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April 14, 2014

U.S. Nuclear Regulatory Commission  
ATTN. Document Control Desk  
Washington D.C. 20555

Re: License R-57, Docket # 50-131. Request for Revisions to the Alan J Blotcky Facility Emergency Plan.

The Alan J Blotcky Reactor Facility was permanently shut down in 2001 and all of the fuel was transferred to the USGS in June of 2002. The reactor's Am-Be neutron sources were removed from the reactor facility and transferred to the Department of Energy's Off-Site Source Recovery Program on 7/24/2003. A Decommissioning and Decontamination plan has been submitted and is currently being reviewed by the NRC.

The Alan J Blotcky Reactor Facility had requested that the NRC exempt the facility from Emergency Plan Requirements in 2010 based on the facility's absence of nuclear fuel. Recently, the AJBRF was informed that the request for exemption would most likely not be granted. Therefore, the AJBRF wishes to submit a revised Emergency Plan for approval. This revision is an attempt to bring the Emergency Plan up to date acknowledging the fact that the TRIGA reactor is no longer operational and that all nuclear fuel has been removed from the facility.

The AJBRF respectfully asks for approval of this revised Emergency Plan.

Sincerely,

  
MARCI MYLAN, Ph.D.

A020  
AY45  
LRR

**EMERGENCY PLAN EVALUATION REPORT  
OMAHA VETERANS ADMINISTRATION MEDICAL CENTER**

**DOCKET NO. 50-131**

**LICENSE NO. R-57**

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## **INTRODUCTION**

The TRIGA MARK I Reactor is owned by the U.S. Veterans Administration and managed by the Omaha Veterans Administration Medical Center and is licensed pursuant to 10 CFR Part 50 under Facility License R-57 with an authorized power level of 20 kW. The reactor facility is located on the grounds of the U.S. Veterans Administration Medical Center at Omaha, Nebraska. The reactor is a pool-type facility formerly fueled with standard TRIGA fuel elements enriched to less than 20% Uranium-235.

## **EVALUATION**

The revised emergency plan for the TRIGA MARK I Reactor is adequate to demonstrate that the licensee has accomplished the purposes of radiological emergency planning. The plan briefly describes the type of reactor, its major functions and utilization, and its location. The plan is designed to cope with emergencies that arise in a TRIGA MARK I Reactor Facility. The objective of the plan is to establish guidelines and designate areas of responsibility for the staff should a radiological emergency occur at the TRIGA MARK I Reactor that may affect the health and safety of workers or the general public.

The plan identifies support organizations and describes the arrangements and agreements with these organizations to augment the licensee's emergency organization should their services be required. The plan includes drawings that provide additional definitive information on facility location, access routes, facility layout, and areas under the administrative control of the licensee.

The plan describes the emergency organization and includes the responsibilities and authority with a line of succession for key members of the emergency organization. The emergency organization provides assurance that emergency management is available for response to any foreseeable emergency at the TRIGA MARK I Reactor. Additionally, the plan describes the criteria for recovery from an emergency, authorization for reentry, and established limits of exposure to radiation in excess of normal occupational limits for emergency team members for life saving and corrective actions that mitigate the consequences of an accident.

Two emergency classes are described for the TRIGA MARK I Reactor. The emergency classes are Notification of Unusual Events and Alert. Each class is associated with specific Emergency Action Levels (EALs) for activating the emergency organization and initiating protective actions appropriate for the emergency event in process. The Emergency Planning Zone (EPZ) for the TRIGA MARK I Reactor is the area within the operations boundary (defined as the reactor building) for which pre-determined protective actions have been established.

The plan describes emergency response measures for each emergency class and related EALs which specify what measures are to be implemented. These response measures include the methods for activating the emergency organization and for assessment, corrective, and protective actions.

The emergency facilities and equipment available for emergency response include a designated Emergency Support Center (ESC) with a backup facility, radiological monitoring systems, instruments and laboratory facilities for continually assessing the

course of an accident, first aid and medical facilities and communications equipment. The provisions for maintaining emergency preparedness include programs for training, retraining, drills, drill critiques, plan review and updates and equipment inventory and calibrations.

Emergency Plan for the Omaha V.A. Medical Center  
TRIGA Mark I Reactor

1. Introduction and objective

1.1. The objective of this plan is to provide a general orientation and common understanding about the nuclear reactor and to outline measures to be taken in the case of any emergency involving the reactor. The Alan J. Blotcky Reactor was permanently shut down on November 5, 2001. All nuclear fuel, active neutron sources and neutron detectors containing fissile materials were removed from the facility on June 22, 2002. One decayed Po-Be neutron source is still on site. This edition of the "Emergency Plan" has been revised to address the "Permanent Shutdown" status of the facility. The references in the "Definitions" section referring to operational status of the facility have been left in for historical purposes only. The below ground TRIGA Mark I reactor is located in the basement of the Omaha Veterans Administration Medical Center. It contains a graphite-reflected fixed core resting at the bottom of a 20 foot steel, concrete, and epoxy tank. Surrounding earth and demineralized water provide the required radial and vertical shielding so that no special containment building is necessary. Core cooling is achieved through a combination of natural convection and a closed loop water-circulating system. The core of the reactor is no longer fueled. It had contained fuel with less than 20% enriched uranium-zirconium hydride. The facility is owned and managed by the U. S. Veterans Administration and is licensed by the U. S. Nuclear Regulatory Commission. Prior to fuel removal the reactor was licensed to operate at a steady state of 20 kilowatts. A description of the location of the reactor together with access routes is shown in Figures 1 and 2.

2. Definitions

- 2.1. Emergency - a condition which calls for immediate action, beyond the scope of normal operating procedure, to avoid an accident or to mitigate the consequence of one.
- 2.2. Emergency Action Levels - Specific instrument readings, or observations; radiological dose or dose rates; or specific contamination levels of airborne, waterborne, or surface-deposited radioactive materials that may be used as thresholds for establishing emergency classes and initiating appropriate emergency measures.
- 2.3. Emergency Classes - Emergency classes are classes of accidents grouped by severity level for which predetermined emergency measures should be taken or considered.
- 2.4. Emergency Plan - An emergency plan is a document that provides the basis for actions to cope with an emergency.
- 2.5. Emergency Planning Zone (EPZ) - Same as Operations Boundary as delineated in Figure 2. This is the 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.
- 2.6. Emergency Procedures - Emergency procedures are documented instructions that detail the implementation actions and methods required to achieve the objectives of the emergency plan.

- 2.7. Offsite - The geographical area that is beyond the site boundary. Onsite - The geographical area that is within the site boundary. Operations Boundary - (Delineated in Figure 2). This is the area within the site boundary where the reactor chief administrator has direct authority over all activities. The area within this boundary shall have prearranged evacuation procedures known to personnel frequenting the area.
- 2.8. Protective Action Guides (PAG) - 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 occurred prior to the assessment.
- 2.9. Research Reactor – A device designed to support a self-sustaining neutron chain reaction for research, development, educational, training, or experimental purposes which may have provisions for production of nonfissile radioisotopes.
- 2.10. Site Boundary – The area that includes the S.W. Wing of the Medical Center and the Research Building. It is within this area that the Emergency Director may directly initiate emergency activities (See Figure I).

### 3. Organization and Responsibilities

- 3.1. Offsite Support Organizations
  - 3.1.1. Fire - Omaha Fire Department
  - 3.1.2. Police Action - Omaha Police Department
  - 3.1.3. Bomb Threat - Omaha Police Department and Federal Bureau of Investigation
  - 3.1.4. Theft - Federal Bureau of Investigation
  - 3.1.5. Radiological Release Incidents outside of V.A. Medical Center Grounds - Nebraska Department of Health and Human Services- Division of Radiological Health
- 3.2. On Site Responsibilities for Emergency Operations
  - 3.2.1. Emergency Director - Reactor Supervisor
    - 3.2.1.1. Responsibilities - Overall responsibility for all emergency control measures
    - 3.2.1.2. Authority - Designated by Medical Center Director
    - 3.2.1.3. Responsibilities that cannot be delegated
      - 3.2.1.3.1. Notification
      - 3.2.1.3.2. Protective Action Decisions
    - 3.2.1.4. Line of Succession
      - 3.2.1.4.1. Radiation Safety Officer
      - 3.2.1.4.2. Radiation Safety Officer backup from University of Nebraska Medical Center
  - 3.2.2. Emergency Co-ordinator - Reactor Supervisor
    - 3.2.2.1. Responsibilities-
      - 3.2.2.1.1. Emergency preparedness planning
      - 3.2.2.1.2. Updating of emergency plans and procedures
      - 3.2.2.1.3. Co-ordinating plans with other applicable organizations
    - 3.2.2.2. Authority - Designated by Medical Center Director
  - 3.2.3. Public Information Officer - Associate Medical Center Director

- 3.2.3.1. Responsibilities - Relating information about the emergency situation to the news media and the public
  - 3.2.4. Radiation Safety Officer -
    - 3.2.4.1. Responsibilities-
      - 3.2.4.1.1. To ensure that proper radiation safety procedures are carried out
      - 3.2.4.1.2. To ensure that all actions are in compliance with 10 CFR 20 and all other Federal Regulations
      - 3.2.4.1.3. To conduct onsite and offsite dose assessments and recommend protective action
    - 3.2.4.2. Line of Succession
    - 3.2.4.3. Backup Radiation Safety Officer from UNMC
  - 3.2.5. Medical Center Security - Chief of Medical Center Police
    - 3.2.5.1. Responsibilities - Maintaining security around designated area if needed
  - 3.2.6. Termination of Emergency and Initiation of Recovery - Reactor Supervisor
    - 3.2.6.1. Line of Succession
    - 3.2.6.2. Radiation Safety Officer
    - 3.2.6.3. Backup Radiation Safety Officer from UNMC
  - 3.2.7. Authorization of Volunteer Emergency Workers to incur Radiation Exposures in Excess of 10 CFR 20 limits - Radiation Safety Officer
    - 3.2.7.1. Line of Succession
      - 3.2.7.1.1. Backup Radiation Safety Officer
  - 3.2.8. Authorization of Re-entry into a Reactor Facility (or portion thereof) that required evacuation following an accident – Radiation Safety Officer
    - 3.2.8.1. Line of Succession
    - 3.2.8.2. Backup Radiation Safety Officer
4. Emergency Classification System
- 4.1. Notification of Unusual Events(NOUE) - Initiated by either man-made events or natural phenomena that can be recognized as creating a significant hazard that was previously non-existent
    - 4.1.1. Purpose
      - 4.1.1.1. Assure that the first steps in any response later found necessary has been carried out
      - 4.1.1.2. Bring the staff to a state of readiness
      - 4.1.1.3. Provide systematic handling of unusual events information and decision making
  - 4.2. Alert - Event or events of such radiological significance as to require notification of the emergency organization and their response as appropriate for the specific emergency situation.
    - 4.2.1. Purpose
      - 4.2.1.1. Assure that emergency personnel are readily available to respond if the situation becomes more serious or to perform confirmatory radiation monitoring if required.
      - 4.2.1.2. Provide offsite authorities current status information

## 5. Emergency Action Levels

### 5.1. Notification of Unusual Events

- 5.1.1. Report or observation of severe natural phenomenon such as tornadoes in the immediate vicinity of the reactor
- 5.1.2. Threats to or breaches of security such as bomb threats or civil disturbances directed towards the reactor.
- 5.1.3. Fire

### 5.2. Alert

- 5.2.1. Loss of water used for shielding of the reactor core at a rate that exceeds makeup capacity or if the pool level drops to less than 12 feet above the top of the core as indicated by the pool level alarm.

## 6. Emergency Planning Zone

- 6.1. Operations Boundary - Room SW-2 (Fig 2)

## 7. Emergency Response

### 7.1. Activation of Emergency Organization

- 7.1.1. Notification Roster - available at VA Medical Center Switchboard, reactor entry doors and on the reactor console. Fire and Police may be notified directly by 911 network or in a case where the phone system is inoperative the Medical Center Police Section has a two-way radio which nets with the Omaha Police Department. Fire Division may be notified by direct alarm box.

### 7.1.2. Procedure for Activating Emergency Organization

#### 7.1.2.1. Notification of Unusual Events

- 7.1.2.1.1. Activated by Emergency Director who notifies Medical Center Director, ACOS Research, Radiation Safety Officer, Medical Center Police Chief and Medical Center Safety Officer
- 7.1.2.1.2. Notification to the NRC will occur within 24 hours after declaring a NOUE. If applicable regulations deem a shorter notification time (see Appendix C), then the more limiting requirement will be adhered to.

#### 7.1.2.1.3. Specific Response

- 7.1.2.1.3.1. Bomb threat or civil disturbance aimed at reactor
  - 7.1.2.1.3.1.1. Emergency Director notifies NRC and F.B.I.
  - 7.1.2.1.3.1.2. Medical Center Police Chief notifies Omaha Police Dept. and Emergency Director of his action
  - 7.1.2.1.3.1.3. Medical Center Safety Office notifies the Omaha Fire Dept. and Emergency Director of his actions
  - 7.1.2.1.3.1.4. Emergency Director notifies Medical Center Public Information Officer
- 7.1.2.1.3.2. Fire within the operation boundary lasting longer than 10 minutes
  - 7.1.2.1.3.2.1. Emergency Director notifies NRC
  - 7.1.2.1.3.2.2. Medical Center Safety Officer notifies Omaha Fire Department by direct fire alarm box or telephone
  - 7.1.2.1.3.2.3. Emergency Director notifies Medical Center Public Information Officer

- 7.1.2.2. Alert - Same as for Notification of Unusual Events except for NRC notification which will occur within 6 hours after declaring an Alert

7.2. Assessment Actions

7.2.1. Non-airborne

- 7.2.1.1. Exposure in the reactor laboratory will be indicated by a calibrated non-jamming area monitoring with an audible alarm set at 2 mR/hr. Radiation detected Beta-Gamma
- 7.2.1.2. One or more calibrated portable survey meters will then be used to accurately measure and confirm projected radiation dose rates and contamination levels inside and outside of the reactor facility
- 7.2.1.3. Additional Radiation Analysis Equipment
  - 7.2.1.3.1. Lab Monitor – An appropriately sensitive radiation monitor with audio output
  - 7.2.1.3.2. Gas Proportional Counter - Alpha, Beta, and Gamma. available from UNMC via MOU with Fort Calhoun Nuclear Power Plant
  - 7.2.1.3.3. Optically stimulated luminescence badges have been positioned at strategic spots within the facility and at the exit boundary of the ventilation fan

7.2.2. Method used to determine onsite radiation doses to personnel during an emergency

- 7.2.2.1. Optically stimulated luminescence badges
- 7.2.2.2. Pocket dosimeters
- 7.2.2.3. Radiation Survey Instruments
- 7.2.2.4. All radiation area survey meters will be calibrated on an annual basis

7.3. Corrective Actions

7.3.1. Notification of Unusual Events

- 7.3.1.1. Report or observation of severe natural phenomenon
- 7.3.1.2. Threats or breaches of security
  - 7.3.1.2.1. Ensure that reactor hatches and area doors are locked
  - 7.3.1.2.2. Notify Medical Center police and request surveillance
- 7.3.1.3. Fire within the operation boundary lasting longer than 10 min
  - 7.3.1.3.1. Use the dry fire extinguisher in the reactor room
  - 7.3.1.3.2. Pull fire alarm switch
  - 7.3.1.3.3. Notify the Medical Center operator of a fire so that he/she can activate the Medical Center fire procedure

7.3.2. Alert

- 7.3.2.1. Break in cooling water piping
  - 7.3.2.1.1. Repair pipe leak
  - 7.3.2.1.2. Confine water
  - 7.3.2.1.3. Add additional deionized water
- 7.3.2.2. Loss of Coolant Water
  - 7.3.2.2.1. Replace water with deionized water or in emergency, water from the fire hose in reactor room

- 7.3.3. All repair and damage control will be carried out by the Omaha VA Medical Center mechanical, electrical and electronics maintenance personnel. Fire control will be handled by the Omaha VA Medical

- Center Safety Officer and Police Officers until the Omaha Fire Department arrives.
- 7.4. Protective Action
  - 7.4.1. Within 30 minutes after the initiation of an emergency event the Emergency Director will prepare a list of all persons within the operations boundary and if evacuation is necessary, be able to account for each individual on the list
  - 7.4.2. The operations area (Fig 2) is small enough so that all personnel can be orally notified and advised of an emergency event
  - 7.4.3. Emergency Personnel Exposures
    - 7.4.3.1. Protective action values
      - 7.4.3.1.1. Rescue of personnel, lifesaving activities - 25 Rem per individual
        - 7.4.3.1.1.1. Authorized by Radiation Safety Officer
      - 7.4.3.1.2. Taking corrective actions related to reactor safety-300mR whole body per individual
        - 7.4.3.1.2.1. If the situation requires greater personnel exposure a maximum of 25 Rem may be authorized by the Radiation Safety Officer
    - 7.4.3.2. Implementation of Emergency Personnel Exposures
      - 7.4.3.2.1. Prior to allowing any emergency exposure the Radiation Safety Officer will make an immediate estimate of the exposure personnel will receive and these values will be recorded
      - 7.4.3.2.2. The Radiation Safety Officer will determine the stay times of all individuals. Factors governing these decisions will include an evaluation of risk versus benefit.
      - 7.4.3.2.3. All personnel who expose themselves to radiation for emergency purposes, both emergency personnel and volunteers, will be appraised of the time they may stay in the area, the radiation exposure they may be expected to receive, and the possible consequences of the exposure
  - 7.4.4. Emergency Health Physics Plan
    - 7.4.4.1. An emergency radiation safety cart is stored outside of the operations boundary and contains the following special protective equipment
      - 7.4.4.1.1. Disposal Acid Suits
      - 7.4.4.1.2. Disposable gloves, head covers, shoe covers and sheeting
      - 7.4.4.1.3. Pocket dosimeters
      - 7.4.4.1.4. Radiation Survey Meter
      - 7.4.4.1.5. Other emergency supplies as described in Paragraph 8.5.2
    - 7.4.4.2. Upon activation of the plan the Radiation Safety Officer will appoint a recording secretary to record the radiation readings obtained so that the RSO can readily determine the radiation hazards and define areas where radiation and/or contamination levels exceed permissible amounts
    - 7.4.4.3. The Radiation Safety Officer is then responsible for estimating the projected exposure to persons within or beyond the site boundaries and determining what emergency action levels have been exceeded
    - 7.4.4.4. All radiation survey records will be filed in a manner that will allow them to be readily available for analysis

8. Emergency Facilities and Equipment - Room R-107 in the adjacent Research Building (See Figure 4) is designated as the Emergency Support Center from which emergency control directions will be given

8.1. Monitoring and Sampling Equipment

8.1.1. Portable radiological monitors

- 8.1.1.1. Geiger-Muller survey meter located in Nuclear Medicine low-range (i.e. 0-500,000 cpm)
- 8.1.1.2. Ion Chamber survey meter located in Nuclear Medicine low-range (i.e. 0-50R/hr)
- 8.1.1.3.

8.1.2. Radiological Sampling equipment

- 8.1.2.1. Instrumentation for specific radionuclide identification and analysis
- 8.1.2.1.1. Multichannel Analyzer available at UNMC
- 8.1.2.1.2. Gas Proportional Counter available from UNMC via MOU with Fort Calhoun Nuclear Power Plant
- 8.1.2.1.3. Liquid Scintillation Counter

8.1.3. Non-radiological monitors

- 8.1.3.1. Reactor water temperature indicator hand held unit
- 8.1.3.2. Conductivity meter for reactor water
- 8.1.3.3. Water level monitor indicating at Medical Center Switchboard if levels drops to less than 12 feet above reactor core
- 8.1.3.4. Flow meter indicating gallons per minute of reactor water flow - on wall in reactor room
- 8.1.3.5. Fire Detection - The reactor is equipped with a sprinkler system that is dry until it is charged by heat sensors which activate to fill the system and trigger an audible alarm when the temperature reaches 135°C. The sprinkler heads open at 165°C. The reactor room also contains one fire alarm box and three smoke detectors.

8.2. Facilities and methods for decontamination and First Aid

- 8.2.1. Room R118 in the adjacent Research Building (See Fig 4) has been designated as the decontamination room. This room has a large stainless steel sink with capabilities of disconnecting the sink drain so that it can drain into carboys for storage. An operation room is also available across the hall if necessary as well as an x-ray suite. All three rooms are in a building separate from building 1, so the problem of contaminating the building 1 does not exist.
- 8.2.2. Since the facility is located within the Medical Center all personnel treating the victims will be physicians or nurses and no medical transportation will be necessary
- 8.2.3. Evaluation of external radiation of the victims as well as radiation exposure and uptake will be carried out and recorded by the the Radiation Safety Officer
- 8.2.4. Medical Center Police have been instructed that if alerted they will seal off the area between the reactor room and room R118 allowing only necessary personnel to enter
- 8.2.5. Personnel will not be allowed to go outside of the contaminated area until they have received radiation safety clearance which will include the monitoring of their hands, feet and clothing

- 8.3. Communication System
    - 8.3.1. Medical Center Audio Page System - speakers strategically placed throughout the Medical Center and Research Building - controlled by switchboard operator
    - 8.3.2. Medical Center Page System - All physicians, key nurses, Radiation Safety Officer, key administration personnel and key engineering personnel have audio pocket pagers, operated through any telephone in the Medical Center. Has range of greater than 15 miles.
    - 8.3.3. Telephones are available throughout the Medical Center including RB533A, in Room R113 across the hall from the decontamination room and in Room R107 the Emergency Support Center
  - 8.4. Emergency Messages to the Nuclear Regulatory Commission and if applicable other off site government agencies
    - 8.4.1. Content of Message
      - 8.4.1.1. Name, title and telephone number of caller, and the location of incident
      - 8.4.1.2. Description of emergency event and emergency class
      - 8.4.1.3. Date and time of incident initiation
      - 8.4.1.4. Type of expected or actual release (airborne, waterborne, surface spill) with estimated duration time
      - 8.4.1.5. The quantity of radionuclides released or expected to be released
  - 8.5. Emergency supplies and equipment
    - 8.5.1. Inventory will be conducted every six months
    - 8.5.2. Contents of emergency cart
      - 8.5.2.1. Radiation Signs and Tags
      - 8.5.2.2. Applicable Handbooks and Regulations
      - 8.5.2.3. Log Books
      - 8.5.2.4. Tape - Radiation and masking
      - 8.5.2.5. Plastic gloves and sheeting
      - 8.5.2.6. Rubber gloves
      - 8.5.2.7. Absorbent paper
      - 8.5.2.8. Acid suits
      - 8.5.2.9. Plastic head coverings and boots
      - 8.5.2.10. Radiac Wash
      - 8.5.2.11. Hard hat with light
      - 8.5.2.12. Flashlight
      - 8.5.2.13. Pocket dosimeters
      - 8.5.2.14. Tools
      - 8.5.2.15. Plastic Bags
      - 8.5.2.16. Stop Watch
    - 8.5.3. Location - In stairwell adjacent of door to S1 (Fig 2)
    - 8.5.4. The portable health physics instruments and dosimeters in the emergency cart will be inspected and checked for operability quarterly and calibrated annually
9. Recovery
- 9.1. Zoned areas - Created for the purpose of controlling radioactive contamination Zoned areas will be designated by the Radiation Safety Officer
    - 9.1.1. Regulated Zone - Operation boundary (See Figure 2)

- 9.1.1.1. Outer boundary of the area in which acceptable contamination zone clothing may be worn
  - 9.1.2. Contamination Zone Clothing Change Area
    - 9.1.2.1. Clothing Change Room - Area where personnel will change into protective clothing (See Figure 2)
    - 9.1.2.2. Intermediate Monitoring Room - Area where extent of contamination is determined before changing back to street clothes
    - 9.1.2.3. Monitoring Room - Area where personnel will be monitored after changing back to street clothes to assure that they are not contaminated before leaving Regulated Zone (See Figure 2)
  - 9.2. Radiation clearance to enter Zoned Areas
    - 9.2.1. Must be given individually by Radiation Safety Officer
    - 9.2.2. Stay times will be strictly adhered to and monitored by someone outside the Regulated Zone
    - 9.2.3. Completed records will be kept for each individual indicating stay time, radiation received and any abnormal occurrences
  - 9.3. All waste, cleaning rags, contaminated materials, etc, will be stored in accordance with applicable regulations and procedures. Disposition of contaminated material will be decided by the Radiation Safety Officer.
  - 9.4. Decontamination will be complete when restricted area removable surface contamination is equal to or less than 2,200 dpm/100cm<sup>2</sup> and fixed contamination is less than 2mrem/hr
10. Maintaining Emergency Preparedness
- 10.1. The following shall be identified or described, as applicable, to demonstrate emergency preparedness:
    - 10.1.1. Programs to train and periodically retrain onsite personnel for participation in the emergency plan and to give specified training to onsite and offsite personnel who have specific emergency assignments
      - 10.1.1.1. Annual onsite emergency drills, to be conducted as action drills with each required emergency measure being executed as realistically as is reasonable possible, including the use of appropriate emergency equipment. At least every two years, these drills shall contain provisions for coordination with offsite emergency personnel (if available) and should test, as a minimum, the communication links and notification procedures with those offsite agencies and support organizations. To provide operational flexibility, the maximum allowable interval between drills shall be 30 months.
      - 10.1.1.2. Provision for critiques of all drills, including timely evaluation of observer comments and correction of identified deficiencies
    - 10.1.2. Plan Review and Update. The emergency plan shall provide for revising and updating of the emergency plan. This includes specifying the methods to ensure that changes and revision are reviewed, approved, and distributed to appropriate elements of the emergency organization. The Reactor Safeguard Committee shall provide for a review of the Emergency Plan every two years. Letters of agreement with organizations listed in Appendix B of this Emergency Plan will be updated every two years not to exceed 2.5 years.

- 10.1.3. **Equipment Maintenance.** The emergency plan shall describe the provisions to ensure operational readiness of emergency equipment and supplies including required maintenance and calibrations, testing, and periodic inventory.

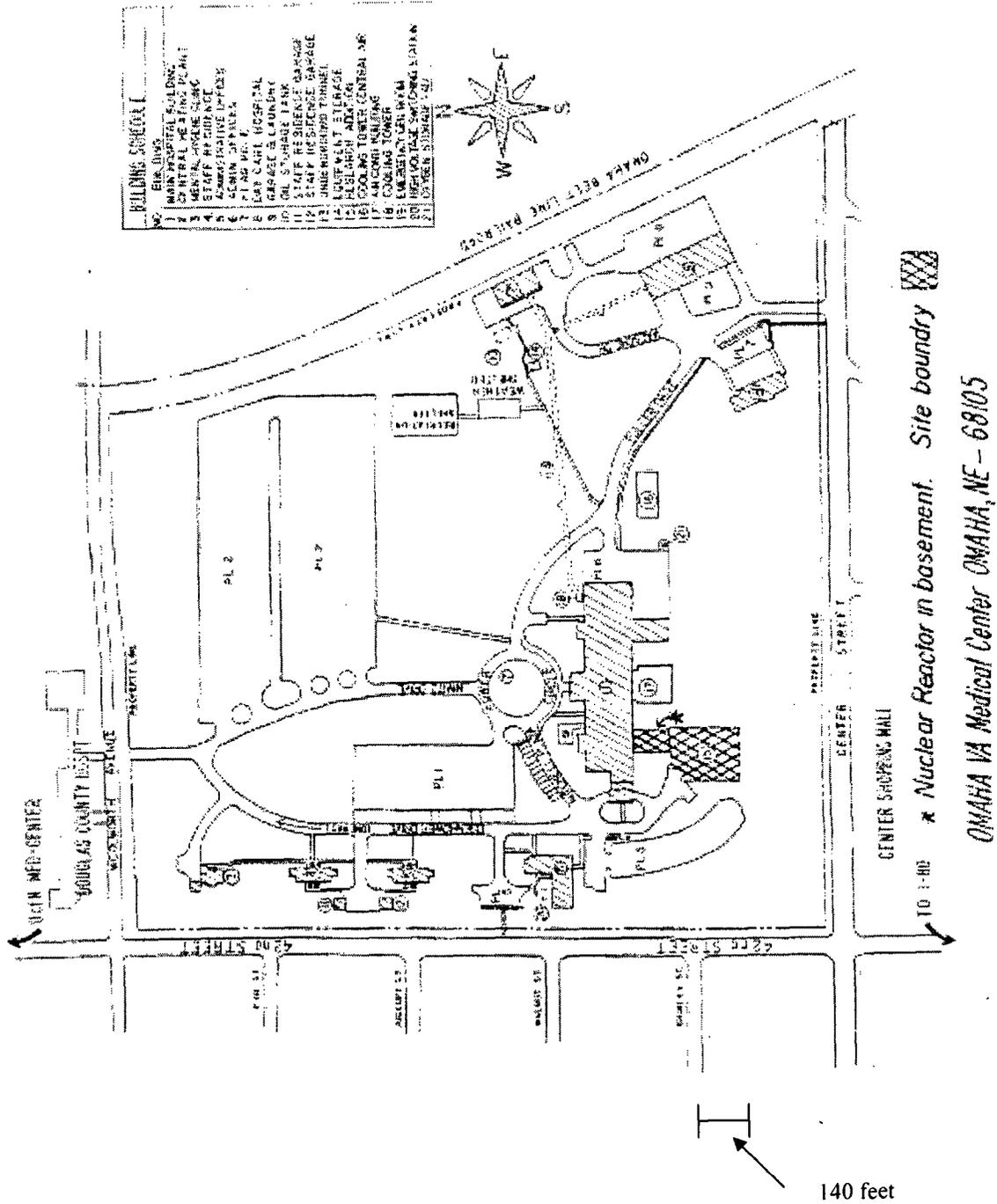
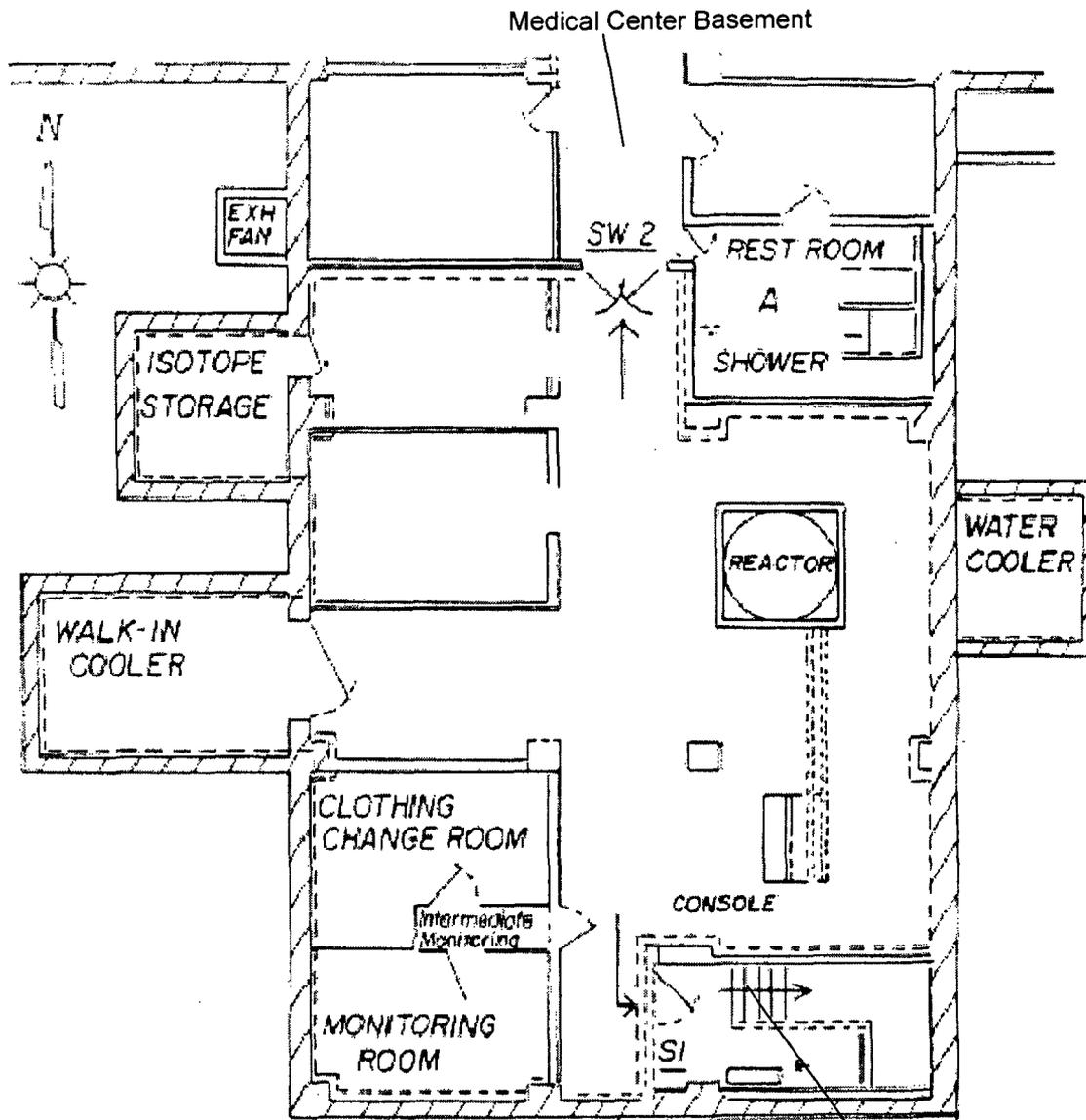


Figure I.

Main medical center:  
Basement area

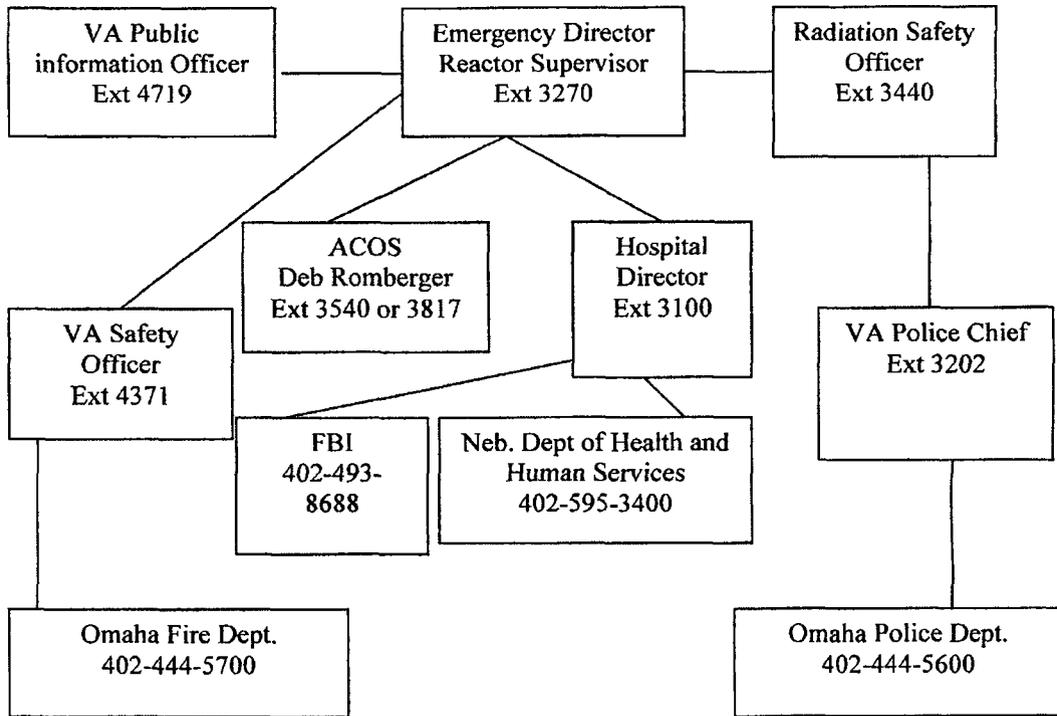


Arrows indicate evacuation route  
Dashed line indicate operation boundary  
\* Emergency cart.

To first floor: research

Figure 2

Figure 3



**Emergency Notification Flow Chart**

Figure 3

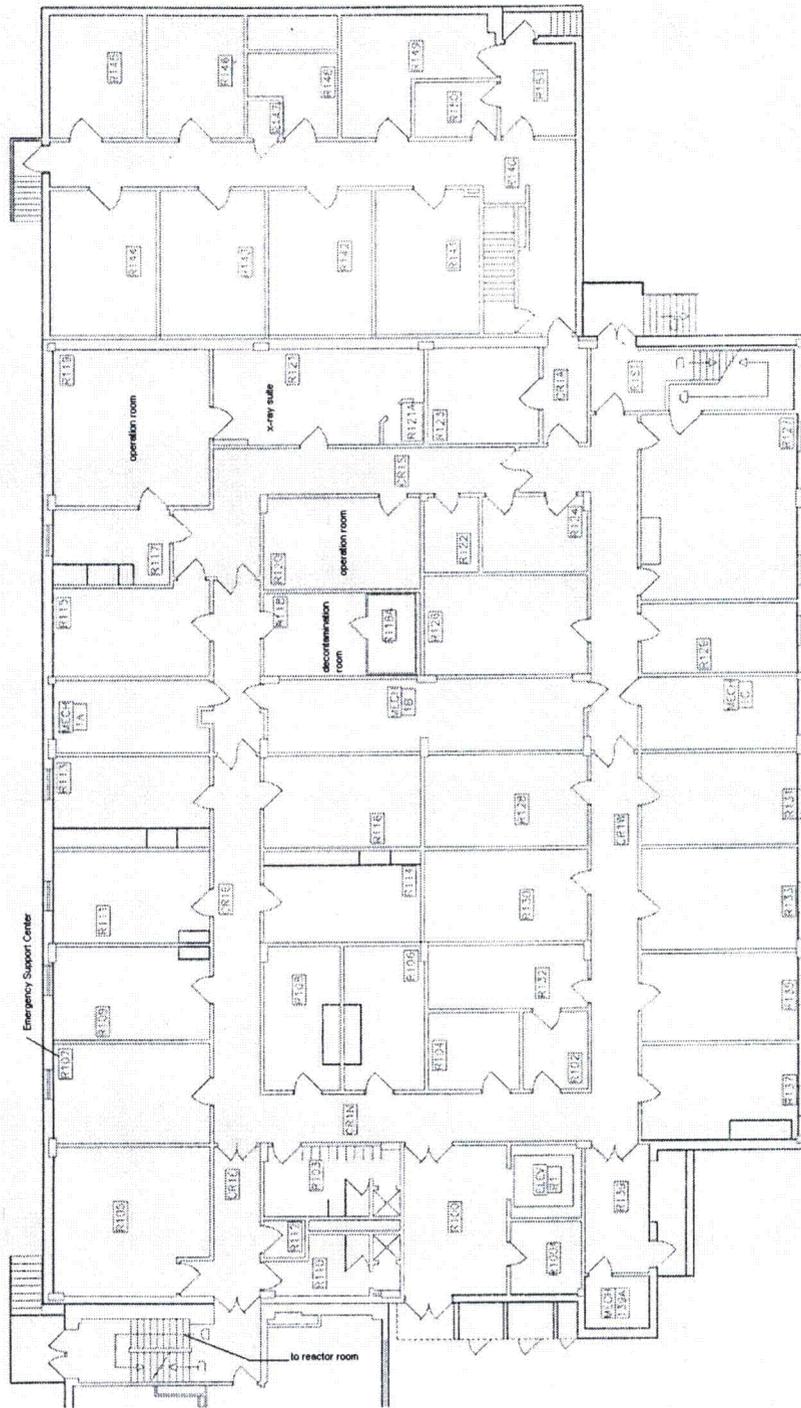


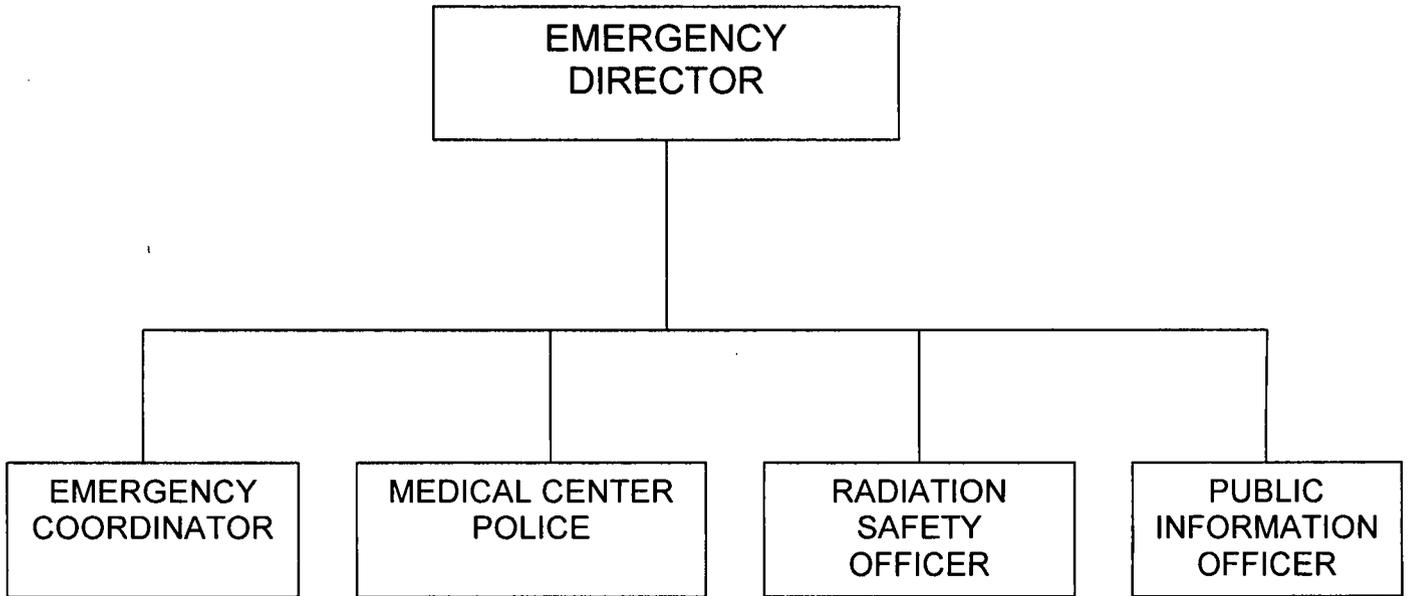
Figure 4



FIRST FLOOR PLAN - BUILDING 15

BIS: d.wg 12-24-98 11:19:30 am EST

Figure 4



FACILITY ORGANIZATION  
(RESPONSIBILITIES)

Figure 5

## Appendix A

### **Written Procedures Implementing Plan**

Reactor Excursion  
Fire outside of reactor area  
Fire within reactor area  
Reactor excursion  
Reactor console alarm during off-duty hours  
Removal of unexpected, highly radioactive sample from the reactor  
Loss of cooling water  
Bomb threat and civil disorders  
Monitoring and sampling equipment maintenance

Appendix B

Letters of Agreement from Local Support Organizations

Omaha Fire Division  
Omaha Police Division

Nebraska Department of Health And Human Services, Division of Radiological  
Health

## Appendix C

**10 CFR 20.2202 Notification of incidents.**

- (a) Immediate notification. Notwithstanding any other requirements for notification, each licensee shall immediately report any event involving byproduct, source, or special nuclear material possessed by the licensee that may have caused or threatens to cause any of the following conditions—
- (1) An individual to receive—
    - (i) A total effective dose equivalent of 25 rems (0.25 Sv) or more; or
    - (ii) A lens dose equivalent of 75 rems (0.75 Sv) or more; or
    - (iii) A shallow-dose equivalent to the skin or extremities of 250 rads (2.5 Gy) or more; or
  - (2) The release of radioactive material, inside or outside of a restricted area, so that, had an individual been present for 24 hours, the individual could have received an intake five times the annual limit on intake (the provisions of this paragraph do not apply to locations where personnel are not normally stationed during routine operations, such as hot-cells or process enclosures).
- (b) Twenty-four hour notification. Each licensee shall, within 24 hours of discovery of the event, report any event involving loss of control of licensed material possessed by the licensee that may have caused, or threatens to cause, any of the following conditions
- (1) An individual to receive, in a period of 24 hours—
    - (i) A total effective dose equivalent exceeding 5 rems (0.05 Sv); or
    - (ii) A lens dose equivalent exceeding 15 rems (0.15 Sv); or
    - (iii) A shallow-dose equivalent to the skin or extremities exceeding 50 rems (0.5 Sv); or
  - (2) The release of radioactive material, inside or outside of a restricted area, so that, had an individual been present for 24 hours, the individual could have received an intake in excess of one occupational annual limit on intake (the provisions of this paragraph do not apply to locations where personnel are not normally stationed during routine operations, such as hot-cells or process enclosures).
- (c) The licensee shall prepare any report filed with the Commission pursuant to this section so that names of individuals who have received exposure to radiation or radioactive material are stated in a separate and detachable part of the report.
- (d) Reports made by licensees in response to the requirements of this section must be made as follows:
- (1) Licensees having an installed Emergency Notification System shall make the reports required by paragraphs (a) and (b) of this section to the NRC Operations Center in accordance with 10 CFR 50.72; and
  - (2) All other licensees shall make the reports required by paragraphs (a) and (b) of this section by telephone to the NRC Operations Center (301) 816-5100.
- (e) The provisions of this section do not include doses that result from planned special exposures, that are within the limits for planned special exposures, and that are reported under Sec. 20.2204.