13. CONDUCT OF OPERATIONS

13.3 Emergency Planning

The U.S. Nuclear Regulatory Commission (NRC) evaluates emergency plans for nuclear power reactors to determine whether there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. An early site permit (ESP) application, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 52.17(b), must identify any physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans. The application must also describe contacts and arrangements the applicant has made with Federal, State, and local governmental agencies with emergency response planning responsibilities. In addition, the application may propose major features of emergency plans, as described in Supplement 2 to Revision 1 of NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants—Criteria for Emergency Planning in an Early Site Permit Application—Draft Report for Comment" (hereafter referred to as Supplement 2), issued April 1996, or may propose complete and integrated emergency plans.

The Exelon Generation Company, LLC (EGC or the applicant), ESP application includes the "Emergency Plan for the Exelon Generation Company, LLC Early Site Permit" (hereafter referred to as the EGC ESP Emergency Plan), that addresses the major features option allowed for ESP applications under 10 CFR 52.17(b)(2)(i). Because the proposed ESP site footprint consists of a portion of the existing Clinton Power Station (CPS) facility, and is located immediately adjacent to CPS, very little distinction exists between the CPS site and the ESP site for purposes of emergency response planning.

The staff, in consultation with the Federal Emergency Management Agency (FEMA), has reviewed the applicant's proposed EGC ESP Emergency Plan, Volume I of the Illinois Plan for Radiological Accidents (IPRA) dated May 2001, Volume VIII of the IPRA dated July 2003, and responses to requests for additional information (RAIs), in accordance with NRC Review Standard (RS)-002, "Processing Applications for Early Site Permits," issued in May 2004.

In RAI 13.3-2, the staff requested copies of the versions of the State and local emergency plans that EGC refers to in the application. On December 15, 2004, the applicant provided copies of the State and local plans in response to RAI 13.3-2. However, EGC provided a more recent version of IPRA Volume VIII than referenced in its application. The applicant also provided a summary of the changes to IPRA Volume VIII in the more recent version. The staff was unable to complete its review of this information before preparation of the draft safety evaluation report (DSER). Therefore, the staff characterized its review and acceptance of the information the applicant provided on December 15, 2004, in response to RAI 13.3-2, as Confirmatory Item 13.3-1. The staff reviewed the summary of the changes to IPRA Volume VIII in the applicant's letter dated December 15, 2004, and determined that it did not affect this SER. The staff also determined that the application was updated to reference the current version of IPRA Volume VIII (2003). Therefore, the staff considers Confirmatory Item 13.3-1 to be resolved.

Because the applicant elected to present and seek NRC acceptance of the major features of emergency plans, the staff's evaluation addresses, in order, the three aspects of such a

submission. The following identifies each aspect and the section of this safety evaluation report (SER) that is discussed:

(1) identification of physical characteristics that could pose a significant impediment to the development of emergency plans (SER Section 13.3.1)

(2) description of contacts and arrangements made with Federal, State, and local governmental agencies with emergency planning responsibilities (SER Section 13.3.2)

(3) proposed major features of the emergency plans (SER Section 13.3.3)

The applicant identified 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," as applicable to the major features it proposed. Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50, however, applies to the "major features" option of 10 CFR 52.17(b)(2) only to the extent that it requires a description of the "essential elements of advance planning that have been considered" (see Section III of Appendix E to 10 CFR Part 50). The staff approved the applicant's identification of 10 CFR Part 50 as one of the regulatory requirements applicable to the staff's review of the major features proposed by the applicant. The staff's findings are set forth throughout Section 13.3.3 of this SER and are limited to those particular portions of Appendix E to 10 CFR Part 50 that the staff considered during the course of its review of a particular major feature. More importantly, any staff finding that a proposed major feature complies with a particular requirement of Appendix E to 10 CFR Part 50 is limited to the description of the major feature approved by the staff in this SER.

Notwithstanding any staff approval of a proposed major feature in this SER, all features of the emergency plan requiring a description pursuant to Appendix E to 10 CFR Part 50, but that are not described in the ESP application, will be reviewed in the context of a combined license (COL) or operating license (OL) application. The staff will review complete and integrated emergency plans submitted in a COL or OL application to determine whether they comply with such requirements, as well as the requirements of 10 CFR 50.47, "Emergency Plans."

The staff's evaluation of the proposed major features of the applicant's emergency plans parallels the major features and planning standards in Supplement 2.

13.3.1 Significant Impediments to the Development of Emergency Plans

13.3.1.1 Technical Information in the Application

In Section 2.3, "Evacuation Time Estimate Analysis," of the EGC ESP Emergency Plan, the applicant stated that the evacuation time estimate[1] (ETE) performed in 1993 for the CPS plume exposure pathway served as the basis for the ETE analysis supporting its ESP application. The applicant further stated that the 1993 ETE assesses the relative feasibility of an evacuation for the 10-mile (mi) emergency planning zone (EPZ) plume exposure pathway. The applicant evaluated the assumptions that served as the basis for the 1993 ETE; Section 2.3.1,

[1] "Evaluation Time Estimates for the Clinton Power Station," July 1993.

"Assumptions," of the EGC ESP Emergency Plan lists these assumptions. The applicant found that these assumptions remain valid for the area surrounding the ESP site.

Sections 2.2, "Summary of Methodology," and 5.5, "Evacuation Simulation," of the 1993 ETE describe the methodology used, including the NETVAC computer simulation model. This model has many features that enable a reasonably sophisticated modeling of the road network, the use of evacuation preparation and departure time distributions, and the use of population and vehicle demand distribution data to simulate a variety of evacuation scenarios.

The 1993 ETE identifies the worst-case ETE for the entire EPZ as a summer weekday, with an ETE of 200 minutes for fair weather and 255 minutes for adverse weather. The Apple and Pork Festival on summer weekends results in an ETE of 380 minutes for fair weather and 530 minutes for adverse weather.

Volumes I and VIII of the IPRA reference the 1993 ETE in the "Planning Standards and Evaluation Criteria Correlation Document" for each volume. The 1993 ETE uses 1990 population data. An assessment of changes in population, using the 2000 census data, was conducted in 2003 in the "Phase One Report—Assessment of Changes within the Emergency Planning Zone for Clinton Nuclear Generating Station," issued in December 2003 (hereafter referred to as the Phase One Report). In RAI 13.3-15, the staff asked whether the information contained in the Phase One Report documenting the assessment of population changes in the plume exposure pathway EPZ should be considered as an update to the 1993 ETE. In response to RAI 13.3-15, the applicant stated that it did not use the Phase One Report in the preparation of the EGC ESP Emergency Plan and that it need not be referenced or considered because Section 2.3.3, "Analysis—Comparison of Infrastructure and Population," of the EGC ESP Emergency Plan independently develops and describes the report's conclusions.

Section 2.2.1, "Plume Exposure Pathway Emergency Planning Zone," of the EGC ESP Emergency Plan states that the EGC ESP site EPZ boundary is identical to the CPS EPZ, that is within approximately a 10-mile radius of the ESP site. Figure 2.1-1, "ESP EPZ with Radial Grid," of the EGC ESP Emergency Plan illustrates the radial boundary of the ESP site plume exposure pathway EPZ. The figure also shows transportation networks, topographical features, and political boundaries. Figure 2.2-1, "ESP EPZ Subareas, Evacuation Routes, and Relocation Centers," of the EGC ESP Emergency Plan delineates the actual EPZ, superimposed on the 10-mile radial grid, along with evacuation routes, subareas, and relocation centers.

In RAI 13.3-17, even though some extrapolated population data have been provided for the addition of two reactors at the Clinton site and refueling outages, the staff asked the applicant to provide additional extrapolated population data for the next 20 years (i.e., the life of the ESP application) and discuss their impact on ETEs. In response to RAI 13.3-17, the applicant stated that Section 2.1, "Geography and Demography," of the EGC ESP Site Safety Analysis Report discusses the population data extrapolated for 60 years (i.e., the life of the ESP plus the life of the operating license). The applicant further stated that the extrapolated population results do not represent a significant change from those considered in the 1993 ETE; therefore, the applicant expects minimal impact.

Section 2.3.2, “Population Data,” of the EGC ESP Emergency Plan estimates the number of people within the 10-mile EPZ who would require evacuation. The applicant developed population estimates for the number of permanent residents within the 10-mile EPZ from 2000 U.S. Census Bureau data; Table 2.1-1, “Census 2000 Demographics within 10 Miles of the Clinton Power Station in 1-mi Bands by Radial Grid Sector,” and Figure 2.3-2, “ESP EPZ Permanent Population by Radial Grid Sector,” in the EGC ESP Emergency Plan provide these data. The applicant derived the seasonal resident population from the 2000 U.S. Census Bureau data category, “Vacant Housing for Seasonal, Recreational or Occasional Use.” In Section 2.3.2.2, “Seasonal Population,” of the EGC ESP Emergency Plan, the applicant stated that it multiplied the value in Table 2.3-1, “Census 2000 Demographics Data within 10 miles of the Clinton Power Station by Radial Grid Sector,” by the previously accepted household occupancy rate of 3, resulting in a total seasonal population of the 10-mile EPZ of 105. Section 2.3.2.3, “Transient Population,” of the EGC ESP Emergency Plan addresses the population estimates for transient facilities (e.g., hotels/motels, major employers, visitors to recreational areas). Tables 2.3-2, “2002 Transient Population,” and 2.3-3, “Estimated EPZ Size Transient Population,” referenced in Section 2.3.2.3 of the EGC ESP Emergency Plan, also provide transient population data. Table 3.11, “Clinton EPZ Population by Subareas: All Conditions,” in the 1993 ETE provides similar tabulations of data based on the 1990 census. The 1993 ETE and the ESP application consider the Apple and Pork Festival, that is a special event when the total summer weekend transient population increases to 65,676 persons. The auto occupancy factor for transients depends on whether they are at campsites or are employees. Section 2.1, “Sources of Data and General Assumptions,” of the 1993 ETE provides these data.

The applicant stated in Section 2.3.2.3 of the EGC ESP Emergency Plan that it developed the estimates from 2002 survey data and that the DeWitt County Emergency Services and Disaster Agency (ESDA) coordinator verified them. Section 2.3.2.3 also states that the transient population statistics include migrant farm workers because of the nature of the farming in the region. This section of the EGC ESP Emergency Plan also discusses the CPS site population.

To evaluate the significant impediments to the development of an emergency plan, the applicant used the sequence of constructing and operating dual AP1000 units on the site. Section 2.3.2.3.1, “Special Population,” of the EGC ESP Emergency Plan addresses special populations. Table 2.3-4, “2002 Special Population in 10-mile EPZ,” in Section 2.3.2.3.1 of the EGC ESP Emergency Plan presents the special population estimates for the four seasons and the weekday or weekend scenarios. The applicant developed the population estimates for special facilities (schools, hospitals, nursing homes, and correction facilities) from 2002 survey data, and the DeWitt County ESDA coordinator verified them. The 1993 ETE provides similar data tabulations in Table 3.11.

Section 2.3.3 of the EGC ESP Emergency Plan describes the analysis to test the current validity of the 1993 ETE conclusions. The applicant drew the following conclusions from its analysis:

- The infrastructure baseline used in the 1993 ETE has not changed and, therefore, does not impact the conclusions of estimated evacuation time.

- The permanent and seasonal population increase is considered negligible and has no negative impact on the 1993 ETE.

- The resulting special population increase of 26 individuals has no negative impact on the estimate for evacuation time.

- The total population estimate for the limiting summer weekday case has not changed significantly and, therefore, has no negative impact on the ETE.

- The population and its distribution have not changed significantly; therefore, the modeling of vehicle entry into the roadway network has not changed. With no changes to the roadway network and no significant changes to the total population, there is no impact on the 1993 ETE and the conclusions of that analysis remain valid.

Section 2.3.4, "Analysis—Special Event," of the EGC ESP Emergency Plan describes the analysis of the ETE for the annual Apple and Pork Festival. The applicant concluded that the evacuation times for fair and adverse weather contained in the 1993 ETE remain valid.

The ETE analysis in Section 2.3 of the EGC ESP Emergency Plan assesses the relative feasibility of an evacuation for the 10-mile plume exposure pathway EPZ. The applicant based the evacuation times on a detailed consideration of the plume exposure pathway EPZ roadway network and population distribution. The information in Table 2.3-5, "Evacuation Time Estimates," of the EGC ESP Emergency Plan details representative evacuation times for daytime and nighttime scenarios under fair and adverse weather conditions for the evacuation of various areas within the EPZ (once a decision has been made to evacuate). In Section 2.3.1 of the EGC ESP Emergency Plan, the applicant described adverse weather as sudden rainstorms that would reduce effective roadway capacity by 20 percent for summer conditions and snowstorms that would reduce roadway capacity by 30 percent for winter conditions. The evacuation times noted include notification, mobilization, and travel time for the general population, including the permanent population and special facilities (e.g., schools, nursing homes, hospitals, and recreational areas).

The 1993 ETE for the CPS plume exposure pathway EPZ served as the basis for the ETE analysis supporting the application. The applicant evaluated the assumptions listed in Section 2.3.1 of the EGC ESP Emergency Plan and found that they remain valid for the area surrounding the ESP site. The applicant further stated in Section 2.3.1 that the preparation and mobilization times developed for each population component (i.e., permanent residents, seasonal residents, transient, and special facilities) in the 1993 ETE analysis are reasonable.

Section 2.3.3 of the EGC ESP Emergency Plan compares the road and highway infrastructure that was the basis of the links and nodes input to the NETVAC program employed in the 1993 ETE to the current infrastructure. This analysis also compares a geographic information system (GIS) plot of roads and highways, based on data obtained from the 2000 census TIGER/Line Files, to the plume exposure pathway EPZ blue-line drawing and the written description of the 1993 ETE. The applicant took three approaches in this infrastructure comparison. In the first approach, the applicant evaluated EPZ zones defined by 22.5-degree sectors and 1-mile incremental radii overlaying the current GIS plot by comparing them to the similar zones on the blue-line drawing. This comparison revealed no differences in the

infrastructure, although there were slight differences in the overlay locations resulting from differences in the accuracy of the GIS data versus the 1993 drawing. In the second approach, that occurred in May 2002, the applicant drove the principal roadways described in the 1993 ETE. The verification of roadways included the links and nodes shown in Figure 2.1-1 of the EGC ESP Emergency Plan. In the third approach, the applicant directly compared the link evacuation routes, 901–905 and 801–815, to nodes 1–75 indicated on the drawing and the GIS plot. The applicant noted no differences. Regarding the second approach (i.e., the May 2002 drive of the principal roadways), the staff requested, in RAI 13.3-20(f), that the applicant discuss any road changes identified, including new or changed access points, roadway conditions, and roadway constrictions that could reduce the capacity of sections of the route. In response to RAI 13.3-20(f), the applicant stated that a verification of roadways was indeed performed in May of 2002 as part of a validity test of the 1993 ETE conclusions and that it noted no differences.

In RAI 13.3-20(a), the staff asked the applicant to discuss its rationale for excluding shadow or voluntary evacuation in the 1993 ETE. In response to RAI 13.3-20(a), the applicant stated that the 1993 ETE study for CPS did not address shadow or voluntary evacuation because the population density in the area within 1 to 2 miles outside of the EPZ boundaries is very sparse. The largest communities located along primary evacuation routes and within a few miles outside of the EPZ are Maroa, located along State Route 51 south of the EPZ, and Heyworth, located along State Route 51 north of the EPZ. The 2000 census stated the population of Maroa City as only 1654 (651 households), and the population of Heyworth Village as only 2431 (897 households). The ETE simulations indicate that Route 51 has the capacity to accept traffic from these communities, in addition to the traffic evacuating from the EPZ. Voluntary evacuation of the entire resident population from Maroa City would contribute only about 325 vehicles per hour, while voluntary evacuation of the entire resident population from Heyworth would contribute about 450 vehicles per hour. Route 51 and the other roadways serving these communities could accommodate these traffic volumes, without interfering with traffic evacuating from the EPZ. The evacuation simulations do not indicate any expected congestion on Route 51, proceeding north or south from Clinton, for any of the evacuation scenarios. The conditions that control the predicted evacuation times reflect local congestion on roadways within the city of Clinton. The applicant's responses to RAI 13.3-20(u) and (v) provide more details concerning predicted traffic flow.

The 1993 ETE states that the road network was obtained by a field survey in 1984 and verified through discussions with the Illinois Power Company, as discussed in Section 2.1 of the 1993 ETE. Section 2.3, "Conditions Modeled," of the 1993 ETE states that the county agency officials agreed that no significant changes to the EPZ roadway network had occurred since 1984. This section also states that the roadways are unchanged and that no major construction projects are planned.

Section 2.1 of the 1993 ETE provides the assumptions used for vehicle occupancy rates. Permanent resident rates in the 1993 ETE are based on the 1990 census average household occupancy rates. Seasonal resident rates are based on the average seasonal resident household size as reported in the 1990 census data. Transient population rates in the 1993 ETE are based on the peak occupancy of recreational and hotel/motel facilities within the EPZ (as determined by a telephone survey). The vehicle occupancy rates are (1) major places for employment—1 vehicle per employee, except the rate for CPS, that is 1.5 people per vehicle,

(2) recreation areas—1 vehicle per campsite and 3 people per vehicle for all other areas, (3) students—60 persons per bus, and (4) hospitals/nursing homes/correctional facilities—40 people per bus.

Section 2.1 of the 1993 ETE also contains the assumptions for adverse weather conditions. The applicant analyzed sudden rainstorms that would reduce roadway capacity by 20 percent for summer conditions and snowstorms that would reduce capacity by 30 percent for winter conditions. The reductions in capacity and speed in Section 2.3 of the ETE analysis are consistent with the Highway Capacity Manual; however, the difference in the ETE for the winter weeknight adverse and the normal conditions (Table 6.2, "Evacuation Time Estimate Summary, Winter Weeknight") is almost negligible, with no difference in many instances and a 5-minute difference for evacuation of the entire EPZ. In RAI 13.3.20(h), the staff asked the applicant to discuss the reason for the almost negligible difference in the ETE for the evacuation of the entire plume exposure pathway EPZ for the winter weeknight adverse conditions and the normal conditions described in the 1993 ETE analysis. In response to RAI 13.3-20(h), the applicant stated that winter weeknight scenarios have the lowest vehicle demand and the shortest ETEs. The relatively short evacuation times for the winter weeknight scenarios (180 minutes for normal weather, 185 minutes for adverse weather) indicate that NETVAC predicts few delays from traffic congestion. Based on a review of the simulation results, the primary controlling factor that determines the ETEs for these two cases is intersection capacity at a few locations in the city of Clinton. The primary effect of adverse weather on NETVAC simulations is to reduce roadway capacity and travel speeds; intersection capacity is largely unaffected. Since the number of vehicles is identical for "normal" and "adverse" weather conditions, the time for traffic to clear the critical intersections is the same for both cases. The small difference in ETEs reflects the travel time from Clinton to the EPZ boundaries. The travel distance is roughly 4 miles; at 30 miles per hour (mph), this requires 8 minutes, while at 21 mph, it takes about 12 minutes.

The 1993 ETE provides the time distributions for the evacuation components for the transient and special populations. For school children, the 1993 ETE assumes that it could take up to 1 hour to assemble buses. School buses are loaded into the evacuation network within 30–90 minutes following the decision to evacuate. Some buses are assumed to be located at the school.

For hospitals, nursing homes, and correctional facilities, the 1993 ETE uses data from other, nonsite-specific studies to arrive at the assumption that these facilities would commence evacuation between 1 to 2 hours after the 15-minute notification. In RAI 13.3-20(b), the staff asked the applicant to provide site-specific data for those hospitals, nursing homes, and correctional facilities addressed in the 1993 ETE or to describe the other studies that it used to arrive at this assumption. In response to RAI 13.3-20(b), dated January 24, 2005, the applicant stated that the departure time distribution used in the 1993 ETE study for the special facilities (including hospitals, nursing homes, and correctional facilities) was formulated with departures following the decision to evacuate as indicated in the revisions to Attachment A, "Analysis of Special Facility Evacuation Times," and Table 1, "Evacuation Time Estimates for Special Facilities in EPZ for Clinton Station." The 1993 ETE study was based on information obtained from individual facilities and from county emergency management officials responsible for coordinating transportation resources for transport-dependent residents and special facilities. The applicant reviewed these assumptions with the Illinois Emergency Management Agency

(IEMA) and the responsible county agencies before performing the ETE analysis. For the evacuation simulations, the goal is to estimate evacuation times for the entire evacuating population, including special facilities. The evacuation model, NETVAC, does not distinguish among vehicles originating from different nodes or facilities, and the evacuation model design does not allow a different departure time distribution to be specified for each facility. Analysis for individual facilities is generally a manual effort, utilizing the evacuation model results to estimate travel times along specific routes. The applicant's response to RAI 13.3-20(c) described below provides additional information.

The 1993 ETE analysis for the total population, provided in Tables 6.1 through 6.4, "Evacuation Time Estimate Summary: Winter Weekday, Winter Weeknight, Summer Weekday, and Summer Weekend," for the season of year and weather scenarios, includes the ETE for special facilities/population. In RAI 13.3-20(c), the staff asked the applicant to provide a separate analysis of the ETE for special populations for normal and adverse conditions. In response to RAI 13.3-20(c), the applicant provided an analysis of ETEs for individual special facilities in Attachment A, "Analysis of Special Facility Evacuation Times," to its letter to the NRC dated January 24, 2005.

Sections 3.1.2, "Transport-Dependent Permanent Population" and 5.3, "Transportation Dependent Population," of the 1993 ETE analysis characterize the nonauto-owning population as contributing one vehicle per household, that neighbors or State/local authorities would provide. In RAI 13.3-20(d), the staff asked the applicant to provide the following information:

- the basis for the assumption that neighbors and State/local authorities would contribute one vehicle per household for the transport-dependent (nonauto-owning) population, as described in the 1993 ETE study
- site-specific data regarding the number of nonauto-owning households within the plume exposure pathway EPZ
- the methodology for determining the transport-dependent population
- an estimate of the number of auto-owning residents versus transport-dependent residents
- the initiation/mobilization time distribution for the transport-dependent population
- a separate estimate of the time required to evacuate the transport-dependent population

In response to RAI 13.3-20(d), the applicant stated in its letter to the NRC dated January 24, 2005, that Table B-1, "Estimates of Transport-Dependent Population in Clinton Station EPZ," and Attachment B, "Transport-Dependent Population," to the letter provide estimates of the number of transport-dependent households by subarea for the EPZ. These data indicate that the large majority of transport-dependent households (259 out of 302) are located in the city of Clinton (subarea 7). However, a footnote was added to revised Table B-1 in the letter dated October 27, 2005, that states that the total of subareas 1–8 is only 301 due to round-off of the subarea values to whole numbers. The 2000 census (SF-3) tabulates the number of vehicles per household; transport-dependent households were estimated on the reported number of

occupied households with no vehicles. The DeWitt County ESDA indicates that the transport-dependent residential population within the city of Clinton will evacuate via buses provided by the city, in addition to assistance from auto-owning residents (generally neighbors or relatives). The buses will evacuate residents from a designated set of pickup locations in the city. The buses will evacuate residents from Clinton to the reception center in Decatur, Illinois. According to ESDA, the number of buses available should be able to evacuate transport-dependent residents in a single pass. If residents arrive at pickup points after the buses have departed, one or more buses will return to Clinton to evacuate any remaining residents. It is assumed that the small number of transport-dependent residents in other subareas will evacuate with assistance from neighbors or relatives. For the 1993 ETE study, one vehicle per household was assigned for the entire residential population, including transport-dependent households. The analysis in the 1993 study assumed the distribution of mobilization times for the transport-dependent population to be the same as for the general residential population. The ETEs for the general population in Clinton are, therefore, considered representative (or conservative) for transport-dependent residents.

Section 2.3 of the 1993 ETE provides the methodology for determining the number of vehicles and the auto occupancy rates for the different population groups based primarily on studies done elsewhere.

Section 4.0, “The Evacuation Roadway Network,” and Appendix 3, “Roadway Network Listings and Capacities from NETVAC,” to the 1993 ETE provide a description of the road network, a printout of the network characteristics, and the roadway network listing and capacities. In RAI 13.3-20(e), the staff asked the applicant to clarify whether the 1993 ETE analyzed the characteristics of each segment for the narrowest section or bottleneck of nonuniform roadways. In response to RAI 13.3-20(e), the applicant stated that when roadway conditions are not uniform over the length of a link, roadway dimensions (e.g., lane width, side width) represent the most restrictive conditions over the link. In general, multiple links are used when a significant change in roadway conditions is encountered (e.g., change in lane width, addition or deletion of lane, change in speed limit).

Section 5.4, “Evacuation Preparation Times and Departure Distributions,” of the 1993 ETE analysis discusses the time distributions used for the different population types. The time distribution for the permanent resident population did not use site-specific data. Instead, the applicant used data from other studies to arrive at the notification and preparation time distribution. Figure 5.1, “Notification/Preparation/Mobilization Time Distributions,” provides this distribution, that assumes that no one begins evacuation for the first 30 minutes (i.e., during the notification period). The permanent resident population time distribution for mobilization and preparation for evacuation spans a period of 2 hours.

Section 6.1, “Evacuation Time Estimate Summary,” of the 1993 ETE analysis describes the locations where queuing is likely to occur under the various scenarios. Sections 7.2, “Evacuation Traffic and Access Control Locations,” and 7.3, “Evacuation Traffic Management Locations and Other Potential Mitigating Measures,” of the 1993 ETE analysis describe the locations identified in the NETVAC simulation that may require traffic management personnel during the evacuation. Section 7.2 includes traffic management at locations warranted by vehicle queuing and delays. The applicant used the NETVAC model results to identify these locations. In RAI 13.3-20(g), the staff asked the applicant to discuss how the NETVAC model

accounts for traffic control or whether the ETE would be reduced if these traffic control measures were implemented. The staff also asked the applicant to clarify whether existing traffic control devices would prevail during an evacuation or if emergency personnel would staff traffic control points. In response to RAI 13.3-20(g), the applicant stated that the NETVAC evacuation model has two operating modes. The first of these modes assumes traffic flow at intersections consistent with existing traffic controls (signals operating on normal cycles, stop signs observed), while the second mode assumes that those controls would be overridden by emergency personnel, who would then direct traffic at designated control points to optimize the flow of evacuating vehicles. The decision on what mode to use for a given ETE study is based on discussions with emergency response agencies responsible for managing the evacuation. If the agencies indicate that plans call for emergency personnel to override existing traffic controls, then NETVAC is run in the "override" mode. If plans call for emergency personnel to manage traffic flow, while existing controls remain in operation, then NETVAC is run in "normal" mode. For the 1993 study, the NETVAC model was run assuming existing traffic controls would remain in place.

Table 4.1, "Primary Evacuation Routes by Township/Incorporated Area," of the 1993 ETE analysis provides a map of the roadwork in the EPZ. Section 6.1 of the 1993 ETE identifies and discusses road intersections with the potential for delays (queuing) during evacuation. The main access road from CPS to Route 54 is one of the roadways that could experience queuing under both fair and adverse weather conditions for all cases. This delay affects the ETEs for all evacuation scenarios because it originates within the 0–2-mile ring included in all evacuation scenarios.

The 1993 ETE considers a variety of factors necessary for ETEs. For example, Section 6.2, "Apple and Pork Festival," addresses the Apple and Pork Festival, that brings nearly 50,000 transients to the township of Clinton. In RAI 13.3-20(i), the staff asked the applicant for the following information:

- the basis for the assumption that 50,000 people, in 16,500 additional vehicles, will enter the evacuation route during the Apple and Pork Festival
- the dependency of the people attending the festival on public transportation to get to their vehicles (if park-and-ride shuttles are used during the event)
- whether any of these vehicles would return home to pack or pick up relatives before evacuating the plume exposure pathway EPZ
- the estimated time to mobilize from the festival to start of the evacuation
- trip generation times for this event

In response to RAI 13.3-20(i), the applicant stated that the correct numbers for the 1993 ETE study are 50,000 people in 16,667 vehicles (3 persons per vehicle). For the Apple and Pork Festival scenario, this population is separate from (in addition to) the residential population. Consequently, the applicant assumed that these vehicles would depart directly from the Apple and Pork Festival and exit the EPZ. (This obviously represents a substantial amount of double-

counting.) Vehicles departing from the festival were assigned to eight departure nodes in the city of Clinton.

The assigned distribution of departure times for vehicles from the Apple and Pork Festival was 30 to 60 minutes, the standard time distribution used for recreation activities. As a practical matter, however, the NETVAC simulations indicate that it would take more than 3 hours for the local roadway network to absorb this many vehicles, regardless of the assigned distribution of departure times. (At the assigned entry nodes, "spillback" conditions persist for more than 3 hours.) According to local officials, the park-and-ride shuttles can move up to 20,000 people per hour to remote parking areas, or 50,000 people in 2.5 hours. Local officials were unable to provide a breakdown of festival attendance based on location of residence. Since the population residing inside the EPZ is only 13,268, the large majority of the 50,000 attending the festival must reside outside of the EPZ. If the scenario were revised to account for residents returning home from the festival, before evacuating the EPZ, this would lengthen the departure times for the residential population, but it would also reduce the number of vehicles evacuating directly from Clinton, thereby reducing the total number of evacuating vehicles. In RAI 13.3-20(j), the staff asked the applicant to discuss the basis for the population estimate of 22,000 people per day for the festival used in Section 2.3.4 of the EGC ESP Emergency Plan, since the 1993 ETE study adds 50,000 people to the transient population for the Apple and Pork Festival. In response to RAI 13.3-20(j), the applicant stated that the value of 22,000 people per day for the festival in Section 2.3.4 of the EGC ESP Emergency Plan is incorrect. According to the DeWitt County ESDA, evacuation planning is based on an estimated maximum attendance of 50,000 people. The applicant stated that Section 2.3.4 of the EGC ESP Emergency Plan will be revised to state, "The current estimate of peak population for the festival remains the same as in 1993: about 50,000 people. Therefore, the evacuation times of 380 minutes for fair weather and 530 minutes for adverse weather during the Apple and Pork Festival remain valid (see Table 2.3.5)."

Section 2.1, "Site Description," of the EGC ESP Emergency Plan states that the Weldon Springs State Recreation Area has camping, fishing, and picnicking facilities. Section 2.1 also states that Lake Clinton State Recreation Area has facilities to accommodate boating, camping, fishing, picnicking, and hiking. In RAI 13.3-3, the staff asked the applicant to provide additional information concerning the availability of adequate shelter facilities for the public in the Weldon Springs State Recreation Area and Lake Clinton State Recreation Area. In response to RAI 13.3-3, the applicant stated that the Weldon Springs State Recreation Area and the Lake Clinton State Recreation Area do not include any identified shelter facilities. In the case of an emergency, the applicant assumed that the public in these locations would leave the recreation area and proceed either to their own homes (if applicable) or to the designated shelter facilities, as identified in Section 10.1, "Notification of On-site Personnel," of the EGC ESP Emergency Plan. In addition, the applicant stated that the ETE analysis discussed in Section 2.3 of the EGC ESP Emergency Plan considers this relocation.

In Section 2.4, "Results—Significant Impediments to the Development of an Emergency Plan," of the EGC ESP Emergency Plan, the applicant stated that there are no geographic or political impediments to the development of an emergency plan. The applicant also stated that Table 2.3-5, "Evacuation Time Estimates," contains those ETEs from the 1993 ETE analysis that remain valid for the current ESP application.

13.3.1.2 Regulatory Evaluation

In Section 1.1, "Overview," of the EGC ESP Emergency Plan, the applicant stated that it developed the EGC ESP Emergency Plan to comply with the requirements of 10 CFR 52.17, "Contents of Application," using the guidance in Supplement 2. In Section 1.2, "Planning Standards and Evaluation Criteria," of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. Therefore, the staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(1), that mandate that the applicant for an ESP identify physical characteristics unique to the proposed site, such as egress limitations from the area surrounding the site, that could pose a significant impediment to the development of emergency plans. The staff further considered 10 CFR 52.18, "Standards for Review of Applications," that requires consultation with FEMA to determine whether the information required of the applicant by 10 CFR 52.17(b)(1) demonstrates that no significant impediment to the development of emergency plans exists. Supplement 2 and RS-002 provide guidance concerning the review and evaluation of emergency response planning information given in an ESP application.

Supplement 2 defines a significant impediment as a physical characteristic or combination of physical characteristics that would pose major difficulties for an evacuation or the taking of other protective actions. Such unique physical characteristics may be identified by performing a preliminary analysis of the time needed to evacuate various sectors and distances within the 10-mile EPZ for transient and permanent populations, noting major difficulties for an evacuation (e.g., significant traffic-related delays) or the taking of other protective actions.

According to RS-002, the applicant should address factors, such as the availability of adequate shelter facilities, local building practices, and land use (e.g., outdoor recreation facilities, including camps, beaches, hunting or fishing areas), and the presence of large institutional or other special needs populations (e.g., schools, hospitals, nursing homes, prisons), when identifying significant impediments to the development of emergency plans. Any ETE or other identification of physical impediments should include the latest population census numbers and the most recent local conditions. In addition, the applicant should describe the proposed means for resolving any impediments identified.

13.3.1.3 Technical Evaluation

The staff finds the applicant's clarification regarding the use of the information in the Phase One Report in the response to RAI 13.3-15 to be acceptable. The staff finds that the applicant's response to RAI 13.3-17 regarding extrapolated population data is consistent with the guidance in Supplement 2 and is, therefore, acceptable. The staff finds the applicant's clarification regarding the availability of adequate shelter facilities for the public in the Weldon Springs and Lake Clinton State Recreation Areas in response to RAI 13.3-3 to be acceptable.

In RAIs 13.3-20(a) through (j), the staff requested information regarding the ETE for CPS as part of its review of physical characteristics unique to the site that could pose significant impediments to the development of emergency plans. The staff identified the need for this information as Open Item 13.3-1. In its submission to the NRC dated January 24, 2005, the applicant responded to RAIs 13.3-20(a) through (j). The information related to the 1993 ETE for Clinton provided by the applicant in response to RAIs 13.3-20(a) through (j) is consistent with the guidance in Supplement 2 and is, therefore, acceptable. The staff considers Open Item 13.3-1 to be resolved.

The staff notes that the ESP application site is adjacent to CPS. Integrated onsite and offsite radiological emergency plans currently exist for CPS, that is an operating nuclear power plant. Because CPS is an operating nuclear power plant, with integrated onsite and offsite emergency plans, no significant impediments exist to the development of an emergency plan for the site.

In addition, the applicant adequately identified physical characteristics unique to the proposed site by performing a preliminary analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations and did not note any major impediments for an evacuation or other protective actions.

The ETE analysis includes a map showing the proposed site and plume exposure pathway EPZ, as well as transportation networks, topographical features, and political boundaries. The boundaries of the EPZ, in addition to the evacuation subareas within the EPZ, are based on factors such as current and projected demography, topography, land characteristics, access routes, and jurisdictional boundaries. The applicant's 1993 ETE does not require updating, since the guidance in NUREG/CR-4831, "State of the Art in Evacuation Time Estimate Studies for Nuclear Power Plants," states that, as a general rule, a 10-percent increase in the population indicates a need to check evacuation times.

The ETE analysis in the application includes an estimate of the number of people to be evacuated, using the latest population census numbers and the most recent local conditions. The population estimate also considers permanent residents, transients, and persons in special facilities, including those confined to institutions such as hospitals, nursing homes, and prisons. The applicant also evaluated the school population in the special facility segment of the analysis.

The ETE analysis in the application included a complete review and description of the road network in the proposed site area. The applicant included the assumptions for determining the number of vehicles that should be provided, as well as the methodology for determining the transport-dependent population. The applicant also analyzed travel times and potential locations for serious congestion along the evacuation routes. The ETE analysis considered normal and adverse weather conditions, such as flooding, snow, ice, fog, or rain, as well.

The ETE analysis focused on site factors that are considered to be impediments to emergency planning and preparedness. The analysis did not identify any of the ETEs as being unduly high. In addition, the analysis did not identify any major difficulties for an evacuation or the taking of other protective actions, such as sheltering in the plume EPZ.

The staff finds that the applicant adequately addressed other factors, such as the availability of sufficient shelter facilities, taking into consideration local building practices and land use (e.g., outdoor recreation facilities, including camps, beaches, and hunting or fishing areas).

The applicant did not identify any other physical characteristics that could pose a significant impediment to the development of an emergency plan, such as new home or shopping center construction, an industrial park, a major increase in the number of new employers, or new roads or highways.

13.3.1.4 Conclusions

As discussed above, the applicant has demonstrated through the use of the 1993 ETE that no physical characteristic unique to the proposed ESP site could pose a significant impediment to the development of emergency plans. Based on its review, as set forth above, the staff concludes that the information the applicant provided is consistent with the guidance in RS-002 and Supplement 2. Therefore, the information is acceptable and meets the requirements of 10 CFR 52.17(b)(1) and 10 CFR 52.18.

13.3.2 Contacts and Arrangements with Federal, State, and Local Agencies

13.3.2.1 Technical Information in the Application

Section 3.1.1.2, "State Agencies," of the EGC ESP Emergency Plan states that the Director of IEMA has acknowledged support of the EGC ESP Emergency Plan. A letter dated December 9, 2002, from Mr. Jeffrey A. Benjamin, Vice President, Licensing & Regulatory Affairs (EGC), to Mr. Michael Chamness, Director, IEMA, requests IEMA support of the EGC ESP application. The letter states that Mr. Chamness's signature attests to his awareness of the intent of EGC to take credit for the existing IPRA Volumes I and VIII in the ESP application and that no significant impediments exist to implementing the emergency plan for the ESP plant.

Appendix A, "Contacts and Arrangements" to the EGC ESP Emergency Plan contains a letter dated December 9, 2002, from Mr. Jeffrey A. Benjamin, Vice President, Licensing & Regulatory Affairs (EGC), to Mr. Thomas W. Ortciger, Director, Illinois Department of Nuclear Safety (IDNS), requesting IDNS support of the EGC ESP application. The letter states that Mr. Ortciger's signature attests to his awareness of the intent of EGC to take credit for the existing IPRA Volumes I and VIII in the ESP application and that no significant impediments exist to implementing the emergency plan for the ESP plant.

Section 3.2.5, "Agreements in Planning Effort," of the EGC ESP Emergency Plan states that IDNS and IEMA are aware of and have concurred with the applicant's intent to take credit for IPRA Volumes I and VIII in the ESP application.

In RAI 13.3-4, the staff requested documentation of the applicant's contacts and arrangements with local governmental agencies having emergency planning responsibilities within the plume exposure EPZ. This documentation should specifically address the expanded responsibilities associated with an additional reactor (or reactors) at the Clinton site. In its response to RAI 13.3-4, the applicant stated that the IEMA agreement letter, which was included in

Appendix A to the EGC ESP Emergency Plan, provides documentation of the necessary contacts and arrangements with local governmental agencies having emergency planning responsibilities within the plume exposure EPZ. The applicant also stated that the State of Illinois established IEMA to coordinate and assist the counties and municipalities in the event of radiological accidents. The applicant referenced and provided the staff with a copy of the State of Illinois Statute 20 ILCS 3305/2, "Illinois Emergency Management Act."

Section 3.2.5 of the EGC ESP Emergency Plan also states that agreement letters with those Federal agencies that are legally required to respond are not necessary.

13.3.2.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17 using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(3), which mandate, in part, that an ESP application describe the contacts and arrangements made with Federal, State, and local governmental agencies with emergency planning responsibilities. Supplement 2 and RS-002 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application.

Supplement 2 states that the description of contacts and arrangements should include the name and location of the organization contacted, the title and/or position of the person(s) contacted, and the role of the organization in emergency planning. The evaluation criteria in Supplement 2, Section V, provide additional guidance, that applies to the submission of emergency plans under the major features option of 10 CFR 52.17(b)(2)(i).

According to RS-002, for an operating reactor site, the ESP application should clearly indicate the impact of applying an existing emergency preparedness program element to the expanded use of the site, including any necessary changes to the program in support of a new reactor(s). For example, letters of agreement, reflecting contacts and arrangements made with local and State governmental agencies with emergency planning responsibilities might need revision to reflect the anticipated presence of an additional reactor(s) at the site. Such revised letters of agreement should reflect any impact an additional reactor(s) would have on the agencies' emergency response planning responsibilities and should include acknowledgment by the agencies of the proposed expanded responsibilities. The use of separate correspondence would also be acceptable. If the applicant cannot make arrangements with Federal, State, and local governmental agencies with emergency response planning responsibilities, for whatever reason, the applicant should discuss its efforts to make such arrangements, along with a description of any compensatory measures it has taken or plans to take because of the lack of such arrangements.

13.3.2.3 Technical Evaluation

The applicant's initial description of contacts and arrangements made with Federal, State, and local governmental agencies did not clearly address the presence of an additional reactor(s) at the site and any resulting impact on the agencies' emergency planning responsibilities, including the agencies' acknowledgment of the proposed expanded responsibilities. Further, the additional information provided by the applicant in its response to RAI 13.3-4 did not adequately address the request. Therefore, the staff identified in Open Item 13.3-2 that the applicant's documentation of contacts and arrangements with local governmental agencies having emergency planning responsibilities within the plume exposure EPZ (potentially DeWitt, Macon, McLean, and Piatt Counties; the municipalities of Clinton, Wapella, and Weldon; and the Village of DeWitt) did not address the expanded responsibilities associated with an additional reactor(s) at the Clinton site. In its submission to the NRC dated April 4, 2005, the applicant responded to Open Item 13.3-2. The applicant stated that, as indicated in the original response to RAI 13.3-4 (submitted October 5, 2004), documentation of contacts and arrangements with local governmental agencies with emergency planning responsibilities within the plume exposure EPZ is provided through IEMA and the State of Illinois Statute 20 ILCS 3305. Specifically, Section 3305/2 of the statute establishes the IEMA and authorizes "emergency management programs with the political subdivision of the State." Section 3305/4 of the statute defines political subdivisions as "any county, city, village, or incorporated town or township…." Section 3305/5(f) indicates that the IEMA shall (among other things) take the following actions:

> (1) Coordinate the overall emergency management program of the State.
>
> (4) Promulgate rules and requirements for political subdivision emergency operations plans that are not inconsistent with and are at least as stringent as applicable federal laws and regulations.
>
> (5) Review and approve, in accordance with Illinois Emergency Management Agency rules, emergency operations plans for those political subdivisions required to have an emergency services and disaster agency pursuant to this Act.
>
> (5.5) Promulgate rules and requirements for the political subdivision emergency management exercises, including, but not limited to, exercises of the emergency operations plans.
>
> (5.10) Review, evaluate, and approve, in accordance with Illinois Emergency Management Agency rules, political subdivision emergency management exercises for those political subdivisions required to have an emergency services and disaster agency pursuant to this Act.
>
> (6) Determine requirements of the State and its political subdivisions for food, clothing, and other necessities in event of a disaster.

These sections show that IEMA coordinates and provides all necessary contacts and arrangements with the political subdivisions of the State, including the local governmental agencies with emergency planning responsibilities within the plume exposure EPZ.

Based on the applicant's above description of contacts and arrangements with Federal, State, and local governmental agencies with emergency planning responsibilities, that included the name and location of the organization contacted, the title of the persons contacted, and the role of the organization in emergency planning, the staff considers Open Item 13.3-2 to be resolved.

13.3.2.4 Conclusions

As discussed above, the applicant provided an acceptable description of contacts and arrangements made with Federal, State, and local governmental agencies with emergency planning responsibilities. Based on its review as set forth above, the staff concludes that the information the applicant provided is consistent with the guidance of RS-002 and Supplement 2. Therefore, the information is acceptable and meets the requirements of 10 CFR 52.17(b)(3).

13.3.3 Major Features of the Emergency Plans

13.3.3.1 Emergency Planning Zones

13.3.3.1.1 Technical Information in the Application

Section 2.2.1 of the EGC ESP Emergency Plan states that the EPZ boundary of the EGC ESP site is identical to the CPS EPZ boundary, that was defined in 1985 following a detailed review of the demography, topography, characteristics of the land, access routes, and jurisdictional boundaries in the area surrounding the power facility. The review determined that the primary basis for the EPZ boundary definition should be political jurisdictions, strong topographical features (e.g., rivers and mountains), or manmade features (e.g., highways and railroads). The area of the plume exposure EPZ is about 10 miles in radius. Figure 2.2-1 of the EGC ESP Emergency Plan shows the radial boundary of the EGC ESP site plume exposure pathway EPZ.

Section 2.2.2, "Ingestion Pathway Emergency Planning Zone," of the EGC ESP Emergency Plan states that Map E, "Dairies and Food Processing Plants, Water Basins and Public Water Supply Intakes, and Illinois Department of Public Health Medical Facility Map," of IPRA Volume VIII identifies major roads, population centers, and public drinking water system intakes from surface water sources within Illinois that are located within a 50-mile radius of the EGC ESP site. The map also identifies the county boundaries.

13.3.3.1.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the

planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i) and 10 CFR 52.18. In addition, the staff considered the regulatory requirements in 10 CFR 50.33(g), 10 CFR 50.47(c)(2), and Sections I, III, and IV of Appendix E to 10 CFR Part 50 in its review of the size and configuration of the EPZs. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of a complete and integrated emergency plan. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of the emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for the major features of emergency plans, including those that apply to determining the size and configuration of the EPZs.

Section III.A of Supplement 2 states that an ESP applicant choosing the option of proposing the major features of an emergency plan should give special emphasis to the exact size of the EPZs. Generally, the 10-mile and 50-mile EPZs consist of an area about 10 miles and 50 miles in radius, respectively. Applicants should determine the exact size and configuration of the EPZs with respect to local emergency response needs and capabilities, since the EPZs can be affected by conditions, such as demography, topography, land characteristics, access routes, and jurisdictional boundaries.

13.3.3.1.3 Technical Evaluation

The applicant described the exact sizes of the EPZs. The applicant also described the exact size and configuration of the EPZs in relation to local emergency response needs and capabilities, as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries.

13.3.3.1.4 Conclusions

As discussed above, the applicant proposed a plume exposure pathway EPZ of approximately a 10-mile radius and an ingestion pathway EPZ of approximately a 50-mile radius, both that reflect local emergency response needs and capabilities. Based on its review, the staff concludes that the proposed major feature, that addresses the size and configuration of the EPZs, is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 50.33(g), 10 CFR 50.47(c)(2), 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections I, III, and IV of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning the applicant considered for the EPZs, as set forth above. EGC provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.2 Assignment of Responsibility (Organization Control) (Major Feature A)

13.3.3.2.1 Technical Information in the Application

Section 3.1, "Concept of Operation," of the EGC ESP Emergency Plan identifies the Federal, State, local, and private sector organizations that are intended to be part of the overall response organization for EPZs as the NRC, the U.S. Department of Energy (DOE), the Federal Bureau of Investigation (FBI), the U.S. National Weather Service (NWS), the EGC ESP facility organization, the corporate organization, and the public information organization. Section 3.4, "Emergency Response Support and Resources," of the EGC ESP Emergency Plan identifies the support services organizations to the EGC ESP facility as the Institute of Nuclear Power Operations; American Nuclear Insurers; Environmental, Inc.; Teledyne Brown Engineering; DOE Radiation Emergency Assistance Center/Training Site (REAC/TS); Murray and Trettel, Inc.; ICN Worldwide Dosimetry Service; Framatome Technologies, the future nuclear steam supply system vendor; John Warner Hospital and Ambulance Service; Decatur Memorial Hospital; DeWitt County Sheriff's Department; Clinton Fire Department; IDNS; and IEMA.

Volume I of the IPRA lists the State and local governmental agencies with responsibility for emergency response in Sections F, "Overview, Operational Centers;" 1I, "Overview, Utility Emergency Plans;" 1J, "Overview, Contiguous States;" 2A, "Direction and Control, Office of the Governor;" 2B, "Direction and Control, Chain of Command;" 3A, "Agency Responsibilities, State Agencies;" 3B, "Agency Responsibilities, Federal Agencies;" and 3C, "Agency Responsibilities, Private Organizations."

Volume VIII of the IPRA lists the State and local governmental agencies with responsibility for emergency response in Sections 1C, "General Information, Concept of Operations;" 1D, "General Information, Participating State Agencies;" 2A, "DeWitt County, Functional Summary Descriptions;" 2B, "DeWitt County, Initial Contact and Operational Response Levels;" 2E, "DeWitt County, Emergency Facilities;" and 2F, "DeWitt County, Concept of Operations;" as well as Annexes 2A, "DeWitt County Checklist Procedures;" 2B, "Clinton Checklist Procedures;" 2C, "Weldon Checklist Procedures;" 2D, "Wapella Checklist Procedures;" 2E, "DeWitt Village Checklist Procedures;" and 2F, "Support County Checklist Procedures."

Volume I of the IPRA describes State and local functions and responsibilities for major elements of emergency response in Sections 1E, "Overview, Basic Functions," 2A, 2B, 3A, 3B, and 3C. Section 2A describes the responsibilities for the Office of the Governor, and Section 3A describes the responsibilities of the 11 State agencies in the event of a radiological emergency at CPS. The State of Illinois has overall command responsibility for radiological and nonradiological aspects of a nuclear incident. Section 1E describes the basic emergency response functions and Section 3A provides the specific duties of each State agency for implementing these basic responsibilities. Section 2B describes the Illinois chain of command. Section 3B notes the responsibilities of Federal agencies, while Section 3C details the American Red Cross responsibilities.

In IPRA Volume VIII, Sections 2A and 2F and Annex 2A identify the major functions to be performed by DeWitt County. In the area of protective actions, DeWitt County would undertake traffic and access control; evacuation support; food, water, and milk control; exposure control; law enforcement; emergency medical services; fire and rescue; and social services. Annex 2F

provides the support county functions and responsibilities, and Annexes 2B, 2C, 2D, and 2E provide the functions and responsibilities for the three municipalities and one village in DeWitt County. Tables F.2.c.1 through F.2.c.5 of IPRA Volume VIII relating to DeWitt County, the municipalities of Clinton, Weldon, Wapella, and DeWitt Village, respectively, display agency responsibilities by organization in matrix format.

Section 1A, "Purpose and Authorization," of IPRA Volume I, provides the following legal citations to support the activities of IDNS and IEMA in developing and maintaining the IPRA:

- Illinois Emergency Management Agency Act (20 ILCS 3305)
- Directive from Governor James R. Thompson, dated May 17, 1979
- Illinois Nuclear Safety Preparedness Act (420 ILCS 5)
- Department of Nuclear Safety—Powers Enabling Statute (20 ILCS 2005/2005-1)
- Radiation Protection Act of 1990 (420 ILCS 40)
- Illinois Nuclear Facility Safety Act (420 ILCS 10)

IDNS and IEMA are the primary State agencies with responsibilities for responding to a radiological emergency. The IPRA protects the citizens of Illinois in the event of a radiological accident. Other State agencies also have major responsibilities in an emergency, as described in Section 3A of IPRA Volume I.

Section 2F of IPRA Volume VIII states that the principal executive officers of DeWitt County and the risk municipalities are authorized to initiate actions and command emergency personnel in any effort to protect the residents of their jurisdictions by their respective bylaws and charters and by the Illinois Emergency Management Agency Act. In RAI 13.3-13(a), the staff asked the applicant to describe the legal basis (i.e., reference specific acts, codes, or statutes) for county or municipal authorities to comprise part of the overall response organization for the EPZs. In response to RAI 13.3-13(a), the applicant stated that Section 1A of IPRA Volume I describes this legal basis. This authorization document includes the political subdivisions of the State (e.g., the county and municipal authorities). Specifically, one purpose of 20 ILCS 3305/2 is to "confer upon the Governor and upon the principal executive officer of the political subdivisions of the State the powers provided herein."

Section 3.1.1.1.1, "United States Nuclear Regulatory Commission," of the EGC ESP Emergency Plan describes the role of the NRC in the event of an incident. Section 3.1.1.1.4, "United States Department of Energy," of the EGC ESP Emergency Plan describes the role of DOE in the event of an incident. Section 3.1.1.1.6, "Federal Bureau of Investigation," of the EGC ESP Emergency Plan describes the role of the FBI in the event of an incident. Section 3.1.1.1.7, "United States National Weather Service," describes the role of the NWS in the event of an incident. Section 3.1.2, "Applicant Response Organization," describes the applicant's emergency response organization (ERO) that would replace the normal plant organization during an emergency. The ERO will consist of the EGC ESP facility, corporate, and public information response suborganizations. Section 3.4 of the EGC ESP Emergency Plan describes the contractors that will be retained to provide supporting services to the EGC ESP facility. The applicant will use a contract/purchase order with a private contractor in lieu of an agreement letter for the specified duration of the contract. Appendix A to the EGC ESP Emergency Plan describes support services under agreements or contracts. For the support services listed in Section 3.4 of the EGC ESP Emergency Plan, the specific contractors may

change but the functions will be maintained. The applicant will only ensure that the agreements and contacts with the necessary third parties will be in place when the attributes of this plan need to be in effect.

Section 3.1.1.3, "County Government Agencies," of the EGC ESP Emergency Plan states that the surrounding communities that comprise the plume exposure pathway EPZ have developed integrated emergency response programs that call upon the resources of the community. Section 3.1.1.3 also states that the community organizations will implement and coordinate the community response to an emergency. In addition, Section 3.1.1.3 identifies the surrounding communities as DeWitt, Macon, McLean, and Piatt Counties; the municipalities of Clinton, Wapella, and Weldon; and the Village of DeWitt. In RAI 13.3-18, the staff requested a copy of a letter of agreement with the DeWitt County Sheriff's Department that is dated 2003 or later. The applicant provided a copy of such a letter in its response to RAI 13.3-18.

Section 3.2.5 of the EGC ESP Emergency Plan states that written agreements establishing the concept of operations developed between the applicant and its support organizations having an emergency response role within the CPS EPZ have been developed. These arrangements identify the emergency measures to be provided, the mutually accepted criteria for implementation, and the agreements for the exchange of information. Appendix A to the EGC ESP Emergency Plan provides letters of agreement, contracts, and purchase orders between the applicant and the various support organizations having a response role.

Chapter 2, "DeWitt County," in IPRA Volume VIII contains letters signed by the county board chairmen of DeWitt, Macon, McLean, and Piatt Counties, as well as the mayors of Clinton, Weldon, Wapella, and DeWitt, acknowledging these duties, responsibilities, and relationships.

13.3.3.2.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III and IV.A of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP can propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for the major features of emergency plans, including those that apply to major feature A, "Assignment of Responsibility—Organization Control."

Major feature A calls for the applicant to identify EROs, including functions and responsibilities for major elements of response, and the legal bases for State and local authorities. The ESP application should also describe contacts and arrangements between agencies and other support organizations having a response role within the EPZs, and it should include any written letters of agreement.

13.3.3.2.3 Technical Evaluation

As described above, the EGC ESP Emergency Plan, IPRA Volumes I and VIII, and the applicant's response to RAI 13.3-13(a) identify the Federal, State, local, and private sector organizations (including utilities) that are intended to be part of the overall response organization for the EPZs.

Volumes I and VIII of the IPRA identify the functions and responsibilities for major elements of emergency response, such as command and control, alerting and notification, communications, public information, accident assessment, public health and sanitation, social services, fire and rescue, traffic control, emergency medical services, law enforcement, transportation, protective response, and radiological exposure control. In addition, IPRA Volumes I and VIII (by reference to specific acts, codes, or statutes) identify the legal basis for the State, local, and private sector organizations that are part of the overall response organization for the EPZs to carry out their identified functions and responsibilities.

The EGC ESP Emergency Plan, IPRA Volumes I and VIII, and the EGC response to RAI 13.3-18 adequately describe contacts and arrangements pertaining to the concept of operations developed among Federal, State, and local agencies and other support organizations having an emergency response role within the EPZs. The plan includes letters of agreement. Sections 13.3.2," Contacts and Arrangements with Federal, State, and Local Agencies;" 13.3.3.4, "Emergency Response Support and Resources;" 13.3.3.7, "Emergency Communications;" 13.3.3.10, "Accident Assessment;" and 13.3.3.13, "Medical and Public Health Support;" of this SER also describe these contacts and arrangements.

13.3.3.2.4 Conclusions

As discussed above, the applicant identified the EROs, including the functions and responsibilities for major elements of response, and the legal bases for State and local authorities. In addition, the applicant described contacts and arrangements among the agencies and other support organizations having a response role within the EPZ. Based on its review, the staff concludes that the proposed major feature A is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III and IV.A of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for organization control, as set forth above. EGC provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.3 Onsite Emergency Organizations (Major Feature B)

13.3.3.3.1 Technical Information in the Application

In Section 3.1.2.4, "Interrelationships," of the EGC ESP Emergency Plan, the applicant stated that Figures 3.1-1, "Applicant Emergency Response Organization Interrelationships," and 3.1-2, "Agency Response Organization Interrelationships," illustrate the major applicant organizations and suborganizations, as well as government interrelationships, in the total response effort. In RAI 13.3-5, the staff asked the applicant to provide additional information related to ERO interfaces between and among the on-shift emergency response functional areas, local support services, and State and local governmental response organizations. In its response to RAI 13.3-5, the applicant noted that Figure 3.1-2 in the EGC ESP Emergency Plan provides the interfaces between and among the on-shift emergency response functional areas and local support services. However, Figures 3.1-1 and 3.1-2 do not show specific details for all of the possible interrelationships because they vary with time (e.g., before and after activation of the emergency operations facility (EOF) and the various State and local emergency operations centers (EOCs)) and with the declared level of event (e.g., an unusual event versus a general emergency). For example, for the declaration of an unusual event, the interrelationship occurs directly between the control room and the required State or local service. However, in the latter stages of a general emergency, interrelationships would occur through the established communications paths and generally include the emergency director in the EOF placing a specific request through the State EOC (SEOC).

In general, for significant events, the emergency response functional areas (see "Applicant" in Figure 3.1-2 in the EGC ESP Emergency Plan) interface with the local support services through the EOF and the State and local governmental response agencies (within their respective EOCs), as shown on Figure 3.1-2 and as discussed in Sections 3.1.2.2, "Corporate Organization," and 3.1.2.5, "Corporate Emergency Director," of the EGC ESP Emergency Plan. Section 3.3.5, "Emergency Response Organization Positional Responsibilities," identifies specific exceptions to this general diagram under the responsibilities for the individual ERO positions. For example, Sections 3.3.5.1.1, "Shift Manager (Shift Emergency Director), Control Room;" 3.3.5.1.2, "Station Emergency Director, Technical Support Center;" and 3.3.5.2.2, "Corporate Emergency Director, Emergency Operations Director;" indicate the command and control functions, that direct these interfaces to cycle through the shift emergency director (in the control room), the station emergency director (in the technical support center (TSC)), and the corporate emergency director (in the EOF) as the activation of the organization progresses. The current Figure 3.1-2 best reflects the majority of these permutations by showing the on-shift emergency organization generally as "Applicant" and the State and local agencies and services as "State Agencies" and "County Agencies." Volume VIII of IPRA also addresses this interface. For example, the figure titled, "DeWitt County Initial Notification," in Chapter 2 of IPRA Volume VIII shows the DeWitt County interfaces.

Section 3.2.3, "Non-applicant Nuclear Support Services," and Appendix A to the EGC ESP Emergency Plan, that includes a signature page documenting the annual review of the agreement between CPS and the DeWitt County Sheriff's Department, address an agreement to provide traffic control and law enforcement services.

Sections 3.2.3 and 12.4, “Medical Transportation,” as well as Appendix A to the EGC ESP Emergency Plan, describe arrangements that will be made, as necessary, with Clinton Ambulance (John Warner Hospital) for prompt ambulance transport of persons with injuries involving radioactivity to designated hospitals.

Sections 3.2.3 and 12.1, “Off-site Hospital and Medical Services,” of the EGC ESP Emergency Plan address arrangements, confirmed by letter of agreement or contract every 2 years, that will be maintained with a qualified hospital located in the vicinity of the EGC ESP facility for receiving and treating contaminated or exposed persons with injuries requiring immediate hospital care. The applicant identified John Warner Hospital in Clinton, Illinois, as the primary supporting medical facility for injured persons who are contaminated with radioactivity. Appendix A to the EGC ESP Emergency Plan includes a letter of agreement with the hospital.

Section 3.2.3 and Appendix A to the EGC ESP Emergency Plan identify arrangements with Decatur Memorial Hospital to act as a supporting medical facility and provide medical services. Appendix A to the ESP application includes a letter of agreement with the hospital.

Section 3.2.3 and Appendix A to the EGC ESP Emergency Plan identify arrangements with the Clinton Fire Department to provide fire protection services and confined space rescue operations. Appendix A includes a copy of a letter of agreement with the Clinton Fire Department to provide fire response support.

13.3.3.3.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant’s emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III and IV.A of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP can propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for major features of emergency plans, including those that apply to major feature B, “Onsite Emergency Organizations.”

Major feature B calls for the applicant to identify interfaces between and among the onsite functional areas of emergency activity, local services support, and State and local government response organizations, including the services to be provided by local agencies.

13.3.3.3.3 Technical Evaluation

As discussed above, the applicant identified, in the EGC ESP Emergency Plan and in its response to RAI 13.3-5, the interfaces between and among the onsite functional areas of emergency activity, local services support, and State and local government response organizations.

The applicant also identified in the EGC ESP Emergency Plan the services to be provided by local agencies for handling emergencies (e.g., police, ambulance, medical, hospital, and firefighting organizations). The EGC ESP Emergency Plan adequately describes the arrangements involving these services. The applicant also included written letters of agreement.

13.3.3.3.4 Conclusions

As discussed above, the applicant identified the interfaces between and among the onsite functional areas of emergency activity, local services support, and State and local government response organizations for the ESP site. In addition, the applicant identified the services and described the arrangements to be provided by various local agencies, and it submitted adequate letters of agreement. Based on its review, the staff concludes that the proposed major feature B is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III and IV.A of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for the onsite ERO, as set forth above. The applicant provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.4 Emergency Response Support and Resources (Major Feature C)

13.3.3.4.1 Technical Information in the Application

Section 3.4.5, "United States Department of Energy Radiation Emergency Assistance Center/Training Site," of the EGC ESP Emergency Plan states that the DOE REAC/TS will provide services of medical and health physics support. The applicant has made provisions for requesting assistance from the DOE REAC/TS through a letter of agreement, as noted in Appendix A to the EGC ESP Emergency Plan.

Section 3.1.1.1.7, "United States National Weather Service," of the EGC ESP Emergency Plan states that the NWS provides meteorological information during emergency situations. Therefore, no special provisions for requesting assistance are needed.

Section 3.1.1.1.4, "United States Department of Energy," describes the applicant's procedure for seeking assistance from DOE, as outlined in the Federal Radiological Monitoring and Assessment Plan.

Sections 3A(8), "Illinois Department of Nuclear Safety," and 3B in IPRA Volume I provide the State's procedures for requesting Federal assistance. The IDNS is authorized to request

Federal assistance depending on the severity of a radiological incident, as outlined in the Federal Radiological Emergency Response Plan (FRERP) and in the Radiological Assistance Program.

Section 3.4.3, "Environmental, Inc.," of the EGC ESP Emergency Plan states that the applicant will rely on Environmental, Inc., to provide radiological environmental monitoring services in an emergency situation. In addition, Section 3.4.5, "United States Department of Energy Radiation Emergency Assistance Center/Training Site," of the EGC ESP Emergency Plan states that the DOE REAC/TS will provide medical and health physics support services. The REAC/TS will also provide advice on the health physics aspects of situations requiring medical assistance. Section 3.4.7, "ICN Worldwide Dosimetry Service," of the EGC ESP Emergency Plan states that ICN Worldwide Dosimetry Service will provide extremity dosimetry services. In an emergency, ICN Worldwide Dosimetry Service will also provide additional dosimetry to the affected nuclear facility and EOF. Section 3.4.8, "Framatome Technologies (Post-accident Sample Analysis Program)," of the EGC ESP Emergency Plan states that Framatome Technologies (Post-accident Sample Analysis Program) will maintain its hot-cell in a state of readiness so that a sample analysis can be completed within 24 hours of sample receipt.

Section 3A(8) in IPRA Volume I provides the State's procedures for requesting Federal assistance. IDNS is authorized to request Federal assistance depending on the severity of a radiological incident, as outlined in the FRERP and in the Radiological Assistance Program. In RAI 13.3-13(b), the staff requested a description of the general capabilities of radiological laboratories (besides the two IDNS mobile laboratories) to provide radiological monitoring and analyses services. In response to RAI 13.3-13(b), the applicant stated that Section E1 in IPRA Volume 1 describes the general capabilities of radiological laboratories (besides the two IDNS mobile laboratories). These labs include the IDNS laboratory in Springfield and the laboratories to be provided by the Federal government under the FRERP.

Section 3.4 of the EGC ESP Emergency Plan states that the applicant will retain contractors to provide supporting services to the EGC ESP facility. Section 3.4 also describes the support services available under the agreements or contracts listed in Appendix A to the EGC ESP Emergency Plan. The applicant further stated that, for the support services listed in Section 3.4, the specific contractors may change but the functions will be maintained.

Section 2F of IPRA Volume VIII provides matrices of the DeWitt County and participating municipal emergency response agencies and all of the State, local, and private agency organizations that are expected to play an active role in an emergency. Section 2J, "DeWitt County, Evacuation Plan," of IPRA Volume VIII briefly summarizes the evacuation plan and the agencies responsible for different aspects of the evacuation. Section 3D, "Sheltering Guide, Registration Centers and Congregate Care Shelter Spaces," of IPRA Volume VIII lists the registration centers and congregate care shelters. Appendix D, "Registration Centers and Congregate Care Shelters," to IPRA Volume VIII is a list of the registration centers and congregate care centers, while Appendix E, "Shelter Profiles," to IPRA Volume VIII is a compilation of the sheltering profiles (i.e., the location, contact number, and amenities of the congregate care centers). Map C in IPRA Volume VIII displays the location of the registration centers and congregate care shelters in relation to the EPZ.

13.3.3.4.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, IV.B, IV.C, IV.D, and IV.E of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for the major features of emergency plans, including those that apply to major feature C, "Emergency Response Support and Resources."

Major feature C calls for the applicant to describe contacts and arrangements for requesting Federal assistance, as well as assistance from radiological laboratories and nuclear or other facilities and organizations. The application should also identify the general capabilities and expected availability of radiological monitoring and analyses services.

13.3.3.4.3 Technical Evaluation

The Federal government maintains an in-depth capability to assist licensees, State, and local governments through the FRERP. The ESP application adequately addresses provisions for requesting Federal assistance through the EGC ESP Emergency Plan and IPRA Volume I.

The EGC ESP Emergency Plan, IPRA Volumes I and VIII, and the applicant's response to RAI 13.3-13(b) identified radiological laboratories, their general capabilities, and their expected availability to provide radiological monitoring and analytical services during an emergency. The EGC ESP Emergency Plan and IPRA Volumes I and VIII also identify nuclear and other facilities and organizations that can provide assistance in an emergency. In addition, the EGC ESP Emergency Plan describes the contacts and arrangements the applicant has made with the response organizations identified in Section 13.3.3.2.1 of this SER.

13.3.3.4.4 Conclusions

As discussed above, the applicant described provisions for requesting Federal assistance, and identified nuclear and other facilities and organizations that can be relied on to provide assistance in an emergency, including the general capabilities and availability of radiological laboratories. In addition, the applicant described the contacts and arrangements made with the

response organizations. Based on its review, the staff concludes that the proposed major feature C is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, IV.B, IV.C, IV.D, and IV.E of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for emergency response support and resources, as set forth above. EGC provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.5 Emergency Classification System (Major Feature D)

13.3.3.5.1 Technical Information in the Application

Sections 4.1, "Unusual Event," 4.2, "Alert," 4.3, "Site Area Emergency," and 4.4, "General Emergency," of the EGC ESP Emergency Plan identify four emergency classes—unusual event, alert, site area emergency, and general emergency, respectively.

Section 1C, "Overview, Accident Classification," of IPRA Volume I states that the emergency classification scheme to be used in the event of an emergency would include unusual event, alert, site area emergency, and general emergency. The applicant's four classifications, as defined in the EGC ESP Emergency Plan, are consistent with these.

Section 1C of IPRA Volume VIII also provides a listing of the four emergency classification levels—unusual event, alert, site area emergency, and general emergency. The applicant's scheme is consistent with this listing as well.

13.3.3.5.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III and IV.C of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for the major features of emergency plans, including those that apply to major feature D, "Emergency Classification System."

Major feature D calls for the applicant to establish a standard emergency classification scheme that is consistent with Appendix 1 to Revision 1 to NUREG-0654/FEMA-REP-1. Major feature D also calls for the State and local organizations to establish an emergency classification scheme that is consistent with that proposed by the applicant.

13.3.3.5.3 Technical Evaluation

The applicant established an emergency classification scheme comprising four categories—unusual event, alert, site area emergency, and general emergency. These four categories meet the guidance in Appendix 1 to Revision 1 of NUREG-0654/FEMA-REP-1. The applicant's scheme also includes a fifth emergency class, "recovery," as stated in Section 4.5, "Recovery," of the EGC ESP Emergency Plan. The staff did not regard this fifth emergency class as essential to its review and, therefore, did not consider it. The applicant's emergency classification scheme is consistent with that established in Volumes I and VIII of IPRA.

13.3.3.5.4 Conclusions

As discussed above, the applicant specified a standard emergency classification scheme, that is consistent with that set forth in Appendix 1 to NUREG-0654/FEMA-REP-1 and with those established by the State and local EROs. Based on its review, the staff concludes that the proposed major feature D is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III and IV.C of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for the emergency classification system, as set forth above. EGC provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.6 Notification Methods and Procedures (Major Features E)

13.3.3.6.1 Technical Information in the Application

In Section 5.1, "Bases for Emergency Response Organization Notification," of the EGC ESP Emergency Plan, the applicant stated that, in cooperation with the State of Illinois and county authorities, it has established mutually agreeable methods and procedures for notifying offsite response organizations consistent with the action level scheme discussed in the previous section. These methods and procedures apply to CPS and other EGC facilities within the State of Illinois.

Sections 1D, "Overview, Operational Response Levels," 3A, and 4A,"Communications, Nuclear Accident Reporting System," in IPRA Volume I list procedures for the notification of State agencies and local communities based on emergency classification levels.

Sections 1C, 1D, and 2B, as well as Annexes 2A, 2B, 2C, 2D, 2E, and 2F of IPRA Volume VIII, describe detailed notification procedures, based on the CPS and State emergency classification levels, for the counties and risk municipalities.

Sections 5.2.1, “On-site,” 5.2.2, “Off-site,” and 5.2.3, “Support Organizations,” of the EGC ESP Emergency Plan describe the methods for alerting, notifying, and mobilizing onsite, offsite, and support organization emergency response.

Sections 3A, 4B, “Communications, Nuclear Accident Reporting System,” 4C, “Communications, IDNS Radio Network,” and 4D, “Communications, State Agency Communications Networks,” in IPRA Volume I provide the procedures that Illinois State agencies use to mobilize and activate emergency response personnel. Sections 3A(3), “Agency Responsibilities, State Agencies, Illinois Emergency Management Agency,” and 3A(8) in IPRA Volume I state that the IEMA and the IDNS, respectively, receive notification of an unusual event concurrently from CPS through the nuclear accident reporting system (NARS). As described in Section 3A of IPRA Volume I, each agency has procedures to mobilize staff by commercial telephone, pager, or radio commensurate with his or her responsibilities in an emergency. The IEMA notifies the county and municipal governments as appropriate via NARS.

Sections 1C, 1D, 2B, 2C, “DeWitt County, Call List,” and 2D, “DeWitt County, Flow Diagram Notes for DeWitt County Initial Notification,” as well as Annexes 2A, 2B, 2C, 2D, 2E, and 2F of IPRA Volume VIII, provide specific mobilization and activation procedures for the counties and municipalities within the plume exposure pathway EPZ.

Section 5.5, “State and County Information Dissemination,” of the EGC ESP Emergency Plan explains that the State of Illinois and county emergency response plans include procedures for how State and county officials should make a public notification decision promptly (within about 15 minutes) once the plant has informed them of an emergency. Currently, the applicant’s system for disseminating information to the public includes notification by prescripted messages through appropriate broadcast media, such as the emergency alert system (EAS). Subsections 5.5.1, “Notification of the Public,” and 5.5.2, “Messages to the Public,” of the EGC ESP Emergency Plan describe dissemination systems that are already in service and will be used for a future EGC ESP facility.

Section 1G, “Overview, Notification of the Public,” of IPRA Volume I discusses activation of the alert notification sirens, deployment of emergency service vehicles, and operation of the EAS. The electronic and mechanical sirens emit a blast and have voice capabilities. The siren system, supplemented by mobile public address (PA) systems, provides coverage to essentially 100 percent of the plume exposure EPZ. After the sounding of the sirens or notification by mobile units, radio broadcast informs members of the public within the plume exposure pathway EPZ of what actions to take.

Section 2A, “DeWitt County, Functional Summary Descriptions,” in IPRA Volume VIII specifies that DeWitt County activates the alert notification sirens upon instruction from IEMA. The county prepares messages, provided in the annexes, to be sent out over the EAS, once approved by IEMA.

13.3.3.6.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the EGC ESP Emergency Plan to comply with the requirements of 10 CFR 52.17, using the guidance in

Supplement 2. In Section 1.2, "Planning Standards and Evaluation Criteria," of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III and IV.D of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in ESP applications. Supplement 2 also provides specific evaluation criteria for major features of emergency plans, including those that apply to major feature E, "Notification Methods and Procedures."

Major feature E calls for the applicant to describe the mutually agreeable bases for notifying response organizations, consistent with the emergency classification scheme in Appendix 1 to NUREG-0654/FEMA-REP-1, including the method for alerting, notifying, and mobilizing personnel. The application should also describe the administrative and physical means for notifying and promptly instructing the public within the 10-mile EPZ.

13.3.3.6.3 Technical Evaluation

The EGC ESP Emergency Plan and IPRA Volumes I and VIII describe a mutually agreeable basis for the notification of response organizations that is consistent with the emergency classification scheme set forth in Appendix 1 to Revision 1 of NUREG-0654/FEMA-REP-1. These documents also describe a method for alerting, notifying, and mobilizing emergency response personnel. In addition, the EGC ESP Emergency Plan and IPRA Volumes I and VIII describe the administrative and physical means for notifying and promptly instructing the public within the plume exposure pathway EPZ.

13.3.3.6.4 Conclusions

As discussed above, the applicant described the mutually agreeable bases for notifying response organizations, that is consistent with Appendix 1 to NUREG-0654/FEMA-REP-1, and includes the method for alerting, notifying, and mobilizing personnel. In addition, the applicant described the administrative and physical means for notifying and promptly instructing the public within the 10-mile EPZ. Based on its review, the staff concludes that the proposed major feature E is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III and IV.D of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for notification methods and procedures, as set forth above. EGC provided other information in the application that is

outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.7 Emergency Communications (Major Feature F)

13.3.3.7.1 Technical Information in the Application

Section 6.1, "Communications/Notifications," of the EGC ESP Emergency Plan states that, for the EGC ESP facility, the applicant will maintain the capability to make initial notifications to the designated offsite agencies on a 24-hour-per-day basis. The offsite notification system, referred to as the NARS, is a dedicated communications system that links the facility control room, EOF, TSC, and State and local authorities. Facsimile and commercial telephone lines will back up the NARS. State and county warning points will be continuously staffed. In addition, the applicant has established several dedicated communication systems that will ensure reliable and timely exchange of information necessary to the effective command and control of any emergency response. This includes information (1) between EGC and State and local agencies within the EPZs, (2) between EGC and the Federal EROs, (3) between the plant, the EOF, and the State and county EOCs, and (4) between the emergency response facilities (ERFs) and field monitoring teams. In addition, facility communication links will exist to ensure appropriate information transfer capabilities during an emergency. The facility may also use PA systems, facility radios, and pagers to augment its communication capabilities.

Sections 3A(3), 3A(8), and 4A of IPRA Volume I identify NARS as the primary source of communications among the ESP site, State agencies, and local governments. Commercial telephones will be used for confirmation. No State, other than Illinois, is located within the EPZ of the EGC ESP site.

Section 2G," DeWitt County, Communications," in IPRA Volume VIII specifies the communications systems utilized by DeWitt County (NARS and telephone). Annexes 2A, 2B, 2C, 2D, 2E, and 2F of IPRA Volume VIII specify the communications systems used by DeWitt County, the risk municipalities, and the support counties.

Section 6.3, "USNRC Communications (Emergency Notification System and Health Physics Network)," in the EGC ESP Emergency Plan states that the applicant will install dedicated telephone equipment between the EGC ESP facility's control room and the NRC, with an extension of that line into the TSC. The EOF will have available a separate line capable of being patched into the facility through the NRC. The NRC will use this line for event notifications and status updates.

A separate dedicated telephone, the health physics network, will also be available to convey health physics information to the NRC from the TSC and EOF, as requested. This telephone can also be used as an open line. The NRC will direct the installation and the use of its own telephones as indicated in Figure 6.1-3, "USNRC Communications for Nuclear Response."

Section 6.1.8, "Emergency Response Data System," of the EGC ESP Emergency Plan states that the Emergency Response Data System (ERDS) will supply the NRC with selected plant data points on a near-real time basis. The ERO will activate the ERDS as soon as possible, but no later than 1 hour after declaration of an alert, a site area emergency, or a general

emergency. The selected data points will be transmitted via modem to the NRC at approximately 1-minute intervals.

Section 2B of IPRA Volume I lists some of the Federal agencies that may be needed in the event of an incident at a nuclear plant. Section 3A(8) of IPRA Volume I describes the duties of IDNS in an emergency, including the responsibility for contacting the appropriate Federal agencies whenever an accident more severe than an alert is reported. Section 3A(8) also references the FRERP and Radiological Assistance Program. In RAI 13.3-13(c), the staff requested a description of the provisions for prompt communications between the Federal and State EROs. In response to RAI 13.3-13(c), the applicant stated that Section F1(1), "Overview, Operations Centers, State Emergency Operations Center," and Section 2B of IPRA Volume 1 describe the provisions for communications between the Federal and State EROs. Section 6A, "Preparedness Functions, Exercises and Drills," of IPRA Volume I and Section 1C of IPRA Volume VIII also discuss these communications provisions. Section 3A(8) of IPRA Volume I indicates that the Radiation Emergency Assistance Center (REAC) will contact the Federal agencies, and Section 3B of IPRA Volume I states that the Governor or his designee is authorized to request Federal assistance.

The applicant stated that the shift manager will be responsible for initiating a call-out to activate the ERO. The applicant will use an automated notification system to rapidly notify members of the ERO. The system, in use at the CPS and planned for use at the EGC ESP facility, consists of a computer with modem equipment capable of initiating and receiving telephone calls. When contact is made, the system will automatically request security identification and then respond. The system will call the paging system vendor. The pager vendor's system will accept group and individual numbers from the ERO notification system, activating several radio transmitters that in turn will activate personal pagers belonging to members of the ERO. The system will incorporate redundant power, phone, and computer components with geographic separation. Implementing procedures will specify the course of action to be taken, should the ERO notification system fail. In case of system failure, facility personnel will manually activate the ERO group page feature and/or directly call-out key emergency response personnel.

Section 3A of IPRA Volume I contains a list of State agencies and gives details of the notification process for their staffs.

Sections 1C and 1D of IPRA Volume VIII state that DeWitt County receives initial notification from IEMA via NARS and notifies the risk municipalities and support counties. Annexes 2A, 2B, 2C, 2D, 2E, and 2F of IPRA Volume VIII detail the emergency personnel notification procedures of DeWitt County, local municipalities, and support counties.

Section 6.4, "Medical Communications," of the EGC ESP Emergency Plan states that communications will be established with the primary and backup medical hospitals described in Section 12.1, "Off-site Hospital and Medical Services," of the plan. Facility personnel will establish communications with medical transportation services via commercial telephone lines.

Section 3A(9), "Agency Responsibilities, State Agencies, Public Health," of IPRA Volume I describes the Illinois Department of Public Health (IDPH) communications as relying on an emergency management system using radio, telephone, or telemetry. The system links the IDPH to hospitals, ambulances, and other emergency vehicles.

Section 2G and Annexes 2A, 2B, 2C, 2D, 2E, and 2F of IPRA Volume VIII state that the John Warner Hospital representative at the DeWitt County EOC is responsible for communicating with the hospital and arranging for ambulance support (Annex 2B), although the means of communication are not specified. The DeWitt County EOC will coordinate medical support for risk counties and municipalities.

13.3.3.7.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, and IV.E of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of a complete and integrated emergency plan. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for major features of emergency plans, including those that apply to major feature F, "Emergency Communications."

Major feature F calls for the applicant to identify communication provisions with State and local governments within the EPZs, with Federal EROs, and with fixed and mobile medical support facilities. The application should also describe provisions for alerting and activating emergency personnel.

13.3.3.7.3 Technical Evaluation

The staff reviewed the applicant's response to RAI 13.3-13(c) and found it to be acceptable based on the evaluation below.

The communication plans for emergencies described in the EGC ESP Emergency Plan and IPRA Volumes I and VIII have provisions for communications among contiguous State/local governments within the EPZ, and, as needed, with Federal EROs. In addition, these communication plans for emergencies have provisions for alerting and activating emergency personnel in each response organization. Finally, the plans describe the communication arrangement for fixed and mobile medical support facilities.

13.3.3.7.4 Conclusions

As discussed above, the applicant identified communication provisions with State and local governments within the EPZs, with Federal EROs, and with fixed and mobile medical support facilities. In addition, the applicant described provisions for alerting and activating emergency personnel. Based on its review, the staff concludes that the proposed major feature F is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.D, and IV.E of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for emergency communications, as set forth above. EGC provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.8 Public Education and Information (Major Feature G)

13.3.3.8.1 Technical Information in the Application

Section 7.1, "Public Information Publication," of the EGC ESP Emergency Plan explains that the State has an overall responsibility to maintain a continuing disaster preparedness public education program. Section 7.1 also states that the emergency public information publication for the applicant's generating facilities is and will be updated annually, in coordination with State and county agencies, to address how the general public is notified and what their actions should be in an emergency. The applicant also stated that it will distribute the EGC ESP site-specific publication on an annual basis by mail to residents within the 10-mile plume exposure pathway EPZ, as well as to appropriate locations where the transient population may obtain a copy.

Section 7.2, "Public Education Materials," of the EGC ESP Emergency Plan states that public information publications will instruct members of the public to go indoors and turn on their radios when they hear the alert notification sirens operating. These publications will also identify the local radio stations that the public should listen to for emergency-related information.

Sections 7.1 and 7.2 of the EGC ESP Emergency Plan state that the public information publication will include educational information on radiation, a description of the events that require public notification and what to do if a "take shelter" or "evacuate" recommendation is given, 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 and those without transportation. In addition, the publication will include an address, telephone number, and email address to contact for further information. In RAI 13.3-7, the staff requested that the applicant provide the respiratory protection information included in its emergency information program. In its response to RAI 13.3-7, the applicant stated that the public information publications for CPS currently provide respiratory protection information. These publications address respiratory protection information by providing general radiation information, actions to be taken for a "shelter-in-place" recommendation, and contacts for additional information. The current "shelter-in-place" actions include the following

statements regarding respiratory protection (i.e., protective measures) consistent with Section 5.5.2 of the EGC ESP Emergency Plan:

> Go indoors and stay there. Close all doors and windows and shut off any systems that draw in outside air, such as furnaces, fireplaces and air conditioners.

As indicated in Section 16.4, "Emergency Plan and Agreement Revisions," of the EGC ESP Emergency Plan, when an application for a COL references the EGC ESP Emergency Plan pursuant to Subpart C, "Combined License," of 10 CFR Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants," it is anticipated that the application will incorporate the EGC ESP Emergency Plan into the EGC nuclear standardized radiological emergency plan in effect at that time, including, in an appropriate annex, the addition of plant-specific information associated with the EGC ESP facility. Along with the adoption of the EGC nuclear standard radiological emergency plan, the COL facility will adopt consistent public information publications and distribution practices.

Section 5C, "Public Information," of IPRA Volume I describes a program whereby the State of Illinois, the operating utilities, and the affected county governments distribute information booklets on an annual basis. The State coordinates this activity with the utility as described in Section 7.1 of the EGC ESP Emergency Plan. The public information booklets entitled, "Emergency Information," are distributed by mail to the public residing within the 10-mile EPZ. Utility billing records or zip codes are used to compile distribution lists and are updated annually. In addition to direct mailing, booklets are available to transients and EPZ visitors at area motels, health care facilities, recreational areas, and other public areas.

Section 2K, "DeWitt County, Public Information Considerations," in IPRA Volume VIII indicates that the emergency information booklet includes instructions on how to obtain additional information, instructions to follow if shelter-in-place or evacuation is recommended, educational information concerning radiation, a map of major evacuation routes, and a list of communities that are likely to serve as host communities for evacuees. The booklet also contains information that is used to identify persons within the EPZ who have special concerns related to their ability to follow protective actions. These special concerns include hearing and walking difficulties, transportation issues, and special medical needs.

Section 7.5, "Media Orientation," of the EGC ESP Emergency Plan states that the applicant's Midwest Regional Operating Group (MWROG) Emergency Preparedness Department, in conjunction with the Communications and Public Affairs Department, will annually provide the applicable news media with information concerning the emergency plan, radiation, and points of contact for release of public information in an emergency.

Section 5D, "Public Information, Media Education," in IPRA Volume I and Section 2K in IPRA Volume VIII describe the program for acquainting the media with the emergency plans, information concerning radiation, and points of contact for release of public information in an emergency. To acquaint the news media with the IPRA, information is provided annually to the media in the vicinity of each nuclear power station. Information is provided by a briefing session, participation in an IPRA exercise, or a mailing of informational material. Any one of these three methods provides information on the IPRA concept of operations, accident

classification scheme, communications, protective actions, parallel actions, public information, and the EPZ.

In RAI 13.3-13(d), the staff requested a description of the State and local programs for acquainting news media with emergency plans, information concerning radiation, and points of contact for the release of public information in an emergency. In response to RAI 13.3-13(d), the applicant stated that Section 5D in IPRA Volume 1 provides a description of the State and local programs for acquainting news media with emergency plans, information concerning radiation, and points of contact for the release of public information in an emergency.

13.3.3.8.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.B, IV.D, IV.E, and IV.F of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for major features of emergency plans, including those that apply to major feature G, "Public Education and Information."

Major feature G calls for the applicant to describe a program to provide information to the public and news media on a periodic basis. The program should address how the applicant would notify the public, including what actions they would take in an emergency, and the applicant's means for acquainting the news media with emergency information.

13.3.3.8.3 Technical Evaluation

The staff reviewed the applicant's responses to RAIs 13.3-7 and 13.3-13(d) and found them to be acceptable based on the evaluation below.

The EGC ESP Emergency Plan and IPRA Volumes I and VIII describe programs to provide a coordinated dissemination of information to members of the public on a periodic basis (at least annually) regarding how they will be notified and what their actions should be in an emergency. The programs described in State and local emergency plans include information on the following:

- educational information on radiation
- contact for additional information
- protective measures (e.g., evacuation routes, relocation centers, and sheltering)
- special needs of the handicapped, transient population, and special facilities

The EGC ESP Emergency Plan and IPRA Volumes I and VIII adequately describe a program for acquainting the news media on a periodic basis (at least annually) with emergency plans, information concerning radiation, and points of contact for release of public information in an emergency.

13.3.3.8.4 Conclusions

As discussed above, the applicant described a program to provide information to the public and news media on a periodic basis, that addresses public notification and emergency actions. Based on its review, the staff concludes that the proposed major feature G is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.B, IV.D, IV.E, and IV.F of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for public education and information, as set forth above. The applicant provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.9 Emergency Facilities and Equipment (Major Feature H)

13.3.3.9.1 Technical Information in the Application

Section 8.1.2, "Technical Support Center," of the EGC ESP Emergency Plan states that a TSC will be established for use during emergency situations by facility management, technical, and engineering support personnel. The TSC will be activated for emergencies classified as an alert or higher. Activation for other events will be optional. When activated, the TSC functions will include the following:

- supporting the control room's emergency response
- performing the nondelegable functions when in command and control
- continually evaluating event classification
- assessing the plant status and potential offsite impact
- coordinating emergency response actions
- notifying appropriate corporate and station management
- providing notification and update information to the NRC via the emergency notification system (ENS), including activation of ERDS

The TSC will be the onsite location used to support the control room for assessment of plant status and potential offsite impact, as well as for the implementation of emergency actions. The TSC will provide technical data and information to the EOF.

The TSC will provide reliable voice communications to the control room, operations support center (OSC), EOF, the NRC, and State and local EOCs. In addition, the TSC will provide

facsimile transmissions capability, as described in Chapter 6, “Emergency Communications,” in the EGC ESP Emergency Plan.

The TSC will be sized for a minimum of 25 spaces and supporting equipment. Of the 25 spaces, 5 will be reserved for the NRC, and adequate space will be available for the appropriate State representative(s). Under accident conditions, personnel in the TSC will be protected from radiological hazards, including direct radiation and airborne contaminants, with similar radiological habitability as the control room personnel. To ensure adequate radiological protection, permanent radiation monitoring systems will be installed in the TSC and/or periodic radiation surveys will be conducted. These systems will be used to indicate radiation dose rates and airborne radioactivity inside the TSC. In addition, protective breathing apparatus (full-face air purifying respirators) and potassium iodide (KI) will be available for use as required. The TSC will have access to a complete set of as-built drawings and other records, including general arrangement diagrams, piping and instrumentation drawings, and the electrical schematics. The TSC will have the capability to record and display vital plant data, in real time, to be used by knowledgeable individuals responsible for engineering and management support of reactor operations and for implementation of emergency procedures.

Section 8.1.3, “Operations Support Center,” in the EGC ESP Emergency Plan states that facility support personnel will report to the OSC, an onsite location used during an emergency. Assignments or duties will be dispatched in support of emergency operations. The OSC will be activated whenever the TSC is activated, but the OSC need not remain activated at the alert level, if the station emergency director judges it to be unnecessary. At the site area and general emergency levels, the OSC or an alternate OSC will be activated at all times. Activation for other events will be optional. Station disciplines reporting to the OSC will include, but not be limited to, the following:

- operating personnel not assigned to the control room
- radiation protection personnel
- chemistry personnel
- maintenance personnel (mechanical, electrical, and instrumentation and control)

The OSC will be equipped with communication links to the control room, TSC, and EOF, as described in Chapter 6 of the EGC ESP Emergency Plan. A limited inventory of supplies will be kept in the OSC. This inventory will include respirators, protective clothing, flashlights, and portable survey instruments.

Sections 8.1.2 and 8.1.3 of the EGC ESP Emergency Plan provide brief, general statements and do not give facility-specific or equipment-specific information. In RAI 13.3-12, the staff requested that the applicant discuss the extent that it intended the application for an ESP to address evaluation criteria V.H.1 and V.H.2 of Supplement 2 for the TSC, OSC, and EOF for an ESP, including whether it intended the application to address NUREG-0696, “Functional Criteria for Emergency Response Facilities—Final Report,” dated February 1981. In addition, the staff asked the applicant to state whether EGC intends to utilize the existing TSC, OSC, and EOF, which support CPS, for the ESP site. In response to RAI 13.3-12, the applicant stated that the EGC ESP Emergency Plan addresses evaluation criterion V.H.1 of Supplement 2 in Section 8.1, which provides the full ESP discussion of the major features of the TSC and OSC, including the NUREG-0696 criteria applicable for a major features discussion. Because the

COL application is expected to reference a certified design that has already addressed the details of the design of these facilities, EGC did not include them in the ESP application. The specific designs vary; thus, providing these details in the ESP application could result in discrepancies with the to-be-selected certified design. The COL application will address any details not included in the combined to-be-referenced ESP and design certification document. The EGC ESP facility does not intend to use the TSC or OSC that support the existing Clinton unit and, thus, there will be no impact from the new facility on the existing CPS TSC and OSC.

Section 8.2, "Emergency Operations Facility," of the EGC ESP Emergency Plan addresses evaluation criterion V.H.2 of Supplement 2. Section 8.2 provides a full discussion of the major features of the EOF, including the NUREG-0696 criteria applicable for a major features discussion. The applicant also stated that, as indicated in Section 8.2, the EGC ESP facility intends to use the existing common EOF currently located in the EGC Cantera facility in Warrenville, Illinois. This facility supports the existing Clinton unit, as well as other existing units in Illinois, and has been previously evaluated against the NUREG-0696 criteria. Since the EOF is already established to support numerous nuclear facilities, the only impact is incorporating the appropriate documents and any necessary communication inputs. Thus, including the EGC ESP facility in the existing EOF is expected to have minimal impact. Completion of the activities will occur at the COL stage and these and other NUREG-0696 criteria can be readily confirmed by inspection at that time (consistent with the process utilized for the previously licensed facilities).

Section 8.2 of the EGC ESP Emergency Plan states that the EOF will be the location where the corporate emergency director will direct a staff to evaluate and coordinate the overall company activities involved with an emergency. Activation of the EOF is mandatory upon declaration of an alert or higher classification. The EOF will provide for the management of overall emergency response, the coordination of radiological and environmental assessments, the determination of recommended public protective actions, the management of recovery operations, and the coordination of emergency response activities with Federal, State, and local agencies. The common MWROG EOF is currently (i.e., in 2003) located in the applicant's Cantera facility, west of Chicago, in Warrenville, Illinois. The EOF was designed with the following considerations in mind:

- The location provides optimum functional and availability characteristics for carrying out the overall strategic direction of the applicant's onsite and support operations, determining public protective actions to be recommended to offsite officials, and coordinating with Federal, State, and local organizations.

- The EOF is well engineered and of sufficient size to accommodate about 50 people.

- The EOF is equipped with reliable voice communications capabilities to the TSC, OSC, control room, NRC, and State and local EOCs. In addition, the EOF has facsimile transmission capability.

- Equipment is provided to gather, store, and display data needed in the EOF to analyze and exchange information on plant conditions within the facility. The EOF technical data system receives, stores, processes, and displays information sufficient to perform

assessments of the actual and potential onsite and offsite environmental consequences of an emergency condition.

- The EOF has (and will have for the EGC ESP facility) ready access to plant records, procedures, and emergency plans needed for effective overall management of the applicant's emergency response resources.

Section 1F(1), "Overview, Operations Centers," in IPRA Volume I fully describes the SEOC and its use in directing and controlling response functions. The IPRA describes the role of IEMA in coordinating and directing response, the State agencies participating at the SEOC, agency roles, physical characteristics of the facility, and communications systems. The SEOC operations can also be conducted from the State forward command post (SFCP).

Sections 1C and 2E in IPRA Volume VIII describe the county and municipal emergency response functions that take place at the DeWitt County EOC. Volume VIII of IPRA describes the location and operation of the EOC in coordinating county and municipal response and in coordinating with the SEOC or the SFCP.

13.3.3.9.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.B, and IV.E of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for major features of emergency plans, including the criteria that are apply to major feature H, "Emergency Facilities and Equipment."

Major feature H calls for the applicant to describe a TSC, onsite OSC, and EOF, in accordance with the guidance in NUREG-0696. The following are the general guidance criteria from NUREG-0696 for these facilities:

- The TSC is an onsite facility located close to the control room that shall provide plant management and technical support to the reactor operating personnel located in the control room during emergency conditions. It shall have technical data displays and plant records available to assist in the detailed analysis and diagnosis of abnormal plant

conditions and any significant release of radioactivity to the environment. The TSC shall be the primary communications center for the plant during an emergency.

- The OSC is an onsite assembly area separate from the control room and the TSC where licensee operations support personnel shall report to in an emergency. There shall be direct communications between the OSC and the control room, and between the OSC and the TSC, so that the personnel reporting to the OSC can be assigned to duties in support of emergency operations.

- The EOF is a near-site support facility for the management of the overall licensee emergency response (including coordination with Federal, State, and local officials), coordination of radiological and environmental assessments, and determination of recommended public protective actions. The EOF shall have appropriate technical data displays and plant records to assist in the diagnosis of plant conditions to evaluate the potential or actual release of radioactive materials to the environment.

In addition, major feature H calls for the ESP application to describe an EOC for each offsite organization for use in directing and controlling response functions.

13.3.3.9.3 Technical Evaluation

The staff finds that the ESP application adequately describes the State and local EOCs for use in directing and controlling response actions.

In Sections 8.1.2, 8.1.3, and 8.2 of the EGC ESP Emergency Plan, the applicant provided general descriptions of the OSC, TSC, and EOF and equipment. With regard to the applicant's response to RAI 13.3-12, the applicant did not address the adequacy of the facilities and related equipment in support of emergency response. In addition, the applicant did not address, with specificity, such facility and equipment details such as location, size, structure, function, habitability, communications, staffing and training, radiological monitoring, instrumentation, data system equipment, power supplies, technical data and data systems, and record availability and management. In Open Item 13.3-3, the staff identified the need for additional specific information related the OSC, TSC, and EOF. In its submission to the NRC dated April 26, 2005, the applicant responded to Open Item 13.3-3. The applicant stated that as indicated in its response to RAI 13.3-12, the EGC ESP addresses evaluation criterion V.H.1 of Supplement 2 to NUREG-0654/FEMA-REP-1 in Section 8.1 of the emergency plan and provides the EGC ESP discussion of the major features of the TSC and OSC. Because the COL application is expected to reference a certified design that has already addressed the details of the design of these facilities, the ESP does not include these details. The specific designs vary; thus, providing these details in the ESP could result in discrepancies with the to-be-selected certified design. The COL application will address any details not included in the combined to-be-referenced ESP and design certification document.

Similarly, Section 8.2 of the EGC ESP Emergency Plan provides the discussion of the major features of the EOF to address evaluation criterion V.H.2 of Supplement 2 to NUREG-0654/FEMA-REP-1. As indicated in Section 8.2, the EGC ESP facility intends to use the existing common EOF currently located in the EGC Cantera facility in Warrenville, Illinois. This facility supports the existing Clinton unit, as well as other existing units in Illinois, and has

been previously approved as an acceptable centralized EOF, as addressed in SECY-02-0033, "Amergen's Request to Consolidate the Clinton Power Station Emergency Operations Facility (EOF) into the Centralized EOF Operated by Exelon Generation Co.," and its associated Commission staff requirements memorandum. Since the EOF is already established to support numerous nuclear facilities, the only impact is incorporating the appropriate documents and any necessary communication inputs. Thus, including the EGC ESP facility in the existing EOF is expected to have minimal impact. Completion of the activities will occur at the COL stage and these and other NUREG-0696 criteria can be readily confirmed by inspection at that time (consistent with the process utilized for the previously licensed facilities).

Based on the additional information provided above, the staff considered the part of Open Item 13.3-3 related to the EOF to be resolved. However, the applicant did not provide sufficient information to resolve the portions of Open Item 13.3-3 related to the OSC and TSC.

13.3.3.9.4 Conclusions

As discussed above, the applicant did not describe in sufficient detail the facilities and related equipment in support of emergency response for the OSC and TSC, as specified in RS-002 and Supplement 2. The applicant did not address, with specificity, such facility and equipment details such as location, size, structure, function, habitability, communications, staffing and training, radiological monitoring, instrumentation, data system equipment, power supplies, technical data and data systems, and record availability and management for the OSC and TSC. Based upon its review, the staff concludes that the proposed major feature H is not consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is unacceptable. EGC provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.10 Accident Assessment (Major Feature I)

13.3.3.10.1 Technical Information in the Application

In Sections 3.1.1.1.7 and 9.1.3, "National Weather Service," of the EGC ESP Emergency Plan, the applicant stated that meteorological information can be acquired and used through the NWS. Available data will include existing and forecast wind directions, wind speed, and ambient air temperature. Appendix A to the EGC ESP Emergency Plan identifies an arrangement with Murray and Trettle, Inc., for meteorological support. In Section 5.3 of the EGC ESP Emergency Plan, the applicant established, in conjunction with State and county authorities, the contents of the initial notification message transmitted during a classified emergency. Meteorological information contained in this message will include wind direction and speed. Section 5.4 of the EGC ESP Emergency Plan states that followup messages will also contain the same information as that provided in the initial notification message.

Section 9.2.3, "State Monitoring Capabilities," of the EGC ESP Emergency Plan explains that the State of Illinois can currently dispatch its own field monitoring teams to track the airborne radioactive plume. The State also has the ability and resources to coordinate with Federal and utility monitoring teams to compare sample results. Appendix A to the EGC ESP Emergency Plan includes letters confirming the State of Illinois commitment to implement IPRA.

Sections 1E and 3A(8) of IPRA Volume I explain that the State of Illinois, in the form of IDNS, has the responsibility and resources to dispatch its own field monitoring teams to perform field monitoring within the plume exposure EPZ. The State also has the ability and resources to coordinate with Federal and utility monitoring teams. Section 3A(8) also details the IDNS response, that will deploy a radiological assessment field team (RAFT) to perform plume exposure rate verification, air sampling, and sampling of food, water, milk, and other media. If requested by IDNS, DOE and other Federal and State agencies may provide additional field teams. The RAFT conducts field monitoring using suitable radiation detection instruments in the downwind portion of the EPZ. The team analyzes samples in a mobile laboratory utilizing a gamma spectroscopy system. The team is also responsible for the assessment of radioactive plume pathways, and they direct other field teams in determining the composition and location of the plume and in collecting of samples.

Sections 1D, 2F, and 2O, "DeWitt County, Radiological Considerations," of IPRA Volume VIII state that IEMA is responsible for performing confirmatory accident assessment. This includes, in part, deployment of field survey teams for radiation exposure monitoring and sample collection.

Section 3.1.1.1.4 of the EGC ESP Emergency Plan states that, if the applicant or the State of Illinois deemed assistance from DOE to be necessary or desirable, the State of Illinois would notify the appropriate DOE operations office.

Section 1E of IPRA Volume I explains that the State of Illinois has the responsibility and resources to dispatch its own field monitoring teams to track the radioactive airborne plume. The State also has the ability and resources to coordinate with Federal and utility monitoring teams.

13.3.3.10.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III and IV.A, IV.B, IV.C, IV.D, and IV.E of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for the

major features of emergency plans, including those that apply to major feature I, “Accident Assessment.”

Major feature I calls for the applicant to describe the methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition. The applicant should also describe the capability and resources associated with acquiring meteorological information and performing field monitoring, as well as contacts and arrangements with offsite organizations (including Federal and State resources).

13.3.3.10.3 Technical Evaluation

In the EGC ESP Emergency Plan, the applicant provided a description of the contacts and arrangements made with offsite organizations for acquiring and evaluating meteorological information. The applicant also described how suitable meteorological data will be made available to the State.

The EGC ESP Emergency Plan and IPRA Volumes I and VIII describe the contacts and arrangements made for field monitoring within the plume exposure EPZ. The EGC ESP Emergency Plan and IPRA Volume I describe contacts and arrangements to locate and track the airborne radioactive plume, using either or both Federal and State resources.

13.3.3.10.4 Conclusions

As discussed above, the applicant described adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite radiological consequences of a radiological emergency condition at the ESP site, including associated contacts and arrangements. Based on its review, the staff concludes that the proposed major feature I is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, IV.B, IV.C, IV.D, and IV.E of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for accident assessment, as set forth above. EGC provided other information in the application that is outside the scope of the staff’s review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.11 Protective Response (Major Features J)

13.3.3.11.1 Technical Information in the Application

Figure 2.2-1 of the EGC ESP Emergency Plan identifies three relocation centers, including the Illinois State University field house, Monticello High School, and Richland Community College. These facilities provide multiple alternatives for relocating evacuated site personnel depending on wind direction and other factors that may impede relocation of evacuated site personnel. Figures 2.2-1 and 2.3-1, “Evacuation Routes to Relocation and Congregate Care Centers,” of the EGC ESP Emergency Plan show evacuation routes. Section 10.1.1, “Evacuation Locations,” of the EGC ESP Emergency Plan states that personal transportation, if available, will normally be used. The applicant will identify personnel without transportation and provide transportation, as necessary. In RAI 13.3-8, the staff requested that the applicant discuss the

means it will use to transport visitors and nonessential personnel without transportation in the event of a site evacuation. In response to RAI 13.3-8, the applicant stated that Section 10.1.1 of the EGC ESP Emergency Plan discusses this. Section 10.1.1 explains that visitors on site will assemble with and follow the instructions of their escorts. Both visitors and nonessential personnel will be transported by the same conveyance they were brought to the site, typically by bus or personal vehicle. Determinations of personnel and visitors without vehicles can be made at the assembly area, and these individuals provided transportation, as necessary (e.g., they could be paired with other nonessential personnel for evacuation from the site by personal vehicle).

Section 10.1.3, "Evacuation," of the EGC ESP Emergency Plan states that evacuation will commence in accordance with future EGC ESP facility procedures as directed by the emergency director or his/her designee, unless one of the following conditions exists:

- Severe weather conditions threaten safe transport.
- A significant radiological hazard would be encountered.
- A security threat occurs that would have an adverse impact on the personnel while leaving the site.
- A condition similar to these in magnitude occurs that, in the opinion of the station emergency director, would adversely affect the site personnel.

Section 10.1.6, "Mechanism for Implementing Protective Action Recommendations," of the EGC ESP Emergency Plan discusses a mechanism for implementing protective action recommendations to the offsite agencies responsible for implementing protective actions for the general public within the 10-mile EPZ. Section 10.2, "Protective Actions Recommendations," of the EGC ESP Emergency Plan states that, for incidents involving actual, potential, or imminent releases of radioactive material to the atmosphere, the U.S. Environmental Protection Agency's (EPA) 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," dated May 1992 (hereafter referred to as EPA 400); Supplement 3 to NUREG-0654/FEMA-REP-1, dated July 1996; and Volume 4 of the NRC's "Response Technical Manual," Revision 4, dated March 1996 (hereafter referred to as RTM-96), will be used as the basis for the general public protective action recommendations.

Section 6.0, "Analysis of Evacuation Times," of the 1993 ETE provides the results of the analysis. The ETE analysis was conducted for peak populations under a variety of scenarios. The applicant calculated the ETEs for winter weekday, winter weeknight, summer weekday, and summer weekend. These scenarios were evaluated for normal and adverse weather conditions in accordance with Revision 1 of NUREG-0654/FEMA-REP-1.

Section 1.2, "Site Location and Emergency Planning Zones (EPZ)," of the 1993 ETE provides a description of the nuclear power plant's general location, and Figure 1.2, "EPZ Evacuation Network," of the 1993 ETE is a map depicting the EPZ boundaries. Section 1.1, "General," of the ETE generally discusses how the analysis was conducted. The applicant developed the ETEs by using existing population data and the NETVAC computer simulation model.

Figures 2.1-1 and 2.2-1 of the EGC ESP Emergency Plan show the plume exposure pathway planning zone, EPZ subareas, evacuation routes, and relocation centers. In RAI 13.3-20(k), the staff requested the applicant to clarify the location of the registration and congregate care centers. The applicant responded to RAI 13.3-20(k) in its submission to the NRC dated January 24, 2005. In its submission, the applicant stated that the three items listed—Section 1.3 of the 1993 ETE, Map C of IPRA Volume VIII, and Figure 2.3-1 of the EGC ESP Emergency Plan—all correctly specify locations for evacuated persons to gather, but each use different terminology. The following table shows the differences in terminology used.

Source	**Terminology**
1993 ETE Study	Reception Centers
Map C of IPRA Volume VIII	Registration and Congregate Care Shelters
Figure 2.3-1 of the EGC ESP Emergency Plan	Registration and Congregate Care Centers

Because of the difference in terminology, the EGC ESP Emergency Plan will be revised to reflect the terminology used in IPRA Volume VIII. For example, “registration and congregate care centers” will be revised to “registration and congregate care shelters,” in Section 2.3.1, in the title of Figure 2.3-1, and in Section 10.1.8.1, “Evacuation Routes and Destinations.”

Additionally, each source specifies evacuation locations that comply with the other sources, except for one discrepancy. For example, the 1993 ETE study directs evacuees to reception centers located in Bloomington (North), Champaign (East), Decatur (South), and Lincoln (West), Illinois. Map C of IPRA Volume VIII shows congregate care shelters in each of these cities. However, Figure 2.3-1 of the EGC ESP Emergency Plan only labels the following registration and congregate care centers:

- ISU Horton Field House (located in Bloomington, Illinois),
- Parkland College (located in Champaign, Illinois)
- Steven Decatur Middle School (located in Decatur, Illinois).

Therefore, Figure 2.3-1 of the EGC ESP Emergency Plan will be revised to include the Lincoln Community High School as the registration and congregate care shelter for the city of Lincoln, Illinois (west of EGC ESP site).

Sections 2.1 and 2.2 of the 1993 ETE describe the general assumptions, that include automobile occupancy factors, method of determining roadway capacities, and method of estimating populations.

The applicant used the computer model NETVAC to develop the ETEs. Sections 2.2 and 2.3 of the 1993 ETE describe the methodology. Section 5.5 of the 1993 ETE also describes the evacuation simulation and the structure and major features associated with NETVAC.

The 1993 ETE estimates permanent residents using 1990 census tract and block data. Section 3.1, “Permanent Residents,” and Tables 1.1, “Townships/Incorporated Areas Partially

or Entirely within the Clinton EPZ," and 1.2, "Subareas within the Clinton EPZ," of the 1993 ETE present the data. Census block maps of the EPZ were used to update and distribute the total 1990 population within each township or incorporated area and sector. The distribution of the total permanent resident population was based on land allocation using the detailed census block maps. The 1993 ETE estimates 12,404 permanent residents in the CPS EPZ. Section 2.3.2.1, "Permanent Population," of the 1993 ETE states that the resident population within the plume exposure pathway EPZ is 12,358. Sections 3.1.1, "Auto-owning Permanent Population," and 3.1.2, "Transport-dependent Permanent Population," of the 1993 ETE describe the assumptions regarding the auto-owning and transport-dependent populations. The auto occupancy assumption for auto-owning and transport-dependent populations is one vehicle per household.

In RAI 13.3-20(d), the staff requested that the applicant discuss the basis for neighbors and State/local authorities contributing one vehicle per household for the transport-dependent (nonauto-owning) population. The applicant responded to RAI 13.3-20(d) in its submission to the NRC dated January 24, 2005. In its submission, the applicant stated that the DeWitt County ESDA indicates that the transport-dependent residential population within the city of Clinton will evacuate via buses provided by the city, plus assistance from auto-owning residents (generally neighbors or relatives). The buses will evacuate residents from a designated set of pickup locations in the city. The buses will evacuate residents from Clinton to the reception center in Decatur. According to ESDA, the number of buses available should be able to evacuate transport-dependent residents in a single pass. If residents arrive at pickup points after the buses have departed, one or more buses would return to Clinton to evacuate any remaining residents. It is assumed that the small number of transport-dependent residents in other subareas will evacuate with assistance from neighbors or relatives. The 1993 study assigned one vehicle per household for the entire residential population, including transport-dependent households. The 1993 study also assumed the distribution of mobilization times for the transport-dependent population to be the same as for the general residential population. The analysis of evacuation times for special facilities the applicant provided in response to RAI 13.3-20(c) indicates that the population of special facilities located in the city of Clinton will mobilize and evacuate in less time than the general population. The ETEs for the general population in Clinton are, therefore, considered representative (or conservative) for transport-dependent residents.

Section 3.2, "Seasonal Residents," of the 1993 ETE also includes information on seasonal residents, who are residents that reside in the area on a temporary basis. The applicant obtained the seasonal residence (assuming three people per housing unit) from the 1990 census. The population was determined to be 54 people within the EPZ.

Section 3.3, "Transient Population," of the 1993 ETE describes the transient population, that includes people in the workforce, hotels/motels, and recreational areas. Tables 3.3, "Transient Population Distribution within the Clinton EPZ: Winter Weekday;" 3.4, "Transient Population Distribution within the Clinton EPZ: Winter Weeknight;" 3.5, "Transient Population Distribution within the Clinton EPZ: Summer Weekday;" and 3.6, "Transient Population Distribution within the Clinton EPZ: Summer Weekend" present the total transient population. Appendix 1, "Transient and Special Facility Population Data," to the 1993 ETE lists the transient population and the corresponding facilities. The applicant estimated the transient population for each of the scenarios evaluated (winter weekday, winter weeknight, summer weekday, summer

weekend). For purposes of estimating the total number of vehicles associated with the transient population segment, the applicant used an auto occupancy factor of 1 employee per vehicle for all work places, except at CPS, where the applicant used an average occupancy factor of 1.5 persons per vehicle. For the hotel/motel population, the applicant assumed that there would be one vehicle per hotel/model unit. The applicant assumed three persons per vehicle at all recreational facilities, except Little Galilee Christian Assembly Church Camp and the Calvary United Pentecostal Christian Camp where buses are provided.

In RAI 13.3-20(s), the staff asked the applicant to explain why it assumed the automobile occupancy rate to be different for CPS workers than that for other factories. The applicant responded to RAI 13.3-20(s) in its submission to the NRC dated January 24, 2005. In its submission, the applicant stated that site-specific information on automobile occupancy was available for CPS, but was not readily available for other employers. In the absence of site-specific information, a conservative default value of one person per vehicle was used to estimate ETEs.

In addition, Section 2.3.2.3 of the EGC ESP Emergency Plan discusses changes to the transient population since the 1993 ETE. The applicant developed the estimates used in the ESP application from 2002 survey data. Table 2.3-2 of the EGC ESP Emergency Plan provides a summary of the transient population included in the counts.

Section 13.3.1.1 of this SER discusses the applicant's analysis of the transient population associated with the Apple and Pork Festival.

The 1993 ETE describes the special facility population in Section 3.4, "Special Facilities Population," and Appendix 1. Tables 3.7, "Special Facilities Population Distribution within the Clinton EPZ: Winter Weekday;" 3.8, "Special Facilities Population Distribution within the Clinton EPZ: Winter Weeknight;" 3.9, "Special Facilities Population Distribution within the Clinton EPZ: Summer Weekday;" and 3.10, "Special Facilities Population Distribution within the Clinton EPZ: Summer Weekend" of the 1993 ETE also present the special facility population totals by sector for all scenarios analyzed. The 1993 ETE assumes a vehicle occupancy factor for students of 60 persons per bus. The analysis also assumes the vehicle occupancy factor for hospitals, nursing homes, and correctional facilities to be 40 people per bus.

In RAI 13.3-20(l), the staff asked the applicant to explain its assumed automobile occupancy factors of 60 students per bus and 40 residents per bus for special facility populations. The staff asked the applicant to provide specific information regarding whether vans or ambulances will be needed in addition to the buses. If vans and ambulances are needed, the applicant should provide information on whether they are included in the vehicle estimate. The applicant responded to RAI 13.3-20(l) in its submission to the NRC dated January 24, 2005. In its submission, the applicant stated that the values of 60 students per bus for schools and 40 persons per bus for health care facilities were assigned based on information provided by the county agencies. The use of buses versus vans is primarily a logistical issue, since one bus is (for traffic purposes) equivalent to four autos, while a van, with roughly half the capacity of a bus, is equivalent to two autos. For health care facilities (hospitals and nursing homes), one ambulance (or wheelchair van) is assigned for every two nonambulatory patients or residents. These vehicles have been included in the analysis for special facilities. Additional information related to the analysis of special facility evacuation times is included in Attachment A, "Analysis

of Special Facility Evacuation Times," to the applicant's submission to the NRC dated January 24, 2005.

In RAI 13.3-20(r), the staff asked the applicant to discuss the availability of buses and drivers and the process for mobilizing the migrant worker and transport-dependant populations during an evacuation, as well as whether these populations can be evacuated in a single trip or if return trips are necessary. The applicant responded to RAI 13.3-20(r) in its submission to the NRC dated January 24, 2005. In its submission, the applicant stated that the 1993 ETE study did not include the migrant worker population (estimated at 65 persons). According to the DeWitt County ESDA, most migrant workers are transported by bus. The buses generally remain on site with the workers, and therefore, would be available for an evacuation. For the 1993 ETE study, the transport-dependent resident population was assigned the same trip generation time distribution as the remainder of the resident population. According to the DeWitt County ESDA, buses will be used to evacuate the transport-dependent residential population in the city of Clinton. Adequate buses and drivers are available to accomplish the evacuation of this population in a single trip, but return trips might be necessary if additional people arrive at pickup locations after buses have departed.

Section 2.3.2.3 of the EGC ESP Emergency Plan also states that migrant farm workers are included in the transient population statistics because of the nature of the farming in the region. In RAI 13.3-20(t), the staff asked the applicant to provide trip generation times for the migrant worker population and information on the automobile occupancy rate for migrant workers. The applicant responded to RAI 13.3-20(t) in its submission to the NRC dated January 24, 2005. In its submission, the applicant stated that the 1993 ETE study did not include the migrant worker population (estimated at 65 persons). The county agencies do not consider these workers transport dependent. If they were to be included in the NETVAC analysis, the standard workforce mobilization time (30 to 60 minutes) would apply to these workers.

Section 2.3.2.3.1 of the EGC ESP Emergency Plan discusses changes to the special facility population that have occurred since the 1993 ETE. The applicant developed the estimates used in the ESP application from 2002 survey data. In RAI 13.3-20(q), the staff asked the applicant to provide a reference for community college enrollment. The applicant responded to RAI 13.3-20(q) in its submission to the NRC dated January 24, 2005. In its submission, the applicant stated that it based the population estimates for Richland Community College Extension in Clinton on numbers of classes and class size provided by the college. The college currently provides up to 15 classes in the winter and spring, and 6 classes in the summer. Each class has up to 15 students.

Section 5.1, "Evacuation Analysis Cases," and Table 5.1, "Clinton EPZ Analysis Areas," of the 1993 ETE describe the analysis areas for the time estimates. The applicant prepared time estimates for the areas within 2 miles of the CPS, for 67.5-degree sectors from 0–5 miles and 0–10 miles from the plant, and for the entire Clinton plume exposure EPZ. Tables 6.1, 6.2, 6.3, and 6.4 provide ETE data following a keyhole approach with a simultaneous evacuation of the 2-mile radius and combinations of three sectors for each condition. This approach is adequate for determining the ETE.

Section 6.1 of the 1993 ETE describes the locations where queuing is likely to occur under the various scenarios.

Section 7.2, “Evacuation Traffic and Access Control Locations,” of the 1993 ETE describes the locations identified in the NETVAC simulation where traffic management personnel may be necessary during the evacuation. In RAI 13.3-20(m), the staff requested that the applicant provide information on whether passthrough traffic affects the roadway capacity and the ETE within the plume exposure pathway EPZ evacuation routes. The applicant responded to RAI 13.3-20(m) in its submission to the NRC dated January 24, 2005. In its submission, the applicant stated that the NETVAC simulations do not include any “background” or “passthrough” traffic. At the start of the simulation, the network is free of traffic. The applicant assumed that access control would prevent through traffic from entering the EPZ during the evacuation.

In RAI 13.3-20(o), the staff asked the applicant to discuss the roadway characteristics, traffic control measures, and area types that support the NETVAC model runs. The applicant responded to RAI 13.3-20(o) in its submission to the NRC dated January 24, 2005. In its submission, the applicant stated that no new NETVAC model runs were made for the ESP application. The 1993 study report documents the roadway characteristics and area types used in the analysis. (Attachment C, “Detailed NETVAC Output for Selected Scenarios,” to the EGC submission also documents these parameters.) As explained in Section 2.4, the applicant determined that the CPS ETE performed in 1993 is valid for current conditions. The NETVAC runs were made with existing (normal) traffic controls in effect. The applicant’s response to RAI 13.3-20(g) provides additional information related to traffic control measures.

Section 2.3.3 of the EGC ESP Emergency Plan describes the analysis conducted to test the validity of the 1993 road network capacities and the current state of the road network. The applicant evaluated the EPZ zones for changes in the infrastructure, drove the principal roadways, and conducted a direct comparison of some of the link evaluation routes and nodes. The applicant noted no major differences.

Figure 1.2 in the 1993 ETE shows the EPZ evacuation network and codes. The sector and quadrant boundaries are numbered and are indicated on the map.

Section 4.0 and Appendix 3 to the 1993 ETE provide a description of the road network and the roadway network listing and capacities. The table in Appendix 3 indicates the evacuation route segments and their characteristics, including capacity. In RAI 13.3-20(e), the staff requested that the applicant clarify whether the characteristics for each segment analyzed in the 1993 ETE are for the narrowest section or bottleneck, if the roadway is not uniform. The applicant responded to RAI 13.3-20(e) in its submission to the NRC dated January 24, 2005. In its submission, the applicant stated that when roadway conditions are not uniform over the length of a link, roadway dimensions (e.g., lane width, side width) represent the most restrictive conditions over the link. In general, multiple links are used when a significant change in roadway conditions is encountered (e.g., change in lane width, addition or deletion of a lane, change in speed limit).

The NETVAC model input files in Appendix 3 to the 1993 ETE assign the area type (AT) identified as “4,” or “residential,” for 100 percent of the EPZ. In RAI 13.3-20(n), the staff asked the applicant to explain why the NETVAC model input files in Appendix 3 assign the AT identified as “4,” or “residential,” for the entire plume exposure pathway EPZ. The applicant responded to RAI 13.3-20(n) in its submission to the NRC dated January 24, 2005. In its

submission, the applicant stated that most of the EPZ is rural or residential. Three of the four area types (central business district, fringe area, outlying business district) are characteristic of larger cities or towns. If a roadway is used predominantly by through traffic, "residential" is the appropriate classification for the link, even if the road traverses a business district. The links and intersections in the center of Clinton, the largest city or town in the EPZ (population 7485), are not considered to comprise a central business district.

Section 6.0 of the 1993 ETE provides the results of the analysis. The analysis for the 1993 ETE was calculated for peak populations under a variety of scenarios. The applicant calculated ETEs for winter weekday, winter weeknight, summer weekday, and summer weekend. The applicant evaluated each of these scenarios for normal and adverse weather conditions, in accordance with Revision 1 of NUREG-0654/FEMA-REP-1.

Sections 2.2 and 2.3 of the 1993 ETE describe the method for computing the total evacuation time. The time estimates are based on a time distribution of evacuation events. Section 5.4 and Figure 5.1 of the 1993 ETE describe the assumptions used for the evacuation preparation times and departure distributions. Section 5.5 provides a description of the general structure and major features associated with NETVAC.

However, to better understand the assumptions used in the methodology for developing the distributions in Section 5.4, "Evacuation Preparation Times and Departure Distributions," of the 1993 ETE, the staff asked the applicant, in RAI 13.3-20(d), to provide site-specific data regarding how many nonauto-owning households are in the plume exposure pathway EPZ. The staff also asked the applicant to provide the methodology for determining the transport-dependent population. In addition, the staff asked the applicant to provide an estimate of the number of auto-owning residents versus transport-dependent residents, as well as information on the initiation/mobilization time distribution for transport-dependent population.

The applicant responded to RAI 13.3-20(d) in its submission to the NRC dated January 24, 2005. In its submission, the applicant provided estimates of the number of auto-owning and transport-dependent households by subarea for the EPZ, that are provided in Table B-1, "Estimates of Transport-Dependent Population in Clinton Station EPZ," of Attachment B, "Transport-Dependent Population," to the letter. The applicant also stated that Table B-1 summarizes the estimated number of transport-dependent households by subarea. The number of transport-dependent households in the EPZ is 302. (According to the data provided in Attachment B, the actual number is 301 instead of 302.) Most of these households are located in the city of Clinton (in Subarea 7). The 2000 census (SF-3) tabulates the number of vehicles per household; transport-dependent households were estimated based on the reported number of occupied households with no vehicles. The applicant used the census data on average household size and vehicles per household at the block group level to estimate values for each subarea. The 1993 study assumed the distribution of mobilization times for the transport-dependent population to be the same as for the general residential population. The ETEs for the general population in Clinton are, therefore, considered representative (or conservative) for transport-dependent residents.

Section 5.4 and Figure 5.1, "Notification/Departure/Mobilization Time Distributions," of the 1993 ETE describe the assumptions used for the evacuation preparation times and departure distributions. The applicant did not provide or discuss distribution times for the transport-

dependent population. The mobilization distribution for hospitals and nursing homes is considered to be the same as the distribution for the correctional facility. In RAI 13.3-20(d), the staff asked the applicant to provide a separate estimate of the time required to evacuate the transport-dependent population and information on the initiation/mobilization time distribution for transport-dependent population. The applicant responded to RAI 13.3-20(d) in its submission to the NRC dated January 24, 2005. In its submission, the applicant stated that the 1993 study assigned one vehicle per household for the entire residential population, including transport-dependent households. The 1993 study also assumed the distribution of mobilization times for the transport-dependent population to be the same as for the general residential population. The ETEs for the general population in Clinton are, therefore, considered representative (or conservative) for transport-dependent residents.

The NETVAC model is acceptable for analysis of traffic queue and identification of traffic delays. Figure 1.2 of the ETE indicates the traffic queue locations. In RAI 13.3-20(u), the staff asked the applicant to provide on-road travel and delay times, as well as the estimated number of cars evacuating, for each segment. The applicant responded to RAI 13.3-20(u) in its submission to the NRC dated January 24, 2005. In its submission, the applicant provided detailed listings of NETVAC output for two evacuation scenarios (winter day adverse weather and summer weekday fair weather) in Attachment C to the submittal. These listings indicate the queue length and flow ("departures") by time step for each link in the roadway network. The departures for exit nodes indicate the number of vehicles leaving the EPZ during each time step.

Figure 5.1 of the 1993 ETE presents the notification and mobilization time distributions. In RAI 13.3-20(v), the staff asked the applicant to provide the percentage of the population as a function of time, since the 1993 ETE does not include the additive reporting format for time estimates when probability distributions are used. The applicant responded to RAI 13.3-20(v) in its submission to the NRC dated January 24, 2005. In its submission, the applicant provided a graph displaying the number of vehicles evacuating as a function of time for the winter day adverse weather scenario as Figure C-1, "Predicted Rate of Vehicles Leaving the EPZ for Winter Day Adverse Weather," in Attachment C.

In RAI 13.3-16, the staff asked the applicant to provide a description of the method(s) used to confirm evacuation and the estimated time required for confirmation of evacuation. In response to RAI 13.3-16, the applicant stated that several methods are available for confirmation of evacuation. One method is random sample telephone surveys with success based on the number of positive responses (i.e., someone still at home) within the expected range. The time required for such confirmation is dependent on the number of persons available to attempt telephone contact and the number of homes to be sampled. These can be varied as desired, and, therefore, specific time estimates are not meaningful and have not been performed.

In RAI 13.3-14, the staff asked the applicant to provide the results of the review of the draft ETE study by State and local organizations. In response to RAI 13.3-14, the applicant stated that it conducted the 1993 ETE for the exclusive use of the State and local organizations in developing their respective emergency plans. The results of the review state that the draft ETE represents a reasonable and reliable approach to the guidance detailed in NUREG-0654/FEMA-REP-1. The results also state that, given the small population base within the EPZ (i.e., a 10-mile radius of CPS), the projected evacuation time frames are appropriate in

most instances and acceptable from an emergency preparedness and planning standpoint. The applicant included each comment resulting in an adaptation of the ETE in the final version of the ETE.

Figures 2.2-1 and 2.3-1 of the EGC ESP Emergency Plan show evacuation routes.

Figure 2.2-1 of the EGC ESP Emergency Plan identifies three relocation centers, including the Illinois State University field house, Monticello High School, and Richland Community College.

Maps A, "Clinton Traffic and Access Control Map," and C, "Clinton Sheltering and Evacuation Map," in IPRA Volume I show evacuation routes, sheltering and evacuation areas, and relocation centers. The local plan described in IPRA Volume VIII contains maps indicating the evacuation/sheltering areas and relocation centers. In RAI 13.3-13(e), the staff asked the applicant to provide references to maps in the local emergency plans that show evacuation routes. In response to RAI 13.3-13(e), the applicant stated that maps A through E in Section 1E of IPRA Volume VIII show the identified routes. In addition, Section 2J of IPRA Volume VIII generally discusses evacuation.

Figure 2.3-2 of the EGC ESP Emergency Plan is a map showing population distribution around the site with the information presented in sector format.

Section 1A, "General Information, Site Information," of IPRA Volume VIII states, "the 2000 permanent population within five miles of the CPS is 1,480...a projected total of 11,300 persons living between five and ten miles...," resulting in a total of 12,780 for the entire EPZ. Figure 1, "Clinton Station EPZ 2000 Permanent Residential Population Figures," in Section 1A of IPRA Volume VIII lists the total population as 13,268. In addition, Section 3C, "Shelter Guide, EPZ Population," of IPRA Volume VIII lists the EPZ population by township, that also totals 13,268.

Section 5.2.1, "Onsite," of the EGC ESP Emergency Plan states that, when an emergency is declared, reclassified, or terminated, an announcement will be made over the plant PA system or by other means. If the EGC ESP facility is a dual unit, the unaffected unit control room will be notified of the emergency declaration or change. The CPS control room will also be notified of the emergency declaration or change. These notifications will include the declaration of the emergency classification and response actions that site personnel are to take. In RAI 13.3-6, the staff asked the applicant to discuss the means that it will use for notifying transient and resident population in the owner-controlled area. In response to RAI 13.3-6, the applicant stated that Section 5.2, "Notification and Mobilization of Emergency Response Personnel," of the EGC ESP Emergency Plan does not address the means that will be used to notify transient and resident population in the owner-controlled area because this section is intended to address notification of the ERO personnel. However, the plant PA system and the siren systems would also notify the non-ERO personnel in the owner-controlled area, including transient and resident populations. Sections 5.5.1 and 10.1 of the EGC ESP Emergency Plan also discuss the means that will be used to notify transient and resident population, including sirens (both station alarms/siren system) and the alert notification system (ANS) and the EAS (i.e., local radio stations).

Section 1G, "Overview, Notification of the Public," of IPRA Volume I outlines the system for notification of the public. The primary system is an outdoor warning system (sirens), that

county officials activate. Public announcements made over mobile PA systems can supplement the sirens.

Section 2G(1)(b), "Clinton Power Station EPZ Siren Warning System," of IPRA Volume VIII states, "When appropriate, the DeWitt County/Clinton ESDA Coordinator will initiate the activation of the Clinton Power Station EPZ Siren Warning System." Section 2.1 references Annexes 2A through 2E and Chapter 3, "Sheltering Guide," for the notification of special facilities. Section 2P is the prescripted messages for mobile PA systems and local emergency information radio stations. Annexes 2A through 2F in IPRA Volume VIII are the checklist procedures for DeWitt County, the towns of Clinton, Weldon, and Wapella, DeWitt Village, and the support counties, respectively. The support counties do not have responsibility for notifying the EPZ population. The risk jurisdiction procedures specify the methods necessary for notifying special facilities. The DeWitt County sheriff's procedures call for mobile PA systems to be used if the sirens were to fail. The Clinton police department chief has a "mobile public address warning scripts" attachment to the procedures.

Section 2A of IPRA Volume VIII states that the notification of the public will be through the CPS EPZ prompt notification system and commercial radio. This prompt notification system consists of a siren warning system throughout the CPS EPZ.

Section 5C of IPRA Volume I describes the public education material distributed annually. The public information booklets are also used to identify persons who have special concerns (e.g., the mobility impaired) related to their ability to follow protective actions that may be recommended.

Attachment 1, "Department Assignments and Responsibilities," of Annex 2A in IPRA Volume VIII identifies the Health Department administrator as being responsible for notifying mobility-impaired individuals, assisting in the identification of nonambulatory patients, and determining the total number of patients that would require transportation. Attachment 5, "Clinton Power Station Special Facilities," of IPRA Volume VIII is a list of the agencies that are responsible for contacting the facilities. The list includes recreational areas, schools, industries, group homes for the developmentally disabled, medical facilities, day care centers, preschools, and motels.

Attachment 4, "Mobility Impaired Individuals Shelter-in-place, Evacuation and Return Instructions," of Annex 2B of IPRA Volume VIII is a town of Clinton checklist procedure for notifying mobility-impaired individuals if shelter-in-place has been recommended. The checklist also includes instructions for the evacuation and return of mobility-impaired individuals. The same attachment is included in Annex 2C, "Weldon Checklist Procedures," for the town of Weldon; Annex 2D, "Wapella Checklist Procedures," for the town of Wapella; and Annex 2E, "DeWitt Village Checklist Procedures," for DeWitt Village.

Section 3B, "Sheltering Guide, Protective Action Instructions," of IPRA Volume VIII is a set of instructions for the county jail, mobility-impaired population, population with special transportation requirements (both medical needs and transients), and school students.

Section 1E(4), "Overview, Basic Functions, Protective Actions," of IPRA Volume VIII states the following:

> When conditions warrant, IDNS will recommend that all facilities within the 10-mile EPZ that are incapable of timely evacuation (e.g., hospitals and nursing homes) administer potassium iodide (KI) to all individuals in the facility. IDNS will also recommend at that time that emergency workers in the EPZ take KI.… Details of these steps are described in IDNS SOPs.

Section 2O(3), "DeWitt County, Radiological Considerations, Potassium Iodide," of IPRA Volume VIII states, "The recommendation to administer KI to emergency personnel and immobile populations, if warranted, will normally be furnished to the DeWitt County DCO [dosimetry control officer] by the IEMA Liaison for dissemination to affected departments and municipalities." Section 1D in IPRA Volume VIII discusses the response for State agencies that have district or regional offices in the Clinton area. Annexes 2A though 2F in IPRA Volume VIII detail the procedures for implementing the recommendation to administer KI.

Section 1E(4) of IPRA Volume I states, "If evacuation is recommended, the public will be advised to leave their homes and go to congregate care shelters located in host communities where they may remain until it is safe to return to their homes." Section 1E(4) also discusses the proposed means of relocating the public.

Sections 2J and 3B, Annexes 2A through 2F, Appendix C, "Clinton Power Station EPZ Evacuation Guide," and Maps A, "Clinton Traffic and Access Control Map," and C, "Clinton Sheltering and Evacuation Map," of IPRA Volume VIII address the proposed means of relocation. Buses, ambulances, and sheriff's department vehicles will be used for the mobility-impaired population.

Appendix D, "Registration Centers and Congregate Care Shelters," to IPRA Volume VIII lists the registration centers and congregate care shelters. Map C indicates the location of the centers, that are more than 20 miles from the site. Section 1C of IPRA Volume VIII gives general information about the congregate care shelters, while Section 1E, "General Information, Maps," lists the maps. Appendix C to IPRA Volume VIII is a list of the host communities for each subarea and the primary evacuation routes.

In RAI 13.3-13(f), the staff requested that the applicant describe the State and local governments' concepts for using the traffic capacities of evacuation routes for implementing protective measures. In response to RAI 13.3-13(f), the applicant stated that the 1993 ETE (that does take into account the traffic capacities of the evacuation routes) is considered in the planning process when establishing the boundaries of the subareas. For instance, during an actual emergency, Illinois Department of Transportation (IDOT) representatives are available in the SEOC and SFCP to provide up-to-the-minute information on road repairs and traffic congestion. In addition, Section 3A(11), "Agency Responsibilities, State Agencies, Transportation," of IPRA Volume I discusses IDOT's responsibilities. The County Highway Department performs a similar function.

Section 1E(4) of IPRA Volume I states, "traffic and access control procedures are utilized to control traffic for all shelter-in-place and evacuation situations and to control access into sheltered and evacuated areas." Section 3A(2), "Agency Responsibilities, State Agencies, Illinois Commerce Commission," of IPRA Volume I details the Illinois Commerce Commission's responsibilities. Section 3A(6), "Agency Responsibilities, State Agencies, Illinois Department of

Military Affairs," of IPRA Volume I details the Illinois Department of Military Affairs' responsibilities. Section 3A(7), "Agency Responsibilities, State Agencies, Illinois Department of Natural Resources," of IPRA Volume I details the Illinois Department of Natural Resources' (IDNR) responsibilities.

Section 1D of IPRA Volume VIII details the regional response of the State agencies, primarily in the assistance of access control. Annexes 2A through 2F in IPRA Volume VIII provide details of the assignment of traffic/access control to the sheriff's department and the checklists associated with their activities. Appendix B, "Traffic and Access Control Guide," to IPRA Volume VIII lists the control posts and guidance (i.e., which direction to direct the traffic or prevent the traffic from flowing). Map A shows all of the points in the EPZ.

Section 3A(6) of IPRA Volume I includes information for the Illinois Department of Military Affairs and information concerning the use of wreckers and crews that can clear highways of debris and vehicles. Section 3A(7) of IPRA Volume I includes information for the IDNR, as well as information on assisting the evacuation by accommodating evacuees who intend to camp out or live in recreation vehicles on IDNR lands. Section 3A(11) of IPRA Volume I includes information for the IDOT and information concerning the use of department resources to control access to Federal and State highways.

Section 1D of IPRA Volume VIII details the regional response of the State agencies, primarily in the assistance of traffic and access control. Attachment 1 to Annex 2A in IPRA Volume I assigns the highway engineer the responsibility to ensure evacuation routes are clear of snow, obstacles, and debris. Annexes 2B through 2F to IPRA Volume I contain similar assignments in each of the towns, that should be included in the ESP application references.

In RAI 13.3-13(g), the staff asked the applicant to describe the State and local organizations' concepts for using ETEs when considering the evacuation of various sectors and distances. In response to RAI 13.3-13(g), the applicant stated that IPRA does not directly address such concepts. However, Section 3A(11) of IPRA Volume I discusses the IDOT responsibilities, that include ensuring the expeditious and safe movement of traffic. The County Highway Department performs a similar function. In addition, the planning process considers the 1993 ETE when establishing the boundaries of the subareas. For instance, during an actual emergency, IDOT representatives will be available in the SEOC and SFCP to provide up-to-the-minute information on road repairs and traffic congestion.

Section 1E(4) of IPRA Volume I states the following:

> Protective actions include shelter-in-place, evacuation, traffic and access control, and food, water, and milk control. Protective Action Guides (PAGs) are projected personnel radiation dose values at which certain protective actions should be implemented…. Plume exposure pathway PAGs are taken from the "EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents."

In RAI 13.3-13(h), the staff asked the applicant to describe the IDNS standard operating procedures (SOPs) relating to the basis for choosing a recommended protective action for the plume. In response to RAI 13.3-13(h), the applicant stated that Section 2J i of IPRA

Volume VIII provides this information. In addition, Section 1E(4) of IPRA Volume I discusses the basis for protective action recommendations.

Section 1E(5)(b), "Overview, Basic Functions, Parallel Actions, Radiation Exposure Control," of IPRA Volume I states the following:

> Evacuees arriving at designated monitoring and decontamination centers (generally co-located with primary congregate care facilities) will be monitored for radioactive contamination and decontaminated, as necessary. The monitoring and decontamination of evacuees, emergency workers and their vehicles will be conducted by personnel under IDNS supervision, utilizing portal and hand-held monitoring instruments and decontamination equipment provided by IDNS for that purpose. Medical treatment, if required for a contaminated individual, will be provided under the State's emergency medical services delivery system with monitoring and decontamination support provided by IDNS staff.

Section 3C(1), "Agency Responsibilities, Private Organizations, American Red Cross," of IPRA Volume I details the American Red Cross' responsibility to provide mass care services for the evacuees and emergency workers. Its services will be provided in accordance with its current policies and procedures (i.e., including a registration component).

Section 3A(8) of IPRA Volume I details the IDNS responsibilities, including the monitoring and decontamination of evacuees.

Section 2J, paragraph 3.f, of IPRA Volume VIII states, "the local chapter of the American Red Cross has the responsibility of registering all evacuees in congregate care shelters in the host areas. Standard record keeping methodology will be used in registering evacuees." Section 2J(4), "DeWitt County, Evacuation," paragraph 4, of IPRA Volume VIII states, "provisions will be made for monitoring and decontamination of evacuees at host area congregate care shelters."

13.3.3.11.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, IV.B, IV.D, and IV.E of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of the emergency plans

submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for the major features of emergency plans, including those that apply to major feature J, "Protective Response."

Major feature J calls for the applicant to describe protective actions within the 10-mile EPZ for the public and emergency workers, including evacuation routes, transportation, and handling of evacuees. The application should identify guidance for the choice of protective actions, consistent with Federal guidance, as well as the bases and mechanisms for recommending protective actions to State and local authorities. The application should describe each organization's concept for implementing protective actions and describe contacts and arrangements with offsite agencies. In addition, the applicant should prepare an ETE for the 10-mile EPZ.

13.3.3.11.3 Technical Evaluation

The staff finds the clarifications provided by the applicant in response to RAIs 13.3-20(e), (k), (l), (n), (q), (s) to be acceptable. The staff finds that the additional information related to the 1993 ETE for Clinton provided by the applicant in response to RAIs 13-3-20(m), (o), (r), (t) is consistent with the guidance in Supplement 2 and is therefore acceptable. The staff finds the additional data and information provided by the applicant in response to RAIs 13.3-20(d), (e), (f), (g), (h), (u), (v), and RAIs 13.3-6, 13.3-8, 13.3-14, and 13.3-16 are also consistent with the guidance in Supplement 2 and are, therefore, acceptable.

The application adequately describes the evacuation routes and transportation for onsite individuals to suitable offsite locations, including alternatives for inclement weather, high traffic density, and specific radiological conditions.

The application describes a mechanism for recommending protective actions to the appropriate State and local authorities, in accordance with EPA 400. The applicant references RTM-96. However, the NRC developed this manual for use in providing licensee oversight in the event of an emergency. Therefore, the staff did not consider the applicant's reference to RTM-96 in its review.

The application contains a vicinity map showing the plant location, along with a detailed map of the plume exposure pathway EPZ. The map is legible and identifies transportation networks, topographical features, and political boundaries.

The application includes all assumptions used in the analysis, that are automobile occupancy factors, the method of determining roadway capacities, and the method of estimating populations.

The application describes the method of analyzing the evacuation times and the algorithm used and provides a source for obtaining further information or documentation. NETVAC is an adequate model for use in ETE development. The applicant provides input files that are consistent with the ETE statements on evacuation routing and traffic loading.

The number of permanent residents is estimated using the U.S. Census data and other reliable data, adjusted as necessary, for growth. These population data are translated into two subgroups, those using autos and those without autos. The number of vehicles used by permanent residents is estimated using an appropriate auto occupancy factor. Special attention is given to those households not having automobiles. The public transport-dependent population is considered as a special case.

Estimates of transient populations are developed using local data such as peak tourist volumes and employment data for large factories. This population segment, along with the permanent population subgroup using automobiles, constitutes the general population group for which an ETE is made.

An estimate for the special facility population group is done on an institution-by-institution basis. The means of transportation are described. Schools are also included in the special facility population segment.

Although the application does not provide all combinations of radial sectors and ring distances as specified in Appendix 4, "Evacuation Time Estimates within the Plume Exposure Pathway Emergency Planning Zone," to Revision 1 of NUREG-0654/FEMA-REP-1, there are sufficient data to be representative of the guidance. Operationally, the subareas, not radial sectors and rings, are used for protective action decisionmaking.

The application adequately describes the different combinations of areas (and zones) used in the ETEs, including the inner area (and inner zone). Hence, the ETE for the outer areas (zones) will include the simultaneous evacuation of the adjacent inner areas (zones).

The subareas described in the application, that require ETEs, encompass the entire area within the plume exposure EPZ. The boundaries of the subareas are based upon the same factors as the EPZ (i.e., demography, topography, land characteristics, access routes, and local jurisdictions). To the extent practical, the sector boundaries do not divide densely populated areas. Special facilities are also noted on these maps, to the extent that their locations can be geographically specified. Populations are provided by evacuation areas. Separate totals are provided for permanent residents, transient populations, and special facility population.

Tables 6.1, 6.2, 6.3, and 6.4 in the application provide ETE data following a keyhole approach with a simultaneous evacuation of the 2-mile radius and combinations of three sectors for each condition. This approach is adequate for determining ETEs.

The application provides a map showing only those roads used as primary evacuation routes. Each segment of the network is numbered for reference. The sector and quadrant boundaries are also indicated.

A table is provided indicating all the evacuation route segments and their characteristics, including capacity. The characteristics of a segment are given for the narrowest section (or bottleneck), if the roadway is not uniform in the number of lanes throughout the segment.

Each of the evacuation time components is presented in the application along with the total evacuation time. The analysis considered both normal and adverse conditions. The applicant

identified the adverse frequency used in the 1993 ETE, and this condition is severe enough to define the sensitivity of the analysis to the selected events.

The application describes critical assumptions that underlie the time estimates (e.g., day versus night, workday versus weekend, peak transient versus off-peak transient, and evacuation on adjacent sectors versus nonevacuation). The relative significance of alternative assumptions is addressed, especially with regard to time-dependent traffic loading of the evacuation roadway network segments.

The application specifies the method of computing total evacuation time. The analysis uses distribution functions and provides estimates of the likelihood that each stage in the evacuation sequence will be accomplished in a given period of time. The applicant developed distribution functions for notification of the various categories of the evacuee population. There are separate distributions for auto-owning households, school populations, and transit-dependent populations.

On-road travel and delay times are calculated. An estimate of the time required to evacuate that segment of the nonauto-owning population, that is dependent upon public transport, is made in a similar manner to that used for the auto-owning population. This estimate includes consideration of special services that might be initiated to serve this population subgroup.

Estimates for special facilities are made with consideration for the means of mobilization of equipment and manpower to aid in evacuation. This includes the need for designated persons to delay their evacuation to shut down industrial facilities. Each special facility is treated on an individual basis. Weather conditions and time of day conditions are considered. Consideration is given to the impact of peak populations, including behavioral aspects.

The 1993 ETE summarizes the maximum times for each component and for each sector. The percentage of the population as a function of time is reported.

The time required for confirmation of evacuation is estimated. Specific recommendations for actions that could be taken to significantly improve evacuation time are given. A review of the draft ETE submittal by the principal (State and local) organizations involved in emergency response for the site was solicited, and comments resulting from the review were included in the final submittal.

The application includes, in the EGC ESP Emergency Plan and State and local plans, maps showing evacuation routes, evacuation areas, shelter areas, and relocation centers in host areas. The application includes maps identifying population distribution around the site by evacuation subareas and describes the means for notifying all segments of the transient and resident population.

State and local plans contain the following:

- a proposed means for protecting those persons whose mobility may be impaired

- a proposed means for the use of radioprotective drugs for emergency workers and institutionalized persons within the plume exposure EPZ whose immediate evacuation may be infeasible or very difficult

- a proposed means of relocation

- a potential relocation center in host areas that are at least 5 miles, and preferably 10 miles, beyond the boundaries of the plume exposure EPZ

- control and access to evacuated areas and organization responsibilities for such control

- an identification of, and means for, dealing with potential impediments to the use of evacuation routes and contingency measures

In Open Item 13.3-4, the staff requested that the applicant provide additional information related to the 1993 ETE, as requested in RAIs 13.3-20(k) through (v), was needed. In addition, the staff noted that the applicant had not adequately addressed the estimated time required for confirmation of evacuation (RAI 13.3-16).

In its submission to the NRC dated April 4, 2005, the applicant responded to Open Item 13.3-4. The applicant also stated that it had submitted a response to RAIs 13.3-20(k) through (v) to the NRC on January 24, 2005. The applicant estimated the time required to confirm evacuation based on visual confirmation by ground vehicles, a specific method included in NUREG-0654/FEMA-REP-1. The applicant then calculated the evacuation confirmation times as the time required for emergency vehicles to conduct a "windshield survey" of the evacuated subareas, road by road, at an average travel speed of 15 mph. U.S. Census TIGER (Topologically Integrated Geographic Encoding and Referencing system) files determine the miles of roadway in each subarea. Based on discussions with IEMA, the applicant assumed that confirmation of evacuation would be performed using 25 vehicles. (More than 100 traffic and access control points have been designated for the EPZ and subareas. As the evacuation nears completion, some of the resources dedicated to traffic management will be available to perform other duties, such as evacuation confirmation.) The table titled, "Estimated Confirmation Times for EGC ESP EPZ," in the 1993 ETE summarizes the miles of roadway in each protective action recommendation evacuation zone and the estimated times for evacuation confirmation (rounded to the nearest 5 minutes). Based on the additional information related to the 1993 ETE provided in the applicant's responses to RAIs 13.3-20(k) through (v) and the estimated time required for confirmation of evacuation, the staff considered Open Item 13.3-4 to be resolved.

In Open Item 13.3-5, the staff requested that the applicant provide additional information concerning the protective measures identified in State and local emergency plans, including a description of the State and local governments' approach to using the traffic capacities of evacuation routes for implementing protective measures, a description of the State and local organizations' approach to using ETEs when considering the evacuation of various sectors and distances, and a description of the IDNS SOPs that serve as the basis for choosing a recommended protective action for the plume exposure pathway, as requested in RAIs 13.3-13(e) through (h). The applicant provided acceptable responses to RAIs 13.3-13(e) through (h) as discussed above.

Another aspect of Open Item 13.3-5 involved the adequacy of the information provided by the applicant, in its response to RAI 13.3-14, related to the review of the draft ETE submitted by the State and local organizations involved in emergency response for the site. In its submission to the NRC dated April 4, 2005, the applicant responded to this aspect of Open Item 13.3-5. In its submission, the applicant stated that the highway traffic capacities identified in the ETE are considered a tool for developing the State and local plans and procedures, but they are not a critical consideration during protective action decisionmaking. The State bases its protective action recommendations to localities primarily on reactor conditions and predictive modeling, with the aim of implementing preemptive protective actions before any radioactive release occurs. Thus, the projected timeframe (i.e., the ETE) for a given scenario is of less concern than the actual environmental conditions that might exist at the time of the emergency. The emergency plans and public information materials predesignate evacuation routes taking into account the various scenarios for wind direction and subarea designations.

The applicant also stated that there are provisions for adjusting the evacuation routes during an actual emergency or an exercise. For example, IPRA, Volume VIII, Chapter 2, Section J, indicates that the specific evacuation routes are determined through coordination of the DeWitt County EOC and IEMA; local officials then arrange the traffic and access control posts as discussed in subsections J.3.b and J.3.d. Under actual (and exercise) emergency conditions, the State and localities adjust the available and desirable routes to the current circumstances, using traffic and access control points to divert evacuees to the appropriate routes so as to avoid traffic moving within and across the plume path and to avoid impediments. These techniques are demonstrated during FEMA-evaluated exercises. There are no specific directions or procedures for these techniques because the conditions under which the action would be taken are dictated by circumstances and the knowledge of the local officials of the road networks in their communities.

The original response to RAI 13.3-14 indicates that “each comment resulting in an adaptation of the ETE was appropriately included in the final version of the ETE.” The applicant also stated that it intended this statement to reflect that it had provided the draft ETE to the State organizations involved in emergency response for the site for comment, that the State provided comments on the draft ETE, and that the applicant had appropriately incorporated these comments into the final ETE delivered to the State.

Based on the additional information related to protective measures in State and local emergency plans and the review of the draft ETE by local and State organizations involved in emergency response for the site in its response to RAI 13.3-14, the staff considers Open Item 13.3-5 to be resolved.

Volumes I and VIII of the IPRA describe the means for registering and monitoring evacuees at reception centers in host areas.

13.3.3.11.4 Conclusions

As discussed above, the applicant described a range of protective actions for the plume exposure pathway EPZ for both the public and emergency workers, including guidance for the choice of protective actions that are consistent with Federal guidance and protective actions for the ingestion exposure pathway EPZ. Based on its review, the staff concludes that the

proposed major feature J is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, IV.B, IV.D, and IV.E of Appendix E to10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for accident assessment, as set forth above. The applicant provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.12 Radiological Exposure Control (Major Feature K)

13.3.3.12.1 Technical Information in the Application

Section 11.1, "Emergency Exposure Guidance," of the EGC ESP Emergency Plan states that, in emergency situations, workers may receive exposure under a variety of circumstances to assure safety and protection of others and of valuable property. These exposures can be justified if the maximum risks or costs to others that are avoided by their actions outweigh the risks that the workers are subjected to. Table 11.1-1, "Emergency Exposure Guidance," of the EGC ESP Emergency Plan provides the emergency worker dose limits. The emergency director must authorize dose extensions beyond the limits imposed by 10 CFR Part 20, "Standards for Protection against Radiation." Section 11.2, "Emergency Radiation Protection Program," of the EGC ESP Emergency Plan describes guidance on dose limits during an emergency.

Section 11.1 of the EGC ESP Emergency Plan states that the station emergency director shall have the nondelegable responsibility for authorizing personnel exposure levels under emergency conditions in accordance with the EPA emergency worker and lifesaving protective action guides (PAGs). Whenever possible, the concurrence of the radiation protection manager (RPM) should be secured before individuals are exposed to dose equivalents beyond the EPA 400 lower limit. Section 11.2 of the EGC ESP Emergency Plan describes an onsite radiation protection program to be implemented during an emergency.

Section 11.2.1, "Personnel Monitoring," of the EGC ESP Emergency Plan describes the use of thermoluminescent dosimetry (TLD) and personnel self-reading dosimeters capable of measuring expected exposures to monitor emergency workers. The capability exists to process TLDs 24 hours per day in emergencies, if necessary.

Section 1E(5)(b) of IPRA Volume I states that IDNS is responsible for all aspects of radiation exposure control. The RAFT exposure control officer (ECO) is responsible for protecting emergency workers from excessive exposure to ionizing radiation. The ECO is also responsible for maintaining a full legal record of exposure. Detailed monitoring of emergency workers is accomplished through the use of dosimetry, bioassay, and whole body counting, as warranted. The ECO will issue dosimetry and instructions for use to emergency workers. At the end of each day's assignment, State emergency workers will turn in their dosimetry to their ECO for processing.

Sections 2O(1), "DeWitt County, Radiological Considerations, Dosimetry Control," and 1D and Annexes 2A through 2F of IPRA Volume VIII state that the local dosimetry control officer (DCO) issues a direct-read dosimeter, a TLD, a bottle of KI, and instructions for use of dosimetry and

KI to all emergency workers. Workers are instructed to read their dosimeters every 30 minutes, unless otherwise directed. Emergency workers record their exposure on a radiation exposure record. Emergency workers are instructed to report an exposure of 3 roentgen R) to their responsible DCO. The DCO will contact the IEMA liaison at the DeWitt County EOC for exposure control guidance. Section 1E(4) of IPRA Volume I states that the 3-R reporting limit may be adjusted downward if conditions warrant, based on actual or projected doses under emergency conditions.

Annexes 2A through 2F in IPRA Volume VIII require that, as instructed or at the end of their assigned mission, emergency workers turn in their dosimetry and exposure control logs to the DCO. Section 2O(1) of IRPA Volume VIII states that TLDs and radiation exposure records should be returned to IEMA for processing.

In addition, the RPMs (as appropriate) will maintain emergency worker dose records in accordance with future emergency and radiological protection procedures. Emergency workers will be instructed to read their dosimeters frequently, and TLDs may be processed with increased periodicity.

Section 1E(5)(b) of IPRA Volume I states that the monitoring of the State of Illinois emergency workers is accomplished through the use of dosimetry, bioassay, and whole-body counting, as warranted. Section 3A(8) of IPRA Volume I states that, to perform tasks associated with the radiological response to a nuclear accident, IDNS maintains a comprehensive inventory of appropriate equipment, and that all emergency response equipment and instruments are inspected, inventoried, and operationally checked once each quarter. In RAI 13.3-13(i), the staff asked the applicant to describe how the State will acquire and distribute dosimeters, both direct-reading and permanent record devices. In response to RAI 13.3-13(i), the applicant stated that Sections 2H and 2O(1) in IPRA Volume VIII describe how the State will acquire and distribute dosimeters. In addition, Section 3A of IPRA Volume I provides information regarding dosimetry for State agency personnel who have field assignments, such as Illinois State police (ISP), IDNR, and IDOT. Section 1D of IPRA Volume VIII also discusses dosimetry for the ISP, IDNR, and IDOT districts and regions specific to the CPS.

Section 2O(1) of IPRA Volume VIII states that IEMA distributes dosimetry equipment and forms to DCOs and then receives the TLDs and radiation exposure records after use.

Sections 1E(4) and 3A(8) of IPRA Volume I state that IDNS is responsible for all aspects of radiation exposure control. The RAFT ECO is responsible for protecting emergency workers from excessive exposure to ionizing radiation. IDNS has adopted the exposure limits for emergency workers found in EPA 400 (identified in the following table). Section 2O(2), “DeWitt County, Radiation Exposure Control,” of IPRA Volume VIII states that the following exposure limits are observed for all emergency workers within the State of Illinois:

13.3-1 State of Illinois Dose Limits for Emergency Workers

Dose Limit (Rem)	Dose Limit Approved for:
5	All activities
10	Protection of valuable property
25	Lifesaving or protection of large populations
>25	Lifesaving or protection of large populations, only on a voluntary basis to persons fully aware of the risks involved

In addition, for emergency worker exposure control purposes, IEMA has established a 3-R notification limit. If an emergency worker's exposure approaches 3 R, he or she must report to his or her DCO or ECO. The DCO/ECO will expeditiously notify IEMA, that will provide further instructions in accordance with SOPs.

Section 11.2.3, "Contamination and Decontamination," of the EGC ESP Emergency Plan states that, during emergency conditions, normal plant contamination control criteria will be adhered to as much as possible. However, these limits may be modified by the applicable RPM in accordance with existing radiological protection procedures, should conditions warrant.

Section 1E(5)(b) and Section 2O(4), "DeWitt County, Decontamination," of IPRA Volume VIII state that evacuees and emergency workers will be monitored for radioactive contamination and, if necessary, decontaminated at designated congregate care facilities. Section 3A(8) states that RAFT monitoring and decontamination teams are responsible for directing decontamination activities and for the radiation monitoring of emergency personnel, vehicles, and equipment. They will ensure that procedures are followed to avoid the unwarranted spread of radioactive contamination and will coordinate with other agencies, as necessary.

Section 1E(5)(b) of IPRA Volume 1 states that monitoring will be performed utilizing portal and hand-held monitoring instruments. The IDNS provides decontamination equipment. In RAI 13.3-13(j), the staff asked the applicant to describe the State and local organization-specific action levels for determining the need for decontamination of emergency workers, equipment and vehicles, and the general public and their possessions. In response to RAI 13.3-13(j), the applicant stated that Section 2O(4) of IPRA Volume VIII provides such a description. Section 1E(4) of IPRA Volume I also provides a general statement about decontamination.

Section 11.2.5, "Decontamination of Relocated Personnel," of the EGC ESP Emergency Plan states that nonessential onsite personnel may be evacuated to an offsite relocation center or assembly area. Radiological control personnel at that location will monitor evacuees and determine the need for decontamination. Existing and temporary facilities to limit contamination and exposure will be utilized and established at the site as necessary during an emergency situation. In the event that decontamination of evacuees is not possible locally, personnel will be sent to designated locations for monitoring and decontamination. Provisions for extra clothing will be made, and suitable decontaminates will be available for the expected type of contamination, particularly with regard to skin contamination.

Section 11.2.3.1, “Contamination Control Means,” of the EGC ESP Emergency Plan states that personnel found contaminated will normally be attended to at decontamination areas located on site. Temporary decontamination areas can also be set up inside at various locations. Decontamination showers and supplies will be provided on site with additional personnel decontamination equipment and capabilities. Shower and sink drains in the controlled area will be routed to the miscellaneous waste processing system, where the liquid will be processed and monitored before discharge. Potentially contaminated emergency vehicles will be surveyed before they are allowed to leave the EGC ESP facility or offsite assembly area. If the survey area is not suitable for monitoring and decontamination because of radiological or other concerns, vehicles will be surveyed at an alternate location. Section 11.2.4 of the EGC ESP Emergency Plan, “Contamination Control Measures,” also states that, if personnel leaving contaminated areas are found contaminated above acceptable levels, they will be decontaminated in accordance with future EGC ESP facility procedures. If normal decontamination procedures do not reduce personnel contamination to acceptable levels, the case will be referred to a competent medical authority.

Supplies, instruments, and equipment that are in contaminated areas or have been brought into contaminated areas will be monitored before removal. If found contaminated, they will be decontaminated using normal EGC ESP facility decontamination techniques or they may be disposed of as radioactive waste.

Sections 11.2.3.1 and 11.2.4 of the EGC ESP Emergency Plan discuss the means for decontaminating personnel, vehicles, supplies, instruments, and equipment. In RAI 13.3-9, the staff asked the applicant to describe the means for decontaminating personnel wounds. In response to RAI 13.3-9, the applicant stated that the means for decontaminating personnel wounds will be wound specific and determined on a case-by-case basis. Life-threatening wounds will be decontaminated at the John Warner Hospital’s “hot” emergency room by trained medical personnel with the support of station radiological control personnel. Nonlife-threatening wounds will be decontaminated by radiological control personnel, with the assistance of emergency response personnel (e.g., emergency medical technicians or ambulance personnel, using procedures for decontamination of personnel with skin or clothing contamination.

In RAI 13.3-13(k), the staff asked the applicant to describe the State and local organizations’ means for radiological decontamination of emergency personnel wounds, supplies, instruments, and equipment. In response to RAI 13.3-13(k), the applicant stated that Section 2O(4) of IPRA Volume VIII describes the State and local organizations’ means for radiological decontamination of emergency personnel wounds, supplies, instruments, and equipment. This section of IPRA also states that such personnel will be transported to a health facility. Section 1E(4) of IPRA Volume I also provides a general statement about decontamination.

13.3.3.12.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant’s emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50.

The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, IV.B, and IV.E of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for the major features of emergency plans, including those that apply to major feature K, “Radiological Exposure Control.”

Major feature K calls for the applicant to describe an onsite radiation protection program and the means for determining and controlling radiological exposures to emergency workers and volunteers (on site and off site), including a decision chain for authorizing exposures in excess of EPA dose limits. The application should also describe specific action levels and the means for radiological decontamination of personnel (including wounds), vehicles, equipment, supplies, and possessions.

13.3.3.12.3 Technical Evaluation

The staff finds the applicant provided sufficient information regarding decontaminating wounds, supplies, instruments, and equipment in response to RAIs 13.3-9 and 13.3-13(k) and is, therefore, acceptable.

In the EGC ESP Emergency Plan, the applicant adequately described guidance for dose limits appropriate to removing injured persons, undertaking corrective actions, performing assessment actions, performing field radiological measurements in the plume EPZ, providing first aid, performing personnel decontamination, providing ambulance service, and providing medical treatment services.

In the EGC ESP Emergency Plan, the applicant described an onsite radiation protection program to be implemented during emergencies, including methods to implement dose limits. The applicant used the general guidance on dose limits for workers performing emergency services found in EPA 400.

The EGC ESP Emergency Plan and IPRA Volumes I and VIII describe how each organization will determine the doses received by emergency personnel involved in any nuclear accident, including volunteers.

The EGC ESP Emergency Plan and the State and local plans describe a decision chain for each organization for authorizing emergency workers to incur exposures in excess of the EPA dose limits for workers performing emergency services.

The EGC ESP Emergency Plan describes how the applicant will acquire and distribute dosimeters, both direct-reading and permanent record devices.

However, the staff identified in Open Item 13.3-6 that the applicant's responses to RAIs 13.3-13(i) through (k) did not provide additional information about how the State will acquire and distribute dosimeters, both direct-reading and permanent record devices. The applicant also did not provide additional information related to the State and local organization-specific action levels for determining the need for decontamination of emergency workers, equipment and vehicles, and the general public and their possessions. Further, the applicant did not describe local and State organizations' means for radiological decontamination of emergency personnel wounds, supplies, instruments, and equipment. In its submission to the NRC dated April 26, 2005, the applicant responded to Open Item 13.3-6. The applicant stated that the State (IEMA) maintains a statewide inventory of approximately 9000 direct-read dosimeters and approximately 9000 TLDs (for permanent record). Over 90 percent of this inventory is prepositioned (predistributed) with the response organizations identified in the plan for distribution to emergency workers when an emergency is declared. For example, dosimetry control actions for various groups are described under the "Parallel Actions" discussions in IPRA, Volume VIII, Sections D.1, D.2, D.3, D.4, D.5, and O.1. Included with the dosimetry is an individual 14-d supply of KI. The dosimetry is field tested and calibrated in accordance with FEMA guidance and replaced when necessary. IEMA has the capability to read the TLDs in the field and in-house for an initial dose determination, and has established a contract with the supplier to read the devices for a certified record.

The contamination "action level" is defined in IEMA procedures as "twice-background." The State reserves the right to make case-by-case determinations on whether equipment, vehicles, and personal possessions can be released with contamination levels above the twice-background threshold (e.g., critical emergency equipment, fixed contamination).

The means for radiological decontamination are also embodied in IEMA's operational procedures and are part of the process associated with monitoring evacuees and emergency workers. Evacuees are directed to reception centers where monitoring occurs either by or under the supervision of trained IEMA staff. These dedicated facilities have decontamination showers and designated areas outside for the decontamination of vehicles and other equipment. These same facilities will be available for use by emergency workers. (Note: The radiological accident field teams' personnel dispatched to take plume measurements and collect environmental samples return to their independent operations center for monitoring and, if necessary, decontamination.)

The reference to "wounds" in the staff's question relates to the availability of medical services. The standing procedures provide that anyone (evacuee or emergency worker) injured and potentially contaminated will be directed to a designed hospital for treatment and their wounds handled in accordance with accepted contamination control protocols. If the patient originates at a reception center, IEMA will provide monitoring personnel to accompany the individual to the treatment facility. In any instance that a patient self-presents and the hospital is concerned about contamination issues, hospital staff can request assistance from IEMA.

The Department of Nuclear Safety Standard Operating Procedures 4-SOP-29 and 4-SOP-30 provide IEMA functional instructions for establishing and operating an evacuee and emergency worker monitoring and decontamination center and for dealing with potentially contaminated vehicles and other equipment.

Based upon the additional information provided in the applicant's responses to RAIs 13.3-13(i) through (k), that are related to how the State will acquire and distribute dosimeters (both direct-reading and permanent record devices); the State and local organization-specific action levels for determining the need for decontamination of emergency workers, equipment and vehicles, and the general public and their possessions, as well as State and local organizations' means for radiological decontamination of emergency personnel wounds, supplies, instruments, and equipment, the staff considers Open Item 13.3-6 to be resolved.

13.3.3.12.4 Conclusions

As discussed above, the applicant described the means for controlling radiological exposures to emergency workers in an emergency. Based on its review, the staff concludes that the proposed major feature K is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, IV.B, and IV.E of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for radiological exposure control, as set forth above. The applicant provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.13 Medical and Public Health Support (Major Feature L)

13.3.3.13.1 Technical Information in the Application

Section 12.1 of the EGC ESP Emergency Plan states that arrangements, confirmed by letter of agreement every two or more calendar years, will also be maintained by the corporate office of a qualified major medical facility that is well equipped and staffed for dealing with persons having radiation injuries. John Warner Hospital in Clinton, Illinois, will be the primary supporting medical facility for injured persons who are contaminated with radioactivity. Whenever necessary, such persons will be transferred to this major hospital facility for extended specialized treatment. Section 12.1 also states that the applicant will have medical consultants available to the hospital staff who will provide the direction of the special care necessary for the treatment of persons having radiation injuries, as described in Section 3.4.5 of the EGC ESP Emergency Plan.

Section 12.3, "Medical Services Facilities," of the EGC ESP Emergency Plan states that, since radiation injuries involve specialized diagnosis and treatment, EGC corporate emergency preparedness personnel maintain an agreement with the REAC/TS. Section 3.4.5 of the EGC ESP Emergency Plan provides additional information related to REAC/TS. REAC/TS is a radiological emergency response team of physicians, nurses, health physicists, and necessary support personnel on 24-hour call to provide consultative or direct medical or radiological assistance at the REAC/TS facility or at the accident site. Specifically, the team has expertise in and is equipped to conduct medical and radiological triage; decontamination procedures and therapies for external contamination and internally deposited radionuclides, including chelation therapy; diagnostic and prognostic assessments of radiation-induced injuries; and radiation dose estimates by methods that include cytogenetic analysis, bioassay, and in vivo counting.

Sections 1H, “Overview, Medical Services,” and 1E(5)(e), “Basic Functions, Parallel Actions, Emergency Medical Services,” of IPRA Volume I explain that hospitals statewide are provided with a telephone number, maintained on a 24-hour basis by IDNS, that medical personnel can use to obtain advice or technical assistance. In accordance with the Illinois Emergency Medical Services Act, an individual who may be contaminated as a result of a reactor accident will be transported to an assigned medical treatment facility.

Section 2A of IPRA Volume VIII states that IEMA and IDNS maintain a listing of hospitals with specific capabilities to treat radiologically contaminated and injured individuals. The IDNS maintains a listing of all medical facilities within the State with capabilities related to the evaluation of radioactive exposure and uptake, including those hospitals under contract to the nuclear utilities for the treatment of onsite injured and exposed or contaminated personnel.

13.3.3.13.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant’s emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.C, and IV.E of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for major features of emergency plans, including those that apply to major feature L, “Medical and Public Health Support.”

Major feature L calls for the applicant to describe contacts and arrangements made for medical services for contaminated, injured individuals, as well as to develop lists indicating the locations and capabilities of emergency medical services facilities.

13.3.3.13.3 Technical Evaluation

In the EGC ESP Emergency Plan and State and local plans, the applicant described the contacts and arrangements made for local and backup hospital and medical services having the capability to evaluate radiation exposure and uptake.

The State plan notes that lists exist to indicate the location of public, private, and military hospitals and other emergency medical services facilities within the State, or contiguous States, that are considered capable of providing medical support for any contaminated, injured

individual. The listing includes the name, location, type of facility and capacity, and any special radiological capabilities. Contacts and arrangements made in developing these lists are described.

13.3.3.13.4 Conclusions

As discussed above, the applicant described the contacts and arrangements for medical services for contaminated, injured individuals, including local and backup hospital and medical services having the capability for evaluating radiation exposure and uptake. Based on its review, the staff concludes that the proposed major feature L is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.C, and IV.E of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for medical and public health support, as set forth above. The applicant provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.14 Radiological Emergency Response Training (Major Feature O)

13.3.3.14.1 Technical Information in the Application

Section 15.1, "Assurance of Training," of the EGC ESP Emergency Plan states that the emergency plan training program will assure the training, qualification, and requalification of individuals who may be called upon for assistance during an emergency. In addition, lesson plans and study guides will describe specific emergency response task training, prepared for each emergency plan position. The ERO training program will contain the lesson plans, study guides, and written tests. Responsibilities for implementing the training program will be contained in the EGC ESP facility procedures. Section 15.5, "General, Initial, and Annual Training Program Maintenance," of the EGC ESP Emergency Plan describes the responsibilities for the training and retraining of the ERO personnel, as well as their initial qualification and requalification. Section 15.1 outlines the training to be provided to support organizations that may be called upon to provide assistance in the event of an emergency. Section 15.4, "Emergency Response Organization Training Program," of the EGC ESP Emergency Plan states that the applicant's ERO personnel who will be responsible for implementing this plan will receive specialized training. Section 15.2, "Functional Training of the Emergency Response Organization," of the EGC ESP Emergency Plan states that, in addition to general and specialized classroom training, members of the applicant's ERO will receive periodic performance-based emergency response training.

Section 15.4.1, "Directors, Managers, and Coordinators within the Facility and Corporate Emergency Response Organization," of the EGC ESP Emergency Plan describes the specialized internal training that will be provided for directors, managers, and coordinators within the facility and corporate ERO.

Section 6B, "Preparedness Functions," of IPRA Volume I and Section 2L, "DeWitt County Training," of IPRA Volume VIII explain that all State and local emergency personnel receive annual initial and refresher training provided jointly by IEMA and IDNS. The training is

comprehensive and covers the operational and technical aspects of IPRA, basics of radiological response, and the specific duties that each organization and individual are responsible for. The training program includes command and coordination, protective actions, and parallel actions.

Section 15.4.2, "Personnel Responsible for Accident Assessment," of the EGC ESP Emergency Plan describes the specialized internal training that will be provided for personnel responsible for accident assessment.

Section 6B of IPRA Volume I and Section 2L of IPRA Volume VIII explain that, at the State level, IDNS performs accident assessments and is responsible for conducting a confirmatory, independent assessment of the accident. State accident assessment personnel work out of the IDNS Radiological Emergency Assessment Center located in Springfield, Illinois. Annual initial and refresher training to all staff is provided on basic radiation principles, detection, and the IPRA concept of operations.

Section 15.4.3, "Radiological Monitoring Teams and Radiological Analysis Personnel," of the EGC ESP Emergency Plan describes the specialized internal training that will be provided for radiological monitoring teams and radiological analysis personnel.

Section 6B of IPRA Volume I and Section 2L of IPRA Volume VIII state that the RAFT performs the field radiological functions of confirmatory accident assessment, monitoring, and decontamination. Upon request, ISP District 6 and 8 will monitor for possible radioactive release during an incident at CPS before the arrival of the RAFT. In a joint effort, IEMA and IDNS provide annual initial and refresher training to all State and local personnel.

Section 15.4.4, "Police, Security, and Fire Fighting Personnel," of the EGC ESP Emergency Plan describes the specialized internal training that will be provided for security and firefighting personnel. Section 15.4.4.1, "Local Police and Fire Fighting Personnel," of the EGC ESP Emergency Plan states that local police and fire departments will be invited to receive training, as outlined in Section 15.1.

Section 6B of IPRA Volume I and Section 2L of IPRA Volume VIII state that all State, local police, security, and firefighting personnel receive the Annual Emergency Response Training Program provided by IEMA. The training focuses on the operational aspects of the plan and addresses the unique radiological emergency response skills that workers would not normally acquire as part of their usual job. The training also addresses subjects of a technical nature such as KI, contamination/decontamination, and a hands-on practical application phase covering the operation and maintenance of dosimetry equipment.

Section 15.3, "First Aid Response," of the EGC ESP Emergency Plan describes the specialized internal training that will be provided for first aid and rescue personnel.

Section 6B of IPRA Volume I and Section 2L of IPRA Volume VIII state that all first aid and rescue team personnel receive the Annual Emergency Response Training Program provided by IEMA. The training focuses on the operational aspects of the plan and addresses the unique radiological emergency response skills that workers would not normally acquire as part of their usual job. The training also addresses subjects of a technical nature such as KI,

contamination/decontamination, and a hands-on practical application phase covering operation and maintenance of dosimetry equipment.

Section 15.4.7, “Local Support Service Personnel,” of the EGC ESP Emergency Plan states that local support service personnel providing assistance during an emergency will be invited to receive the training, as outlined in Section 15.1 of the EGC ESP Emergency Plan.

Section 6B of IPRA Volume I and Section 2L in IPRA Volume VIII state that all local support services personnel receive the Annual Emergency Response Training Program provided by IEMA. The training focuses on the operational aspects of the plan and addresses the unique radiological emergency response skills that workers would not normally acquire as part of their usual job. The training also addresses subjects of a technical nature such as KI, contamination/decontamination, and a hands-on practical application phase covering operation and maintenance of dosimetry equipment.

Section 15.4.8, “Medical Support Personnel,” of the EGC ESP Emergency Plan states that onsite medical service personnel will receive specialized training in the handling of contaminated victims and hospital interface. In addition, offsite ambulance and hospital personnel will be offered annual training in accordance with the program described in Section 15.1 of the EGC ESP Emergency Plan.

Section 6B of IPRA Volume I and Section 2L of IPRA Volume VIII state that, in accordance with the guidance of Revision 1 of NUREG-0654/FEMA-REP-1, IDNS maintains a listing of all medical facilities within the State with capabilities related to the evaluation of radioactive exposure and uptake, including those hospitals under contract to the nuclear utilities for the evaluation and treatment of onsite injured and exposed or contaminated personnel. The IDNS provides a guide for handling, transporting, evaluating, and treating patients accidentally exposed to radiation or contaminated with radioactive materials. Offsite ambulance and hospital personnel will be offered annual training based on this guidance.

Section 15.4.10, “Communication Personnel,” of the EGC ESP Emergency Plan describes the specialized internal training that will be provided for communications personnel.

Section 6B of IPRA Volume I and Section 2L of IPRA Volume VIII state that, at the State and county level, public information personnel receive the Annual Emergency Response Training Program provided by IEMA. The training covers all operational and technical aspects of IPRA. State and county plans do not include the major features of specific training for personnel responsible for disseminating emergency information. Information is also provided annually to the media in the vicinity of the powerplant.

13.3.3.14.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant’s emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. The staff finds that the

applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, and IV.F of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for a ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of complete and integrated emergency plans. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for major features of emergency plans, including those that apply to major feature O, “Radiological Emergency Response Training.”

Major feature O calls for the applicant to describe a radiological emergency response training program for personnel who would implement the radiological emergency response plans.

13.3.3.14.3 Technical Evaluation

The EGC ESP Emergency Plan and IPRA Volumes I and VIII adequately describe a training program for instructing and qualifying personnel who will implement radiological emergency response plans. Specialized initial training and periodic retraining is provided for the following categories of personnel:

- directors or coordinators of the response organizations
- personnel responsible for accident assessment
- radiological monitoring teams and radiological analysis personnel
- police, security, and firefighting personnel
- first aid and rescue personnel
- local support services personnel, including civil defense/emergency services personnel
- medical support personnel
- personnel responsible for transmission of emergency information and instructions

13.3.3.14.4 Conclusions

As discussed above, the applicant described a radiological emergency response training program for those who may be called on to assist in an emergency, including a training program for instructing and qualifying personnel who would implement the radiological emergency response plans. In addition, the applicant described specialized initial training and periodic retraining. Based on its review, the staff concludes that the proposed major feature O is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, and IV.F of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for radiological emergency response training, as set forth above. The applicant provided other information in the application that is outside the scope of the staff’s review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

13.3.3.15 Responsibility for the Planning Effort: Development, Periodic Review, and Distribution of Emergency Plans (Major Feature P)

13.3.3.15.1 Technical Information in the Application

Section 16.1, "Emergency Preparedness Staff Training" of the EGC ESP Emergency Plan describes the training of each member of the emergency preparedness staff as involving at least one of the following activities at least once a calendar year:

- training courses specific or related to emergency preparedness
- observation of, or participation in, drills and/or exercises at other facilities
- participation in industry review and evaluation programs
- participation in regional or national emergency preparedness seminars, committees, workshops, or forums
- specific training courses in related areas, such as systems, equipment, operations, radiological protection, or problem identification and resolution

Section 6B of IPRA Volume I and Section 2L of IPRA Volume VIII state that State and county personnel responsible for the IPRA planning functions receive annual initial and refresher training provided jointly by IEMA and IDNS. This comprehensive training covers the operational and technical aspects of IPRA, the basics of radiological response, and the specific duties that each organization and individual are responsible for.

Section 16.2, "Authority for the Emergency Preparedness Effort," of the EGC ESP Emergency Plan states that the applicant's officers will be responsible for the safe and reliable operation of the EGC ESP facility. The issuance and control of this plan and the activities associated with emergency preparedness at EGC will be the overall responsibility of the Vice President of Licensing and Regulatory Affairs. In RAI 13.3-10, the staff asked the applicant to identify by title the individual who will have overall authority and responsibility for radiological emergency response planning. In addition, the staff asked the applicant to identify an emergency planning coordinator with responsibility for developing and updating of emergency plans and for coordinating these plans with other response organizations.

In response to RAI 13.3-10, the applicant stated that the Vice President of Licensing and Regulatory Affairs will have overall authority and responsibility for radiological response planning, as indicated in Section 16.2 of the EGC ESP Emergency Plan. However, Section 16.3, "Responsibility for Development and Maintenance of the Plan," identifies the emergency planning coordinator as the emergency preparedness manager, who has certain authority and responsibilities, as discussed in Section 16.3.1.1, "Program Administration," of the EGC ESP Emergency Plan. Section 16.3.1.1 states that the MWROG emergency preparedness manager is responsible for developing and maintaining the emergency plan.

Section 6C, "Preparedness Functions, Plan Maintenance and Updating," of IPRA Volume I indicates that IEMA and IDNS are responsible for overseeing the updating of the IPRA,

including the plans, SOPs, and training modules. In RAI 13.3-13(l), the staff requested the title of the individual(s) at the State level with the overall authority and responsibility for radiological emergency response planning. In response to RAI 13.3-13(l), the applicant stated that, ultimately, the Governor has the overall authority and responsibility. However, within IEMA, Section 3A(3) of IPRA Volume I provides the requested information and identifies that IEMA is responsible for emergency planning, and the director of IEMA is responsible for the direction and control of IEMA operations.

Section 2N, "DeWitt County, Emergency Plan Maintenance," of IPRA Volume VIII states that DeWitt County defers responsibility for maintenance and updating IPRA to IEMA. The DeWitt County/Clinton ESDA coordinator is responsible for coordinating the planning, updating, and maintenance of the DeWitt County section of IRPA Volume VIII. Furthermore, each agency head is responsible for updating its agency's sections.

Section 16.3 of the EGC ESP Emergency Plan states that the MWROG emergency preparedness manager will be responsible for the overall Radiological Emergency Preparedness Program associated with the EGC ESP site. Section 16.3.1.1 of the EGC ESP Emergency Plan states that the emergency preparedness manager is responsible for developing and maintaining the emergency plan, developing and maintaining 10 CFR 50.54(q) evaluations of changes to emergency planning documents, and ensuring integration of plans between the applicant and offsite agencies.

In RAI 13.3-13(m), the staff requested the title of the individual(s) at the State level who is designated as the emergency planning coordinator with responsibility for developing and updating emergency plans and coordinating these plans with other response organizations. In response to RAI 13.3-13(m), the applicant stated that, although no title is provided in Section 6C of IPRA Volume I, this section identifies that IEMA and IDNS are responsible for these activities. Appropriate IEMA and IDNS documents (e.g., procedures and position descriptions) provide the specific titles. The respective directors of IEMA and IDNS are the positions with the identified responsibility.

Section 2N of IPRA Volume VIII states that, in DeWitt County, the Dewitt County/Clinton ESDA coordinator is assigned this responsibility.

Section 16.4, "Emergency Plan and Agreement Revisions," of the EGC ESP Emergency Plan states that the Exelon Nuclear Standardized Radiological Emergency Plan and supporting agreements will be reviewed on an annual basis. The annual plan review/update will include required changes identified during audits, assessments, training, drills, and exercises. The MWROG emergency preparedness manager will be responsible for determining which recommended changes are incorporated into a plan or emergency procedure revision. In those years when the review does not warrant a revision, a letter to that effect will be issued. In RAI 13.3-11, the staff requested that the applicant submit a description of the process for updating the agreements that support the Exelon Nuclear Standardized Radiological Emergency Plan. In response to RAI 13.3-11, the applicant stated that agreements supporting the Exelon Nuclear Standardized Radiological Emergency Plan are reviewed on an annual basis, as identified in the first sentence of Section 16.4 of the EGC ESP Emergency Plan (i.e., the phrase "and supporting agreements" is included specifically to identify that annual reviews are also applicable to the agreements). As indicated in the second sentence, this review

includes updating as necessary. The process for updating an agreement is the same as the process for obtaining the original agreement.

Section 6C of IPRA Volume I states that, at the State level, IEMA ensures that each State agency reviews its portion of the plan annually, and any changes deemed necessary by lessons learned during the drills and exercises and from actual emergency response, as well as those resulting from agency reorganization, address, and telephone changes, will be made during the IPRA update process. The IEMA is also responsible for ensuring that the same requirement is met at the local level.

Section 2N of IPRA Volume VIII states that changes at the local level are reported to the DeWitt County ESDA coordinator, who keeps a record of changes and forwards them to IEMA.

Section 16.5, "Emergency Plan Distribution," of the EGC ESP Emergency Plan states that the emergency plan for the EGC ESP facility will not be distributed for implementation. The final emergency plan and future EGC ESP facility implementing procedures will be distributed on a controlled basis, before initial fuel loading, to the ERFs, selected Federal, State, and local agencies, and other appropriate locations. Controlled document holders will be issued revision changes upon approval. Procedures that control the revision of the emergency plan will require the use of revision bars and individual page identifications (i.e., section of plan and revision number).

Sections 6C of IPRA Volume I and Section 2N of IPRA Volume VIII state that all State, local, and private organizations, upon review and update of their sections of the plan, are required to forward to IEMA either a statement saying that no changes are necessary or a copy of their portions with all revisions clearly marked and dated.

The table of contents for the EGC ESP Emergency Plan is provided on pages iii–xi. Appendix B, "Requirements Matrix," to the EGC ESP Emergency Plan contains a cross-reference of the planning standards and evaluation criteria in Supplement 2. In RAI 13.3-19, the staff asked the applicant to provide an updated version of Table B-1, "Requirements Matrix," of Appendix B to the EGC ESP Emergency Plan. In response to RAI 13.3-19, the applicant stated that it updated Table B-1 of Appendix B to the EGC ESP Emergency Plan to include the revisions that the NRC identified in this RAI.

There are tables of contents at the beginning of each section for the State and local plans. The State and local plans also contain a "Planning Standards and Evaluation Criteria Correlation Document," that includes a cross-reference to Revision 1 of NUREG-0654/FEMA-REP-1.

13.3.3.15.2 Regulatory Evaluation

In Section 1.1 of the EGC ESP Emergency Plan, the applicant stated that it developed the plan to comply with the requirements of 10 CFR 52.17, using the guidance in Supplement 2. In Section 1.2 of the EGC ESP Emergency Plan, the applicant stated that the EGC ESP Emergency Plan, in conjunction with future implementing and administrative procedures, documents the methods by which the applicant's emergency preparedness program meets the planning standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50.

The staff finds that the applicant identified the regulatory requirements and guidance applicable to the proposed major features of emergency plans for an ESP application.

In its review of the application, the staff considered the regulatory requirements in 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, IV.F, and IV.G of Appendix E to 10 CFR Part 50. Under 10 CFR 52.17(b)(2)(i), an applicant for an ESP may propose major features of emergency plans for NRC review and approval, in consultation with FEMA, in the absence of a complete and integrated emergency plan. Under 10 CFR 52.18, after consultation with FEMA, the NRC will determine whether the major features of emergency plans submitted under 10 CFR 52.17(b)(2)(i) are acceptable. RS-002 and Supplement 2 provide guidance concerning the review and evaluation of emergency planning information given in an ESP application. Supplement 2 also provides specific evaluation criteria for major features of emergency plans, including those that apply to major feature P, "Responsibility for the Planning Effort: Development, Periodic Review, and Distribution of Emergency Plans."

Major feature P calls for the applicant to describe the development, review, distribution, and update of emergency plans. The ESP application should also designate an emergency planning coordinator for each organization and identify (by title) individuals with emergency planning responsibility. In addition, the application should describe training for those responsible for the planning effort.

13.3.3.15.3 Technical Evaluation

The staff finds the applicant's clarification of the authority and responsibility for radiological response planning in response to RAIs 13.3-10 and 13.3-13(l) and (m) consistent with the guidance in Supplement 2 and, therefore, acceptable. The staff finds the additional information related to the process for updating agreements in the response to RAI 13.3-11 and the updates to the cross-reference matrix in response to RAI 13.3-19 to be acceptable.

The EGC ESP Emergency Plan and IPRA Volumes I and VIII adequately describe (1) the training of individuals responsible for the planning effort, (2) the individual with the overall authority and responsibility for radiological emergency response planning, (3) the designation of an emergency planning coordinator with responsibility for the development and updating of emergency plans, (4) the coordination of these plans with other response organizations, (5) the update of emergency plans and agreements, as needed, (6) the process for approved changes to the emergency response plans to be forwarded to all organizations and appropriate individuals with responsibility for the implementation of the plans, (7) the dating and marking of revised pages to show where changes have been made, and (8) a specific table of contents.

The EGC ESP Emergency Plan contains a matrix that adequately cross-references the criteria in Supplement 2. Volumes I and VIII of IPRA contain a matrix that appropriately cross-references the criteria in Revision 1 of NUREG-0654/FEMA-REP-1, rather than the criteria in Supplement 2.

13.3.3.15.4 Conclusions

As discussed above, the applicant described the responsibilities for plan development and review, as well as for distribution and update of emergency plans. In addition, the applicant

identified those responsible for the planning effort and described the training they receive. Based on its review, the staff concludes that the proposed major feature P is consistent with the guidance in RS-002 and Supplement 2. Therefore, this feature is acceptable and meets the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.18, and Sections III, IV.A, IV.F, and IV.G of Appendix E to 10 CFR Part 50, insofar as it describes the essential elements of advanced planning that the applicant considered for assigning responsibility for the planning effort, including development, periodic review, and distribution of emergency plans, as set forth above. The applicant provided other information in the application that is outside the scope of the staff's review of this feature and is not discussed in this SER. Therefore, the staff did not make findings regarding its acceptability.

The EGC ESP Emergency Plan contains a matrix that adequately cross-references the criteria in Supplement 2. Volumes I and VIII of IPRA contain a matrix that appropriately cross-references the criteria in Revision 1 of NUREG-0654/FEMA-REP-1, rather than the criteria in Supplement 2.

13.6 Industrial Security

The NRC staff reviewed the physical security aspects of the ESP application to determine whether the site characteristics are such that adequate security plans and measures can be developed.

13.6.1 Technical Information in the Application

SSAR Section 3.4.1.6 states that, to accommodate the recommended 360 feet of distance from vital equipment to the protected area (PA) fence, as specified in Regulatory Guide (RG) 4.7, Revision 2, "General Site Suitability Criteria for Nuclear Power Stations," issued April 1998, the actual ESP facility footprint may extend beyond the depicted ESP footprint. The application indicates that the site characteristics are such that applicable NRC regulations, guidance documents, and orders can be met. This conclusion is based on the fact that the Clinton owner-controlled area (OCA) is sufficiently large to provide adequate distances between vital areas and the probable location of a security boundary.

In RAI 3.4.1.6-1, the staff asked the applicant to provide a scale drawing of the ESP site in relation to the PA boundary, the OCA boundary, the shore of Clinton Lake, and other features such as roads and railroad lines. In response, the applicant provided a figure indicating that the OCA is large enough to meet the 360-foot distance criterion.

SSAR Section 3.4.1.6 also states that EGC has a security program in place for the existing unit and that there are no identified impediments to the eventual development of an adequate security plan for EGC's ESP facility. In addition, Section 3.4.1.6 states that sufficient distance is available to satisfy the criteria of 10 CFR 73.55 and the revised design-basis threat.

Sections 2.2 and 3.5.1.6 of the SSAR discuss the potential hazards (e.g., fluids, explosives, munitions, and chemicals stored or transported near the site).

13.6.2 Regulatory Evaluation

According to NRC regulations, applicants for an ESP must address characteristics of the proposed site that could affect the establishment of an effective security program. Specifically, 10 CFR 52.17 requires that site characteristics comply with 10 CFR Part 100. Pursuant to 10 CFR 100.21(f), site characteristics must allow the development of adequate security plans and measures. Revision 2 of RG 4.7 provides amplifying guidance and notes that 10 CFR 73.55 describes physical protection requirements for nuclear power plants.

SSAR Section 3.4.1.6 states that RG 4.7 provides applicable guidance and, in response to RAI 1.5-1, the applicant stated that RS-002 identifies the NRC regulations applicable to its ESP SSAR. RS-002 identifies 10 CFR 100.21(f) and 10 CFR 73.55 as the applicable regulations. The staff reviewed this portion of the application for conformance with the applicable regulations and considered the corresponding regulatory guidance.

13.6.3 Technical Evaluation

The staff reviewed the application and the responses to the RAIs and examined aspects of the application during a site visit. The proposed ESP site is located on the shore of Clinton Lake in DeWitt County, Illinois, near a licensed nuclear power reactor (Clinton Power Station) owned by AmerGen Energy, LLC, an affiliate of the applicant. Using the criteria set forth in 10 CFR 100.21(f), the staff identified and considered various characteristics of the site that could affect the establishment of adequate security plans and measures. Specifically, the staff considered pedestrian land approaches, vehicular land approaches, railroad approaches, water approaches, potential high-ground adversary advantage areas, nearby road transportation routes, nearby hazardous materials facilities, nearby pipelines, and culverts that could provide a pathway into the PA.

With respect to pedestrian and water approaches, the staff found that various figures in the application (e.g., Figure 1.2-4) identify the ESP site footprint within which all safety-related structures would be located if one or more reactors were constructed. In RAI 3.4.1.6-1, the staff asked the applicant to provide a scale drawing to allow the NRC staff to assess conformance with RG 4.7, which specifies that there should be a minimum of 360 feet for appropriate barriers, detection equipment, and isolation zones to protect vital equipment. In response, the applicant provided Figure 3.4-1, which shows that the distances between the planned locations of vital equipment and structures and the OCA boundary would permit the development of adequate security plans and measures. The staff concluded that the distance from possible locations of vital equipment and structures (which might be located anywhere in the site footprint identified by the applicant because the ESP application does not describe a specific design) to the OCA boundary is sufficiently large to locate barriers, detection equipment, and isolation zones consistent with RG 4.7.

With respect to vehicular land and railroad approaches, the staff identified and evaluated existing roads, rail spurs, and site terrain features. The staff concluded that the location of existing roads and site terrain features does not preclude the establishment of adequate vehicle control measures to prevent potential adversaries from getting close to vital equipment or protect against a vehicle bomb. This conclusion is based on the fact that the OCA is sufficiently large to enable the establishment of a vehicle checkpoint that has adequate standoff distance

from the possible location of vital equipment to mitigate vehicle bomb overpressure effects. The ESP facility would not use the same vehicle checkpoint that was used during the May 2004 site visit for the existing operating facility. The staff identified railroad lines and spurs and found no features that would preclude the development of adequate security plans or measures. The staff also confirmed during the site visit that it is feasible to implement a vehicle barrier system over the terrain on all borders of the site.

With respect to deliberate vehicle explosions on nearby transportation routes, the staff analyzed a gasoline tanker explosion of 8500 gallons of gasoline on Illinois Highway 54 at a point three-fourths of a mile from the proposed site, which is the nearest approach to the site from a highway. The analysis demonstrated that such an event would not result in an overpressure greater than 1 psi at the site boundary (the pressure threshold for human eardrum rupture is 5 psi, which is also the first point of human incapacitation per U.S. Army Technical Manual 5-1300, "Structures to Resist the Effects of Accidental Explosions," issued November 1990). According to RG 1.91, Revision 1, "Evaluations of Explosions Postulated To Occur on Transportation Routes Near Nuclear Power Plants," issued February 1978, 1 psi of peak positive overpressure is a conservative threshold. Below 1 psi, no significant damage would be expected for structures, components, and systems of concern.

With respect to nearby hazardous materials facilities and nearby pipelines, the staff found that the distances to those facilities and pipelines and the hazardous materials identified associated with them were of such a nature that they did not pose an impediment to the development of adequate security plans or measures.

The staff examined the overall site terrain with respect to natural features and existing manmade features such as culverts that potential adversaries could use to their advantage; no features that would preclude establishment of adequate security plans and measures were found on the site.

The COL applicant will need to provide specific designs for protected area barriers, since such design information is not available at the ESP stage. This is **COL Action Item 13.6-1**.

13.6.4 Conclusions

As described above, the staff examined the proposed ESP site characteristics to determine whether they might affect the establishment of adequate security plans and measures. The staff examined pedestrian, vehicle, and water approaches, including existing culverts, nearby railroad lines, nearby hazardous materials facilities, nearby pipelines, and other transportation routes and terrain features. Based on this evaluation, the staff concludes that the ESP site characteristics would allow an applicant for a combined license or construction permit to develop adequate security plans and measures for a reactor or reactors that the applicant might construct and operate on the ESP site.