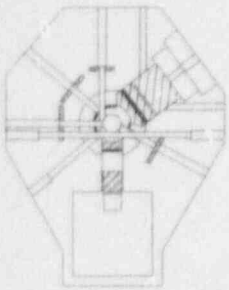
Radiation Science Laboratory
University of Illinois at Urbana-Champaign
Department of Nuclear Engineering / College of Engineering



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Administrator
Richard L. Holm
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Health Physicist
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June 30, 1997
Docket No. 50-151

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-137
Washington, DC 20555

Dear Sir,

Please find enclosed a copy of the Emergency Plan for the Nuclear Reactor Laboratory at the University of Illinois in Urbana, Illinois. I am submitting this plan in accordance with 10 CFR 50.54(q). No changes were made that decrease the effectiveness of the plan.

The three attachments to this letter are as follows

- A memo from the Emergency Coordinator outlining the changes made to the Plan.
- A draft revision with revision bars showing the changes that were made.
- A final version with the changes incorporated and the revision bars removed.

If there are any questions concerning the Emergency Plan please do not hesitate to contact me.

Sincerely,

Richard L. Holm
Reactor Administrator

c: file
USNRC, Region III
Mr. Alexander Adams, Jr, USNRC, NRR

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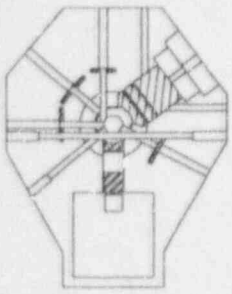
Radiation Science Laboratory

University of Illinois at Urbana-Champaign
Department of Nuclear Engineering / College of Engineering



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To: Rich L. Holm
Emergency Director and Reactor Administrator

From: Mark A. Kaczor mak
Emergency Coordinator and Reactor Health Physicist

Date: May 22, 1997 (Item # 8. added on 6/2797).

Subject: Summary of Changes to the Emergency Plan in Revision 1, May 1997.

I have completed the first biennial review and update of the new Emergency Plan, Revision 0, dated March 1995, and accepted by the NRC by letter dated, September 26, 1995. This review resulted in the changes listed below and is designated Revision 1, May 1997:

1. Incorporated all comments received to date on Revision 0.
2. Incorporated all "Lessons Learned" from the 1995 Emergency Drill and the 1996 Emergency Exercise as outlined in the Critiques for these events.
3. Incorporated format changes to the Emergency Action Levels (EALs) and Emergency Classification System as suggested in the April 1997 "ERRATA" referencing "NUREG-0849" received from the NRC Office of Resources Management on May 5, 1997.
4. Updated the Agreement with the Offsite Support Agency, Champaign County Emergency Services and Disaster Agency (ESDA).
5. As a result of 2) and 4) above, changed the notification of the "Senior University Police or Fire Officer On Duty" as the individual authorized to place a call to Champaign County ESDA to the "Reactor Operator / Acting Emergency Director or the Emergency Director" as the individuals authorized to place a call to 9-911 and request that the Champaign County Emergency Services and Disaster Agency (ESDA) activate Onsite coordination with local hospitals and support agencies.
6. Removed Equipment Inventory Lists for equipment we had no control over that belonged to other campus organizations. This did not change the minimum equipment required to be operable at all times to maintain Emergency Preparedness, located in the Emergency Equipment Locker in Room 106B NEL.
7. Made minor grammatical and document format changes as appropriate.
8. As a result of Reactor Committee Review on 6/23/97 the Carle Clinic Association, "Radiation Accident Program" was removed from Attachment 5 to the Emergency Plan. This document is controlled by Carle Clinic and provides guidance to hospital personnel. Since it gives no instruction to our own Emergency Plan Members it was removed and placed in the Emergency Preparedness files where it can be reviewed by interested parties.

Thank you for your time and consideration of this matter.

MAK/mak

pc: Reactor Committee and Head, Department of Nuclear Engineering as noted to the right: D. Miller, D. Hang, B. Heuser, E. Wiener, D. Scherer, R. Holm, B. Jones

(eplan\rvsum597.doc)

Draft Revision for Review

EMERGENCY PLAN

for the

NUCLEAR REACTOR LABORATORY

at the

UNIVERSITY OF ILLINOIS

in

URBANA, ILLINOIS

Facility Licenses No. R-115; R-117
Docket Nos. 50-151; 50-356

Revision ~~0~~ 1
~~March 1995~~ May 1997

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PREFACE

Planning for possible emergencies at the Nuclear Reactor Laboratory (NRL) was started with the publication of the Hazards Analysis in October, 1959. This report contained written procedures to be followed in the case of a sudden or threatening increase in radiation levels, ~~were to occur. After the start-up~~ After the commencement of operations in 1960, these procedures were incorporated into the "Rules and Regulations for the Operations of the NRL". Because of extensive changes in 1968-69, a new Utilization License was required. Appendix A of this License, "Technical Specifications for the Illinois Advanced TRIGA Reactor", required written procedures for emergency conditions involving potential or actual release of radioactivity, including provisions for evacuation, re-entry, recovery, and medical support. Criteria for re-entry and recovery were added to the "Rules and Regulations". Medical support was provided by a decontamination room at McKinley Hospital.

Appendix E of 10 CFR 50 was added on December 31, 1970. This required Emergency Plans for all nuclear reactors. Following the guidelines that were available, a Radiation Emergency Plan for NRL was reviewed and approved by the Nuclear Reactor Committee on April 12, 1973. This Plan was then reviewed by personnel from the Office of Inspection and Enforcement of the Nuclear Regulatory Commission (NRC) and was found to be adequate. For a number of years, most of the attention for approved Emergency Plans was directed toward Nuclear Power Reactors.

On November 2, 1982, a Radiation Emergency Plan was submitted to the Director of the Office of Nuclear Reactor Regulation as required by 10 CFR 50.54(r). The Plan followed the outline of the "Standard for Emergency Planning for Research Reactors" (ANSI/ANS 15.16), and was basically the original Plan with sections added to address areas that were not previously covered. On March 20, 1984, a notice was received that the Plan was inadequate in certain areas. The areas were listed with the notice. The deficient items were covered in a letter that was sent on July 9, 1984. A letter was received from the NRC on November 16, 1984, stating that the Emergency Plan was acceptable. The Plan was fully implemented on March 16, 1985, and accepted by the NRC on September 17, 1985.

The Emergency Plan then implemented, was a combination of the items sent on November 1982 and July 1984. When completed, it was reviewed and approved by the Nuclear Reactor Committee. Copies were then submitted to the NRC to replace the earlier documents. This plan remained relatively unchanged from 1985 until this revision; with the exception of annual reviews that included minor modifications such as; changes to names, telephone numbers, a relocation of the decontamination center, and a relocation of the assembly area.

A letter dated April 12, 1994, from the Emergency Preparedness Branch , Division of Radiation Safety and Safeguards of the NRC stated that the revisions submitted on March 3, 1994, were acceptable in accordance with 10 CFR 50.54(q). However, the letter included some suggestions for improvements to the plan that would ensure that it more closely followed the guidance in NRC Regulatory Guide 2.6, ANSI/ANS 15.16-1982, and NUREG-0849. These documents were reviewed and compared to the existing plan and as a result ~~this~~ a major revision to the scope and content of the plan was completed as "Revision 0". The major thrust of the changes were to more completely follow the guidance given in the aforementioned documents, correct deficiencies noted in the April 12 letter from the NRC, and to replace the "Group Concept" of the Emergency Organization in the previous plan with "the normal hierarchy where one individual is given responsibility with a line of succession". This revision was ~~will be~~ reviewed and approved by the Reactor Committee and submitted to the NRC on ~~in~~ March 13, 1995. The NRC accepted the plan in a letter dated, September 26, 1995.

1.0 INTRODUCTION

1.1 Description of the Reactors:

The Illinois Advanced TRIGA and LOPRA reactors utilize fuel produced by General Atomics. The authorized maximum steady state power levels are 1.5 MW for the TRIGA reactor and 10 kW for the LOPRA reactor. The TRIGA is used for education, training operators, the production of radioactive isotopes, and research. The LOPRA is coupled to the TRIGA through a thermal column. Although the LOPRA was originally built to study coupling effects, the only present use is for education and training.

1.2 Location of the Reactor Facility:

The reactors are housed in a concrete block building near the Northeast end of the University of Illinois Campus in Urbana-Champaign. The actual location is 200 feet East of Goodwin Avenue between Green Street and Springfield Avenue. A semi-alley way called Western Avenue dead ends at the facility. Two maps are included to show access and locations of the reactor building and alternate emergency centers. One is a partial map of Champaign-Urbana showing access from Interstate 74 to the reactor and the location of Carle Medical Center (Attachment 1). The second map shows the immediate area and gives access routes to the reactor and the alternate sites that would be used as emergency centers (Attachment 2). A third map is included as a diagram of the reactor building showing the site boundary, the location of the reactors within the building, and associated equipment locations (Attachment 3).

1.3 Identification of the Owner/Operator:

Both reactors are owned by the University of Illinois Board of Trustees and operated by the Nuclear Engineering Department in the College of Engineering.

1.4 Objective of the Emergency Plan:

The Emergency Plan contains provisions for a graded response to possible unplanned adverse radiological conditions both within and beyond the facility boundaries. The content follows the guidelines of ANSI/ANS 15.16-1982 "Emergency Planning for Research Reactors", NRC Regulatory Guide 2.6, and NUREG-0849. Since the postulated radioactive releases from credible accidents at this facility falls in the first category, "Authorized Power Level... Equal to or less than 2 MW", in the Section 3.6, Table 2 Guidelines of ANSI/ANS 15.16-1982, "Alternate Method For Determining The Size of an EPZ", (Emergency Planning Zone) the EPZ for this plan is established at the Operations (Site) Boundary and the Emergency Classification "General Emergency" is not used.

2.0 DEFINITIONS

Confinement System: is defined at the Reactor Building Walls and is designed to confine and maintain control of the dispersal of radioactive material in the gaseous, particulate, and liquid states.

Controlled Area: is that area, outside the restricted area but inside the site boundary, access to which is limited by the licensee for any reason. It is ~~defined the same as the areas referred to below as the Operations and Site Boundaries. It is controlled for the purpose of Security~~ controlled at the NRL for the purpose of Security and is identical to the Operations and Site Boundaries, as defined below.

Emergency: is a condition that calls for immediate action, beyond the scope of normal operating procedures, to avoid an accident or to mitigate the consequences of one.

Emergency Action Levels (EALs): are specific instrument readings or observations; radiological dose or dose rates; specific contamination levels of airborne, waterborne, or surface-deposited radioactive material; that may be used as thresholds for establishing emergency classes and initiating emergency measures.

Emergency Classes: are classes of accidents grouped by severity level for which predetermined emergency measures should be taken or considered.

Emergency Plan: is a document that provides the basis for actions to cope with an emergency. It outlines the objectives to be met by the emergency procedures and defines the authority and responsibilities to achieve such objectives.

Emergency Planning Zone (EPZ): is an area for which offsite emergency planning is performed to assure that prompt and effective actions can be taken to protect the public in the event of an accident. The EPZ for this plan is the Operations (Site) Boundary and is defined by the Reactor Building Walls (Confinement).

Emergency Plan Implementation Procedures (EPIPs): are documented instructions that detail the implementation actions and methods required to achieve the objectives of the Emergency Plan and are contained as a distinct group of procedures as an appendix to this plan.

Emergency Support Centers (ESCs): ~~is an area~~ are areas designated for assembly after an evacuation. The purpose of these facilities is to provide: a control center; an accountability station; and a radiological monitoring area for frisking of personnel and evaluation of radiological samples.

LOPRA Reactor: Low Power Reactor Assembly; which refers to the smaller of the two reactors located onsite that utilizes General Atomics designed TRIGA Type Fuel Elements and has a maximum steady state power rating of 10 kW.

Nuclear Reactor Laboratory (NRL): is defined in the introduction to this plan.

Offsite: is the geographical area outside the walls (the confinement) of the Reactor Lab and is not controlled by the operator of the lab, the Nuclear Engineering Department.

Onsite: is the geographical area inside the walls (the confinement) of the Reactor Lab and is under the control of the operator of the lab, the Nuclear Engineering Department.

Operations Boundary: is the area where the Reactor Administrator (Emergency Director) has direct authority over all activities. This is defined by the Reactor Building Walls (Confinement) and the area within this boundary has prearranged evacuation procedures known to people frequenting the area. This area is also referred to as the Site Boundary.

Protective Action Guides (PAGs): are projected radiological dose or dose commitment values to individuals that warrant protective action following a release of radioactive material. Protective actions would be warranted provided the reduction in individual dose expected to be achieved by carrying out the protective action is not offset by excessive risks to individual safety in taking the protective action. The projected dose does not include the dose that has unavoidably occurred prior to the assessment.

Reactor Staff: are those individuals with assigned duties at the Reactor Lab who have both Security and Restricted Area Access. They are trained to respond to breaches of security and have the appropriate level of

radiological training to have unescorted access to, and escort individuals into, the restricted area. They also have an assigned position in this plan.

Research Reactor: is a device designed to support a self-sustaining neutron chain reaction for research, developmental, educational, training, or experimental purposes, and which may have provisions for production of non-fissile radioisotopes.

Restricted Area: is that area, access to which is limited by the licensee, for the purpose of protecting individuals against undue risk from exposure to radiation and radioactive material. This area is clearly posted within the reactor building and the boundaries are known by all members of the Reactor Staff.

Site Boundary: is the area where the Reactor Administrator (Emergency Director) has direct authority over all activities. This is defined by the Reactor Building Walls (Confinement) and the area within this boundary has prearranged evacuation procedures known to people frequenting the area. This area is also referred to as the Operations Boundary. This area may also be frequented by people unacquainted with reactor operations; such as Visitors and Tour Groups; however, these individuals are always under the direct supervision and control of a member of the Reactor Staff.

Shall, Should, and May: the word "shall" is used to denote a requirement; the word "should" to denote a recommendation; and the word "may" to denote permission, neither a requirement nor a recommendation.

TRIGA Reactor: Training, Research, Isotope pProduction, General Atomics; is the acronym used to refer to the main and larger of the two reactors at the NRL with a maximum steady state power rating of 1.5 MW..

3.0 ORGANIZATION AND RESPONSIBILITIES

The Nuclear Reactor Laboratory (NRL) is a facility of the Nuclear Engineering Department, through which it receives primary funding for staff and equipment, and is operated under license from the NRC. The Reactor Administrator, a licensed Senior Reactor Operator (SRO), is directly responsible for all activities conducted at the NRL including, but not limited to: Building Security, Special Nuclear Material (SNM) Custodian, the Emergency Plan, and Supervision of the Reactor Staff. The Reactor Administrator is responsible, in a line of authority to the Head of the Department of Nuclear Engineering, who is responsible to the Dean of the College of Engineering. The Reactor Administrator shall be designated as the Emergency Director in the Emergency Plan. The Reactor Administrator shall be responsible to inform the individuals designated in the Emergency Organization on their part in the overall plan. He shall keep these individuals informed regarding changes to their roles in the Emergency Organization and changes to the Emergency Plan. The Reactor Health Physicist is responsible for radiological controls at the NRL and shall be designated as the Emergency Coordinator and the Emergency Radiation Protection Manager in the Emergency Plan. The Reactor Health Physicist is responsible for ensuring that the radiation monitoring and supplementary equipment required for an emergency is available as specified in the Emergency Plan. The Reactor Operating Staff consists of individuals who have a current SRO or Reactor Operator (RO) License and shall be responsible to take immediate action that may be necessary to respond to a potential emergency and/or to activate the Emergency Plan. Other Reactor Staff members shall be assigned roles in the Emergency Plan commensurate with their training and experience. The Reactor Committee is a permanent standing committee of the Department of Nuclear Engineering and reports directly to the Department Head. Their responsibilities include: review of reactor operation, experiments, changes to operations procedures, and to review and approve the Emergency Plan in accordance with the facility Technical Specifications and 10 CFR 50.

3.1 Emergency Response Organization (ERO)

The ERO shall consist of an Emergency Director and Emergency Staff acting under the authority of the Emergency Director as outlined in this Plan and the Emergency Plan Implementing Procedures (EPIPs). The positions in the ERO shall be filled by Reactor Staff personnel and augmented, as necessary, by staff from the Radiation Safety Office (RSO) in the Division of Environmental Health & Safety (DEH&S), and the Nuclear Engineering Department. Onsite and Offsite organizations may be required to assist the ERO for emergency event response. This assistance may include the University Police for security matters, traffic control and limited building evacuation; the University Fire Department for firefighting, emergency medical trauma response, and/or rescue; the University Office of Public Affairs for media contact; and the Champaign County Emergency Services and Disaster Agency (ESDA) for outside assistance with police, fire and medical facilities. A Block Diagram outlining the reporting responsibilities, lines of authority, and line of succession to the Emergency Director is included as Attachment 4. Written agreements for those organizations that would be available to the ERO staff are included as Attachment 5. More complete details on the ERO's organization and responsibilities may be found in **EPIP-01**.

3.1.1 Emergency Director (ED)

The **Reactor Administrator** is the Emergency Director. The ED has ultimate authority over Onsite activities and personnel. The ED is in charge of classifying an emergency based on Emergency Action Levels (EALs) or events and directing the activation of the Emergency Plan as detailed in **EPIP-08**. The details of the ED's responsibilities may be found in **EPIP-04**. The authority and responsibility of this position includes:

*a) classification of an emergency, upgrading and downgrading;
b) initiating response and activation of the Emergency Response Organization (ERO);
c) ensuring the reactors are shutdown, and terminating or minimizing releases of radioactive material;
d) protecting facility personnel and visitors;
e) exchange of information with authorities responsible for offsite emergency measures and summoning assistance as necessary;
*f) protective action decisions;
*g) authorizing radiation exposures in accordance with NRC Regulatory Guide 8.35 "Planned Special Exposures";
h) declaring the termination of an emergency and directing restoration,
i) providing for a final report on the emergency with revisions to the Emergency Plan if necessary, including informing the ERO of planned organizational actions or changes.

* Indicates authorities and responsibilities which may not be delegated by the ED.

Other personnel, listed below, are also assigned to the position of ED (as alternates) with the same responsibilities and authorities described above. This assures the immediate availability of an individual to respond if the Emergency Director is not available.

Line of Succession to ED: Reactor Health Physicist
Operations Supervisor
Senior Reactor Operator
Campus Radiation Safety Officer

3.1.2 Emergency Coordinator (EC)

The **Reactor Health Physicist** is the Emergency Coordinator. The EC is responsible for the overall coordination of the Emergency Plan as detailed in **EPIP-05**. These responsibilities include:

a) developing and maintaining the Emergency Plan and Implementing Procedures (EPIPs);

b) advising the Reactor Administrator on the selection and training of individuals assigned to key emergency plan positions;
c) providing training and exercises for facility personnel and outside agencies;
d) procuring equipment and supplies required by the Emergency Plan;
e) providing a critique of drills or exercises for the purpose of updating the plan;
f) conducting the biennial review of the plan;
g) coordinating plans with other applicable organizations.

Line of Succession to EC: Operations Supervisor
Senior Reactor Operator

3.1.3 Reactor Operator (RO / SRO)

The **Reactor Operator** is responsible for the shutdown and securing of the reactors in emergency situations which occur during reactor operation. The operator shall inform the Duty SRO of the observed action levels and shall take immediate action in case of possible reactor damage or uncontrolled radioactivity release. The operator shall refer to **EPIP-02**, "Reactor Operator Immediate Action Procedures" and **EPIP-03**, "Nuclear Reactor Lab Emergency Call List - Intrusion/Emergency" for guidance and for details on other responsibilities.

3.1.4 Emergency Radiation Protection Manager (ERPM)

The **Reactor Health Physicist** is the Emergency Radiation Protection Manager. The ERPM is responsible for the initial assessment of actual or potential radiological hazards onsite and offsite. This responsibility includes; onsite and offsite dose assessments, recommended protective actions, and all radiation protection services within the provisions of the Emergency Plan. The ERPM is also the Emergency Director until the ED arrives. The details of the ERPM's responsibilities may be found in **EPIP-06**. Other individuals that may act as ERPM if the primary ERPM is not available are:

Line of Succession to ERPM: Reactor Health Physicist Assistant
Campus Radiation Safety Officer (RSO)
Radiation Safety Office Health Physicist

3.1.5 Emergency Plant Services Manager (EPSM): Medical, Security, and Fire.

The **Duty Senior Reactor Operator (SRO)** is the EPSM and is responsible for obtaining first aid, police, and fire-fighting assistance from the Senior University Police Officer or the Senior University Fire Officer On Duty as warranted by the situation. The EPSM is responsible for assessment of actual or potential security aspects of all radiation emergencies and shall provide advice and consultation to the ED on all matters relating to security and traffic control upon activation of the Emergency Plan. In addition, the SRO is responsible for advising the ED on Plant Services and Equipment and for obtaining needed equipment from the University Operations and Maintenance Department. The details of the EPSM's

responsibilities may be found in **EPIP-07**. Other individuals that may act as EPSM if the primary EPSM is not available are:

Line of Succession to EPSM: Any SRO
Reactor Health Physicist
Safety Specialist from DEH&S

3.1.6 Emergency Public Information Manager (EPIM)

The **Head, Department of Nuclear Engineering** is the EPIM. The EPIM shall provide information, as discretion dictates, to the University Office of Public Affairs, when such information is provided by the Emergency Director. The EPIM shall act as primary spokesperson for the Emergency Director. The EPIM shall review all press releases written by the University Office of Public Affairs. In the absence of the duly appointed EPIM, the following individuals shall act as temporary EPIM:

Alternates to EPIM: Assistant Head, Department of Nuclear Engineering
Director, Division of Environmental Health & Safety

3.1.7 University Office of Public Affairs

The University Office of Public Affairs will handle all official news releases concerning emergency conditions at the Nuclear Reactor Lab. The Reactor Administrator shall be responsible for the technical content of information prepared for release by the Office of Public Affairs.

3.1.8 ~~Senior University Police or Fire Officer On Duty~~ Police, Fire, and Medical Assistance

The Senior ~~University Police or Fire Officer On Duty~~ Reactor Operator / Acting Emergency Director or the Emergency Director (ED) shall be authorized to place a call to 9-911 and request that the Champaign County Emergency Services and Disaster Agency (ESDA) activate Onsite coordination with local hospitals and support ~~hospital~~ agencies. These calls should be regarded as being properly sanctioned by the University. Police and Fire services are available at all times. The University Police may be called to provide security assistance, emergency radio communications, traffic and crowd control; as necessary. The University Fire Department may be called to fight a fire, provide emergency medical assistance or rescue services. Both the Police and Fire Departments are instructed, on a biennial basis, on the special aspects of the NRL including building security and fires involving potential radiation exposure or areas with radioactive material present.

shall be authorized to place a call to activate Onsite coordination with local hospitals and support agencies.

3.1.9 Radiation Safety Office (RSO)

The RSO is the Section within the Division of Environmental Health & Safety responsible for Radiation Safety on the Campus outside the confines of the NRL. Professional and Technical Health Physics staff from the RSO are available to assist in the event of an emergency at the NRL. The Director of the Radiation Safety Officer is also the Campus Radiation Safety Officer and shall be notified in the event of an emergency at the NRL.

3.2 Coordination and Notification of Federal, State, and Local Governmental Agencies

The postulated credible accidents associated with the operation of the Nuclear Reactor Laboratory will not result in a radiological hazard affecting the General Public. The credible emergency events will not require the direct involvement of Federal, State, and Local Governmental Agencies; however, these agencies shall be notified as specified in Sections 3.2.1, 3.2.2, 3.2.3, and 3.2.4 below. The contents of initial and follow-up

emergency messages; to the extent the information is known, and dependent upon the agency being notified; should include some or all of the following:

a) Name, title, and telephone number of the caller;
b) The location of the incident and the emergency class;
c) A description of the emergency event;
d) The date and time of the incident initiation;
e) The type and quantity of radionuclides released or expected to be released.
f) Projected or actual dose rates outside the operations (site) boundary.
g) Ask the recipient of the message to place a return telephone call to authenticate the message.

3.2.1 Nuclear Regulatory Commission (NRC) and American Nuclear Insurers (ANI)

The NRC Region III Office of Inspection and Enforcement is located at Lisle, Illinois. Assistance from this office would be in accordance with the provisions of the license, 10 CFR 20, and commensurate with the seriousness of the emergency. Notification of the Headquarters Operations Center at the telephone and facsimile numbers noted below will result in Region III being notified in the event of an emergency, therefore, a separate call to Region III is not required.

Location	Telephone Number	Availability
NRC Operations Center	Voice: 1-301-816-5100 Voice backup : 1-301-951-0550 Facsimile: 1-301-816-5151	24 hours/day 24 hours/day 24 hours/day
NRC Region III	Voice: 1-708-829-9500	24 hours/day
American Nuclear Insurers (ANI)	Voice: 1- 860-561-3433	24 hours/day
	Facsimile: 1-860-561-4655	24 hours/day
~~American Nuclear Insurers~~	~~? Voice: 1- 203-561-3433~~	~~?~~ ~~?24 hours/day~~

3.2.2 Champaign County Emergency Services and Disaster Agency (ESDA)

ESDA has overall responsibility for providing coordination of local police, fire, rescue, and medical response for large scale disasters and emergencies. The Senior ~~University Police or Fire Officer On Duty~~ Reactor Operator / Acting Emergency Director or the Emergency Director (ED) shall be authorized to place a call to 9-911 and request that the Champaign County Emergency Services and Disaster Agency (ESDA) activate Onsite coordination with local hospitals and support ~~hospital~~ agencies. These calls should be regarded as being properly sanctioned by the University.

3.2.3 University of Illinois Police and Fire Departments

The University Police and Fire Departments shall provide immediate response to a security event or fire within or without the Reactor Building and near environs. The Emergency Director (ED), or an individual such as ~~the Duty~~ a Senior Reactor Operator (SRO) acting as the ED or at the direction of the ED, shall be authorized to request assistance from ~~the University Police and Fire Departments or to notify them of a potential emergency at the NRL. The Senior University Police or Fire Officer On Duty shall be the only individuals authorized to place a call to the Champaign County Emergency Services and Disaster Agency~~

~~(ESDA) when the need~~ Champaign County ESDA. ESDA will notify the University Police and Fire Departments, as well as other appropriate support agencies, of a potential emergency at the NRL. ~~arises and request that ESDA activate~~ ~~Onsite coordination with the local hospitals. These calls should be regarded as being properly sanctioned by the University~~.

3.2.4 University Division of Environmental Health & Safety (DEH&S)

The Director of the Radiation Safety Office is also the Campus Radiation Safety Officer and shall be notified in the event of an emergency at the NRL.

3.3 Termination of an Emergency

The Emergency Director (ED) is responsible for declaring the termination of an emergency. Prior to termination of an emergency the ED shall conclude that no foreseeable subsequent events could cause the action limits of the emergency to be exceeded. The ED shall verify that all areas to be reopened to personnel or to the General Public meet the requirements of 10 CFR 20 and all areas to be restricted for entry or which require controlled access are properly posted.

3.4 Authorization for Reentry

The Emergency Director (ED) shall authorize any reentry into the NRL, or portions thereof, previously evacuated during an emergency, in accordance with the guidelines established in **EPIP-10** , "Reentry and Recovery Procedures".

3.5 Authorization for Planned Special Exposures

With the concurrence of the Head of the Department of Nuclear Engineering and after consultation with the Emergency Radiation Protection Manager, the Emergency Director may authorize Planned Special Exposures for emergency team members. The criteria used to establish exposure limits for this authorization shall be in accordance with NRC Regulatory Guide 8.35 "Planned Special Exposures.

4.0 EMERGENCY ACTION LEVELS (EALs) AND EMERGENCY CLASSIFICATION SYSTEM

The Emergency Action Levels (EALs) and Emergency Classes described below for the Nuclear Reactor Laboratory are based on credible accidents associated with reactor operation and other non-reactor safety related events that have minimal, if any, radiological consequences. More specific guidance on any of the topics listed in Section 4.0 can be found in **EPIP-08**, "Emergency Action Levels (EALs) and Emergency Classification Procedures".

4.1 Non-Reactor Safety Related Event (NRSRE)

This class of emergency consists of an event that does not endanger the General Public. Notification of or assistance from the University Police and Fire Departments may be warranted. The following Emergency Action Levels (EALs) or events shall initiate emergency measures associated with this Emergency Class:

a) Significant personnel injury with or without radiological complications.
b) Minor fire or explosion not specific to the reactors.
c) Significant contamination of an individual or of the facility.
d) Civil disturbances or receipt of a bomb threat that is not specific to the Nuclear Reactor Lab.

More specific guidance on this topic can be found in **EPIP-08**, "Emergency Action Levels (EALs) and Emergency Classification Procedures".

4.2 Notification of Unusual Event (NOUE)

This class of emergency consists of an event that may be initiated by either man-made or natural phenomena that can be recognized as creating a significant hazard potential that was previously nonexistent. There is usually time available to take precautionary and corrective steps to prevent escalation of an accident or to mitigate the consequences should it occur. No releases of radioactive material requiring offsite response are expected. Some elements of the Emergency Organization may be activated or notified to increase the state of readiness, as warranted by the circumstances. Although the situation may not have caused damage to the reactors, the reactors shall be shutdown.

The following Emergency Action Levels (EALs) or events shall initiate emergency measures associated with this Emergency Class:

a) Actual or projected radiological effluents at the site (operations) boundary calculated to produce a ~~whole body dose of 15 mRem~~ Deep Dose Equivalent (DDE) of 15 mRem (0.15 mSv) accumulated within 24 hours.

i) The following guideline shall be used to calculate ~~this projected dose~~ a Committed Effective Dose Equivalent (CEDE):

~~50 * EC * 24 hours ≈ 15 mRem (for noble gases)~~
~~100 * EC * 24 hours ≈ 15 mRem (for nuclides other than noble gases)~~
100 * EC * 24 hours = 2.4 E^3 EC-hr ≈ 15 mRem (0.15 mSv) for radionuclides other than noble gases
50 * EC * 24 hours = 1.2 E^3 EC-hr ≈ 15 mRem (0.15 mSv) for noble gases

Note: EC = Effluent Concentration values listed in 10 CFR 20, Appendix B, Table 2.

This can be determined by observing the following radiation levels on the facility radiological monitors:

ii) Area Radiation Monitors (ARMs) > 20 mR/hr for the West **and** Lobby **and** Reactor Top ARMs for more than 10 minutes with the reactor shutdown and no other sources of radiation present **and**;

iii) Continuous Air Monitors (CAMs): Mezzanine **and** Reactor Top CAMs > 2000 cpm above background **and** Exhaust Stack Monitor > 380 cps.

Note: If the East ARM is greater than 20 mR/hr, this is an Alert. Proceed to section 4.3.

b) Report or observation of severe natural phenomena, such as tornadoes in the immediate vicinity of the Nuclear Reactor Lab, or earthquakes felt in the facility.

c) Receipt of a bomb threat specific to the Nuclear Reactor Lab or a bomb discovered in or near the facility with potential radiological release implications.

d) Fire or explosion within the facility that cannot be controlled immediately with an onsite CO_2 extinguisher and requiring the assistance of the University Fire Department for control.

e) Failure of a fuel element or failure of an experiment with a release of radioactivity.

More specific guidance on this topic can be found in **EPIP-08**, "Emergency Action Levels (EALs) and Emergency Classification Procedures".

4.3 Alert

This class of emergency consists of events that would be of such radiological significance as to require notification of the Emergency Response Organization (ERO) and their response as appropriate for the specific emergency situation. Under this class it is unlikely that offsite response or monitoring would be necessary. Substantial modification of reactor operating status is a highly probable corrective action. Protective evacuations or isolation of certain areas within the operations (site) boundary may be necessary. Situations that may lead to this class include: 1) severe failure of fuel cladding or of fueled experiments where containment boundaries exist to reduce releases or less severe cladding failures in situations where fission products are not well contained, or 2) significant release of radioactive material as a result of experiment failures.

The following Emergency Action Levels (EALs) or events shall initiate emergency measures associated with this Emergency Class:

a) Actual or projected radiological effluents at the site (operations) boundary calculated to produce a ~~whole body dose of 75 mRem~~ Deep Dose Equivalent (DDE) of 75 mRem (0.75 mSv) accumulated within 24 hours.

i) The following guideline shall be used to calculate a Committed Effective Dose Equivalent (CEDE): ~~this projected dose~~:

~~250 * EC * 24 hours ≈ 75 mRem (for noble gases)~~
~~500 * EC * 24 hours ≈ 75 mRem (for nuclides other than noble gases)~~
500 * EC * 24 hours = $1.2\ E^4$ EC-hr ≈ 75 mRem (0.75 mSv) for radionuclides other than noble gases
250 * EC * 24 hours = $6.0\ E^3$ EC-hr ≈ 75 mRem (0.75 mSv) for noble gases

Note: EC = Effluent Concentration values listed in 10 CFR 20, Appendix B, Table 2.

This can be determined by observing the following radiation levels on the facility radiological monitors:

ii) Area Radiation Monitors (ARMs) > 100 mR/hr for the West **and** Lobby **and** Reactor Top ARMs for more than 10 minutes with the reactor shutdown and no other sources of radiation present **and**;

iii) Continuous Air Monitors (CAMs): Mezzanine **and** Reactor Top CAMs > 10,000 cpm above background **and** Exhaust Stack Monitor > 999 cps.

b) Actual or projected radiation levels at the site (operations) boundary of 20 mRem/hr ~~for 1 hour whole body~~ (0.2 mSv/hr) Deep Dose Equivalent (DDE) for 1 hour, based on East Wall Area Radiation Monitor (ARM); or 100 mRem ~~projected thyroid dose~~ (1.0 mSv) Committed Dose Equivalent (CDE) to the thyroid.

c) Severe failure of fuel cladding, as indicated by the Demineralizer ARM alarming with an indication >40 mR/hr and confirmed by indications in Sections 7.2 a) ii) & iii) above; or failure of fueled experiments where containment boundaries exist to reduce releases or less severe cladding failures in situations where fission products are not well contained.

d) Significant releases of radioactive material as a result of experiment failures.

e) Loss of physical control of the facility.

More specific guidance on this topic can be found in **EPIP-08**, "Emergency Action Levels (EALs) and Emergency Classification Procedures".

4.4 Site Area Emergency

No credible accidents attributable to the reactor or its operation are postulated which could cause emergency conditions beyond the operations (site) boundary. Chapter XIV of the Safety Analysis Report (SAR) analyzed a number of accidents, including the release of radioactive effluents to the environment. The analysis of a fuel cladding failure with complete loss of coolant, and the ventilation system off, indicate that an emergency of this class would never occur. However, an emergency condition where the Emergency Response Organization (ERO) may consider setting up traffic control or the evacuation of adjacent buildings may require limited entry into the provisions of this classification.

More specific guidance on this topic can be found in **EPIP-08**, "Emergency Action Levels (EALs) and Emergency Classification Procedures".

4.5 General Emergency (Not Applicable)

No credible accidents attributable to the reactor or its operation are postulated which could cause emergency conditions beyond the operations (site) boundary. Chapter XIV of the Safety Analysis Report (SAR) analyzed a number of accidents including the release of radioactive effluents to the environment. The analysis of a fuel cladding failure with complete loss of coolant, and the ventilation system off, indicate that an emergency of this class would never occur. Therefore, this emergency class is not addressed in this plan.

4.6 Emergency Action Levels (EALs) for Members of the General Public Onsite

Before exposure levels equal to or exceeding the Protective Action Guides (PAGs) of ~~1 Rem whole body and 5 Rem~~ 1 Rem (10 mSv) Total Effective Dose Equivalent (TEDE) or 5 Rem (50 mSv) Committed Dose Equivalent (CDE) to the thyroid, within the operations (site) boundary,; have been reached members of the general public shall have been evacuated from the building.

5.0 EMERGENCY PLANNING ZONES (EPZs)

Since the postulated radioactive releases from credible accidents at this facility falls in the first category, "Authorized Power Level... Equal to or less than 2 MW", in the Section 3.6, Table 2 Guidelines of ANSI/ANS 15.16-1982, ' Alternate Method For Determining The Size of an EPZ" and Appendix II of NUREG-0849, the EPZ for this plan is established at the Operations (Site) Boundary and is defined by the Reactor Building Walls (Confinement).

6.0 EMERGENCY RESPONSE

6.1 Activation of the Emergency Response Organization (ERO)

The Emergency Director (ED) is responsible for initiating the Emergency Plan and for notifying and mobilizing the ERO. During periods of time when the NRL facility is unattended and an unusual situation (lights on at night, alarm signal, etc.) is detected by the University Police or reported to the University Dispatcher, a member of the NRL Staff is contacted by telephone or beeper. A copy of the Emergency Call

List is kept by the Police Dispatcher and telephone numbers are visible through the front window of the lab entrance. The Dispatcher is on duty around the clock thus ensuring that an NRL Staff member on the list can be notified of an unusual situation. The NRL Staff member notified shall resolve the situation and determine whether a real emergency condition exists. If the potential for an emergency condition exists the NRL Staff member shall notify the Emergency Director (ED) and take charge of the potential emergency until the ED arrives. The ED shall give instructions on steps to be taken prior to the arrival of the ED at the Nuclear Reactor Lab and determine if additional notifications are warranted.

More specific guidance on this topic can be found in **EPIP-03**, "Nuclear Reactor Lab Emergency Call List - Intrusion / Emergency" and **EPIP-08**, "Emergency Action Levels (EALs) and Emergency Classification Procedures".

6.2 Protective Action Values

No credible accidents attributable to the reactor or its operation are postulated which could cause emergency conditions beyond the operations (site) boundary. Chapter XIV of the Safety Analysis Report (SAR) analyzed a number of accidents including the release of radioactive effluents to the environment. The analysis of a fuel cladding failure with complete loss of coolant, and the ventilation system off, indicate that the Protective Action Guides (PAGs) of 1 Rem ~~whole body~~ (10 mSv) Total Effective Dose Equivalent (TEDE) or 5 Rem (50 mSv) Committed Dose Equivalent (CDE) to the thyroid for members of the public offsite could not be reached. As stated in Section 4.6 above, "Before exposure levels equal to or exceeding the Protective Action Guides (PAGs) of ~~1 Rem whole body and 5 Rem~~: 1 Rem (10 mSv) Total Effective Dose Equivalent (TEDE) or 5 Rem (50 mSv) Committed Dose Equivalent (CDE) to the thyroid, within the operations (site) boundary,; have been reached members of the general public shall have been evacuated from the building".

Exposures of Emergency Personnel would be expected to be within the limits of 10 CFR 20, however, Chapter XIV of the Safety Analysis Report (SAR) indicates that, under the worst case scenario, thyroid doses within the operations (site) boundary could be limiting. The ED has the authority to authorize Planned Special Exposures as described in Section 3.5 above, "With the concurrence of the Head of the Department of Nuclear Engineering and after consultation with the Emergency Radiation Protection Manager, the Emergency Director may authorize Planned Special Exposures for emergency team members. The criteria used to establish exposure limits for this authorization shall be in accordance with NRC Regulatory Guide 8.35 "Planned Special Exposures".

6.3 Emergency Response for a Non-Reactor Safety Related Event (NRSRE)

6.3.1 Activation of the Emergency Organization for a NRSRE

The complete activation of the emergency organization for this emergency class would not normally be required. The Emergency Director (ED) shall activate that portion of the emergency organization necessary to respond to the event.

6.3.2 Assessment Actions for a NRSRE

This class of emergency consists of events that do not endanger the General Public. Notification of, or assistance from, the University Police and Fire Departments may be warranted. The following Assessment Actions shall be considered appropriate for this Emergency Class:

a) Significant personnel injury with or without radiological complications: The ED shall assess the

extent of the injury and whether radioactive contamination is present. The assessment will consider the nature of the injury, the appropriate first aid, the need for transportation to medical treatment facilities, and the levels of radioactive contamination, if present.

b) Minor fire or explosion not specific to the reactors: The ED shall assess fire or explosion events to determine the magnitude of the event, the need for prompt control, and the need for support from outside agencies. The reactor staff will monitor the area to determine if radioactive contamination is present.

c) Significant contamination of an individual or of the facility: Significant personnel contamination that repeatedly fails to be removed by ordinary decontamination procedures shall be evaluated by the ED for possible consultation with appropriately trained medical personnel before further decontamination is attempted. Significant contamination of the facility shall be assessed by the ED, after consultation with the Emergency Radiation Protection Manager (ERPM), to determine whether a formal decontamination procedure needs to be developed for this event.

d) Civil disturbances or receipt of a bomb threat that is not specific to the Nuclear Reactor Lab: Civil disturbances shall be evaluated by the ED, for potential impact on the facility, after consulting the University Police and Campus Administration. Bomb threats shall be assessed by the ED, for validity, after consulting the University Police and evaluating the information source.

6.3.3 Corrective Actions for a NRSRE

This class of emergency consists of events that do not endanger the General Public. Notification of or assistance from the University Police and Fire Departments may be warranted. The following Corrective Actions shall be considered appropriate for this Emergency Class:

a) Significant personnel injury with or without radiological complications: For cases of personnel injury with or without radiological complications, the ED shall determine what medical assistance is needed, and may contact the ~~Police Dispatcher~~ Champaign County ESDA at 9-911 to request transportation. If the injured individual is contaminated, decontamination will be attempted only if it is judged that this will not further aggravate the injury. A contaminated injured individual will be transported using contamination control and isolation methods.

b) Minor fire or explosion not specific to the reactors: For minor fires or explosions not specific to the reactor ~~or its control systems~~ or their control systems the ED shall be notified and reactor staff members shall attempt to control the fire with portable fire extinguishers if it is safe to do so. The ED shall determine if the scope of the fire or explosion requires the assistance of the University Fire Department, and if so, the ~~Dispatcher shall be notified~~. Champaign County ESDA shall be notified at 9-911.

c) Significant contamination of an individual or of the facility: The ED, after consultation with the Emergency Radiation Protection Manager (ERPM), shall determine the decontamination procedure appropriate for the individual or the facility. Goals shall be established to determine when further decontamination is not warranted. These goals should consider returning contamination levels to 10 CFR 20 limits.

d) Civil disturbances or receipt of a bomb threat that is not specific to the Nuclear Reactor Lab: In the event of a civil disturbance or receipt of a bomb threat that is not specific to the reactor, the University Police shall be notified and will initiate the appropriate controls to insure the protection of personnel and property. The ED shall notify the Head of the Department of Nuclear Engineering and keep him informed of the emergency status.

6.3.4 Protective Actions for a NRSRE

Some protective actions at this level of emergency (e.g., fire alarms) necessitate the evacuation of the Reactor Building. In this case reactor staff members will assemble at the north entrance to the Nuclear Engineering Laboratory to determine if their services are needed. All evacuations will be initiated by notifying personnel on the public address system. Should fire or other event involve areas with radioactive material, the ERPM shall control access to the areas and shall be responsible, with support from the reactor staff, for the segregation of potentially contaminated personnel.

More specific guidance on the methods, systems, and equipment for gathering and processing information and data on which to base decisions to escalate or de-escalate emergency response actions are contained in **EPIP-09**, "Assessment, Corrective, and Protective Action Procedures". Other specific guidance on this topic can be found in **EPIP-08**, "Emergency Action Levels (EALs) and Emergency Classification Procedures".

6.4 Emergency Response for a Notification of Unusual Event (NOUE)

6.4.1 Activation of the Emergency Organization for a NOUE

The complete activation of the emergency organization for this emergency class would not normally be required. The Emergency Director (ED) shall activate that portion of the emergency organization necessary to respond to the event. This class of emergency consists of events that may be initiated by either man-made or natural phenomena that can be recognized as creating a significant hazard potential that was previously nonexistent. There is usually time available to take precautionary and corrective steps to prevent escalation of an accident or to mitigate the consequences should it occur. No releases of radioactive material requiring offsite response are expected. Some elements of the Emergency Organization may be activated or notified to increase the state of readiness, as warranted by the circumstances. Although the situation may not have caused damage to the reactors, the reactors shall be shutdown.

6.4.2 Assessment Actions for a NOUE

a) Actual or projected radiological effluents at the site (operations) boundary calculated to produce a ~~whole body dose of 15 mRem~~ Deep Dose Equivalent (DDE) of 15 mRem (0.15 mSv) or a Committed Effective Dose Equivalent (CEDE) of 15 mRem (0.15 mSv) accumulated within 24 hours: Fuel damage, experiment failure, or any event manifested by unusual radiation levels within the Reactor Laboratory, or the release of radioactive effluents offsite, shall be assessed by the ED with assistance from the reactor staff. Additional support for assessment shall be requested from the Radiation Safety Office (RSO), if needed. The assessment shall consist of an observation and evaluation of the facility Continuous Air Monitors (CAMs) and Area Radiation Monitors (ARMs) in the control room and by surveys with portable ion chambers or other appropriate survey instruments. Both high and low volume air samplers are available and collected air filters and smear samples can be counted in Room 106B NEL or, for gamma spectroscopy, in Room 222 MRL. The results can be used to assess whether the source is due to fission products, activation products, or a non-reactor source. Excessive airborne or radiation levels may require evacuation of the Reactor Building and further assessment will be made from outside the facility with the information provided to the Emergency Support Center (ESC).

b) Report or observation of severe natural phenomena, such as tornadoes in the immediate vicinity of the Nuclear Reactor Lab, or earthquakes felt in the facility: This situation requires immediate shutdown of the reactors and notification of the ED. The ED shall establish contact with the ~~University Police~~

~~Dispatcher~~ Champaign County ESDA for further assessment of the severe natural phenomenon and for recommendations on seeking shelter at appropriate assembly areas.

c) Threats to or breaches of security, such as a bomb threat or civil disturbance, specific to the Nuclear Reactor Lab: Civil disturbances shall be evaluated by the ED, for potential impact on the facility, after consulting the University Police and Campus Administration. Bomb threats shall be assessed by the ED, for validity, after consulting the University Police and evaluating the information source.

d) Fire or explosion within the facility that cannot be controlled immediately with an onsite CO_2 extinguisher and requiring the assistance of the University Fire Department for control: The ED shall assess the severity of the fire or explosion to determine if the assistance of the University Fire Department is required.

e) Failure of a fuel element or failure of an experiment with a release of radioactivity: The assessment actions for this event are the same as those detailed in 6.4.2 a) immediately above.

More specific guidance on the methods, systems, and equipment for gathering and processing information and data on which to base decisions to escalate or de-escalate emergency response actions are contained in **EPIP-09**, "Assessment, Corrective, and Protective Action Procedures". Other specific guidance on this topic can be found in **EPIP-08**, "Emergency Action Levels (EALs) and Emergency Classification Procedures".

6.4.3 Corrective Actions for a NOUE

a) Actual or projected radiological effluents at the site (operations) boundary calculated to produce a ~~whole body dose of 15 mRem~~ Deep Dose Equivalent (DDE) of 15 mRem (0.15 mSv) or a Committed Effective Dose Equivalent (CEDE) of 15 mRem (0.15 mSv) accumulated within 24 hours: If a ~~Notification of Unusual Event~~ NOUE is dictated by assessment of high radiation or airborne radioactivity levels, the Reactor Building shall be evacuated pending an evaluation and identification of the probable source. The ED shall direct the ERO to control access to the Reactor Building until radiation and airborne activity levels have been restored to normal. All personnel that were evacuated from the Reactor Building shall assemble at the north entrance lobby to the Nuclear Engineering Laboratory (NEL), which is the Primary Emergency Support Center (ESC); or at the north entrance lobby to the Division of Environmental Health & Safety (DEH&S), which is the Alternate Emergency Support Center (ESC). The location of these buildings is shown on the detailed map (Attachment 2). Both buildings are within 150 yards of the Nuclear Reactor Laboratory. Since one is in a westerly direction and the other in an easterly direction, the choice could depend on the wind direction. All personnel who were in the Reactor Building at the time of the emergency shall be accounted for.

b) Report or observation of severe natural phenomena, such as tornadoes in the immediate vicinity of the Nuclear Reactor Lab, or earthquakes felt in the facility: This situation requires immediate shutdown of the reactors and notification of the ED. The ED shall establish contact with the ~~University Police Dispatcher~~ Champaign County ESDA for further assessment of the severe natural phenomenon and for recommendations on seeking shelter at appropriate assembly areas.

c) Threats to or breaches of security, such as a bomb threat or civil disturbance, specific to the Nuclear Reactor Lab: Civil disturbances shall be evaluated by the ED, for potential impact on the facility, after consulting the University Police and Campus Administration. Bomb threats shall be assessed by the ED, for validity, after consulting the University Police and evaluating the information source. The police may initiate controls to insure the protection of personnel and property. The reactors shall be shut-down and

personnel evacuated to the Nuclear Engineering Laboratory or the ESC. All personnel who were in the facility at the time of the emergency shall be accounted for.

d) Fire or explosion within the facility that cannot be controlled immediately with an onsite CO_2 extinguisher and requiring the assistance of the University Fire Department for control: The ~~ED shall assess the severity of the fire or explosion to determine if the assistance of the University Police and Fire Departments are required. The~~ police or fire department may initiate controls to ensure the protection of personnel and property. The reactors shall be shut-down and personnel evacuated to the Nuclear Engineering Laboratory or the ESC. All personnel who were in the facility at the time of the emergency shall be accounted for.

e) Failure of a fuel element or failure of an experiment with a release of radioactivity: The corrective actions for this event are the same as those detailed in 6.4.3 a) immediately above.

6.4.4 Protective Actions for a NOUE

If the Reactor Building has been evacuated, all personnel who were in the facility at the time of the emergency shall be accounted for. All individuals who evacuated the Reactor Building shall be surveyed for contamination with portable instruments. Those individuals who are contaminated shall remain in an area designated by the ED or ERPM for decontamination. The ED is responsible for limiting access to the Reactor Building to rescue and emergency response ~~operations~~ personnel. The ERPM is responsible for minimizing personnel exposure and the spread of contamination. Emergency exposure levels for personnel shall be in accordance with Section 3.5 of this plan.

More specific guidance on the methods, systems, and equipment for gathering and processing information and data on which to base decisions to escalate or de-escalate emergency response actions are contained in **EPIP-09**, "Assessment, Corrective, and Protective Action Procedures". Other specific guidance on this topic can be found in **EPIP-08**, "Emergency Action Levels (EALs) and Emergency Classification Procedures".

6.5 Emergency Response for an Alert

6.5.1 Activation of the Emergency Organization for an Alert

The complete activation of the emergency organization for this emergency class is required. The Emergency Director (ED) shall activate the entire emergency organization in response to an event of this class. This class of emergency consists of events that would be of such radiological significance as to require notification of the Emergency Response Organization (ERO) and their response as appropriate for the specific emergency situation. Under this class it is unlikely that offsite response or monitoring would be necessary. Substantial modification of reactor operating status is a highly probable corrective action. Protective evacuations or isolation of certain areas within the operations (site) boundary may be necessary. Situations that may lead to this class include: 1) severe failure of fuel cladding or of fueled experiments where containment boundaries exist to reduce releases or less severe cladding failures in situations where fission products are not well contained, or 2) significant release of radioactive material as a result of experiment failures.

6.5.2 Assessment Actions for an Alert

a) Actual or projected radiological effluents at the site (operations) boundary calculated to produce a ~~whole body dose of~~ 75 ~~mRem~~ Deep Dose Equivalent (DDE) of 75 mRem (0.75 mSv) or a Committed Effective Dose Equivalent (CEDE) of 75 mRem (0.75 mSv) accumulated within 24 hours: Fuel damage, experiment failure, or any event manifested by unusual radiation levels within the Reactor Laboratory, or the release of radioactive effluents offsite, shall be assessed by the ED with assistance from the reactor staff. Additional support for assessment shall be requested from the Radiation Safety Office (RSO), if needed. " . assessment shall consist of an observation and evaluation of the facility Continuous Air Monitors (CAMs) and Area Radiation Monitors (ARMs) in the control room and by surveys with portable ion chambers or other appropriate survey instruments. Both high and low volume air samplers are available and collected air filters and smear samples can be counted in Room 106B NEL or, for gamma spectroscopy, in Room 222 MRL. The results can be used to assess whether the source is due to fission products, activation products, or a non-reactor source. Excessive airborne or radiation levels may require evacuation of the Reactor Building and further assessment will be made from outside the facility with the information provided to the Emergency Support Center (ESC).

b) Actual or projected radiation levels at the site (operations) boundary of 20 mRem/hr (0.2 mSv/hr) ~~whole body for 1 hour~~ Deep Dose Equivalent (DDE) for 1 hour, based on East Wall Area Radiation Monitor (ARM); or 100 ~~mRem projected thyroid dose~~ mRem (1.0 mSv) Committed Dose Equivalent (CDE) to the thyroid: Same as in a) immediately above.

c) Severe failure of fuel cladding or of fueled experiments where containment boundaries exist to reduce releases or less severe cladding failures in situations where fission products are not well contained: Same as in a) & b) immediately above.

d) Significant releases of radioactive material as a result of experiment failures: Same as in a), b), ~~&~~ and c) immediately above.

e) Loss of physical control of the facility: The ED shall consult the University Police, the Nuclear Engineering Department Head, and the Campus Administration on steps to be taken to regain control of the facility. This will depend entirely on the nature of the loss of control.

6.5.3 Corrective Actions for an Alert

a) Actual or projected radiological effluents at the site (operations) boundary calculated to produce a ~~whole body dose of 75 mRem~~ Deep Dose Equivalent (DDE) of 75 mRem (0.75 mSv) or a Committed Effective Dose Equivalent (CEDE) of 75 mRem (0.75 mSv) accumulated within 24 hours: If a Notification of an Alert is dictated by assessment of high radiation or airborne radioactivity levels, the Reactor Building shall be evacuated pending an evaluation and identification of the probable source. The ED shall direct the ERO to control access to the Reactor Building until radiation and airborne activity levels have been restored to normal. All personnel that were evacuated from the Reactor Building shall assemble at the north entrance lobby to the Nuclear Engineering Laboratory (NEL), which is the Primary Emergency Support Center (ESC), or at the north entrance lobby to the Division of Environmental Health & Safety (DEH&S), which is the Alternate Emergency Support Center (ESC). The location of these buildings is shown on the detailed map (Attachment 2). Both buildings are within 150 yards of the Nuclear Reactor Laboratory. Since one is in a westerly direction and the other in an easterly direction, the choice could depend on the wind direction. All personnel who were in the Reactor Building at the time of the emergency shall be accounted for.

b) Actual or projected radiation levels at the site (operations) boundary of 20 mRem/hr (0.2 mSv/hr) ~~whole body for 1 hour~~ Deep Dose Equivalent (DDE) for 1 hour, based on East Wall Area Radiation Monitor (ARM); or 100 ~~mRem projected thyroid dose~~ mRem (1.0 mSv) Committed Dose Equivalent (CDE) to the thyroid: Same as in a) immediately above.

c) Severe failure of fuel cladding or of fueled experiments where containment boundaries exist to reduce releases or less severe cladding failures in situations where fission products are not well contained: Same as in a) & b) immediately above.

d) Significant releases of radioactive material as a result of experiment failures: Same as in a), b), ~~&~~ and c) immediately above.

e) Loss of physical control of the facility: The ED shall consult the University Police, the Nuclear Engineering Department Head, and the Campus Administration on steps to be taken to regain control of the facility. This will depend entirely on the nature of the loss of control.

6.5.4 Protective Actions for an Alert

If the Reactor Building has been evacuated, all personnel who were in the facility at the time of the emergency shall be accounted for. All individuals who evacuated the Reactor Building shall be surveyed for contamination with portable instruments. Those individuals who are contaminated shall remain in an area designated by the ED or ERPM for decontamination. The ED is responsible for limiting access to the Reactor Building to rescue and emergency response operations. The ERPM is responsible for minimizing personnel exposure and the spread of contamination. Emergency exposure levels for personnel shall be in accordance with Section 3.5 of this plan.

More specific guidance on the methods, systems, and equipment for gathering and processing information and data on which to base decisions to escalate or de-escalate emergency response actions are contained in **EPIP-09**, "Assessment, Corrective, and Protective Action Procedures". Other specific guidance on this topic can be found in **EPIP-08**, "Emergency Action Levels (EALs) and Emergency Classification Procedures".

6.6 Site Area Emergency

No credible accidents attributable to the reactor or its operation are postulated which could cause emergency conditions beyond the operations (site) boundary. Chapter XIV of the Safety Analysis Report (SAR) analyzed a number of accidents, including the release of radioactive effluents to the environment. The analysis of a fuel cladding failure with complete loss of coolant, and the ventilation system off, indicate that an emergency of this class would never occur. However, an emergency condition where the Emergency Response Organization (ERO) may consider setting up traffic control or the evacuation of adjacent buildings may require limited entry into the provisions of this classification.

7.0 EMERGENCY FACILITIES AND EQUIPMENT

7.1 Emergency Support Centers

The Nuclear Engineering Laboratory (NEL) is the Primary Emergency Support Center (ESC) and the Division of Environmental Health & Safety (DEH&S) is the Alternate Emergency Support Center (ESC). The north building entrance lobby of each building shall constitute the assembly area. The location of these

buildings is shown on the detailed map (Attachment 2). Both buildings are within 150 yards of the Nuclear Reactor Laboratory. Since one is in a westerly direction and the other in an easterly direction, the choice could depend on the wind direction. The purpose of these facilities is to provide: a control center; an accountability station; and a radiological monitoring area for frisking of personnel and evaluation of radiological samples. Room 106B in NEL is designated as the radiological counting room and the Emergency Equipment Locker is located there. Emergency Response directions would be given from one of these locations. Telephones and fax machines are available in both locations and the telephones and fax machine in NEL are under the control of the Nuclear Engineering Department. In addition, dedicated telephone lines are on each telephone in the Reactor Building. These are unpublished numbers to be used only in an emergency. Fax capability is also available by computer modem on ~~several~~ one of the computers in the Reactor Building.

7.2 Assessment Facilities

The Reactor Lab has Area Radiation Monitors (ARMs) with readouts and alarm indications locally, by each detector, and in the control room; and Continuous Air Monitors (CAMs), both of which readout locally and one of which reads out in the control room and provides a building wide alarm, as well as a trip that closes the damper in the Building Exhaust Ventilation System sending the air effluent through a charcoal filter bed prior to release out of the stack at an elevation of 60 feet above grade. The Department of Nuclear Engineering has counting laboratories at 106B NEL and 222 Materials Research Lab (MRL). Portable survey instruments are kept near the entrance to the Reactor Lab and could easily be taken along during an evacuation. In addition, portable survey instruments may be readily obtained from: the Emergency Equipment Locker in Room 106B NEL, the HLab in Room 222 MRL, and the Campus Radiation Safety Office at the alternate ESC noted above. Gamma Spectroscopy equipment is available in both 106B NEL and 222 MRL and under the control of the Department of Nuclear Engineering. Portable high and low volume air samplers are available in the Reactor Lab and the Emergency Equipment Locker.

Non-radiological monitors that may provide pertinent information include: the primary and secondary control consoles, in the control room, which display all reactor status information; a smoke detector in the control room; and meteorological data that is readily available from the Illinois State Water Survey Office located On Campus.

More specific guidance on this topic can be found in **EPIP-09**, "Assessment, Corrective, and Protective Action Procedures".

7.3 First Aid, Medical, and Decontamination Facilities

Carle Clinic Association would be utilized as the decontamination center by the Champaign County ~~Emergency Services and Disaster Agency (ESDA)~~ ESDA. The "Radiation Accident Program" procedures for Carle Clinic are included in Attachment 5. This hospital is about 3/4 mile from the reactor facility and is shown on the area map (Attachment 1). Because of the close proximity, transportation would be either by University Police, private ambulance service, or automobiles owned by Reactor Staff personnel. If an individual becomes contaminated with no physical injury requiring immediate treatment, decontamination would be done in the ~~D~~decon sink or shower located in the lower level of the Reactor Building. The drains to this sink and shower are collected in the Retention Tank, which is pumped through a 0.45 micron filter ~~and monitored for soluble radionuclides~~ to a holdup tank where it is sampled and counted for soluble and insoluble radioactivity prior to release to the sanitary sewer system.

More specific guidance on this topic can be found in **EPIP-03**, "Nuclear Reactor Lab Emergency Call List - Intrusion / Emergency", **EPIP-06**, " Radiation Protection Manager Procedures", **EPIP-07**, "Emergency

Medical, Security, Fire, and Plant Services Manager Procedures", **EPIP-09**, "Assessment, Corrective, and Protective Action Procedures", and **EPIP-11**, "Support Agency Procedures", as well as Attachment 5.

7.4 Communications Equipment

Telephones and fax machines are available in both Emergency Support Centers (ESC) and the telephones and fax machine in the NEL Support Center are under the control of the Nuclear Engineering Department. In addition, dedicated telephone lines are on each telephone in the Reactor Building. These are unpublished numbers to be used only in an emergency. Fax capability is also available by computer modem on ~~several~~ one of the computers in the Reactor Building. The University Police can also be summoned on activation of the intrusion alarm system by pressing a button in the control room. The University Police and Fire Department personnel also maintain a radio system for communication with the Dispatcher.

More specific guidance on this topic can be found in **EPIP-07**, "Emergency Medical, Security, Fire, and Plant Services Manager Procedures".

8.0 REENTRY AND RECOVERY OPERATIONS

This authority is vested with the Emergency Director (ED). The Reactor Building can be isolated and secured following any emergency with any operation in progress delayed until a complete recovery is made. Since any water would drain to a hold up tank (Retention Tank) and any particulate activity in the air would be trapped in the HEPA exhaust filters, ample time would be available to meet at some other location and formulate plans for a given scenario. Specific recovery procedures for an actual emergency event will be written and approved as needed. Guidelines on recovery and reentry are given in **EPIP-10**, "Reentry and Recovery Procedures". Several of the areas investigated prior to reentry would include:

1. Evaluation of airborne activity adjacent to entryways and in the building by remote sampling.
2. Evaluation of dose rates on the building exterior and within the building as conditions warrant.
3. Contamination outside the facility and within the building as conditions warrant.

Personnel entering the building would be required to wear appropriate protective clothing until contamination levels have been evaluated. Doses to individuals should be kept within the 10 CFR 20 limits, except for Planned Special Exposures as noted in Section 3.5.

9.0 MAINTAINING EMERGENCY PREPAREDNESS

9.1 Training

Initial training ~~will~~ shall be provided to all individuals occupying positions designated in this plan. ~~when this plan has been approved by the NRC. Because this is Revision 0 of a completely revised Emergency Plan Emergency Preparedness will be maintained as outlined in the current approved "Radiation Emergency Plan, Revision March 1994".~~ Subsequently, Emergency Plan Training shall be provided on an annual basis, at intervals not to exceed 15 months, and as needed for new personnel or for personnel whose job assignment has changed and this change also results in a change in their designated position in the plan. This retraining will be limited to the responsibilities of their new emergency plan position assignment. The University Police and Fire Department personnel shall be trained biennially on a rotating basis.

Elements of the annual training shall include:

1. A review of the Emergency Plan and Implementing Procedures.
2. A review of emergency monitoring equipment and its location.

3. A review of the Emergency Call List and procedure.

4. Methods by which to recognize that an adverse radiological condition exists by use of the Continuous Air Monitors (CAMs) and Area Radiation Monitors (ARMs).
5. Directions regarding those areas of the lab where a radiological release might occur in conjunction with a fire or other disturbance.

More specific guidance on this topic can be found in **EPIP-12**, "Training Procedures", **EPIP-13**, "Drills and Exercises", and **EPIP-14**, "Emergency Equipment Maintenance and Surveillance".

9.2 Conduct of Drills and Exercises

Onsite ~~emergency drills, to be conducted as action drills, shall be held on an~~ Emergency Drills or Exercises, to be conducted as Action Drills, shall be held on an alternating annual basis, at intervals not to exceed 15 months. An ~~action drill~~ Action Drill or Exercise tests the integrated capability of the Emergency Plan, or a component thereof, and may include instruction periods to develop and maintain skills in a particular operation. All telephone numbers in the plan shall be verified annually, at intervals not to exceed 15 months.

More specific guidance on this topic can be found in **EPIP-13**, "Drills and Exercises".

9.3 Critiques of Drills and Exercises

A ~~critique of the drill~~ Critique of the Drill or Exercise shall be held immediately following its completion. This shall include comments from those participating, review of problems encountered, corrections of identified deficiencies, and the status of the verification of the Emergency Call List.

More specific guidance on this topic can be found in **EPIP-13**, "Drills and Exercises".

9.4 Drill and Exercise Scenarios

The Emergency Coordinator, with the assistance of the Emergency Director, shall develop a written scenario for the conduct of the ~~annual action drill~~ alternating annual Action Drill or Exercise, at intervals not to exceed 15 months.

More specific guidance on this topic can be found in **EPIP-13**, "Drills and Exercises".

9.5 Emergency Plan Review and Update

The Emergency Plan, the Emergency Plan Implementing Procedures, and the Agreements with Offsite Support Agencies (Champaign County ESDA) shall be revised and updated on a biennial basis. Each revision shall be reviewed and approved by the Emergency Director, the Emergency Coordinator, and the Nuclear Reactor Committee. Modifications resulting from ~~action drills~~ Action Drills, Exercises, or changes in the facility or environs, shall be incorporated into each revision. Updated revisions shall be distributed to all organizations affected by; or mentioned as a participating organization in; the plan. Any revisions to the Emergency Plan or the Emergency Plan Implementing Procedures (EPIPs) shall be approved by the Reactor ~~Committee~~ Administrator, reviewed by the Reactor Committee, and transmitted to the authorized recipients within 30 days after the revised plans have been issued.

More specific guidance on this topic can be found in **EPIP-05**, "Emergency Coordinator Procedures".

9.6 Emergency Equipment Maintenance and Surveillance

The major sources of radiation monitoring equipment that would be immediately available in an emergency are: 1) the Control Room and Reactor Health Physicist's Office at the Nuclear Reactor Lab in or near the lobby area by the main door; 2) the Radiation Safety Office (RSO) at both, a) 101 S. Gregory St., Urbana and b) the Dynamics Testing Laboratory, 601 E. Curtis Road, Champaign; c) Room 106B NEL; and d) Room 222 MRL. Additional equipment, if the need arises, may also be made available from the various facilities that utilize radioactive material on the University of Illinois Campus. Lists of equipment available at the major sources are given in Section 9.5.1 below.

More specific guidance on this topic can be found in **EPIP-14**, "Emergency Equipment Maintenance and Surveillance".

9.6.1 Inventory of Equipment and Supplies

The instruments that would be used in an emergency are those that are used routinely for monitoring radiation and contamination levels at the Nuclear Reactor Lab, those instruments dedicated for use in an emergency and stored in the Emergency Equipment Locker in 106B NEL, those instruments available within the Department of Nuclear Engineering (primarily gamma spectrometers) in 106B NEL and 222 MRL, ~~and those instruments under the control of the Radiation Safety Office (RSO) that are used campus wide for a variety of purposes~~. The Reactor Lab instruments are function tested as part of the "Health Physics Daily Checklist" on each day of the work week that the reactors are operated, all other portable instruments, including those stored in the Emergency Equipment Locker, are functionally tested as part of their semiannual or annual calibration. The minimum frequency for inventory of Emergency Equipment and Supplies shall be annually, at intervals not to exceed 15 months, and include all instruments listed in this section of the Emergency Plan.

More specific guidance on this topic can be found in **EPIP-14**, "Emergency Equipment Maintenance and Surveillance".

Nuclear Reactor Lab Equipment:

Total Number Available	Equipment Designation	Range
21	Victoreen 450 (Ion Chamber)	0 - 50 R/hr
1	Eberline RO - 2 (Ion Chamber)	0 - 5 R/hr
1	Neutron Rem Meter	0 - 5 Rem/hr
~~1~~	~~Dosipole (CdTe Semiconductor)~~	~~0 - 1000 R/hr~~
2	Neutron Rem Meters	0 - 5 and 0 - 2 Rem/hr
8	Electronic Pocket Dosimeters	0 - 9999 mRem
1	120 V. A.C. Air sampler	0 - 70 cfm
2	Eberline RM-14 Count Rate Meters	0 - 50,000 and 0 - 5,000,000 cpm
1	Johnson GSM-15 Count Rate Meter	0 - 500,000 cpm
1	Johnson GSM-5 Count Rate Meters	0 - 50,000 cpm
1	Eberline BC-4 Beta Counter	0 - 999,999 Counts
1	Eberline SAC-4 Alpha counter	0 - 999,999 Counts
1	Canberra HPGe γ-ray spectrometer	0 - 3000 keV
1	Alpha Scintillation Probe ASP-2	N/A
~~1~~	~~Canberra NaI γ-ray spectrometer~~	~~0 - 2000 keV~~
~~1~~	~~Alpha Scintillation Probe ASP-2~~	~~N/A~~

1	HP-210T Probe	N/A
1	HP-265 Probe	N/A
1	HP-260 Probe	N/A

Emergency Equipment Locker (106B NEL):

Total Number Available	Equipment Designation	Range
1	Victoreen 450 (Ion Chamber)	0 - 50 R/hr
1	Eberline E-140 Count Rate Meter	0 - 60,000 cpm
5	Quartz Fiber Dosimeters	0 - 200 mRem
2	Quartz Fiber Dosimeters	0 - 600 Rem
1	Dosimeter Charger	N/A
1	120 V. A.C. Air sampler	0 - 100 lpm
10	50 mm Glass Fiber Filter Papers	N/A
1	Johnson GSM-5 Count Rate Meters	0 - 50,000 cpm
1	HP-260 Probe	N/A
1	Johnson GSP-2A ~~NaI~~ Probe	N/A
3 boxes 100 each	Paper Smears	N/A
9/11	Protective Clothing Coveralls/Hoods	N/A
~~21 pairs~~1 Dozen	Rubber Gloves and Liners	N/A
~~62 pairs~~4 Dozen	Plastic Shoe Covers	N/A
1 Dozen	Rubbers	N/A
~~9 pairs~~	~~Plastic Boot Liners~~	~~N/A~~
~~19 pairs~~	~~Rubbers~~	~~N/A~~

~~Radiation Safety Office (RSO) Equipment~~:

~~Total Number Available~~	~~Equipment Designation~~	~~Range~~
~~6~~	~~Geiger-Mueller instruments~~	~~0 - 50,000 cpm~~
~~3~~	~~Low energy gamma NaI detector~~	~~Iodine surveys and thyroid checks~~
~~1~~	~~Low Volume Air Sampler~~	~~dependent on orifice used~~
~~1~~	~~High Volume Air Sampler~~	~~dependent on orifice used~~
~~1~~	~~Ionization Chamber instrument~~	~~0 - 2 R/hr~~
~~1~~	~~Ionization Chamber instrument~~	~~0 - 25 R/hr~~
~~1~~	~~Ionization Chamber instrument~~	~~0 - 1,000 R/hr~~
~~1~~	~~Low energy air ionization meter~~	~~0.00005-500 R/hr~~
~~5~~	~~Quartz Fiber Dosimeters~~	~~0 - 200 mR~~
~~1~~	~~Liquid Scintillation Counter~~	~~0 - 9,999,999 Counts~~
~~1~~	~~Gas-flow Proportional Counter~~	~~0 - 999,999 Counts~~
~~6~~	~~HP-265 Probes~~	~~N/A~~
~~1~~	~~Alpha Scintillation Probe ASP-2~~	~~N/A~~
2	~~Dosimeter chargers~~	~~N/A~~

~~Radiation Safety Office (RSO) Laboratory Analytical Equipment~~:

~~Internal liquid scintillation spectrophotometer~~
~~Gas-flow proportional counting system~~
~~NaI (Tl) - Multichannel Analyzer~~

Secondary standard condenser Roentgen-meter
Capintec secondary standard electrometer

Note: This equipment should be available but is not under the control of the Reactor Staff or Nuclear Engineering Department personnel.

Materials Research Lab (MRL) Room 222

Total Number Available	Equipment Designation	Range
1	Victoreen 450 (Ion Chamber)	0 - 50 R/hr
1	Johnson GSM-15 Count Rate Meter	0 - 500,000 cpm
1	HP-265 Probe	N/A
2	Gamma Spectroscopy Detectors	N/A

Note: The minimum equipment required to be operable at all times to maintain Emergency Preparedness shall be: 1 Ion Chamber, 5 Self-Reading Pocket Dosimeters, 1 Count Rate Meter with G-M probe, and 1 Air Sampler. This equipment shall be located in the Emergency Equipment Locker in Room 106B NEL. If, at any time, any of the above listed equipment should become inoperable it shall be immediately replaced.

9.6.2 Radiation Monitoring Equipment Calibration:

All portable instruments are calibrated on an annual basis, alland laboratory analytical instruments are calibrated at least once per year. The two secondary standard x-ray and gamma ray exposure rate instruments are calibrated per manufacturer instructions or every two yearon an annual basis.

More specific guidance on this topic can be found in **EPIP-14**, "Emergency Equipment Maintenance and Surveillance".

9.7 Emergency Plan Implementing Procedures (EPIPs) List:

No.	Title
EPIP-01	General Instructions and Organizational Responsibilities.
EPIP-02	Reactor Operator Immediate Action Procedures.
EPIP-03	Nuclear Reactor Lab Emergency Call List - Intrusion / Emergency.
EPIP-04	Emergency Director (ED) Procedures.
EPIP-05	Emergency Coordinator (EC) Procedures.
EPIP-06	Emergency Radiation Protection Manager (ERPM) Procedures.
EPIP-07	Emergency Medical, Security, Fire, and Plant Services Manager (EPSM) Procedures.
EPIP-08	Emergency Action Levels (EALs) and Emergency Classification Procedure.
EPIP-09	Corrective and Protective Action Procedures.
EPIP-10	Reentry and Recovery Procedures.
EPIP-11	Coordination of Offsite Agencies Procedures.
EPIP-12	Training Procedures.
EPIP-13	Drills and Exercises.
EPIP-14	Emergency Equipment Maintenance and Surveillance.
EPIP-15	Documentation and Records.

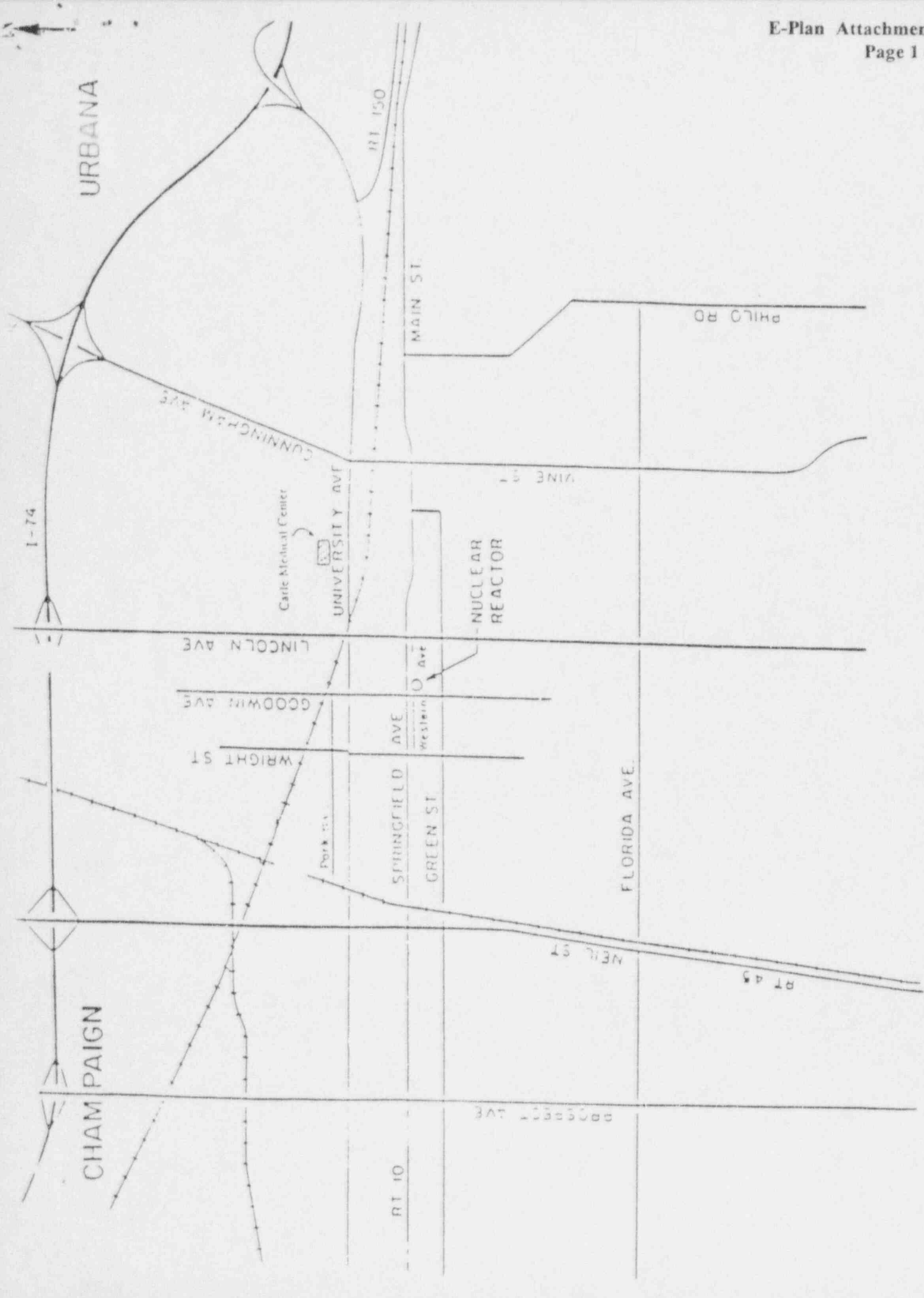
Revised By: _____ Title: Emergency Coordinator Date: _____
Mark A. Kaczor

Reviewed By: _____ Title: Operations Supervisor Date: _____
Jonathan M. Ralston

Approved By: _____ Title: Emergency Director Date: _____
Rich L. Holm

Date Reviewed by the Reactor Committee: _____

~~(eplan\eplannew.395)~~
(eplan\eplanrev.597)


URBANA
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MAIN ST
PHILO RD
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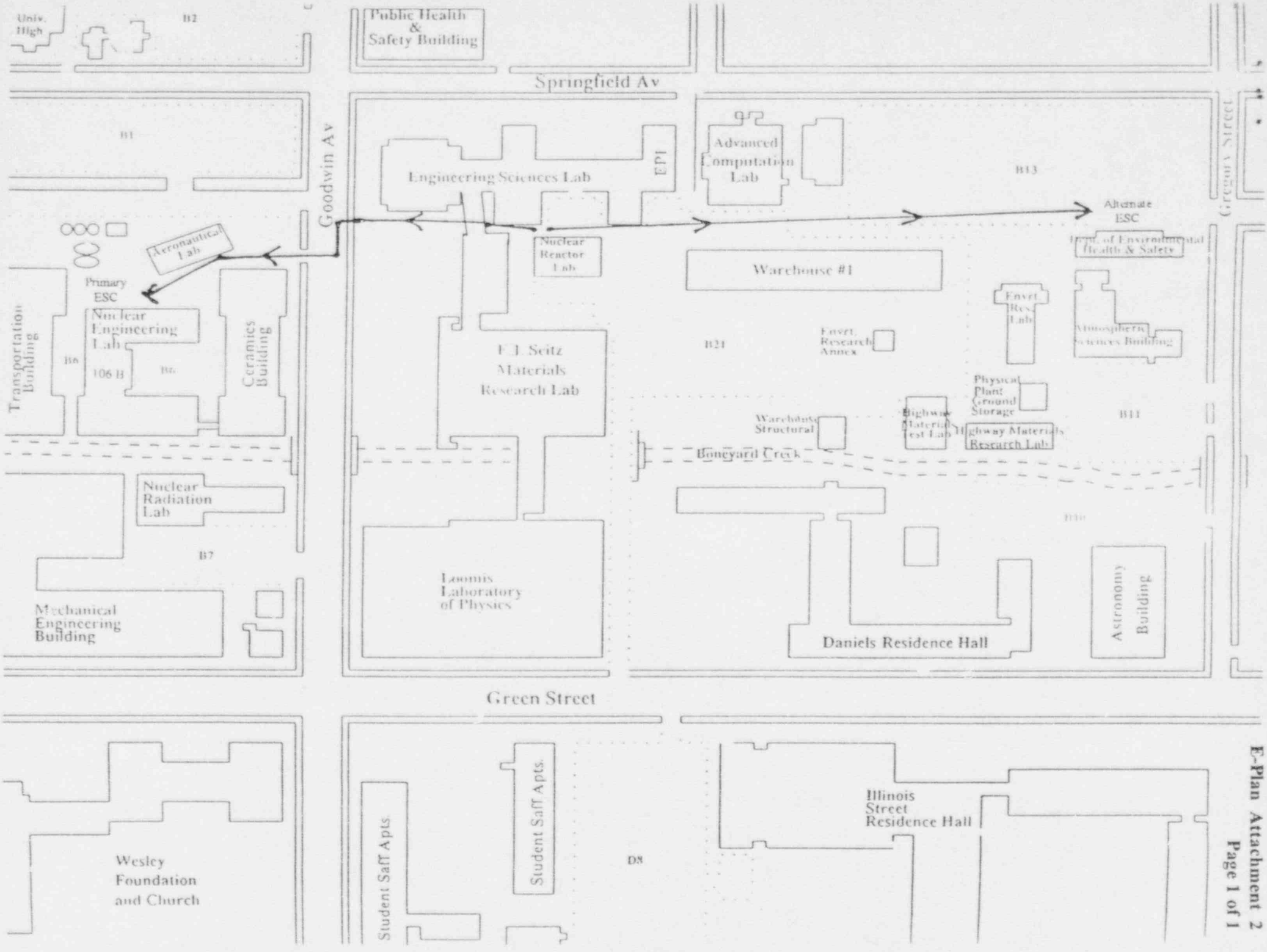
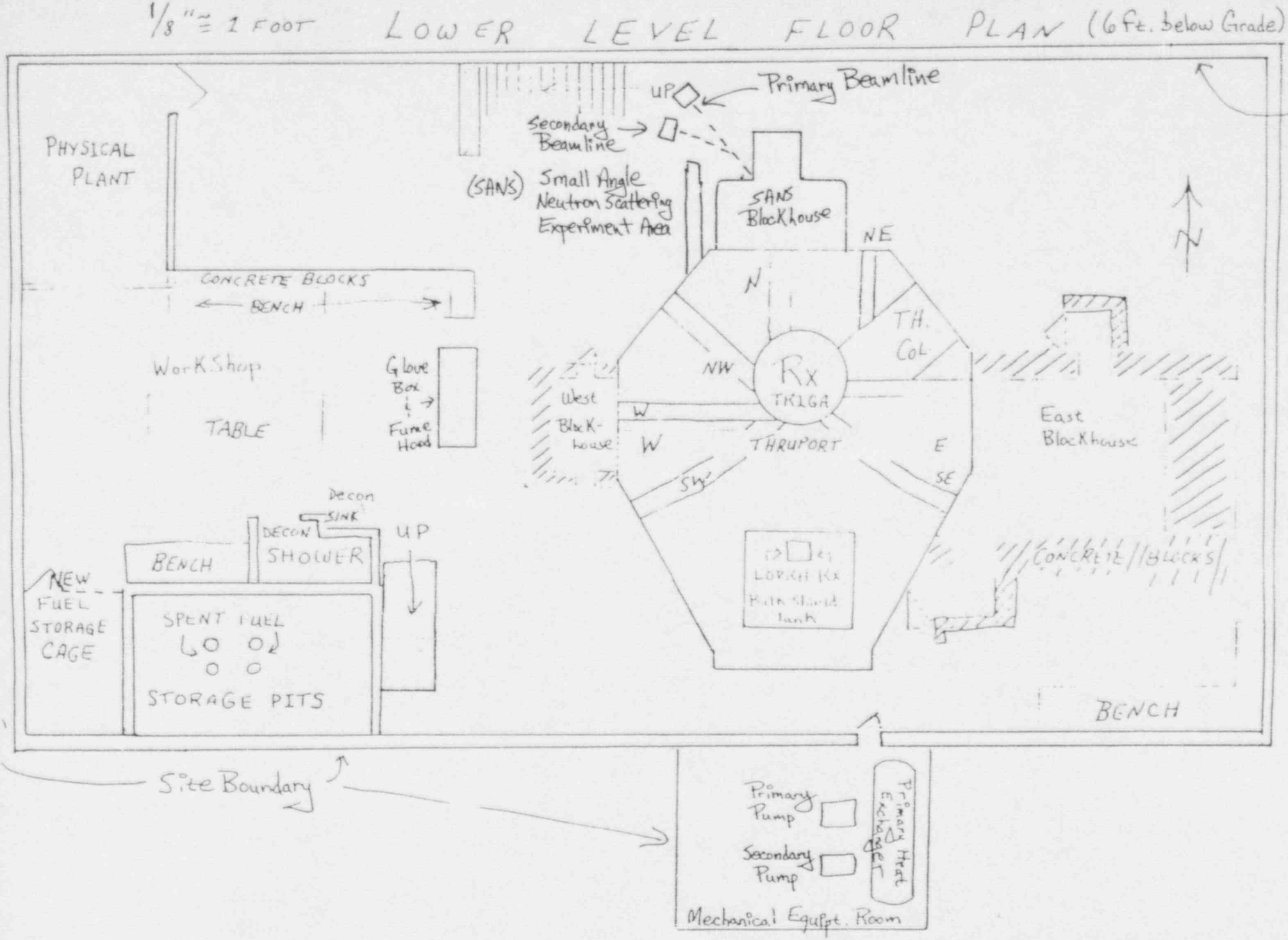
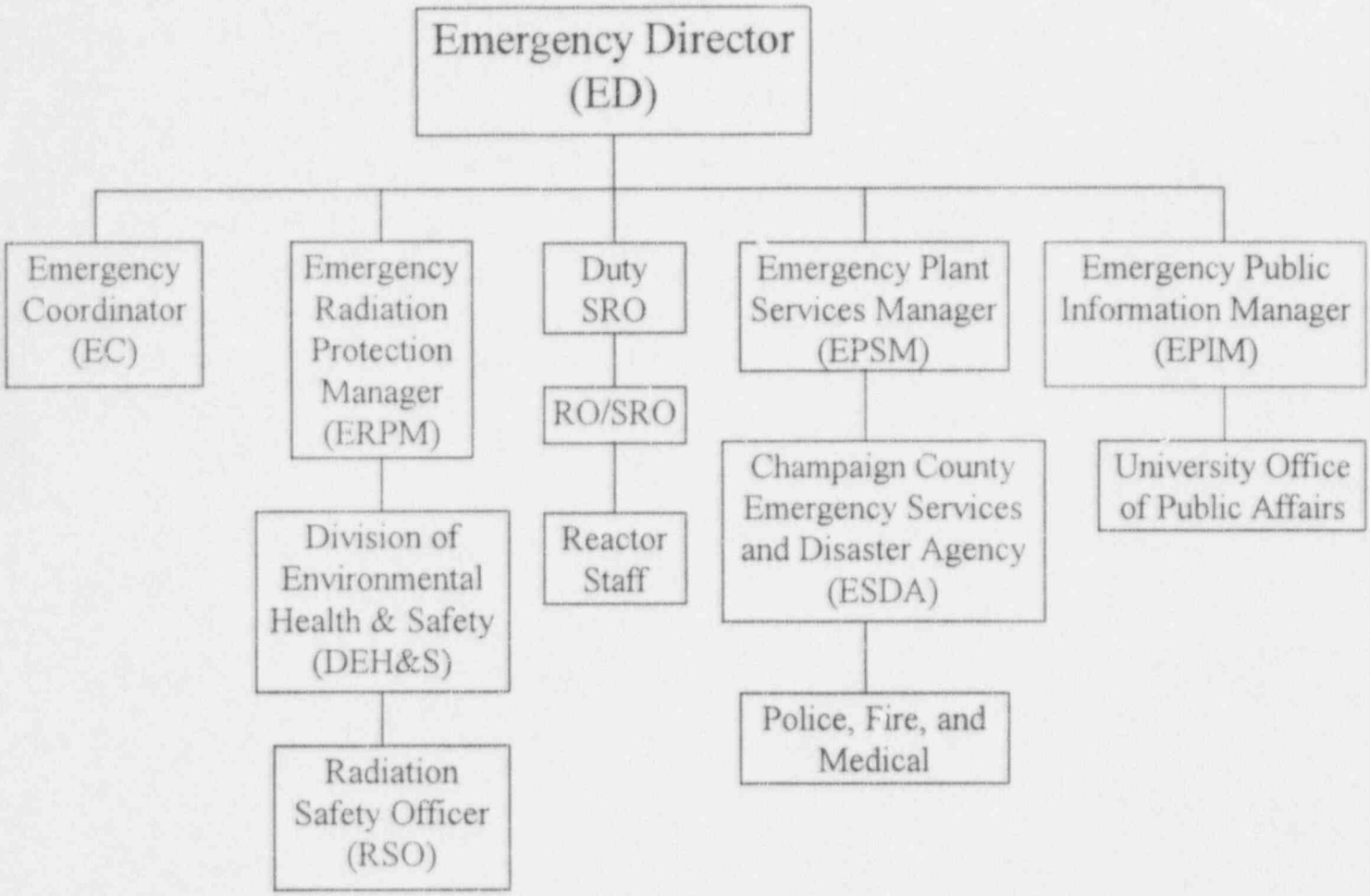
NUCLEAR REACTOR
LINCOLN AVE
GOODWIN AVE
WRIGHT ST
SPRINGFIELD AVE
Western Ave
GREEN ST
FLORIDA AVE
NEIL ST
RT 45
PROSPECT AVE
RT 10



E-Plan Attachment 2
Page 1 of 1


1/8" = 1 FOOT
LOWER LEVEL FLOOR PLAN (6 ft. below Grade)
UP
Primary Beamline
Secondary Beamline
(SANS) Small Angle Neutron Scattering Experiment Area
SANS Blockhouse
Site Boundary
PHYSICAL PLANT
CONCRETE BLOCKS
BENCH
NE
N
TH. COL
NW
RX
TRIGA
West Block-house
W
THRUPORT
E
SW
SE
East Blockhouse
Work Shop
TABLE
Glove Box
Fume Hood
Decon SINK
DECON SHOWER
BENCH
UP
NEW FUEL STORAGE CAGE
SPENT FUEL
STORAGE PITS
CONCRETE BLOCKS
BENCH
Site Boundary
Primary Pump
Secondary Pump
Primary Heat Exchanger
Mechanical Equipt. Room

Emergency Response Organization (ERO)



CHAMPAIGN COUNTY

Emergency Services and Disaster Agency
1905 East Main, Urbana, IL 61802
217 • 384-3826

March 26, 1997

Richard L. Holm
Reactor Administrator
214 Nuclear Engineering Laboratory
103 S. Goodwin Ave.
Urbana, IL. 61801-2984

Dear Sir:

In checking with Carle Hospital and Covenant Medical Center, I believe you and I have the most current Radiation Safety Plans for ~~each~~ mak Carle Hospital (see next page).
mak 6/27/97
Champaign County E.S.D.A. will respond to any incident for coordination or resource support. To activate ESDA call 911.

If we can be of any assistance please feel free to call.

Sincerely,

Bill L. Keller,
Coordinator

BLK:jh

The Carle Clinic Association

"Radiation Accident Program"

is available for review at the Nuclear Reactor Lab and is located in the Emergency Preparedness Files.