



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

August 18, 1988

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MEMORANDUM FOR: Charles E. Norelius, Director *BM*  
Division of Radiation Safety and Safeguards  
Region III

FROM: William D. Travers, Chief  
Emergency Preparedness Branch  
Division of Radiation Protection  
and Emergency Preparedness  
Office of Nuclear Reactor Regulation

SUBJECT: FEMA REPORT ON THE OCTOBER 14, 1987 BYRON EXERCISE

The subject report, transmitted by a July 28, 1988 FEMA memorandum, is enclosed.

*William Travers*  
William D. Travers, Chief  
Emergency Preparedness Branch  
Division of Radiation Protection  
and Emergency Preparedness  
Office of Nuclear Reactor Regulation

Enclosed:  
FEMA Memo dtd. 7/28/88  
with attachments

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CONTACT:  
Robert A. Meck, NRR  
492-1084

AUG 22 1988



# Federal Emergency Management Agency

Washington, D.C. 20472

JUL 28 1988

MEMORANDUM FOR: Frank J. Congel  
Director, Division of Radiation Protection  
and Emergency Preparedness  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission

FROM: *Richard W. Krimm*  
Richard W. Krimm  
Assistant Associate Director  
Office of Natural and Technological  
Hazards Programs

SUBJECT: Final Report of the October 14, 1987,  
Exercise of the Offsite Radiological Emergency  
Response Plans, Site-specific to the Byron  
Nuclear Power Station

Attached is a copy of the final report for the joint exercise of the offsite radiological emergency response plans for the Byron Nuclear Power Station. The State of Illinois, Ogle County, five municipalities, and the Commonwealth Edison Company participated in the exercise. The report, dated December 16, 1987, was prepared by the Federal Emergency Management Agency (FEMA) Region V staff.

One municipality, Davis Junction, did not participate. The State plan and Municipal Annex designate Davis Junction as a "resource base." Ogle County, the primary response organization, can request resource support from any of the municipalities designated as a "resource base" to provide the required resource(s), if available. The State plan and Municipal Annex have been reviewed by FEMA staff to clarify offsite emergency response roles and responsibilities. In addition, it was through a pre-exercise agreement which provided for Davis Junction to be in the communication loop, but not to participate during the exercise.

There were no deficiencies observed in the exercise. The FEMA Region V staff has reviewed the schedule of corrective actions provided by the State of Illinois in response to the exercise weaknesses identified, incorporated them into the final exercise report, and has forwarded a copy of this report to the State.

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Based on our review of the final exercise report and schedule of corrective actions, FEMA considers that offsite radiological emergency preparedness is adequate to provide reasonable assurance that appropriate offsite measures can be taken to protect the health and safety of the public living in the vicinity of the Byron Nuclear Power Station, in the event of a radiological emergency occurring at that site. Therefore, the approval of the offsite plans for Byron Nuclear Power Station granted under 44 CFR 350 in September 1984, continues to be in effect.

If you have any questions, please feel free to contact me on 646-2871.

Attachment  
As stated



# Federal Emergency Management Agency

Region V 175 West Jackson, 4th Floor, Chicago, IL 60604 (312) 431-5500

December 16, 1987

MEMORANDUM FOR: Richard W. Krimm  
Assistant Associate Director  
Office of Natural and Technological Hazards

ATTENTION: Ken Green, SL-WI-TH

FROM: *Wallace J. Weaver*  
Wallace J. Weaver, Chairman  
Regional Assistance Committee

SUBJECT: Byron Schedule of Corrective Actions and Final  
Exercise Report

Enclosed are copies of the schedule of corrective actions from the State of Illinois for the weaknesses identified during the October 14, 1987 joint participation radiological emergency preparedness exercise of the Byron Nuclear Power Station. The schedule of corrective actions has been reviewed by FEMA Region V and found to be adequate to correct the weaknesses identified during the exercise.

The corrective actions have been incorporated into the final exercise report. A copy of the final exercise report is enclosed. We recommend that you transmit the final report to the Nuclear Regulatory Commission.

Enclosure

EXERCISE REPORT  
BYRON NUCLEAR POWER STATION  
COMMONWEALTH EDISON COMPANY  
JOINT EXERCISE

Facility Location: Byron Nuclear Power Station, Byron (Ogle County)  
Illinois

Exercise Date: October 14, 1987

Draft Report Date: November 5, 1987

Final Report Date: December 16, 1987

Participants: State of Illinois (partial participation)  
Ogle County (full participation)  
and Commonwealth Edison Company (full participation)

FEDERAL EMERGENCY MANAGEMENT AGENCY  
REGION V  
NATURAL AND TECHNOLOGICAL HAZARDS DIVISION  
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## EXECUTIVE SUMMARY

### State of Illinois

The October 14, 1987 Byron radiological emergency preparedness exercise was a partial participation exercise for the State of Illinois. The State effectively implemented its emergency response procedures in support of the Ogle County emergency response. The State EOC was activated following receipt of the Alert notification. The EOC was staffed by representatives of IESDA and IDNS with the ESDA Director simulating the Governor's office. State staff were dispatched to the JPIC and the EOF. The timely staffing of the State EOC corrected a weakness identified during the previous exercise. Decisions were coordinated and well executed by the foregoing executive group in the State EOC.

The State EOC facilities are excellent and were effectively utilized by the staff during the exercise. The NARS is the primary communications link between the State EOC and the utility and the County. Radio is the backup system. A datafax capability was effectively demonstrated during the exercise.

The dose projection activities of the REAC were simulated during this exercise. Protective actions were based to some extent on plant conditions, variable winds and the low dose rate projections.

The NARS was utilized to provide the County with timely protective action recommendations following the declaration of the General Emergency. It was noted that several hand written changes to the NARS forms were implemented to overcome problems encountered during the Dresden exercise earlier this year. Formal changes to the NARS form are being contemplated by the State.

The JPIC is colocated with the utility's EOF in Dixon, Illinois, which is well beyond the 10 mile EPZ. The facility has insufficient resources for the State PIOs and is somewhat limited in the number of media representatives it can accommodate. These problems were noted during the previous exercise, however, it is considered an interim facility and will be upgraded. The IESDA, IDNS, and Ogle County each dispatched a PIO to the JPIC. The PIOs were adequately trained and knowledgeable of their duties and responsibilities. They could communicate with their respective EOCs by commercial telephone, and with radio as backup. Copies of press releases were datafaxed to the State and Ogle County EOCs.

Several briefings were conducted throughout the day. The State, County and utility PIOs coordinated their presentations prior to each briefing even if all of the PIOs were not going to be involved in the briefing.

The briefings were accurate and timely and included information from both the State EOC and Ogle County. The IESDA PIO served as the primary State spokesperson, assisted by the Ogle County PIO, while the IDNS PIO answered technical questions. Technical jargon was avoided or explained when utilized. The areas affected by the protective action recommendations were described using familiar landmarks and boundaries. Press information packets, background information and copies of the press releases were available in the briefing room.

The State PIOs prepared a reentry press release which corrected a weakness identified during the previous exercise. The JPIC PIOs demonstrated the ability to respond to several rumors by effectively coordinating with the utility and State and County EOCs to obtain information to respond to the rumors. This also corrected a weakness identified during the previous exercise.

An emergency worker decontamination station was established by IDNS at the Dixon Rural Fire Protection District Station in Dixon. All equipment necessary to establish the decontamination station was contained in pre-packaged kits, maintained by IDNS. The equipment and procedures for the radiological monitoring of potentially contaminated emergency workers, equipment and vehicles were successfully demonstrated.

An ambulance and two paramedics were simulated to have been contaminated and were processed through the decontamination station. Appropriate decontamination procedures for the paramedics were either demonstrated or explained by the IDNS staff, while IDNS and the Dixon Rural Fire Protection District personnel demonstrated decontamination of the ambulance vehicle.

Personnel assigned to the decontamination station were quite knowledgeable on the use of their equipment and the appropriate procedures for decontamination. They also had the appropriate dosimetry and established a protocol to minimize the potential for the spread of contamination within the facility. The procedures for deactivation of the decontamination station and recovery of the facility were also demonstrated. This emergency worker decontamination station demonstration corrected a weakness identified during the previous exercise.

#### Ogle County

Ogle County demonstrated the ability to mobilize staff and activate the County EOC. The Sheriffs Dispatcher received all incoming communications traffic including the NARS messages from which all alerting and staffing actions were directed by the ESDA Coordinator. All staff mobilization was accomplished using an up-to-date written call-up list. All localities in the County were also alerted by the Ogle County Sheriffs Dispatcher. The EOC was fully mobilized and staffed by the following: ESDA and IDNS Coordinators, Assistant ESDA Coordinator, Superintendent of the County Highway Department, Superintendent of Schools, the Coroners Office, Rochelle Fire Department Mutual Aid Coordinator, Commonwealth Edison, IESDA, Winnebago County Sheriffs Department, American Red Cross, Ogle County Sheriffs Department, Illinois State Police, the County Health Department and a recorder. The County ESDA Coordinator coordinated the activities of the EOC.

Around the clock staffing was demonstrated by double staffing and presentation of a roster of personnel for subsequent shifts.

All maps, status boards, and other displays were prominently posted in the EOC. The status boards were constantly updated to reflect the current situation. Staff briefings were conducted at approximately 45 minute intervals. The communications were excellent and provided a strong base for the exercise. The use of dedicated (NARS) telephone, datafax, commercial telephone and two-way radio was demonstrated during various phases of the exercise.



EOC staff upon notification of the Site Area Emergency and General Emergency developed written messages for dissemination to the public, activated the EBS station and coordinated the sounding of the siren system so that public alerting was followed immediately by an instructional message. The messages did not include information on ad hoc respiratory protection, however, the nature of the release did not warrant ad hoc respiratory protection. The formulation of an EBS message announcing the recovery and reentry for EBS broadcast to the public, corrected a weakness identified in Ogle County during the June 11-12, 1985 exercise.

EOC staff of the Ogle and Winnebago County Sheriffs Departments and the Illinois State Police coordinated with Police Departments of the municipalities to man traffic and access control points, for removal of impediments to traffic, evacuation of recreational areas and security for the evacuated areas. EOC staff had computer listings of the mobility impaired individuals within the County. The lists included addresses, telephone numbers, and the special needs of the individuals. EOC staff simulated the contact of mobility impaired individuals and the organizational coordination for the pick-up and transporting of the individuals.

A media briefing was held. The briefing included information on the County's participation in the emergency response. There was a referral of the media to the JPIC for additional information. The information released was consistent with the information released to the State and the JPIC. The staff responded to reports of a theft within the evacuated area and followed-up on reports of traffic incidents and rumors. The information regarding the incidents were included in reports to IESDA.

The County was notified of the recovery and unrestricted reentry into the evacuated area. Each organization represented in the EOC detailed the responsibilities for their respective agencies. Roadblocks were removed by police personnel; buses were made available for transporting evacuees back into the areas, and police personnel continued patrols to assist in assuring that traffic and roadways remained clear for the safe return of the evacuees.

#### Municipalities

Five of the six EPZ municipalities participated in the exercise. These included Oregon, Byron, Leaf River, Mt. Morris and Stillman Valley. Davis Junction was unable to participate in the exercise. However, the County EOC staff, per routine procedures, kept appropriate Davis Junction municipality officials aware of significant events throughout the exercise and would have compensated for the absence of Davis Junction resources had this been necessary.

Each of the five communities activated and staffed their EOC in a timely manner. Staff mobilization procedures were well demonstrated through the use of up-to-date written staff callup list. Some double staffing was noted with rosters presented to show 24 hour staff's capability. The respective facility setups, when required, were exceptional. The facilities in general are adequate and contained the necessary amenities to conduct emergency operations (e.g., maps, displays, status boards, classification level signs, plans, procedures, etc). A larger operations room and the addition of a copier would enhance operations in Oregon.

There was a designated individual in charge of the activities at each municipal EOC. This person varied from the mayor at Oregon, the police chief at Mt. Morris, and the fire chiefs at Byron and Leaf River. In the absence of the ESDA Director at Stillman Valley, the acting director along with the fire chief were in charge. The EOC staff at each municipality generally included the ESDA Coordinator, the police chief, the fire chief, the mayor or village president, the Public Works Director (title varies) and the Superintendent of Schools. All of these individuals were well trained and knowledgeable of their duties and responsibilities.

These responsibilities included access control, route alerting, dealing with impediments the evacuation routes, issuance of dosimetry and KI, and radiological exposure control for their emergency workers. Most of these activities were simulated through tabletop discussions within the EOCs. Status boards were maintained and effective message handling procedures were established within each of the EOCs. Periodic staff briefings were conducted.

Commercial telephone is the primary means of communications with police and fire radio as backup. Information from the NARS form was relayed to the municipalities by Ogle County. It is recommended that the procedures be reviewed to determine if the process can be improved so that the municipalities are provided with automatic periodic updates.

## EXERCISE REPORT

### Introduction

#### 1. Exercise Background

This was the third joint exercise for the Illinois Emergency Services and Disaster Agency and Ogle County resulting from a simulated accident at the Byron Nuclear Power Station. The first joint exercise was conducted November 15, 1983 and involved full participation by the State of Illinois and Ogle County. The second joint exercise was conducted June 11-12, 1985 and involved partial participation by the State of Illinois and full participation by Ogle County. This report addresses the most recent joint exercise for the Byron Nuclear Power Station which was conducted on October 14, 1987.

#### 2. Participating and Non-Participating State and Local Governments

The EPZ of the Byron Nuclear Power Station impacts on Ogle and Winnebago Counties and the cities of Byron, Oregon, Stillman Valley, Mt. Morris, Leaf River and Davis Junction in the State of Illinois. The affected portion of Winnebago County is minimal. Therefore, there is a planning arrangement with Ogle County for the coordinated care of the small number of residents in Winnebago County. Winnebago County was represented in the Ogle County EOC during this exercise. Five of the six municipalities noted above participated in the exercise. The exception was the municipality of Davis Junction. The non-participation of Davis Junction did not impact negatively on the emergency response capabilities of Ogle County.

The ingestion pathway EPZ of the Byron Nuclear Power Station impacts on an additional nineteen Counties in three States. These Counties are Stephenson, Boone, McHenry, Jo Davies, Kane, DeKalb, Carroll, Whiteside, Lee, Kendall, LaSalle, Bureau, and Henry in the State of Illinois; Clinton and Jackson in the State of Iowa; and Rock, Walworth, Green and Lafayette in the State of Wisconsin. Illinois did not demonstrate the procedures for implementation of ingestion EPZ protective actions as this activity was beyond the scope of the planned exercise.

### 3. List of Evaluators

There was a total of six Federal evaluators observing offsite exercise activities. Onsite activities were evaluated by a separate team from the Nuclear Regulatory Commission, Region III. Of the offsite evaluators, two, including the Offsite Exercise Evaluation Team Director, were FEMA Region V staff, three were from the Center for Planning and Research (CPR), and one was from Argonne National Laboratory. The evaluator assignments were as follows:

Exercise Evaluation Team Director	Wallace Weaver, FEMA
Team Leader State of Illinois	Wallace Weaver James Opelka, ANL
Team Leader Ogle County	Woodie Curtis, FEMA William Small, CPR Martha Willis, CPR George Barber, CPR

### 4. Evaluation Criteria

The plans being evaluated by this exercise were developed using the "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (NUREG-0654/FEMA REP-1, Revision 1). Therefore, these criteria and the exercrit based on these criteria, "Modular Format for Uniformity of Radiological Emergency Preparedness Exercise Observations and Evaluation" dated June 1983, were used for exercise evaluation.

### 5. Exercise Objectives

Objectives for this exercise were selected from among the FEMA thirty-five (35) standard objectives listed in TAB "M" of the "Modular Format for Uniformity of Radiological Emergency Preparedness Exercise Observations and Evaluations", dated June 1983. The objective numbers listed below correlate to Tab "M".

The State of Illinois selected the following eleven objectives, including those applicable to the JPIC, to be demonstrated during the exercise.

1. Demonstrate ability to mobilize staff and activate facilities promptly.
3. Demonstrate ability to make decisions and to coordinate emergency activities.

4. Demonstrate adequacy of facilities and displays to support emergency operations.
5. Demonstrate ability to communicate with all appropriate locations, organizations and field personnel.
10. Demonstrate ability to project dosage to the public via plume exposure, based on plant and field data, and to determine appropriate protective measures based on Protective Action Guides (PAGs), available shelters, evacuation time estimates and all other appropriate factors.
13. Demonstrate ability to alert the public within the 10-mile EPZ, and disseminate an initial instructional message, within 15 minutes.
14. Demonstrate ability to formulate and distribute appropriate instructions to the public, in a timely fashion.
24. Demonstrate ability to brief the media in a clear, accurate and timely manner.
25. Demonstrate ability to provide advance coordination of information released.
26. Demonstrate ability to establish and operate rumor control in a coordinated fashion.
29. Demonstrate adequate equipment and procedures for decontamination of emergency workers, equipment and vehicles.

Ogle County selected the following fourteen objectives for demonstration:

1. Demonstrate ability to mobilize staff and activate facilities promptly.
2. Demonstrate ability to fully staff facilities and maintain staffing around the clock.
3. Demonstrate ability to make decisions and to coordinate emergency activities.
4. Demonstrate adequacy of facilities and displays to support emergency operations.
5. Demonstrate ability to communicate with all appropriate locations, organizations and field personnel.
13. Demonstrate ability to alert the public within the 10-mile EPZ and disseminate an initial instructional message, within 15 minutes.
14. Demonstrate ability to formulate and distribute appropriate instructions to the public, in a timely fashion.
15. Demonstrate the organizational ability and resources necessary to manage an orderly evacuation of all or part of the plume EPZ.

18. Demonstrated the organizational ability and resources necessary to effect an orderly evacuation of mobility-impaired individuals within the plume EPZ.
23. Demonstrate ability to effect an orderly evacuation of onsite personnel.
24. Demonstrate ability to brief the media in a clear, accurate and timely manner.
25. Demonstrate ability to provide advance coordination of information released.
26. Demonstrate ability to establish and operate rumor control in a coordinated fashion.
35. Demonstrate ability to determine and implement appropriate measures for controlled recovery and re-entry.

#### 6. Summary of Scenario

The summary of the exercise scenario is included in this report as Attachment 1.

#### 7. State and Local Resources Planned To Be Used in the Exercise

The State of Illinois planned to use the State EOC in Springfield and the State REAC in Springfield. They also planned to use the necessary communications systems to conduct emergency operations.

Ogle County planned to use the County EOC in Oregon, their emergency response staff, and communications systems.

The municipalities of Byron, Oregon, Leaf River, Mt. Morris and Stillman Valley planned to use their respective EOCs, their emergency response staff, and communications systems.

#### 8. Weaknesses Noted in Past Exercises

The State of Illinois had a total of four Areas Requiring Corrective Action during the June 11-12 1985 joint exercise. The State successfully demonstrated three of the four Areas Requiring Corrective Actions during the October 14, 1987 exercise. The fourth weakness (G.3.a) will be corrected when the new JPIC facility is completed by the utility.

Ogle County had two Areas Requiring Corrective Action during the June 11-12, 1985 joint Byron Nuclear Power Station exercise. Both were successfully demonstrated during the October 14, 1987 exercise of the Byron Nuclear Power Plant.

#### 9. Exercise Objectives Still To Be Effectively Achieved

There are weaknesses identified as Areas Requiring Corrective Action in this report. Appropriate action will be required to correct these weaknesses and the objectives demonstrated during a future exercise.

The next biennial exercise must be an unannounced exercise as one was not conducted during the current exercise cycle.

## Narrative

### 1. State of Illinois

#### Activation and Staffing

The State ESDA EOC in Springfield was partially activated, by design of the scenario. The exercise was partial participation for the State of Illinois. The IESDA dispatcher implemented the notification procedures as defined in the State General Plan and in accordance with SOPs. The REAC in Springfield was partially activated. The Radiological Assessment Field Team (RAFT) was not activated for this exercise.

The State EOC utilizes the NARS as the primary communications system between the State and the utility. The system is continuously monitored by ESDA communications personnel, 24 hours a day.

The notification activating the State EOC was received at 0806 and came from the utility. The notification was verified. Mobilization procedures were demonstrated and the EOC was staffed in a timely manner. Current written call lists were used to notify personnel. Present in the EOC were representatives from IESDA and IDNS. The timely staffing of the EOC corrected the weakness identified during the last exercise of the Byron Nuclear Power Plant. IESDA and IDNS personnel were dispatched to the County EOC, the JPIC and the utility's EOF. The foregoing is the regular system for alerting and mobilizing EOC staff around the clock, seven days a week.

#### Emergency Operations Management

The Chief of Operations IESDA, was in charge of the State EOC and the emergency response. This assignment is consistent with the State General Plan. Briefings were held throughout the exercise which included those persons involved in the response. Copies of the State General Plan and the Illinois Plan for Radiological Accidents (IPRA), Byron, were available and written procedures and check lists were utilized. Messages were effectively received, logged, copied and distributed in an efficient manner.

The staff simulated the notification of the State and Federal support agencies and the Governor's office. The IESDA Director role played the presence of the Governor in the EOC.

The State EOC was notified of the following events at the given times: Alert, 0843; Site Area Emergency, 1001; General Emergency, 1117.

#### Facilities

The State EOC, located in the sub level of the IESDA headquarters, has sufficient furnishings to conduct emergency operations. Furniture, space, lighting, telephones, backup electrical power, displays and maps are sufficient and well positioned. Access and traffic flow is effective and adequate. The noise level is adequately controlled. A status board was clearly visible to the staff and was kept up to date on significant events.

## Communications

Communications are well established. Communications systems are established between the State and the Ogle County EOC and all field operations. Landline telephone, NARS and radios are the main systems used to communicate. Thereby, sufficient backup capability exists.

## Dose Assessment And Protective Action Recommendation

State ESDA and IDNS coordinated to demonstrate the ability to project dosage to the public and recommend protective action guides based upon projections. The dose projection activities of the REAC were simulated. Protective actions were based to some extent on plant conditions, variable winds and the low dose rate projections. The expected doses were derived from release data from the utility. Calculations were made promptly and the plume was correctly defined. IDNS provided periodic estimations of the total population exposure. Protective action decisions were reached for the plume pathway hazards based on EPA exposure guidelines. Protective action recommendations were promptly reviewed and updated as conditions changed.

Protective action recommendations were implemented when the State EOC staff received notification of the General Emergency at 1117. The initial protective action recommendation was issued at 1123 and recommended the evacuation of all persons 0-2 miles in all sectors, and sheltering 2-10 miles in sectors F,G and H. At 1146 the evacuation was expanded to include sectors R-A-B-C-D and E, in addition to sectors F-G and H, which also called for evacuation 2-10 miles. At the Site Area Emergency notification the State initiated the recommendation that milk producing animals should be sheltered and fed from stored feed and well water. The recommendation was upgraded at the General Emergency to encompass the entire 10 mile EPZ.

## Public Alerting And Instruction

Public Alerting and instructions are implemented at the County level after the State ESDA has provided recommendations.

## Protective Action

Protective Actions are implemented at the County level after the State ESDA has provided the recommendations.

## Decontamination

An emergency worker decontamination station was established at the Dixon Rural Fire Protection District Station by personnel of the IDNS and the Dixon Rural Fire Protection District. This decontamination station would provide services for both State and local emergency workers such as law enforcement personnel, fire departments, radiological monitoring teams, school bus drivers, highway departments, etc. All of the equipment needed to establish the decontamination station is pre-packaged in sealed kits and transported to the facility by the IDNS. It was estimated that 30 to 35 people could be monitored per hour and 1 to 10 vehicles depending on size and contamination levels, if any.

During facility setup, traffic flow at the entrance and throughout the station was clearly marked. Clean and contaminated paths within the facility were identified to facilitate traffic flow and covered with paper to reduce the potential for the spread of contamination within the facility. Plastic was available in the kits, but paper was utilized to reduce expense. Security for the facility would be maintained by local law enforcement personnel. The roads in the immediate vicinity of the decontamination station would also be controlled by local law enforcement personnel.

The procedures for determining the need to decontaminate personnel, equipment and vehicles were demonstrated. Background radiation levels were established for each of the survey instruments to be utilized at the facility. The emergency action level for decontamination was set at twice background. As the emergency workers arrived in their vehicle it was directed to the monitoring point. The exterior door was surveyed prior to opening. The paramedic's hands and feet were checked and his simulated contaminated feet covered before he was permitted to exit the vehicle.

The two paramedics were then directed to the recorder station where personal information was recorded while complete personnel monitoring was performed. The information obtained during the survey was also recorded. Appropriate monitoring equipment and procedures for external and thyroid contamination were demonstrated. During processing the paramedics were asked for their personal dosimetry. The dose information was recorded and the dosimetry was bagged.

While the personnel monitoring was being conducted a second survey team conducted an exterior and interior survey of the vehicle. If decontamination was required it would be conducted immediately at that location. The vehicle survey point was located adjacent to the outside drain to facilitate the control and disposal of washwater runoff. Again, the appropriate equipment and procedures for radiological monitoring were demonstrated.

Simulated decontamination of the emergency worker was explained by the staff manning the shower station. The staff explained the appropriate procedures for decontamination and then conducted personnel monitoring to determine if the decontamination was effective. The kits contained all of the materials necessary to conduct personnel decontamination.

AREA RECOMMENDED FOR IMPROVEMENT: The personnel assigned to the shower station should provide more specific instructions concerning the procedures for disrobing, which would minimize the spread of contamination.

Actual decontamination procedures were demonstrated for the vehicle. The exterior of the vehicle was washed down by fire hose and then remonitored. If necessary, it would be scrubbed with materials available in the kits. These materials were used to decontaminate the interior of the vehicle. Once the vehicle was determined to be clean, it was removed from the monitoring point. The firemen and their fire hose were surveyed and decontaminated as necessary before returning inside of the fire station.



All contaminated waste is double bagged and held at the facility. The final disposal of the waste is coordinated by the RAFT. The wash water for the vehicle is flushed to a drain which also provides for dilution. The discharge point of the drain is the Rock River, so the RAFT would establish river monitoring points upstream and downstream of the discharge point. If the contamination levels could not be effectively diluted at the facility, a pumper and storage tank system would be established to control the wash water runoff. The facility cleanup would be conducted by the same personnel manning the decontamination station. Some of the facility deactivation procedures were effectively demonstrated by the staff, the remainder were explained.

All personnel assigned to the facility were equipped with the appropriate dosimetry. IDNS had additional dosimetry kits for local fire department personnel assigned to the decontamination of vehicles and equipment. The dosimetry kits included a low range (0-200 mR) and mid range (0-20 R) dosimeters, a TLD and record keeping cards. Personnel were aware of the proper procedures for reading and recording their dose. All of the dosimeters were zeroed upon issuance and a sign in/sign out log was maintained for the kits.

The personnel at the facility maintained appropriate procedures to prevent or minimize the spread of contamination to themselves, their equipment and the facility. Whenever contaminated equipment or personnel were identified, procedures were implemented to minimize the spread of contamination any further.

#### Media Relations

The JPIC is colocated with the utility's EOF in Dixon, Illinois which is well beyond the limits of the 10 mile EPZ. At the present time the EOF/JPIC is considered an interim facility. In its present configuration there is insufficient space for the IESDA and IDNS PIO staff who must share a desk and telephone with their respective EOF liaison.

There is a media briefing area set off from the EOF. This area includes a media work room with tables, chairs and telephones. The space available to the media to conduct private interviews is extremely limited. The briefing room would only accommodate approximately 60 media representatives while the work room would accommodate far fewer.

AREA REQUIRING CORRECTIVE ACTION (NUREG 0654 criteria item G3a) - The State of Illinois should continue to work with the utility during the layout of the permanent EOF/JPIC facility to ensure that the needs of the State EOF and JPIC staffs and the media are met. (These weaknesses were also identified during the previous exercise. It is noted that there is action underway to upgrade the JPIC facility).

IESDA, IDNS and Ogle County each dispatched a PIO to the JPIC. IESDA provided clerical support for the PIOs. The IESDA and IDNS PIO staff were prepositioned in the vicinity of the JPIC and reported to the JPIC following receipt of the Alert notification from Springfield. The Ogle County PIO was dispatched from Oregon following receipt of the Alert notification.

The JPIC was activated by the utility and declared operational at 1010. The IESDA PIO was already operational in the JPIC at this time and the IDNS and Ogle County PIOs had just arrived. The IESDA PIO was the principal State spokesperson with the IDNS PIO providing information in response to technical questions. Although the Ogle County PIO did not function as a spokesperson during the briefings, she did provide information to the IESDA PIO and assisted in the briefings. The PIOs were adequately trained and were knowledgeable of their duties and responsibilities.

The State and County PIOs were able to communicate with their respective EOCs through the use of commercial telephones. The IESDA and IDNS PIOs would utilize their agency radio nets as backup, while the Ogle County PIO had a Sheriffs Department radio as backup. The EOF datafax and copier capabilities were available to the JPIC staff. Copies of the press releases were datafaxed to the State and Ogle County EOCs and information was received from both locations.

The IESDA PIO had a portable personal computer and printer available to prepare press releases. Most of the information for the press releases were prescribed and stored in the personal computer. This greatly facilitated the preparation of press releases but did result in a problem early in the exercise when the first press release incorrectly referred to the affected site as Zion rather than Byron. The IESDA PIO caught the error during a press briefing, removed the incorrect copies from the JPIC and prepared an accurate press release.

AREA RECOMMENDED FOR IMPROVEMENT: The prescribed file of press releases should be purged of site specific information following each radiological emergency preparedness exercise.

Several press briefings were conducted during the exercise. The briefings were accurate and tended to avoid technical jargon and acronyms. When its use was unavoidable technical jargon was explained. There were maps and displays available in the briefing room which were utilized during the briefing as necessary. There also were press information packets and background information available in the briefing room. Copies of the utility and State press releases were made available to the media. There were several real and simulated media present to ask questions during the briefings. The PIOs were effective in responding to the questions directly or in obtaining information in response to questions and providing it to the media.

Prior to each briefing the State, County and utility PIOs conferred to coordinate their information. This coordination occurred even if all of the PIOs were not going to be involved in a joint briefing. Although no special room was set aside for this coordination the PIOs were able to utilize space within the EOF to meet.

The IESDA PIO received emergency classification notifications and protective action recommendations from the State EOC. This information was released to the media in the JPIC in a timely manner. The Site Area Emergency was declared at 0959, the notification of it and the accompanying dairy advisory was received from the State EOC at 1010. A press release was prepared at 1025 (corrected at 1045 per the foregoing) and the media was briefed at 1040.

The General Emergency was declared at 1117 and notification of it along with an expanded dairy advisory and the evacuation and sheltering protective actions were received in the JPIC at 1126. These protective action recommendations were immediately upgraded by the utility. The State amended their protective recommendations and informed the JPIC at 1140. The media was briefed about the protective action recommendations at 1153. The press release was issued at 1245 and incorporated information from both the State EOC and Ogle County EOC. The press release described the effected evacuation and sheltering areas utilizing familiar landmarks and boundaries. Copies of the County EBS messages were not made available to the media, although most of the information from the County EBS messages were included in the State press briefings and to some extent in the press releases.

AREA RECOMMENDED FOR IMPROVEMENT: Copies of the County EBS messages should be made available to the media at the JPIC.

The utility had terminated the JPIC exercise play prior to receipt of the State's decision to allow unrestricted reentry to the evacuated area. Although unable to brief the media the IESDA PIO prepared a press release with the reentry information. This corrected a weakness identified during the previous exercise.

The JPIC PIOs were called upon to respond to several rumors during the exercise. They demonstrated the ability to effectively coordinate with the utility, State and County EOCs in obtaining information to respond to the rumors. The information was provided to the media during briefings. This corrects a weakness identified during the previous exercise.

## 2. Ogle County

### Activation and Staffing

The Nuclear Accident Reporting System (NARS) is the direct communications link between Ogle County the State IESDA, IDNS and the Byron Nuclear Power Station. The NARS link is located in the Ogle County Sheriffs Communications Center, which is across the hallway from the EOC operations room. The Sheriffs Dispatcher received all incoming communications traffic, including the NARS messages from which all alerting and staffing actions were directed by the ESDA Coordinator. Personnel of the Sheriffs Communications Center were advised of the Alert conditions at the Byron Nuclear Power Plant at 0906 by the IESDA Dispatcher. Staff mobilization procedures were demonstrated by use of of an up-to-date telephone call-up list. The activation and staffing was accomplished in an orderly and efficient manner. Partial staffing occurred upon receipt of the Alert status at 0906 and full staff call-up was initiated at the Site Area Emergency notification at 1020. The EOC was mobilized and fully staffed by the following: ESDA and IDNS Coordinators, Assistant ESDA Coordinator, Superintendent of the County Highway Department, Superintendent of Schools, the Coroners Office, Rochelle Fire Department Mutual Aid Coordinator, Commonwealth Edison, IESDA, Winnebago County Sheriffs Department, American Red Cross, Ogle County Sheriffs Department, Illinois State Police, the County Health Department and a recorder.

According to staff participating in the exercise, key individuals of the Ogle County EOC staff receive initial notification of incidents at the utility by telephone from staff of the County Sheriffs Communications Center. The key individuals then become responsible to notify personnel of their respective organizations (i.e., Health, Social Services, Red Cross, etc.). The procedure is utilized to alert and/or mobilize staff around the clock (24 hours) seven days a week. Around the clock staffing was demonstrated by double staffing and presentation of a roster of personnel for subsequent shifts. All EOC staff were knowledgeable of the County plan and their respective responsibilities.

#### Emergency Operations Management

The County ESDA Coordinator was the individual in charge of the EOC operations as designated in the County plan. Briefings were held, at approximately forty-five minute intervals, and staff were involved in decisionmaking. Copies of the plan were available for reference and staff had excerpts of the plan that pertained to their respective responsibilities. Message logs were kept and messages were reproduced and distributed by means of an efficient distribution procedure. Access to the EOC was controlled by personnel of the County Sheriffs Department.

Ogle County was notified of the Alert status at the Byron Nuclear Power Station at 0906, the Site Area Emergency at 1020, and the General Emergency at 1127. Protective action recommendations to evacuate, 0-2 miles in all sectors, and to shelter 2-10 miles in sectors F-G and H were received along with the General Emergency notification at 1127. The IESDA notified the County EOC staff that the Belvedere and Dixon High Schools had been activated as reception/congregate care centers for receipt of evacuees. The sheltering recommendation was subsequently expanded at 1150 to include the additional sectors R-A-B-C and D. The recommendation to shelter milk producing livestock and feed them on stored food and well water was also expanded to encompass the entire 10 mile EPZ.

#### Facilities

The Ogle County EOC is located in the lower level of the building housing the Sheriffs Department and the County Jail. The facility has sufficient furniture, space, lighting, telephones, cooking and eating facilities, alternate power sources, and other amenities to support extended operations. The noise level in the EOC was adequately controlled. emergency classification levels were posted in the EOC and a status board was clearly visible to the EOC staff. The status board was constantly updated to reflect the current situation by EOC staff assigned that responsibility. All required maps were posted in the EOC. The maps depicted the plume EPZ with sectors labeled, evacuation routes, relocation centers, access control points, radiological monitoring points, and population by evacuation areas.

#### Communications

The County EOC staff demonstrated the ability to communicate with all appropriate locations, organizations, and field personnel by use of primary and backup means of communications. Primary and backup means of communications was demonstrated by use of the dedicated NARS, commercial

telephone, and two-way radio during various phases of the exercise. The communications were excellent and provided a strong base for the exercise. Conferencing via telephone is available within the EOC. A facsimile machine was available for hardcopy capability between the County and State EOCs and the JPIC. The facsimile was reliable and reasonably fast.

#### Dose Assessment And Protective Action Recommendation

Dose assessment is the responsibility of the Illinois Department of Nuclear Safety. Protective action recommendations are provided to the County, by the State, for implementation.

#### Public Alerting And Instruction

The County activated the prompt alert and notification system after receipt of the Site Area Emergency notification. This activation advised of an incident at the Byron Nuclear Power Station and the protective action recommendation to shelter milk producing livestock and feed them on stored feed and well water in a 0-5 mile radius of the utility site. The EBS message further advised individuals to remain tuned to the EBS stations (WROK or WZOK) for updates on the situation.

The initial activation of the EBS and sounding of the sirens for public alerting occurred at the notification of the General Emergency conditions at the utility. An additional activation occurred as changes in protective action recommendations were received by the County from the State ESDA. The County received notification of the General Emergency at the Byron Nuclear Power Station at 1127. The notification of the EBS station and sounding of the sirens were coordinated with the public alerting process, so that public alerting was followed immediately by an instructional message at 1132. Tone alert radios in schools, factories, institutions, and other locations were activated at both the initial and subsequent activations of the prompt alert and notification system. Parks and recreational areas, within a five mile radius of the utility site, had been evacuated after the County received notification of the Site Area Emergency at 1020.

#### AREA REQUIRING CORRECTIVE ACTION: (NUREG 0654 criteria item E7) -

Prescribed messages were drafted in the EOC. The messages were clear, appropriate to the situation and described protective action areas in terms of familiar boundaries and landmarks. The sheltering messages did not include information on ad hoc respiratory protection, however, the nature of the release did not warrant ad hoc respiratory protection. (The State of Illinois' schedule of corrective actions indicates their position on prescribed ad hoc respiratory protection information).

#### Protective Action

Ogle County EOC staff simulated the manning of traffic and access control points by personnel of the County Sheriff, State and Municipal Police Departments. They simulated the coordination and provision of barricades, for setting up roadblocks by the County Highway Department, Illinois Department of Transportation and the municipalities. According to EOC staff of the County Sheriffs Department, through mutual aid agreements with the State Police and surrounding law enforcement agencies, there are appropriate resources, in terms of personnel and equipment, to man all traffic and

access control points simultaneously; to keep evacuation routes clear during inclement weather or in the event of stalled or wrecked cars. Waterway traffic, along the Rock River, was discontinued within the EPZ by personnel of the County Sheriffs Department by simulated announcements over public address systems of the siren units, emergency vehicles, and airplane surveillance along the river and its tributaries. According to EOC staff there is no commercial traffic along the portion of the Rock River that is within the 10 mile EPZ. The control of rail and air traffic within the area is the responsibility of the State.

EOC staff of the County Sheriff and Health Departments had computer listings of the locations, conditions and special needs of mobility impaired individuals within the County. The staff simulated contact of mobility impaired individuals regarding their evacuation needs, and the organizational coordination for the pick-up and transport of the individuals. EOC staff of the County School Superintendent's Office simulated the contact of County School principals to assess the number of buses available, and to alert and activate bus drivers to assist in the evacuation of schools and transport evacuees. The County EOC staff was notified that non-essential plant personnel were being evacuated shortly after the County received notification of the Site Area Emergency conditions at the utility. EOC personnel of the County Sheriffs Department explained that patrol personnel of the County Sheriffs Department were in the vicinity of the utility and would assist in expediting the evacuation from the plant site if it became necessary.

#### Radiological Exposure Control

The Ogle County EOC is situated in a protected facility within the 10 mile EPZ of the Byron Nuclear Power Station. The EOC staff were issued dosimetry kits upon signing into the EOC. The kits included high range (0-200 R) self reading dosimeters, TLDs, record keeping cards and KI. There were no written instructions included in the dosimetry kits. However, the County ESDA Coordinator reminded the EOC staff at each briefing to contact field personnel with reminders to check personal dosimeters and telephone the information to the EOC. He also instructed EOC staff to insure the issuance of dosimetry kits for emergency workers being dispatched within the affected areas. Sheriffs Department personnel contacted Police Departments of other municipalities to insure that personnel assigned traffic and access control points were issued dosimetry kits.

There was an adequate supply of the dosimetry kits and chargers for zeroing the dosimeters. Utility, State and County ESDA personnel are members of the County EOC staff and are aware and explained the allowable radiological dosage.

AREA RECOMMENDED FOR IMPROVEMENT: The dosimetry kits should include written instructions.

## Media Relations

The County ESDA Coordinator, in concert with a utility and IDNS representative, held a media briefing with individuals role playing the parts of media representatives. The briefing was held in a room that is adjacent to the EOC operations room. The briefing was accurate and complete. Technical jargon was explained. A map display was used to augment the briefing. The briefing included information on the County's participation in the emergency and the referral of the media to the JPIC for information being released to the State and the JPIC.

## Recovery And Reentry

The County EOC staff were notified of the recovery and reentry in two phases by the IDNS. The IDNS representative explained the recovery phase of field monitoring and radiological assessment to the EOC staff. The staff was subsequently notified of the decision for unrestricted reentry. The unrestricted reentry was also explained to the staff by the IDNS EOC representative. The EOC staff explained their respective organizations responsibilities during the reentry phase of the incident. An EBS message was developed and disseminated to the EBS station for broadcast to the public. The sirens were activated in coordination with the release of the message to the EBS station. The formulation of the EBS message for broadcast to the public corrects the weakness identified in Ogle County during the June 11-12, 1985 exercise.

## 3. Byron

### Activation and Staffing

The Dispatcher for the Byron Fire Department was notified of conditions at the Byron Nuclear Power Plant by staff of the Ogle County EOC. The Alert notification, which initiated the activation of the EOC, was received from the Ogle County Sheriffs Department by the Byron Fire Department Dispatcher. The call was verified by a telephone call back to the Sheriffs Communications Center per standard operating procedures. The Fire Department Dispatcher notified the Fire Chief, who has the dual role as the Byron ESDA Coordinator. The ESDA Coordinator implemented staff mobilization procedures by use of an up-to-date staff callup roster. According to exercise participants the foregoing is the regular system in place to notify and activate the EOC staff day or night, seven days a week. The EOC staff is well trained, knowledgeable of the County plan and their respective responsibilities. Around the clock (24 hours) staffing was demonstrated by double staffing some positions and presentation of a roster of personnel for other positions and subsequent shifts.

### Emergency Operations Management

The ESDA Coordinator was the individual effectively in charge of the EOC operations. Management of the EOC was excellent. Periodic briefings were held and the staff was involved in decisionmaking. Copies of the State and County plans were available for reference. The staff had written checklists and message logs were kept.

There were infrequent updates to the Byron EOC from Ogle County. However, this did not impair the municipality's response, because Byron police and highway personnel had been activated at the Site Area Emergency notification to assist in the evacuation of parks and recreational areas. Later, route alerting was coordinated and accomplished jointly by County and municipality police departments throughout the affected areas.

AREA RECOMMENDED FOR IMPROVEMENT: The County EOC staff should ensure that the municipalities are immediately notified of the accident classifications and provide frequent periodic updates on the situation.

The EOC staff were issued self reading and permanent record (TLDs) dosimeters and potassium iodide. The self reading dosimeters were calibrated before they were issued to the EOC staff. The issuance of dosimetry was carried out in accordance with proper procedures and documentation (record keeping). There was a sufficient supply of dosimetry equipment, and potassium iodide (KI), with sufficient instructions regarding its use.

#### Facilities

The Byron EOC is located in the Fire Department Headquarters. The facility's training room when converted serves as the EOC. The facility has adequate lighting, telephones, backup electrical power and other amenities to support an extended operation. Classification levels were posted in the EOC. A status board was clearly visible to the staff and kept up to date on significant events. The required maps were posted or available in the plans.

#### Communications

Sufficient communications are available to meet the needs for conducting emergency response operations. The primary means of communications is commercial telephone, with radio backup to the County EOC, adjacent municipalities, and local school systems.

#### Alerting And Instructions

Public alerting was simulated by the EOC staff. In coordination with the County EOC the Byron EOC staff simulated instructions to police and fire department emergency personnel to conduct route alerting to notify the public, via public address systems mounted on emergency response vehicles.

#### Protective Action

The staff simulated the manning of a traffic and access control point in coordination with instructions received from the County EOC.

#### 4. Oregon

##### Activation and Staffing

The Alert notification, which initiated the activation of the Oregon EOC, was received from the Ogle County Sheriffs Department by the Oregon Police Department Dispatcher. The call was verified by a telephone call back to the Sheriffs Communications Center. The Police Dispatcher notified the Oregon ESDA Coordinator, who is responsible to notify the Mayor. The ESDA Coordinator reported to the EOC and staff mobilization procedures were



initiated by use of an up-to-date staff callup roster. The EOC was fully staffed in less than one hour. According to exercise participants the foregoing is the regular system in place to notify and activate the EOC staff. The EOC staff is well trained and knowledgeable of the County plan and their respective responsibilities. Around the clock (24 hours) staffing was demonstrated by presentation of a roster of personnel for subsequent shifts.

#### Emergency Operations Management

The Mayor was the individual effectively in charge of the EOC operations. Management of the EOC was excellent. Periodic briefings were held and the staff was involved in decisionmaking. Copies of the State and County plans were available for reference. The staff had written checklists and message logs were kept.

There was a lack of status updates (particularly when no changes had taken place) to the Oregon EOC from Ogle County. Because of other exercise obligations the Federal evaluator was unable to observe the municipality's receipt of the General Emergency notification from the County EOC.

AREA RECOMMENDED FOR IMPROVEMENT: The County EOC staff should ensure that the municipalities are immediately notified of the accident classifications and provide frequent periodic updates on the situation.

The EOC staff were issued self reading and permanent record (TLDs) dosimeters, potassium iodide, record keeping cards and instructions. The self reading dosimeters were calibrated before they were issued to the EOC staff.

#### Facilities

The Oregon EOC facility is adequate for operation as the EOC but very cramped for space. The facility has adequate lighting, telephones, backup electrical power and other amenities to support an extended operation. Classification levels were posted in the EOC. A status board was clearly visible to the staff. Messages were received, verified and promptly posted on the status board. The status board was updated as soon as the messages were received and verified. The required maps were posted and/or in the plans.

AREA RECOMMENDED FOR IMPROVEMENT: It is recommended that a larger area within the Coliseum building be provided for emergency operations. Also, it would be advantageous to provide message copying equipment to the EOC.

#### Communications

The primary communications system is commercial telephone and radio is the backup system. Both systems were operated without difficulty during various phases of the exercise.

## Alerting And Instructions

Public alerting was simulated by the EOC staff. In coordination with the County EOC the Oregon EOC staff simulated instructions to police and fire department emergency personnel to conduct route alerting to notify the public, via public address systems mounted on emergency response vehicles.

## Protective Action

The staff simulated manning four traffic and access control points in coordination with instructions received from the County EOC. It was estimated that there would not be any traffic problems but there would be heavy traffic patterns during the rush hours between 3 P.M. and 5 P.M. on normal work days. According to EOC staff there is sufficient equipment and personnel to remove roadblocks and impediments to traffic along evacuation routes.

## 5. Leaf River

### Activation and Staffing

The Dispatcher for the Leaf River Fire Department was notified of conditions at the Byron Nuclear Power Station by staff of the Ogle County EOC. The Alert notification, which initiated the activation of the EOC, was received from the Ogle County Sheriffs Department. The call was verified by a telephone call back to the Sheriffs Communications Center per standard operating procedures. The Fire Chief notified the Mayor and EOC staff. Mobilization procedures were initiated by use of an up-to-date staff callup roster. The activation of the EOC was prompt. Key staff members were in place in about 10 minutes after notification. The EOC was fully staffed in less than one hour. According to exercise participants the foregoing is the regular system in place to notify and activate the EOC staff. The EOC staff is well trained and knowledgeable of the County plan and their respective responsibilities. Around the clock (24 hours) staffing was demonstrated by presentation of a roster of personnel for subsequent shifts.

### Emergency Operations Management

The Fire Chief was the individual effectively in charge of the EOC operations. Periodic briefings were held and the staff was involved in decision making. Copies of the State and County plans were available for reference. The staff had written checklists and message logs were kept. Messages were received, verified, duplicated and provided to the EOC staff. Access to the EOC was controlled by use of personal identification and a sign in roster.

### Facilities

The Leaf River EOC facility is an excellent facility with sufficient space, furniture, lighting, telephones, auxillary electrical power, and other amenities to support extended operations. Noise was adequately controlled and emergency classification levels were posted in the EOC. A status board was clearly visible to the staff. Messages were received, verified and posted on the status board. The status board was updated as soon as the messages were received and verified. The required maps were posted and/or in the plans.

## Communications

The primary communications system is commercial telephone and radio is the backup system. Both systems were operated without difficulty during various phases of the exercise.

## Alerting And Instructions

Public alerting was simulated by the EOC staff. In coordination with the County EOC the Leaf River EOC staff simulated instructions to police and fire department emergency personnel to conduct route alerting to notify the public, via public address systems mounted on emergency response vehicles.

## Protective Action

The staff simulated the manning of a traffic and access control point and setting up barricades in coordination with instructions received from the County EOC.

## 6. Mt. Morris

### Activation and Staffing

The Dispatcher for the Mt. Morris Police Department was notified of conditions at the Byron Nuclear Power Station by staff of the Ogle County EOC. The Alert notification, which initiated the activation of the EOC, was received from the Ogle County Sheriffs Department. The call was verified by a telephone call back to the Sheriffs Communications Center. The Police Dispatcher notified the Mt. Morris President, who implemented the mobilization of the EOC staff. Mobilization procedures were initiated by use of an up-to-date staff callup roster. The activation of the EOC was prompt. Key staff members were in place in about 10 minutes after notification. The EOC was fully staffed in less than thirty minutes. According to exercise participants the foregoing is the regular system in place to notify and activate the EOC staff. The EOC staff is well trained, knowledgeable of the County plan and proficient in their respective responsibilities. Around the clock (24 hours) staffing was demonstrated by presentation of a roster of personnel for subsequent shifts.

### Emergency Operations Management

The Police Chief was the individual effectively in charge of the EOC operations. Management of the EOC was excellent. Periodic briefings were held and the staff was involved in decision making. Copies of the State and County plans were available for reference. The staff had written checklists and message logs were kept.

There were infrequent status updates (particularly when no changes had taken place) to the Mt. Morris EOC from Ogle County.

AREA RECOMMENDED FOR IMPROVEMENT: The County EOC staff should ensure that the municipalities are immediately notified of the accident classifications and provide frequent periodic updates on the situation.

The EOC staff were issued self reading and permanent record (TLD) dosimeters record keeping cards, potassium iodide and instructions on the use of the dosimeters. The dosimeters were calibrated prior to being issued to the staff.

#### Facilities

The Mt. Morris EOC is located in the Police Station and is an excellent facility for use as the EOC. The facility has adequate lighting, telephones, backup electrical power and other amenities to support an extended operation. Classification levels were posted in the EOC. A status board was clearly visible to the staff. Messages were received, verified and promptly posted on the status board. The status board was updated as soon as the messages were received and verified. The required maps were posted and/or in the plans.

#### Communications

The communications system was adequate. The primary communications system is commercial telephone and radio the backup system.

#### Alerting And Instructions

Public alerting was simulated by the EOC staff. In coordination with the County EOC the Mt. Morris EOC staff simulated instructions to police and fire department emergency personnel to conduct route alerting to notify the public, via public address systems mounted on emergency response vehicles.

#### Protective Action

The staff simulated the manning of three traffic and access control points in coordination with instructions received from the County EOC.

### 7. Stillman Valley

#### Activation and Staffing

The Dispatcher for the Stillman Valley Fire Department was notified of conditions at the Byron Nuclear Power Plant by staff of the Ogle County EOC. The Alert notification, which initiated the activation of the EOC, was received from the Ogle County Sheriffs Department. The call was verified by a telephone call back to the Sheriffs Communications Center per standard operating procedures. The Fire Department Dispatcher notified the Stillman Valley ESDA Director. The ESDA Director implemented the staff mobilization procedures by use of an up-to-date staff callup roster. According to exercise participants the foregoing is the regular system in place to notify and activate the EOC staff at anytime day or night, seven days a week. The EOC staff is well trained and knowledgeable of the County plan and their respective responsibilities. Around the clock (24 hours) staffing was demonstrated by double staffing some positions and the presentation of a roster of personnel for subsequent shifts.

## Emergency Operations Management

The ESDA Director was the individual that was effectively in charge of the EOC operations. Management of the EOC was excellent. Periodic briefings were held and the staff was involved in decision making. Copies of the State and County plans were available for reference. The staff had written checklists and message logs were kept.

The EOC staff were issued self reading and permanent record (TLDs) dosimeters and potassium iodide. The self reading dosimeters were calibrated before they were issued to the EOC staff. The issuance of dosimetry was carried out in accordance with proper procedures and documentation (record keeping). In addition to the sufficient supply of dosimetry equipment, a supply of KI was available for first responder personnel together with appropriate instructions about its use.

## Facilities

The Stillman Valley EOC is located in the Fire Station. The EOC facility has adequate lighting, telephones, backup electrical power and other amenities to support an extended operation. Classification levels were posted in the EOC. A status board was clearly visible to the staff and kept up to date on significant events. The required maps were posted in the EOC or available in the plans.

## Communications

Sufficient communications are available to meet the needs for conducting emergency response operations. The primary means of communications is commercial telephone, with radio backup to the County EOC, adjacent municipalities, and local school systems.

## Alerting And Instructions

Public alerting was simulated by the EOC staff. In coordination with the County EOC the Stillman Valley EOC staff simulated instructions to police and fire department emergency personnel to conduct route alerting to notify the public, via public address systems mounted on emergency response vehicles.

## Protective Action

The staff simulated manning a traffic and access control point in coordination with instructions received from the County EOC.

SUMMARY LISTING OF EXERCISE FINDINGS

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Byron Nuclear Power Station  
Summary Listing of Exercise Findings  
1. Deficiencies

<u>NUREG</u> <u>Item</u>	<u>Narrative Statement</u> <u>of Weakness</u>	<u>Corrective Action</u> <u>Proposed</u>	<u>Scheduled</u> <u>Date</u>	<u>Actual</u> <u>Date</u>
	<u>State of Illinois</u>			
	NONE			
	<u>Ogle County</u>			
	NONE			

Byron Nuclear Power Station  
Summary Listing of Exercise Findings  
2. Areas Requiring Corrective Action

<u>NUREG Item</u>	<u>Narrative Statement of Weakness</u>	<u>Corrective Action Proposed</u>	<u>Scheduled Date</u>	<u>Actual Date</u>
<u>State of Illinois</u>				
G.3.a	The State of Illinois should continue to work with the utility during the layout of the permanent EOF/JPIC facility to ensure that the needs of the State EOF and JPIC staffs and the media are met. (These weaknesses were also identified during the previous exercise. It is noted that there is action underway to upgrade the JPIC facility.	The State of Illinois will continue to work with CECO during the layout of the permanent EOF/JPIC. Remodeling is scheduled to be completed by the end of 1988.		



Byron Nuclear Power Station  
Summary Listing of Exercise Findings  
2. Areas Requiring Corrective Action

<u>NUREG Item</u>	<u>Narrative Statement of Weakness</u>	<u>Corrective Action Proposed</u>	<u>Scheduled Date</u>	<u>Actual Date</u>
<u>Ogle County</u>				
E.7	Prescribed messages were drafted in the EOC. The messages were clear and appropriate to the situation and described protective action areas in terms of familiar boundaries and landmarks. However, the sheltering messages did not include information on ad hoc respiratory protection.	The State of Illinois will continue its practice of including instructions for ad hoc respiratory protection in messages to the public only when the situation warrants.		

Byron Nuclear Power Station  
Summary Listing of Exercise Findings  
3. Areas Recommended For Improvement

State of Illinois

1. The personnel assigned to the shower station at the decontamination center should provide more specific instructions concerning the procedures for disrobing, which would minimize the spread of contamination.
2. The prescribed file of press releases should be purged of site specific information following each radiological emergency preparedness exercise.
3. Copies of the County EBS messages should be made available to the media at the JPIC.

Ogle County

1. The dosimetry kits in the County EOC should include written instructions.
2. The County EOC staff should ensure that the municipalities are immediately notified of the accident classifications and provide frequent periodic updates on the situation.
3. Copies of the County EBS messages should be made available to the media at the JPIC.
4. In Oregon, It is recommended that a larger area within the Coliseum building be provided for emergency operations. Also, it would be advantageous to provide message copying equipment to the EOC.

### 3.0 EXERCISE SCENARIO

#### NARRATIVE SUMMARY

##### Initial Situation (0730-0800)

###### Unit 1

###### Plant Status:

1. Mode 1 - Steady state operation at 98% power for last 135 days with equilibrium Xenon. RCS boron concentration is 10ppm.
2. RCS Iodine 131 concentration at 1.5E-02 microcuries per gram.
3. RCS leakrate calculation is 0.56 gpm unidentified and 1.6 gpm identified with no s/g tube leakage.
4. Positive Displacement Pump (1CV02P) is out of service for seal replacement. Repair time is 8 days.
5. The 1B CD/CB pump is out of service for bearing replacement. Repair time is 3 days.
6. The 1B CC pump is out of service for bearing replacement. Repair time is 2 hours.
7. Radiation Monitor 1PRO03J is inoperable. LCOAR was initiated at 2000 on 10-10-87.

###### Unit 2

###### Plant Status

1. Mode 6 - Six days into a refueling outage caused by indications of possible fuel cladding damage. Twenty-one fuel assemblies have been removed to the Spent Fuel Pool (SFP). Fuel assembly #22 is at present entering the Transfer Canal in the upender to be placed in the SFP. The 2B RH pump is in operation in the shutdown cooling mode.
2. The following pumps are out of service for administrative control: 2A and 2B SI pumps, 2A CV pump, 2A and 2B CS pumps.
3. The 2A RH pump is out of service for rebuilding the pump. Repair time is 7 days.
4. The U-2 CST is drained for heater replacement. Repair time is 5 days.
5. The U-2 main turbine is out of service for bearing inspection. Repair time is 10 days.
6. The main turbine oil reservoir is out of service to clean the reservoir. Repair time is 3 days.

Unit 0  
Status

1. The OC Gas Decay Tank (GDT) release has been initiated at 0725 on 10-14-87. The OPRO02J (both A & B) radiation monitor is inoperable so two samples have been independently verified. LCOAR entered at 0800 on 10-10-87. The O<sub>2</sub> analyzers for GW (OGW8003) and OGW8004) are inoperable. Samples are being analyzed per LCOAR. LCOAR entered at 2200 on 10-8-87.
2. The OB WW pump is out of service for electrical determination. Repair time is 5 hours.
3. The SX blowdown valve OSX161A is stuck in a variable open position due to a severed stem. Repair time is 2 days.
4. The OA demin flushing pump is out of service for a motor alignment. Repair time is 8 hours.

UNUSUAL EVENT (0800-0845)

45 minute duration

EAL #3 Seismic equipment is actuated at level of 0.02g

At 0800 (-0)

The seismic actuation alarm annunciates in the control room. Level is verified at 0.02g and the shift begins to shutdown Unit one per procedure. System walkdowns are initiated and the fuel assembly #22 is to be transferred to the SFP.

The following abnormal conditions are caused by the earthquake.

1. The -2 turbine building crane is partially derailed with the operator dangling from the escape harness. The fire brigade assembles to rescue the crane operator. Outside assistance is requested.
2. The station north entrance at the guardhouse is blocked by the toppled flagpole.
3. Numerous leaks begin in the fire protection outside ring header.
4. The U-1 Condensate storage tank (CST) is structurally deformed.
5. German Church Road is blocked from the north.
6. The OA deepwell (WW) pump casing is collapsed. This requires that action be initiated within 1 hour to place Unit 1 in HOT STANDBY within the next 6 hours, HOT SHUTDOWN within the following 6 hours, and COLD SHUTDOWN within 24 hours after that.

7. The fuel assembly #22 becomes stuck in the upender in the transfer canal near its fully withdrawn position.

The Rockford Load Dispatcher requests that the station maintain the 345KV ring bus intact for system stability.

ALERT (0845-1006)

81 minute duration

EAL #3 Seismic equipment is activated at a level greater than the Operating Basis Earthquake (>0.09g)

At 0845 (t-45)

The second seismic alarm annunciates in the control room with level verification >0.09g.

As a result, the following events occur:

1. Unit 1 main turbine vibration is 20 mils. The turbine is manually tripped and the reactor verified tripped.
2. A fire starts in the north laydown area.
3. The Byron Bridge over the Rock River (Route 72) collapses.
4. The essential service water and the circ water makeup line from the river screen house to the plant ruptures. (SX/CW) The OA and OCCW makeup pumps trip. SC basin level drops to the low-low level. The OA and OB SX makeup pumps autostart (or are started manually) and trip.
5. The Unit 1 CST catastrophically ruptures. Level indication at the main control board (MCB) is 0%.
6. The fire protection system der fails in many locations.
7. The transfer canal develops a leak. Level begins decreasing. The Spent Fuel Pool (SFP) low level alarm annunciates in the control room (level is < 423.5'). The shift initiates the procedure to find the cause and initiate makeup.
8. Due to GW piping vibration, several cracks appear resulting in the intake of O<sub>2</sub> to the on-line GDT (OA) via the on-line compressor. This results in the buildup for an explosive mixture in the OA GDT.

SITE EMERGENCY (1006-1116)

70 minute duration

EAL #25 Radiation levels in the Fuel Handling Building (FHB) are >100 mRem/hour as observed on the RM-11 display console for ORE-AR055 or ORE-AR056

At 1006 (t-126)

The radiation monitors ORE-AR055 and ORE-AR056 alarm high radiation at the RM-11 console in the control room. Radiation level is > 100mRem/hour per the RM-11 indication.

The fuel assembly #22 becomes unstuck from the upper and level is maintained in the SFP by either makeup or isolation to resolve the site emergency.

An explosion occurs at the 346' auxiliary building GDT area. Radwaste panel indications show the OA GDT is completely depressurized and the OB, OC, and OD GDT's are slowly depressurizing. No fire is in progress. As a result of the RM-11 console in the control room indicates high radiation alarms for 2PRO2BJ, 2PRO30J, and various area radiation monitors.

GENERAL EMERGENCY (1116-1336)

140 minute duration

EAL #27 Instantaneous release rate exceeds the level corresponding to > 1 Rem/hour whole body at the site boundary under actual meteorology. This condition exists when  $Q > 1.3 \times 10^{-4} \times U$  where Q = release rate in microcuries/second and U = wind speed in meters/second.

At 1116 (t-196)

The A-Model report shows that the instantaneous release rate exceeds 1 Rem/hour whole body exposure at the site boundary under actual meteorology. The release path is from the GDT area 346' auxiliary building via the aux building ventilation system over the vent stack and from stuck open GDT relief valve(s) line to downstream of the OGW014 valve and out the vent-stack (bypassing the aux building ventilation charcoal filters). The release will be terminated when all GDT's have blown down and the ventilation system clears the radiation level in the auxiliary building (>2 hour release).

RECOVERY (1336-1426)

50 minute duration

At 1336

The radiation release is terminated (within limits of the site boundary). Survey teams continue both in and outside the plant. Long-term makeup has been established to the SX basins. Construction activity has begun on the SX/CW makeup lines. OB WW pump has been restored to operable status. Radchem is monitoring transfer canal radiation levels and potential airborne radiation.