From: <eddie.grant@exeloncorp.com>
To: <nvg@nrc.gov>
Date: 10/8/04 8:08AM
Subject: Response to RAI Letter No. 11

Nannette Gilles

Attached is your copy of the response to RAI letter No. 11 that was mailed yesterday.

Thanks,

Exelon
Early Site Permit Project
Eddie R. Grant
610.765.5001 voice
610.765.5755 fax
850.598.9801 cell

CC: <thomas.mundy@exeloncorp.com>
Mail Envelope Properties (41668334.348 : 11 : 25416)

Subject: Response to RAI Letter No. 11
Creation Date: 10/8/04 8:05AM
From: <eddie.grant@exeloncorp.com>

Created By: eddie.grant@exeloncorp.com

Recipients
nrc.gov
owf4_po.OWFN_DO
NVG (Nanette Gilles)

exeloncorp.com
thomas.mundy CC

Post Office	**Route**
owf4_po.OWFN_DO	nrc.gov

exeloncorp.com

Files	Size	Date & Time
MESSAGE	1131	10/08/04 08:05AM
TEXT.htm	3533	
Ltr - 2004-10-07 Kray RAI No 11 Response.pdf	3052175	
Blank Bkgrd.gif	145	
Mime.822	4184319	

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

Exelon Nuclear
200 Exelon Way
KSA3-N
Kennett Square, PA 19348

Telephone 610.765.5610
Fax 610.765.5755
www.exeloncorp.com

Exelon Nuclear

52.17

October 7, 2004

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Response to Revision to Request for Additional Information (RAI) Letter No. 11 – Exelon Early Site Permit (ESP) Application for the Clinton ESP Site (TAC No. MC1122)

Re: Letter, U.S. Nuclear Regulatory Commission (N. V. Gilles) to Exelon Generation Company, LLC, (M. Kray), dated August 24, 2004, Revision to Request for Additional Information Letter No. 11 – Exelon Early Site Permit Application for the Clinton ESP Site (TAC No. MC1122)

Enclosed, as requested in the referenced letter, are responses to the requests for additional information (RAIs) associated with the emergency planning portion of the Exelon Generation Company, LLC (EGC) ESP application.

Please contact Eddie Grant of my staff at 610-765-5001 if you have any questions regarding this submittal.

Sincerely yours,

Marilyn C. Kray
Vice President, Project Development

TPM/ERG

cc: U.S. NRC Regional Office (w/ enclosures)
Ms. Nanette V. Gilles (w/ enclosures)

Enclosure: Response to RAIs 13.3-12 through 13.3-19 (and associated attachments)

Attachments: RAI 13.3-13 Attachment (Public & Media Info)
RAI 13.3-18 Attachment (DeWitt Sheriff LOA)
RAI 13.3-19 Attachment (Revised EP App. B Table B-1)

AFFIDAVIT OF MARILYN C. KRAY

State of Pennsylvania

County of Chester

The foregoing document was acknowledged before me, in and for the County and State aforesaid, by Marilyn C. Kray, who is Vice President, Project Development, of Exelon Generation Company, LLC. She has affirmed before me that she is duly authorized to execute and file the foregoing document on behalf of Exelon Generation Company, LLC, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged and affirmed before me this 7th day of October, 2004.

My commission expires 10-6-07.

Vivia V. Gallimore

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Vivia V. Gallimore, Notary Public
Kennett Square Boro, Chester County
My Commission Expires Oct. 6, 2007
Member, Pennsylvania Association Of Notaries

NRC Letter Dated: 08/24/2004

NRC RAI No. 13.3-12

Discuss the extent to which the Clinton ESP application is intended to address Evaluation Criteria V.H.1 and V.H.2 of Supplement 2 to NUREG-0654/FEMA-REP-1 for the Technical Support Center (TSC), Operations Support Center (OSC), and Emergency Operations Facility (EOF); including addressing NUREG-0696. If the application is intended to address these two Evaluation Criteria, provide additional information to address applicable NUREG-0696 criteria. Also, state whether or not Exelon intends to use the existing TSC, OSC, and EOF, which support the existing Clinton unit, for the ESP site. If so, provide information consistent with Evaluation Criteria V.H.1 and V.H.2 regarding the impact of the new reactor on these facilities.

EGC RAI ID: R12-1

EGC RESPONSE:

The EGC ESP addresses Evaluation Criterion V.H.1 of Supplement 2 to NUREG-0654/FEMA-REP-1 in Section 8.1 and 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 Combined License (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 and 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.

The EGC ESP facility does not intend to use the TSC or OSC that support the existing Clinton unit, thus there will be no impact from the new facility on the existing Clinton Power Station TSC and OSC.

Evaluation Criterion V.H.2 of Supplement 2 to NUREG-0654/FEMA-REP-1 is addressed in Section 8.2 of the EGC ESP and provides the full discussion of the major features of the EOF; including the NUREG-0696 criteria applicable for a major features discussion.

As indicated in Section 8.2, the EGC ESP facility intends to use the existing common EOF currently located in the Exelon Cantera Facility in Warrenville, IL. 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 associated with these impacts 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).

ASSOCIATED EGC ESP APPLICATION REVISIONS:

None

ATTACHMENTS:

None

NRC Letter Dated: 08/24/2004

NRC RAI No. 13.3-13

Provide the following information regarding the State and/or local emergency plans:

a) a description of the legal basis (reference specific acts, codes or statutes) for county or municipal authorities to be part of the overall response organization for the Emergency Planning Zones

b) a description of the general capabilities of radiological laboratories (besides the two Illinois Department of Nuclear Safety mobile laboratories) to provide radiological monitoring and analyses services

c) a description of the provisions for prompt communications between state and federal emergency response organizations

d) 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

e) references to maps in the local emergency plans that show evacuation routes

f) a description of the State and local governments' concept for using the traffic capacities of evacuation routes for implementing protective measures

g) a description of the State and local organizations' concepts for using evacuation time estimates when considering the evacuation of various sectors and distances

h) a description of the Illinois Department of Nuclear Safety Standard Operating Procedures that relate to the bases for choosing a recommended protective action for the plume exposure pathway

i) a description of how the State will acquire and distribute dosimeters, both direct-reading and permanent record devices

j) a description of 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

k) a description of state and local organizations' means for radiological decontamination of emergency personnel wounds, supplies, instruments, and equipment

l) the title of the individual(s) at the state level with the overall authority and responsibility for radiological emergency response planning

m) the title of the individual(s) at the state level who is designated as the Emergency Planning Coordinator with responsibility for the development and updating of emergency plans and coordinating of these plans with the other response organizations

EGC RAI ID: R12-2

EGC RESPONSE:

The appropriate sections of the State and local emergency plans containing the requested information are identified below. Any details below this level are considered to be beyond the scope of the ESP major features description.

a) A description of the legal basis (reference specific acts, codes or statutes) for county or municipal authorities to be part of the overall response organization for the Emergency Planning Zones is provided in the IPRA Volume I, Introduction, Section A, Purpose and Authorization [I - page 1]. This authorization document includes the political subdivisions of the state, e.g., the county and municipal authorities. Specifically, see 20 ILCS 3305/2 that identifies one of the purposes of the Act to be: *(2) To confer upon the Governor and upon the principal executive officer of the political subdivisions of the State the powers provided herein.* [Found at: <http://www.state.il.us/IEMA/newIEMAAct.pdf> and previously provided with response to RAI 13.3-4).]

b) A description of the general capabilities of radiological laboratories (besides the two Illinois Department of Nuclear Safety mobile laboratories) and their general capabilities are identified in IPRA Volume I, Part A, Chapter 1, Section E.1 [I (1) - page 10]. These labs include the IDNS lab in Springfield and the laboratories to be provided by the federal government under the Federal Radiological Emergency Response Plan (FRERP).

c) A description of the provisions for communications between State and federal emergency response organizations is provided in IPRA Volume I, Part A, Chapter 1, Section F [I (1) - pages 15-18], and in Chapter 2, Section B [I (2) - pages 3&4]. Other discussions of the communications provisions include IPRA Volume I, Part A, Chapter 6, Section A [I (6) - page 2] and IPRA Volume VIII, Chapter 1, Section C [VIII (1) - page 11]. Finally, IPRA Volume I, Part A, Chapter 3, Section A.8 [I (3) - page 20], indicates that Federal agencies are contacted by REAC and Chapter 3, Section B [I (3) - page 43], states that the Governor or his designee is authorized to request Federal assistance.

d) 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 is provided in IPRA Volume I, Part A, Chapter 5, Section D [I (5) - page 7]. [Found at: <http://www.state.il.us/idns/pdfs/pubPDF/4792.pdf> and attached (RAI 13.3-13 Attachment).]

e) Evacuation routes are referenced in IPRA Volume VIII, Chapter 2, Annex 2A [VIII (2A) - page 56]. The identified routes are shown in IPRA Volume VIII, Chapter 1, Section E, Maps A - E [VIII (1) - beginning at page 33]. Finally, evacuation is generally discussed in IPRA Volume VIII, Chapter 2, Section J [VIII (2) - page 49].

f) A description of the State and local governments' concept for using the traffic capacities of evacuation routes for implementing protective measures is not addressed in the IPRA, however the ETE (which does consider the traffic capacities of the evacuation routes) is considered in the planning process when establishing the boundaries of the sub-areas. For instance, during an actual emergency, Illinois Department of Transportation representatives are available in the State EOC and Forward Command Post to provide up to the minute information on road repairs and traffic congestion. In addition, IPRA Volume I, Part A, Chapter 3 [I (3) - pages 35-39], discuss IDOT's responsibilities, which include ensuring the expeditious and safe

movement of traffic. At the county level, the County Highway Department performs a similar function.

g) A description of the State and local organizations' concepts for using evacuation time estimates when considering the evacuation of various sectors and distances is not directly addressed by IPRA. However, IPRA Volume I, Part A, Chapter 3 [I (3) - pages 35-39], discuss IDOT's responsibilities, which include ensuring the expeditious and safe movement of traffic. At the county level, the County Highway Department performs a similar function. In addition, the ETE is considered in the planning process when establishing the boundaries of the sub-areas. For instance, during an actual emergency, Illinois Department of Transportation representatives are available in the State EOC and Forward Command Post to provide up to the minute information on road repairs and traffic congestion.

h) A description of the Illinois Department of Nuclear Safety Standard Operating Procedures that relate to the basis for choosing a recommended protective action for the plume exposure pathway is provided in IPRA Volume VIII, Chapter 2, Section J [VIII (2) - page 49]. In addition, IPRA Volume I, Part A, Chapter 1, Section E.4 [I (1) - pages 11-12], discuss the basis for protection action recommendations.

i) A description of how the State will acquire and distribute dosimeters is provided in IPRA Volume VIII, Chapter 2, Section H [VIII (2) - page 45] and Section O.1 [VIII (2) - page 61]. In addition, Volume I, Part A, Chapter 3, provides information regarding dosimetry for State agency personnel who have field assignments, such as ISP, IDNR and IDOT. Finally, IPRA Volume VIII, Chapter 1, Section D, discusses dosimetry for the ISP, IDNR and DOT districts and regions specific to the Clinton Station. Details below this level are considered to be beyond the scope of the ESP major features descriptions.

j) A description of State and local organization's specific action levels for determining the need for decontamination of emergency workers, equipment and vehicles, and the general public and their possessions is provided in IPRA Volume VIII, Chapter 2, Section O.4 [VIII (2) - page 67]. IPRA Volume I, Part A, Chapter 1, Section E.4 [I (1) - page 13], also provides a general statement about decontamination.

k) A description of State and local organizations' means for radiological decontamination of emergency personnel wounds, supplies, instruments, and equipment is provided in IPRA Volume VIII, Chapter 2, Section O.4 [VIII (2) - page 67], which identifies that the personnel will be transported to a Health Facility. In addition, IPRA Volume I, Part A, Chapter 1, Section E.4 [I (1) - page 13], also provides a general statement about decontamination.

l) Ultimately, the Governor has the overall authority and responsibility. However, within IEMA, the requested information is provided in IPRA Volume I, Part A, Chapter 3, Section A.3 [I (3) - page 7] which identifies that IEMA is responsible for emergency planning and the Director of IEMA is responsible for direction and control of IEMA operations.

m) Although no title is identified in IPRA Volume I, Part A, Chapter 6, Section C [I (6) - page 5], this section identifies that IEMA and IDNS are responsible for development and updating of emergency planning and coordinating the plans with other response organizations. Specific titles are provided in appropriate IEMA and IDNS documents, e.g., procedures and position descriptions. The respective Directors of IEMA and IDNS would be the positions with the identified responsibility.

ASSOCIATED EGC ESP APPLICATION REVISIONS:

None

ATTACHMENTS:

RAI 13.3-13 Attachment (Public & Media Info)

NRC Letter Dated: 08/24/2004

NRC RAI No. 13.3-14

Provide the results of the review of the draft Evacuation Time Estimate study by state and local organizations.

EGC RAI ID: R12-3

EGC RESPONSE:

The Evacuation Time Estimate (ETE) study is conducted by Exelon 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 requirements under NUREG-0654. The results also state that given the small population base within the EPZ (10-mile radius of CPS), the projected evacuation time frames are generally appropriate in most instances and acceptable from an emergency preparedness and planning standpoint. It should be noted that each comment resulting in an adaptation of the ETE was appropriately included in the final version of the ETE.

ASSOCIATED EGC ESP APPLICATION REVISIONS:

None

ATTACHMENTS:

None

NRC Letter Dated: 08/24/2004

NRC RAI No. 13.3-15

Should the information contained in the Phase One Report that was completed in December 2003 and documents the assessment of population changes in the plume exposure pathway emergency planning zone be considered as an update to the 1993 Evacuation Time Estimate (ETE) study for use in evaluation of your ESP application? If not, discuss why it shouldn't be considered. If it should be considered, please provide a copy of the report and discuss the differences in the population data presented in the application and the population data in the 1993 ETE study.

EGC RAI ID: R12-4

EGC RESPONSE:

The Phase One Report was not utilized in preparation of the EGC ESP EP, and need not be referenced or considered because the conclusions identified in the report were independently developed and reported in the EGC ESP EP Section 2.3.3.

The difference (<1%) in population data presented in the EGC ESP EP versus the Evacuation Time Estimate (ETE) study is a result of assumptions used in calculating resident population and the ten-year time difference between the two sources used to support these reports. For example, the ETE used 1990 Census of Population and Housing data, along with an assumption of 3.0 residents per seasonal housing unit. The EGC ESP EP used 2000 U.S. Census Bureau data and a block level calculation approach. For instance, if a block were bisected by a 1-mi band or radial grid line and parts of the same block fell in two or more cells, demographic data were proportioned by percent block area. This implicitly assumes population is fairly uniform in the block. This assumption was used because a block is the smallest census data unit. Further explanations of the population estimates used in the EGC ESP EP are discussed in Sections 2.3.2 through 2.3.5.

ASSOCIATED EGC ESP APPLICATION REVISIONS:

None

ATTACHMENTS:

None

NRC Letter Dated: 08/24/2004

NRC RAI No. 13.3-16

Provide a description of the method(s) used to confirm evacuation and the estimated time required for confirmation of evacuation.

EGC RAI ID: R12-5

EGC RESPONSE:

Several methods are available for confirmation of evacuation. Of these, one method is random sample telephone surveys with success based on the number of positive responses (i.e., someone still at home) being 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.

ASSOCIATED EGC ESP APPLICATION REVISIONS:

None

ATTACHMENTS:

None

NRC Letter Dated: 08/24/2004

NRC RAI No. 13.3-17

Even though some extrapolated population data has been provided for the addition of two reactors at the Clinton site and refueling outages, additional extrapolated population data is needed for the next 20 years (life of the ESP application) and a discussion of its impact on the ETE.

EGC RAI ID: R12-6

EGC RESPONSE:

Population extrapolation for 60 years (i.e., the life of the ESP and the life of the operating license) is discussed in EGC ESP SSAR Section 2.1. The extrapolated population results in no significant change from those considered in the ETE, therefore, minimal impact is expected.

ASSOCIATED EGC ESP APPLICATION REVISIONS:

None

ATTACHMENTS:

None

NRC Letter Dated: 08/24/2004

NRC RAI No. 13.3-18

Provide a copy of the letter of agreement with the DeWitt County Sheriff's Department that is dated 2003 or later.

EGC RAI ID: R12-8

EGC RESPONSE:

A copy of a letter of agreement with the DeWitt County Sheriff's Department that is dated 2003 or later is provided as an attachment to this RAI response.

ASSOCIATED EGC ESP APPLICATION REVISIONS:

Revise EGC ESP EP Appendix A, to replace the existing letter of agreement with the DeWitt County Sheriff's Department (dated January 16, 2002) with the one provided in the attachment to this RAI response.

ATTACHMENTS:

RAI 13.3-18 Attachment (DeWitt Sheriff LOA)

NRC Letter Dated: 08/24/2004

NRC RAI No. 13.3-19

Provide an updated version of Table B-1 “Requirements Matrix” in Appendix B "Requirements Matrix" of the Exelon Generation Company (EGC) ESP Emergency Plan. For example, consider updating the following references:

NUREG-0654/ FEMA-REP-1, Rev.1, Supp. 2, Sec. V Eval. Criteria	EGC ESP Plan	State of Illinois Plan	DeWitt County Plan
C.1	Add section 3.1.1.1.2		
C.2		Remove 3A(3) Add 1E(1)	
C.3		Remove 1E(1) and 3A(8) Add 3A(12) and 3C	Add Appendices D and E Add Map C
E.2	Replace sections 5.3.and 5.4 with 5.2 and 5.3		
E.3		Remove 4A, 4B, 4C, and 4D Add 1G	Remove 1D Add 2A
F.1.a		Remove 1E(2), 4C, and 4D Add 1J	Remove 1C, 1D, 2A, 2B, 2C, and 2D Add 2G and Appendix A
F.1.b		Remove 1J and 4A Add 2B	Remove 2G and Annexes 2A – 2F Add IPRA Volume I
F.1.c		Remove 2B, 3A(3), and 3A(8) Add 3A	Add 1C and 1D
F.2			Add 2G and Annexes 2A – 2F
G.2		Remove 5C Add 5D	
I.1	Add 3.1.1.1.7	Remove 3A(4) Add 1E and 3A(8)	Add 1D, 2F, and 2O
I.3		Add 1E	
J.1		Remove 1E(4) Add “Not Applicable”	Remove “Included in the Illinois Plan at 1E(4)” Add “Clinton Power Station Emergency Plan”
J.2	Add 10.2		
J.4	Add 10.1.3 and Figure 10.2-1		
J.4.a		Remove 1E(4) Add “Site-specific volumes”	Remove 2J, Annexes 2A – 2F Add 1E and Maps B and D
J.4.b	Change figure number to	Remove 1E(4)	Add Maps A – C

NUREG-0654/ FEMA-REP-1, Rev.1, Supp. 2, Sec. V Eval. Criteria	EGC ESP Plan	State of Illinois Plan	DeWitt County Plan
	2.3-2	Add “Site-specific volumes”	
J.4.c	Remove 6.1 Add 5.2.1	Add 1G	Remove 2G, 2I, and 2P Add 1C and 2A
J.4.d		Remove 1E(4) Add 5C	Remove Attachment references Add 2J, 3B, and Annexes 2A – 2F
J.4.e			Remove 2O(3) Add 1D, 2O, and Annexes 2A – 2F
J.4.f			Remove Appendix D and Map C
J.4.g		Remove 1E(4) Add “Site-specific volumes”	Remove Appendix D
J.4.h		Remove 1E(4) Add “Evacuation Time Estimates”	Remove 2J, Map A, and Map C Add “Evacuation Time Estimates”
J.4.i		Add 3A(2), 3A(6), and 3A(7)	Remove 1D(1) and Annex 2A Attachment 8 Add 1D and Annexes 2A – 2F
J.4.j		Remove 1E(4) Add 3A(6), 3A(7), and 3A(11)	Remove 1D(1), 1D(4), Annex 2A Attachment 1, Map A, and Appendix B Add 1D, Annexes 2A – 2F
J.4.k		Remove 1E(4) Add “Evacuation Time Estimates”	Remove “Included in Illinois Plan at 1E(4)” Add “Evacuation Time Estimates”
J.4.l			Remove 3 Add “See IPRA Volume I”
J.5		Remove 1E(4)	Remove Appendix D and Appendix E
K.1.a thru h	Add 11.1		
K.3.a			Remove 2O(1) Add 1D, 2O, and Annexes 2A – 2F
K.3.b		Remove 1E(4) and 3A(8)	Add 1D and Annexes 2A – 2F
K.4	Add 11.1		
K.5.b	Add 11.2.4		Add 2A and Annexes 2A – 2F

NUREG-0654/ FEMA-REP-1, Rev.1, Supp. 2, Sec. V Eval. Criteria	EGC ESP Plan	State of Illinois Plan	DeWitt County Plan
L.1	Add 3.4.5	Remove 1E Add 1H	Remove 1E
O.1	Add 15.5		
O.1.h		Add 1H	
P.1			Remove 2N Ass 2L
P.2		Remove 6D	
P.5	Remove 16.4		
P.5	Add Appendix B Remove 16.7		

EGC RAI ID: R12-7

EGC RESPONSE:

Table B-1 "Requirements Matrix" in Appendix B "Requirements Matrix" of the EGC ESP Emergency Plan has been updated to include the revisions identified by the NRC in this RAI.

ASSOCIATED EGC ESP APPLICATION REVISIONS:

Revise EP Appendix B in its entirety to read as shown in the attachment to this RAI response.

ATTACHMENTS:

RAI 13.3-19 Attachment (Revised EP App. B Table B-1 Requirements Matrix)

RAI ATTACHMENT

RAI 13.3-13 Attachment (Public & Media Info)

ILLINOIS DEPARTMENT OF NUCLEAR SAFETY

Radiological Emergency Response

Information for the public and the media

Rod R. Blagojevich
Governor

Gary N. Wright
Director

Table of Contents

Emergency Response to Reactor Accidents in Illinois:

The Illinois Department of Nuclear Safety (IDNS)

A State Agency Responsible for Radiation Protection in Illinois

Created by Executive Order on April 1, 1980, IDNS was assigned responsibility for all radiation protection activities in the state under legislation enacted by the Illinois General Assembly. Its mandates included the development and maintenance of a comprehensive capability to address any emergency that involved the state's nuclear power generating stations. The IDNS is one of only two state cabinet-level agencies in the country devoted exclusively to radiation monitoring and nuclear safety. The other is in the State of Arizona.

Eleven commercial nuclear reactors used to generate electricity are currently operating at six sites in Illinois; no other state has as many nuclear reactors. In addition, there are two major nuclear research facilities in Illinois operated by the US Department of Energy (Argonne National Laboratory and FermiLab), uranium processing facilities at Metropolis and in nearby Paducah, Kentucky, several manufacturers of radiopharmaceuticals and other radioactive materials, thousands of radiation-producing machines used in medicine and industry, and a network of major arterial highways and rail lines over which radioactive material shipments move on a regular basis.

Protecting the health and safety of Illinois citizens and the environment from the potentially harmful effects of ionizing radiation is the primary function of IDNS. That role is fulfilled through programs that monitor nuclear facilities around the clock, ensure the proper operation of radiation-producing equipment and the use of radioactive materials, and measure radioactivity in the environment to ensure no threats to public health exist.

Gary N. Wright is director of the department and manages the activities of its 215 employees.

Organization of IDNS

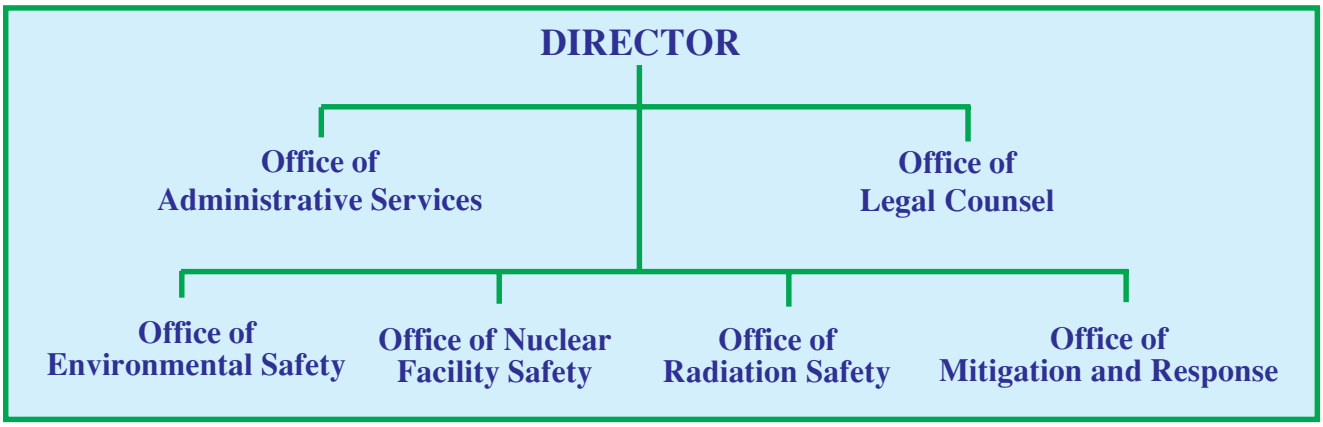
The IDNS is made up of four programmatic offices in addition to support offices that handle administrative and legal issues.

• **The Office of Nuclear Facility Safety** oversees the operation of the state's nuclear reactors and provides the technical assessment capability required to respond to a radiological accident.

• **The Office of Radiation Safety** regulates the use of radiation-producing devices and radioactive materials in medical, research, and industrial applications.

• **The Office of Environmental Safety** monitors environmental radiation at numerous locations throughout the state, including naturally occurring radon and radium, and oversees siting for a low-level radioactive waste disposal facility. The staff also oversees the decontamination of facilities, operates a radiochemistry laboratory, and monitors and escorts shipments of high-level radioactive materials in and across the state.

• **The Office of Mitigation and Response (OMR)** develops and maintains the department's radiological emergency response plans, procedures, and equipment as well as providing training for state and local government response personnel. OMR is responsible for the organization, training and field operations of department emergency response personnel under the Illinois Plan for Radiological Accidents (IPRA). In addition, it trains and directs the Radiological Assessment and Coordi



nated Emergency Response (RACER) Team. OMR staff supports the environmental assessment and data collection capabilities necessary for emergency response and manages the emergency exercise program.

Reactor safety programs are funded by a legislatively established fee assessed on the nuclear utilities and supporting industries operating facilities in Illinois. These fees are placed in the Nuclear Safety Emergency Preparedness Fund. Other IDNS programs are funded from fees assessed on low-level radioactive waste producers, radioactive materials users, and the owners/operators of radiation-producing machines.

Facts on Radiation

Radioactivity is a term used to describe the instability of an atom. Elements of our environment tend toward stability. A radioactive atom will emit energy in the form of ionizing radiation to become more stable. Ionizing radiation comes from natural sources such as the sun and certain rock formations, as well as from human-made sources such as x-ray machines and nuclear reactors. Radiation has the capability to knock electrons out of atoms and leave them electrically charged or "ionized." These charged particles or "ions" can cause cell damage and alter the functions of the human body such as those involved in blood formation and infection resistance.

Examples of non-ionizing radiation are microwaves, radiowaves, and visible light. Non-ionizing radiation can also alter biological functions, but does so through different means such as heating.

Ionizing radiation occurs naturally in the environment. We are continuously exposed to cosmic rays from the sun and stars, and the earth emits radiation from materials such as granite, natural gas, phosphates, radium, and its decay product, radon. This type of radiation is referred to as "natural " or "background" radiation.

The Electromagnetic Spectrum

The average American receives a dose of approximately 360 millirems of radiation each year (a millirem is a unit of radiation dose equivalent, 1000 millirems = 1 rem). Of this, about 82 percent, or 295 millirems, comes from natural sources. Radon is the biggest contributor, at 200 millirems per year. This natural dose varies with such factors as geographical location, altitude, frequency of air travel, occupation, and the presence of radon in the home. On average, however, our bodies are being struck by some form of natural radiation at a rate of approximately 15,000 times per second.

Examples of non-ionizing radiation are microwaves, radiowaves, and visible light.

Ionizing radiation comes from natural sources such as the sun and certain rock formations, as well as from human-made sources such as x-ray machines and nuclear reactors.

In addition, the average American receives about 65 millirem each year from technological sources, mostly from medical and dental x-rays and procedures that use radioactive materials to detect (diagnostic) and treat (therapeutic) various medical conditions.

When radiation deposits energy in a human cell, several types of changes may occur. The radiation might pass through the cell causing no damage; damage the cell, but if the cell involved is slow in dividing, the cell can repair this damage; or damage the cell so self-repair is impossible or incomplete, especially in rapidly dividing cells. In this case, the cell may reproduce itself in the damaged form, or more likely, will not be able to divide at all.

Different cells within the human body respond differently to radiation. Cells that are dividing rapidly are most sensitive to radiation because they have very little time to repair themselves from

radiation-induced damage. Thus, growing children and human fetuses are among the most susceptible to the harmful effects of radiation. At the same time, with certain types of cells that are dividing much more rapidly than normal (e.g., cancer cells), radiation becomes an effective tool to selectively destroy the cells before they can replicate.

Radiation, even at low doses, may result in some damage to living tissue, but it is difficult to quantify. Most of the evidence of human health risks associated with radiation exposure has been derived from the Japanese nuclear weapon survivors of World War II, patients in ongoing radiation therapy, and workers unnecessarily exposed to radiation in the days before radiation hazards were well known. Since these known effects are caused by high doses of radiation, there are little or no data to predict the health risks from very low doses. Low-dose effects generally are extrapolated from the known high-dose effects.

This degree of conservatism (not considering intracellular repair mechanisms) has been maintained with respect to the protection of the public. Studies involving large numbers of individuals exposed to low levels of radiation for extended periods of time have shown no serious detrimental effects. These studies show that for each millirem received by a member of the general public, the risk of dying from radiation-induced cancer **MAY** be increased by only one chance in two million.

Emergency Response to Reactor Accidents in Illinois: *The Illinois Plan for Radiological Accidents (IPRA)*

The IPRA is a comprehensive emergency plan that outlines the coordination of government response to all types of radiological accidents. Such accidents are unique because radiation cannot be seen, felt, or smelled. The assessment and analysis of a radiation accident involves technical and scientific skills utilizing sensitive detection equipment. The appropriate protection of the public from the consequences of a radiation accident requires an integrated response effort at many levels. IPRA provides the direction for ensuring both aspects are addressed.

Development of IPRA by the Illinois Department of Nuclear Safety (IDNS) and the Illinois Emergency Management Agency (IEMA) began in 1980 following the adoption of new state and federal guidelines for radiological emergency preparedness that were the result of the 1979 Three Mile Island nuclear plant accident in Pennsylvania. IDNS and IEMA jointly maintain IPRA in cooperation with other state agencies and local governments.

The objectives of IPRA are to protect the health and safety of the citizens and the environment during a radiological emergency in Illinois; organize and coordinate local, state, and federal emergency response functions; and ensure the continuing availability of resources and personnel to address emergency situations.

Organization of IPRA

IPRA consists of seven volumes of detailed instructions for emergency response workers and government agencies. The set includes the State General Plan (Volume I) and site-specific volumes for each of the operating commercial nuclear power installations in Illinois. Volume I also describes the process for addressing radiological incidents that might occur at other fixed facilities or during the transportation of radioactive materials.

- The State General Plan explains the mechanism for coordinating the responsibilities of state and local governments and the utilities that own and operate nuclear power facilities. The plan also describes emergency response roles, procedures, and responsibilities for local, state, and federal agencies.
- The site-specific volumes detail the functions and responsibilities of local governments that would be affected in the event of a radiological accident. Details include maps of the site and surrounding area, procedures for local officials, lists of local resources available during an accident, and names and telephone numbers of local officials.

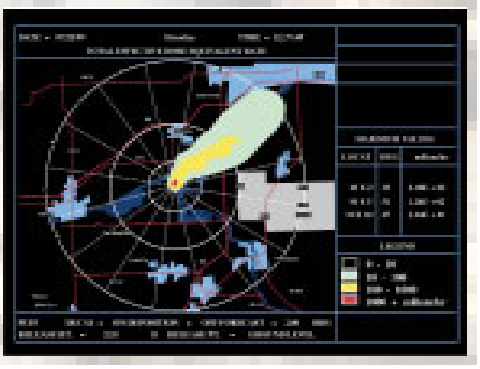
The Governor of Illinois has overall command and control of emergency response. IDNS provides technical information and advice to assist the Governor's decision-making. Operational support and coordination to carry out the Governor's decisions is provided by IEMA. IDNS technical support involves the use of professional staff and resources to assess the severity of a radiological accident and to recommend appropriate protective actions. IEMA operational support includes notification to local officials of the recommended protective actions and the provision of state resources, where necessary, to ensure actions are implemented effectively.

Regularly scheduled exercises ensure state and local emergency response teams are trained and knowledgeable and can effectively assess any situation and implement the necessary protective actions. These exercises are evaluated by the Federal Emergency Management Agency (FEMA) and the US Nuclear Regulatory Commission (NRC).

IPRA Planning Basis

A 10-mile radius around each commercial nuclear generating station is designated as the Emergency Planning Zone (EPZ) for that facility. A key objective for IDNS is to recommend protective actions for the EPZ population before any radioactive release occurs to ensure that no member of the public is unnecessarily exposed to a radiation hazard.

The 10-mile EPZ is required by the NRC for radiological emergency preparedness planning. It takes into account the various engineered safety features of nuclear reactors, the possible release paths, and the quantities of radiation that may be released in an accident. In addition, planning includes a 50-mile ingestion exposure pathway planning zone for each nuclear plant. Emphasis in the zone between 10 and 50 miles is on protection against the consumption of contaminated food and water supplies. Protective actions in the ingestion pathway EPZ include extensive radiological monitoring and sampling concurrent with warnings to food producers and the public regarding the potential for contamination of such pathways as water supplies, crops, and livestock.



Emergency Classification

NRC regulations categorize radiological emergencies at nuclear power facilities into four severity classifications. Specific events at each facility are defined under one of these emergency levels.

• **Unusual Event.** This classification represents a deviation from normal operating conditions that involves a potential degradation of the level of safety at a nuclear reactor. Operating status does not necessarily change, and no radioactive releases are expected during an unusual event. IDNS and IEMA are notified, but no off-site actions are initiated.

• **Alert.** This condition involves the actual or potentially serious degradation of safety levels at a facility. Operating status may change, including such actions as reducing power and placing on-site personnel in emergency status. IDNS, IEMA, and key local governments are notified, and may elect to put key response personnel on stand-by. IDNS initiates an ongoing technical assessment of the situation.

• **Site Area Emergency.** This level includes events that are in progress, or have occurred, involving the actual, or likely, major failure of station safety functions crucial to the protection of the public. Releases of radiation may occur that warrant the implementation of off-site protective actions. All emergency response personnel in IDNS, IEMA, supporting state agencies, and key local governments within the EPZ are activated. IDNS may recommend precautionary protective actions for the public.

• **General Emergency.** This classification means events are in progress, or have occurred, that involve actual or imminent substantial reactor core damage. During a General Emergency, significant quantities of radioactivity may be released to the environment. Full activation of IPRA is required, and public notification and appropriate protective actions are implemented. Such an event would likely result in recommendations to evacuate or shelter populations downwind of the affected facility.

IPRA Response Functions

• **Notification of off-site authorities** occurs when the utility informs IDNS and IEMA through the Nuclear Accident Reporting System (NARS) of an emergency classification. NARS is a dedicated

emergency telephone system linking emergency response locations. IEMA then notifies locally affected municipalities and counties through the NARS. The Emergency Alert System (radio & TV), mobile public address systems, and sirens are used to notify local citizens.

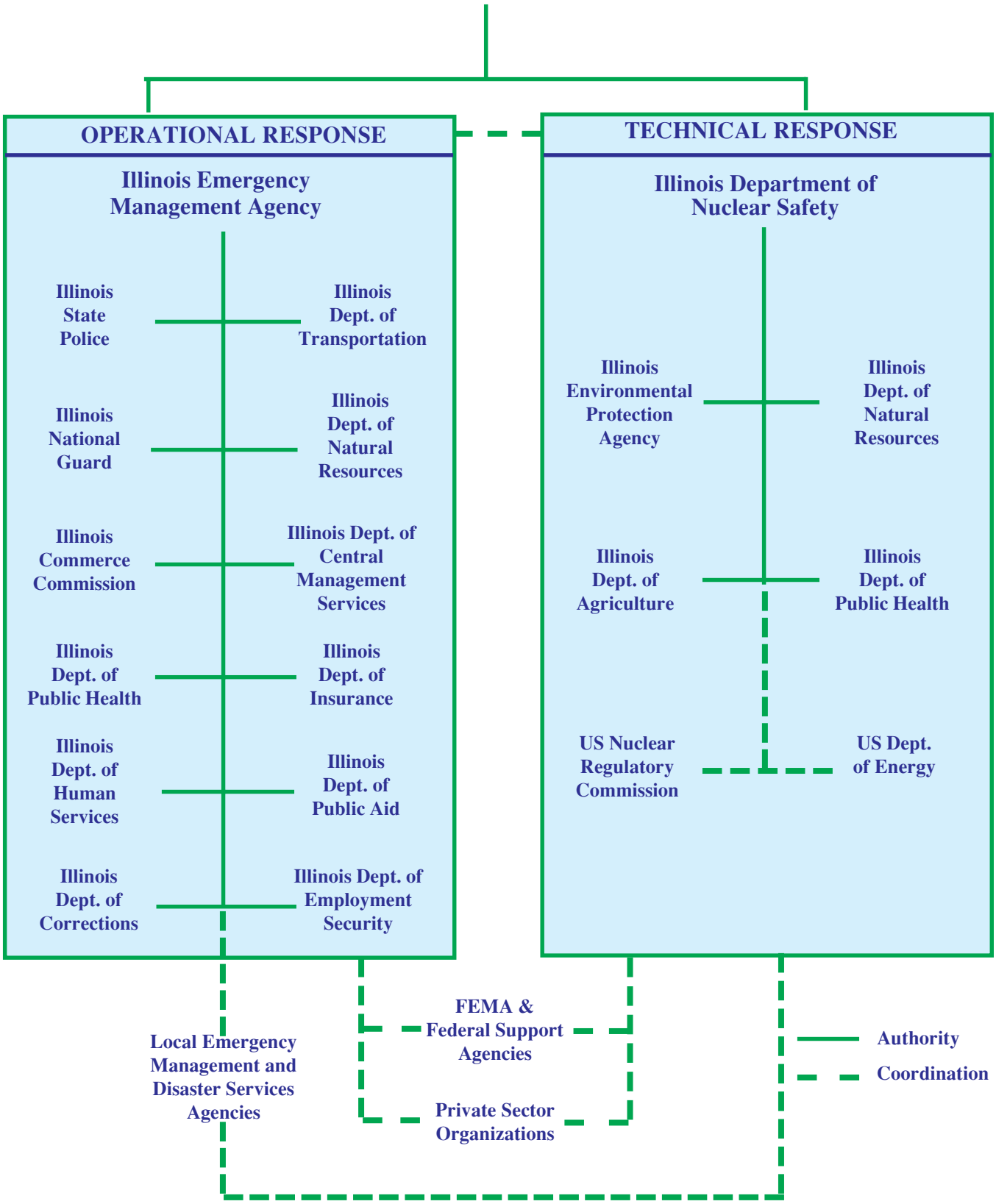
- **Radiological accident assessment** is performed by IDNS. Data analysis personnel in Springfield use information generated by the IDNS Remote Monitoring System (RMS) and data collected by IDNS field teams to assess the severity of an accident.
- **Protective actions** include instructions for taking shelter, evacuation, traffic control, measures to protect against contamination of livestock and food supplies, and the interdiction of potentially contaminated food, water, and milk.
- **Supportive parallel actions** include activities such as emergency medical services, social services, radiological exposure control, and law enforcement.
- **Public and media information** includes pre-established meeting locations for the press, public information materials, rumor control mechanisms, and pre-written emergency announcement scripts on the Emergency Alert System.

Past Performance of IPRA

Since the creation of IPRA, IDNS has responded to hundreds of radiological incidents. These included transportation accidents, industrial accidents, fires, and Unusual Events and Alerts at nuclear reactors. IPRA procedures have been followed in responding to these emergencies. None of these incidents have resulted in significant exposures of the public to radiation. To date, only Unusual Events and Alerts have occurred at the nuclear reactors in Illinois.

Under IPRA, training is provided by IDNS and IEMA for more than 8,500 local officials, fire fighters, police, medical personnel, bus drivers, Red Cross volunteers, and other emergency workers to address a radiological emergency. Personal radiation dosimetry and potassium iodide tablets (a blocking agent to keep radioactive iodine from concentrating in the thyroid gland) are maintained for all emergency workers with assigned roles under the IPRA.

An emergency response exercise simulating a severe nuclear power plant accident is conducted for each of the state's operating nuclear power plant sites every two years. State and local government performance in these exercises is evaluated by the Federal Emergency Management Agency (FEMA). The FEMA evaluations are part of the emergency preparedness requirements for the licensing of nuclear reactors, and form the basis for improving planning and response capabilities.


GOVERNOR
OPERATIONAL RESPONSE
Illinois Emergency Management Agency
Illinois State Police
Illinois Dept. of Transportation
Illinois National Guard
Illinois Dept. of Natural Resources
Illinois Commerce Commission
Illinois Dept. of Central Management Services
Illinois Dept. of Public Health
Illinois Dept. of Insurance
Illinois Dept. of Human Services
Illinois Dept. of Public Aid
Illinois Dept. of Corrections
Illinois Dept. of Employment Security
TECHNICAL RESPONSE
Illinois Department of Nuclear Safety
Illinois Environmental Protection Agency
Illinois Dept. of Natural Resources
Illinois Dept. of Agriculture
Illinois Dept. of Public Health
US Nuclear Regulatory Commission
US Dept. of Energy
Local Emergency Management and Disaster Services Agencies
FEMA & Federal Support Agencies
Private Sector Organizations
Authority
Coordination

Emergency Response to Reactor Accidents in Illinois:
Radiological Emergency Response in Illinois

IDNS has an important responsibility as the technical assessor of a radiological emergency situation in Illinois. Department staff provides analysis of the technical data from a nuclear reactor during an accident and formulates the recommendations that the Director makes to the Governor concerning protective actions for the public.

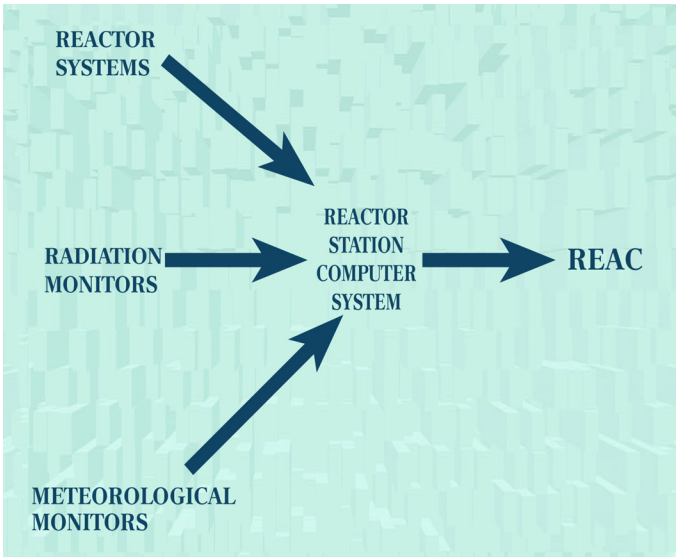
IDNS has unique and sophisticated equipment for continually monitoring conditions at all 11 operating Illinois nuclear reactors, analyzing actual releases of radioactivity to the environment, predicting the magnitude of a release, and anticipating the potential areas where exposures to a release might occur.

In a radiological accident, protective actions may be recommended based on the following analyses:

- operational conditions at the reactor site;
- probability of a radioactive release to the environment;
- content and magnitude of the release;
- radiation levels found in the environment; and
- weather conditions that could affect how and where radioactive materials might migrate.

Radiological Emergency Assessment Center

Accident analysis and field operations are directed from the command and control center at the department's headquarters in Springfield, Illinois, known as the Radiological Emergency Assessment Center (REAC). REAC houses an integrated computer system that continuously monitors thousands of incoming data sources from the IDNS Remote Monitoring System (RMS) and the Reactor Data Link (RDL) at each reactor.

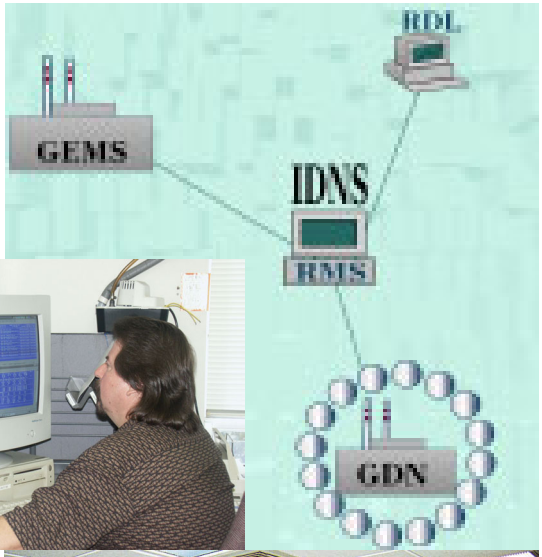


The REAC Commander is supported by a technical staff of nuclear engineers, health physicists, and environmental analysts who are on-call 24 hours a day and can be mobilized within one hour of notification.

The REAC facilities consist of the emergency command center and a 24-hour Telecommunications Center, supported by an independent mainframe computer center. Special equipment in REAC includes computer graphics monitors; computer terminals for analysis teams; telephone links to the Illinois State Emergency Operations Center, local emergency operations facilities, and the nuclear utilities; maps of the 10- and 50-mile Emergency Planning Zones for each power station; an extensive technical library; software to analyze the incoming data; and back-up power systems. Through the adjacent Telecommunications Center, REAC maintains communications with the Radiological Assessment Field Team (RAFT). All emergency communications are recorded.

The IDNS Remote Monitoring System sends data through computer links to REAC for analysis. The system includes:

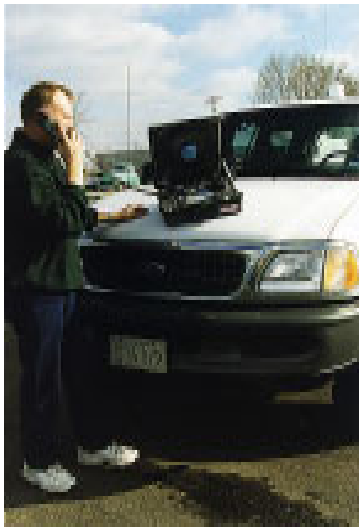
- A gamma detection network (GDN), consisting of pressurized ion chamber radiation detectors that are located radially at a distance of 1-2 miles around each nuclear power station. The detectors measure gamma radiation in the environment and can detect radiation levels in a range from normal background to very high levels.



- A Gaseous Effluent Monitoring System (GEMS) installed inside each power station samples the station ventilation exhaust stack. The GEMS measures the quantities and types of gaseous radioactive materials that are released by the station through the stack.
- A direct data communication link (RDL) between the REAC computer and each reactor's process computer provides continuous information on the status of safety systems, reactor auxiliary systems, in-plant radiation levels, and power generation levels. Hundreds of parameters are received from each reactor and updated every two to four minutes.

The REAC Commander is responsible for assessing the severity of an accident and advising the IDNS director on appropriate actions to recommend to the Governor to protect Illinois citizens. Within the REAC facility, the Commander's staff is divided into two elements: the Reactor Analysis Team and the Environmental Analysis Team.

- Reactor Analysts monitor the condition of the reactor safety systems and communicate with the staff at the utility and the NRC to evaluate the course of events during an accident. This analysis can be used to predict the potential severity of an event, the potential radiological consequences, and when a release might occur.
- Environmental Analysts use computerized dose assessment models to forecast the potential offsite impact of an accident, and once a release occurs, use environmental sampling data collected by the RAFT personnel to analyze the consequences of a release to the environment.



Radiological Assessment Field Team

During a reactor accident situation, Radiological Assessment Field Team (RAFT) personnel are dispatched to areas near the plant to monitor the levels and types of radioactivity and radioactive materials in the environment. The team consists of more than 80 highly trained personnel, a mobile command and communications van, a mobile radiochemistry laboratory, and a fleet of more than 40 vehicles, many specifically equipped for radiological emergency response. Each vehicle is equipped with both radio and satellite communications capability. RAFT is on call 24 hours a day and can mobilize within one hour of notification.

In addition to taking environmental samples, RAFT's personnel are

available to provide radiological monitoring and decontamination services for other emergency workers responding to the accident, as well as for any individuals evacuated as a result of the situation.

Results of RAFT environmental sampling are communicated to the Environmental Analyst Team in REAC. A confirming accident assessment is then formulated using RAFT sampling results and computer model predictions to evaluate the total radiological hazard to the public from any radioactive plume released during an accident and from radioactive materials inhaled from the air or ingested in food or water. Confirming accident assessments include the on-site consequences as determined by the affected utility and the off-site consequences developed by the IDNS Environmental Analyst Team.

The RAFT Commander directs and coordinates actions taken by IDNS field teams and maintains contact with REAC via radio, telephone, and satellite communications links. The RAFT Commander also coordinates communication with field teams from other state and federal agencies.

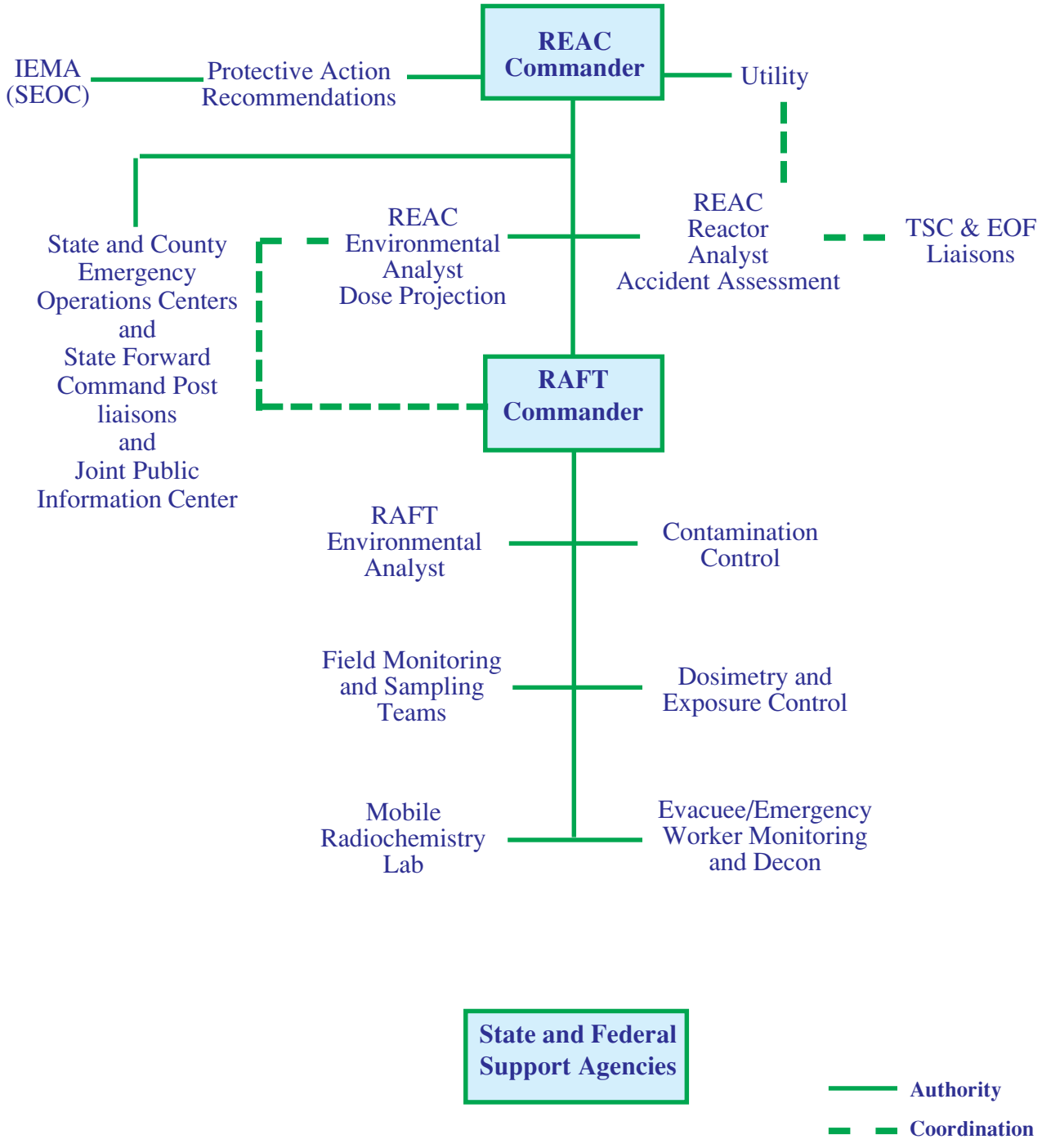
Staff working under the direction of the RAFT Commander include:

- **RAFT Environmental Analysts** responsible for tracking the gaseous radioactive plume that may be released in a severe accident;
- **Exposure Control Officers** responsible for protecting RAFT and other support personnel from excessive radiation exposure;
- **Contamination Control Officers** responsible for controlling and limiting radioactive contamination of RAFT;
- **Field Monitoring Teams** responsible for performing radiological surveys and collecting environmental samples. Monitoring team members carry personal dosimeters to measure radiation so any exposures can be carefully monitored by the Exposure Control Officer. These personnel also monitor other RAFT personnel, equipment, and vehicles, as well as other emergency response personnel and members of the public, when necessary.

(If people are evacuated from the area around a nuclear power plant, evacuees will be screened for contamination by RAFT teams before being provided with temporary shelter and necessities by the American Red Cross at pre-established Congregate Care Centers. The location of such facilities will be announced over the Emergency Alert System. Local governments are responsible for establishing these centers; the IDNS Contamination Control Officer is responsible for coordinating radiation monitoring at these facilities.)

- **Radiochemists** responsible for performing isotopic analysis of environmental samples.

RAFT equipment includes four-wheel-drive support vehicles to reach remote areas, sophisticated sampling and monitoring equipment, and personal dosimeters to measure radiation. Portable radiation instruments are used to measure radiation levels in the plume in the downwind sectors of the Emergency Planning Zone. Air, plants, soil, water, milk, and food samples are analyzed for specific radionuclides in the mobile radiochemistry laboratory or at the IDNS laboratory facilities in Springfield. Each RAFT member also is given potassium iodide (KI) tablets that may be taken before entering a contaminated area. Potassium iodide helps block the absorption of radioactive iodine by the thyroid gland, but is not effective in preventing detrimental health effects from other types of radioactivity.


REAC Commander
IEMA (SEOC)
Protective Action Recommendations
Utility
State and County Emergency Operations Centers and State Forward Command Post liaisons and Joint Public Information Center
REAC Environmental Analyst Dose Projection
REAC Reactor Analyst Accident Assessment
TSC & EOF Liaisons
RAFT Commander
RAFT Environmental Analyst
Contamination Control
Field Monitoring and Sampling Teams
Dosimetry and Exposure Control
Mobile Radiochemistry Lab
Evacuee/Emergency Worker Monitoring and Decon
State and Federal Support Agencies
Authority
Coordination

Emergency Response to Reactor Accidents in Illinois:

Protective Actions

Protective actions are taken to avoid or reduce the projected radiation dose to the public that may result from a radiological release. Evacuation, to avoid any unnecessary exposure, is the preferred protective action for the general population. Sheltering in place also may be recommended in limited situations where evacuation is not feasible.

IPRA employs an emergency response methodology that is pre-emptive; that is to use the state's diagnostic capabilities to forecast the potential consequences of a radiological accident as it develops and to prescribe protective actions early so that any risk of exposure to the public is minimized.

Protective Action Recommendations (PARs) are based on Protective Action Guidelines (PAGs) developed by the US Environmental Protection Agency and other federal agencies. Under most circumstances, IDNS is able to base PARs on its analysis of reactor conditions and sophisticated computer model predictions of radiation levels should a release to the environment occur. Once a release begins, a confirmatory assessment is performed by the IDNS Environmental Analyst Team based on the field data collected by the Radiological Assessment Field Team (RAFT) and computer model predictions.

- **Evacuation** - In a radiological emergency where evacuation is the preferable protective action, the Governor advises the residents in the areas downwind of the accident site to leave their homes and go to pre-established Congregate Care Centers. Here people are monitored for contamination and decontaminated, if necessary. Volunteer organizations provide food, clothing, and social services. Temporary shelter will be arranged by the American Red Cross. Immobile populations, such as hospital or nursing home patients, are relocated to appropriate facilities outside of the Emergency Planning Zone (EPZ).

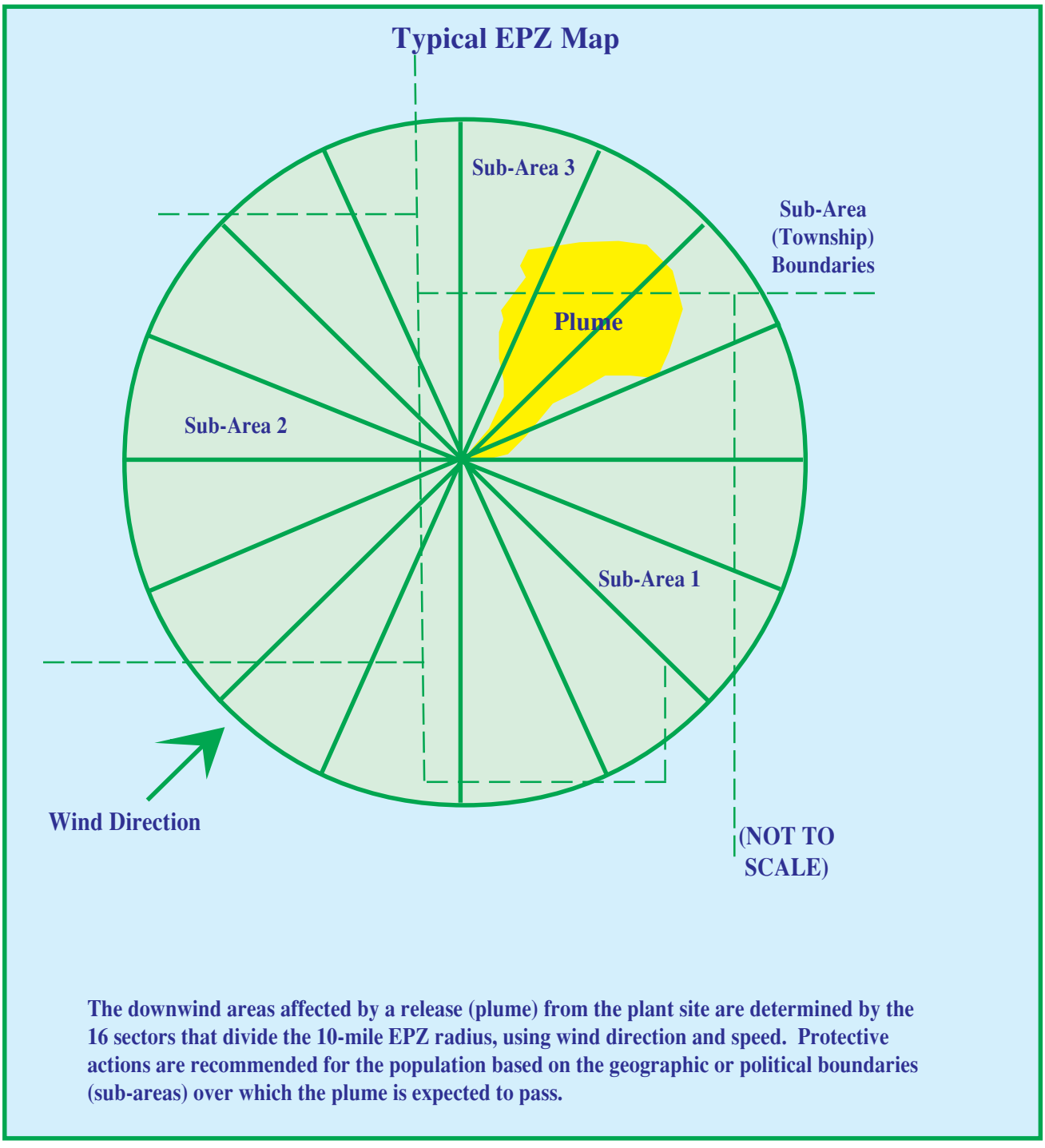
  Evacuation recommendations usually affect the immediate two-mile radius around the nuclear plant and may affect areas five to ten miles downwind of the facility. Residents in adjacent sectors of the EPZ may also be urged to shelter in place as a precaution. The affected sectors are converted to recognizable geo-political boundaries for broadcast to the public over the Emergency Alert System. Since meteorological conditions determine the path of a radioactive plume, evacuation and shelter recommendations may change as the situation evolves based on changing weather conditions.

- **Take Shelter** - The public is advised to stay in their homes, stores, or places of business, and to remain inside until directed to do otherwise. People will be advised to keep their windows and doors shut, turn off heating and air conditioning units that draw in outside air, and to listen to radios or televisions for emergency broadcasts. Sheltering may be recommended if a small or short duration release of radioactivity has already occurred or if adverse weather conditions prohibit the effective implementation of a prompt evacuation.

- **Traffic and Access Control** - Law enforcement agencies staff pre-established checkpoints to control access to and from the affected areas of the EPZ.

• **Food, Water, and Milk Control -** The state may recommend that farmers within a designated radius of the plant shelter livestock and restrict them to stored feed and protected water. This action is taken before releases occur, if possible, to avoid ingestion by livestock of contaminated vegetation or water so harmful levels of radioactivity do not enter the food chain.

The public is warned to avoid consumption of food and water from areas affected by any release of radiation until sampling and testing is conducted to determine the extent of contamination. Embargoes on the shipment of food, crops, and livestock from the affected areas may also be imposed. IDNS and the state departments of Natural Resources, Agriculture, and Public Health, and the Environmental Protection Agency work together to accomplish this task.



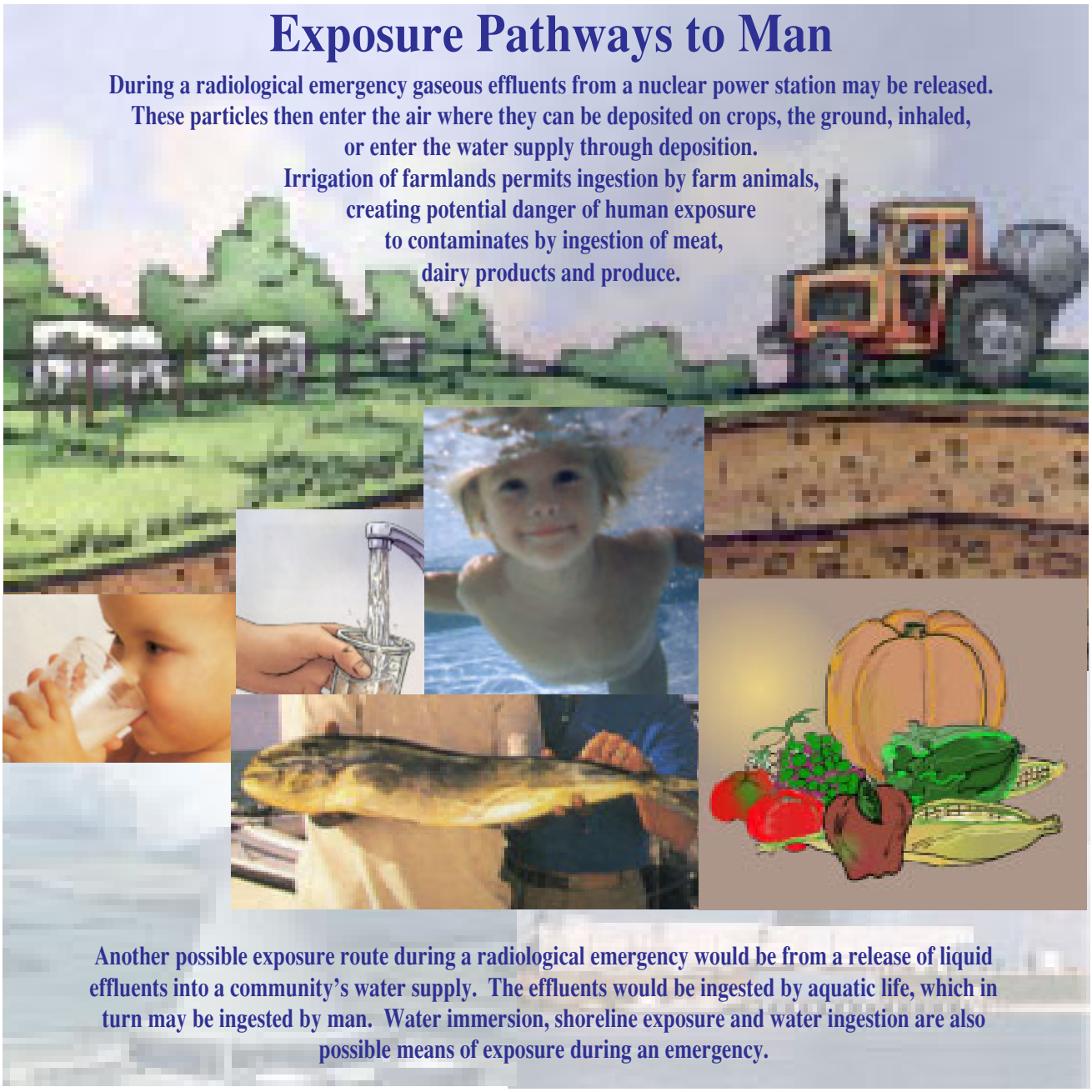
The downwind areas affected by a release (plume) from the plant site are determined by the 16 sectors that divide the 10-mile EPZ radius, using wind direction and speed. Protective actions are recommended for the population based on the geographic or political boundaries (sub-areas) over which the plume is expected to pass.

Informing the Public

If an accident with potential offsite consequences occurs, a combination of the Emergency Alert System (EAS), a network of sirens, and mobile public address systems is used to notify the public. Official messages concerning emergencies and protective actions are broadcast on a network of designated radio and television stations and cable TV systems serving the communities surrounding each nuclear station.

A Joint Public Information Center (JPIC) is established where the responding government agencies and the utility meet with media representatives to relay the most up-to-date information.

Every year, the inhabitants of the 10-mile EPZ receive emergency information published and distributed by the nuclear utilities. These public information brochures cover what to do if sheltering or evacuation is recommended, and include a map of recommended evacuation routes and general information about radiation and nuclear power. Citizens with special needs are identified by the utility with reply cards included in the information pamphlet. Special arrangements are pre-planned to accommodate immobile populations and persons with handicaps.



Emergency Response to Accidents Involving Radioactive Materials: *The Radiological Assessment & Coordinated Emergency Response (RACER) Team*

Department response personnel are activated more than 50 times each year to investigate accidents involving spilled or misplaced radioactive materials, or the recovery of lost radiation sources. In response to growing concerns over the increasing number of hazardous materials accidents, some potentially involving radioactive materials, IDNS initiated development in 1990 of an enhanced capability with the emergency response unit. A cadre of staff volunteers was organized within the department and trained in the use of specialized equipment and techniques for addressing radiological concerns in a mixed hazard environment. The RACER unit is available to assist local response organizations in dealing safely with incidents involving radioactive material.

Team members have a wide variety of educational backgrounds in such areas as chemistry, health physics, industrial hygiene, biology, nursing, and Emergency Medical Services. Team members must pass a level II physical, complete a 40 hour Hazardous Materials (HAZMAT) course and complete OSHA mandated training before they can perform entry and decontamination operations. This training prepares the team to conduct response activities in levels A through D personnel protective equipment.

The RACER team conducts training on a monthly basis, with team exercises each quarter. Training is complemented with periodic training from outside agencies and at least one off-site multi-agency exercise annually. Joint exercises have been conducted with the Springfield Airport Authority, Ottawa, IL Fire and Police Departments, the 183rd Fighter Wing of the Illinois Air National Guard (IL ANG) and the Peoria fire and police departments. The RACER team also participated in the Weapons of Mass Destruction (WMD) drill held in Aurora, IL. That drill included local, state and federal response agencies. Members of the RACER team also serve as integral members of the three State Weapons of Mass Destruction (SWMD) teams.

Basic sampling, mitigation and radiological survey techniques are routinely covered in training. Actual radioactive materials are utilized, whenever possible, to simulate accident conditions. Operational strengths and weaknesses are identified during each drill, and are incorporated into future training seminars.

The RACER team is organized in accordance with the Incident Management System. The RACER Commander (RC) directs the RACER team activities and serves as an advisor to the on-

scene incident commander. The operations officer, in coordination with other technical staff, develops the plan of action for the RC's approval. Upon approval, the operations officer directs the field staff in the conduct of field activities. The medical officer and safety officer work with the field staff and ensure that all team members operate in a safe manner. Other department staff in Springfield support RACER team field operations by serving as subject matter experts to research hazards and coordinating other support activities.

Terms Used to Describe Radiation and Related Activities

ALARA—A policy maintained for those individuals working with radiation that limits their occupational dose and the sum of doses received by all workers to a level As Low As is Reasonably Achievable.

ASSESSMENT ACTIONS—Those actions taken during or after an emergency to obtain and process information that is necessary to make decisions to implement specific emergency measures.

ATOM—The smallest particle of an element. It consists of a nucleus and a less dense outer area of electrons in motion.

BACKGROUND RADIATION—The radioactivity in the environment including cosmic rays from space and radiation that exists everywhere—in the air, in the earth, and in manufactured materials that surround us. In the United States most people receive 300 to 400 millirems of background radiation per year.

CONTAMINATION—Any radioactive material where it does not belong.

CONTROLLED AREA—Any area that requires radiological posting.

COUNTS PER MINUTE(CPM)—The number of emitted radioactive particles or rays counted per unit time by a detector.

CURIE(Ci)—A unit of radioactivity = 3.7×10^{10} nuclear transformations (disintegrations) per second (dps). Common fractions are:

Millicurie—One thousandth of a curie (mCi)
Microcurie—One millionth of a curie (uCi)
Nanocurie—One billionth of a curie (nCi)
Picocurie—One millionth of a microcurie (pCi)

DECAY HEAT—The heat produced by radioactive atoms in a nuclear reactor after it has been shut down.

DECAY, RADIOACTIVE—The disintegration of the nucleus of an unstable nuclide by spontaneous emission of charged particles, electromagnetic rays, or both.

DOSE—A general term denoting the quantity of radiation or energy absorbed. The unit of dose is the rad.

DOSE EQUIVALENT—A quantity that expresses all radiation on a common scale per unit mass for calculating the effective absorbed dose. It is defined as the product of the absorbed dose in rads and certain modifying factors depending on the type of radiation involved. The unit of dose equivalent is the rem.

DOSE RATE—The absorbed dose delivered per unit time.

DOSIMETER—A device, such as a film badge, which can be worn and used to measure the radiation dosage a person receives over a period of time.

ELECTRON—A negatively charged particle that forms part of the atom outside the nucleus. Electrons surround the positively charged nucleus and determine the chemical properties of the atom.

EXPOSURE—A measure of the ionization produced in air by x-rays or gamma radiation. The unit of exposure in air is the roentgen (R).

GAMMA RAY—Any short-wavelength electromagnetic radiation that originates from within the nucleus of an atom.

GEIGER COUNTER—An instrument for detecting and measuring beta and gamma radiation.

HALF-LIFE, RADIOACTIVE—The time required for a radioactive substance to lose 50 percent of its activity by decay.

ION—An atomic particle, atom, or chemical radical bearing an electric charge, either negative or positive.

IONIZATION—The process by which a neutral atom or molecule acquires a positive or negative charge.

ISOTOPE—The different forms of the same chemical element that are distinguished by having a different number of neutrons in the nucleus. A single element may have many isotopes. For example, the three isotopes of hydrogen are protium, deuterium, and tritium.

MAXIMUM PERMISSIBLE DOSE—An established limit on the radiation exposure a member of the general public can legally receive from a nuclear power plant due to routine operations.

NOBLE GASES—Those gases that do not combine chemically with other materials. The noble gases are helium, neon, argon, krypton, xenon, and radon. Radioactive isotopes of some noble gases are created by the fission process.

NUCLEUS, NUCLEI—The small positively charged core of an atom. It is only about 1/10,000 the diameter of the atom (determined by the position of the electrons), but contains nearly all the atom's mass. All nuclei contain both protons and neutrons, except the nucleus of ordinary hydrogen which consists of a single proton.

OCCUPATIONAL DOSE—Any dose received while working with radioactive materials.

OFFSITE—That area around a nuclear generating station that lies outside the station's site boundary.

PARTICULATES—Any microscopic particles that may be radioactive.

PERSON-REM (Synonym, MAN-REM)—A unit of population exposure obtained by summing individual dose-equivalent values for all people in the population. Thus, the number of person-rems contributed by 1 person exposed to 100 rem is equal to that contributed by 100,000 people each exposed to .001 rem.

PROTECTED AREA—The security area inside the double fence of a nuclear power plant.

RAD—Radiation Absorbed Dose, the unit of absorbed dose.

RADIOACTIVITY—The property of some nuclides of spontaneously emitting particles or electromagnetic rays.

RADIOLOGICALLY CONTROLLED AREA—Any area that requires radiological posting.

RADIOSENSITIVITY—The relative susceptibility of cells, tissues, organs, and organisms to the injurious action of radiation.

REM—Roentgen Equivalent Man, a unit of dose equivalent. 1 rem = 1000 millirem

RESTRICTED AREA—Any area where access is prohibited or controlled to protect against unnecessary exposure to radiation.

ROENTGEN (R)—A measurement of radiation effect in air from x-ray or gamma radiation. 1R = 1000 milliR

SHIELDING—A material, such as lead or concrete, around radioactive material used to prevent the escape of radiation and to protect workers and equipment.

SITE BOUNDARY—The boundary line that includes the property owned and controlled by a nuclear utility within which a nuclear plant is operated. The Protected Area is located within the Site Boundary.

THERMOLUMINESCENT DOSIMETER (TLD) — A device worn by emergency workers to record the accumulated amount of exposure during a given period of time.

URANIUM—A radioactive element, the basic fuel of a nuclear reactor.

X-RAY—Any penetrating electromagnetic radiation whose wavelength is shorter than that of visible light.

ILLINOIS DEPARTMENT OF NUCLEAR SAFETY

1035 Outer Park Drive, Springfield, IL 62704
217/785-9900
TDD: 217/782-6133
www.state.il.us/idns

Illinois Department of Nuclear Safety

The Illinois Department of Nuclear Safety is the state agency responsible for protecting Illinois residents from the potentially harmful effects of ionizing radiation.

IDNS began operation on October 1, 1980. Today, with a staff of about 215, IDNS has one of the foremost radiation protection programs in the nation. The department is well-equipped and has a superbly trained staff that enforces radiation regulations to protect the citizens of Illinois and their environment.

IDNS is nationally and internationally recognized as a leader in remote monitoring of nuclear power stations, emergency preparedness, and the inspection and licensing of users of radiation producing machines and radioactive materials.

Printed by the Authority of the State of Illinois
4792-100-3/03

RAI ATTACHMENT

RAI 13.3-18 Attachment (DeWitt Sheriff LOA)

AmerGen

An Exelon Company

Clinton Power Station
R. R. 3, Box 228
Clinton, IL 61727

January 21, 2004

Sheriff Roger W. Massey
DeWitt County Sheriff's Department
101 W. Washington
Clinton, IL 61727

Dear Sheriff Massey:

Clinton Power Station has a commitment to the Nuclear Regulatory Commission to annually review and update the letter of agreement with the local law enforcement agency. Accordingly, I have enclosed a copy of the current letter of agreement between Clinton Power Station and the Sheriff, DeWitt County, Illinois, for your review. If you still concur with the agreement, please sign in the space provided on the annual review of the agreement statement and return it to C. S. Williamson, Manager- Nuclear Security, at the Clinton Power Station. If you have any questions or comments, please feel free to contact me or Mr. Jay Waddell.

We appreciate your cooperation and support and look forward to continuing this excellent working relationship in the future.

The enclosed agreement has been classified as Safeguards Information in accordance with Title 10, Code of Federal Regulation, Part 73.21. Please protect this information against unauthorized disclosure.

Sincerely,

Charles S. Williamson

C. S. Williamson
Manager – Nuclear Security

CSW/cf

Enclosure

ANNUAL REVIEW
OF THE AGREEMENT BETWEEN CLINTON POWER STATION
AND THE SHERIFF, DEWITT COUNTY, ILLINOIS

I have reviewed the enclosed agreement and find it to be an acceptable and workable document as it is currently written.

Clinton Power Station

Date: 01/21/04

By: Charles S Williamson
C. S. Williamson
Manager – Nuclear Security

Date: 01/27/04

By: Roger W Massey
Roger W. Massey, Sheriff
DeWitt County, Illinois

RAI ATTACHMENT

RAI 13.3-19 Attachment (Revised EP App. B Table B-1 Requirements Matrix)

APPENDIX B

Requirements Matrix

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
10 CFR 52.17 (b) (1)	None	The application must identify physical characteristics unique to the proposed site, such as egress limitations from the area surrounding the site that could impose a significant impediment to the development of emergency plans.	None	None	2.3; 2.4	NR[c]	1A
10 CFR 52.17(b)(2)(i)	NUREG-0654 REV 1, SUPPLEMENT 2, Section III	The application may also propose major features of the emergency plans, such as the exact sizes of the EPZs that can be reviewed and approved by the USNRC in consultation with FEMA in the absence of complete and integrated emergency plans.			1.1; 2.2	NR	NR
10 CFR 52.17(b)(3)	NUREG-0654 REV 1, SUPPLEMENT 2, Section III C	Description of contacts and arrangements made with local, state, and federal government agencies with emergency planning responsibilities	Include the name and location of the organization contacted, the title and/or position of the person contacted, and the role of the organization in emergency planning. Additional guidance concerning contacts and arrangements for this option of the rule from Section V planning standards and evaluation criteria.		3.1, 3.2, 3.4 App. A; IPRA Vol. I by ref.	NR	NR
10 CFR 50.47		Emergency Planning Zones			2.2	NR	1A

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
10 CFR 50.47		Plume Exposure Pathway			2.2	NR	NR
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(1) 10 CFR 50 APP E IV (A)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	A. Assignment of Responsibility (Organization Control)			CH 3		
			Primary responsibilities are identified for emergency response by applicant and by state and local organizations within the EPZ.		CH 3		
				1. Identify the state, local, federal and private sector organizations (including utilities) that are intended to be part of the overall response organization for EPZs. A[d], S[d], L[d]	3.1.1; 3.2; 3.3; 3.4	1F; 1I; 1J; 2A; 2B; 3A; 3B; 3C	1C; 1D; 2B; 2E; 2F; Annexes 2A-2F
				2. a. Each organization shall identify the functions and responsibilities for major elements of ER, 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	NR but in 3.2; 3.3	1E; 2A; 2B; 3A; 3B; 3C	1D; 2A; 2F; Annexes 2A-2F

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				The description of these functions may be shown in a table of primary and support responsibilities. S, L		IPRA Command and Coordination Table, Chapter 2, Section B	Figures F.2.b.1; F.2.c.1; F.2.c.2; F.2.c.3; F.2.c.4; F.2.c.5
				2.b. Each application shall contain the legal basis for such authorities, by reference to specific acts, codes or statutes. S, L	NR but in 3.1	Introduction Section A	
				3. Include a description of contacts and arrangements pertaining to the concept of operations developed between F[d], S, and L agencies and other support organizations having an emergency response role within the EPZs. Any written letters of agreement should be included. A signature page in the application may be appropriate for some organizations to signify their agreement. A, S ,L	3.2.3; 3.2.4; 3.2.5; 3.4; App. A	Signature Sheet	2 Signature Sheet
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(2) 10 CFR 50 APP E IV (A)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	B. On-Site Emergency Organization			CH 3		
			Interfaces among various on-site response activities and off-site support and response activities are identified.		CH 3		

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				1. Identify interfaces between and among the on-site functional areas of emergency activity, local services support, and S and L government response organizations. This may be illustrated in a block diagram. A	Figure 3.1-2	NR	NR but in 2; Figure F.2.b.1 Annex 2A Att. 1
				2. Identify services to be provided by local agencies for handling emergencies (e.g. police, ambulance, medical, hospital, and fire fighting). A description of the arrangements involving these services shall be included in the plan. Any written letters of agreement should also be included. A	3.2.4; 3.2.5; App. A	NR	NR but in 2F; 2H; Annexes 2A-2F
10 CFR 52.17(b)(2)(i) 10 CFR 50.4(b)(3) 10 CFR 50 APP E IV (A)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	C. Emergency Response Support and Resources			CH 3		
			Arrangements for requesting assistance resources are described, and organizations capable of augmenting the planned responses are identified.		3.4		
				1. Each state and ESP applicant shall make provisions for requesting federal assistance through the Federal Radiological Emergency Response Plan. A,S	3.1.1.1.2, 3.1.1.1.4; 3.4.5	3 A(8); 3B	NR

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				2. Identify radiation labs and their general capabilities and expected availability to provide radiation monitoring and analyses services during an emergency. A,S,L	3.4.3; 3.4.4; 3.4.7; 3.4.8	1E(1); 3A(8)	Included in Illinois Plan
				3. Identify nuclear and other facilities and organizations that can be relied on to provide assistance in an emergency. A,S,L	3.4.1; 3.4.2; 3.4.9; 3.4.10	3A(12); 3C	2F; 2J; 3D; App. D; App. E; Map C
				4. Include description of the contacts and arrangements made with the response organizations Identified above. A,S,L	App. A	Signature Sheet; 3A(12); 3C	2F; 2J; 3D; App. D; App. E; Map C
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(4) 10 CFR 50 APP E IV (B)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	D. Emergency Classification System			CH 4		
			A standard emergency classification system is specified.		CH 4		
				1. An emergency classification scheme as set forth in Appendix 1 of NUREG-0654 Revision 1 or Regulatory Guide 1.101 Revision 3 must be established by ESP applicant but need not include plant-specific initiating conditions. A	4.1 - 4.7 and 4.9	NR but in 1C	NR but in 1C
				2. Each S and L organization shall establish an emergency classification system consistent with that established by the ESP applicant. S,L	NR but in 4.10	1C	1C

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(5) 10 CFR 50 APP E IV (C,D)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	E. Notification Methods and Procedures			CH 5		
			The means are established for notification by the ESP applicant of S and L response organizations, and for notification of emergency personnel and the populace within the plume EPZ.		CH 5		
				1. Each organization shall describe mutually agreeable bases for notification of response organizations consistent with the emergency classification scheme set forth in Appendix 1 of NUREG-0654 Revision 1. A,S,L			
				2. Each organization shall describe a method for alerting, notifying, and mobilizing emergency response personnel. A,S,L	5.2; 5.3; 5.5	3A; 4A; 4B; 4C; 4D	1C; 1D; 2B; 2C; 2D; Annexes 2A-2F

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				3. Each organization shall describe the administrative and physical means for notifying and promptly instructing the public within the plume EPZ. A,S,L	5.5.1; 5.5.2	1G	2A; Annexes 2A-2F
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(6) 10 CFR 50 APP E IV (D)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	F. Emergency Communications			CH 6		
			Provisions are provided for prompt communications among principal response organizations to emergency personnel and to the public.		CH 6		
				1. The communication plans for emergencies shall describe:			
				a. Provision for communications with contiguous S and L governments within the EPZ. A,S,L	6.1	1J; 3A; 4A; 4B	2G; Annexes 2A-2F; App. A
				b. Provision for communications as needed with Federal emergency response organizations. A,S,L	6.1 ERDS 6.1.8	2B; 3A(3); 3A(8)	IPRA Volume 1; App. A

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				c. Provision for alerting and activating e personnel within each response organization. A,S,L	6.2	3A	1C; 1D; Annexes 2A-2F
				2. The communication arrangement for fixed and mobile medical support facilities shall be described A,S,L	6.4	3A(9)	2G; Annexes 2A-2F; App. A
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(7)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	G. Public Education and Information			CH 7		
			An emergency information program for the public and news media is described to address: (1) the provision of information to the public, on a periodic basis, on how they will be notified and what initial actions should be taken in an emergency; and (2) the means for acquainting the news media with emergency information.		CH 7		
				1. Each organization shall describe a program to provide a coordinated dissemination of information to the public on a periodic basis (at least annually) regarding how they will be notified and what their actions should be in an emergency. This program should include information on:			

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				Educational information on radiation	7.1	5C	2K
				Contact for additional information	7.1	5C	2K
				Protective measures, e.g. evacuation routes and relocation centers, sheltering, respiratory protection, radioprotection drugs	7.1; 7.2	5C	2K
				Special needs of the handicapped and transient population	7.1	5C	2K
				Means for accomplishing this dissemination may include, but are not limited to: information in the telephone book, periodic information in utility bills, posting in public areas, and publications distributed on an annual basis. A,S,L	7.1	5C	2K
				2. Each organization shall describe a program for acquainting news media on a periodic basis (at least annually) with the emergency plans, information concerning radiation, and points of contact for release of public information in an emergency. A,S,L	7.5	5D	2K
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(8) 10 CFR 50 APP E IV (E)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	H. Emergency Facilities and Equipment			CH 8		

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
			Adequate emergency facilities and equipment to support the emergency response are described.		CH 8		
				1. Each applicant shall describe a TSC and an OSC in accordance with NUREG-0696 "Functional Criteria for ER Facilities," Feb. 1981. A	8.1	NR	NR
				2. Describe an EOF from which evaluation and coordination of all licensee (applicant) activities related to an emergency is to be carried out and from which the licensee (applicant) shall provide information to F, S, and L authorities responding to emergencies in accordance with NUREG 0696. A	8.2	NR	NR
				3. Each off-site organization shall describe an EOC for use in directing and controlling response functions. S,L	NR but in 8.3	1F(1)	1C; 2E
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(9) 10 CFR 50 APP E IV (B)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	I. Accident Assessment			CH 9		
			Adequate methods, systems and equipment are described for assessing and monitoring actual or potential off-site consequences of a radiological emergency condition.		CH 9		

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				1. Provide a description of the contacts and arrangements made with off-site organizations for acquiring and evaluating met information. Describe how suitable met data will be made available to the State. A	3.1.1.1.7; 9.1.3; App. A	NR but in 1(E) & 3A(8)	1D; 2F and 2O
				2. Describe the contacts and arrangements made for field monitoring within the plume exposure EPZ. A,S,L	9.2; 9.2.3	3A(4)	Included in Illinois Plan at 3a(4)
				3. Contacts and arrangements to locate and track airborne radioactive plume, using either or both F and S resources, shall be described. A,S	9.2; 9.2.1; 9.2.3	1E; 3A(8)	NR but Included in Illinois State Plan at 3A(8)
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(10) 10 CFR 50 APP E IV (B)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	J. Protective Response			CH 10		
			A range of protective actions is described for the plume exposure pathway EPZ for the public and emergency workers. Guidelines for the choice of protective actions during an emergency, consistent with federal guidance, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale are described.		CH 10		

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				1. Describe the evacuation routes and transportation for on-site individuals to some suitable off-site location, including alternatives for inclement weather, high traffic density, and specific radiological conditions. A,S,L	10.1.3	NR	Clinton Power Station Emergency Plan
				2. Describe a mechanism for recommending protective actions to the appropriate S and L authorities IAW the Manual of PAGs and Protective Actions for Nuclear Incidents (EPA 400-R-92-001). A	10.1.6; 10.2	NR	NR
				3. Prepare ETE within plume exposure EPZ in accordance with Appendix 4 of 0654 Revision 1. A	2.3; Table 2.3-5	NR	NR
				4. Each organization concept for implementing protective measures for the plume EPZ shall be described, including items such as those listed below, if available. Where appropriate, a description of contacts and arrangements made with off-site agencies with emergency planning responsibilities must be included.	10.1.3; 10.1.7; 10.1.8; Figure 10.2-1 App. A	1E(4)	2J
				a. Maps showing evacuation routes, evacuation areas, shelter areas, and relocation centers in host areas. A,S,L	Figs. 2.2-1; 2.3-1	Site-specific volumes	1E; Map A; Map B; Map C; Map D
				b. Maps showing population districts around site. This shall be by evacuation areas. Each applicant shall also present the information in a sector format. A,S,L	Fig. 2.2-2 Fig. 2.3-2	Site-specific volumes	1A; Table1; Map A; Map B; Map C

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				c. Proposed means for notifying all segments of the transient and resident population. A,S,L	5.2.1	1E(4); 1G	1C; 2A; Annexes 2A-2F
				d. Proposed means for protecting those persons whose mobility may be impaired (e.g., institution or other confinement). S,L	NR	5C	2J;3B; Annexes 2A-2F;
				e. Proposed means for the use of KI for emergency workers and institutionalized persons within the plume EPZ whose immediate evacuation may be infeasible or very difficult. S,L	NR but in 10.1.5.3	1E(4)	1D; 2O; Annexes 2A-2F
				f. Proposed means of relocation. S,L	NR	1E(4)	2J; Annexes 2A-2F; App. C;
				g. Potential relocation centers in host areas, which are at least 5 mi, and preferably 10 mi, beyond the boundaries of the plume EPZ. S,L	NR but in 10.3	Site-specific volumes	Map C
				h. Projected traffic capacities of evacuation routes under emergency conditions. S,L	NR but in 2.3;	Evacuation Time Estimates	Evacuation Time Estimates

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				i. Control of access to evacuated areas and organization responsibilities for such control. S,L	NR	1E(4); 3A(2); 3A(6); 3A(7);	1D; App. B; Annexes 2A-2F; Map A
				j. Identification of and means for dealing with potential impediments (e.g., seasonable impassability of roads) to use of evacuation routes and contingency measures. S,L	NR	3A(6); 3A(7); 3A(11);	1D; Annexes 2A-2F
				k. Time estimates for evacuation of various sectors and distances based on a dynamic analysis (time-motion study under various conditions) for the plume EPZ (see Appendix 4 of 0654 Revision 1 and Section II of 0654 Revision 1 Supplement 2). S,L	NR but in 2.3, Table 2.3-5	Evacuation Time Estimates	Evacuation Time Estimates
				l. The basis for the choice of recommended PAs from the plume exposure pathway during emergency conditions. This shall include expected local protection afforded in residential units or other shelter for direct and inhalation exposure, as well as evacuation time estimates. S,L	NR but in 2.3, Table 2.3-5; 10.2; Figure 10.2-1	1E(4)	See IPRA Volume 1
				5. Describe the means for registering and monitoring evacuees at reception centers in host areas. S,L	NR but in 10.3	1E(5)(b); 3C(1)	2J(3)(f); 2J(4)
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(11)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	K. Radiological Exposure Control			CH 11		

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
			Means are described for controlling radiation exposure to emergency workers in an emergency.		CH 11		
				1. Describe guidelines on dose limits for:	11.2; Table 11.1-1	NR	NR but in 2O(2)
				a. Removal of injured persons.	11.1; 11.2	NR	NR but in 2O(2)
				b. Undertaking corrective actions.	11.1; 11.2	NR	NR but in 2O(2)
				c. Performing assessment actions.	11.1; 11.2	NR	NR but in 2O(2)
				d. Performing field radiological measurements in the plume EPZ.	11.1; 11.2	NR	NR but in 2O(2)
				e. Providing first aid.	11.1; 11.2	NR	NR but in 2O(2)
				f. Performing personnel decontamination.	11.1; 11.2	NR	NR but in 2O(2)
				g. Providing ambulance service.	11.1; 11.2	NR	NR but in 2O(2)
				h. Providing medical treatment services. A	11.1; 11.2	NR	NR but in 2O(2)
				2. Describe an on-site radiation protection program to be implemented during emergencies, including methods to implement dose limits. General guidance on dose limits for workers performing emergency services can be found in EPA 400-R-92-001. A	11.1; 11.2	NR	NR

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				3.a. Describe how to determine doses received by emergency personnel involved in any nuclear accident, including volunteers. A,S,L	11.2.1	1E(5)(b)	1D; 2O; Annexes 2A-2F
				3.b. Describe how to acquire and distribute dosimeters, both direct reading and permanent record devices. A,S,L	11.2.1	1E(5)(b);	1D; 2O(1); Annexes 2A-2F
				4. Describe a decision chain for authorizing emergency workers to incur exposures in excess of the EPA dose limits for workers performing emergency services. A,S,L	11.1;	1E(4); 3A(8)	Included in Illinois Plan at 1E(4); 3A(8)
				5.a. Specify action levels for determining the need for decontamination of emergency workers, equipment and vehicles, and the general public and their possessions. A,S,L	11.2.3; 11.2.5	1E(5)(b); 3A(8)	Included in Illinois Plan at 1E(5)(b); 3A(8)
				5.b. Describe a means for decontamination of emergency personnel wounds, supplies, instruments and equipment. A,S,L	11.2.3; 11.2.4	1E(5)(b); 3A(8)	2A; 2O(4); Annexes 2A-2F
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(12)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	L. Medical and Public Health Support			CH 12		
			Contacts and arrangements are described for medical services for contaminated injured individuals.		CH 12		

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				1. Describe the contacts and arrangements made for local and backup hospitals and medical services having the capability for evaluation of radiation exposure and uptake. A,S,L	3.4.5; 12.1;12.3; APP A	Included in Local Plan at 1H; 2A	2A
				2. Each state shall develop lists indicating the location of public, private, and military hospitals and other emergency medical services facilities within the state or contiguous states considered capable of providing medical support for any contaminated injured individual. The listing shall include the name, location, type of facility and capacity, and any special radiation capabilities. Contacts and arrangements made in developing this list should be described. S	NR	3A(9)	NR but included at Annex 2A Att.19
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(13) 10 CFR 50 APP E IV (H)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	M. General Plans for Recovery and Re-entry are developed			NR but Chapter 13	NR but 1B	NR but 2F; App. F
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(14) 10 CFR 50 APP E IV (F)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	N. Periodic Exercises are Conducted			NR Chapter 14 - Placeholder only	NR but 6A	NR but 2M

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(15) 10 CFR 50 APP E IV (F)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	O. Radiological Emergency Response Training			CH 15		
			A Radiological Emergency Response Training Program is described for those who may be called on to assist in an emergency.		CH 15		
				1. Describe a training program for instructing and qualifying personnel who will implement radiological emergency response plans. Specialized internal training and periodic retraining shall be provided in the following categories: A,S,L	15.1; 15.2; 15.5	6B	2L
				a. Directors or coordinators of the response organizations	15.4.1.1	6B	2L
				b. Personnel responsible for accident assessment	15.4.1.2	6B	2L
				c. Radiation monitoring teams and radiation analysis personnel	15.4.1.3	6B	2L
				d. Police, security and fire fighting personnel	15.4.1.4	6B	2L
				f. First aid and rescue personnel	15.4.1.6	6B	2L
				g. Local support services personnel including Civil Defense /emergency services personnel	15.4.1.7	6B	2L
				h. Medical support personnel	15.4.1.8	1H; 6B	2L

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				i. Personnel responsible for transmission of emergency information and instructions.	15.4.1.9; 15.4.1.10	6B	2L
10 CFR 52.17(b)(2)(i) 10 CFR 50.47(b)(16) 10 CFR 50 APP E IV (G)	NUREG-0654 REV 1, SUPPLEMENT 2, Section V	P. Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans			CH 16		
			Responsibilities are established for plan development and review and for distribution of emergency plans, and training is described for planners.		CH 16		
				1. Each organization shall provide for the training of individuals responsible for the planning effort. A,S,L	16.1	6B	2L
				2. Each organization shall identify by title the individual with the overall authority and responsibility for radiation emergency response planning. A,S,L	16.2	6C	2N
				3. Each organization shall designate an Emergency Planning Coordinator with responsibility for the development and updating of emergency plans and coordination of these plans with other response organizations. A,S,L	16.3	6C	2N
				4. Each organization shall update its plan and agreements as needed. A,S,L	16.4	6C	2N

TABLE B-1
Requirements Matrix

Code	Guidance	Requirement	Planning Standard	Evaluation Criteria	ESP	Illinois[a]	DeWitt[b]
				5. The emergency plans and approved changes to the plans shall be forwarded to all organizations and appropriate individuals with responsibility for implementation of the plans. Revised pages shall be dated and marked to show where changes have been made. A,S,L	16.5	6C	2N
				6. Each plan shall contain a specific table of contents. Plans submitted for review should be cross-referenced to this supplement. A,S,L	App. B	6D	2N

Notes:

[a] Illinois Plan for Radiological Accidents (IPRA). Volume I. Concept of Operations. May 2001.
[b] Illinois Plan for Radiological Accidents (IPRA). Volume VIII. Clinton Plan. July 2003.
[c] NR = Not required.
[d] A = Applicant; S = State; L = Local; F = Federal