UNIVERSITY OF CALIFORNIA, DAVIS
MCCLELLAN NUCLEAR RESEARCH CENTER
TRIGA RESEARCH REACTOR
LICENSE NO. R-130
DOCKET NO. 50-607

EMERGENCY PLAN

PROVIDED FOR THE
LICENSE RENEWAL APPLICATION
FOR THE
UNIVERSITY OF CALIFORNIA, DAVIS
MCCLELLAN NUCLEAR RESEARCH CENTER
RESEARCH REACTOR
JUNE 11, 2018

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UNIVERSITY OF CALIFORNIA, DAVIS
McCLELLAN NUCLEAR RADIATION CENTER
(UCD/MNRC)
EMERGENCY PLAN

MNRC-0001-DOC-09
June 2018

Reviewed By: _____ Date: 6/20/18
Reactor Supervisor

_____ Date: 6/21/18
Radiation Safety Officer

Approved By: _____ Date: 6/21/18
UCD/MNRC Director

_____ Date: 6/21/18
NSC Chairman

_____ Date: 6-21-18
UCD Emergency Director

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TABLE OF CONTENTS

University of California, Davis
McClellan Nuclear Radiation Center
Emergency Plan

1. Introduction

The University of California, Davis McClellan Nuclear Radiation Center (UCD/MNRC) is a three level 18,000 ft^2 rectangular building located on the former McClellan Air Force Base. The UCD/MNRC is located approximately 8 miles from northeast Sacramento, CA. The UCD/MNRC provides a broad range of radiographic and irradiation services. The facility provides four radiography bays and consequently four beams of neutrons for radiography purposes. In addition to the radiography bays, the UCD/MNRC reactor core and associated experiment facilities are accessible for the irradiation of material (see Appendix E).

The UCD/MNRC TRIGA™-type reactor is located in a cylindrical aluminum walled tank with the core positioned approximately 4.5 ft. below grade. The reactor tank is surrounded by a monolithic block of reinforced concrete. Below ground level, the concrete is approximately 11 ft. thick. Above ground level, the concrete varies in thickness from approximately 10 ft. to 3.25 ft. thick with the smaller dimension at the tank top. Due to the massiveness of these structures, they provide excellent protection for the reactor core against natural phenomena.

The UCD/MNRC reactor is a 2 MW natural convection cooled TRIGA™ reactor with graphite reflector designed to accept the source end of the four neutron beams. The reactor is located near the bottom of a water filled aluminum tank 7ft. in diameter and about 25 ft. deep. Direct visual and mechanical access to the core and components are available from the top of the tank.

The UCD/MNRC is owned and operated by the University of California under U.S. Nuclear Regulatory Commission (NRC) License Number R-130 (Docket Number 50-607). The UCD/MNRC is used for teaching, research, industrial and medical applications. The reactor is typically operated from 7:30 a.m. to 4:00 p.m., five days a week. The typical power level is 1.0 MW.

The objective of this emergency plan is to provide a plan of action for coping with radiological and other emergencies, and to minimize the consequences of such emergencies at the UCD/MNRC. The emergency plan also specifies emergency action levels for applicable classes of emergencies, in response to which the relevant portions of this plan shall be activated.

2. Definitions
   a. Annual – Every 12 months, with an interval not exceeding 15 months.

   b. Assessment Actions – Those actions taken during or after an accident to obtain and process information that is necessary when deciding whether to implement specific emergency measures.

   c. Biennial – Every 24 months, with an interval not exceeding 30 months.

   d. Corrective Actions – Those measures taken to ameliorate or terminate an emergency situation at or near the source of the problem.

e. Drill – A planned exercise that 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.

f. Emergency – An 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.

g. Emergency Action Level (EAL) – Radiological dose rates, specific concentrations of airborne, waterborne or surface-deposited radioactive materials, specific observations, or specific instrument readings that may be used as thresholds for initiating specific emergency measures (e.g., designating a particular class of emergency, initiating a notification procedure, or initiating a particular protective action).

h. Emergency Support Center (ESC) – Location where the Emergency Manager controls and issues instructions to the Reactor Supervisor.

i. Emergency Control Station (ECS) – The ECS is the reactor control room or other specifically designated location from which effective emergency control directions shall be given.

j. Emergency Planning Zone (EPZ) – The EPZ for the UCD/MNRC is the area for which emergency planning is performed and is limited to the site boundary.

k. Emergency Radiological Assessment Team – The team of people who shall perform radiation dose rate, contamination, and environmental surveys to assess the radiological conditions existing within the operations boundary.

l. Monthly – Every four weeks, with an interval not to exceed six weeks.

m. Operations Boundary – The fence surrounding the UCD/MNRC and the enclosed area the UCD/MNRC Director has direct authority over all activities, and for which there are prearranged evacuation procedures known to the personnel frequenting the area.

n. Population at Risk Those persons for whom protective actions are being or would be taken.

o. Protective Actions – Those measures taken in anticipation of an uncontrolled release of radioactive material, or after an uncontrolled release of radioactive material has occurred, for the purpose of preventing or minimizing personnel radiation doses or dose commitments that would otherwise be likely to occur if the actions were not taken.

p. Protective Action Guides (PAG) – Projected radiation doses or dose commitments in the general population 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 the process of taking the protective action. The projected dose does not include the dose that has unavoidably occurred prior to the assessment.

q. Quarterly – Every three months, with an interval not exceeding four months.

r. Reactor Building – The building inside the operations boundary that houses the TRIGA™ reactor located at 5335 Price Avenue, Bldg. 258, McClellan, CA 95652.

s. Recovery Actions – Those actions taken after an emergency to restore the facility to a safe status.

t. Semi-annual – Every six months, with an interval not exceeding seven and one-half months.

u. Site Boundary – The site boundary is that boundary, not necessarily having restrictive barriers, surrounding the operations boundary wherein the UCD/MNRC Director may directly initiate emergency activities. The area within the site boundary may be frequented by people unacquainted with the reactor operations. For the UCD/MNRC, the site boundary extends 40 meters in all directions from the center of the reactor building.

v. UCD/MNRC – University of California, Davis McClellan Nuclear Radiation Center.

3. Organization and Responsibilities

a. The UCD/MNRC emergency organization is shown in Appendix B, Figure B-1. The UCD Emergency Director (ED) has primary responsibility for all actions taken at the facility during an emergency or recovery operation. The ED shall have primary responsibility for the safety of all personnel during emergency situations the UCD/MNRC, and they shall exercise final approval authority for any protective action decisions. The ED may call upon personnel and equipment resources available within the MNRC organization, UCD campus, or within Sacramento County. The MNRC Emergency Manager (EM) is responsible to the ED for all actions taken within the operations boundary during an emergency or recovery operation. The EM shall be responsible for notifying UCD dispatch and the ED of any emergency situations, directing all MNRC personnel, and coordinating emergency operations with the Sacramento Metro Fire Department Incident Commander. Further descriptions of emergency responsibilities are given throughout this section.

i) Emergency Director: In the event of an emergency, the UCD Chief of Police shall be the UCD Emergency Director. The line of succession and responsibilities of the UCD Emergency Director are as follows:

(1) Line of succession for the UCD Emergency Director:

(2) Responsibilities for the UCD Emergency Director

(a) The UCD Emergency Director has authority and responsibility for all actions taken at the MNRC during an emergency or recovery operation and shall delegate emergency responsibilities as deemed necessary.

(b) The UCD Emergency Director shall coordinate emergency and recovery activities with the MNRC Emergency Manager, who shall direct the on-site emergency operations to ensure proper implementation of the UCD/MNRC Emergency Plan.
(c) The UCD Emergency Director shall ensure that necessary UCD administrative and emergency response agencies are notified and receive status reports of any emergency.

b. Authorities and Responsibilities of Governmental Agencies: This section describes the authorities, responsibilities and support functions of federal, state, county, and university agencies in an emergency situation. Supporting service agencies are also identified. The information presented here pertains to any class of emergency. Specific responsibilities and emergency response actions of these agencies are described in greater detail in Chapter 7. To ensure a clear understanding of the emergency response activities provided by key public safety organizations, a written Memorandum of Understanding (MOU) had been obtained from the Sacramento County Sheriff's Office (See Physical Security Plan), and Sacramento Metropolitan Fire District. (See Appendix A.)

i) Federal Agencies

U.S. Nuclear Regulatory Commission (USNRC) Title 10, Code of Federal Regulations (CFR) Part 20.2202, "Notification of Incidents", and Sections 6.6 and 6.7 of the UCD/MNRC Technical Specifications outline requirement for required actions and the reporting of emergencies to the USNRC. Notification procedures (e.g. telephone, telegraph, written reports, etc.) shall be implemented as required in these documents. The USNRC shall assess the situation and determine if any further response is required.

ii) State Agencies

The Governor of California's Office of Emergency Services (OES) Warning Center or Regional Emergency Operations Center (REOC), if activated, shall be notified in the event of a Class I or greater emergency. The Warning Center shall make all appropriate notifications to other state agencies, such as the State Bureau of Radiological Health. Notifications to the Warning Center or ROEC shall be made by the Sacramento Metropolitan Fire District Incident Commander.

iii) County Agencies

The Sacramento County Sheriff's Office shall notify Sacramento County Environmental Management for any applicable Class I or greater emergency situation at the UCD/MNRC.

iv) UC Davis Agencies

The UCD dispatch center shall notify the UCD Police, Sacramento Metropolitan Fire District, UCD Facilities Services and the UCD Emergency Director of any emergency at the UCD/MNRC. These agencies shall represent the university in a unified command response at the facility. Supporting campus departments such as Environmental Health and Safety for health physics personnel and the News Service for news releases and media interface will be used as needed. An agreement for personnel medical care exists for UCD/MNRC with the University of California Medical Center (UCDMC). The campus emergency planner assists the Emergency Manager as needed with preparedness activities and with the coordination of emergency response services.

c. Authorities and Responsibilities of Non-Governmental Agencies: This section describes the authorities, responsibilities and support functions on non-governmental agencies.

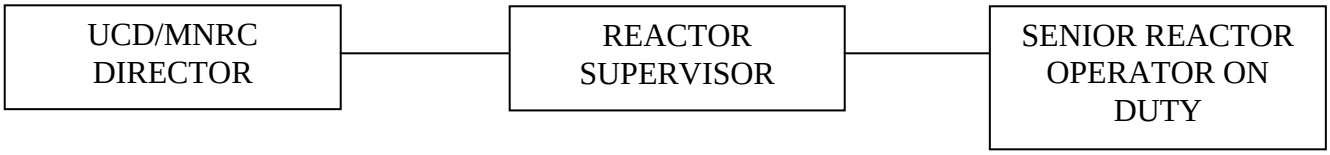
d. UCD/MNRC Emergency Organization

i) The UCD/MNRC emergency organizational chart is shown in Figure B-1.

ii) Authorities and Responsibilities of Facility Emergency Personnel

(1) Emergency Manager: In the event of an emergency, the UCD/MNRC Director shall be the Emergency Manager. The line of succession and responsibilities of the Emergency Manager are as follows:

(2) Line of Succession:



(3) Responsibilities:

(a) Establishes the location of the ESC.

(b) Coordinate emergency response and recovery strategy with the UCD Emergency Director.

(c) Direct on-site emergency operations in coordination with the Sacramento Metropolitan Fire District Incident Commander, and ensure proper implementation of the emergency plan.

(d) Ensure that any necessary NRC and UCD notifications are made.

(e) Authorize emergency workers to incur radiation exposures in excess of the normal occupational limits. *This function cannot be delegated and the Emergency Director shall be informed of any such action.*

(f) Terminate an emergency and in coordination with the UCD Emergency Director, initiate recovery operations based on advice from the Reactor Supervisor and Radiation Safety Officer.

(g) Authorize reentry into the reactor facility, or portions thereof that required evacuation during the emergency.

(h) Coordinate emergency response actions with the offsite emergency support services.

(i) Notify the UCD News Service and keep them informed regarding the emergency situation.

(4) Reactor Supervisor: In the event of an emergency, the Reactor Supervisor shall be the Emergency Coordinator. The line of succession and responsibilities of the Emergency Coordinator are as follows:

(a) Line of Succession:

(b) Responsibilities

(i) Establish the location of the Emergency Control Station (ECS). Take charge of the ECS and emergency control measures inside the operations boundary.

(ii) Coordinate the activities of the Senior Reactor Operator and Radiation Safety Officer and determine the course of action with the assistance of these individuals and the Emergency Manager.

(iii) Keep the Emergency Manager continuously updated concerning emergency actions.

(iv) Ensure proper evacuation of the facility or portions thereof during the emergency.

(v) Advise the Emergency Manager of the possibility of terminating the emergency and initiating recovery operations.

(vi) Establish the recovery team and determine course of recovery operation. Report team recommendations to the Emergency Manager for approval to continue.

(5) Radiation Safety Officer: In the event of an emergency, the Radiation Safety Officer shall be responsible for the radiological aspects of the emergency. The line of succession and responsibilities are as follows:

(a) Line of Succession

(b) Responsibilities

(i) Direct and oversee all actions of the radiological assessment team.

(ii) Evaluate personnel doses received during the incident.

(iii) Assess subsequent potential doses and recommend protective actions to the Reactor Supervisor, as appropriate.

(iv) Supervise the establishment of a release process for persons leaving or entering the operations boundary control points.

(v) Assist the Reactor Supervisor and help determine the course of further action.

(6) Radiological Assessment Team and Labor Pool.

(a) Personnel: The radiological assessment team shall consist of MNRC personnel who have been trained in radiological assessment techniques and do not have an assigned responsibility already specified in this section. This may include the following personnel as available during an emergency:
(i) UCD RSO
(ii) Senior Reactor Operators
(iii)Reactor Operators
(iv)Radiographers

(b) Responsibilities
(i) Bring extra portable survey instruments to the assembly point during and evacuation.
(ii) Survey personnel at the operations boundary control points for possible radioactive contamination.
(iii)Perform radiological assessment actions as directed by the Radiation Safety Officer.

(7) News Service (Emergency Communications): In the event of an emergency, the Emergency Manager, or the UC Davis Public Communications or News Service Director, or an MNRC management staff member acting specifically on their behalf, shall coordinate the release of information, as appropriate, to the public, assisted as necessary by other personnel from UCD's news and communications services. All news releases shall be coordinate with the Emergency Director. The line of succession and responsibilities of the News Service (Emergency Communications team) are as follows:

(a) Line of Succession

(b) Responsibilities
(i) Coordinate all public relations aspects of the emergency, interfacing with the Emergency Director and others as appropriate.
(ii) Obtain current and accurate information regarding the emergency situation and recovery operations prior to any news releases describing the emergency.
(iii)Serve as spokesperson to the news media, providing timely and accurate reports of the emergency.

(8) Recovery Operations Coordinator: After an emergency has been terminated and recovery operations initiated, the Reactor Supervisor shall act as Recovery Operations

Coordinator. The line of succession and responsibilities of the Recovery Operations Coordinator are as follows:

(a) Line of Succession

(b) Responsibilities

(i) Assess conditions in the reactor facility after termination of the emergency to determine the proper course of further recovery actions.

(ii) Establish and coordinate recovery/reentry efforts with the assistance of the Emergency Manager, Reactor Supervisor, and Radiation Safety Officer.

(iii) Keep the Emergency manager informed regarding recovery operations.

(iv) Evaluate the causes of the emergency and recommend corrective actions before returning the facility to a normal operating status.

(9) Historian: A Senior Reactor Operator shall be the Historian for an emergency.

(a) Responsibilities

(i) Log the sequence of events, with the time, as they occur in the ECS. Log as much pertinent information as possible.

iii) Interfaces Between the Facility Emergency Organization, Offsite Local Support Organizations, and State and Federal Agencies.

(1) interfaces between the UCD/MNRC emergency organization and off-site support agencies are shown in Figure B-1 (Appendix B)

(2) Authorities and responsibilities for the offsite organizations are specified in the Memorandum of Understanding with each organization. These MOU's can be found in Appendix A.

4. Emergency Classification System

a. Purpose

i) The purpose of this emergency classification system is to provide for improved communications between facility personnel, local offsite emergency support personnel, and state and federal organizations.

ii) The emergency classes addressed for the UCD/MNRC are based upon accidents associated with reactor operations, many of which are highly unlikely, and upon other lesser emergency situations that are non-reactor related.

iii) The emergency action levels for each of the three classes of emergencies addressed for the UCD/MNRC are intended to provide specific trigger points for the activation of the emergency organization, or applicable portions thereof, and the initiation of protective actions appropriate for the emergency event.

iv) The emergency action levels listed below are not all inclusive. Situations or occurrences not listed under a specific emergency class, but having similar postulated consequences as an

occurrence listed in one of the three classes of emergencies shall also be used to trigger emergency response actions applicable to that particular class of emergency. Identification of such occurrences is left to the judgment of the reactor staff.

v) Emergency response implementing procedures for the UCD/MNRC are listed in Appendix C.

b. Class O Emergency – Personnel and Operational Events
   i) Class O emergencies are events less severe than Class I emergencies, which still require a response by at least part of the emergency organization. There usually is no effect on the reactor and immediate operator action to alter reactor status is not normally required.
   ii) The emergency action levels (EALs) for this class of emergency are given in Table 5.1

c. Class I Emergency – Notification of Unusual Events
   i) Notification of Unusual Events (Class I Emergencies) may be initiated by either man-made events or natural phenomena that can be recognized as creating a hazard potential that was previously non-existent. There is usually time available to take precautionary and corrective steps to prevent escalation of the accident, or to mitigate the consequences should it occur. No releases of radioactive materials requiring offsite response are projected.
   ii) In a Class I Emergency, one or more elements of the emergency organization are likely to 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 reactor, it may warrant an immediate shutdown of the reactor or interruption of non-essential routine functions.
   iii) The emergency action levels (EALs) for this class of emergency are given in Table 5.1

d. Class II Emergency – Alert
   i) Events leading to an alert are sufficient to require response by the emergency organization. Modification of reactor operating status should be a corrective action. Protective evacuations or isolation of certain areas within the operations boundary may be necessary. As with a Class I emergency, no releases of radioactive materials requiring offsite responses are projected.
   ii) The emergency action levels (EALs) for this class of emergency are given in Table 5.1

e. Class III Emergency – Site Area Emergency
   i) Based on the UCD/MNRC Safety Analysis Report, no accident analyzed for this reactor, including the Maximum Hypothetical Accident, will result in radiation levels or releases of radioactive effluents sufficient to meet the emergency action levels for a site area emergency. Therefore, this emergency class is not considered in this plan.

f. Class IV Emergency – General Emergency
   i) Based on the UCD/MNRC Safety Analysis Report, no accident analyzed for this reactor, including the Maximum Hypothetical Accident, will result in radiation levels or releases of radioactive effluents sufficient to meet the emergency action levels for a site area emergency. Therefore, this emergency class is not considered in this plan

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5. Emergency Action Levels (EAL)
   The emergency action levels for each UCD/MNRC emergency class are included under the appropriate class in Table 5.1 of this section. The action levels specified in Table 5.1 "Emergency Classes and Action Levels" are EALs for activating the emergency organization and initiating protective actions appropriate for the emergency event.

Table 5.1
Emergency Classes and Action Levels

Emergency Class	Emergency Action Levels
Class O – Personnel and Operational Levels	(1) A major injury such as a severe cut, wound or burn. (2) A person experiencing a heart attack, stroke, or other severe physical ailment of rapid onset. (3) Any person receiving an actual or estimated radiation dose equivalent greater than any applicable occupational dose limit from sources external to the body, including doses caused by skin contamination. (4) Any person becoming internally contaminated with radioactive material sufficient to give a dose equivalent in excess of any applicable occupational dose limit. (5) Radiation levels in the reactor building sufficient to trip the alarm on any single area radiation monitor, when such levels are from unknown sources, or sources known to represent a potential emergency situation. (6) Airborne radioactivity levels in the reactor building sufficient to alarm the reactor room continuous air monitor (CAM) or the stack CAM, when such levels are from unknown sources or sources known to represent a potential emergency situation. (7) Uncontrolled surface contamination greater than 2.2E6 dpm/100sq.cm over 50% of the accessible reactor room.

Table 5.1

Emergency Classes and Action Levels

Emergency Class	Emergency Action Levels
Class I- Notification of Unusual Events	(1) Receipt of information threatening, or confirming, a breach in physical security (e.g., bomb threat, or signs of a hostile crowd assembling). (2) Receipt of information that a severe natural phenomenon such as a flood, volcano, tornado, or earthquake, is likely to affect the Sacramento area. (3) An explosion or a fire in the reactor building lasting more than 15 minutes. (4) Actual or projected radiological effluents with concentrations resulting in an unrestricted area total effective dose equivalent of 15 mrem accumulated in 24 hours NOTE: The stack and/or reactor room continuous air monitor shall have alarmed long before the concentration level in (4) above has been reached. A reactor monitor alarm puts the reactor ventilation system in the recirculation mode. However, the stack monitor shall continue to function and would be used to project radiological effluent releases and direct radiation levels at the site boundary. Direct measurements with portable survey meters would also be used to evaluate radiation levels at the site boundary.

Table 5.1
Emergency Classes and Action Levels

Emergency Class	Emergency Action Levels
Class II -Alert	(1) Loss of greater than 80% of the reactor tank water. (2) Actual or projected radiation levels at the site boundary of 20 mrem/hr deep dose equivalent for one hour, or 100 mrem committed dose equivalent to the thyroid. (3) Actual or projected radiological effluents at the site boundary with concentrations calculated or measured to result in a total effective dose equivalent of 75 mrem accumulated in 24 hours or less. (See note.) NOTE: Determination of airborne effluent concentrations and radiation levels at the site boundary will follow the same process as described for a Class I Emergency.

6. Emergency Planning Zone (EPZ)

   b. The emergency planning zone (EPZ) for the UCD/MNRC used for all classes of emergencies covered in this Emergency Plan is the area within the site boundary. The site boundary is indicated in Appendix E, Figure E-6
   c. The area within the site boundary (the EPZ) is large enough to support emergency actions should this ever be needed. The predetermined protective actions for the EPZ for each class of emergency are described in Section 7.

7. Emergency Response

   a. Class O Emergency – Personnel and Operational Events
      i) Activation of Emergency Organization for Personnel and Operational Events
         (1) The individual who initially confirms an emergency situation shall immediately contact the Senior Reactor Operator (SRO) on duty. The SRO shall take the immediate steps needed to bring the emergency situation under control. The SRO shall notify the Reactor Supervisor as soon as possible and briefly describe the emergency.
         (2) The Reactor Supervisor shall notify the Emergency Manager of the emergency. The Emergency Manager shall mobilize that part of the facility organization appropriate for the emergency.
         (3) The emergency call list for emergency response personnel is posted in the reactor control room.

(4) Required offsite support agencies shall then be mobilized (normally by telephone) by the SRO, Reactor Supervisor or Emergency Manager, depending on the situation.
(5) The NRC and UCD agencies shall be notified of this class of emergency by the Emergency Manager when required by applicable licenses or regulations.

ii) Assessment Actions for Personnel and Operational Events

(1) Personnel Injury or Ailment

(a) The nature and extent of any personnel injuries or physical ailment shall be assessed by responding medical personnel.

(b) MNRC personnel trained in first aid should make an immediate assessment of the medical situation and pass the information on to the medical responders as appropriate.

(2) Personnel Radiation Exposure (In Excess of Applicable Limits)

(a) Initial assessment of personnel radiation doses should be made and shall be verified by a health physicist at the earliest opportunity. This assessment should be based on:
(i) Any direct-reading dosimeters worn.
(ii) Measured dose rate and exposure time, or estimates of these.
(iii) Calculations from available known data such as source strength, distance, etc.

(b) As soon as possible, other dosimeters should be collected and returned to the supplier of the dosimetry service for emergency processing.

(3) Personnel Contamination with Radioactive Material

(a) Internal and/or external contamination of personnel shall be assessed by:
(i) Direct radiation surveys with appropriate instruments
(ii) Smears and swabs of the affected area
(iii) Applicable bioassay techniques available at UCD Medical Center (e.g. urinalysis, etc.)

(4) Radiation Area Monitor Alarm

(a) Radiation dose rates in the reactor building shall be assessed by the installed radiation area monitors (RAMs). There are several radiation area monitors in various positions throughout the facility. These RAMs have detection ranges for gamma radiation between 0.1 mR/hr and 10,000 mR/hr. The RAMs in the staging and equipment areas are typically set to alarm at 100mR/hr.The RAM in the reactor room is typically set to alert at 100mR/hr and alarm at 10,000 mR/hr. Radiation levels on all these RAMs are displayed in the reactor control room and at their location within the facility.

(b) Portable dose rate instruments shall be used by the Radiological Assessment Team to further assess and characterize the radiation field in the reactor building. Instruments are available which cover a wide range of dose rate, radiation types and energies.

(5) Reactor Room or Stack Continuous Air Monitor Alarm

(a) Airborne radioactivity in the reactor building shall initially be assessed by the installed continuous air monitors (CAMs). Of the four CAMs in the building, two are directly associated with reactor operations. First, the reactor room CAM monitors the air leaving the reactor room for particulate, radioiodine, and noble gas radioactivity. The alert set point for the reactor room CAM is typically set at a fraction of the applicable DAC for radionuclides normally expected to be present. The alarm set point for the reactor room CAM is typically set at the applicable concentration limit.

(b) In addition to the reactor room CAM, all ventilation air in the reactor building is monitored as it exhausts through the facility stack. The Stack CAM monitors airflow

out of the stack for particulate radioactivity and Argon-41. The stack effluent monitor alert set point is also typically set at a fraction of the applicable concentration limit for radionuclides normally expected to be present. The stack effluent monitor alarm set point is also typically set at the applicable concentration limit.

(c) High volume portable air samplers are also available to take grab air samples to further monitor any particulate or gaseous airborne radioactivity, if necessary.

(6) Uncontrolled Surface Contamination

(a) If background radiation levels permit, direct surface contamination levels shall be monitored using a portable thin window G.M. detector. The lower limit of detection for this type of instrument is consistently well below the emergency action level for contamination.

(b) Gross smear surveys using smear pads and thin window pancake G.M. detectors should also be used to determine the extent of the surface contamination, especially in the presence of higher background levels. The lower limit of detection for this survey technique is also well below the emergency action level specified.

(c) Analytical smear surveys shall also be taken using filter papers smeared over a known area and counted on appropriate instrumentation.

iii) Corrective Actions for Personnel and Operational Events

(1) Personnel Injury or Ailment

(a) First aid by qualified individual

(b) Transfer to appropriate medical treatment facility.

(2) Personnel Exposure

(a) Corrective actions for personnel exposure depend on the specific situation, but may include:

(i) Shutting off equipment

(ii) Moving or shielding sources

(iii)Moving the individual out of the radiation field.

(3) Personnel Contamination or Uncontrolled Surface Contamination

(a) Corrective actions shall include initiating spill and contamination control procedures, along with decontamination procedures to the extent appropriate. Such procedures are posted in areas where radioactive materials are use and describe the correct actions for both minor and major spills, including:

(i) Notifying other persons in the area that a spill or contamination has occurred

(ii) Preventing the spread of radioactive material

(iii)Shielding any large sources

(iv)Closing and locking the doors to the area

(v) Calling for assistance

(vi)Securing ventilation to the affected area

(vii) Decontaminating personnel and the affected area.

(4) Radiation Area Monitor Alarms

(a) The cause of the alarm shall be determined, and if it is identified as indicating no potential problem, it will be reset.

(b) If the alarm is for an unknown reason or a cause known to present an emergency situation, the reactor shall be shutdown and secured in accordance with the UCD/MNRC Operation Instructions

(5) Reactor Room or Stack Effluent Continuous Air Monitor Alarm.
(a) The cause of the alarm shall be determined, and if it is identified as indicating no potential problem, it will be reset.
(b) If the alarm is for an unknown reason or a cause known to present an emergency situation, the reactor shall be shutdown and secured in accordance with the UCD/MNRC Operation Instructions.
(c) If the reactor room CAM alarms, the reactor room ventilation system automatically begins recirculation the reactor room air in a closed loop from the reactor room through a bank of filters back into the reactor room. The SRO shall determine if the recirculation system should continue to run as a result of the alarm.

iv) Protective Actions for Personnel and Operational Events
(1) Protective actions at this level of emergency are often not distinguishable from corrective actions. Usually it will not be necessary to evacuate the reactor building for this class of emergency; however, it may be desirable to keep nonessential personnel away from any problem areas.
(2) Some protective actions which may be applicable to this class of emergency are:
(a) Performing first aid
(b) Moving personnel away from high radiation fields
(c) Dressing contaminated personnel in protective clothing prior to movement to contain the contamination.
(d) Moving personnel away from the contaminated areas.
(e) Establishing restricted areas

b. Class I Emergency – Notification of Unusual Events
i) Activation of Emergency Organization for Notification of Unusual Events
(1) The individual who initially confirms an emergency shall immediately contact the SRO on duty. The SRO shall take the immediate steps needed to bring the emergency situation under control. The SRO shall immediately contact the Reactor Supervisor and briefly describe the emergency.
(2) The Reactor Supervisor shall notify the Emergency Manager. The Emergency Manager shall then mobilize that part of the facility emergency organization as appropriate.
(3) The emergency call list for emergency response personnel is posted in reactor control room.
(4) Required offsite support agencies shall the be mobilized (normally by telephone) by the SRO, Reactor Supervisor or the Emergency Manager as appropriate. Some of the offsite support agencies shall receive automatic alarms for certain emergencies in this class. For example, police and fire will receive physical security and fire alarms directly.
(5) The NRC and appropriate UCD agencies shall be notified by the Emergency Manager. A system shall be used to ensure that these offsite agencies have received the initial message and that they can verify its authenticity
(6) Contents of initial and follow-up emergency messages to the NRC, and other appropriate offsite authorities will include the following, to the extent known and applicable: (See form in Appendix D.)
(a) Name, title and telephone number of caller, location of emergency, and license or docket number.

(b) Description of emergency event and emergency class.
(c) Date and time of emergency initiation
(d) Type and quantity of radionuclides released or expected to be released.

ii) Assessment Actions for Notification of Unusual Events

(1) Physical Security Threats or Breaches, Severe Natural Phenomena and Explosions or Fires

(a) The assessment actions for physical security threats, or breaches in physical security, severe natural phenomena, explosions, and fires shall consist of gathering data by direct visual observation or from personnel involved in the situation. The Emergency Manager, Reactor Supervisor, and Radiation Safety Officer shall then evaluate this data in an expedient and timely manner.

(2) Elevated Radiological Effluents at the Site Boundary

(a) Airborne radioactivity in the reactor building shall initially be assessed by the installed air monitors. A reactor room CAM analyzes the air in the reactor room for particulate, radioiodine, and gaseous radioactivity. The alarm setpoints are typically set at the applicable concentration limit.

(b) In addition, all ventilation air leaving the building is monitored as it exhausts through the facility stack. The stack effluent monitor is capable of detecting particulate and Argon-41 radioactivity. The stack monitor alarms are typically set at the applicable concentration limit for radionuclides expected to be present.

(c) Prior to the stack monitor reaching full scale, grab air sampling shall be initiated at the site boundary. This will ensure continuity of the assessment technique prior to approaching the specified emergency action level. High volume portable air samplers are available for this function, which shall be performed by the Radiological Assessment Team.

iii) Corrective Actions for Notification of Unusual Events

(1) Physical Security Threats or Breaches

(a) The reactor shall be shut down and secured.

(b) In all emergencies involving physical security, the next corrective action is to contact the Sacramento County Sheriff, who shall respond to the UCD/MNRC. Further law enforcement support shall be coordinated by the Sacramento County Sheriff as appropriate. Procedures for these actions are contained in the UCD/MNRC NRC-approved Physical Security Plan, which is “Safeguards Information”, exempted from public disclosure, and thus not reproduced here.

(2) Severe Natural Phenomena

(a) On receipt that a severe natural phenomena is likely to affect the Sacramento Area, the Emergency Manager, the Reactor Supervisor and the RSO shall immediately convene to determine an appropriate course of action. Action that should be considered is:

(i) Shutdown and secure the reactor.

(3) Explosions or Fires

(a) The reactor shall be shut down and secured.

(b) Personnel initially discovering an explosion or fire shall use individual judgment regarding the use of a fire extinguisher.

(c) If the alarm has not been activated automatically, it shall be activated manually. Fire alarm boxes and fire extinguishers are located throughout the facility.

(d) Doors not already closed should be shut to help prevent the spread of any fire or the spread of any radioactive contamination that may arise as a result of an explosion or fire.

(4) Elevated Radiological Effluents at the Site Boundary

(a) The reactor shall be shut down and secured.

(b) The SRO shall determine the need for the recirculation system to continue to operate. If a CAM alarm has not been activated, the SRO may put the ventilation system into the recirculation mode.

iv) Protective Actions for Notification of Unusual Events

(1) For most Class I emergencies (and Class II emergencies), the main protective action shall be to evacuate the Reactor Building, or portion thereof.

(2) Due to the nature of most Class I emergencies, any member of the staff may initiate an evacuation.

(3) There are three methods to evacuate the reactor building:

(a) Fire alarm system

(b) Evacuation horns

(c) Public address system

(4) Evacuation procedures are posted throughout the MNRC. All personnel in areas where any evacuation alarm sounds shall immediately evacuate the building by the shortest reasonable route. Personnel shall reassemble at Building 248 (the south side of the reactor building) unless ordered to another assembly point.

(5) The reactor operations staff shall activate the MNRC intrusion alarm system during any evacuation of the reactor building.

(6) In the assembly area, personnel who suspect that they are contaminated shall assemble separately from other personnel.

(7) Other appropriate protective actions may be communicated to individuals within the operations boundary by means of the public address system or by use of radios.

(8) A battery-operated public address device (bullhorn) is available in the emergency equipment locker to communicate protective actions and other information to personnel at the assembly area.

(9) Personnel accountability within the operations boundary is accomplished by the following:

(a) Upon hearing the building evacuation alarm, all personnel shall leave the reactor building and normally, depending on wind direction, assemble on the south side of the facility. The assembly area is designated as the area under the Building 248 overhang. This building is the first building to south of the facility. All personnel shall stay in this area until the SRO on duty or their designated alternate obtains personnel accountability status. Personnel shall stay in the assembly area to assist the emergency personnel as needed.

c. Class II Emergency – Alert

i) Activation of Emergency Organization for Alert

(1) The individual who initially confirms an emergency situation shall immediately contact the SRO on duty. The SRO shall take the steps necessary to mitigate the consequences of the emergency. As soon as possible, the SRO shall notify the Reactor Supervisor.

(2) The Reactor Supervisor shall notify the Emergency Manager of the emergency. The Emergency Manager shall then mobilize that part of the facility emergency organization appropriate for the emergency.
(3) The emergency call list for emergency response personnel is posted in the reactor control room
(4) The Emergency Manager shall then mobilize the required offsite support agencies. In the unlikely event that this class of emergency occurs during off duty hours, the UCD dispatcher shall have already been notified through an automatic system.
(5) The NRC, UCD and other appropriate agencies shall be notified by the Emergency Manager. A system shall be used to ensure that these offsite agencies have received the initial message and that they can verify its authenticity.
(6) Contents of initial an follow-up emergency messages the NRC, UCD and other appropriate offsite authorities shall include the following, to the extent known and applicable:
(a) Name, title and telephone number of caller, location of the emergency, and license or docket number.
(b) Description of emergency event and emergency class.
(c) Date and time of emergency initiation
(d) Type and quantity of radionuclides released or expected to be released.

ii) Assessment Actions for Alert
(1) Loss of Reactor Tank Water
(a) A loss of reactor tank water shall be indicated by the reactor tank low water level alarm. This shall be annunciated in the reactor control room during working hours and will alarm at the UCD campus dispatcher during off-duty hours. Assessment of the situation based on this alarm shall be by visual observation, as this alarm shall trigger after only a small water loss.
(b) In the event of a failure of low water level alarm system, the reactor room RAM shall alarm when the loss of shielding water over the core results in the radiation level from the core exceeding the alarm point on the RAM (normally 10 R/hr). Assessment of water loss following alarms from the RAM may be by observation of RAM radiation levels and the water level in the tank.
(c) Water from the radiography bay one floor drains to the liquid holding tank. Between the holding tank and the radiography bay, the entire volume of liquid in the reactor tank should remain onsite.
(d) Further assessment of the loss of reactor water shall be made by visual observation of the reactor tank water level and the rate of increase of radiation levels as measured by the reactor room RAM.
(2) Elevated Radiation Levels at the Site Boundary
(a) Elevated radiation dose rates initially shall be assessed by the radiation area monitors (RAMs). There are several RAMs in various positions throughout the reactor building. These have detection ranges for gamma radiation between 0.1mrem/hr and 10,000 mrem/hr. These RAMs are response checked weekly. All of these RAMs may be read in the reactor control room and near the detector location.
(b) Portable dose rate instruments shall be used by the Radiological Assessment Team to further assess and characterize the radiation field at the site boundary.

(3) Elevated Radiological Effluents at the Site Boundary

(a) Airborne radioactivity in the reactor room initially shall be assessed by the installed air monitors. A reactor room continuous air monitor (CAM) analyzes the air for particulate, radioiodine and gaseous radioactivity. The alarm set points for the particulate, radioiodine and gaseous channels are typically set at the applicable DAC for radionuclides normally expected to be present.

(b) In addition, all ventilation air from the building is monitored as it exhausts through the facility stack. The stack effluent monitor is capable of detecting particulate and Argon -41 radioactivity. The stack monitor alarm set points are typically set at the applicable concentration limit for radionuclides normally expected to be present.

(c) Prior to the stack monitor reaching full scale, grab air sampling shall be initiated at the site boundary. This should ensure continuity of the assessment technique prior to approaching the specified emergency action level. High volume portable air samplers are available for this function, which shall be performed by the Radiological Assessment Team.

iii) Corrective Actions for Alert

(1) Loss Reactor Tank Water

(a) If the reactor is operating, the following shall occur, in accordance with UCD/MNRC Operating Instructions MNRC-0016-DOC:

(i) Scram the reactor

(ii) Secure the primary and secondary pumps

(iii)Secure the demineralizer pumps

(b) Under any circumstances, the following shall occur:

(i) Attempt to isolate and stop the leak.

(c) In addition, the following may occur:

(i) Add make-up water in an attempt to maintain an adequate water level

(2) Elevated Radiation Levels at the Site Boundary

(a) The reactor shall be shutdown and secured in accordance with the UCD/MNRC operating instructions

(b) Search for the source of high radiation levels attempt to shield

(c) Send personnel to the operations boundary, out of the radiation field, to minimize access to the general area.

(3) Elevated Radiological Effluents at the Site Boundary

(a) The reactor shall be shut down.

(b) Upon receiving a reactor room CAM alarm the reactor room ventilation system shall automatically go into the recirculation mode. The SRO on duty shall determine the correct ventilation mode upon immediate assessment of the emergency. Further assessment of the emergency by the Emergency Manager and/or Reactor Supervisor may change the reactor room ventilation mode.

iv) Protective Actions for Alert – Protective actions for this class of emergency shall be in accordance with section 7.b.(iv).

d. Emergency Exposure Levels

i) Lifesaving Activities

(1) For lifesaving situations, a total effective dose equivalent of up to 25 rem shall be permissible without authorization, due to the implied urgency of the situation.

ii) Corrective Actions

(1) For non-lifesaving corrective actions, the maximum total effective dose equivalent that shall be authorized is 10 rem. Authorization for this limit shall be obtained form the Emergency Manager.

iii) Other Emergency Actions

(1) Emergency personnel providing routine first aid, decontamination or medical treatment services to injured persons shall be subject to the normally applicable occupational dose limits.

e. Access Control and Restricted Areas.

i) Following the assessment of radiation and contamination conditions in and around the entire facility, in order to minimize exposures to radiation and the spread of radioactive contamination, the RSO shall identify, post appropriate warning signs, and restrict access to areas where permissible contamination or radiation limits are exceeded.

ii) No area shall be returned to normal use until radiation and contamination levels have been reduced to the approximate background levels existing in the area prior to the incident. Such levels shall be determined by conventional radiation surveys. In all applicable situations, levels shall be equal to or below the limits specified in current regulatory guidance for unrestricted use and access.

f. Personnel Dosimetry

i) Determination of the onsite radiation doses to personnel during an emergency shall be made using existing dosimeters regularly supplied to personnel.

ii) Members of the reactor facility staff routinely wear appropriate dosimeters and there are a large number of additional pocket ion chambers (some with higher ranges, up to 500 mR) are available for issue in the event of an emergency. These will be used as necessary for assessing personnel doses.

iii) The issuance, use and recording of self-reading dosimeter doses during an emergency are under the direction of the RSO.

g. Protective Action Guides (PAGs) for Whole Body and Thyroid Dose Equivalent for Members of the General Public and Within the EPZ (the Operations Boundary)

i) Although it is extremely unlikely that any member of the general public will remain inside the EPZ during an emergency involving radioactive materials, PAGs for radiation exposure of these individuals have been set at 1 Rem deep dose equivalent and 5 Rem committed dose equivalent to the thyroid.

8. Emergency Equipment and Facilities

a. Emergency Support Center (ESC)

i) The ESC is a location where the Emergency Manager is positioned. The ESC is located such that the Emergency Manager has the ability to communicate with the Emergency Control Station.

ii) The ESC is the area where responding off-site agencies initially report, and is where the Emergency Manager receives information concerning the emergency situation. ESC activities include:

(1) Coordination of requests for support

(2) Notification of off-site agencies

(3) Coordination with responding off-site agencies

b. Emergency Control Station (ECS)
   i) The ECS is the focal point between the Emergency Manager and emergency personnel and is where actions authorized by the Emergency Manager are implemented within the UCD/MNRC operations boundary. The Reactor Supervisor shall either operate from or assign someone to the ECS throughout an emergency. Personnel at the ECS shall relay information between the Reactor Supervisor and the Emergency Manager. The Historian shall also maintain a record of events at the ECS. The primary location of the ECS shall be the reactor control room, since virtually all of the instrumentation, displays and controls necessary to assess and correct reactor related emergencies are located within the reactor control room.

c. Assessment Facilities and Equipment – The location of the emergency equipment is shown in Appendix E.
   i) Portable and Fixed Radiological Monitors
      (1) Many portable radiation monitoring instruments are available for use during an emergency. Some of these are kept in the emergency equipment lockers and others are routinely used for normal operations. A representative listing of these instruments includes:
         (a) High-range gamma ion chamber survey meters
         (b) Medium and high range beta-gamma ion chamber survey meters
         (c) Beta-gamma G.M. survey meters
         (d) Neutron survey meters
         (e) Alpha survey meters
         (f) *High-range ion chamber suitable for use in air or underwater.*
      (2) A number of fixed radiological monitors are also available, and as described in Chapter 7, these include:
         (a) Reactor Room continuous air monitor (particulate, radioiodine, and gaseous) located in the upstairs CAM room.
         (b) A stack effluent monitor for ventilation discharge (particulate and Argon-41) located in the upstairs CAM room.
         (c) The area radiation monitoring system (RAMs) located throughout the facility.
   ii) Sampling Equipment
      (1) There are a number of portable air samplers available for use in an emergency. A representative listing of equipment includes:
         (a) High volume particulate air sampler in staging area
         (b) Medium volume, battery powered particulate air sampler in staging area
      (2) There are supplies kept in the staging areas, trailer and equipment room for various other forms of sampling, including water and surface smear sampling. The emergency lockers also contain a selection of necessary sampling materials.
   iii) Instrumentation for Specific Radionuclide Identification and Analysis
      (1) The multi-channel analyzer (MCA) with an HPGe detector for automated computer analysis of gamma spectra, normally in the Counting Laboratory.
      (2) A gas flow proportional counter, also in the Counting Laboratory.
   iv) Personnel Monitoring Equipment – Typical personnel monitoring equipment is described in Section 7.f. under “Personnel Dosimetry.”

v) Non-Radiological Monitoring Equipment.
(1) Reactor Instrumentation – All of the non-radiological reactor system monitors which may provide pertinent information have their displays in the reactor control room.
(a) There are four reactor power indicators operating off of two separate detectors. These are:
(i) Fission Chamber – for Linear Power Recorder, Log Power Recorder and Log Power Meter
(ii) Uncompensated Ion Chamber – Percent Power Meter.
(b) The reactor also has two instrumented fuel elements that permit the measurement of the fuel temperature in those elements. These readout on the reactor console.
(c) There are five water temperature measuring instruments that read out in the reactor control room.
(i) Bulk (tank) water temperature
(ii) Heat Exchanger Outlet Temperature – Primary and Secondary
(iii)Heat Exchanger Inlet Temperature – Primary and Secondary
(d) A dual float operated micro-switch is used to annunciate a low reactor tank water level. This is activated when the water level drops about two inches below the normal operating level. The same floats also activate a high water alarm when the reactor tank water level rises about one inch above normal.
(2) Fire Detectors
(a) The UCD/MNRC facility has fire detection devices in essentially all rooms. Most of these respond to temperature-rate-of-rise; however, there are also a few smoke detectors.
(b) If one of the fire sensors detects a fire, an alarm is automatically activated, not only in the building, but also at the alarm monitoring company. The dispatcher shall then call the Sacramento Metro Fire Department, who shall alert the nearest available fire engine crew. The dispatcher shall also use the UCD/MNRC Emergency Recall List to call members of the facility emergency organization.

d. First Aid, Decontamination, and Medical Facilities
i) First Aid Training
(1) One or more members of the UCD/MNRC emergency organization should have current Red Cross first aid qualification. Training, such as the American National Red Cross Standard Multimedia Course (refresher course every three years) or equivalent should be provided to selected members of the facility emergency organization.
ii) Contamination Control and Personnel Decontamination
(1) The RSO shall coordinate any personnel decontamination
(a) If there are a number of people involved in an emergency where there is a possibility for contamination, injured personnel shall be monitored first.
(b) All contaminated personnel shall be kept in one area to minimize the spread of contamination.
(c) Injured personnel shall normally be decontaminated and then dispatched to the UCD Medical Center. Monitoring and decontamination may occur enroute or after arrival depending on the nature of the injury.
(d) After all injured persons are cared for, uninjured personnel shall be checked for contamination and necessary action taken to remove whatever contamination is detected.

iii) Decontamination Facilities and Equipment
(1) There is personnel decontamination locker in the men's restroom. It contains supplies that can be used for minor skin contamination.
(2) There is a sink and a shower within the men's restroom that can be used for personnel decontamination. The water drains into the liquid waste holding tank.
(3) In the event that this shower is not accessible or available, there are further personnel decontamination facilities at the UCD Medical Center.

iv) Medical Transportation
(1) Personnel with obviously serious injuries, with or without contamination, shall be transported by ambulance directly to the emergency room of the UCD Medical Center.
(2) The attending medical staff shall decide how injured persons are treated, based on :
(a) The nature and severity of the injuries
(b) The level of radioactive contamination
(3) If transport is necessary care shall be taken to contain any contamination by covering the individual with blankets or plastic, or other appropriate means.

v) Medical Treatment
(1) The UCD Medical Center has a standard operating procedure for radiological emergencies which typically includes the following:
(a) The ambulance shall notify the emergency room that a radiological emergency is in effect.
(b) The ambulance shall then be met by hospital personnel dressed in protective clothing and will use a covered gurney for transportation of the patient from the ambulance to the treatment area. Ambulance attendants shall stay in the ambulance until monitored.
(c) One of the emergency treatment rooms shall have been previously set apart as a restricted area, with an access control point and plastic (or other) sheeting over most surfaces.
(d) The radiological emergency cabinet at the hospital, which contains all the equipment necessary for monitoring and decontamination, shall have been set up near the restricted area.
(2) The UCD/MNRC shall maintain a written agreement with the UCD Medical Center that assures that medical services are available and that the staff is prepared to handle radiological emergencies (see Appendix A).

e. Communications Equipment

i) Communications equipment or systems normally available for use during an emergency are:
(1) The UCD/MNRC has a digital telephone system with multiple independent lines that are available as long as the facility has utility supplied power. There are six incoming/outgoing line as well as numerous direct dialed numbers. In total, there can be up to 10 simultaneous calls taking place at one time. In the event of a power outage, there is a battery within the phone system that can power the phones for a short period of time. As a backup there are two fax machines within the facility that have analog lines that capable of functioning during a utility power failure. These phones will continue to function in the event of a power loss to the facility.
(2) A public address system serves the entire facility and is operable from the reactor control room.
(3) A battery-operated portable PA device (bullhorn) for addressing personnel at the assembly area or for other similar uses.

(4) Portable radios are located in the equipment, reactor control room, the Reactor Operations office, and the North Annex.

ii) Responding emergency organizations have the capability of radio communication with local law enforcement and other responding agencies, and of using the loudspeaker system on their vehicles as an external public address system, if necessary.

9. Recovery
   a. Recovery criteria for restoring the facility to a safe status shall be strongly dependent upon the incident and shall be determined by a task group consisting of:
      i) The Emergency Manager
      ii) The Recovery Coordinator (Reactor Supervisor)
      iii) The Radiation Safety Officer
      iv) Senior Reactor Operators
   b. As needed, recovery procedures shall be written and approved by the Emergency Manager for each operation prior to initiation. The recovery operations and any needed procedures shall include consideration of the radiation and contamination levels.
   c. After the emergency, a comprehensive written report of the events and subsequent actions shall be prepared by the reactor operations staff, and historian, and filed with the appropriate agencies and committees as soon as possible.

10. Maintaining Emergency Preparedness
   a. This section describes the elements necessary for maintaining an acceptable state of emergency preparedness. Provisions have been made for maintaining the effectiveness of the emergency plan, including training, review and update of the emergency plan and associated implementing procedures, and maintenance and inventory of equipment and supplies that would be used in emergencies
   b. The RSO shall be responsible for the following:
      i) Ensuring the implementation of an emergency preparedness program for facility equipment and personnel.
      ii) Ensure up-to-date status of emergency plans and procedures.
      iii) Coordinate emergency plans with other affected support organizations and obtain written agreements confirming assistance from such organizations.
   c. Initial Training and Periodic Retraining Program
      i) An initial training and periodic retraining program shall be conducted to maintain the ability of emergency response personnel to perform their assigned functions. The personnel involved in the training program should include:
         (1) Facility personnel responsible for decision making and transmitting emergency information and instructions.
         (2) Facility personnel responsible for accident assessment
         (3) Facility radiological monitoring and assessment team members
         (4) Medical support personnel at the UCD Medical Center
         (5) County Sheriff and UCD Police personnel
         (6) Campus Health Physics support staff
         (7) News Service Staff
      ii) The content of the training program shall include the overall emergency plan and the particular implementing procedures relevant to each group listed above.

d. Emergency Drills
   i) Annual onsite emergency drills shall conducted as action drills with each required emergency measure being executed as realistically as is reasonably possible, including the use of appropriate emergency equipment.
   ii) Annual drills shall employ the use of written scenarios to more effectively fulfill their function.
   iii) At least every two years, these drills shall contain provisions for coordination with offsite emergency personnel and shall test, as a minimum, the communication links and notification procedures with these offsite agencies and support organizations.
   iv) After each drill there shall be a debriefing, during which time observers shall present their critiques of the exercise. These shall then be evaluated by the facility emergency response personnel. Any deficiencies identified in the emergency plan, the implementing procedures, or their actual use during a drill shall be corrected within six months of the exercise. Revisions to the Emergency Plan shall be approved by the UCD/MNRC Nuclear Safety Committee prior to implementation
e. Emergency Plan Review and Update
   i) The emergency plan shall be reviewed and updated biennially, and shall include modifications necessitated by changes in the facility and/or environs. The review committee should consist of the UCD/MNRC Director, Reactor Supervisor, Radiation Safety Officer, and Campus Emergency Planner.
   ii) UCD/MNRC activities associated with the emergency plan (e.g. training, drills, etc.) shall be reviewed as part of the Nuclear Safety Committee annual facility audit.
f. Equipment Maintenance and Inventory
   i) The operational readiness of all emergency communications, emergency radiation safety equipment, reactor instrumentation and fire detectors is assured by a routine maintenance program. This is performed under the existing preventive maintenance (PM) system.
      (1) Required Maintenance and Minimum Calibration Frequency for Emergency Communications and Radiation Safety Equipment
         (a) Communications equipment is repaired as necessary.
         (b) All portable survey instruments are repaired as necessary and calibrated at least annually.
         (c) The fixed radiological monitors are repaired as necessary and calibrated at least annually.
         (d) Self-reading pocket dosimeters are calibrated annually
         (e) Air samplers are calibrated annually
         (f) The battery for the portable air sampler is recharged as needed
         (g) The gas flow proportional counter is calibrated annually.
      (2) Functional Testing of Emergency Communications and Radiation Safety Equipment
         (a) Most communications equipment is in daily use and hence is undergoing continuous functional testing. The bullhorn and two-way radios are functionally tested semiannually.
         (b) All portable survey instruments at the UCD/MNRC are functionally checked prior to use.
         (c) The fixed radiological monitors are in routine use and functionally tested weekly, and checked daily during the normal workweek as part of the reactor startup checklist.
         (d) The emergency evacuation horns are functionally tested semiannually.

(3) Equipment Inventory

(a) The equipment in the emergency lockers at the UCD/MNRC is inventoried on a semiannual basis.

APPENDIX A

MEMORANDUM OF UNDERSTANDING

COUNTY OF SACRAMENTO

Resolution No. 2004-1468

RESOLUTION OF THE BOARD OF SUPERVISORS AUTHORIZING THE EXECUTION OF A CONTRACT BETWEEN THE COUNTY OF SACRAMENTO AND SACRAMENTO METROPOLITAN FIRE DISTRICT FOR FIRE PROTECTION SERVICES AT MCCLELLAN AIRPORT AND BUSINESS PARK

WHEREAS, McClellan Air Force Base (hereafter referred to as "McClellan") is a former military base located in Sacramento County, California, and was closed as an active military installation on July 13, 2001, pursuant to the Defense Base Closure and Realignment Act of 1990, Pub. L. No. 101-510 ("DBCRA"), as amended; and

WHEREAS, the County of Sacramento (hereafter referred to as "County") was appointed the Local Redevelopment Authority (LRA) for McClellan Air Force Base pursuant to law; and

WHEREAS, Base closure laws provide that federal agencies may continue to occupy facilities at closed military installations by executing "Leaseback" Agreements with the LRA for the closed installation and, the United States Coast Guard (Coast Guard) has entered into a "Leaseback" of hangars at the McClellan Airport; and

WHEREAS, County entered into a Contract with Coast Guard for the use of the McClellan Airport for aviation purposes and a contract with Sacramento Metropolitan Fire District ("SMFD") to be its provider or subcontractor for airport crash, fire and rescue services, under Coast Guard Agreement, on September 26, 2000 and the term expires on November 30, 2004; and

WHEREAS, in connection with the Coast Guard Agreement, County is required to provide aircraft rescue and firefighting (ARFF) services for McClellan Airport; and

WHEREAS, County and Coast Guard intend to continue the Coast Guard use of McClellan Airport and associated services by entering into a new five year term contract of even date, herewith.

WHEREAS, outside the scope of the Coast Guard Agreement, County is also in need of emergency medical and structural fire protection services for the McClellan Park properties; and

WHEREAS, County desires to enter into a contract with SMFD to provide emergency medical, ARFF and structural fire protection services for both McClellan Airport and McClellan Park property; and

WHEREAS, SMFD has agreed to expeditiously file any and all necessary documentation to facilitate the annexation of the former McClellan Air Force Base and surrounding McClellan Properties into the Sacramento Metropolitan Fire District; and

WHEREAS, in connection with the annexation of McClellan, SMFD and County desire to enter into a property tax exchange agreement that will ultimately fund the District's net costs for services; and

WHEREAS, SMFD is authorized to enter into such a contract for services pursuant to Health and Safety Code Section 13878 and Public Contract Code Section 20811.

NOW THEREFORE, BE IT RESOLVED AND ORDERED that the Chair of the Board of Supervisors be hereby authorized and directed to execute the Agreement, in the form hereto attached, on behalf of the COUNTY OF SACRAMENTO, a political subdivision of the State of California, between the County of Sacramento and the Sacramento Metropolitan Fire District for fire protection services at McClellan Airport and Business Park.

On a motion by Supervisor Dickinson, seconded by Supervisor Johnson, the foregoing resolution was passed and adopted by the Board of Supervisors of the County of Sacramento, State of California, this 23rd day of November 2004 by the following vote, to wit:

AYES: Supervisors, Collin, Dickinson, Niello, Nottoli, Johnson

NOES: Supervisors, None

ABSENT: Supervisors, None

ABSTAIN: Supervisors, None

Muriel P. Johnson
Chair of the Board of Supervisors
of Sacramento County California

In accordance with Section 25103 of the Government Code of the State of California a copy of the document has been delivered to the Chairman of the Board of Supervisors, County of Sacramento on
NOV 23 2004
By Janeen Lawson
Deputy Clerk, Board of Supervisors

COUNTY OF SACRAMENTO (SEAL) CALIFORNIA

ATTEST: Sandra Seaky
Clerk of the Board of Supervisors

FILED
NOV 23 2005
BOARD OF SUPERVISORS
By Cindy A. Turner
CLERK OF THE BOARD

foregoing is a correct copy of a resolution
pted by the Board of Supervisors, Sacramento
nty, California
on NOV 23 2004
ed NOV 24 2004
Clerk of said Board of Supervisors
Janeen Lawson
Deputy

AGREEMENT FOR McCLELLAN AIRPORT AND McCLELLAN PARK FIRE PROTECTION SERVICES

THIS AGREEMENT, is made and entered into this 23rd day of November, 2004, by and between the COUNTY OF SACRAMENTO, a political subdivision of the State of California (hereinafter "COUNTY"), and the SACRAMENTO METROPOLITAN FIRE DISTRICT, an independent special district duly authorized and existing under the laws of the State of California (hereinafter "SMFD").

WITNESSETH:

WHEREAS, COUNTY has entered into an agreement with the United States Coast Guard (Coast Guard) with respect to the use of McClellan Airport for aviation purposes and the necessary support services required for such airfield use (Coast Guard Agreement); and

WHEREAS, in connection with the Coast Guard Agreement, COUNTY is required to provide aircraft rescue and firefighting (ARFF) services for McClellan Airport; and

WHEREAS, outside the scope of the Coast Guard Agreement, COUNTY is also in need of emergency medical and structural fire protection services for the McClellan Park properties; and

WHEREAS, COUNTY desires to enter into a contract with SMFD to provide emergency medical, ARFF and structural fire protection services for both McClellan Airport and McClellan Park properties; and

WHEREAS, SMFD has agreed to expeditiously file any and all necessary documentation to facilitate the annexation of the former McClellan Air Force Base into the Sacramento Metropolitan Fire District; and

WHEREAS, in connection with the annexation of McClellan Park properties, SMFD and COUNTY desire to enter into a property tax exchange agreement that will ultimately fund the District's "net costs" for services associated with the annexation of McClellan Park properties; and

WHEREAS, within the performance work statement (PWS) of the Coast Guard Agreement the Coast Guard is referred to as "Government"; and such terms are used interchangeably; and

WHEREAS, the Coast Guard Agreement is a standard federal commercial contract wherein COUNTY is referred to as "Contractor"; and such terms are used interchangeably; and.

WHEREAS, SMFD is authorized to enter into such a contract for services pursuant to Health and Safety Code Section 13878 and Public Contract Code Section 20811.

NOW, THEREFORE, in consideration of the mutual promises hereinafter set forth, COUNTY and SMFD agree as follows:

1. RECITALS:

The Parties agree that the foregoing recitals are true and correct, and are incorporated herein, by reference.

2. TERM OF AGREEMENT; EFFECTIVE DATE; TRANSITION PERIOD

This Agreement shall become effective on October 1, 2004 and shall remain in force until September 30, 2009, unless terminated earlier in accordance with Paragraph 10 of this Agreement.

3. SCOPE OF SERVICES

McClellan Airport

Effective October 1, 2004, at 0001 hours SMFD hereby agrees to provide aircraft rescue and firefighting services to COUNTY at McClellan Airport in accordance with the requirements and conditions of the Coast Guard Agreement between COUNTY and the United States Coast Guard, a copy of which is attached hereto and incorporated herein as Exhibit "A" to this Agreement. Said services will be provided from Station 114 (Building 1074 and Building 636).

B. McClellan Park Properties

Effective October 1, 2004 at 0001 hours, SMFD agrees to provide on site structural fire protection and emergency medical services to McClellan Park Properties. A map generally depicting McClellan Park Properties is attached hereto and incorporated herein as Exhibit "B" to this Agreement. The service level and standards for on-site structural fire protection and emergency medical services shall be equivalent to other developed property within SMFD boundaries. COUNTY agrees to provide SMFD with a no-cost lease for Station 114 (Building 1074 and Building 636) for use by SMFD to provide fire protection and aircraft rescue and firefighting services contemplated by this Agreement. SMFD intends to use Station 114 during the term of this Agreement to house personnel and equipment associated with fire protection and ARFF services. However, if such ARFF services are discontinued, SMFD desires to maintain the option of transferring its structural fire protection and emergency medical services to Station 115 (Building 737). COUNTY therefore agrees to maintain the availability of Station 115 to SMFD during the term of this Agreement subject to SMFD providing County with six (6) months prior written notice that it intends to relocate its structural fire protection and emergency medical services from Station 114 to Station 115. In the event SMFD vacates Station 114 and relocates to Station 115, COUNTY shall be free to use Station 114 for its own purposes. SMFD will retain the right to apply for Station 114 relocation under the same conditions outlined above.

Said stations shall be available for use by SMFD as set forth above so long as SMFD is providing fire protection and emergency medical services at McClellan Airport or McClellan Park Properties, and will revert to the COUNTY at such time that SMFD ceases to provide such services.

C. Services Excluded

Fire Prevention services, including plan review and code enforcement, are not included as part of this Agreement. These services are available through the SMFD Fire Prevention Bureau at the SMFD adopted hourly rate.

4. SMFD STAFFING

SMFD will staff Station 114 as follows in order to provide the emergency medical, structural fire protection, and aircraft rescue and firefighting (ARFF) services specified in Paragraph 3A and 3B on a twenty-four (24) hour, seven (7) day per week basis:

A. Three (3) dedicated personnel only available for ARFF responses, consisting of the following:

1 Captain
1 Engineer
1 Firefighter

B. Three (3) personnel to respond as an Engine Company to any emergency medical, structural or wildland fire, or other emergency or non-emergency incident within their response zone. This same Engine Company will cross-staff an additional ARFF vehicle for ARFF responses. The Engine Company will be staffed as follows:

1 Captain
1 Engineer
1 Firefighter

C. In the event the Engine Company is dispatched to an incident not involving ARFF activities, a backfill engine company will be automatically dispatched to Station 114 to replace said Engine Company's ARFF responsibilities at McClellan Airport. This backfill company will be the nearest available SMFD Engine Company, outside the property boundaries of McClellan Airport. This backfill shall replace those personnel responding to a non-ARFF emergency with an equal number of fully qualified ARFF personnel within twelve (12) minutes of original dispatch.

D. SMFD will provide incident command and control from one of the seven (7) Battalion Supervisor locations.

E. Dispatch services will be provided by the Sacramento Regional Fire/EMS Communications Center (SRFECC).

5. COUNTY FURNISHED EQUIPMENT AND FACILITIES

A. The Coast Guard Agreement Performance Work Statement (PWS) section 3.1 (Government Furnished Equipment) provides that the Government (Coast Guard) will furnish (1) one 2001 Model P150 ARFF vehicle, 4X4, 1500 gallon Emergency One Titan, Vin#4ENBAA8X110003122. The PWS provides that Contractor will be responsible for maintenance, repair and inspection of the furnished vehicle and at the end of the term of the contract, will return it to the Government in good working order. Section 4 of the PWS obligates the Contractor to furnish all other equipment with the exception of the ARFF unit provided by Government. COUNTY transferred two (2) P4 ARFF vehicles to SMFD in 2000 associated with ARFF services. Due to the age and condition of the P4's provided, they did not meet the PWS requirement for vehicle readiness and reliability. In August of 2003, SMFD located and purchased a 1996 E One Titan ARFF unit (Vin # 4ENDAAA8XT1003771). Compensation for services under this agreement includes a four (4) year amortized reimbursement to SMFD for the ARFF unit purchase. Upon full payment by the COUNTY, SMFD will transfer ownership of the 1996 E One Titan to the COUNTY. After transfer of ownership the COUNTY shall furnish this unit back to SMFD for ARFF response at McClellan Airport during the term of this Agreement. To ensure SMFD has ARFF units available in the event the primary ARFF units require maintenance or repairs, the District will continue to maintain the two (2) P4's in reserve.

B. It is expressly understood and agreed that SMFD's ability to perform under the Government PWS is contingent upon COUNTY providing two (2) operationally ready ARFF vehicles with automated turrets. To ensure compliance with the PWS, the County agrees to reimburse SMFD for any costs associated with leasing a replacement ARFF vehicle to fulfill this requirement, should one (1) or both of the primary ARFF vehicles, described in Section 4, become inoperable.

C. Station 114 is comprised of Building 1074 and Building 636 (Building 636 is used essentially for storage). Station 115 is composed of Building 737, COUNTY agrees to provide Station 114 (Building 1074 and Building 636) for use by SMFD in providing the fire protection and aircraft rescue and firefighting services contemplated by this Agreement pursuant to the terms of a mutually agreed upon no-cost lease. Station 115 (Building 737) shall be made available to SMFD with a six (6) month written notice to COUNTY that SMFD requires this Station for the purposes of providing structural fire protection to McClellan Park properties. SMFD acknowledges that Building 737 will be under lease between the COUNTY and McClellan Business Park LLC until such time as SMFD provides such notice to the County. Said stations shall be available for use by SMFD as long as SMFD is providing fire protection and emergency medical services at McClellan Airport and McClellan Park properties, and will revert to the COUNTY at such time that SMFD ceases to provide such services.

6. COMPENSATION

COUNTY agrees to compensate SMFD for the fire protection and emergency medical services contemplated by this Agreement in accordance with the annual total costs specified in Exhibit "C" to this Agreement, attached hereto and incorporated herein. Provided, however that

such amounts owed by County shall be first reduced or adjusted downward on an annual basis to reflect the amount of property tax revenue received by SMFD from the annexation of McClellan Park Properties into SMFD boundaries and/or the execution of agreements providing tax revenue to SMFD ("net cost").

The County and SMFD agree to complete an annual or semi-annual review process to establish the amount of tax revenue received by SMFD for McClellan Park properties either as a direct taxing entity or resulting from property tax sharing agreements. SMFD shall first deduct such tax revenue received, projected or accrued from the amount owed by County for services rendered under this Agreement and shall invoice the County accordingly.

Subject to SMFD approval, and provided that County shall make payments to SMFD within forty five days of receipt of SMFD invoice, County payment to District may include "in-kind" services, transfer of real or personal property assets, and payments to SMFD from non-County sources. Approval and acceptance of such alternative forms of payment shall be at the sole discretion of SMFD.

7. NOTICES

Any notice demand, request, consent, or approval that either party hereto may or is required to give the other shall be in writing and shall be either personally delivered or sent by first class mail, postage prepaid, and addressed as follows:

Paul Hahn
Assistant to the County Executive for
Economic Development and
Intergovernmental Affairs ("Director")
Office of Military Base Conversion
County of Sacramento
3331 Peacekeeper Way
McClellan AFB, CA 95652
Attn: John Kozitza

Fire Chief or Designee
SacramentoMetropolitan Fire District
2101 Hurley Way
Sacramento, CA 95825

8. ENFORCEMENT AUTHORITY

COUNTY shall take all necessary legal steps required to transfer and delegate to SMFD full legal authority to enforce all applicable Uniform Fire Codes, together with any additional county fire regulations; weed abatement ordinances; Uniform Building Codes; and any other state and local laws and regulations which COUNTY is required by law to enforce.

9. INDEMNIFICATION

With regard to any liability which may arise from the use and/or operation of this facility, each party expressly agrees that it shall be solely and exclusively liable for the negligence of its own agents, servants, and/or employees, in accordance with applicable law, and that neither

party looks to the other to save or hold it harmless for the consequences of any negligence on the part of one of its own agents, servants, and/or employees.

10. AUTHORITY OF THE DIRECTOR

The Director or its designee shall administer this Agreement on behalf of the COUNTY. Unless otherwise provided herein or required by applicable law, the Director shall be vested with all rights, powers, and duties of the COUNTY hereunder.

With respect to matters hereunder subject to the approval, satisfaction, or discretion of the COUNTY or the Director, the decision of the Director shall be final.

As used herein the term "Director" means the person duly appointed to the position of Assistant to the County Executive for Economic Development and Intergovernmental Affairs for the County of Sacramento.

11. TERMINATION

A. Either party may terminate this Agreement upon the substantial failure of performance by the other party, provided such terminating party first transmits written notice of intent to terminate to the party failing to perform and allows such party a reasonable opportunity to cure or correct said failure of performance.

B. COUNTY may terminate this Agreement immediately upon written notice served upon SMFD if advised that funds are not available from external sources for this Agreement or for any portion thereof, or if funds are not specifically appropriated for this Agreement in COUNTY'S final budget for applicable fiscal year(s).

C. COUNTY and SMFD agree to make their best efforts to annex McClellan Park properties into SMFD boundaries. In the event this Agreement terminates prior to annexation, SMFD agrees to continue to provide structural fire protection and emergency services to COUNTY at McClellan Park properties and COUNTY agrees to pay SMFD's "net costs" for providing said services.

12. ENTIRE AGREEMENT

This Agreement, all exhibits attached hereto, all other terms or provisions incorporated herein by reference, and any notices issued in accordance with the terms hereto constitute the entire Agreement and understanding between COUNTY and SMFD as to the subject matter contained herein, and supersedes all prior negotiations, representations, or agreements, whether written or oral. This agreement shall be interpreted as having been drafted by both parties.

13. AMENDMENTS

This Agreement may be amended only by written instrument, signed by both COUNTY and SMFD as authorized by action of their respective governing boards.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the day and year first written above.

COUNTY OF SACRAMENTO,
a political subdivision of the
State of California

By: Muriel P. Johnson
Chairman, Board of Supervisors

SACRAMENTO METROPOLITAN FIRE DISTRICT, an independent Special District duly authorized and existing under the laws of the State of California

By: Craig Jones
President, Board of Directors

(SEAL)

Attest: Sandra Lahey
Clerk of the Board of Supervisors

Approved as to form:

Robert Ravel
Deputy County Counsel

Approved as to form:

Dan G. Price
District General Counsel

Exhibit "A"

To the Agreement For McClellan Airport and McClellan Park Fire Protection Services

McClellan Fire Protection Services Contract

Description	Task	Base Year	Option Year 1	Option Year 2	Option Year 3	Option Year 4
		10/1/04-9/30/05	10/1/05-9/30/06	10/1/06-9/30/07	10/1/07-9/30/08	10/1/08-9/30/09
Labor Section						
Aircraft Rescue and FF	ARFF Dedicated labor	1,334,867	1,517,899	1,593,794	1,673,484	1,824,098
Aircraft Rescue and FF	Administrative 12%	160,184	182,148	191,255	200,818	218,892
Aircraft Rescue and FF	ARFF Structural Labor	1,334,867	1,517,899	1,593,794	1,673,484	1,824,098
Aircraft Rescue and FF	Administrative 12%	160,184	182,148	191,255	200,818	218892
Total Labor Costs		**2,990,102**	**3,400,094**	**3,570,099**	**3,748,604**	**4,085,980**
F/Y 06/07 and 07-08 Labor Cost assumes 5% annual inflation.						
Other Section Cost						
Vehicle Maintenance	Routine Maintenance	16,000	16,800	17,640	18,522	19,448
ARFF/Structural	Dispatch Services	17,098	17,098	17,098	17,098	17,098
ARFF/Structural	Facilities	23,802	23,802	23,802	23,802	23,802
ARFF/Structural	Support Equipment	9,967	11,733	12,282	12,859	13,502
ARFF Response Unit	Unit Reimbursement	73,205	73,205	73,205	73,205	
(1996 E One Titan)						
Total Annual Costs		**3,130,174**	**3,542,732**	**3,714,126**	**3,894,090**	**4,159,830**
Other Services	Fire Prevention	Hourly Rate	Hourly Rate	Hourly Rate	Hourly Rate	
Line Item Reimbursable	Major Repairs	34,000	34,000	34,000	34,000	34,000
(not to exceed)						

Exhibit "C" To The Sacramento Metropolitan Fire District Agreement

Description	Task	Base Year	Option Year 1	Option Year 2	Option Year 3	Option Year 4
		10/1/04-9/30/05	10/1/05-9/30/06	10/1/06-9/30/07	10/1/07-9/30/08	10/1/08-9/30/09
Labor Section						
Aircraft Rescue and FF	ARFF Dedicated labor	1,334,867	1,517,899	1,593,794	1,673,484	1,824,098
Aircraft Rescue and FF	Administrative 12%	160,184	182,148	191,255	200,818	218,892
Aircraft Rescue and FF	ARFF Structural Labor	1,334,867	1,517,899	1,593,794	1,673,484	1,824,098
Aircraft Rescue and FF	Administrative 12%	160,184	182,148	191,255	200,818	218892
Total Labor Costs		**2,990,102**	**3,400,094**	**3,570,099**	**3,748,604**	**4,085,980**
F/Y 06/07 and 07-08 Labor Cost assumes 5% annual inflation 08-09 assumes 9% annual inflation.						
Other Section Cost						
Vehicle Maintenance	Routine Maintenance	16,000	16,800	17,640	18,522	19,448
ARFF/Structural	Dispatch Services	17,098	17,098	17,098	17,098	17,098
ARFF/Structural	Facilities	23,802	23,802	23,802	23,802	23,802
ARFF/Structural	Support Equipment	9,967	11,733	12,282	12,859	13,502
ARFF Response Unit (1996 E One Titan)	Unit Reimbursement	73,205	73,205	73,205	73,205	
Total Annual Costs		**3,130,174**	**3,542,732**	**3,714,126**	**3,894,090**	**4,159,830**
Other Services **Line Item Reimbursable (not to exceed)**	Fire Prevention Major Repairs	Hourly Rate 34,000	Hourly Rate 34,000	Hourly Rate 34,000	Hourly Rate 34,000	34,000

APPENDIX B

UCD/MNRC EMERGENCY ORGANIZATIONAL CHART

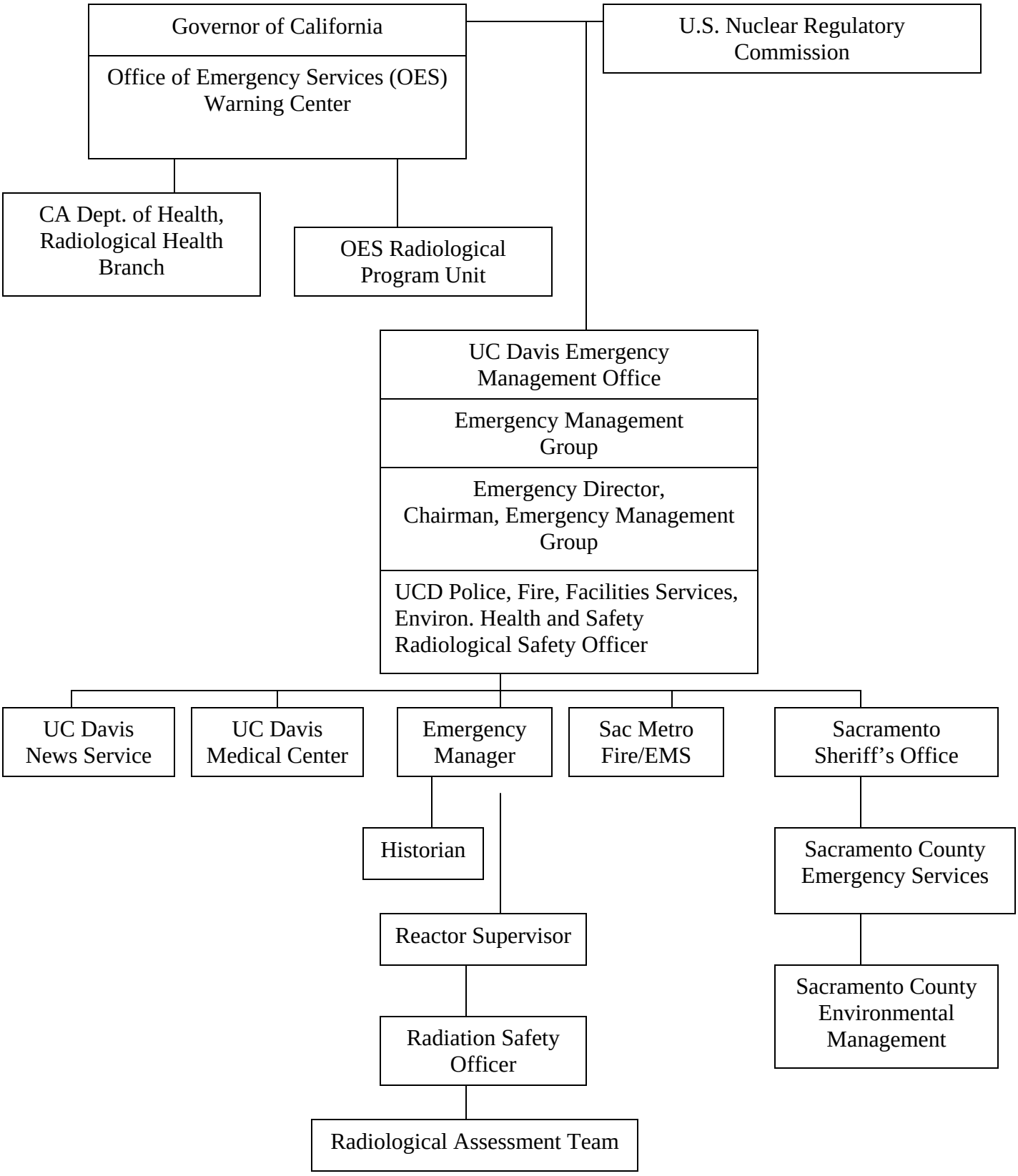


Figure B-1
UCD/MNRC Emergency Organization

APPENDIX C

List of Emergency Implementation Procedures

UCD/MNRC Emergency Operating Procedures; MNRC-0018-DOC

UCD/MNRC Emergency Procedures for Emergency Response Personnel

Class O Emergency – Personnel and Operational Events, MNRC-0078-DOC

Class I Emergency – Notification of Unusual Events, MNRC-0079-DOC

Class II Emergency- Alerts, MNRC-0080-DOC

APPENDIX D

UCD/MNRC EMERGENCY NOTIFICATION FORM

In the event of an emergency at the UCD/MNRC, this form shall be used for notification of off-site authorities.

1. Caller ID: _____

2. Caller's Title: _____

3. Caller's Telephone No.: _____-_____-_____

4. Facility Docket No.: 50-607

5. Location of Emergency: _____

_____

_____

6. Date of Emergency Initiation: _____

7. Time of Emergency Initiation: _____

8. Description of Emergency: _____

_____

_____

_____

_____

_____

9. Emergency Class: _____

10. Type and Quantity of Radionuclides Released or Expected to be Released: _____

_____

_____

APPENDIX E – List of Figures

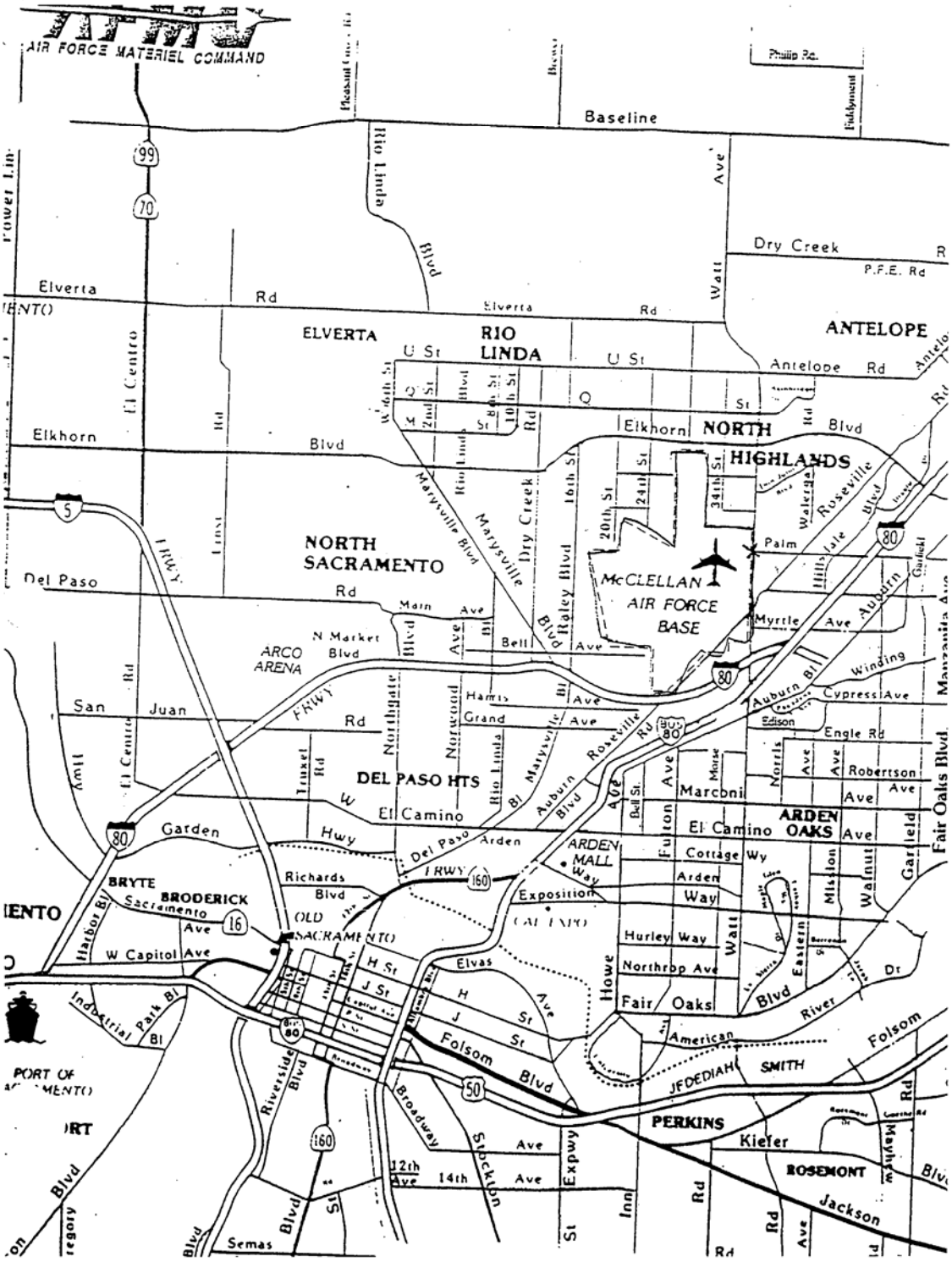
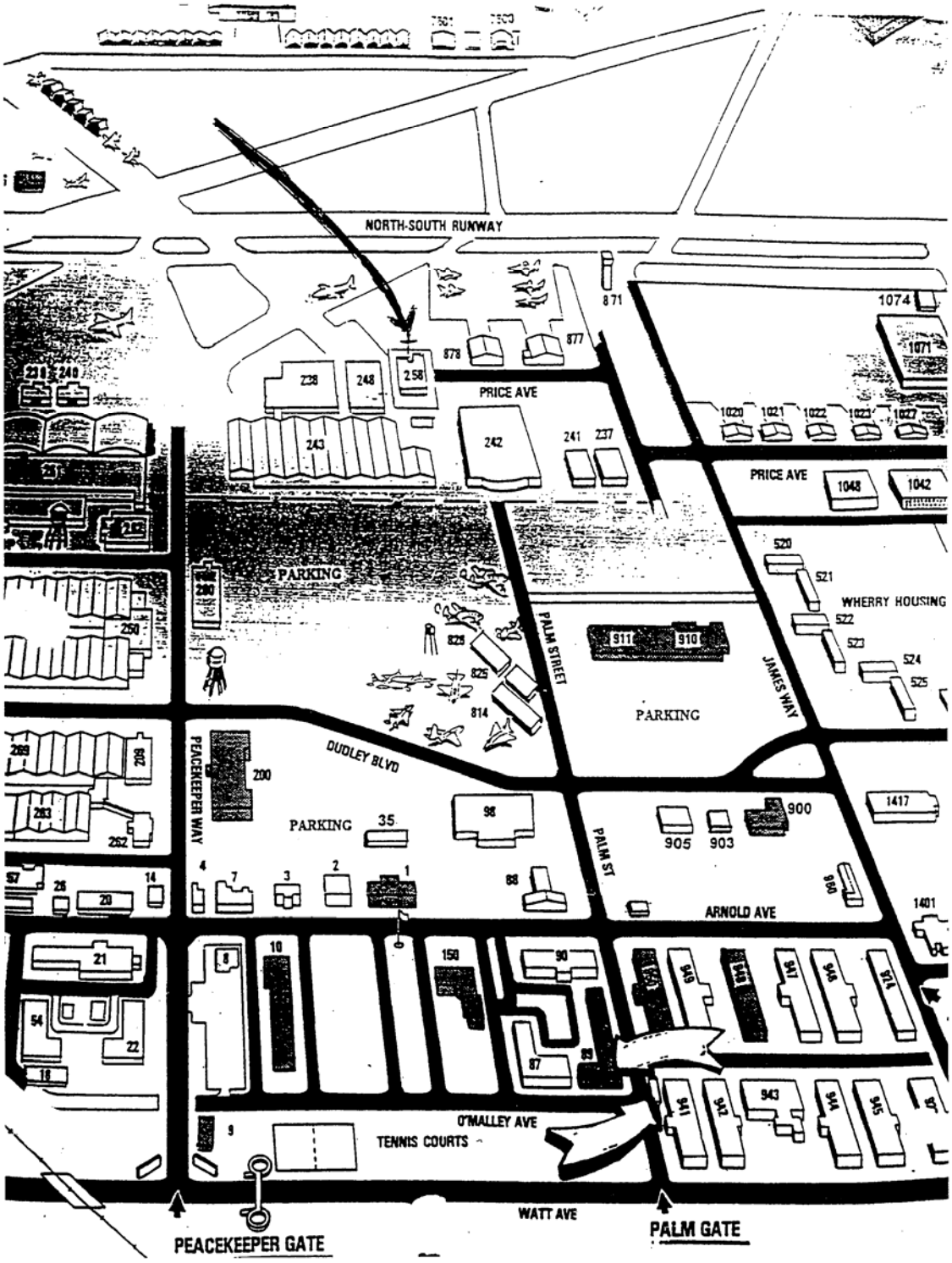


Figure E-1

Rev 08
May 2006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PRICE AVE
PARKING
PALM STREET
JAMES WAY
WHERRY HOUSING
DUDLEY BLVD
PEACEKEEPER WAY
PARKING
PALM ST
ARNOLD AVE
O'MALLEY AVE
TENNIS COURTS
WATT AVE
PEACEKEEPER GATE
PALM GATE

Figure E-2

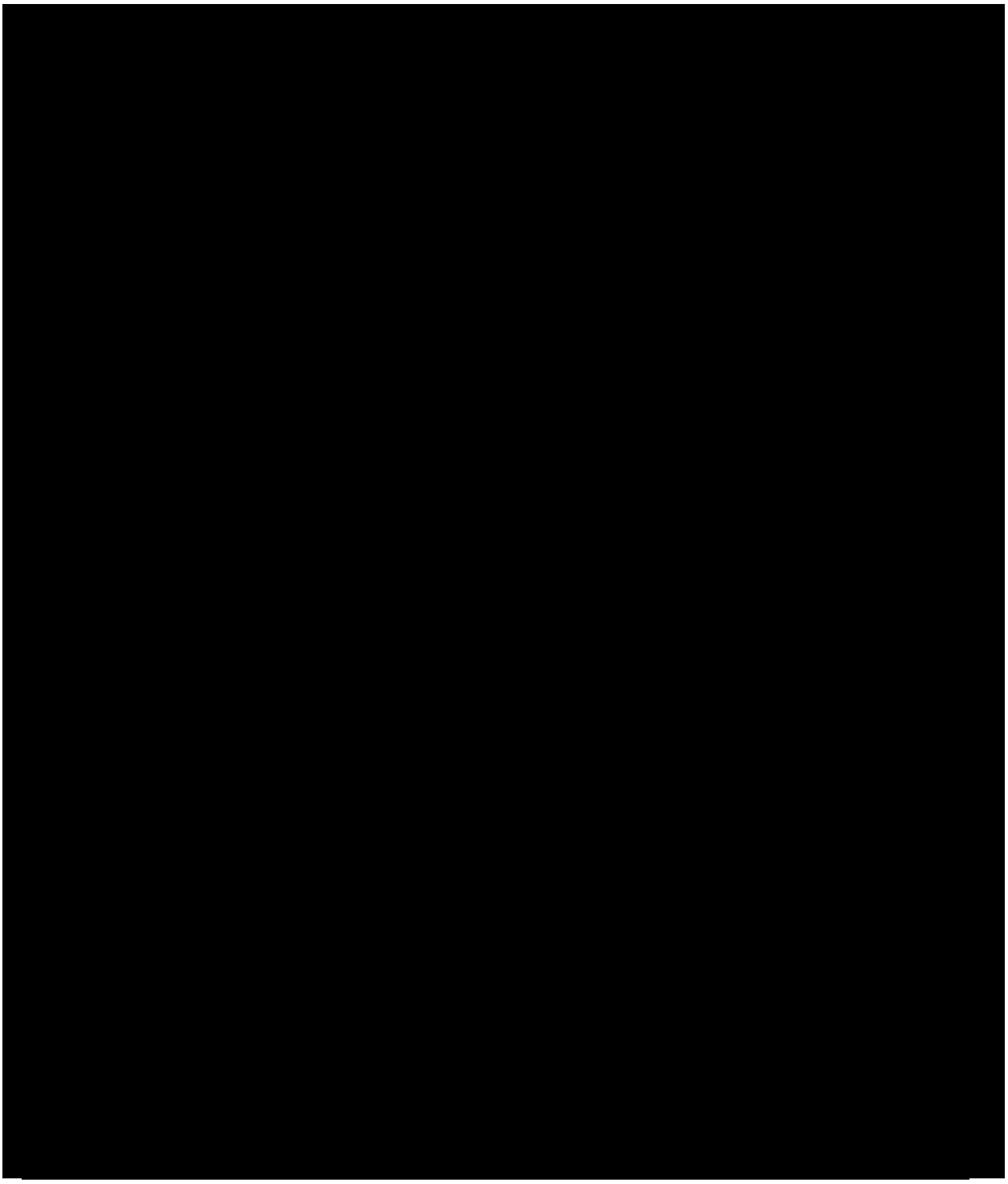

Figure E-3

Figure E-4

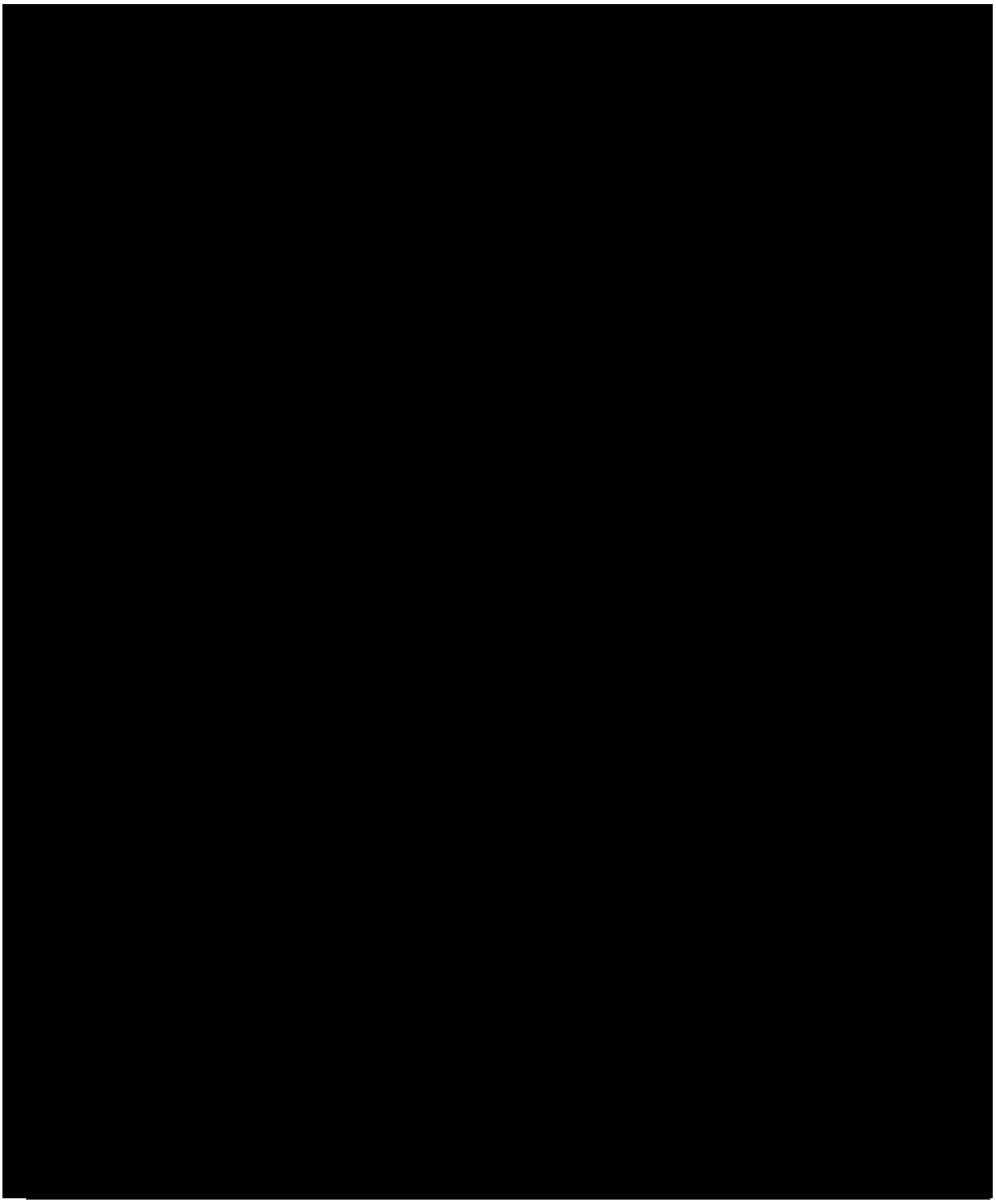

Figure E-5

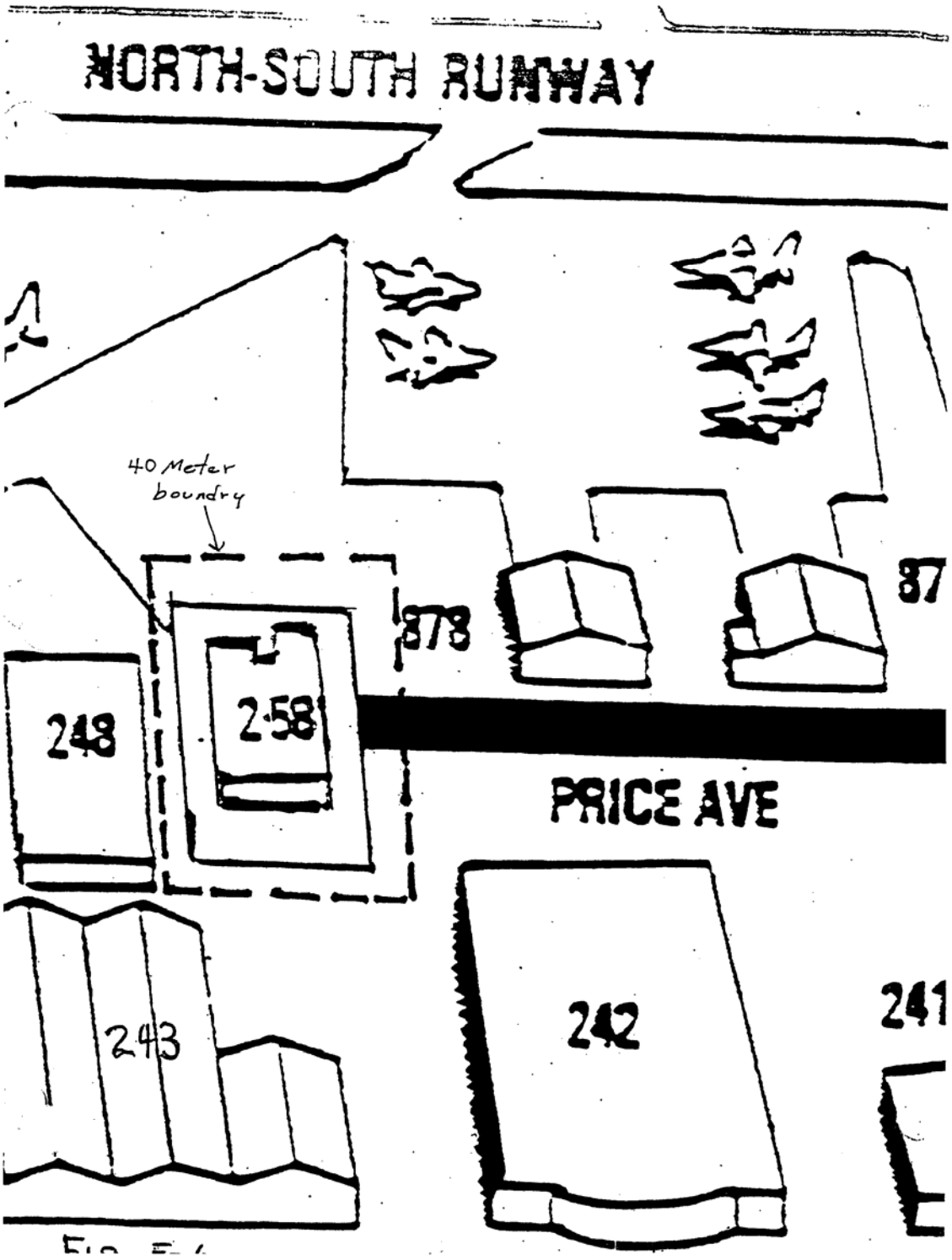
NORTH-SOUTH RUNWAY
40 Meter boundry
248
258
PRICE AVE
243
242
241

Figure E-6