). The EOF continues complete participation until 1300, to give the State enough time to demonstrate congregate care at the Fairgrounds.
1300	NSP ceases participation in the Exercise. A 1 day time jump message is issued to the State with a description of intervening activities and sufficient ground deposition data to allow them to close out their portion of the Exercise. The RPSS should remain available until 1400.