

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-409/85008(DRSS)

Docket No. 50-409

License No. DPR-45

Licensee: Dairyland Power Cooperative
2615 East Avenue - South
La Crosse, WI 54601

Facility Name: La Crosse Boiling Water Reactor

Inspection At: LACBWR site, Genoa, WI

Inspection Conducted: June 24-26, 1985

Inspectors: *W. Snell*
Team Leader

July 15, 1985
Date

N. Williamsen
N. Williamsen

July 15, 1985
Date

Approved By: *J.P. Patterson for*
M. Phillips, Chief
Emergency Preparedness Section

July 12, 1985
Date

Inspection Summary

Inspection on June 24-26, 1985 (Report No. 50-409/85008(DRSS))

Areas Inspected: Routine, announced inspection of the La Crosse Boiling Water Reactor emergency preparedness exercise involving observations by six NRC representatives of key functions and locations during the exercise. The inspection involved 69 inspector-hours onsite by three NRC inspectors and three consultants.

Results: No items of noncompliance, deficiencies, or deviations were identified.

DETAILS

1. Persons Contacted

NRC Observers and Areas Observed

F. Carlson, Control Room
M. Phillips, Technical Support Center (TSC)
N. Williamsen, TSC
W. Thomas, Operational Support Center (OSC), Inplant Teams
L. Smith, Offsite Teams
W. Snell, Emergency Operations Facility (EOF)
I. Villalva, NRC Resident Inspector

Dairyland Power Cooperative

T. Steele, Director, Environmental Department
J. Parkyn, Plant Superintendent
R. Marose, Emergency Preparedness Director
M. Polsean, Relief Shift Supervisor
R. Wery, QA Supervisor
P. Bronk, Nuclear Engineer
H. Towsley, Technical Support Engineer
R. Odegard, Computer Analyst
M. Johnson, Relief Operator, SRO
A. Hansen, Senior Health Physics Technician

All personnel listed above attended the exit interview on June 26, 1985.

2. General

An exercise of the licensee's La Crosse Boiling Water Reactor Emergency Plan was conducted at the LACBWR plant on June 25, 1985, testing the response of the licensee to a hypothetical accident scenario resulting in a major degradation of plant emergency systems. Attachment 1 describes the Scope and Objectives of the exercise and Attachment 2 describes the exercise scenario.

3. General Observations

a. Procedures

This exercise was conducted in accordance with 10 CFR Part 50, Appendix E requirements using the LACBWR Emergency Plan and Emergency Plan Procedures.

b. Coordination

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

c. Observers

Licensee observers monitored and critiqued this exercise along with six NRC observers.

d. Critique

A critique was held with the licensee and NRC representatives on June 26, 1985, the day after the exercise. The NRC discussed the observed strengths and weaknesses during the exit interview.

4. Specific Observations

a. Control Room

The Control Room Operators responded quickly to changing plant conditions including an expeditious and judicious use of Plant Operating Procedures and Emergency Plan Procedures. The evaluation of events and data and subsequent emergency classifications were timely and as specified by the procedures.

Announcements and logkeeping of which emergency classification the plant was in were timely. However, the turnover of the Emergency Control Director responsibilities from the Control Room to the Technical Support Center (TSC) was not announced in the Control Room. This subsequently led to confusion among Control Room personnel as to who was in command.

The initial notifications to offsite authorities of the Unusual Event and the Alert were completed in 15 and 20 minutes, respectively. Even though the TSC was activated when the Site Area Emergency was declared, the initial notification for this classification by the Central Alarm Station in the Control Room took 27 minutes. Both the Alert and Site Area Emergency declarations were beyond the 15 minute notification time limit specified in 10 CFR Part 50, Appendix E, IV.D.3. This was an exercise weakness that will be tracked as Open Item No. 409/85008-01. In addition, the Shift Technical Advisor (STA) spent a significant amount of his time assisting with the initial notifications, which was an under-utilization of his expertise. However, once the notifications were completed, the STA did contribute to and complement plant evaluations and planning.

It was also observed that the content of the initial notifications for the Site Area Emergency did not specify whether a release was in progress as required by the Emergency Plan and Procedures. This is an exercise weakness that will be tracked under Open Item No. 409/85008-02. There was no mention of whether a release was in progress for either the Unusual Event or Alert, even though there are EALs for each of these that are based on a release as the basis for classification. This makes providing information on a release for any emergency classification very important.

Data logging as required by EPP-2, Organizations and Operations During Emergencies, was incomplete. Spaces provided to initial, date, and time tasks completed were often left blank or signed in the wrong places. In addition, at least two copies of EPP-2 were being used which could lead to confusion over who was performing what tasks. The equipment status board in the Control Room was also not kept up-to-date. Use of the plant PA System was not as effective as it could have been to keep plant personnel informed of events.

b. Technical Support Center (TSC)

The activation of the TSC was orderly and timely. The Emergency Control Director (ECD) queried each member of his staff to ensure that everyone was ready before the TSC assumed command and control from the Control Room. Although there was no formal announcement in the TSC when command and control was assumed, this did not present any confusion since most TSC members were present and could hear the ECD's telephone conversation when control was passed.

In general, the functions of the TSC were carried out efficiently. The one exception was that offsite notifications to State and local authorities was delegated back to the Central Alarm Station in the Control Room. This lack of personnel within the TSC to make these notifications contributed to the failure to complete offsite notifications of the declaration of the Site Area Emergency within the required 15 minutes.

Accident assessment and subsequent classification was adequate and accurate, as shown by the TSC decision to declare a Site Area Emergency. However, there was insufficient decisionmaking communication between the TSC and EOF when the decision to classify a General Emergency was made. Although the ERD was opposed to the General Emergency, there was little communication with the EOF to make his views known. In addition, earlier in the exercise when the ERD knew that the Control Room was recommending a General Emergency, he did not act forcefully enough to make his views known.

A primary three-way communication link connecting the TSC, the Control Room, and the EOF had been established early in the exercise and was well used. However, the TSC communicator failed to adequately log messages and failed to adequately assess the priority of messages. For example, the ERD was not even aware that the EOF had declared a General Emergency until almost an hour after the decision.

The habitability of the TSC/OSC was frequently monitored and radiation data sheets were properly used by the Onsite Radiological Assessment Director (RAD). Adequate and accurate briefings were given to the various monitoring teams leaving the TSC.

After the declaration of the Site Area Emergency by the TSC, evacuation was ordered and accountability was obtained in a timely manner.

No status boards were used except one board that listed the names of the TSC staff. This lack of status boards coupled with the almost total lack of logkeeping by the TSC communicator, could make shift change and/or augmentation difficult to efficiently carry out.

The assistance and support to the Control Room was timely and effective. For example, early in the exercise the TSC recommended reducing power in anticipation of the tornado damage (since they were in a Tornado Warning) that happened only fifteen minutes later. Consultation among the TSC staff was frequent, except for the RAD who was in an adjoining room. However, the RAD did not seem to be handicapped by the lack of any formal briefings.

The real-time data display system was utilized frequently and efficiently. Computer print-outs of the vital reactor data were readily available to the ERD, as well as being posted in the adjoining room.

c. Operational Support Center (OSC)/Inplant Teams

The Operational Support Center (OSC) was activated and functional in a timely manner. Communications with the TSC and Control Room were immediately established and maintained throughout the exercise.

The Radiological Assessment Director (RAD) was knowledgeable of his duties and responsibilities. He functioned well in a dual role with the TSC. He maintained radio contact with all dispatched teams and maintained a status board of all significant activities.

The OSC was properly equipped to perform its function. All emergency equipment described in the Emergency Plan was available for use. All radiation survey instrumentation in the emergency kits was operational and within calibration. All radio communications systems functioned properly throughout the exercise. Backup systems were also available for use.

Health Physics technicians, electrical maintenance, instrument and control technicians, and radiochemistry technicians were available for inplant surveys, radiation protection, sample taking and analysis, and for assistance in repair and corrective actions. All personnel performing key functions from the OSC were those assigned on the duty roster. Assignment of personnel was done in a timely manner. Clear instructions were given to all teams dispatched by the TSC and debriefings were held with the teams by the RAD.

Although several out-of-plant dose rate surveys were performed and communicated back to the TSC, this information was not recorded on plant survey maps in the TSC. In addition, no formal log of OSC activities was maintained. The OSC did not contain a status board for the display of plant data, trend information, inplant activities, and time of declaration of plant emergency classification.

With the aid of maintenance and operations personnel, implant corrective actions were planned to reduce exposures and prevent possible "burn-up" of personnel by the Radiological Assessment Director. However, there were no efforts by OSC personnel to track any exposures that may have been accumulated by the implant teams.

d. Onsite and Offsite Radiation Monitoring Teams

Onsite and offsite teams were adequately trained in Health Physics emergency procedures for collecting, handling and analyzing radioactive samples. The only weaknesses observed in this area was when an onsite survey was requested because the S/D Condenser Area Radiation Monitor No. 8 was observed to read 40 mr/hr. The HP was dispatched to collect an air sample and take direct radiation readings near the stack. The HP used an Eberline RO-3 instrument with a closed window. He should have also taken an open window reading to get a Beta-Gamma ratio.

The offsite team did not use EPP-8, Attachment A, "Initial Checklist For Offsite Radiological Assessment Team." If this checklist form had been used and followed the offsite team would have more thoroughly covered all of the functions required of an offsite monitoring team. For example, prior to being dispatched, the Offsite Monitoring Team did not check their equipment located in the emergency kit to be sure that the kit was complete and that the instruments were operating and had current calibration stickers. In addition, the offsite team used survey instruments while moving from one grid point to another. However, it was not observed that any team member checked his dosimeter during the exercise.

Communications between the offsite monitoring teams and the Emergency Operations Facility were good. The grid map located in the offsite kit provided a detailed description of roads and sampling point locations which made it possible for the offsite team to locate sampling points in a timely manner. However, an adequate supply of forms required by the offsite teams was not available in the offsite kit. In addition, communication between the offsite team and the EOF were not proceeded or ended with "This Is A Drill."

e. Emergency Operations Facility (EOF)

The EOF was set up and activated in a timely manner. Sufficient copies of the Emergency Plan Procedures were available and they were continuously reviewed to insure all necessary duties and tasks were being carried out. Log sheets, checklists and forms were effectively used and properly filled out throughout the exercise.

The continual updating of meteorological data (onsite, Mound Ridge, and forecast) and the interpretation of the data was excellent. The Dose Specialist briefed the Emergency Control Director in the EOF that based on the meteorological data that had been examined, a tornado must have hit the site. This was about five minutes prior to TSC informing the EOF that they had in fact been hit by a tornado.

EALs were continually reviewed to insure that the proper emergency classification was being used with frequent discussions as to upgrading or downgrading the event. Although the scenario was not intended to escalate to a General Emergency, the decision to classify the General Emergency was made based on a LOCA and degradation in the Emergency Core Cooling System (ECCS). Although there was a basis for this escalation, the discussion surrounding the decision was weak. Only a minimum of discussion was carried out with the TSC, and little or no thought was given to the possibility of offsite evacuations, evacuation time estimates, forecast information, length of time before obtaining water from ESWSS, the probability of losing ECCS completely, or the time before uncovering the core either with or without intermittent use of the ECCS.

Once the General Emergency was declared, the notifications to offsite agencies were completed within 15 minutes. However, the nomenclature for identifying the downwind affected sectors was the principal compass points, not the Sectors A, B, C, ..., R as agreed to with the offsite authorities. This finding, which was also identified in the June 1984 exercise, was the result of failing to eliminate an old map from the EOF after being superceded by new revised maps. This old map was removed from the EOF at the conclusion of the exit meeting on June 26, 1985, which should eliminate this problem in the future.

At 0859, shortly after the General Emergency had been declared, the Dose Specialist informed the Emergency Control Director (ECD) that the meteorological forecast showed the wind direction would shortly be shifting so it would be coming from the south. At 0915 the Dose Specialist provided the ECD with 0907 meteorological data that showed the wind direction was now from 110 degrees (ESE). However, the calls to offsite agencies between 0909 and 0916 all gave the downwind affected sectors as NE, ENE, E, ESE and SE. The offsite authorities were never notified that these sectors were no longer correct, and the status board in the EOF was not updated to reflect this change until 1130 when de-escalating from the General Emergency. The EOF also never attempted to obtain from the offsite authorities the protective actions that were actually implemented versus what they had recommended.

5. Exercise Scenario and Control

The scenario for the June 1985 LACBWR exercise postulated an interesting sequence of events to challenge and test the exercise players emergency response capabilities. At no time during the drill were any controllers observed to be prompting the players. With the exception of an adequate demonstration of recovery, all exercise objectives were met. Recovery was not adequately demonstrated because the four hour time jump at the end of the exercise resulted in the plant being in a shutdown status with little else left for the players to do but de-activate the emergency organization. This should be more thoroughly demonstrated during next year's exercise.

Observations of the exercise identified two areas that could be changed to enhance player participation and realism. The first is the handing out of the drill cards to the control room staff and allowing them to keep them. If the players were only allowed to read the cards and then return them, this would force them to maintain their own records and status boards. The second item involves the "you can't because its broken" response to player-contrived fixes to plant equipment problems. It would be significantly more realistic to wait for a team to be sent to try to repair the equipment prior to informing them it is broken beyond repair. This not only would introduce a much more realistic time factor into the exercise, it would give the inplant and HP teams more opportunity to demonstrate their capabilities.

6. Exit Interview

The inspectors held an exit interview the day after the exercise on June 26, 1985, with the representatives denoted in Section 1. The NRC Team Leader discussed the Scope and findings of the inspection. The licensee was also asked if any of the information discussed during the exit was proprietary. The licensee responded that none of the information was proprietary.

Attachments:

1. LACBWR Exercise Scope and Objectives
2. LACBWR Exercise Scenario Outline

0 Scope and Objectives

1.1 Scope

The June 1985 emergency exercise at the La Crosse Boiling Water Reactor will simulate a loss of coolant accident (LOCA) coupled with a tornado passing near the site. The simulation will escalate from an Unusual Event through a Site Area Emergency and will require plant, TSC, and EOF personnel to respond in their respective capacities to a rapidly escalating emergency situation, terminate the plant occurrence and make recommendations to protect the public. The scenario will require plant personnel to mitigate the LOCA despite the loss of all offsite AC power. Since the exercise only involves DPC personnel, offsite agencies will be notified per the emergency plan, but will not actively interface with DPC in the exercise. The Joint Public Information Center will not be activated, due to the limited scale of the exercise.

1.2 Objectives

- 1.2.1 Demonstrate the ability to notify and assemble licensee emergency response personnel and activate the licensee's onsite and nearsite emergency facilities (TSC, OSC, EOF).
- 1.2.2 Demonstrate the ability to assess and classify an emergency according to the emergency plan, and to carry out the emergency notification of federal, state, and local emergency response personnel.
- 1.2.3 Demonstrate the ability of plant and TSC personnel to assess, mitigate, and terminate a significant plant emergency, while EOF personnel monitor developments and determine if protective action recommendations need to be made to offsite authorities.
- 1.2.4 Demonstrate the adequacy of communications links between the TSC, EOF and offsite authorities.
- 1.2.5 Demonstrate the ability to dispatch and direct onsite and offsite radiological monitoring teams and assess the data supplied by them to determine if a release has occurred.
- 1.2.6 Demonstrate the ability to effect measures to protect onsite personnel from non-radiological emergencies, ie. high winds, debris, or tornadoes.
- 1.2.7 Demonstrate the ability of plant personnel to efficiently perform a normal shift turnover during an emergency.
- 1.2.8 Demonstrate the ability of TSC and control room personnel to effectively monitor unrelated events (fire alarms, injured persons, etc.) during a plant emergency.
- 1.2.9 Demonstrate the ability to deploy the Emergency Service Water Supply System (ESWSS) pumps.

- 1.2.10 Demonstrate the ability to make decisions leading to re-entry and recovery of the plant during and after a LOCA.
- 1.2.11 Demonstrate the ability to account for personnel onsite during an emergency.

5.0 Revised Narrative Summary

Initial Plant Conditions

- 1) Reactor is at 95% power for past 90 days.
- 2) Stormy period over West Central Wisconsin, Southeastern Minnesota and Northeast Iowa.
- 3) "Tornado Watch" has been declared for West Central Wisconsin, Southeastern Minnesota and Northeast Iowa.
- 4) Emergency Airlock Surveillance Test in progress.
- 5) 1A Demineralized Water Pump is out of service.
- 6) 1B Seal Inject Pump is out for repacking.

Exercise Summary

- T-00:15 Initial conditions given to applicable participants.
(0700)
- T+00:00 Exercise Begins: Weather Reports announce a "Tornado Warning" for
(0715) NE Iowa, SE Minnesota, and West Central Wisconsin. Emergency Airlock fails its leak test and an Unusual Event is declared.
- T+00:45 High winds (~ 100 mph) occur at the site as a tornado passes one
(0800) half mile south of the plant.
- T+00:48 High winds at the site cause the following damage:
(0803)
- a) Offsite power is lost as the lines are knocked down.
 - b) Cribhouse roof and west wall are blown off and are laying on ESWSS pump ramp with other debris. Both HPSW/ACS diesels are damaged and inoperable.
 - c) Outside doors on 1B EDG building are blown off and they disable the 1B EDG radiator.
- The following actions occur as a result of the above:
- a) Generator trips and the reactor scrams normally.
 - b) MSIV closes normally due to loss of vacuum.
 - c) Shutdown condenser operates normally.
 - d) 1B demineralized water pump motor burns up.
 - e) 1A EDG starts and operates at reduced capacity due to engine problems.
 - f) Bottom section of reactor water level sightglass starts leaking; small-break LOCA is initiated.
- Site Area Emergency is declared because of damage to the 1B EDG building.
- T+01:15 Shutdown condenser boils dry due to lack of make-up water.
(0830) Containment isolates due to LOCA. Reactor water level is dropping and pressure is slowly rising. 1A HPCS pump will not operate for extended periods of time.

T+01:20 (0835) FCP suction and discharge valves are closed but leak does not slow down. The 480 volt ESS busses are paralled, but 1A EDG is not operating properly and cannot carry the 1B HPCS pump.

T+01:30 (0845) Reactor water level is decreasing (approximately 15" below normal) and pressure is increasing (approximately 1300 psi).

T+01:45 (0900) Fire alarm is received for LACBWR switchyard. Fire Brigade discovers a damaged, malfunctioning detector. Low set relief valve lifts at 1390 psi.

T+02:15 (0930) Reactor water level is decreasing (approximately 33" below normal) and pressure is slowly increasing (approximately 1300 psi).

T+02:45 (1000) One person is injured during recovery efforts in plant. Plant personnel should respond. (Offsite agencies, ie. hospitals, ambulance, etc., will not be assisting.)

T+03:15 (1030) Reactor water level is increasing slowly (approximately 29" below normal) and pressure is slowly increasing (approximately 1380 psi). Problem with 1A EDG is solved and 1A HPCS is run to bring reactor water level to normal.

T+03:45 (1100) Debris has been removed from ESWSS pump ramp so that pumps may be deployed.

T+04:05 1B EDG is operating normally by using ESWSS pump to supply cooling (1120) water to the 1B EDG. HPSW is supplying make-up water to the shutdown condenser.

T+04:15 (1130) Reactor water level is normal and cooldown is in progress.

Time Step: It is now 4 hours later.

T+04:15-04:45 (1530-1600) Reactor is in cold shutdown (<212°F) and offsite power has been restored. Terminate the Site Emergency, and TSC should discuss recovery of the plant.

T+04:45 (1600) Exercise terminated.