



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

APR 26 1986

Docket Nos.: 50-456
50-457

MEMORANDUM FOR: Atomic Safety and Licensing Board
for Braidwood Station, Units 1 and 2
(H. Grossman, A. D. Callihan, R. F. Cole)

FROM: Janice A. Stevens, Project Manager
PWR Project Directorate #5
Division of PWR Licensing-A

SUBJECT: BOARD NOTIFICATION REGARDING A SUPPLEMENTAL
SAFETY EVALUATION REPORT CONCERNING EMERGENCY
PLANNING FOR BRAIDWOOD STATION, UNITS 1 AND 2
(BN-86-10)

In accordance with the NRC procedures for Board Notifications, the enclosed Supplemental Evaluation Report (SSER) is being provided. This information is applicable to Braidwood Station, Units 1 and 2. Parties to the proceeding are being informed by copy of this memorandum.

The enclosed Supplemental Safety Evaluation Report (SSER) addresses Section 13.3 Emergency Planning of the Braidwood Safety Evaluation Report (NUREG-1002). Based on its review, the NRC staff concludes that Commonwealth Edison Company's Generating Stations Emergency Plan and the Braidwood site-specific Annex, upon satisfactory correction of the items listed in the enclosed SSER, will meet the planning standards of 10 CFR 50.47 (b) and the requirements of 10 CFR 50, Appendix E, and conform with the guidance in NUREG-0654, Revision 1. Upon correction of these items and after receiving the findings and determinations of the Federal Emergency Management Agency (FEMA) on the State and local emergency response plans, a SSER will be issued which provides the staff's overall conclusions on the status of emergency preparedness for the Braidwood Station and related emergency planning zones. The staff will conduct an Emergency Preparedness Implementation Appraisal of the Braidwood Station as part of its routine pre-licensing program in accordance with 10 CFR 50.47 (a)(2).

Janice A. Stevens

Janice A. Stevens, Project Manager
PWR Project Directorate #5
Division of PWR Licensing-A

Enclosure: EP SSER

cc: See next page

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cc: SECY (2)
EDO
OGC
OPE
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Parties to the Proceeding
See next page



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

JA Stevens

MAR 04 1986

Docket Nos.: STN 50-456, STN 50-457

Mr. Dennis L. Farrar
Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Farrar:

SUBJECT: SUPPLEMENTAL SAFETY EVALUATION REPORT CONCERNING
EMERGENCY PLANNING FOR BRAIDWOOD STATION, UNITS 1 and 2

The enclosed Supplemental Safety Evaluation Report (SSER) addresses Section 13.3 Emergency Planning of the Braidwood Safety Evaluation Report (NUREG-1002). Based on its review, the NRC staff concludes that Commonwealth Edison Company's Generating Stations Emergency Plan and the Braidwood site-specific Annex, upon satisfactory correction of the items listed in the enclosed SSER, will meet the planning standards of 10 CFR 50.47 (b) and the requirements of 10 CFR 50, Appendix E, and conform with the guidance in NUREG-0654, Revision 1. Upon correction of these items and after receiving the findings and determinations of the Federal Emergency Management Agency (FEMA) on the State and local emergency response plans, a SSER will be issued which provides the staff's overall conclusions on the status of emergency preparedness for the Braidwood Station and related emergency planning zones. The staff will conduct an Emergency Preparedness Implementation Appraisal of the Braidwood Station as part of its routine pre-licensing program in accordance with 10 CFR 50.47 (a)(2).

The enclosed evaluation will be incorporated in the next published Supplemental Safety Evaluation Report.

Vincent S. Noonan, Director
PWR Project Directorate #5
Division of PWR Licensing-A

Enclosure: SSER on Emergency Planning

cc: See next page

~~8603130128~~ 36 pp.

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Braidwood Station
Units 1 and 2

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13.3 Emergency Planning

The Commonwealth Edison Company filed with the Nuclear Regulatory Commission revisions to the Commonwealth Edison Generating Stations Emergency Plan (GSEP) dated January 3, 1980; April 24, 1980; June 4, 1980; July 30, 1980; December 31, 1980; March 27, 1981; October 20, 1981; May, 1984; and October, 1984.

The GSEP (filed in May and October, 1984 and dated April and July, 1984) is a generic emergency plan applicable to all nuclear generating stations operated by CECO. The GSEP includes site-specific annexes that contain additional information and guidance specific to each nuclear generating station. The Braidwood Annex to the GSEP, dated October, 1984, was submitted to the Nuclear Regulatory Commission in January, 1985. The plan is for the Braidwood onsite and corporate activities only. By correspondence dated March 15, 1985, CECO submitted clarifications to this annex and committed to incorporate these clarifications to an annex revision scheduled to be issued around October, 1985. The Commission staff has conducted a review of the GSEP and the Braidwood Annex (all hereinafter referred to as the Plan) as part of the overall emergency preparedness planning evaluation for the Braidwood Station.

Evaluation of the state of emergency preparedness for Braidwood also involves the review of State and local radiological emergency response plans by the Federal Emergency Management Agency (FEMA). NUREG-0800 states that the FEMA findings on offsite plans are reviewed by the NRC and a full-participation exercise is conducted at the facility. In accordance with the revised rule on emergency planning (47 FR 30232), no NRC or FEMA findings and determinations concerning the state or adequacy of offsite emergency preparedness are required before issuance of an operating license authorizing only fuel loading and low-power operations up to 5% of rated power. The findings and determinations of FEMA on the adequacy of the State and local emergency response plans and the overall conclusion of the NRC on the state of emergency preparedness for Braidwood will be presented in a future supplement to the SER.

The Plan was reviewed against the requirements of 50.47(b) and Appendix E of 10 CFR 50, and the criteria of the 16 planning standards in Part II of 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, dated November 1980. The criteria of NUREG-0654 have been endorsed in Regulatory Guide 1.101, Revision 2, "Emergency. Planning and Preparedness for Nuclear Power Reactors," dated October, 1981, and thus have the same status as a regulatory guide. Section 13.3 of the July 1981 revision of the Standard Review Plan (NUREG-0800) was also used during the staff review of Braidwood Station Emergency Preparedness.

Section 13.3.2 of this supplement lists each planning standard of 10 CFR 50.47(b) in order followed by an evaluation of the applicable portions of the Emergency (Onsite) Plan that relate principally to that particular planning standard. Section 13.3.3 of this supplement provides the staff review results and conclusions.

13.3.2 Evaluation of the Emergency (Onsite) Plan

13.3.2.1 Assignment of Responsibility (Organization Control)

The applicant's GSEP organization is divided into onsite and offsite functional areas. The onsite GSEP organization consists of a Station Group, which functions under a Station Director who is responsible for organizing and coordinating emergency response activities at and within the immediate vicinity of the station. The offsite GSEP organization is comprised of a Corporate Command Center (CCC) Group and a Recovery Group. During emergencies of limited extent, such as a transportation accident involving radioactive or other hazardous materials or a condition that would be classified as a Notification of an Unusual Event or as an Alert, the CCC Group's Director and staff may be activated to support the Station Group in evaluating, coordinating, and directing the overall company response to the emergency. For more serious emergencies, such as any Site Area or General Emergency, CECO has developed a prioritized Nuclear Duty Officer/CCC Director/Recovery Group notification list. This list enables the corporate Nuclear Duty Officer to initiate activation of the Recovery Group, which functions under the Recovery Manager at the nearsite Emergency Operations Facility (EOF). The CCC Group becomes a support staff to the Recovery Group upon the

Recovery Manager's decision that the Recovery Group is ready to assume its responsibilities at the EOF. The Recovery Manager's responsibilities include the evaluation, coordination, and direction of the overall company and industry response and management of the nuclear plant recovery operations. The CCC Director is responsible for initial coordination with governmental agencies, with the Recovery Manager assuming this responsibility after the EOF is functional.

Figures 1 and 2 illustrate the CCC Group (limited response offsite GSEP organization) and Recovery Group (full response offsite GSEP organization), respectively. The Plan describes the duties, responsibilities, and interfaces of each position in these organizations, as well as analogous information for each position in the Station Group. The applicant has a sufficient pool of trained personnel available from its nuclear generating stations and corporate staff to ensure that the GSEP organizations are capable of continuous operations for a protracted period of time, as evident from information provided in the GSEP Telephone Directory. The Administrative Director, Administration/Logistics Manager, and the Manpower/Logistics Director are responsible for ensuring that adequate numbers of trained personnel are available for protracted emergency organizations' operations.

The Shift Engineer, who is on duty 24 hours a day, becomes the initial Station Director upon detection of an abnormal condition, and is responsible for classifying the emergency and implementing the Plan as required. Multiple communications links are described in the Plan that will enable the Station to communicate 24 hours a day with Federal, State, and local emergency response organizations to ensure the rapid transmittal of accurate notification information and emergency assessment data.

Formal agreements with appropriate agencies and organizations including law enforcement, ambulance services, medical and hospital support, fire departments, and state and local authorities responsible for implementation of protective measures for the public are maintained separate from the Plan. With the exception of a letter of agreement with the U.S. Coast Guard, the staff determined that adequate letters of agreement have been

executed. The staff will examine the agreement with the U.S. Coast Guard and report its finding in a future supplement to the SER.

13.3.2.2 Onsite Emergency Organization

The normal station organization is shown in Figure 3. The Braidwood Station is managed by a Station Superintendent who is responsible for direct management of the station. During an emergency situation (normal working hours) the Station Superintendent is the Station Group Director. During periods when the Station Superintendent is unavailable, his responsibilities are delegated to alternates who satisfy the requirements of ANSI N18.1-1971, "Experience Requirements for Plant Manager."

The Shift Engineer, on duty 24 hours per day, is the initial Station Director and, as such, has the duties and responsibilities specified in Table 4.2-1 of the generic GSEP. Should the Shift Engineer become incapacitated, a line of succession is provided in the GSEP. The Braidwood Annex to the GSEP specifies responsibilities of the Station Director that cannot be delegated: the decision to declare an emergency condition and the decision to notify and recommend protective actions to offsite authorities in the event that the Recovery Manager or CCC Director have not been contacted or are not prepared to make an informed decision. The GSEP addresses the need for limiting personnel exposures under emergency conditions, and the need to obtain the prior approval of the Station Superintendent, the CEC Medical Director, and/or the Station's Radiation Protection Supervisor before potentially exposing volunteer emergency workers to doses which will potentially exceed 10 CFR 20 limits for life saving actions or actions needed to protect facilities, terminate radioactive releases, or to control fires. However, the Plan does not specify which individuals in the onsite and offsite emergency organizations have the ultimate responsibility for authorizing excessive exposures to volunteers under the aforementioned circumstances. This is an Open Item.

As described previously, the onsite emergency organization is the Station Group. Figure 4 shows this organization. The major duties and responsibilities of each Station Group director are defined in the Plan. The interfaces between

the Station Group, the CCC Group, and the Recovery Group are indicated in Figures 1 and 2. Interfaces between and among the Station Group, CCC Group, and Recovery Group staffs and the staffs of governmental and private sector organizations and technical and engineering contractors have been specified in the Plan.

The onsite emergency organization for nonnormal working hours, backshifts, and holidays is described in the Plan. Emergency assignments have been made, and the relationship between this emergency organization and the normal staff complement is shown in the Plan. Positions and/or titles and qualifications of plant personnel who are assigned major emergency functional duties are listed.

The minimum shift staffing levels provided in Figure 4.2-2 of the Plan meet the objectives of Table B-1 in NUREG 0654, Revision 1. This onshift staff includes the following areas of expertise. one Shift Engineer (Senior Reactor Operator (SRO)); one Shift Foreman (SRO); two Nuclear Station Operators (three, if both units are operating); three equipment operators/ attendants (four, if both units are operating); two Radiation/Chemistry Technicians; and one Shift Technical Advisor (also referred to as the Station Control Room Engineer (SCRE)).

The applicant's provisions for onshift augmentation within the first hour after an emergency declaration is described in Section 4.2 of the GSEP. CECO has established a 24-hour Station Duty Officer who would be notified first after a Plan activation. This individual would initiate a prioritized notification (call-list) procedure whereby individuals are contacted who are capable of performing the specific response functions identified in Table B-1 of NUREG-0654. The call-list is prioritized according to the least amount of travel time of the applicant's staff members to the site. This is done to ensure that the desired functions can be properly covered by qualified people within the time goals of Table B-1 of NUREG-0654. Further, unannounced offshift notification drills will be conducted at least every 6 months to demonstrate that the goals of Table B-1 are maintained. Drill records will be maintained for inspection. Figure 4.2-3 of the Plan indicates which personnel must respond, or may respond depending upon the nature of the emergency, following the declaration of a specific emergency classification. Within about 60 minutes of any Alert declar-

ation, for example, a minimum of eight and a maximum of 25 individuals would be required to augment onshift personnel.

Following any Site Area or General Emergency declaration, twenty-nine personnel would augment the onsite emergency organization within about 60 minutes. These 29 persons would function in the following emergency roles: all nine Station Group directors; an Environs Director; seven radiation/chemistry personnel for inplant, onsite, and offsite surveys; four radiation/chemistry personnel for protective actions; three engineers for plant system engineering; two electrical/mechanical personnel; one Instrument and Control Technician; one Radwaste Operator for equipment repair and correction; and one dedicated communicator.

13.3.2.3 Emergency Response Support and Resources

Arrangements for requesting and utilizing outside resources have been made, including authority to request implementation of the Department of Energy (DOE) Radiological Assistance Plan and the Federal Radiological Emergency Response Plan. Either the Station Director, Recovery Manager, or CCC Director may request DOE assistance, or other Federal response, if deemed necessary or desirable. The applicant also retains contractors to provide various emergency support services to the Braidwood Station, including technical experts for the following: accident analyses; environmental radiological monitoring, bioassay, and radiochemical analyses; medical and health physics support; meteorological monitoring and forecasting support; and personnel dosimetry services.

The Plan describes the radiological laboratories at each CECO nuclear generating station. Because each station's management and resources are similar, each station can make available some of its equipment, manpower, and counting facilities to a station affected by an emergency situation.

The CECO organization provides for dispatching licensee representatives to governmental emergency operations centers, if requested. Working space will be available for Federal, State, and local offsite representatives as well as for contractor and other support groups in the applicant's EOF located near

Mazon, Illinois. This facility presently serves as the EOF for the applicant's LaSalle County and Dresden Nuclear Generating Stations. This facility is the central point for providing information needed by primary response agencies for implementation of protective actions.

13.3.2.4 Emergency Classification System

The Plan provides for classification of emergency conditions into one of six categories. The first category, Transportation Accident, concerns an emergency involving the transportation of radioactive or other hazardous material from a nuclear generating station. The next four classes, in order of increasing severity, are Notification of an Unusual Event, Alert, Site Area Emergency, and General Emergency. The applicant's definitions of these classes are consistent with the descriptions found in Appendix I of NUREG 0654, Revision 1. The sixth category is Recovery, which the applicant has defined as that period when the emergency phase is over and activities are underway to return the station to normal operation. The Plan contains guidance for determining when the individual in charge of the applicant's emergency response activities can declare the beginning of the Recovery phase of operations, as well as guidance for downgrading of an emergency classification, and for terminating an emergency condition. The Plan also summarizes major CECo emergency response actions for the first five emergency classes (Transportation Accident through General Emergency). The applicant's actions to be taken in response to each of the four emergency classes described in Appendix I of NUREG 0654, Revision 1, are consistent with the guidance provided in that document.

The GSEP contains general descriptions of initiating conditions for the applicant's first five emergency classes. The descriptions for Notification of an Unusual Event through General Emergency classes include most of the examples given in Appendix I of NUREG 0654, Revision 1. The Braidwood Annex contains station-specific Emergency Action Levels (EALs) that are based on various plant sensors, onsite and offsite radiation monitoring information, and various natural phenomena. These station-specific EALs will be used for rapid classification of emergency situations.

The staff has evaluated the adequacy of the site-specific EALs, as contained in the Braidwood Annex to the generic GSEP, versus the guidance in Appendix 1 of NUREG-0654, Revision 1. The EALs were determined to be adequate, with the following two exceptions:

- (1) Four EALs addressed the situation in which equipment described in the station's Technical Specifications had been degraded beyond the limiting condition for operation that requires a reactor shutdown, or had been degraded such that a Technical Specification safety limit had been exceeded. Such equipment degradation would be classified as an Alert, per EAL Condition 14; however, the same resulting degradation would be classified as a Site Area Emergency, per EAL Conditions 1, 4, or 5, if it were caused by aircraft or missile crash, unplanned explosion, or fire, respectively. The applicant must justify the rationale for classifying the same level of equipment degradation either as an Alert (Condition 14) or as a Site Area Emergency (Conditions 1, 4, and 5), depending on the cause of the degradation. This is an Open Item.
- (2) The wording of EALs for Gaseous Radiation Releases implied that releases would always be monitored and quantified by plant instrumentation. The plan must contain guidance in appropriate EALs for Condition 27 to indicate that unmonitored gaseous radiation releases will be estimated from field measurements taken by environmental survey teams, so that unmonitored releases will be approximately classified. This EAL is in the Byron Annex, but missing from the Braidwood Annex. This is an Open Item.

13.3.2.5 Notification Methods and Procedures

The applicant has made provisions for initial and followup notifications of State and local authorities in case of an emergency at the Braidwood Station. The Shift Engineer, as acting Station Director, has the authority and responsibility for initiating emergency notifications to these authorities. The initial notification scheme is shown in Figures 5A, 5B, and 5C, and was set up by the State of Illinois and agreed to by the applicant. The Nuclear Accident Reporting System (NARS) is the dedicated voice communications system utilized for

notifying State and local emergency operations centers of declared emergencies. Its capability to enable timely notification of offsite authorities has been demonstrated at CECO's operating nuclear stations. Initial messages to State and local representatives of the Illinois Department of Nuclear Safety (IDNS) and the Illinois Emergency Services and Disaster Agency (IESDA) are reported in the format of the current NARS Form, a copy of which is included in the Plan. The format and content of the NARS form has been agreed to by CECO and the Directors of IDNS and IESDA. The NARS form is standard for all CECO nuclear generating stations and is not subject to alteration by CECO onsite or offsite review groups. The current NARS Form includes: information about the emergency class; whether a release of radioactive material has taken place; potentially affected population and areas; and whether offsite protective actions may be necessary. Provisions exist for verification of messages. The plan has established procedures which describe mutually agreeable bases for notification of offsite response organizations consistent with the standard emergency classification and action scheme set forth in Appendix 1 of NUREG-0654, Revision 1.

The plan contains guidance for the formulation of followup messages to State and local authorities that is consistent with the guidance found in Criterion 4, Planning Standard E, of NUREG-0654, Revision 1. However, the Plan neither addresses the frequency of followup message transmittal nor contains a copy of a standardized followup message form, which would provide greater assurance that followup message content would be developed in accordance with regulatory guidance. The lack of an adequate followup message and Plan provisions addressing the frequency of followup message transmittal to State and local authorities is an Open Item.

The plan has established procedures for notifying, alerting, and mobilizing applicant emergency response personnel. These procedures include both station and corporate personnel.

CECO and the State have developed predetermined written messages intended for the public and consistent with the emergency classification scheme. These messages are part of the State Emergency Plan and are not included in the applicant's plan.

The Plan describes the Prompt Public Notification System (PPNS) as consisting of a permanently installed outdoor notification system within the zero (0) to ten (10) mile radius around the station. The zero (0) to ten (10) mile radius around the station is primarily an agricultural area with a population density below 2000 persons per square mile. The prompt notification system to be installed consists of mechanical and electronic sirens which will cover this entire area with a minimum sound level of 60 db. Additionally, for the heavily populated areas within the zero (0) to ten (10) mile radius around the station, the prompt notification system will cover these communities with a minimum sound level of 70 db to ensure complete coverage. Responsibility for activating the PPNS is given to local offsite authorities. Per instructions to be provided in the emergency information brochures to be distributed within the plume exposure EPZ, persons hearing a siren are to tune their radios to predesignated Emergency Broadcast System (EBS) radio stations to obtain detailed instructional messages from local authorities. State and local procedures provide the contents of these messages.

By letter dated March 3, 1986, the applicant committed to providing information in a subsequent Annex which would address how members of the transient population, such as boaters and fishermen who may be at recreation areas, will receive an instructional message on what actions they would take upon hearing the siren.

Although the siren system will be operated by local government agencies, it will be maintained by CECO. CECO will seek agreement with these agencies to test the system monthly and to report inoperable equipment to designated maintenance personnel for timely repair. In addition to this nonroutine repair program, CECO will provide for a periodic, preventive maintenance program.

13.3.2.6 Emergency Communications

The Plan describes multiple communications systems, which include the use of normal and dedicated telephone lines on land lines and microwave voice channels, mobile radio units, handi-talkies, and computer peripherals, thus providing both a primary and several backup means for communications.

A dedicated telephone communications system, called the Nuclear Accident Reporting System (NARS), is described and provides for the notification of State and local authorities in the event of an emergency. This system links the Control Room, Corporate Command Center (CCC), Technical Support Center (TSC), System Power Supply Office, Emergency Operations Facility (EOF), and State and local Emergency Operations Centers. Initial contact points are manned 24 hours per day. Additional dedicated communications systems include..

- A microwave voice channel between the CCC and Control Room, TSC, and the EOF;
- A dedicated telephone link that enables communication between the CCC, TSC, and the EOF;
- A dedicated telephone link that enables communication between the Control Room and the TSC;
- A dedicated telephone link that enables communication between the Control Room and the Operational Support Center (OSC); and
- A dedicated telephone link that enables communication between the TSC and OSC.

Two separate communication systems have been installed to allow coordinated environmental monitoring and assessment during an emergency. The first system consists of the necessary hardware to allow communications between the Corporate Command Center, the Control Room, the TSC, the EOF mobile units in Commonwealth vehicles, and handi-talkies held by environmental monitoring teams in the field. The second system consists of a dedicated telephone which allows continuous communication between the Corporate Command Center and the Illinois Department of Nuclear Safety REAC in Springfield.

The Braidwood Station will also have other intraplant and plant-to-offsite communications equipment, including: a public address system; a commercial phone system; Security/Operations radioconsoles and handi-talkies; and sound-powered phones.

The NRC will install dedicated telephones linking the station's control room, TSC, and EOF with the NRC Incident Response Center in Washington, D.C. and the regional NRC office in Glen Ellyn, IL. Also there will be a separate dedicated Health Physics Network (HPN) telephone between the NRC and the Braidwood Radiation Protection Office, TSC, and EOF. Operation of these systems will be under the direction of the NRC.

13.3.2.7 Public Education and Information

The Plan provides for the annual distribution of informational brochures to the public which address how they will be notified and what their actions should be during an emergency. The public information brochure for the Braidwood Station included the following information: what to do if a take-shelter request is given, what to do if an evacuation request is given, methods for notification during an emergency, educational information concerning radiation, a map of major evacuation routes, a list of communities likely to serve as host shelter areas, and instructions on how to obtain additional information, especially for the disabled or their caretakers or those without transportation. The public information brochure described above was mailed to all residents in the plume exposure EPZ of the Braidwood Station and was also provided to appropriate locations (city halls, State parks, campgrounds) and other areas where a transient population may obtain a copy.

The EOF provides support and interface between CECo, State, and local agencies, and the news media. The plan provides for dispatching the Emergency News Center Director to the EOF. An Emergency News Center functions under the direction of this person and is the single-point of contact for disseminating information to the public. The Emergency News Center Director's responsibilities include coordinating information releases with Federal, State, and local agencies, and participating in rumor control activities managed by State agencies. A technical spokesperson, knowledgeable about the affected station and its operations, will be available to brief the press at the Emergency News Center.

CECo will offer programs at least annually to acquaint news media with the GSEP, information concerning radiation, and points of contact for release of public information in an emergency.

13.3.2.8 Emergency Facilities and Equipment

Emergency facilities needed to support an emergency response effort have been described, including an onsite Technical Support Center (TSC); onsite Operational Support Center (OSC); nearsite Emergency Operations Facility (EOF); and a Corporate Command Center (CCC) located at the applicant's offices in Chicago, Illinois. The TSC and OSC will be activated for any Alert or higher emergency classification. The EOF will be activated for any Site Area or General Emergency classification, and the CCC may be activated for any class.

The TSC will be located at the south end of the turbine building and is sized for at least 25 persons and supporting equipment. Personnel in the TSC will be protected from radiological hazards, including direct radiation and airborne contaminants under accident conditions to the same degree as Control Room personnel. To ensure adequate radiological protection, permanent radiation monitoring systems will be installed. These systems continuously indicate radiation dose rates and airborne radioactivity inside the TSC while in use.

In addition, protective breathing apparatus and thyroid blocking agents will be available for use as needed. The TSC will have access to a complete set of as-built drawings and other records, including general arrangement diagrams, P&IDs, piping system isometrics, and electrical schematics. The TSC will have the capability to record and display vital plant data in real time.

The station's primary OSC will be located in Meeting Room Number 1 of the Service Building. The Shift Engineer's office in the Auxiliary Building will serve as a backup OSC. Operations, Radwaste, and Rad/Chem personnel will report to the OSC for assignment. A limited inventory of supplies will be kept in the OSC. This inventory will include portable lighting, respirators, protective clothing, and portable survey instruments. Communications and management controls from the OSC to the TSC and Control Room will be provided.

Braidwood Station has an EOF located at Mazon, Illinois approximately 14 miles WNW of the station. This facility presently serves as the EOF for CECO's LaSalle County and Dresden Nuclear Generating Stations. Since this EOF is beyond 10 miles from the Braidwood Station, it conforms to the NUREG 0696

habitability guidelines for EOF locations between 10 and 20 miles from a nuclear power plant. The EOF will be utilized to evaluate and coordinate the emergency reentry/recovery operations on a continuing basis. Liaison with Federal, State, and local officials will be maintained at this center, which will also be used for receipt and analysis of field monitoring data submitted by field teams.

In December 1983, the NRC issued Supplement 1 to NUREG 0737 which contained final requirements and guidance for Emergency Response Facilities (ERFs) that superseded the previous requirements of NUREG 0737. A determination of adequacy of the applicant's final ERFs will be performed during a post-implementation appraisal. That appraisal will be conducted against the provisions of Supplement 1 to NUREG-0737 at a future date.

The CCC is located on the 12th floor of the Edison Building in downtown Chicago, and is the location from which the CCC Director will normally direct overall company activities involved in coping with an emergency, if he has assumed command. If the Recovery Group is activated at the EOF, the CCC will be the location for a support staff reporting to the Recovery Group. In addition to the above functions, the CCC will serve as the corporate environmental center where environmental monitoring will be coordinated and offsite dose projections performed under the direction of the CCC Environmental Director. The CCC has dedicated communication with the Control Room, TSC, EOF, State of Illinois Emergency Services and Disaster Agency, the Illinois Department of Nuclear Safety REAC, company cars, and field radios.

A CECO submittal dated January 12, 1982 not only described the Braidwood Station's ERFs but also contained commitments and preliminary descriptions of the Safety Parameter Display System (SPDS), indicating that SPDS consoles would be located in the TSC and EOF. The staff finds these locations acceptable. The consoles will be installed to ensure that personnel in the TSC and EOF have indications of direct and derived plant variables as necessary to assess plant status. Supplement 1 to NUREG 0737 contained final requirements and guidance for SPDS that superseded the previous requirements of NUREG 0737. A determination of the adequacy of the Braidwood Station's SPDS will be performed during a post-implementation appraisal, to be conducted against the provisions of Supplement 1 at a future date. This item does not require resolution prior to licensing.

Onsite monitoring systems and instrumentation used to initiate emergency measures and/or provide continuing assessment are identified. These systems include the following: a meteorological monitoring system with wind speed, direction, and temperature capability; seismic instrumentation to measure ground acceleration levels; radiation monitors in process lines that actually or potentially contain radioactive effluents; area radiation monitors to measure upward deviations in radiation levels in specific locations in the station; fire and smoke detection instruments placed in strategic plant locations; portable dose rate and radiation detection instruments; and laboratory counting and analysis facilities. The plan also indicates the nonradiological process monitors that will be used under accident conditions (such as, reactor coolant system pressure and temperature, liquid levels, containment pressure and temperature, flow rates, and so forth). Such process monitors are referenced in the Station's EALs. Hydrological monitors have not been installed because of the plant site's hydrological characteristics, as described in the FSAR and the Plan. EALs are, however, specified for both flood and low water conditions, based on probable maximum precipitation amounts and cooling pond dike failure scenarios, respectively.

Provisions for offsite monitoring equipment have been made. Seismic data, respiratory protection equipment, portable detection instruments, and counting room equipment can be obtained from the Dresden, LaSalle County, Quad Cities, Zion, and Byron Stations. The Illinois Department of Nuclear Safety maintains a mobile laboratory equipped with radioassay capability to respond to radiation emergencies.

The Environmental/Emergency Coordinator is responsible for the receipt and analysis of all field monitoring data and the determination of where environmental sample media will be taken for analysis.

The meteorological monitoring equipment installed at the Braidwood Station meets the criteria of Regulatory Guide 1.23, "Onsite Meteorological Programs," dated 1972. The applicant submitted plans (letter dated January 19, 1981) for upgrading the meteorological program as per NUREG-0737, "Clarification of TMI Action Plan Requirements," Task Item III.A.2. This material also included a description of the Offsite Dose Calculation System (ODCS). The plan describes

the ODCS and its objectives. These objectives include: (1) meet the meteorological criteria of NUREG-0654, Revision 1; (2) provide, where possible, redundant independent pathways of data transmission and redundant data processing computers for use in an emergency situation; (3) provide quick and reasonably accurate estimates of radiation dose to persons living offsite, including preparation of procedures and training of users required to accomplish this assessment; and (4) provide a method for meteorological contractors to secure meteorological data for assessment of routine releases and to detect equipment failure quickly. The Emergency Plan describes the Braidwood Station's onsite meteorological monitoring system, provisions for the system's routine and emergency maintenance, and data review and quality control. Offsite meteorological information can also be obtained from CECO's LaSalle County and Dresden Stations, the National Weather Service station in Joliet Illinois, or from CECO's meteorological services contractor. The latter source of data can provide both current and forecast meteorological information.

The Plan indicates that EAL alarms based on offsite dose rates will, in accordance with Appendix 1 of NUREG-0654, Revision 1, be factored into the Class A model. The station process computers will process this information and will produce initial transport and diffusion estimates within 15 minutes following initiation of the calculational procedure. This information will be immediately available to the Control Room operators.

In December 1983, the NRC issued Supplement 1 to NUREG-0737 which contained final requirements and guidance for ERFs that superseded the previous requirements of item III.A.1.2 (Upgraded Emergency Support Facilities) and III.A.2.2 (Meteorological Data) of NUREG-0737. The adequacy of CECO's final ODCS and upgraded meteorological monitoring program will be determined during a future post-implementation appraisal to be conducted against the provisions of NUREG 0737, Supplement 1.

Procedures will be developed for emergency preparedness including quarterly inventory and operational readiness of emergency equipment and supplies. Sufficient equipment for emergency kits exists to ensure a minimum inventory in

case of replacement delay. The station will maintain portable survey instrumentation to assess inplant, onsite, and offsite contamination levels, exposure rates, and airborne gaseous, radioiodine, and particulate concentrations. Additionally, during emergency situations, emergency equipment and supplies can be obtained from other CECo nuclear generating facilities. The staff finds that the applicant's Emergency Response Facilities (ERFs) and equipment meet the requirements of 10 CFR Part 50, Appendix E, and the guidance criteria of NUREG-0654 on an interim basis for licensing. As noted above, the staff will confirm the adequacy of the applicant's final ERFs during a post implementation inspection in accordance with the requirements of Supplement 1 of NUREG-0737 on a schedule to be developed between the applicant and the NRC.

13.3.2.9 Accident Assessment

The Plan describes several system and radiological effluent parameter values characteristic of a spectrum of offnormal conditions and accidents. Parameter values and other reliable information are tabulated to cross-reference initiating conditions for each of the emergency classes. Specific alarm setpoints, both visual and audio, will be in the Control Room to alert the operators.

The onsite radiation monitoring capability includes installed process, effluent, airborne and area radiation monitoring systems; portable survey instrumentation; counting equipment for radiochemical analysis; and a personnel dosimetry program to record integrated exposure. The radiation monitoring system is designed to continuously monitor the containment atmosphere, plant effluents, and various inplant locations. The system includes Control Room readouts and recorders for each parameter that is monitored and an audible Control Room alarm when predetermined setpoints are exceeded. The system can be subdivided into process/effluent instrumentation and an area monitoring system.

The process/effluent instrumentation will consist of pumps, filter samplers, detectors, and associated electronics to determine noble gas, iodine, and particulate concentrations in plant cubicles or in liquid and gaseous effluents. Several monitored effluent pathways have control functions which will terminate the release at predetermined setpoints. These setpoints are premised on compliance with federal regulations. The area monitoring system provides information

of existing radiation levels in various areas of the plant to ensure safe occupancy. It is equipped with Control Room and local readout and audible alarms to warn personnel of an increased radiation level.

Two General Atomic Company wide-range monitors will be installed on the auxiliary building vent stacks (final release points), one monitor per stack. The monitor has a range for radioactive gas concentration 1×10^{-7} $\mu\text{Ci/cc}$ to 1×10^5 $\mu\text{Ci/cc}$. Each monitor system has a microprocessor which utilizes digital processing techniques to analyze data and control monitor functions. Control Room readouts include a chart recorder and an RM-23 remote display module for all monitored parameters.

Two General Atomic Company RD-12 detectors will be provided for each of the four main steamlines upstream of the safety and relief valves. The range of the monitor is 10^{-1} mR/hr to 10^4 mR/hr. The monitors will be mounted external to the main steamline piping, and corrections made for the loss of low energy gammas.

The General Atomic Company wide range gas monitor includes a sampling rack for collection of the auxiliary building vent stack particulate and radioiodine samples. Filter holders and valves are provided to allow grab sample collection for isotopic analyses in the station's counting rooms. The sampling rack is shielded to minimize personnel exposure. The sampling media will be analyzed by a gamma ray spectrometer which utilizes a Ge(Li) detector. The iodine cartridges are reverse blown for at least ten minutes to reduce the level of entrapped noble gases. In addition, silver zeolite cartridges are available to further reduce the interference of noble gases.

In cases where the instrumentation used for effluent assessment is inoperable or offscale, actual releases will be determined periodically by collecting grab samples, counting the samples, and calculating the releases.

Two high range containment radiation monitors will be installed for each operating reactor. The monitors will detect and measure the radiation level within the reactor containment during and following an accident. The range of the monitors is 1 rad/hr to 10^8 rads/hr (beta-gamma) or alternatively, 1 R/hr to

10⁷ R/hr for gamma only. Plots of activity in containment (Ci) versus containment radiation reading (R/hr) for each reactor are developed to aid the Control Room operator in an assessment of core damage. These values are related to EALs for rapid classification of an emergency conditions.

Monitoring of increasing iodine levels in buildings under accident conditions will include the use of portable instruments using silver zeolite as a sample media. The Braidwood Station will have a Transportable Data Acquisition and Analysis System for analyzing samples that cannot be counted and analyzed in the normal Station counting room because of background problems. Auxiliary counting room locations have been identified within the Turbine Building. The applicant estimates that a sample can be obtained, purged, and analyzed for iodine content within a two-hour time frame.

The Station will maintain portable survey instrumentation to assess contamination levels, exposure rates, and gaseous, iodine, and particulate airborne radioactivity concentrations. This equipment will include G-M's, ion chambers, and air samplers. The equipment will be operated and calibrated by Station personnel. The Station counting room contains Ge(Li) gamma spectrometer systems, gas-flow proportional counters for alpha and beta/gamma analysis, and liquid scintillation counters for tritium analysis. The Station will use film badges, TLDs, direct reading pocket ion chambers, and electronic dosimeters to monitor personnel exposures. In addition, a whole body counting system for bioassay determinations will be located onsite.

The Plan and Appendix E of the applicant's FSAR describe an extensive post-accident primary coolant and containment atmosphere sampling system. The post-accident primary coolant sampling system will provide samples from the reactor loops, pressurizer, and the residual heat removal (RHR) system. The system will allow sample collection and analysis within the exposure guidelines given in NUREG-0737. This system provides analytical capabilities for boron and isotopic analysis for diluted samples (1000 to 1), and online analysis of pH, dissolved oxygen, specific conductivity, chloride, and hydrogen. The containment atmosphere sampling system will provide representative grab samples at the time of an accident and fixed intervals thereafter. The Plan describes means by which operator exposure will be limited when utilizing either the coolant or containment air sampling system.

The Plan describes an Offsite Dose Calculation System (ODCS) which meets the design objectives of the NRC Class A model. The system will be computerized and used to predict offsite doses on a real-time basis using effluent and meteorological monitors. The ODCS provides access to meteorological information at any CECo facility on a real-time basis, and can be accessed from the Control Room, TSC, EOF, and CCC. The ODCS can determine the magnitude of a release or potential release by using any of the following: (1) evaluation of plant conditions, (2) offsite radiological measurements, and (3) dose projections offsite. The ODCS will achieve operational status at the Braidwood Station per the schedule provided in CECo's response to NUREG 0737, Supplement 1.

The Plan describes the offsite radiological environmental monitoring program, including fixed continuous air samplers and a fixed thermoluminescent dosimeter (TLD) monitoring network which meets the NRC Radiological Assessment Branch Technical Position for Environmental Radiological Monitoring Programs. Maps are provided in the Plan that depict the TLD and air sampler locations.

The Plan describes the capabilities and resources for field monitoring within the plume exposure EPZ. Teams will have adequate monitoring equipment to locate and characterize the plume, and make airborne measurements of radioiodine to levels of $1 \text{ E-7 } \mu\text{Ci/cc}$ under field conditions. Adequate communications systems for the field teams will be provided.

13.3.2.10 Protective Response

The Plan describes protective actions to be taken by onsite personnel. The station will have a siren to signal all persons to assemble in predesignated areas. Assembly areas for onsite emergency response personnel are specified in the Plan. Persons not having an emergency response assignment, including visitors and contractors, will be required to assemble in other predesignated areas also identified in the Plan. Onsite accountability is the responsibility of the Security Director, who will account for all individuals within the protected area at the time the assembly is announced and will be able to ascertain the names of missing individuals within about 30 minutes, utilizing the computerized security control system. If site evacuation is necessary (such as

for a Site Area or General Emergency), personnel will be relocated and monitored at one or more of the following locations: (1) the Dresden Nuclear Generating Station near Morris, Illinois; (2) the LaSalle County Nuclear Generating Station near Marseilles, Illinois; and (3) the Joliet Generating Station in Joliet, Illinois. The Plan indicates the evacuation routes to these relocation areas. Traffic control for onsite areas during a site evacuation will be the responsibility of the Braidwood Station security force. The Plan describes how radiological monitoring and decontamination (if necessary) will be provided for evacuees at the offsite relocation site(s). The plan makes provisions for respiratory protection, use of protective clothing, and use of radioprotective drugs for onsite emergency workers. The criteria for issuance of these protective measures are described in CECo Radiation Protection Standards and radiation/chemistry procedures.

The Plan provides the bases for recommendations for protective actions for the public. These protective action recommendations are consistent with the guidance set for in Table 5.1 of the Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA-510/1-75-001) and the guidance of the U.S. Food and Drug Administration covering contamination of human food and animal feed (Federal Register, Vol. 43, No. 242, December 15, 1978). The plan summarizes possible recommended protective actions to be made to State and local agencies during an emergency. The applicant's protective action formulation guidance, as stated in the Plan, is consistent with current NRC guidance. The plan clearly indicates that prompt notification will be made directly to offsite authorities responsible for implementing protective measures within the plume exposure pathway and ingestion exposure pathway EPZs.

Population distribution data by sector and distance within a 50-mile radius have been compiled and are included in the plan. Maps indicating major evacuation routes for the public and station personnel are provided in the plan. Detailed evacuation routes (maps) for the general public will be contained in the State and local emergency plans.

The Plan contains evacuation time data for normal and adverse weather conditions from the August 1985 "Preliminary Evacuation Time Estimates Within the Plume

Exposure Pathway Emergency Planning Zone for the Braidwood Nuclear Generating Station." A review of these estimates was made by the staff and by Dr. Thomas Urbanik, an NRC consultant from the Texas Transportation Institute of Texas A&M University. A final conclusion as to the adequacy of the estimates can not be made until the following three areas are completed: (1) review and approval by local officials; (2) evacuation time estimates for specific special facilities; and (3) consideration of the transport dependent population. No other problems were noted in the general methodology used in the study. The applicant submitted the complete evacuation time estimate information for the plume exposure EPZ on February 5, 1986. Evaluation of this information by the staff is an Open Item; the results of the staff review will be reported in a future supplement to the SER.

The evacuation time estimates may be used by the Environmental/Emergency Coordinator as an aid in determining the recommended protection action for the off-site public (that is, sheltering or evacuation). The applicant's procedures will describe the bases for the choice of recommended protective actions including such factors as evacuation time estimates and local protection afforded in residential units.

13.3.2.11 Radiological Exposure Control

Emergency response personnel may receive radiation exposures in excess of the limits imposed by 10 CFR 20. The Plan indicates that whenever possible, prior authorization of the Station Superintendent, CECO Medical Director, and/or the Station's Radiation Protection Supervisor should be obtained before potentially exposing volunteer emergency workers to doses exceeding these regulatory limits. However, as indicated in Section 13.3.2.2 of this SER, the Plan does not specify which individuals in the onsite and offsite emergency organizations have the ultimate responsibility for authorizing these "once in a lifetime" exposures under the appropriate circumstances. The Plan does, however, contain emergency exposure guidelines for whole-body and thyroid doses which are consistent with the EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

The station will provide and distribute self-reading and accumulative type dosimetry to personnel involved in onsite emergency response, regardless of

company affiliation. Accumulated exposure records will be maintained and checked daily during an emergency condition.

Provisions for minimizing the affects of radiological exposures or contamination problems include the distribution of respirators, use of protective clothing, and use of thyroid blocking agents. The Station Director is responsible for preventing or minimizing direct or subsequent inhalation exposures due to radioactive materials deposited on the ground or other surfaces. CECO Radiation Protection Standards, used by the Station Director as general methods to be used in contamination control, include criteria for issuance of respiratory protection and protective clothing. The CECO Medical Director is responsible for maintaining adequate supplies of thyroid blocking agents and for establishing the specific policy for its use.

Onsite contamination control procedures for personnel, equipment, and access control are in place. Decontamination of personnel and equipment is required when contamination levels exceed predetermined values. Criteria for permitting return of contaminated areas and their contents to normal use are stated in the appropriate contamination control procedures.

The station will supply clothing and decontamination materials to onsite personnel required to relocate and found to be contaminated. In addition, the station will provide for monitoring, decontamination, and bioassay capabilities at the relocation sites.

13.3.2.12 Medical and Public Health Support

Although there are no resident physicians, nurses, or industrial hygienists on the staffs of CECO nuclear generating stations, select station radiation protection and supervisory personnel will be trained and qualified to administer first aid. The Plan indicates that such personnel will be annually retrained in first aid techniques and that at least one of these individuals will be available onshift at all times. The Braidwood Station will have an inplant first aid/decontamination room. First aid kits, stretchers, sinks, eyewashes, and emergency showers will be placed in various locations throughout the station.

Because of the specialized nature of the diagnosis and treatment of radiation injuries, CECO's Corporate Medical Office maintains a roster of physicians especially competent in this area of medicine and available for the care of persons with these special problems. These specialists may be in direct charge of the care of these patients or may serve as consultants to other physicians in charge of their care. In addition, Radiation Management Corporation (RMC) provides health physics and medical support, including bioassay result interpretation.

The applicant had made arrangements with the Braidwood Fire Department, confirmed in writing, for ambulance service for transporting contaminated, injured personnel from the Braidwood Station to a local hospital. This service will be available 24 hours per day. Radiation monitoring will be provided by the station whenever it becomes necessary to use the ambulance service to transport a contaminated person.

The applicant had made arrangements, confirmed in writing, with St. Joseph's Hospital in Joliet, IL, for receiving and treating contaminated or exposed persons. This hospital is also the supporting hospital for the applicant's Dresden Station, and has been involved in the handling of actual patients from Dresden. This hospital will be utilized for decontamination and initial treatment of persons with injuries involving radioactivity and requiring immediate hospital care. CECO will provide medical consultants to aid in any special care necessary at this hospital. Radiation monitoring will be provided by the station whenever it becomes necessary to use the hospital to treat a contaminated injured patient.

Backup medical support, confirmed in writing, is also maintained with Northwestern Memorial Hospital in Chicago, which is equipped and staffed for dealing with persons having radiation injuries. The Plan states that, whenever necessary, contaminated, injured personnel would be transferred to this major facility for extended specialized treatment.

By letter dated October 23, 1985, the NRC staff requested that the applicant commit to complying with the Interim Guidance contained in the Commission Statement of Policy on Emergency Planning Standard 10 CFR 50.47(b)(12), published in the Federal Register (50 FR 20892) May 21, 1985. This issue is an

Open Item for authorization above 5% of rated power pending a satisfactory response by the applicant to the Commission's policy statement.

13.3.2.13 Recovery and Reentry Planning and Post-accident Operations

The Plan describes an extensive Recovery Organization (Figure 2) which follows the recommendations of the Atomic Industrial Forum and the Institute for Nuclear Power Operations. The Recovery Organization will be activated upon activation of the EOF, which will automatically take place for any Site Area or General Emergency declaration. Designated CECO personnel will assemble at the EOF and assume additional responsibilities for assigned positions. These responsibilities are described in the Plan. There will be three major groups of emergency control personnel functioning at the EOF. They are (1) Recovery personnel; (2) Environmental Control personnel; and (3) Emergency News personnel. Recovery personnel function under the direction of the Recovery Manager and serve as the command post for direction of all recovery operations. Environmental Control personnel are under the direction of the Environmental/ Emergency Coordinator and function to evaluate emergency situations that affect the public. Emergency News personnel operate from the Emergency News Center, which functions as the single-point contact to interface with Federal, State, and local authorities who are responsible for disseminating information to the public. A technical spokesperson will be chosen by the Recovery Manager and will have the authority and responsibility to discuss technical problems associated with the emergency. The spokesperson shall be available to brief the press at the Joint Public Information Center.

The Recovery Manager is responsible for determining that a Recovery mode may be entered. The Recovery Manager is the designated CECO individual given the requisite authority, management ability, and technical knowledge to manage recovery operations. The primary Recovery Manager is the Division Vice-President and General Manager, Nuclear Stations. The Plan includes guidelines for determining when a Recovery phase can be declared, how to downgrade an emergency classification, and when an emergency condition can be declared terminated. Provisions will be made for informing members of appropriate emergency response organizations of any change in emergency classification.

The Plan contains provisions which address entry to previously evacuated onsite areas for the purpose of saving lives, search and rescue of missing and injured persons, or manipulation, repair, or recovery of critical equipment or systems. The Plan also contains guidelines for recommending re-entry into previously evacuated offsite areas. The Plan describes the Offsite Dose Calculation System (ODCS) as the method used for estimating the environmental impact of an unplanned airborne release of a radioactive release from the station, including estimating total population exposures.

13.3.2.14 Exercises and Drills

The Plan ensures that an annual exercise will be conducted at Braidwood to test the adequacy of timing and content of implementing procedures and methods, to test emergency equipment and communications networks, and to ensure that emergency personnel are familiar with their duties. Both full-participation and partial-participation exercises will be conducted. The plan states that once every 6 years, an exercise should be scheduled between the hours of 6.00 p.m. and midnight, and another between midnight and 6:00 a.m.

Full-participation exercises which test as much of the appropriate plans (licensee, State, or local) as is reasonably achievable without mandatory public participation will be scheduled in order to permit agencies to fulfill their full-scale exercise frequency requirements as delineated in 10 CFR Part 50, Appendix E, Sections IV.F.1 and IV.F.2. This exercise is observed during the NRC's pre-operational inspection program, and has been scheduled for the late fall of 1985.

Partial-participation exercises will be conducted at the frequency specified in Appendix E of 10 CFR Part 50. This exercise means that appropriate offsite authorities will actively take part in the exercise sufficient to test direction and control functions; i.e., protective action decisionmaking related to EALs and communication capabilities among affected State and local authorities and the licensee.

A written scenario will be prepared for each annual exercise. This scenario will include: (1) the basic objectives of the exercise; (2) the date, time period, places, and participating organizations; (3) the simulated events;

(4) the time schedule of real and simulated initiating events; (5) arrangements for qualified observers; and (6) a narrative summary describing the conduct of the exercise to include such things as simulated casualties, rescue of personnel, deployment of radiological monitoring teams, and public information activities. A critique will be conducted as soon as practical after each exercise. The critique will discuss the exercise results as to the ability of the GSEP organization to respond to a simulated emergency situation as called for in the GSEP. The Supervisor of Emergency Planning will ensure that when deficiencies in the plan, corresponding implementing procedures, or training program are discovered during exercises and/or drills, necessary corrective actions will be completed.

Medical emergency drills, involving a simulated contaminated individual, will contain provisions for participation by local support services agencies (i.e., ambulance and offsite support hospital) and will be conducted annually. Health physics drills will be conducted semiannually. These drills will include response to, and analysis of, simulated airborne and liquid samples within the plant. At least annually, these drills will include a test of post-accident sampling systems. Plant environs and radiological monitoring drills will be conducted annually. These drills will include collection and analysis of sample media such as water, grass, soil, and air. An assembly/accountability drill will be conducted annually, and will include identifying the locations of all persons within the protected area after an assembly is ordered. The station will also conduct unannounced offshift notification drills at least every six months. These drills shall involve implementation of the station's notification procedure and documentation of the times that persons are contacted. These drills shall serve to demonstrate the capability to augment the onshift staff in a timely manner. Fire drills will be conducted in accordance with station Technical Specifications. The current revision to the GSEP deleted reference to an annual operator response drill, which was to be conducted in the event that the annual exercise requirement would have been deleted. This drill is no longer required since an annual exercise remains a requirement. Reference to an annual operator response drill should, therefore, be deleted from the Braidwood Annex to remain consistent with the GSEP.

The capability to notify NRC Region III, FEMA Region V, and other federal emergency response organizations listed in the GSEP Telephone Directory will be

demonstrated from the CECo corporate office at least quarterly. The capability to notify the NRC from the Braidwood Station's Control Room, TSC, and EOF will be demonstrated at least monthly, following installation of dedicated communications equipment to be arranged through the NRC. The capability to notify the Illinois Emergency Services and Disaster Agency and Illinois Department of Nuclear Safety will be demonstrated, using the NARS, at least monthly. The communications systems described in Section F of this Appendix will be tested annually. These systems include communications between the station, State, and local emergency operations centers, and field assessment teams. The Plan does not indicate whether communications drills with Indiana (the only State other than Illinois within the ingestion pathway EPZ) will be tested quarterly. Inclusion of provisions for quarterly communications tests with appropriate Indiana emergency response organization(s) is an Open Item.

13.3.2.15 Radiological Emergency Response Training

Appropriate initial and annual retraining will be given to all CECo emergency response personnel. CECo's Production Training Center is responsible for ensuring that necessary training is given; however, the station's Training Department will actually perform the training of onsite response emergency personnel, under the guidance of the Production Training Center. Station personnel who are assigned positions in the offsite emergency organization will receive appropriate additional training from staff members of the Division Vice-President and General Manager, Nuclear Stations. The Supervisor of Emergency Planning will notify the Production Training Center whenever new personnel are assigned emergency organization positions. The Production Training Center will ensure that appropriate initial training, and retraining sessions are scheduled and given. They will also maintain records of all emergency personnel trained. Station personnel not specifically assigned to emergency organization positions will be provided with an annual review of the Plan by the Station training staff.

The training program for emergency response personnel allows each member to meet the following objectives: know the objectives of the Plan; understand the emergency classification system; display an adequate knowledge of personal responsibilities and duties as listed in the Plan and its implementing procedures; know the persons with whom they may interface while performing emergency

duties; and display a functional knowledge of the documents necessary to fulfill these duties.

The proficiency of the applicant's emergency response personnel is ensured by the following means:

- Assigning persons to emergency duties which are similar to those performed as a part of their regular work assignment;
- The initial and annual retraining of emergency personnel on applicable generic and site specific portions of the Plan and corresponding Emergency Plan Implementing Procedures; and
- Participation in exercises and drills designed to sharpen those skills which they are expected to use during a radiological emergency.

The Station Superintendent is responsible for making an annual written offer to train those non-Commonwealth organizations, referenced in the Plan and Letters of Agreement, which may provide specialized services during a radiological emergency (e.g., firefighting, medical services, transport of injured). This training will acquaint the participants with the special problems potentially encountered during a radiological emergency, notification procedures, and their expected roles. Those organizations who must enter the site will also receive onsite training. They will also be instructed in site access procedures and the identity (by position and title) of those persons in the onsite organization who will control their support activities. CECo will offer programs (at least annually) to acquaint news media with the Plan, information concerning radiation, and points of contact for release of public information in an emergency.

The Plan does not clearly indicate that Unit 2 construction and other contractor personnel who would be onsite but outside of the temporary protected area boundary while Unit 1 was operational, would receive an initial orientation and annual retraining on the Plan and relevant implementing procedures sufficient to ensure that they are aware of actions they should take during an emergency. This is an Open Item.

13.3.2.16 Responsibility for the Planning Effort: Development, Periodic Review, and Distribution of Emergency Plans

The Division Vice-President and General Manager, Nuclear Stations, has overall responsibility for radiological emergency response planning within CECO. A staff assigned to this individual has the responsibility for developing and updating the Plan and coordinating the Plan with other response organizations. This staff is headed by the Supervisor of Emergency Planning. Training of emergency planning staff will be performed as a matter of practice. Actual training received is subject to the availability of appropriate courses and the availability of individuals to be scheduled for those courses.

To ensure that the Plan and the corresponding implementing procedures are kept current and updated, the Supervisor of Emergency Planning will ensure the following: (1) each copy of the Plan will be assigned a serial number; (2) an assignment record will be maintained of all copies; (3) the Plan will be distributed on a controlled basis to all individuals requiring them; (4) the Plan will be reviewed and certified current on an annual basis and updated as needed; (5) all changes to the Plan will be approved by onsite and offsite review committees; (6) all persons in possession of the Plan will receive authorized changes, which will be marked and dated to show where changes have been made; and (7) names and phone numbers of emergency organizations and support personnel will be reviewed and updated at least quarterly. The generic GSEP also indicates that Emergency Plan Implementing Procedures (EPIPs) will be developed and will be reviewed every two years. Per a commitment in the Braidwood FSAR, Braidwood Station EPIPs will be reviewed annually.

The Plan contains a detailed listing of supporting plans and their sources. A section in the Plan outlines the required content of implementing procedures, and lists the subjects of procedures required to implement the Plan. The Plan contains a specific table of contents.

An independent audit of the Emergency Plan and its implementing procedures will be conducted on an annual basis by the CECO Quality Assurance Department. The Plan states that actions shall be taken for evaluation and correction of all audit findings. However, it does not state that the scope of these audits will

be in accordance with the requirements of 10 CFR 50.54(t); nor does the Plan indicate that portions of the audits that address the adequacy of the Station's interface with State and local governments will be made available to those organizations. The Plan must indicate that the scope of independent audits of the emergency preparedness program will be adequate, and that appropriate portions of audit results will be made available to representatives of State and local governments, per the requirements of 10 CFR 50.54(t). This is an Open Item.

13.3.3 Conclusion

Based on its review, the staff concludes that Commonwealth Edison Company's Generating Stations Emergency Plan and the Braidwood site-specific Annex, upon satisfactory correction of the items listed below, will meet the planning standards of 10 CFR 50.47(b) and the requirements of 10 CFR 50, Appendix E, and conform with the guidance in NUREG-0654, Revision 1. These items are as follows:

- (1) A formal letter of agreement should be executed between CECO and the U.S. Coast Guard which would specify the support to be provided by that organization in response to an emergency condition at the Braidwood Station. (Section 13.3.2.1)
- (2) The Plan should specify those individuals in the onsite and offsite emergency organizations who have the undelegatable authority to authorize emergency worker exposures in excess of regulatory limits. (Sections 13.3.2.2 and 13.3.2.11)
- (3) The Station's Emergency Action Levels (EALs) need to be modified as indicated in this SER. (Section 13.3.2.4)
- (4) A followup message form and provisions for periodically transmitting adequate followup messages to State and local authorities should be developed. (Section 13.3.2.5)

- (5) The evacuation time estimate study for the Braidwood Station's plume exposure EPZ should be modified as indicated in this SER. (Section 13.3.2.10)
- (6) A letter of commitment to compliance with the Interim Guidance contained in the Commission Statement of Policy on Emergency Planning Standard 10 CFR 50.47(b)(12) is required for licensing above 5% rated power. (Section 13.3.2.12).
- (7) Indicate in the Plan that communications drills between the Braidwood Station and the appropriate emergency response organization(s) in Indiana will take place quarterly. (Section 13.3.2.14)
- (8) Indicate in the Plan that construction and other contractor personnel, who would not have duties in the onsite emergency organization, would receive an initial orientation and annual retraining on the Plan and relevant procedures sufficient to ensure that they are aware of actions they should take during an emergency. (Section 13.3.2.15)
- (9) Indicate in the Plan that the scope of independent audits of the station's emergency preparedness program will be in accordance with the requirements of 10 CFR 50.54(t). Also, indicate in the Plan that portions of such audits that address the adequacy of the Station's interface with State and local governmental organizations will be made available for review by these organizations, per the aforementioned regulatory requirement. (Section 13.3.2.16)

Upon correction of the above items and after receiving the findings and determinations of the Federal Emergency Management Agency (FEMA) on the State and local emergency response plans, a supplement to this report will provide the staff's overall conclusions on the status of emergency preparedness for the Braidwood Station and related emergency planning zones. The staff will conduct an Emergency Preparedness Implementation Appraisal of the Braidwood Station as part of its routine pre-licensing program in accordance with 10 CFR 50.47(a)(2).

REFERENCES

American National Standards Institute, ANSI N18.1-1971, "Experience Requirements for Plant Manager"

Commonwealth letter to NRC describing Braidwood emergency facilities compliance with NUREG-0737 requirements

---, Letter to NRC regarding upgrading of meteorological program to meet NUREG-0737 requirements

---, letter to NRC regarding response to meet NUREG 0737, Supplement 1 requirements

---, letter to NRC agreeing to provide letters of agreement with NUREG-0654; Revision 1, requirements regarding notification system

U.S. Environmental Protection Agency, EPA report EPA-510/1-75-01, "Manual of Action Guides and Protective Actions for the Nuclear Industry"

U.S. Nuclear Regulatory Commission, NUREG report NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, October 1981

---, NUREG-0696, "Functional Criteria for Emergency Response Facilities," February 1981

---, NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1981

---, NUREG-0737, Supplement 1, "Clarification of TMI Action Plan Requirements," January 1983

---, NUREG-0800, "Standard Review Plan for Review of Safety Analysis Reports for Nuclear Power Plants," July 1981

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