

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-315/93017(DRSS); 50-316/93017(DRSS)

Docket Nos. 50-315; 50-316

Licenses No. DPR-58; DPR-74

Licensee: Indiana Michigan Power Company
1 Riverside Plaza
Columbus, OH 43216

Facility Name: D. C. Cook Nuclear Power Plant, Units 1 and 2

Inspection At: D. C. Cook Site, Bridgman, Michigan

Inspection Conducted: June 29 - July 1, and July 7-8, 1993

Inspector: H. Simons
H. Simons

July 22, 1993
Date

A. Markley
A. Markley

7-27-93
Date

R. Paul
R. Paul

7/27/93
Date

Accompanying Inspectors: B. Wetzel
J. Isom
D. Hartland
T. Chapman

Approved By: J. W. McCormick-Barger
J. W. McCormick-Barger, Chief
Emergency Preparedness and
Non-Power Reactor Section

7/27/93
Date

Inspection Summary

Inspection on June 29-July 1 and July 7-8, 1993 (Reports
No. 50-315/93017(DRSS); 50-316/93017(DRSS))

Areas Inspected: Routine, announced inspection of D. C. Cook's emergency preparedness exercise involving a review of the exercise scenario (IP 82302), and observations by seven NRC representatives of key functions and locations during the exercise (IP 82301), and follow up on previously identified items (IP 82301).

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Results: No violations or deviations were identified. Overall exercise performance was very good. However, two emergency planning concerns were identified and are discussed in Sections 5a and 5c of this report. The emergency plan does not define the Control Room (CR) Emergency Response Organization (ERO) that was demonstrated during this exercise. Additionally this CR ERO is not standardized among the various CR crews. Also, the emergency plan specifies that auxiliary equipment operators will be staged in the CR during the emergency rather than the Operational Staging Area. This could cause confusion and distract from the emergency response efforts of the CR crew.

DETAILS

1. NRC Observers and Areas Observed

H. Simons, Control Room Simulator (CRS), Operational Staging Area (OSA)
B. Wetzel, Technical Support Center (TSC)
J. Isom, CRS
D. Hartland, CRS
A. Markley, OSA
T. Chapman, Emergency Operations Facility (EOF)
R. Paul, EOF

2. Persons Contacted

E. Fitzpatrick, Vice President, Nuclear Operations
A. Blind, Plant Manager
J. Rutkowski, Assistant Plant Manager-Technical Support
J. Wiebe, Safety and Assessment Superintendent
S. Richardson, Operations Superintendent
R. Krieger, Emergency Preparedness (EP) Coordinator
J. Smith, Assistant EP Coordinator
S. Colvis, Corporate EP Coordinator
D. Noble, Radiation Protection Superintendent
R. West, Licensing Coordinator

The personnel listed above and others attended the NRC exit interview on July 8, 1993. The inspectors also contacted other licensee personnel during the inspection.

3. Licensee Action on Previously Identified Items (IP 82301)

(Closed) Inspection Follow Up Items 315/92019-03 and 316/92019-03: The licensee failed to demonstrate adequate command and control in directing the onsite emergency response efforts during the 1992 exercise.

The inspectors observed command and control during the 1993 exercise and interviewed key exercise participants. The inspectors determined that command and control of the onsite emergency response efforts was adequate during the 1993 exercise. Therefore, this item is closed. However, two emergency planning concerns were identified as a result of the interviews with key players. These concerns are discussed in Sections 5a and 5c of this report.

(Closed) Inspection Follow Up Items 315/92019-04 and 316/92019-04: The licensee failed to demonstrate the capability to dispatch emergency response teams from the Operational Staging Area (OSA) in a timely manner during the 1992 exercise.

During this exercise, all emergency response teams were dispatched from the OSA within 20 minutes of being requested. Several teams were dispatched very quickly when there were minimal radiological concerns. This item is closed.

4. General Observations (IP 82301)

An announced, daytime exercise of the licensee's emergency plan was conducted at the D. C. Cook Plant on June 30, 1993. This was a full participation exercise for the State of Michigan and Berrien County. This exercise tested the licensee's, State's and counties's capabilities to respond to an accident scenario resulting in a simulated release of gaseous effluent. Attachment 1 describes the scope and objectives of the exercise. Attachment 2 summarizes the exercise scenario.

The licensee's response was generally coordinated, orderly, and timely. If scenario events had been real, the actions taken by the licensee would have been sufficient to mitigate the accident and permit the State and local authorities to take appropriate actions to protect the public's health and safety.

5. Specific Observations (IP 82301)

a. Control Room Simulator (CRS)

The Control Room Simulator (CRS) crew properly responded to abnormal conditions. Their use and knowledge of procedures was excellent.

The Shift Supervisor (SS) properly declared an Unusual Event due to a simulated injured, contaminated worker. He also correctly declared an Alert based on primary to secondary leakage. Offsite notifications were performed in a timely and adequately detailed manner. The NRC was notified within one hour of each declaration.

The SS generally did a good job ensuring his priorities were communicated to the Technical Director (TD) in the Technical Support Center (TSC). However, one example of poor communication was noted. At 10:14 a.m., isolation of the reactor coolant pump seals was a high priority; however, the request for radiation protection support from the Operational Staging Area (OSA) was not communicated to the TSC until 10:30 a.m.

The Control Room (CR) crew effectively organized themselves to respond to the emergency. However, it was determined through player interviews that an informal emergency response organization (ERO) had been established in the CR. The crew had assigned specific duties to each member of the crew. For example, the Assistant SS was responsible for briefing and dispatching auxiliary equipment operators (AEOs). The Unit Supervisor was

responsible for directing actions required by the emergency operating procedures (EOPs). An extra Unit Supervisor was responsible for interfacing with the Assistant SS and the Unit Supervisor to ensure that the AEOs accomplished the remote tasks required by the EOPs. Each position had an emergency title.

It was also determined through interviews that the licensee was unsure if all CR crews had set up this informal ERO or it was unique to this crew. No formal training was provided on this ERO.

The licensee's emergency plan does not specify the responsibilities of the Operations Superintendent while responding to an emergency in the Control Room. Nor does it describe the responsibilities of the SS after the responsibilities of Site Emergency Coordinator are transferred to the Plant Manager or the TD in the TSC.

The licensee's emergency plan does not assign responsibility to a specific person for ensuring that the inplant tasks requiring assistance by AEOs are accomplished.

The licensee's review of the concerns identified above regarding the lack of clarity in the plan describing the control room emergency response organization will be tracked as an Inspection. Follow Up Item (No. 315/93017-01).

No violations or deviations were identified.

b. Technical Support Center (TSC)

Activation of the Technical Support Center (TSC) was conducted in an orderly manner with minimum noise level. Staffing sheets and the TSC staff status boards were promptly completed. The Technical Director (TD) properly assumed the duties of Site Emergency Coordinator (SEC) from the Plant Manager.

The TD provided briefings regularly to the TSC staff. These briefings could have contained more details related to priorities and the focus of the emergency response efforts. More detailed briefings could have helped to focus the TSC staff on their tasks. No information was given during briefings on the radiological conditions in the plant. This would have been useful to the plant evaluation team (PET) in determining which plant equipment was accessible.

Communications with other facilities were good. The Operational Staging Area (OSA) Communicator did an excellent job explaining details and priorities related to the inplant teams to the communicator in the OSA. He also assisted in coordinating resources for these teams.

Maintenance of the status boards was very good. Plant parameters were updated every 15 minutes. A detailed chronology was kept and printed out every 30 minutes. The status board recording the progress of inplant teams was also kept current. Priorities were listed on the inplant team status board for the teams in the plant. However, there was no status board listing the overall priorities of the emergency response efforts.

Assessment of plant conditions and recommendations made by the PET were good. The PET communicated with the Control Room Simulator (CRS) crew and the Initial Assessment Group to recommend actions. The operations representative, training representative, and Shift Technical Advisor in the PET followed actions taken in the emergency operating procedures and worked with the CRS for their transition into the required EOPs. Toward the end of the exercise, the PET worked together in an anticipatory mode developing guidance for the CRS for recovery and long term actions.

No violations or deviations were identified.

c. Operational Staging Area (OSA)

The Operational Staging Area (OSA) was declared operable within 25 minutes from the declaration of the Alert. Activation of the OSA proceeded in a timely and orderly manner with a good use of procedures. Good initial briefings were observed between the Radiation Protection (RP) Director and the OSA Manager, between RP Director and inplant teams, and (RPD) from the OSA Manager to the OSA staff regarding plant status and OSA priorities.

The main staging area within the OSA had been expanded to approximately twice its previous size. Additional emergency equipment was also available. Improvements were also made to the emergency status and team tracking boards.

Emergency workers began donning protective clothing and checking emergency respiratory equipment upon arrival in the OSA. These changes facilitated a more timely response and dispatch of inplant teams. Teams were dispatched in a timely manner from the OSA. All teams were dispatched within 20 minutes of being requested. At the beginning of the exercise, when there were not significant radiological concerns, inplant teams were dispatched even more quickly.

Within the OSA, there was good coordination and planning between radiation protection and maintenance personnel. However, it was determined through player interviews, that some confusion existed regarding who was responsible for ensuring that teams assigned auxiliary equipment operators accomplished their mission. Since AEOs remained in the Control Room and did not report to the

OSA Manager, the Shift Supervisor (SS) maintained control of the AEOs' activities.

During the accident scenario, extensive coordination between the Radiation Protection Director in the OSA and the Assistant SS was needed such that AEOs could be dispatched into the plant. At times, there were minor delays in dispatching radiation protection technicians to accompany AEOs because the RPD needed the name and badge number of the AEO being dispatched so he could issue dosimetry.

When significant radiological hazards existed in the plant, the RPD correctly decided that all AEOs dispatched from the CRS should first report to the OSA. The licensee could have at this time relocated the AEOs to the OSA in order to expedite their inplant response when requested.

NUREG-0578 discussed the need to establish an Operational Support Centers for auxiliary operators, health physics personnel and technicians to decrease the congestion and confusion in the Control Room during an emergency. The licensee's reevaluation of the practice of having AEOs staged in the Control Room and reporting to the Shift Supervisor will be tracked as an Inspection Follow Up Item (No. 315/93017-02).

No violations or deviations were identified. . .

d. Post Accident Sampling Team (PASS)

The Post Accident Sampling (PASS) team followed instructions and reported status, technical information, and problems encountered, as appropriate. Good use of procedures, repeat backs in communications, and corrections of errors were observed. However, the OSA did not keep the PASS team apprised of plant conditions or emergency classifications during the exercise. The PASS team, once dispatched, was unaware that the a Site Area Emergency and subsequently a General Emergency had been declared. In addition, the PASS team was not advised that a simulated radioactive release had occurred.

Good problem solving efforts and input to OSA decision makers were provided by the PASS team. Based on a sample request time of 11:30 a.m., the sample was taken and analyzed by the PASS team in two hours and fifteen minutes.

Attention to radiation exposure control and minimizing radiation dose was excellent. Contamination controls used by the PASS team in the plant were observed to be very good. However, the demonstration of contamination controls was not fully played out after the PASS sample was obtained. Upon exit from the plant to the chemistry lab area, the CTs entered the clean side of the

chemistry lab without removing their protective clothing or without monitoring themselves for radioactive contamination.

No violations or deviations were identified.

e. Emergency Operations Facility (EOF)

The activation of the Emergency Operations Facility (EOF) was performed in an efficient manner. The EOF personnel were knowledgeable of their duties. The EOF Manager and Recovery Manager received good briefings upon arrival at the EOF. The turnover briefing, from the plant staff to the corporate responders, was very thorough. Briefings provided to the EOF staff were timely and informative.

The State was provided information in a timely manner. The periodic State updates required every 15 minutes were generally performed in a timely manner. Only on two instances were these updates a few minutes late. On these occasions, the State was informed that the updates were going to be a few minutes late and verbally briefed on plant conditions.

The dose assessment area was well staffed by plant staff initially and augmented by the corporate staff. They were familiar with dose assessment equipment and applicable procedures. Dose projections were performed in accordance with procedures. The staff verified the projections by comparing them to field data obtained from the offsite monitoring teams.

Offsite monitoring teams were directed appropriately such that they were in position to measure the radioactive release in a timely manner. Communication between the offsite monitoring teams and the EOF dose assessment staff was very good.

Protective action recommendations (PARs) were properly formulated by the EOF staff. The EOF staff did a very good job responding to inquiries from the State on the basis for the PARs.

No violations or deviations were identified.

6. Exercise Objectives and Scenario Review

The exercise scope and objectives and the exercise scenario were submitted to NRC within the proper timeframes. The licensee adequately responded to the inspectors' questions pertaining to the scenario.

The scenario was challenging and included a large offsite release, multiple equipment failures, and demonstration of assembly and accountability.

No violations or deviations were identified.



7. Exercise Control and Critiques

Exercise control was very good. There were adequate controllers to control the exercise. No instances of controllers prompting participants to initiate actions, which they might not otherwise have taken, were observed.

The licensee's controllers held initial critiques in each facility with participants immediately following the exercise. These critiques were well detailed and sought player input. The licensee provided a summary of its preliminary strengths and weaknesses prior to the exit interview. These findings were in very good agreement with the inspectors' preliminary findings.

No violations or deviations were identified.

8. Exit Interview

The inspectors held an exit interview on July 8, 1993, with the licensee representatives identified in Section 2 to present and discuss the preliminary inspection findings. The licensee indicated that none of the matters discussed were proprietary in nature.

Attachments:

1. Exercise Scope and Objectives
2. Exercise Scenario Summary



PURPOSE:

The purpose of this emergency preparedness exercise is meet the conditions of 10CFR 50, Appendix E,(IV)(F)(3)(b) which require a biennial joint demonstration of nuclear emergency preparedness by the Cook Plant, the State of Michigan, and the County of Berrien.

SCOPE:

This exercise will take place between the hours of 0800 and 1600 on June 30, 1993. It will include actions taken by the Cook Plant, the State of Michigan, the County of Berrien and other local public agencies. It will take place within the County of Berrien with exception of Michigan State Agency activities that will take place in Lansing, Michigan.

The Cook Plant Unit 2 simulator will be utilized to drive scenario events and all emergency response facilities will be activated. They include the Operations Staging Area (OSA), Simulated Technical Support Center (TSC), Emergency Operations Facility (EOF) and the Joint Public Information Center (JPIC). Likewise, State and County Emergency Operations Centers along with selected various field emergency facilities will be activated.

Simulated events at the plant will result in a simulated release of radioactive material off the plant site. This will provide plant, State and County personnel with an opportunity to demonstrate various radiological surveying and analysis objectives.

Initial conditions include:

- o Both reactors at 100% power;
- o 69KV offsite power source tagged out of service;
- o Both reactor coolant demineralizers are out of service;
- o Radiation Protection (RP) Personnel is in the process of changing out a Reactor Coolant System (RCS) filter;
- o Auxiliary Steam and Plant Air are being fed from Unit-1;
- o Unit-2 Primary-to-Secondary leak at $\approx .07$ gpm.
- o Normal seasonal weather conditions. Moderate winds generally from the west with no rain.

The following timeline details subsequent events ending with a one day time jump to demonstrate post accident radiological survey and analysis; public affairs activities; re-entry procedures; and recovery planning.

DONALD C. COOK NUCLEAR PLANT

EMERGENCY RESPONSE EXERCISE

II. EXERCISE OBJECTIVES

The exercise objectives dictate the scope of the scenario. The objectives for this exercise were developed based upon the Donald C. Cook Nuclear Plant Emergency Plan Administrative Manual.

Situations will be presented in the scenario to prompt the desired player response for each objective. Where appropriate, specific objectives and criteria for adequate demonstration have been included in the exercise messages for Controller/Observer use.

A. OVERALL LICENSEE OBJECTIVES

1. Demonstrate the ability of the emergency response organizations to implement DCCNP Emergency Plan Procedures, the Indiana Michigan Power Company Emergency Plan Response Manual and the AEPSC Emergency Response Manual.
2. Demonstrate the ability to establish emergency management command and control, and maintain continuity of this function for the duration of the postulated event.
3. Demonstrate the ability to establish communications and information flow between DCCNP emergency response facilities and participating offsite agencies.

B. CONTROL ROOM OBJECTIVES

1. Demonstrate the ability to recognize symptoms and parameters indicative of degrading plant conditions and to classify degraded conditions as emergencies.
2. Demonstrate the ability to initiate notification of offsite authorities and plant personnel.
3. Demonstrate communications and information flow to and from the Technical Support Center.

4. Demonstrate the ability to transfer emergency authorities and responsibilities from the on-shift emergency organization to the DCCNP emergency response organization.
5. Demonstrate the ability to respond to an injured person who is radiologically contaminated.
6. Demonstrate the ability to establish emergency command and control.

C. TECHNICAL SUPPORT CENTER OBJECTIVES

1. Demonstrate the ability to activate the facility within one hour of declaration of an emergency requiring facility activation.
2. Demonstrate the ability to provide analytical assistance and operational guidance to the Control Room.
3. Demonstrate the ability to coordinate onsite activities in response to the emergency.
4. Demonstrate the ability to establish and maintain hard copy communications with the EOF and verbal communications with the EOF, OSA, IAG, ENC and/or JPIC.
5. Demonstrate the ability to provide analytical radiological assistance to the OSA and Control Room.
6. Demonstrate the ability to obtain data from the OTSC/PSSD system.
7. Demonstrate the ability to request emergency response teams from the OSA.
8. Demonstrate the ability to evaluate the results of TSC/OSA habitability surveys and assess the need to evacuate these facilities.
9. Demonstrate the ability to recognize degrading plant conditions and classify plant conditions as an emergency.
10. Demonstrate the ability to direct the implementation of site assembly, accountability and evacuation.

11. Demonstrate the ability to evaluate site evacuation routes and determine an appropriate route based on indicated radiological and meteorological conditions.
12. Demonstrate the actions required to be taken in the TSC if the emergency involves a breach of the reactor coolant system.
13. Demonstrate the ability to determine the level of core damage based on plant parameters provided.

D. OPERATIONS STAGING AREA OBJECTIVES

1. Demonstrate the ability to activate the facility within one hour of declaration of an emergency requiring facility activation.
2. Demonstrate the ability to assemble, brief, and dispatch the following emergency response team(s) within an average time of 20 minutes or less after being requested:
 - a. Damage Control
 - b. Chemistry Sampling
 - c. On-Site Radiation Monitoring
 - d. Off-Site Radiation Monitoring
3. Each emergency response team assembled and dispatched shall demonstrate the following actions as applicable to the team type and mission:
 - a. Assembly of tools/equipment;
 - b. Pre-operation checks of equipment and communication devices;
 - c. Performance of appropriate radiological precautions;
 - d. Performance or simulation of team mission and;
 - e. Post-mission debriefing and radiological controls;
4. Demonstrate the ability to provide emergency radiological support. As a minimum, the following activities should be demonstrated:
 - a. Establishment of emergency dosimetry and exposure tracking system;
 - b. Determination and establishment (if necessary) of emergency control points;
 - c. Performance of habitability surveys prescribed by procedure;

- d. Analysis of radiological conditions to be encountered by emergency response teams and;
 - e. Specification of radiological controls and precautions for emergency response teams.
5. Demonstrate the ability to perform offsite radiological monitoring. As a minimum, two teams should be dispatched and direct radiation monitoring as well as airborne radioactivity analysis should be demonstrated.
 6. Demonstrate the ability to implement damage control activities in accordance with applicable Emergency Plan Procedures.
 7. Demonstrate the ability to perform onsite radiological monitoring in accordance with applicable Emergency Plan Procedures. This monitoring should include direct radiations surveys and analysis of airborne radioactivity samples.
 8. Demonstrate the ability to obtain post accident samples from the following mediums and complete appropriate chemical and isotopic analysis within three hours of the sample request.
 - a. RCS loop
 - b. Containment Sump
 9. Demonstrate the ability to obtain radiological base data required to evaluate the release level from the secondary plant during a steam generator tube rupture.

E. EMERGENCY OPERATION FACILITY OBJECTIVES

1. Demonstrate the ability to activate the facility within one hour of declaration of an emergency requiring facility activation.
2. Demonstrate the ability to establish overall command and control of the DCCNP emergency response within one hour of declaration of a Site Area Emergency or General Emergency, as applicable.

3. Demonstrate the ability to establish and maintain effective emergency communications with each of the following agencies and facilities:
 - a. State of Michigan
 - b. Berrien County
 - c. NRC
 - d. Technical Support Center
 - e. Joint Public Information Center
 - f. Initial Assessment Group
4. Demonstrate the ability to establish and maintain hard copy data transmission and reception with each of the following facilities:
 - a. Technical Support Center
 - b. Joint Public Information Center or Emergency News Center
 - c. State of Michigan EOC
5. Demonstrate the ability to direct Offsite Radiation Monitoring Teams in order to determine the geographical location and radiological magnitude of the postulated plume.
6. Demonstrate the ability to develop protective action recommendations based on projected dose and/or core and containment status.
7. Demonstrate the ability to update the State of Michigan on the status of the emergency as 15 minute intervals.
8. Demonstrate the ability to respond to inquiries from the TSC, JPIC, IAG and the State of Michigan in a timely manner.
9. Demonstrate corporate augmentation of the EOF staff.
10. Demonstrate recovery planning associated with the emergency termination.



F. PUBLIC AFFAIRS OBJECTIVES

1. Demonstrate activation of the Joint Public Information Center.
2. Demonstrate the ability to conduct media briefings.
3. Demonstrate the ability to respond to actual or simulated inquiries from media representatives.
4. Demonstrate the ability of rumor control personnel to respond to simulated inquiries from the general public.
5. Demonstrate the ability to monitor media transmissions and respond to inaccurate information being transmitted by the media.
6. Demonstrate coordination of news announcement content with State and County representatives.

COOK NUCLEAR PLANT

EMERGENCY RESPONSE EXERCISE

VI. EXERCISE NARRATIVE SUMMARY

- * Both Units at 100% power
 - U-1 is at 190 EFPD and 915 PPM Boron
 - U-2 is at 427 EFPD and 15 PPM Boron
- * 69/4 KV EP yard tagged out of service for two days of routine testing and maintenance.
- * Both Demineralizers out of service
- * RP is changing out a RCS Filter
- * Auxiliary Steam and plant air being fed from U-1
- * U-2 Primary-Secondary leak at ~.07 gpm
- * Normal seasonal weather conditions. Moderate winds generally from the West with no rain.

NARRATIVE

The simulated events begin to unfold at the beginning of the day shift on June 30, 1993. At approximately 0800, RP is doing a routine RCS filter change. While the filter housing is open and the filter element removed, valve 2-CS-377 fails, resulting in a 10 gpm leak. The RP Tech is contaminated with reactor coolant. The Tech is startled causing him to fall backwards and striking his head, resulting in a head injury. The Tech is dizzy, bleeding, can't stand by himself or walk unassisted. The Shift Supervisor is notified of the incident and the Plant EMTs are dispatched to the scene. The RP Tech is found to need hospital attention and is transported to the local hospital. Upon determination that the injured Technician is contaminated an UNUSUAL EVENT is declared based on ECC-20, CONTAMINATED INJURY.

The Control Room Operators isolate letdown to stop the leak through 2-CS-377.

Shortly thereafter, a squirrel causes breaker "BE" to trip resulting in a loss of AC power to both units. For this reason, additional UNUSUAL EVENT conditions now exist based on ECC-10, LOSS OF AC POWER.

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The primary-to-secondary leak rate has increased from the original .07 gpm to .4 gpm in Steam Generator 22. As a result, radiation detector SRA-2905 alarms high. Operations places excess letdown in service and begins a controlled reactor shutdown. An ALERT is declared based on ECC-17, STEAM GENERATOR TUBE RUPTURE. As the Emergency Response Facilities are being manned, a loose parts alarm results from sounds detected by monitors on the reactor vessel head and the bottom of the reactor vessel. Shortly thereafter, the steam generator leak escalates to approximately 500 gpm. At this point, the reactor trips and safety injection initiates. Three rods do not fully insert.

A unit blackout occurs at this point and AB diesel fails to start and CD does not load. As the EOF becomes staffed a SITE AREA EMERGENCY is declared based on ECC-10, LOSS OF AC POWER. However, offsite power is restored moments later via "BC" breaker. It is now mid-morning and Operations requests that the Post Accident Containment Hydrogen Monitoring System (PACHMS) be placed in service. As the diesels are brought back into service a few minutes later, number 22 steam generator power operated relief valve (PORV) fails completely open resulting in an unplanned release of radioactive material which alarms the PORV radiation monitor.

A GENERAL EMERGENCY is declared based on ECC-19, radiation release with a projected dose ≥ 250 mR/hr whole body or ≥ 1250 mR/hr thyroid at the site boundary. The release continues for a little over one hour at which time the PORV is repaired/isolated and the release is stopped.

TIMELINE

<u>REAL TIME</u>	<u>SCENARIO TIME</u>	<u>EVENT/CONDITION</u>
		Initial Conditions
0800	00:00	A Radiation Protection Technician, while changing a reactor coolant system demineralizer filter, is sprayed with reactor coolant when valve 2-CS-377 fails. Startled, he falls and injures himself. The Control Room is notified.
0820	00:20	<p>UNUSUAL EVENT conditions exist based on ECC-20, (CONTAMINATED INJURY)</p> <p>Operators isolate letdown to stop leak.</p> <p>Plant receives status on contaminated injured RP Tech.</p> <p>Operators place excess letdown in service.</p>
0835	00:35	<p>(Prompt ECC-20 UE if not declared by now.</p> <p>Breaker "BE" trips causing loss of offsite power to both units. Conditions now exist for UNUSUAL EVENT based on ECC-10, (LOSS OF AC POWER)</p>
0840	00:40	<p>Receive SRA-2905 and R-19 High Alarm due to increase primary - secondary leakage greater than Tech Spec limits at ~ 0.4 gpm on S/G #22.</p> <p>Conditions now exist for an ALERT based on ECC-17, (STEAM GENERATOR TUBE RUPTURE).</p> <p>Operators request Chem Lab to draw S/G activity samples.</p>

0850	00:50	(Prompt ECC-10 UE if not declared by now.)
0855	00:55	(Prompt ECC-17 ALERT, if not declared by now.) Start controlled reactor shutdown.
0915	01:15	#22 Reactor Coolant Pump (RCP) vibration increases to alarm setpoint. (7 mil increase)
0920	01:20	Loose parts alarm comes in on Reactor Vessel upper and lower.
0930	01:30	The TSC and OSA are staffed and operational.
0933	01:33	#22 S/G tube rupture at 500 gpm.
0935	01:35	Reactor Trip and Safety Injection. Indication that rods D2, E3, and D4 are not fully inserted.
0936	01:36	Unit blackout occurs * AB Diesel fails to start * CD Diesel starts but fails to load. EOF staffed and operational. Control Room receives sample results from Chemistry Lab.
0950	01:50	SITE AREA EMERGENCY Conditions exist based on ECC-10, (LOSS OF AC POWER).
1000	02:00	(Prompt ECC-10 SITE AREA EMERGENCY if not declared by now.)
1002	02:02	Offsite power restored to plant. Power aligned via "BC" breaker.
1005	02:05	Diesels fixed and released to Operations.

1017 02:17 #22 S/G PORV fails 100% open.
Release starts.

(Prompt PACHMS be placed in service
if not previously done.)

1018 02:18 #22 S/G PORV Rad Monitor High Alarms.

1030 02:30 GENERAL EMERGENCY Conditions exist
based on ECC-19, (Radiation Release -
projected dose \geq 250 mR/hr whole body
or \geq 1250 mR/hr thyroid at site
boundary).

1045 02:45 (Prompt ECC-19 GENERAL EMERGENCY if
not declared be now.)

1205 04:05 Release terminates - PORV repaired
and closed or PORV line isolated.

1300 05:00 Drill terminates for Control Room,
TSC, & OSA. EOF, JPIC, State and
County do a 24 hour time jump.

