

Idaho State UNIVERSITY

Nuclear Engineering

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December 19, 2016

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SUBJECT: Emergency Plan for Nuclear Facilities at Idaho State University: AGN-201M (License R-110, Docket No. 50-284) and Subcritical Assembly (License No. SNM-1373, Docket No. 70-1374) Redacted for Public Release

Attached is a redacted version of the Emergency Plan to allow for public release, as requested by Mr. Xiaosong Yin of NRC.

Sincerely,



Mary Lou Dunzik-Gougan, PhD
Reactor Administrator
Idaho State University

Attachments:
Emergency Plan, Rev. 7 Redacted

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EMERGENCY PLAN

FOR THE

NUCLEAR FACILITIES AT IDAHO STATE UNIVERSITY:

AGN-201M NUCLEAR REACTOR
(LICENSE NO. R-110, DOCKET NO. 50-284)

AND


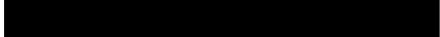
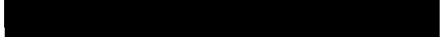

SUBCRITICAL ASSEMBLY
(LICENSE NO. SNM-1373, DOCKET NO. 70-1374)

Facility Emergency Plan, Rev. 7
RSC Approval: August 5, 2016
NRC Approval: August 14, 2006

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1.0 INTRODUCTION

This Emergency Plan shall be used as a plan of action to follow in the event of an emergency situation at the nuclear facility located at Idaho State University, Pocatello, Idaho.

The nuclear facility consists of an AGN-201 nuclear reactor manufactured by Aerojet General Nucleonics (AGN) in 1956 and a Subcritical Assembly. The AGN reactor and Subcritical Assembly are owned by Idaho State University and operated under U.S. NRC License Nos. R-110 and SNM-1373, respectively. The reactor is licensed to operate at a maximum power of 5 W. The fuel for both facilities consists of uranium [REDACTED].

The AGN-201 reactor system consists of two basic units, the reactor and the control console. The reactor unit includes the core consisting of UO₂ uniformly dispersed in polyethylene, a graphite reflector, and the lead and water shielding. Fuel loaded control and safety rods are installed vertically from the bottom of the reactor unit. These rods pass by the nuclear instrumentation, which measures the power level. Rod movement is achieved by the use of control rod drive mechanisms that provide safe and efficient operation of the reactor. The weight of the reactor unit, with the water shield, is approximately 20,000 pounds; the weight of the reactor control console is about 800 pounds. The AGN-201 reactor is located in [REDACTED] building at Idaho State University (ISU).

The Subcritical Assembly [REDACTED]. The Subcritical Assembly fuel consists of [REDACTED] containing an aluminum-uranium mixture enriched to [REDACTED]. The fuel plates measure [REDACTED]. The aluminum cladding is [REDACTED].

The Emergency Plan has the following purposes:

- (1) To describe provisions made through advanced planning to cope with an emergency situation not normally expected from routine operations of the nuclear facilities; and
- (2) To provide assurances that appropriate measures can and will be taken to mitigate the consequences of such an emergency, should it occur, and thereby further assure the protection of the public health and safety, as well as the safety of radiation workers at the facility.

This Emergency Plan was prepared to be in compliance with ANSI/ANS-15.16-1982, "Emergency Planning for Research Reactors," and NUREG-0849, "Standard review Plan for the review and Evaluation of Emergency Plans for Research and Test Reactors." Differences and variation of this document from those that are used for other reactor facilities realistically reflect the characteristics unique to the ISU Nuclear Facility.

2.0 DEFINITIONS

- 2.1 Emergency – An emergency is a condition that calls for immediate action, beyond the scope of normal operating procedures, to avoid an accident or mitigate the consequences of one.
- 2.2 Emergency Organization – The Emergency Organization consists of a Director and a team of technical coordinators who possess the detailed knowledge of the Nuclear Facilities and radiation safety to respond appropriately to any Emergency within the EPZ.
- 2.3 Director of Emergency Operations (DEO) – The DEO is the individual who has the responsibility of coordinating the response of the Emergency Organization to any Emergency within the EPZ.
- 2.4 Emergency Preparedness Coordinator (EPC) - The EPC is the individual who has the responsibility of coordinating emergency preparedness, including responsibility and authority for emergency preparedness planning, updating emergency plans and procedures, and coordinating plans with other applicable organizations.
- 2.5 Radiation Safety Dose Assessment Coordinator (DAC) - The DAC is the individual who has the responsibility for onsite and offsite dose assessments and recommended protective actions.
- 2.6 Reactor Safety Committee (RSC) – The RSC consists of a group of engineers and scientists, knowledgeable in nuclear reactor matters. The RSC periodically reviews and approves all procedures related to the safe operation of the ISU AGN-201 Reactor Facility, including this Emergency Plan Document.
- 2.7 Recovery Operations Coordinator (ROC) - The ROC is the individual who has the responsibility of making recommendations to mitigate the consequences of and resolve emergencies directly involving reactor or Subcritical Assembly safety.
- 2.8 Emergency Planning Zone (EPZ) – [REDACTED]
- 2.9 Emergency Support Center (ESC) - The ESC serves as a coordination area for all emergency response agencies for addressing the emergency. [REDACTED]
- 2.10 Hold Station – During an emergency, reactor personnel will gather at the Hold Station insuring everyone is accounted for and checked for radioactive contamination [REDACTED]
- 2.11 Operations Area - [REDACTED]
- 2.12 Operations Boundary - [REDACTED]
- 2.13 Nuclear Facility - Consists of the AGN-201 nuclear reactor and the Subcritical Assembly.

3.0 ORGANIZATION AND RESPONSIBILITIES

3.1 Emergency Organization

The Emergency organization consists of a Director and a team of technical coordinators who possess a detailed knowledge of the Reactor Facility. This team is augmented with selected off-campus agencies that provide response actions normally beyond the capabilities of ISU personnel. Figure 1 shows a block diagram illustrating the structure of the Emergency Organization. Appendix B shows the Emergency Organization and its line of succession along with a current listing of personnel. Updating of Appendix B does not constitute a revision to this Emergency Plan.

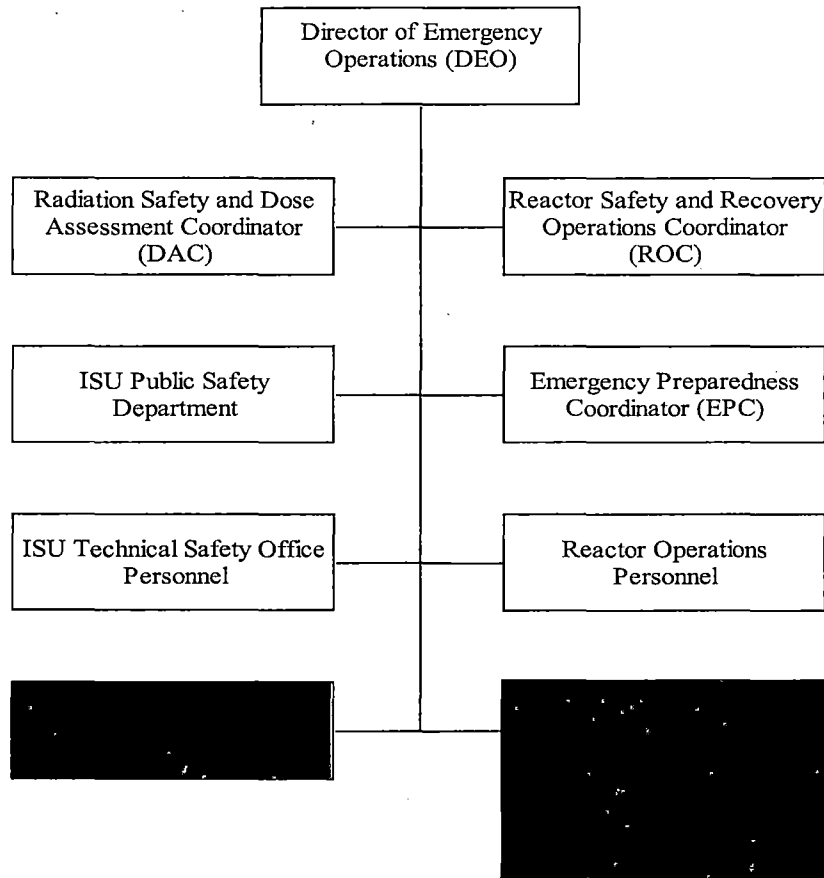


Figure 1. Emergency Organization for ISU Nuclear Facilities.

3.2 Director of Emergency Operations (DEO)

3.2.1 The Reactor Administrator for the ISU AGN-201M Reactor Facility shall be the Director of Emergency Operations. In the event that the Reactor Administrator is unavailable or

otherwise incapacitated, the DEO shall be assumed according to the following line of succession:

Reactor Administrator

Assistant Reactor Administrator

Reactor Supervisor

Senior Reactor Operator Onsite

3.2.2. The DEO shall be responsible for classifying the emergency and declaring a Notification of an Unusual Event (NOUE). The DEO shall be responsible for directing all elements of the Emergency Organization to effectively bring the emergency under control. This responsibility shall include the following key decisions:

- (a) That specific elements of the Emergency Organization should or should not be activated based upon circumstances of the emergency, existing or imminent;
- (b) That sufficient control exists such that an emergency, once declared, may be terminated;
- (c) That recovery actions shall commence; and
- (d) That changes to the planned organization and organizational actions, based upon existing circumstances of the emergency, may be made.

In addition, the DEO shall be responsible for proper notification of and initial liaison with the U.S. Nuclear Regulatory Commission and the State of Idaho Emergency Communications Bridge. The DEO shall authorize, upon the recommendation of the Radiation Safety and Dose Assessment Coordinator (DAC), emergency workers to incur voluntary doses in excess of normal occupational limits. The DEO shall authorize, upon recommendations from the DAC and the Reactor Safety and Recovery Operations Coordinator (ROC), reentry into areas of the facility that required evacuation following an accident. The DEO shall relate information about the emergency situation to the news media and to the public.

3.3 Radiation Safety and Dose Assessment Coordinator (DAC)

3.3.1 The ISU Radiation Safety officer (RSO) shall be the DAC. In the event that the RSO is unavailable or otherwise incapacitated, the DAC shall be assumed according to the following line of succession:

ISU Radiation Safety Officer

Reactor Supervisor

Health Physicist Onsite

3.3.2 The DAC shall be responsible for onsite and offsite dose assessments, including maintenance of records. The DAC shall make recommendations to the DEO for actions that would mitigate the consequences of radiological hazards resulting from the emergency. The DAC shall directly supervise decontamination actions, including the decontamination and/or preparation of contaminated injured personnel using measures to minimize radiation exposures for personnel engaged in corrective and recovery actions. The responsibilities of the DAC can only be delegated to those in the line of succession.

3.4 Reactor Safety and Recovery Operations Coordinator (ROC)

3.4.1 The Reactor Supervisor for the ISU AGN-201M Reactor Facility shall be the ROC. In the event that the Chief Reactor Supervisor is unavailable or otherwise incapacitated, the ROC shall be assumed according to the following line of succession:

Reactor Supervisor

Senior Reactor Operator Onsite

3.4.2 The ROC shall make recommendations to the DEO for actions that would mitigate the consequences of and resolve emergencies directly involving reactor safety. The ROC shall supervise any such actions. The ROC shall assess reactor core damage, existing or imminent. The ROC shall initiate actions required to assure reactor shutdown, as defined in the ISU AGN-201M Facility Operating License. The ROC shall make recommendations for actions to improve the posture of any security measures that may have been degraded as a result of an accident. The ROC shall supervise onsite recovery actions as directed by the DEO. The responsibilities of the ROC can only be delegated to those in the line of succession.

3.5 Emergency Preparedness Coordinator (EPC)

The Reactor Supervisor of the ISU AGN-201M Reactor Facility shall be the EPC. The EPC shall be responsible for emergency preparedness planning, including the updating of this plan, notification of members of the Emergency Organization and the implementation of procedures. The EPC shall distribute the Emergency Plan, including approved changes and revisions to appropriate elements of the Emergency Organization. The EPC shall initiate action to obtain, where necessary, written agreement with offsite support agencies to augment and extend the capabilities of the Emergency Organization. The EPC shall ensure that onsite equipment and facilities are available and maintained in the proper state of readiness to support this plan. The EPC shall request review and approval of revisions to the Emergency Plan by the ISU AGN Reactor Safety Committee.

3.6 On-Campus Emergency Support Organizations - Appendix B contains the telephone numbers for Emergency Support Organizations, both On-Campus and Off-Campus.

3.6.1 ISU PUBLIC SAFETY DEPARTMENT (ISUPSD) The ISU Public Safety Department is an on-campus organization that maintains a permanent detachment of armed police officers on the ISU campus. It has a full-time director and is responsible for the enforcement of physical security and personnel access regulations. This includes routine access to restricted facilities on campus [REDACTED]

[REDACTED]. Communications between ISUPSD Headquarters and patrolling officers is maintained by the use of two-way radios. The ISUPSD maintains a liaison with other law enforcement agencies, including city, county sheriff department and state police, to ensure effective traffic control and crowd control in emergency situations. ISUPSD will coordinate with the DEO to initiate actions that would improve the posture of any security measures that may have been degraded as a result of an accident.

3.6.2 ISU TECHNICAL SAFETY OFFICE (TSO) This ISU organization has the specific function of evaluating and controlling radiological hazards related to ISU activities. Included in the normal operation of the office is the monitoring of personnel radiation doses and routine radiological emissions at ISU. The ISU Radiation Safety Officer serves as DAC in a nuclear facility Emergency. The TSO provides monitoring and control of radioisotope emission through a staff of trained Radiation Safety Technicians. This includes personnel dose assessment, air sampling, surface contamination sampling and bioassay where designated by the DAC. This organization follows procedures which meet federal guidelines and which have been approved by the U.S. Nuclear Regulatory Commission.

3.7 Off-Campus Emergency Support Agencies

3.7.1

[REDACTED]

3.7.2

[REDACTED]

3.7.3

[REDACTED]

3.7.4

[REDACTED]

3.7.5

[REDACTED]

4.0 EMERGENCY CLASSIFICATIONS

By virtue of the small quantity of fissile material and the negligible fission-product inventory associated with operation of the AGN-201M reactor and the Subcritical Assembly Facility, a release of radioactive material that would require offsite responses is not expected from any credible potential emergency involving the ISU nuclear facilities. Radiological emergencies that may be possible are within the control capabilities of onsite personnel and predetermined responses are specified in the reactor facility operating procedures. Emergencies for which predetermined responses may be necessary by the Emergency Organization outlined in the plan are described in the following classification. The reactor operating staff under the direction of the Reactor Supervisor shall address emergencies of lesser severity.

4.1 Notification of Unusual Events (NOUE)

Unusual Events shall include man-made events or natural phenomena, existing or imminent, which can be recognized as creating a significant hazard potential that was previously nonexistent and that may be beyond the scope of normal operating procedures, as defined in U.S. NRC NUREG-0849. Notification or mobilization of one or more of the elements of the Emergency Organization may be necessary to increase the state of readiness, to prevent escalation of the emergency or to mitigate the consequence of an accident should it occur.

5.0 EMERGENCY ACTION LEVELS

By virtue of the minimum fission-product inventory, all conditions that might initiate or signal a radiological incident fall into the Notification of Unusual Event (NOUE) Emergency Class. Within this class, the following action levels are established for the ISU Nuclear Facilities:

- (1) Bomb threat or civil disturbance directed toward the ISU Nuclear Facilities.
- (2) Report or observation of severe natural phenomena, imminent or existing, such as tornadoes or earthquakes that could strike the facility with the potential for degradation of the physical barriers that comprise the Operations Boundary.
- (3) Fire [REDACTED] lasting more than 10 minutes.
- (4) Radiological Safety Incidents that results in actual or projected radiological effluents at the Site Boundary exceeding 10 MPC (as listed in 10 CFR 20, Appendix B, Table II, Column I) when averaged over 24 hours, or 15 mrem whole body accumulated in 24 hours.

6.0 EMERGENCY PLANNING ZONE

The Emergency Planning Zone (EPZ), [REDACTED]

[REDACTED] This Emergency Plan shall apply to the EPZ.
[REDACTED]

7.0 EMERGENCY RESPONSE

7.1 Activation of the Emergency Organization

7.1.1 Mobilization - The DEO shall be immediately notified of any situation, existing or imminent, equivalent to the Emergency Action Levels specified for Notification of Unusual Events. Notification will normally be initiated by reactor facility operators during working hours and by ISUPSD officers during off-working hours. However, notification may be initiated by any individual recognizing the emergency. The DEO shall determine the extent to which other elements of the Emergency Organization should be activated, commensurate with circumstances of the situation, and shall direct the most efficient method for further notification and/or mobilization.

7.1.2 Emergency Notification Rosters - Emergency Notification Rosters (see Appendix B) that identify the Emergency Organization, the names and phone numbers of personnel in the line of succession for the DEO, ROC, and DAC, and the phone numbers of contacts for police, fire, medical and ambulance support services shall be posted at conspicuous locations in the following areas:

- (a) Reactor Laboratory Room, [REDACTED]
- (b) Subcritical Assembly Laboratory Room, [REDACTED]
- (c) Nuclear Engineering Laboratory Entrance Hallway, [REDACTED]
- (d) ISU Public Safety Department, near central communications dispatcher.

7.1.3



7.2 Assessment Actions

The DEO shall assess the severity of an emergency situation from first-hand knowledge. Decisions to escalate or de-escalate emergency response actions shall be made by the DEO based upon personal evaluation of the situation, existing or imminent, and after consideration of recommendations from facility staff, Emergency Organization coordinators, and/or offsite support teams that may be present.

7.3 Protective Actions

- 7.3.1 Shutdown of Reactor. For each of the Emergency Action Levels specified in this plan, the reactor shall be placed in the shutdown condition as defined in the Facility Operating License. If the operator determines that an abnormal level of radiation exists within Operations Boundary, then the reactor shall be placed in the shutdown condition as defined in the Facility Operating License.
- 7.3.2 Evacuation Procedure. For each of the Emergency Action Levels specified in this plan or for abnormal radiation levels within the Operations Boundary, the Nuclear Engineering Laboratory [REDACTED] building shall be evacuated after the reactor is shutdown. The evacuation procedure shall be as follows:
- (a) The reactor operator has the responsibility of evacuating the building and carrying relevant operation logs and radiation monitors. The operator shall:
 - (i) Sound the fire alarm on the [REDACTED]. Additional fire-alarm pull stations are located [REDACTED].
 - (ii) Take the reactor console keys and the Operations Log, along with a portable radiation survey meter, if this does not cause a delay;
 - (iii) *In case of fire*, call 911 using the telephone [REDACTED] to notify [REDACTED] the DEO. In all other instances, notify the DEO by the nearest available telephone of the Emergency;
 - (iv) The first person to reach the Emergency Ventilation Cut-Out Switch (located on the south wall, [REDACTED])
 - (v) [REDACTED]
 - (b) The reactor operator and other personnel leaving the EPZ area shall proceed immediately to the Hold Station [REDACTED]. All personnel shall proceed by the most direct route to that Hold Station and await further instructions. Accountability of personnel shall be maintained at the Hold Station by the reactor operator.
 - (c) The DEO shall respond to the Emergency, and individuals shall be allowed to leave the Hold Station or given appropriate attention, based upon the specific circumstances of the Emergency and potential dangers to the safety of the personnel. Those individuals who, because of their radiological contamination, pose a health risk to others shall be isolated as possible in the circumstances of the accident.
- 7.3.3 TLD badges and/or self-reading dosimeters shall be worn by all personnel who enter

restricted areas. Additional measures such as protective clothing and breathing apparatus may be required as specified by the DAC or DEO. Emergency personnel shall be advised of the extent and locations of any known radiological hazards that may be present in the facility prior to entry into such areas.

Radiation exposures shall normally be limited to the occupational dose limits specified in 10 CFR 20. If warranted by the situation, emergency doses in accordance with 10 CFR 20.1206 may be authorized by the DEO for volunteers but shall be consistent with the Environmental Protection Agency (EPA) Emergency Workers and Lifesaving Activity Protective Action Guides.

7.3.4

[REDACTED]
Restricted areas shall be posted and access shall be controlled as directed by the DEO consistent with the nature of the emergency.

7.3.5 Radiation dose rates shall be continuously monitored with survey meters and airborne particulate samplers. Those monitors permanently installed within the Operations Boundary shall be used, if accessible, otherwise portable units available to radiation safety personnel shall be used.

7.3.6 Personnel exposures shall be monitored by TLD badge and/or self-reading pocket dosimeters. In the event that unmonitored personnel may have been exposed to radiation, an estimate of exposures shall be made by the DAC based upon surveys and air particulate samples for areas that were occupied, the potential for exposure from the emergency situation that existed during the time such areas were occupied, and standard dose assessment practices.

7.4 Corrective Actions

The type of actions that could mitigate or correct the problems for each emergency class listed in this plan shall be specified in the Implementing Procedures in section 11.

8.0 EMERGENCY FACILITIES AND EQUIPMENT

8.1 Emergency Support Center (ESC)

The Emergency Support Center will normally [REDACTED]. Emergency control directions will be given from this area. In the event that this location is inaccessible or otherwise considered inadequate for the emergency at hand, an alternate location should be established [REDACTED] as directed by the DEO.

Selection of the normal and alternate ESC is based upon the proximity of locations for portable radiation monitoring and sampling equipment, fixed systems for determining specific radionuclide identification and analyses, decontamination equipment, and availability of telephone communications.

8.2 Assessment Facilities

8.2.1 Portable survey instruments of sufficient range to determine alpha, beta, gamma, and neutron radiation levels commensurate with potential radiological consequences of credible emergency situations shall normally be stored, except when in use,

[REDACTED]
The Technical Safety Office also maintains portable alpha, beta, gamma and neutron survey instruments.

8.2.2 Fixed area gamma monitors are permanently installed [REDACTED] inside the Operations Boundary. Both instruments have visual readout and are equipped with visual and audible alarms that are activated at or below 10 mrem/hr.

8.2.3 Multichannel Pulse Height Analyzers with photon detectors are located [REDACTED]. Additional gamma-ray spectroscopy systems operated by the Health Physics Program are [REDACTED] used by the Technical Safety Office as necessary for radiological assessment.

8.2.4 [REDACTED]
TLD badges are provided for all radiation workers by the ISU Technical Safety Office.

8.2.5 A seismic displacement sensor is permanently attached to the reactor shield water tank and is fully described in the reactor facility operating license.

8.2.6 [REDACTED] Additional fire-alarm pull stations are located [REDACTED] near the north and south stairwells. [REDACTED]

8.3 Facilities and Methods for Assisting Injured and Contaminated Personnel

8.3.1 Decontamination Facilities - Washing facilities, soaps and detergents, anti-contamination clothing and waste disposal bags shall be available in [REDACTED]. There is also a decontamination shower there. [REDACTED]. Decontamination of personnel and/or equipment shall be performed under the direction of the DAC.

8.3.2 First-Aid Supplies - First-aid supplies shall be available [REDACTED]
[REDACTED]

8.3.3 Transport of Injured Personnel and Emergency Treatment - The [REDACTED]

[REDACTED] rescue ambulance service shall provide emergency treatment and transportation for injured personnel, including those who may be radioactively contaminated [REDACTED]

8.3.4 Methods of Handling Contaminated, Injured Personnel - The nature and severity of an injury will determine if first aid and/or decontamination is possible prior to transporting a patient to the medical facility. Action shall be taken to prevent the spread of contamination into open wounds. Contaminated clothing should be removed by the best practical means and, if possible, contaminated areas of the skin should be rinsed with water prior to transport.

If decontamination is not practical, then the extent to which a patient is contaminated shall be noted on a tag attached to the injured person and, as appropriate, measures shall be taken to prevent the spread of contamination to the ambulance and ambulance personnel. The DAC shall assign a member of the facility staff or the TSO to accompany the victim to the medical facility to ensure that the attending physician is fully advised of the extent and type of contamination.

8.4 Emergency Communications System

An Emergency Communications System consisting of two-way radios between the ISUPSD officers and their headquarters is staffed by ISUPSD officers on a continuous basis. That system will be used by the Emergency Organization in the event of an emergency.

Standard commercial telephones are available [REDACTED]

9.0 RECOVERY

Recovery operations to restore the facility to a safe status shall be determined after an assessment of the existing radiation and contamination levels has been made by the DAC and the ROC. Written procedures shall be prepared by the ROC, as needed, and submitted to the DEO for approval.

Recovery operations shall commence and/or reentry into the affected Operations Area shall be permitted only after plans for such action, written or verbal, have been approved by the DEO and reviewed with the facility staff.

If physical damage to the Operations Boundary has occurred, action shall be initiated to promptly reestablish a security system that is at least equivalent, in effect, to the requirements specified in the Reactor Facility Operating License.

10.0 MAINTAINING EMERGENCY PREPAREDNESS

The DEO and the EPC are responsible to ensure the proper execution of the Emergency Plan.

10.1 Reviews and Approvals

- 10.1.1 The Emergency Plan and Implementing Procedures shall be audited under the cognizance of the Reactor Safety Committee (RSC) at least once every two years, with intervals not to exceed 30 months. The RSC, or a subcommittee thereof, shall evaluate the effectiveness of the plan and note the results of the evaluation in their minutes. The RSC shall also approve any changes that may be made to the Emergency Plan. Changes that would alter the scope of the plan or otherwise result in a reduction of Emergency organization capabilities shall not be made without prior approval of the U.S. Nuclear Regulatory Commission (NRC). Changes that are made without prior approval shall be submitted to the NRC within 30 days of the effective date.
- 10.1.2 The Emergency Plan and Implementing Procedures shall be reviewed by the EPC at least annually, with intervals not to exceed 15 months, and updated as necessary.
- 10.1.3 Notification Procedures shall be updated as necessary and a visual inspection made annually, with intervals not to exceed 15 months, to verify that current Notification Rosters are posted in designated locations.

10.2 Training and Drills

- 10.2.1 Operators of the AGN-201M Reactor shall receive training in the Emergency Plan and the Implementing Procedures during their initial license training program and shall review the plan and Implementing Procedures at least annually, thereafter. Initial training and subsequent reviews shall be documented in the facility training records.
- 10.2.2 The training of University personnel who are responsible to act under this Emergency Plan is the responsibility of the Reactor Administrator and the Reactor Supervisor with the assistance of the Technical Safety Office in the area of radiological control. This training will be provided annually, with intervals not to exceed 15 months, to University personnel who may be called upon to assist in the improbable event of a Nuclear Incident. Off-site support organizations are responsible for providing their own training.
- 10.2.3 Emergency drills shall be conducted annually, with intervals not to exceed 15 months, to test the on-site integrated capability of the Emergency Plan, or a component thereof, and may include instruction periods to develop and maintain skills in a particular operation. At least every two years, with intervals not to exceed 30 months, communication links and notification procedures with offsite support agencies shall be tested. Drills will normally be scheduled by the EPC and may be initiated as either announced or unannounced events. Actual situations that involve some or all of the Emergency Plan components may be used in lieu of drills.
- 10.2.4 The EPC, or an observer designated by the EPC, shall provide a critique of each Emergency Plan drill and should distribute a written report within 60 days after each drill occurrence. The EPC shall be responsible for timely corrective action of identified deficiencies.

10.3 Equipment Maintenance

- 10.3.1 Portable health physics instruments, including personnel dosimeters that may be used in an emergency, and fixed radiation monitors shall be calibrated at least semiannually, with the intervals not to exceed 8 months.
- 10.3.2 Emergency equipment used for fire-fighting, radiation detection and air sampling shall normally be checked for proper operation annually, with intervals not to exceed 15 months. Batteries in portable equipment shall be checked prior to each use and annually unless previous experience dictates a more frequent check is required. A complete stock of replacement batteries shall be available for all battery-powered emergency equipment. Replacement batteries shall be kept [REDACTED]
- 10.3.3 Emergency equipment shall be inventoried annually, with intervals not to exceed 15 months.
- 10.3.4 Communications equipment and alarms shall be tested annually, with intervals not to exceed 15 months.
- 10.3.5 The criticality alarm [REDACTED] shall be tested annually, with intervals not to exceed 15 months.

11.0 IMPLEMENTING PROCEDURES

The Implementing Procedures for the Emergency Plan shall include:

- (a) Notification Procedures;
- (b) Procedures for the evacuation of personnel from within the Operations Boundary of the facility; and
- (c) Procedures for corrective actions that could mitigate the consequences of situations matching the Emergency Action Levels specified in this Emergency Plan;

all of which are contained in this document (see Appendix C for specific emergency procedures). Emergency personnel shall be allowed to deviate from the actions described in this Emergency Plan in the event of unusual or unanticipated conditions

APPENDIX A.

IDAHO STATE UNIVERSITY CAMPUS AND FACILITY FLOOR PLANS

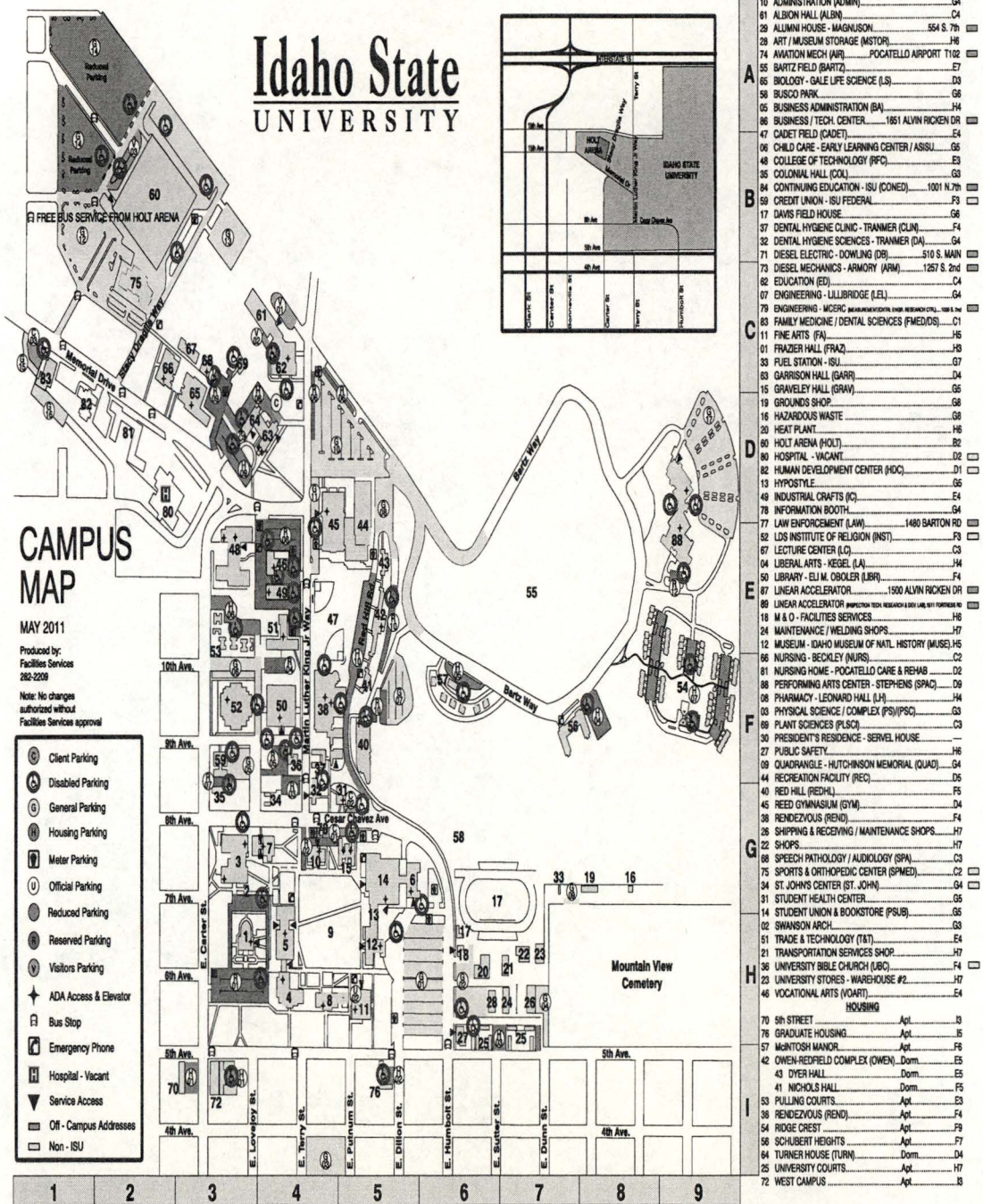
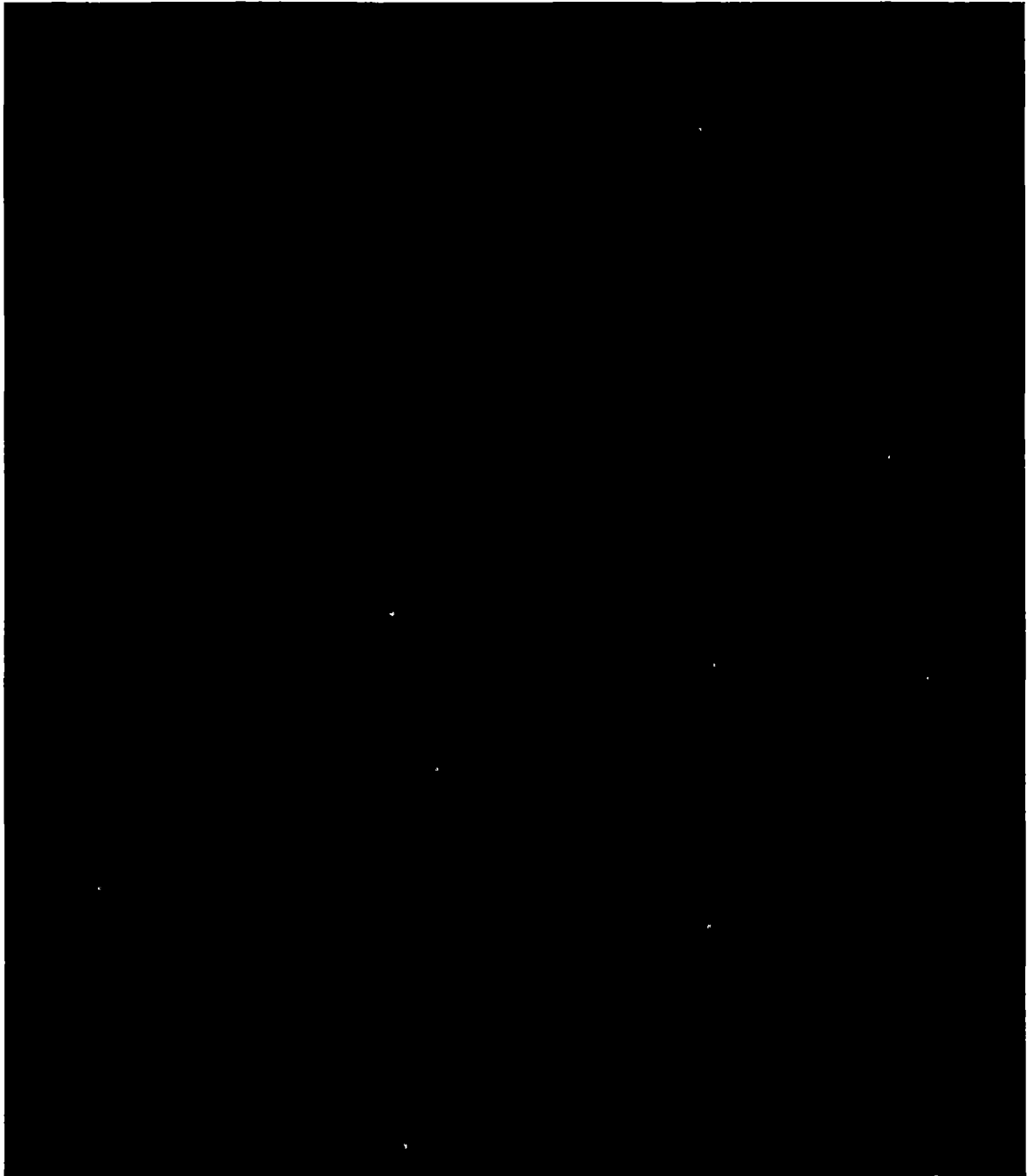
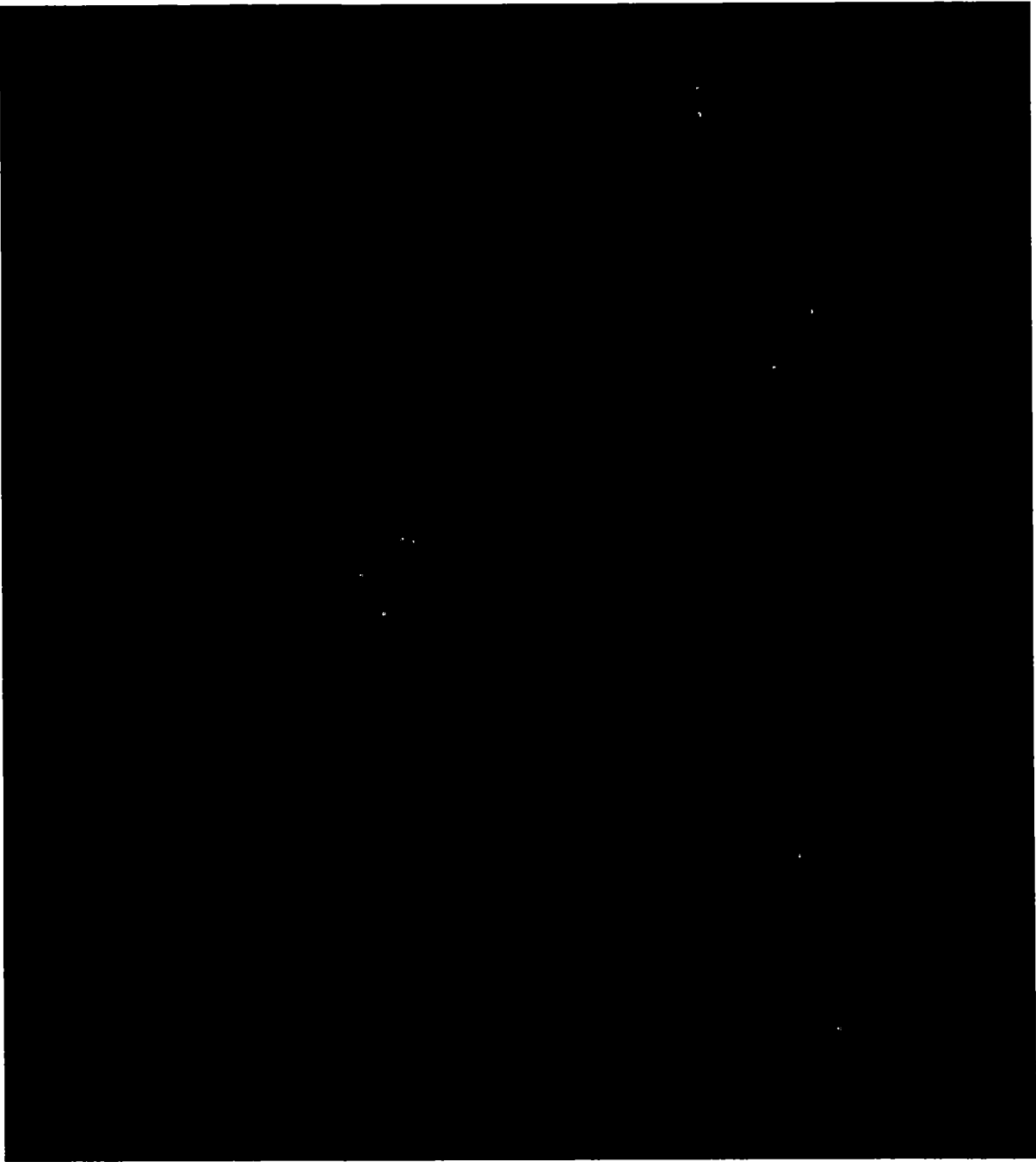


Figure A1. Idaho State University Campus.









APPENDIX B.

**Idaho State University
REACTOR FACILITY
EMERGENCY NOTIFICATION ROSTER**

Effective Date: July 1st, 2016

In the event of an emergency involving the ISU Reactor Facility Complex in the basement of the LEL Bldg. (Building #5), call the following personnel, in the order given, until someone positively confirms that they will respond to the emergency situation, and will meet ISU Public Safety Officers at the facility if the situation cannot be resolved by phone contact:

Reactor Supervisor:	Maxwell Daniels	C:	(253) 905-1907
		W:	(208) 282-4237
Senior Reactor Operator:	Ryan Stewart	C:	(208) 949-5844
Emeritus Prof. of Nuclear Engr.:	Jay Kunze	H:	(208) 238-9385
		W:	(208) 282-4147
		C:	(208) 313-7395
Asst. Reactor Administrator:	George Imel	H:	(208) 242-3509
		W:	(208) 282-3732
		C:	(208) 705-2344

(Note: All of the above are approved for security access to the nuclear facilities in LEL.)

On-Site SUPPORT ORGANIZATIONS

ISU Technical Safety Office (TSO):	Richard Brey	H:	(208) 233-8184
And Radiation Safety Officer		W:	(208) 282-2667
		C:	(208) 220-2735
ISU Campus Security (Public Safety Dept.)			(208) 282-2515

Off-Site SUPPORT ORGANIZATIONS:

*Pocatello Police Department	911
*Pocatello Fire Department	911
*Idaho State Police (Region V)	(208) 236-6066
*Portneuf Medical Center Emergency Room	(208) 239-1801
U.S. Nuclear Regulatory Commission	(301) 816-5100

*ISU has a Memoranda of Understanding with these agencies for emergency response support.

Approved:	<u>Mary Lou Dunzik-Gougar</u>	<u>30 June 2016</u>
	Reactor Administrator	Date

APPENDIX C.

EMERGENCY PROCEDURES

C1. Bomb Threat to Nuclear Facilities.

1. Shut down and secure the reactor or Subcritical Assembly.
2. The person receiving the threat should obtain as much information as possible. Ask the following questions:
 - (a) Where is the bomb located?
 - (b) What type of bomb is it?
 - (c) What time will it go off?
 - (d) Why are you doing this?
 - (e) Name of person making call.
 - (f) Where is the person calling from?
 - (g) Is the person making call a male or female?
2. Notify:
 - (a) Idaho State University Public Safety, 282-2515
 - (b) [REDACTED], 911
3. The Public Safety dispatcher, upon being notified of the threat, will immediately notify the following offices:
 - (a) [REDACTED]
 - (b) [REDACTED]
 - (c) [REDACTED]
 - (d) [REDACTED]
 - (e) [REDACTED]
 - (f) [REDACTED]
 - (g) [REDACTED]
 - (h) [REDACTED]
 - (i) [REDACTED]
4. [REDACTED]
5. [REDACTED]
6. [REDACTED]

C2. Extensive Fire or Explosion at the Nuclear Engineering Laboratory.

APPENDIX C.

EMERGENCY PROCEDURES

C1. Bomb Threat to Nuclear Facilities.

1. Shut down and secure the reactor or Subcritical Assembly.
2. The person receiving the threat should obtain as much information as possible. Ask the following questions:
 - (a) Where is the bomb located?
 - (b) What type of bomb is it?
 - (c) What time will it go off?
 - (d) Why are you doing this?
 - (e) Name of person making call.
 - (f) Where is the person calling from?
 - (g) Is the person making call a male or female?
2. Notify:
 - (a) Idaho State University Public Safety, 282-2515
 - (b) [REDACTED], 911
3. The Public Safety dispatcher, upon being notified of the threat, will immediately notify the following offices:
 - (a) [REDACTED]
 - (b) [REDACTED]
 - (c) [REDACTED]
 - (d) [REDACTED]
 - (e) [REDACTED]
 - (f) [REDACTED]
 - (g) [REDACTED]
 - (h) [REDACTED]
 - (i) [REDACTED]
4. [REDACTED]
5. [REDACTED]
6. [REDACTED]

C2. Extensive Fire or Explosion at the Nuclear Engineering Laboratory.

1. Shut down and secure the reactor or Subcritical Assembly.
2. Attempt to extinguish the fire using available fire-fighting equipment. If the fire cannot be controlled, initiate building evacuation by actuating the building fire alarm.
3. Notify the [REDACTED] Fire Department by the quickest available means, i.e., radio, fire alarm, telephone 911.
4. The [REDACTED] Fire Department will:
 - (a) [REDACTED]
 - (b) [REDACTED]
 - (c) [REDACTED]
 - (1) [REDACTED]
 - (2) [REDACTED]
5. The DAC and ROC will assist by monitoring the area for radioactive contamination.

C3. Theft or Attempted Theft of Special Nuclear Material from the Nuclear Facilities.

1. Shut down and secure the reactor or Subcritical Assembly.
2. If an indication of theft or attempted theft of Special Nuclear Material exists [REDACTED] immediately notify the ISU Public Safety Department who will, in turn, notify:
 - (a) [REDACTED]
 - (b) [REDACTED]
 - (c) [REDACTED]
 - (d) [REDACTED]
 - (e) [REDACTED]
 - (f) [REDACTED]
3. [REDACTED]

C4. Civil disturbance [REDACTED]

1. Shut down and secure the reactor or Subcritical Assembly.

2. [REDACTED]

3. [REDACTED]

4. [REDACTED]

C5. Report or Observation of Severe Natural Phenomena (e.g., tornado, flood, earthquake, etc.).

1. Shut down and secure the reactor or Subcritical Assembly.

2. Evacuate the area and seek safety for the duration of the event.

3. [REDACTED]

4. [REDACTED]

C6. Evacuation Procedure.

1. The licensed reactor operator is cognizant of the detailed emergency plan. HE/SHE SHALL BE IN CHARGE OF FACILITY/BUILDING EVACUATION.

2. Use the normal room exit and building exits if possible. [REDACTED]

3. The radiological monitoring instrument on the reactor console and the reactor operations log book shall be brought from the laboratory room by the reactor operator.

4. If radiation levels are above 10 mR/hr outside the Operations Area [REDACTED] OR if there are airborne radioactive materials, the reactor operator shall order building evacuation.

5. The reactor operator shall initiate building evacuation by tripping one of the building fire alarms located at the bottom of the staircase on the south side (or on the way to the staircase on the north side) of the building [REDACTED]

6. The first person to reach the Emergency Ventilation Cut-out Switch [REDACTED] will trip all ventilation off-line.

7. The reactor operator shall notify the DEO and ROC immediately.

8. 