

APPENDIX

Emergency Procedures

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## Emergency Procedures

### 1.0 Introduction

Implementation of the emergency plan is accomplished by emergency procedures.

- 1.1 The philosophy of an emergency response to protect personnel and the public in an emergency situation depends on
  - 1.1.1 accident prevention or safety,
  - 1.1.2 accident mitigation and
  - 1.1.3 area evacuation.
- 1.2 The effective response in the event that an emergency situation develops is based on
  - 1.2.1 assessment of emergency conditions,
  - 1.2.2 recognition of potential developments and
  - 1.2.3 knowledge of applicable response procedures.
- 1.3 Observations by facility personnel should be a routine function that provides constant reassessment of facility conditions. The Emergency Plan identifies criteria to classify an emergency situation and identifies personnel responsible for the emergency response. Initial actions for any emergency situation are
  - 1.3.1 classification of emergency,
  - 1.3.2 identification of emergency director.
- 1.4 To supplement the decisions and management of an emergency situation several supplements are provided to these procedures as follows,
  - 1.4.1 emergency notification list,
  - 1.4.2 emergency supply list,
  - 1.4.3 emergency equipment list,
  - 1.4.4 radiation measurement guidelines,
  - 1.4.5 facility evacuation guidelines,

## 2.0 Emergency Classification Procedures

### 2.1 Non Reactor Emergency

- 2.1.1 Shutdown reactor and secure radiation sources if necessary to provide the assistance or actions necessary of this class.
- 2.1.2 Render immediate assistance to victim or action to mitigate threatening condition.
- 2.1.3 Request assistance from appropriate emergency response organization.
- 2.1.4 Evaluate the circumstances of the emergency and if possible prevent reoccurrence or continuance of the specific emergency conditions.

### 2.2 Notification of Unusual Events

- 2.2.1 Shutdown or scram reactor upon assessment of this emergency classification.
- 2.2.2 Remove all non-staff personnel from affected facility areas.
- 2.2.3 Secure appropriate emergency equipment and initiate actions to minimize or mitigate consequences of emergency to public or facility.
- 2.2.4 Notify required emergency response organizations, university police and university safety office.
- 2.2.5 Provide for security, access control and possible removal of personnel from adjacent site areas.
- 2.2.6 If a radiological event, assess extent of facility doses and limit personnel exposures appropriately.
- 2.2.7 Maintain effective control, security and radiological monitoring of area until event is terminated.
- 2.2.8 Notify NRC and state radiation authority.
- 2.2.9 Review recovery requirements and status of reactor safety systems and radiological measurement systems to develop specific recovery procedures.

# 51. Emergency Call List

	<u>All Hours</u>
UT Police	CTX 1234
Security Threat	CTX 1234
Fire	911
Ambulance	911

The UT Police should be called after any type of emergency call to provide security, communication, and area access control.

## Emergency In Reactor Facility

Attempt to contact one staff member in the order listed. For immediate MEDICAL AID, severe SECURITY THREAT, or FIRE, call for the SERVICE REQUIRED first, then proceed through the list until one member is contacted.

Name	Responsibility	Work Phone	Home Phone
1. T.L. Bauer	Reactor Supervisor	471-5136	345-5044
2. M.G. Krause	Senior Reactor Operator	471-5136	452-1336
3. N.A. Povio	Senior Reactor Operator	471-5136	445-0324
4. H.W. Bryant	Radiation Safety Officer	471-3511	452-6689
5. D.E. Klein	Facility Director	471-5136	459-0075
6. D.G. Decker	Safety Engineer	471-3511	345-5914

State of Texas (Radiation Emergencies) (512)458-7460

U.S. NRC (Region IV) (817)465-8222  
465-8100

# Supplementary Call List

	<u>Work Hours</u>	<u>24 Hours</u>
United States NRC (Region IV)	(817)465-8100	(817)465-8100
State of Texas-Texas Department of Health(Radiation Control)	(512)835-7000	(512)458-7400

## UTILITIES EMERGENCY LIST

E.M. Schoenfeld	Power Distribution	471-6241	PAX 3841
W.A. Worsham	Air Conditioning	471-6241	PAX 3841
Saleem Tawil	Communications	471-3641	PAX 2500
H.T. Ward	Assistant Director Utilities	471-7403	PAX 5001
E.D.H. Berry	Assistant Director Utilities	471-6241	PAX 3841
N.A. Kurio	Director Physical Plant	471-7403	PAX 5001

## S2. Emergency Equipment

Emergency Lights  
(ac line charged, 6 volts):

2 room 131  
2 room 125

Fire Extinguishers:

2 Carbon dioxide 15.10 lbs.  
1 Dry Chemical 6 lbs.  
1 Halon 2.5 lbs.

Radiation Monitors (portable):

1 Victoreen (mr/hr, cpm)  
B- $\gamma$ , GM thin window probe  
 $\alpha$ , ZnS scintillation counter probe  
1 Technical Associates (mr/hr, cpm)  
B- $\gamma$ , GM thin window probe  
n<sup>1</sup>, Li loaded scintillator probe  
o

Radiation monitors (fixed):

1 Ludlum 4 channel  
 $\gamma$  sensitive GM tubes  
audible alarms

Particulate monitor (mobile):

1 Nuclear Measurement Corporation  
B- $\gamma$ , thin window GM  
warning/evacuation alarms

Radiation monitors (uncalibrated)

3 Victoreen ionization chambers  
Model 440, civil defense type

S3. Emergency Locker Inventory  
(Minimum Contents Required)

1. Reference Materials:
  - Emergency Procedures
  - Emergency Notification List
  - University Radiation Safety Manual
  - Triga Safety Analysis Report
  - Health Physics Handbook
  - 10CFR20
2. Radiation Detection Equipment:
  - 2- $\gamma$  sensitive radiation detectors with batteries
  - 4- $\gamma$  sensitive pocket dosimeters
  - 1-pocket dosimeter charging/reading unit with battery
3. Warning Signs:
  - 5-Radiation Area
  - 5-High Radiation Area
  - 5-Radioactive Material
  - 5-Airborne Radioactivity Area
  - 1 roll Radioactive Material tape
  - $\approx$ 20 ft magenta and yellow rope
4. Protective Clothing:
  - 8 pair coveralls
  - 8 pair gloves
  - 8 pair shoe covers
  - 8 respirators, spare filters
5. Contamination Cleanup Material:
  - 10 large plastic bags
  - 1 roll lab-mat absorbent paper
  - 1 pkg ordinary paper towels
  - 1 bottle decontamination soap
6. Radiation Safety Office Key
7. First Aid Kit

## Radiation Measurement Guide

### A. Equations:

1. point source  $\text{rem/hr} = .5 \text{ EC}/r^2$
2. semi-infinite cloud  $\text{rad/hr} = 1600 \text{ EC}/v$   
C - activity in curies  
E - energy in MeV per disintegration  
r - distance in meters  
v - one cubic meter volume
3. filter activity  $\mu\text{C}/\text{cm}^3 = c/(10 \cdot 2.83 \times 10^4 \cdot 3.7 \times 10^4 \cdot 3.6 \times 10^3 \cdot .9 \cdot .10)$   
 $= c/3.4 \times 10^{12}$   
c - counts per minute increase during one hour

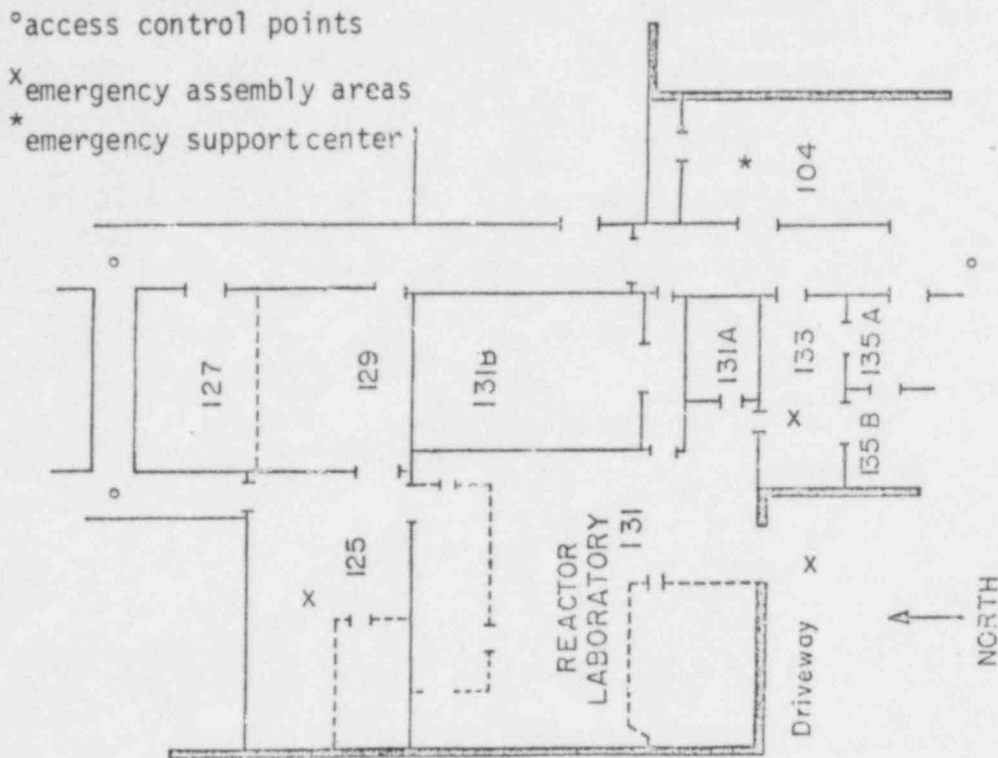
### B. Instruments:

1. Whole body dose (100 mrem/hr)

GM area probes (Ludlum)	calibrated	full scale
GM portable probe (Thyac III)	calibrated	400k cpm
Ionization chamber (V 440)	inspected	direct
2. Maximum permissible concentration (10 MPC restricted areas)

Air filter monitor (GM tube NMC)	5000 cpm	$1.5 \times 10^{-9} \mu\text{C}/\text{cm}^3$
Air volume monitor ( $\beta$ scintillator V) to be installed		





### Facility Evacuation Guide

(Unknown cause: 400k cpm GM or 5000 cpm air filter)

1. When an evacuation is initiated portable survey instruments should be removed from the laboratory to the evacuation area.
2. Evacuation of room 131 should be to the emergency area of room 125.
3. Alternate evacuation to room 133 should be used when events compromise the route to 125.
4. If further evacuation of the adjacent areas are required, access control should be established in building corridors or at all building entrances.
5. Persons should be assigned to verify evacuation of areas south, east, and north of the laboratory facility including the second floor area.