



# AEROTEST OPERATIONS, INC.

3455 FOSTORIA WAY • SAN RAMON, CA 94583 • (925) 866-1212 • FAX (925) 866-1716

July 1, 2021

ATTENTION: Document Control Desk  
U.S. Nuclear Regulatory Commission  
White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2738

AEROTEST RADIOGRAPHY AND RESEARCH REACTOR  
DOCKET NO. 50-228/LICENSE NO. R-98.

Updated Emergency Plan

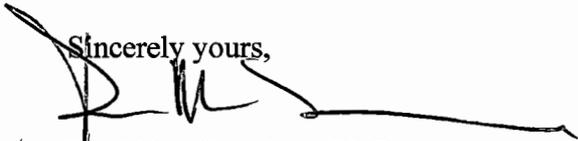
Ladies and Gentlemen:

Enclosed please find the updated Emergency Plan for ARRR. (R-98). The changes comply with 10 CFR 50.54 q(3). This updated plan does not reduce the predecessor's effectiveness (dated March 23, 2020); the changes are mainly administrative in nature. Therefore, the enclosed document is placed into service. (This document does not contain safeguards information.)

I declare under penalty of perjury that the statements made in the enclosures are correct and truthful to the best of my knowledge.

Should you have any questions or require additional information regarding this submission, please contact AO President David M. Slaughter, Ph.D. at (801) 631 5919 or [dmsraven@gmail.com](mailto:dmsraven@gmail.com)

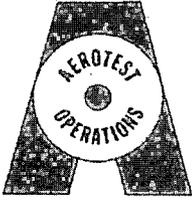
Sincerely yours,

  
David M. Slaughter, Ph.D.  
President, Reactor Administrator and Manager  
Aerotest Operations, Inc.

AX45  
NRR

Enclosures:

1. ARRR Emergency Plan



# AEROTEST OPERATIONS, INC.

3455 FOSTORIA WAY • SAN RAMON, CA 94583 • (925) 866-1212 • FAX (925) 866-1716

## Aerotest Radiography and Research Reactor

DOCKET NO. 50-228/LICENSE NO. R-98.

### Emergency Plan For Possession Only

Accepted June 30, 2021

  
\_\_\_\_\_  
Radiation Safety Officer

  
\_\_\_\_\_  
President, Reactor Admin.

## I. INTRODUCTION

The purpose of this emergency plan is to define and classify credible radiological and facility emergencies and the required response to those emergencies to minimize their consequences. The content of this plan will serve as a guide for the development and implementation of appropriate emergency procedures.

The facility is owned and operated by Aerotest Operations, Inc. a subsidiary of Nuclear Labyrinth, LLC. The Aerotest Operations is located in Danville, CA. It is accessible from Interstate 680 via Crow Canyon Road, east, Camino Ramon and Fostoria Way. The ARRR (NRC License No. R-98) is a permanently shut down TRIGA reactor. The ARRR pool stores the irradiated zirconium hydride TRIGA fuel elements enriched to <20% in  $^{235}\text{U}$  until their removal.

The ARRR facility consists of a controlled radiation area with a total floor area less than 10,000 square feet. The building is located inside a security fence and the property is surrounded on three sides by fenced industrial property (see Figure I). Public access to the facility is thereby restricted and minimized. Based on storage and transfer possible single-element accidents, there is no event at the ARRR which could result in exposure to the general public greater than that allowed by 10 CFR 20, App. B, Table II, for unrestricted areas. Emergency planning, therefore, need only address consequences occurring within the ARRR property boundary. These consequences are limited to radiological exposure or contamination to ARRR personnel or visitors.

## II. DEFINITIONS

- **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.
- **Emergency Action Levels:** Specific instrument readings, or observations; radiological dose or dose rates; or specific contamination levels of airborne, waterborne, or surface-deposited radioactive materials that may be used as thresholds for establishing emergency classes and initiating appropriate emergency measures.
- **Emergency Classes:** Emergency classes are classes of accidents grouped by severity level for which predetermined emergency measures should be taken or considered.
- **Offsite:** The geographical area that is beyond the site boundary.
- **Onsite:** The geographical area that is within the site boundary.
- **Site boundary:** The geographical area owned by Aerotest Operations (Fig I).
- **Protected Area:** The geographical area encompassed by the perimeter fence (Fig I).
- **CAA:** Controlled Access Area is the entire area in the buildings (except area 46, Fig 1)
- **Operation Area:** The high bay area in the building (Fig I).
- **Pool Enclosure:** The area inside the concrete shield (Fig I).
- **Main Gas Shutoff:** Main gas shutoff is located outdoors between rooms 8 and 10 (Fig 1)

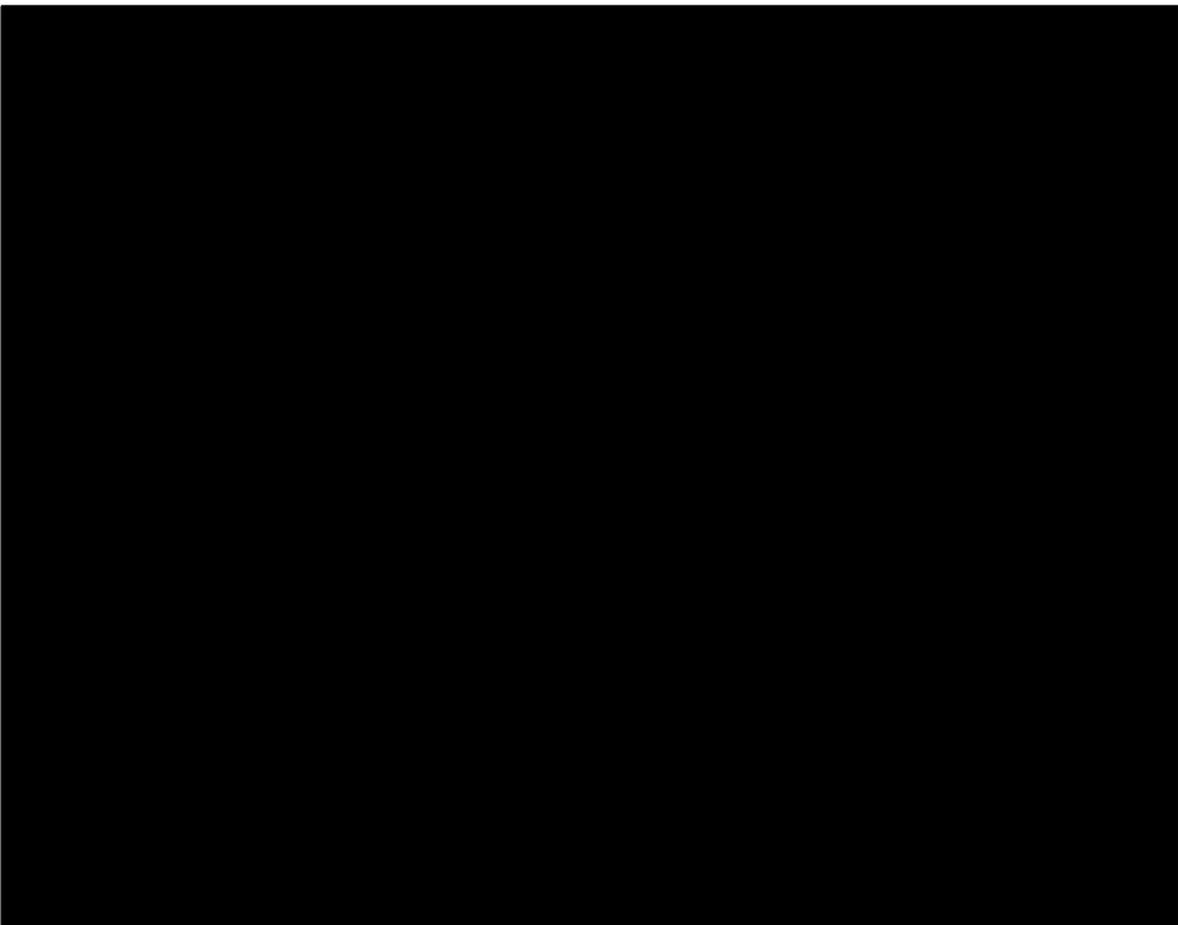


Figure 1. Aerotest Site and Boundary Layout

### III. ORGANIZATION AND RESPONSIBILITIES

#### A. Organizational Philosophy

Aerotest Operations, Inc., is currently composed of fewer than 10 people located in one building. All activities are related to the performance of storage/transfer services. Based on these considerations it is clear that an elaborate emergency organization is neither possible nor desirable. This section of the Emergency Plan is therefore designed to define prime areas of responsibility while retaining the flexibility dictated by a small staff.

#### B. Organizational Structure

The organizational chart for Aerotest Operations, Inc. is shown in Figure II.

#### C. Emergency Responsibilities

##### 1. Emergency Coordinator

The President of Aerotest Operations, Inc. shall serve as the Emergency Coordinator. In his absence, the Reactor Administrator shall serve in the case of a facility emergency and the Radiological Safety Officer shall serve in the case of a radiological emergency. The Emergency Coordinator shall be in charge of all emergency operations including the following items:

- Emergency Preparedness
- Determination of Emergency
- Communications
- Scheduling
- Assignments
- News Media and Public Interface
- Emergency Termination and Recovery Actions

##### 2. Radiological Control

The Radiological Safety Officer shall be responsible for radiological assessments on and off site and for authorizing any radiation exposures in excess of 10 CFR 20 limits. In his/her absence, the President shall have this authority.

##### 3. Offsite Assistance

An analysis of the maximum credible accident indicates that any radiological emergency which could occur at the ARRR would be sufficiently inconsequential as to preclude the need for outside radiological assistance. Therefore, only two outside agencies are required from an emergency standpoint. These are the fire department and a hospital as shown in Figure III.

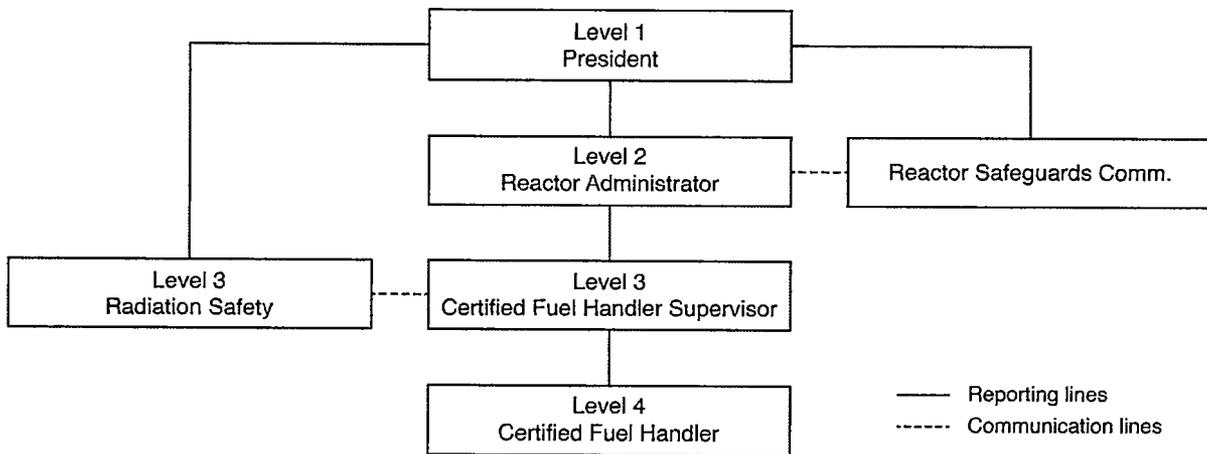


Figure II. ARRR ANSI/ANS-15.1 Organization

The San Ramon Valley Fire Protection District is trained in radiological assistance and will respond and assist ARRR personnel. Stanford Health Care Valley Care Medical Center in Pleasanton has facilities for medical treatment of persons contaminated by either chemical or radiological agents.

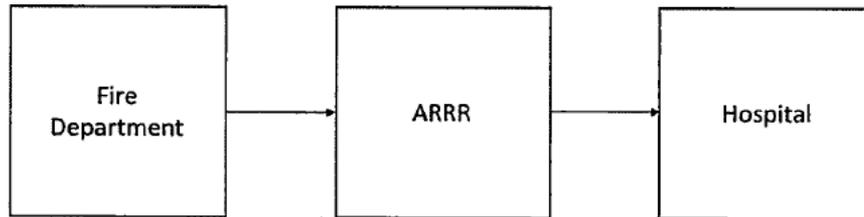


Figure III. Offsite Agency Interface

#### 4. Emergency Notification

Agencies whose assistance is not required should nevertheless be notified depending on the incident circumstances. A list of agencies that may be notified is included below. (Notification requirements are included in the Emergency Procedures.)

- Contra Costa County Health Services
- Contra Costa County Sheriff
- California Highway Patrol
- U.S. Nuclear Regulatory Commission
- California Department of Public Health
- Federal Bureau of Investigation
- Radiological Assistance - State of California
- Radiological Assistance - Dept. of Energy

#### 5. Automatic Alarm System

The ARRR facility uses a sophisticated alarm system supplied and monitored by the Denalect Alarm Company in Walnut Creek. Denalect uses a polling computer which monitors [REDACTED], fire, and radiation. Denalect then notifies pre-determined ARRR personnel and agencies as shown in Figure IV.

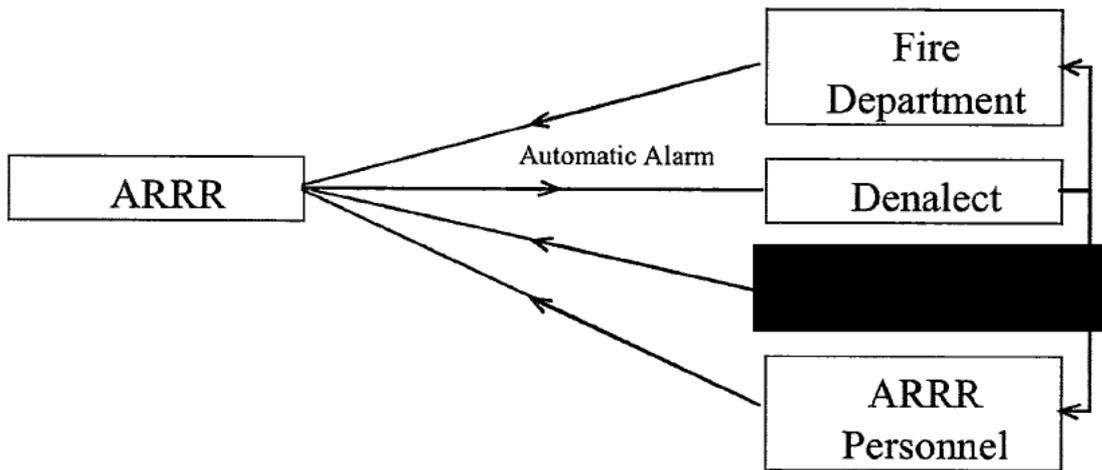


Figure IV. Automatic Alarm System

D. Program Maintenance

Both the Emergency Plan and Emergency Procedures shall be reviewed and updated, if required, on a biennial basis.

IV. EMERGENCY CLASSIFICATION SYSTEM

A. Emergency Classification Philosophy

As discussed in Appendix A (Planning Basis), there is no credible set of events which could result in emergency conditions of a severity greater than the emergency classification of "Notification of Unusual Events" as defined in ANSI/ANS-15.16. Accordingly, the emergency classes listed herein are subsets of that classification.

B. Facility Emergency

A facility emergency is an event of the type listed below which causes or could cause a major disruption of facility operation but would not result in significant radiological impact.

- Fire
- Earthquake Resulting in Damage to the fuel storage pool
- Bomb Threat

- Pool Tank Rupture

#### C. Radiological Emergency

A radiological emergency is an event of the type listed below which results in significant radiation levels and/or radioactivity levels in air or water and/or smearable contamination.

- Smearable Surface Contamination > 10 mr/hr per 100 cm<sup>2</sup>
- High Radiation Level (>100 mr/hr as monitored in the control room)
- High Water Radioactivity (>200 mr/hr as measured by the water monitor)
- High Air Radioactivity (>20 mr/hr as measured by the air monitor)

#### D. Emergency Procedures

The Emergency Procedures shall include:

- Organization
- Coordination
- Emergency Types and Responses
- Communications
- Equipment
- Training

#### V. EMERGENCY ACTION LEVELS

Emergency action levels are based on specific occurrences which result or could result in unusually high radiation exposure, ingestion, or contamination. Emergency response, as defined procedurally, shall be initiated when any of the conditions listed in IV.C. are met.

#### VI. EMERGENCY RESPONSE

##### A. Activation of Emergency Organization

Based either on emergency action levels defined in this plan or on other factors, the Emergency Coordinator will declare an emergency. The most severe emergency possible for the ARRR is defined in IV.A. Lower levels of severity may be established procedurally. Upon declaration of an emergency, ARRR personnel shall assemble in the control room. If assembly in the control room is not possible the Emergency Coordinator shall choose an alternate area. At such time, response to the emergency shall be defined and assignments made by the Emergency Coordinator.

##### B. Notifications

A notification list is maintained in the Emergency Procedures. The control room radiation monitor automatically alerts the alarm company. During on-shift hours the alarm-monitor calls Aerotest Operations to confirm the alarm before notifying the appropriate outside agencies. During off-shift hours alarm-monitor notifies pre-determined ARRR personnel and outside agencies.

C. Assessment Actions

The three radiation monitors which are required for assessment activities have readouts in the control room. These are:

1. Water Monitor
2. Air Monitor
3. Area Radiation Monitor

Assessment actions are based on information obtained from these instruments and from various portable radiation monitors maintained in the control room.

D. Corrective Actions

No credible emergency exists for the ARRR which has significant impact on the health and safety of personnel or the general public. Corrective actions will be determined on a case to case basis.

E. Protective Actions

1. Evacuation and Assembly

Personnel will be notified of an emergency by the public address system or by audible alarm systems. They will evacuate work areas and, unless otherwise instructed, proceed to the appropriate assembly area. In case of fire, the primary assembly area is across the street.

2. Personnel Accountability and Segregation

Personnel accountability will be accomplished by visual observation in the assembly area. Contaminated personnel will be segregated and decontaminated.

3. Facility Isolation

Individual areas of the facility may be isolated by locking or barricading doors.

VII. EMERGENCY FACILITIES AND EQUIPMENT

A. Emergency Support Center

The Emergency Support Center is located in the control room.

## B. Assessment Facilities

The following items (located in control room) may be used to assist in emergency assessment:

1. Control Room Radiation Monitor
2. Air Monitor
3. Water Monitor
4. G/M Survey Meters
5. ARRR Earthquake Alarm
6. Alarm System

## C. First Aid and Medical Facilities

First aid and medical facilities are available for emergency purposes.

### 1. Equipment

- First Aid Kit (control room)
- Stretcher (admin. office)
- Company Vehicle

### 2. Medical Facility

- Stanford Health Care ValleyCare Medical Center (Pleasanton) with facilities for treating contaminated personnel. The hospital agreement is included in Appendix D.

### 3. Transportation

- Ambulance
- Company Vehicle for contaminated personnel

## D. Communications

### 1. Telephone

Telephone service provides the primary communication mode. If company phones are disrupted, ARRR personnel cellular phones are available.

### 2. Alarm System

An alarm system is connected to the alarm company which in turn alerts appropriate agencies as required. Automatic backup is a part of the system.

## VIII. RECOVERY

Since no credible emergency exists for the ARRR which has significant impact on the health and safety of personnel or the general public, recovery actions will be determined at the time.

## IX. MAINTAINING EMERGENCY PREPAREDNESS

### A. Training

1. As stated in IV.A (Emergency Classification Philosophy), no credible set of events could exceed the planning guide classification of "Notification of Unusual Events." A training/refresher course shall be given on an annual basis and will be attended by all ARRR personnel. Training is based on the criteria of the Standard Operating Procedure "III. – General Emergency Procedures."
2. Drills shall be conducted on a randomly timed, twice yearly basis during the monthly tests of the various alarms.
3. All non-employees shall be issued dosimeters if they are to enter a restricted area. Each visitor shall be instructed as to their required response to alarms.

### B. Communication and Notification Verification

1. The notification list will be checked for accuracy annually.
2. Automatic alarm functions shall be checked quarterly.
3. Review discussions of emergency interface requirements shall be held annually with the San Ramon Valley Fire Protection District.
4. An ARRR representative shall contact Stanford Health Care/ValleyCare Medical Center annually to verify facility readiness.

### C. Plan Review and Update

1. The Emergency Plan shall be reviewed on a biennial basis. If revision is necessary all changes shall be reviewed and approved by the President, Aerotest Operations. A revised copy shall be submitted to the Nuclear Regulatory Commission if the changes are of such nature as to require submittal.
2. Emergency Plan shall be made available to all personnel. An official up-to-date copy shall be retained in the control room.

### D. Equipment Maintenance

1. All equipment which is essential for emergency assessment and response is covered under ARRR Maintenance Procedures. Calibration, testing, and repair are thereby controlled.

APPENDIX A. SAMPLE RADIATION ACCIDENT CARE AGREEMENT



**AEROTEST OPERATIONS, INC.**

3455 FOSTORIA WAY • SAN RAMON, CA 94583 • (925) 866-1212 • FAX (925) 866-1716

**RADIATION ACCIDENT CARE AGREEMENT**

Aerotest Operations, Inc., and Stanford Health Care ValleyCare have agreed on the following conditions concerning the admittance to Stanford Health Care ValleyCare hospital of radiation-exposed or contaminated individuals requiring medical treatment.

1. Individuals not contaminated will be accepted at the emergency entrance at 5555 W. Las Positas Road, Pleasanton, CA.
2. Contaminated individuals shall be isolated. Aerotest Operations shall inform Stanford Health Care ValleyCare prior to arrival so that potentially contaminated patients can be directed to the de-contamination room at the side entrance to the emergency room for isolation and decontamination during treatment.
3. Aerotest Operations personnel will be responsible for decontaminating all individuals before arrival at Stanford Health Care ValleyCare except in instances where any delay will have serious medical consequences.
4. Aerotest Operations shall insure that all individuals exposed to or contaminated by radiation will be accompanied by a qualified health physicist with appropriate survey instruments when delivered to the hospital.
5. The health physicist shall assist the Stanford Health Care ValleyCare staff in the control of contamination and shall be responsible for the complete decontamination of the area and personnel, cleanup and disposal of waste, and all associated fees, if necessary.

The current workman's compensation insurance carrier is State Fund, P.O. Box 7980, San Francisco, CA 94120-7980.

/s/

\_\_\_\_\_  
 Scott Gunderson  
 President  
 Stanford Health Care ValleyCare

\_\_\_\_\_  
Date

/s/

\_\_\_\_\_  
 David M. Slaughter, PhD  
 President  
 Aerotest Operations, Inc.

\_\_\_\_\_  
Date