

MATERIALS LICENSE

Amendment No. 25

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 39, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

91080

Licensee

In accordance with letter dated
February 19, 19923. License number 34-19089-01 is amended
in its entirety to read as follows:

1. Advanced Medical Systems, Inc.

2. 1020 London Road
Cleveland, OH 44110

4. Expiration date December 31, 1994

5. Docket or
Reference No 030-16055/040-08764/030-171546. Byproduct, source, and/or
special nuclear material7. Chemical and/or physical
form8. Maximum amount that licensee
may possess at any one time
under this license

A. Cobalt-60

A. Solid Metal

A. 150,000 curies

B. Cobalt-60

B. Sealed sources
(teletherapy/radiography
sealed sources which have
been evaluated and
approved for commercial
distribution by the NRC
or an Agreement State)B. 135,000 curies
(no single source
to exceed 13,700
curies)

C. Cesium-137

C. Sealed sources
(teletherapy/radiography
sealed sources which
have been evaluated and
approved for commercial
distribution by the NRC
or an Agreement State)C. 40,000 curies
(no single source
to exceed 2,200
curies)

D. Depleted Uranium

D. Nickel Plated

D. 4,040 kilograms

E. Cobalt-60

E. Sealed Sources

E. 15,000 curies

F. Cobalt-60

F. Sealed Sources
(any sealed source
approved by the NRC or
an Agreement State)

F. 15 millicuries

240104

9. Authorized Use

A. For storage and training of licensee personnel in the manufacture of
NRC approved sealed sources. This license does not authorize manufacture of
sealed sources for distribution.

3/1/93

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License number

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030-160 140-08764/030-17154

Amendment No. 25

9. (Continued)

- B. For installation, maintenance of, dismantling and servicing of Picker Corporation and Advanced Medical Systems, Inc. teletherapy units and Picker Model 6145 radiography units possessed by licensees authorized to possess the radioactive material pursuant to a specific license issued by the Commission or an Agreement State. For installation and removal of sealed sources into Picker Corporation, Advanced Medical Systems, Inc. and Keleket Barnes teletherapy units of licensees authorized to possess the radioactive material pursuant to a specific license issued by the Commission or an Agreement State. For training Hospital or Clinic personnel for in-house service operations on teletherapy equipment, on unit model per course, in accordance with letter dated August 15, 1988 and September 29, 1988.
- C. For installation, maintenance, dismantling and servicing of Picker Corporation and Advanced Medical Systems radiography and teletherapy units of licensees authorized to possess the radioactive material pursuant to a specific license issued by the Commission or an Agreement State.
- D. Shielding material in Picker Corporation and Advanced Medical System, Inc., radiography and teletherapy devices.
- E. For storage only, those non-NRC approved sources in the possession of the licensee prior to the issuance of this amendment.
- F. For use in devices (including Tech OP Model 571 Calibrator described in application dated November 12, 1984) approved by the Nuclear Regulatory Commission or an Agreement State to calibrate radiation survey instruments.

CONDITIONS

- 10. Licensed material in Items 6.A, 6.E. and 6.F shall be used only at the licensee's facility at 1020 London Road, Cleveland, Ohio. Licensed material in Items 6.B. and 6.C. shall be used only at 1020 London Road, Cleveland, Ohio and at facilities of customers who possess a specific license from the NRC authorizing possession of the licensed material. Licensed material in Item 6.D. shall be used only at the licensee's facilities at 1020 London Road, Cleveland, Ohio or 121 North Eagle Street, Geneva, Ohio, and at facilities of customers who possess a specific license from the NRC authorizing possession of the licensed material.
- 11. A. The Radiation Protection Officer for service operations described in Subitems 9.B and 9.C and routine health physics activities is Mark Loeser.

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11. B. Licensed material shall be used by, or under the supervision of and in the physical presence of users listed in the table below. The users are only authorized to perform the indicated services on the teletherapy or radiography units specified in the table below:

AMS/PICKER TELETHERAPY/RADIOGRAPHY UNITS MODELS

	CS 60C	C 1000	C 2000	C 3000	C 5000	C 10,000	C4	C8	C9	C12	Cyclops
USER											
Edmond											
DeRosa				3			1,2	1,2	1,2	1,2	1,2
Curtis											
Perry				3	1,2	1,2	1,2	1,2	1,2		1,2
William											
Turbett	2,4	4	4	2	2,4	2,4	2,4	2,4	2,4	2,4	2,4
Ginzel	5	5	5	5	5	5	5	5	5	5	5
Haddock	5	5	5	5	5	5	5	5	5	5	5

AMS/PICKER TELETHERAPY/RADIOGRAPHY UNITS MODELS

	V 1000	V 2000	V 3000	V 10,000	C V4	C V9
USER						
Edmond						
DeRosa		1,2	1,2	★	1,2	1,2
Curtis						
Perry		1,2	1,2	1,2	1,2	1,2
William						
Turbett		2,4	2,4	2,4	2,4	2,4
Ginzel	5	5	5	5	5	5
Haddock	5	5	5	5	5	5

1. Authorizes the servicing of AMS/Picker units, excluding source exchange.
2. Authorizes sealed source exchange.
3. Authorizes removal of unit and head from customer sites only.
4. Authorizes the training of AMS personnel in the manufacture of AMS/Picker sealed sources.
5. Authorizes the handling of sealed sources only.

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License number	34-19089-01
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12. A. (1) Each sealed source acquired from another person and containing licensed material, other than hydrogen-3, with a half-life greater than 30 days and in any form other than gas shall be tested for contamination and/or leakage before use. In the absence of a certificate from a transfer or indicating that a test has been made within 6 months before the transfer, a sealed source received from another person shall not be put into use until tested.
- (2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries or less of beta and/or gamma emitting materials or 10 microcuries or less of alpha emitting material.
- (3) Except for alpha sources, the periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage before any use or transfer to another person unless they have been leak tested within 6 months before the date of use or transfer.
- B. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to use or transfer as a sealed source. If the inspection or test reveals any construction defects or 0.005 microcurie or greater of contamination, the source shall not be used or transferred as a sealed source until it has been repaired, decontaminated and retested.
- C. Each sealed source containing licensed material, other than hydrogen-3, with a half-life greater than 30 days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed 6 months except that each source designed for the purpose of emitting alpha particles shall be tested at intervals not to exceed 3 months.
- D. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of the device in which the sealed source is permanently or semipermanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission. Records may be disposed of following Commission inspection.
- E. If the test required by Subsection A. or C. of this condition reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region III, 799 Roosevelt Road, Glen Ellyn, Illinois 60137, ATTN: Chief, Nuclear Materials Safety Branch, describing the equipment involved, the test results, and the corrective action.

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13. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
14. Inventory Requirements:
- A. An inventory system will be established that accounts for the receipt, movement, transfer and disposal of all radioactive material possessed under this license. Records of inventories will be maintained for 10 years from the date of each inventory.
 - B. A complete examination of records will be completed every six months to confirm the location of all radioactive material and ensure that possession is within the limits specified in this license.
 - C. A physical inventory of all radioactive material possessed under this license will be conducted on or before March 31, 1993. Thereafter, a physical inventory of all radioactive material possessed under this license will be completed within 60 months of the previous physical inventory.
 - D. The following schedule of activities will be accomplished to complete the physical inventory on or before March 31, 1993:
 - i. By May 31, 1992, a contractor will be selected for the installation of the hot cell ventilation system.
 - ii. By August 31, 1992, the hot cell ventilation system will be installed, tested and declared operational.
 - iii. By September 30, 1992:
 - a. AMS staff will be trained on the handling of sealed sources and performance of hot cell operations in accordance with the AMS training procedures by an organization authorized by the NRC or an Agreement State to handle sealed sources and perform hot cell operations; and
 - b. Physical inventory of the cesium-137 sealed sources will be accomplished.
 - iv. By March 31, 1993, physical inventory of the remaining radioactive material possessed under this license will be accomplished.
15. The licensee's field service audits (as described in the ATC Medical Group Management Plan, revised April 1, 1989, and submitted with letter dated April 17, 1989) shall be performed unannounced by the Radiation Protection Officer (i.e., Radiation Safety Officer).

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16. The licensee shall follow the recommended survey frequencies outlined in Regulatory Guide 8.21, Revision 1, October 1979, in work areas when radioactive materials are handled or used.
17. The licensee shall maintain records of information important to safe and effective decommissioning at 1020 London Road, Cleveland, Ohio, per the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.
18. The licensee shall maintain and execute the response measure of their Emergency Plan dated October 25, 1991, and revised January 1992 and May 27, 1992. The licensee shall make no change in the emergency plan submitted pursuant to 10 CFR 30.32(i) that would decrease the effectiveness of the plan without prior Commission approval. The licensee may make changes to its Emergency Plan without prior Commission approval if the changes do not decrease the effectiveness of the plan. The licensee shall maintain records of changes that are made to the plan without prior approval for a period of three years from the date of the changes and shall furnish the Chief, Medical, Academic, and Commercial Use Safety Branch, Division of Industrial and Medical Nuclear Safety, NMSS, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, and the appropriate NRC Regional Office specified in Appendix D of 10 CFR 20, a report, within six months after the change is made, containing a description of each change.
19. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.
 - A. Application dated November 12, 1984;
 - B. Letters dated November 12, 1984 (excluding Item 4), February 12, 1985, June 7, 1985 (excluding letter Item 4), September 6, 1985 (excluding change to Page 29 of ISP-1 manual);
 - C. Letters dated May 29, 1986 (Response to Enclosure A, Significant Licensing Deficiencies of NRC letter dated March 7, 1986);
 - D. Letter dated July 23, 1986 (Response to Enclosure B, Additional Licensing Issues for Renewal Applications of NRC letter dated March 7, 1986) excluding approval of the licensee's in-house training program;
 - E. Letters dated August 22, 1986, October 28, 1986, November 13, 1986, November 14, 1986, and December 4, 1986 (with Revised ISP-1 Manual, Appendices A and B attached), May 7, 1987, August 3, 1987, December 31, 1987, January 15, 1988 (Item V only), August 15, 1988 (with attached course manual), September 29, 1988 (with attachments) and November 21, 1988; and

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- F. Letters dated March 29, 1989 (except Section 3.4 "Hot Cell Entry and Action Levels"), April 7, 1989, August 25, 1989 (except Item B(4)), July 23, 1990 (except Sections 3.0 and 5.0 of ISP-14 procedure), March 1, 1991 (with attachments) March 27, 1991 (with attachments), May 9, 1991, May 14, 1991, February 27, 1992, February 28, 1992, March 2, 1992, and March 5, 1992.



For the U.S. Nuclear Regulatory Commission

Date:

7/30/92

By

John R. Mad

Materials Licensing Section, Region

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(FOR LFMS USE)
INFORMATION FROM LTS

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: PROGRAM CODE: 03211
: STATUS CODE: 0
: FEE CATEGORY: 36 3P 3N 28
: EXP. DATE: 19941231
: FEE COMMENTS: SEC_4/22/87_TELECON
: .....

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A. REGION

APPLICANT/LICENSEE: ADVANCED MEDICAL SYS., INC.
RECEIVED DATE: 901109
DOCKET NO: 3016085
CONTROL NO.: 391080
LICENSE NO.: 24-19089-01
ACTION TYPE: AMENDMENT

AMOUNT: \$ 100.00
CHECK NO.: 100

Add'l Info to
C/N 90791 per
Wayne Slawinski

P. Lolloff
2-28-96

1. FEE CATEGORY AND AMOUNTS:

AMENDMENT
RENEWAL
LICENSE

SIGNED _____
DATE _____

LESSON 5 OF 15 ENTERED
FEE NOT REQUIRED
10/10/10 390-791



Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 810-4272-183

November 6, 1990

Emergency Room
Huron Road Hospital
13951 Terrace Road
Cleveland, OH 44112

RE: Advanced Medical Systems, Inc.
1020 London Road
Cleveland Emergency Pre-Plan

Gentlemen:

Enclosed please find a draft of Advanced Medical Systems' revised Emergency Pre-Plan. We welcome your comments and suggestions by January 7, 1991. A final draft will be sent to you after all comments have been received. Please retain the enclosed set of maps for your files.

In addition, we are happy to give members of your staff your biennial tour of our London Road facility. Please contact me at (216) 466-4671 to arrange for your tour.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Sherry J. Stein
SHERRY J. STEIN
Director of Regulatory Affairs

SJS/mz
Enclosures

cc: USNRC Region III w/enc.

RECEIVED BY LFMS	
Date	3/1/91
Log	Mar 4 III
By	Reg
Date Completed	3/7/91

additional info 390791
FEE NOT REQUIRED

CERTIFIED MAIL #P228723978
RETURN RECEIPT REQUESTED

RECEIVED

NOV 09 1990

REGION III

91080



Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 810-4272-183

November 6, 1990

Pre-Plan Captain Ray Masarik
Cleveland City Fire Department
1645 Superior
Cleveland, OH 44114

RE: Advanced Medical Systems, Inc.
1020 London Road
Cleveland Emergency Pre-Plan

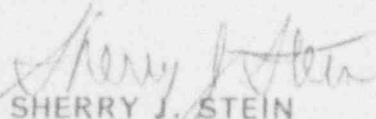
Dear Capt. Masarik:

Enclosed please find a draft of Advanced Medical Systems' revised Emergency Pre-Plan. We welcome your comments and suggestions by January 7, 1991. A final draft will be sent to you after all comments have been received. Please retain the enclosed set of maps for your files.

In addition, we are happy to give members of your staff your biennial tour of our London Road facility. Please contact me at (216) 466-4671 to arrange for your tour.

Should you have any questions, please do not hesitate to contact me.

Sincerely,



SHERRY J. STEIN
Director of Regulatory Affairs

SJS/mz
Enclosures

cc: USNRC Region III w/enc.

CERTIFIED MAIL #P228723975
RETURN RECEIPT REQUESTED

91090



Advanced Medical Systems, Inc.

1020 London Rd.
Cleveland, Ohio 44110
1-800 321-5803

EMERGENCY PRE-PLAN

ADVANCED MEDICAL SYSTEMS, INC.
1020 London Road
Cleveland, OH 44110

Rev. October, 1990

91080

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EMERGENCY CONTACT PERSONNEL
Advanced Medical Systems, Inc.

AMS Personnel: [Update for Final Release]

Emergency Civil Response Agencies

Huron Road Hospital - Emergency Room 13951 Terrace Road, Cleveland, OH 44112	(216) 761-4242
Cleveland Fire Department, Dial 9-1-1 or	621-1212
Cleveland Police Department, Dial 9-1-1 or	621-1234
Cleveland Ambulance - Emergency Medical Service - Dial 9-1-1 or	623-4545
Ohio State Highway Patrol	587-4305
ADT Security Services	526-9539
Ohio Disaster Service Agency	(614) 889-7157
Nuclear Regulatory Commission Region III	(708) 790-5500
Operations Center	(202) 951-0550

ADVANCED MEDICAL SYSTEMS, INC.

I. EMERGENCY PRE-PLAN

1.0 INTRODUCTION

Advanced Medical Systems, Inc. (AMS), located in Cleveland, Ohio, manufactures and fabricates sealed sources of Cobalt-60 for teletherapy and radiography machines manufactured by its Geneva, Ohio division. AMS is licensed by the U.S. Nuclear Regulatory Commission (NRC) under License No. 34-19089-01. This license authorizes possession of up to 300 kCi of Cobalt-60 for manufacture, installation, and servicing of sealed sources. AMS' license also permits possession of up to 40 kCi of Cesium-137.

1.1 Purpose

This Emergency Pre-Plan was prepared to establish responsibilities and operational procedures in the event of an emergency at Advanced Medical Systems, Inc. located at 1020 London Road, Cleveland, Ohio.

2.0 SITE DESCRIPTION

Advanced Medical Systems is a controlled-access building located in an industrial/residential neighborhood at 1020 London Road, on the east side of Cleveland. AMS occupies approximately 25% (1925m²) of the total floor space of 8000m² including the southeastern end of the building which contains the hot cell. The remainder of the building is not currently being used. There are three (3) floors in the facility. The main floor includes an office area, an Isotope Shop area, a Hot Cell, a shielded work room, a storage area, and miscellaneous unoccupied areas.

The second floor includes additional unoccupied office space, a mechanical equipment room, and the Exhaust Ventilation Equipment Room. The basement includes a former Dry Waste Storage Area, a Liquid Waste Holding Room, additional unoccupied space, and a former liquid waste holdup tank (WHUT) room.

AMS, with the permission of the NRC, sealed the Waste Holdup Tank (WHUT) Room. It is routinely monitored.

AMS has established a temporary dry waste storage area on the south side of the warehouse area. The waste is stored in a locked room with rope barriers delineating the area as restricted. The building is monitored by ADT Security Services ("ADT").

An emergency response kit is stored in the fire pumphouse located on Mandalay Avenue approximately 300 feet west of the London Road facility. The contents includes the items listed in Attachment 1.

2.1 Description of the Hot Cell

The hot cell is designed to manufacture sealed Cobalt 60 sources used for medical teletherapy and industrial radiography, with the teletherapy sources containing activities in the kilocurie range.

The hot cell is square with an inner dimension of 6 feet, extends to a height of 11 feet and has 5½-foot-thick concrete walls and 4-foot-thick floor and ceiling. A stainless steel floor pan lines the cell floor and its inside walls are lined with a ¼-inch steel plate. The cell is closed at the rear by a 42-ton hinged door which provides a full 6-foot wide entrance into the cell when open.

Numerous small access ports are located on the front and side faces of the cell. Observation of all operations is possible through a 60-inch-thick glass and zinc bromide window. Remote handling is accomplished with a pair of manipulators and a 2-ton capacity overhead crane.

All cell operating controls are located on the outside of the cell so that normal operation, other than pass box operations, do not require entry into the controlled isotope shop area. The isotope shop may be observed from the cell control area through a window by the southeast corner of the cell and in line with mirrors placed against the south wall of the isotope shop. An intercom system is utilized to communicate between the isotope shop and cell control area.

When Cobalt-60 pellets are received, they are shipped in a G.E. cask weighing 6,300 lbs. The cask, its base, and protective jacket weigh 8,100 lbs. total. The cask is placed in the hot cell for remote removal of the cobalt pellets.

The cobalt targets are removed from the cask by use of manipulators. After the cobalt is removed from the cask, the cask is removed from the cell, so that sources can be built.

2.2 Attached Maps

Location of Facility: Attachment 2
First Floor: Attachment 3
ADT System Layout - First Floor: Attachment 4
Second Floor: Attachment 5
ADT System Layout - Second Floor: Attachment 6
Roof Layout: Attachment 7
Basement: Attachment 8

3.0 TYPE OF ACCIDENT - FIRE, EXPLOSION OR MEDICAL EMERGENCY

Fire, explosions and medical emergencies are covered by specific procedures beginning on Page 6.

4.0 CLASSIFICATION

- a) Alerts - unusual event. No notification of actions by emergency response agencies required.
- b) Site Area Emergency - Notification received. Action required.

5.0 DETECTION OF UNUSUAL EVENTS/ACCIDENTS

- a) Visual by employee.

b) All safety and monitor devices are connected to an alarm panel in the control area. Since six of the eight separate lights for each controlled item are always lit on the panel, faulty operation of the panel itself is indicated by the absence of light. When a controlled item malfunctions, the six lit alarm lights increase in intensity and the other two light up to indicate a specific problem. The lights remain on until an acknowledgement button is depressed. An audible alarm also sounds on the first and second floors until acknowledged. This type of alarm will, therefore, indicate the difficulty even though it has corrected itself before the operator has checked the panel. The alarm signal will be erased only when the acknowledgement button has been depressed.

Alarms for fan shutdown, excessive heat or cold are also transmitted to ADT so that malfunctions during non-working hours are reported to a responsible person.

6.0 MITIGATION OF CONSEQUENCES

The building is equipped with an ADT 24-hour supervisory electronics monitoring and alarm system as well as two wet pipe sprinkler systems. Both carbon dioxide and dry chemical extinguishers are located throughout the building. All fire detection alarms are transmitted to the ADT central station. Also included are burglar alarms, sprinkler valve tamper switches, sprinkler overflow, ventilation system shutdown, a manual pull alarm (located outside of the airlock area), fire pump operation, and fire pump power failure.

The air handling system is under continuous control by a monitoring and safety system. The air sampling tube is mounted across a diameter of the air exhaust block about 8 feet above the roof level. An air monitor located in the clean equipment room draws a continuous sample of 5cfm minimum for analysis. The recorder and alarm panel are located in the hot cell control area. Any increase of activity above the preset level immediately stops the exhaust fans and the supply fan. The control system also includes alternative shutdown of either exhaust fan if a sudden pressure drop occurs across its absolute filters, indicating rupture to the filter media.

The operation of the air handling equipment, the monitoring equipment and the liquid waste facilities is insured in the event of electrical power failure by a natural gas burning emergency generator with automatic rapid changeover. An emergency lighting system is also powered by this generator.

7.0 ASSESSMENT OF RELEASES

- Air monitoring surveys
- Probes
- Survey meters
- Friskers

8.0 RESPONSIBILITIES

The Radiation Safety Officer ("RSO") or designated alternate will notify off-site response as necessary providing:

- a) their name and that they are calling from Advanced Medical Systems at 1020 London Road;

- b) a brief description of the type of problem;
- c) a brief description of the location of the problem.

The RSO or designated alternative is to remain on the telephone until the response agency hangs up.

9.0 NOTIFICATION AND COORDINATION

The RSO or designated alternate will work with off-site response organizations in the event of an emergency organizations and will assist them in setting up a traffic control point.

Not later than 1 hour after an emergency is declared, the RSO or designated alternate will notify the NRC Region III at (312) 790-5500.

10.0 INFORMATION TO BE COMMUNICATED

The RSO or designated alternate will communicate to emergency organizations:

- a) the location of the emergency;
- b) the type of emergency;
- c) recommended protective actions, if necessary; and
- d) that a 5mR dosimeter should be used.

11.0 TRAINING

The RSO or designated alternate will, on an biennial basis, offer facility tours to fire, police, medical and other emergency personnel to familiarize them with the site specific emergency procedures.

AMS personnel will be similarly trained.

See Section II, AMS Fire/Explosion/Medical Emergency Procedures.

12.0 SAFE SHUTDOWN

Following any necessary decon work, the facility will be restored to safe condition after an incident.

13.0 EXERCISES

Quarterly communication checks to check and update all necessary telephone numbers with off-site response organizations and biennial on-site exercises to test response are performed.

14.0 HAZARDOUS CHEMICALS

Not applicable, although personnel are trained under Emergency Planning and Community Right-To-Know and are also trained in the use of Material Safety Data Sheets.

II. FIRE/EXPLOSION/MEDICAL EMERGENCY PROCEDURES

1.0 PURPOSE

This procedure is intended to define Advanced Medical Systems' administrative actions on discovery of a fire, explosion, responses to fires, use of fire alarms as well as medical emergencies.

2.0 SCOPE

This procedure applies to fire, explosion, or medical emergency within AMS' London Road facility during working hours as well as procedures to be followed by responding authorities during non-working hours.

3.0 RESPONSIBILITY

- a) The Radiation Safety Officer (RSO) or a designated alternative will review this procedure with the Cleveland City Fire Department and Cleveland City Police. This plan shall be periodically updated and verified for correct information.
- b) All training of affected personnel will be the responsibility of the Director of Regulatory Affairs or a designated alternate.
- c) No one shall make any public announcements/statements concerning an emergency situation except the Director of Regulatory Affairs or designated alternate.
- d) A review and update of all names and telephone numbers of personnel listed in this plan will be on a quarterly basis and will be the responsibility of the Director of Regulatory Affairs.
- e) Any responsibility or action item assigned to an individual in this procedure may be performed by a designated alternate.

4.0 RSO EMERGENCY RESPONSIBILITIES

- Personnel evacuation
- Fire prevention
- Fire/safety inspections (monthly by consultant)
- Safety Committee Meetings (monthly)
- Fire Fighter information assistance
- Overseeing of salvage operations (post emergency)

5.0 DEFINITIONS

5.1 Fire

Fire or Combustion is an exothermic, self-sustaining reaction involving a solid, liquid, and/or gas phase fuel. The process is usually associated with the emission of light. For purposes of this procedure, any incident that has potential to escalate into a fire condition or non-radiological emergency life-threatening situation shall be acted upon as a fire.

- a) It is the policy of AMS that fire fighting by personnel be limited to fighting incipient stage fires. Incipient stage fires are defined as fires that can be controlled or extinguished with portable fire extinguishers or 1½" hose streams without the use of self-contained breathing apparatus or personal protective equipment.

5.2 Classification of Fire Extinguishers

See Attachment 9.

6.0 EMERGENCY CONTACT PERSONNEL

See Page 1.

7.0 GENERAL EMERGENCY PROCEDURES

7.1 Reporting An Emergency - General

In the event of an emergency, the following action should be taken by the person reporting such emergencies.

7.2 Applicability

All personnel on AMS property are responsible to report life or property-threatening emergencies.

7.3 Fire During Working Hours

The individual who discovers the fire shall:

- 1.) Promptly notify the Radiation Safety Officer and nearby personnel through the intercom system at the nearest available telephone.
- 2.) The ADT Security Services 24-hour supervisory electronics monitoring sound alarm system will call AMS prior to notifying the Fire Department.
- 3.) Evacuate building and proceed to assigned area.
- 4.) The Radiation Safety Officer or designated alternate will notify the Cleveland City Fire Department at 621-1212. The RSO is to provide the following information:
 - a) State your name and that you are calling from Advanced Medical Systems at 1020 London Road.
 - b) Describe of the location of the fire.
 - c) Describe of the type of fire; i.e., what is burning.
 - d) The approximate fire conditions; e.g., smoke only, smoke with flames, rolling smoke, etc.
 - e) A description of any personnel injuries.

- f) If safe to stay at the telephone, will answer all questions and let the person answering hang up before you do.

PROVIDE EMERGENCY ASSISTANCE IF ABLE TO DO SO.

7.4 Fire or Explosion During Unoccupied Hours

1.) Background

The 1020 London Road, Cleveland, Ohio facility is equipped with an ADT Security Services 24-hour supervisory electronics monitoring and alarm system. In the event of a fire or explosion, the signal is automatically transmitted to the ADT Central Office and the proper response civil service group (Cleveland Fire and Police Departments) is immediately notified. During working hours or periods when AMS personnel are occupying the facility, ADT also calls this location. During periods when the building is unoccupied, ADT calls key AMS emergency response personnel.

2.) Procedures

a.) In the event that local fire and police response groups reach the facility before the designated AMS representative, they have been advised to remain outside the building until either the AMS representative or the designated Cleveland City Fire Department Radiation Officer arrives.

b.) In the event of the emission of detectable quantities of smoke or other gases, response personnel and agencies should remain upwind of the emergency site. Police should establish road blocks to prevent normal civilian traffic from passing through the downwind area.

c.) Upon arrival, the AMS representative should confer with the civil authorities as to the nature of the emergency and establish a control point.

d.) Verify the existence and location of radioactive materials.

e.) Using locator floor plans, determine whether the fire/explosion is in restricted or non-restricted areas.

f.) If fire/explosion involves a restricted area, obtain emergency protection and detection equipment from the AMS pumphouse storage point.

g.) Primary entry personnel should be issued and instructed in reading a survey meter and pocket dosimeters in order to make an initial radiation hazard survey. Pocket dosimeters must be zeroed prior to use. If radiation levels are acceptable, then additional firefighters may be authorized to enter. Fire-fighters must wear respiratory protection - SCBA type.

h.) The best method of fire suppression in restricted areas would be determined by both professional firemen and AMS personnel. The method chosen should be the one least likely to spread contamination.

i.) All firefighting personnel should be monitored for contamination upon exiting the facility before leaving the site.

j.) Exit contamination surveys will be performed to insure that the facility has been restored to a safe condition after an accident.

8.0 MEDICAL EMERGENCIES

The individual discovering the emergency shall notify the RSO who, in turn, shall:

1.) Call the Cleveland Ambulance Emergency Medical Services at 623-4545 and/or provide the following information:

- a) Your name and that you are from Advanced Medical Systems located at 1020 London Road.
- b) Describe the problem.
- c) Answer all of their questions and let them hang up before you do.

PROVIDE EMERGENCY ASSISTANCE IF ABLE TO DO SO.

The first aid supplies are located in the Chemistry Lab.

9.0 MINOR INJURIES

1.) Administer first aid to the injured victim. First aid kits are located in First Floor Areas 10 and 12.

2.) Call or have an emergency call placed for ambulance service (623-4545) and notify the Huron Road Hospital (761-4242) of its impending arrival.

3.) If within the limits of good emergency treatment, move the injured person out of the restricted area (shaded area on Attachments 3 and 5, Drawings A9-P-0063 and 0062).

- a.) Using a Frisker, assess the injured person for possible radioactive contamination.
- b.) Remove contaminated clothing or cover patient with clean plastic and tape wrap.

4.) If victim cannot be moved from the restricted area, the following procedures should be followed:

- a.) Secure all sources of radiation near the location and access path to the victim.
 - b.) Roll out a Kraft paper path or similar clean floor covering to the victim for emergency response traffic.
 - c.) Using a survey meter, determine the radiation dose rates in the response area.
 - d.) Using a Frisker, assess the person for possible radioactive contamination.
 - e.) Meet the emergency response team at the entrance and inform them of the situation including:
 - 1.) Nature of injury
 - 2.) Location
 - 3.) Dose rates
 - 4.) Contamination level
 - 5.) Need for exit contamination surveys
 - f.) Escort the response team to the victim and advise of potential exposure points along the access path.
 - g.) Conduct exit contamination survey to insure that the facility is in safe condition after an accident.
- 5.) Prepare the transport vehicle for use by spreading plastic sheets in the area to be occupied by the patient.
 - 6.) Accompany the patient to the hospital if no further emergency exists or if backup AMS response personnel are at the AMS site.
 - a.) The following equipment should be transported with the patient:
 - 1.) Survey meter
 - 2.) Frisker
 - 3.) Plastic waste bags and tape
 - 7.) Inform the ambulance personnel that an AMS representative should supervise the decontamination of the transport vehicle before its next response.

10.0 POLICE EMERGENCIES

The individual discovering the emergency shall notify the RSO who, in turn, shall:

- 1.) Call the Cleveland City Police Department at 621-1234.
 - a) State your name and that you are from Advanced Medical Systems, Inc. located at 1020 London Road.
 - b) Describe the problem.

c) Answer all questions and let them hang up before you do.

11.0 EVACUATION PROCEDURE

11.1 Decision

The decision to evacuate any section of the facility because of fire or other occurrence will be made by the RSO or his/her designee.

11.2 Notification

If time permits, the RSO will notify the Engineering Manager located at the Geneva, Ohio office that a portion of the building has been evacuated.

11.3 Evacuation

- 1.) Each employee will, if possible, shut off any electrical equipment being used including the coffee pot, before evacuating the premises.
- 2.) Supervisory personnel will assemble their personnel in the parking lot and stand ready to assist in the control of the emergency.
- 3.) The RSO is responsible for the communication of information to all personnel concerning the resumption of plant operation following an evacuation.

11.4 Training

It is the responsibility of the RSO to inform each employee of their emergency evacuation exit and their alternative exit(s).

11.5 Equipment Alarms

ADT maintains and is responsible for all fire detection and security equipment. ADT conducts monthly inspections and performs all necessary repairs.

12.0 GENERAL RULES FOR SECURITY BREACHES FOR RESPONDING LAW ENFORCEMENT AGENCIES AND ADT

AMS has ADT Security Service throughout the restricted and non-restricted areas of the London Road facility. During unoccupied hours, this system is armed and breaches of security are electronically transmitted to the ADT office. During occupied hours, these systems are disarmed to avoid the inadvertent transmission of alarm signals by the AMS staff.

12.1 Response

- 1.) During occupied hours, any breach of security will be reported by AMS staff personnel to the Cleveland City Police Department at 621-1234.

- 2.) During unoccupied hours, breaches in security are first detected by the ADT supervisory monitoring system.
- 3.) ADT immediately calls AMS emergency response personnel.
- 4.) ADT security personnel (armed guards) or local law enforcement agencies responding to an ADT call report to the London Road site and await the arrival of either trained emergency response personnel or an AMS representative.
- 5.) An escorted and supervised search of the facility is conducted by the law enforcement officers and either an AMS representative or trained emergency response personnel.
- 6.) If possible, the source of the security breach is determined and the nature or type of security breach recorded.
- 7.) All locks and secured entrances are checked for status. If any of the secured systems have been damaged, they should be repaired before the building is vacated by the AMS representative.
- 8.) All sources of radioactive materials storage are checked to determine tampering or accountability. This includes stored radioactive materials, instrument calibration sources, and any source of depleted uranium shielding.
- 9.) The AMS representative should check the supervisory panel to assure that all systems are functioning properly.
- 10.) If a breach of security into restricted areas is detected, wipes of the floor areas will be taken to determine if any radioactive contamination has occurred.
- 11.) Should either the theft of the radioactive material be detected or the release of radioactive contamination occur as a result of the security breach, the NRC will be notified according to the requirements of 10 CFR 20.
- 12.) Following an all-clear situation, ADT systems are reset before exiting the facility.

13.0 GENERAL RULES FOR AMBULANCE-RESCUE SQUADS

Reference:

Based on DOE/EV-0020, Department of Energy, October 1978

13.1 Background

- 1.) Ambulance-rescue squad personnel are usually the first persons of the medical team to see the case of radiation exposure or radioactive contamination. Their first acts will vary in degree. Trained, knowledgeable co-workers, supervisors, or health physicists are usually on hand.

2.) When the accident has occurred, the health physicist, supervisor, co-workers, and the patient(s) should be able to inform members of the rescue squad of the nature of the accident, number of patients and type of radiation exposure or radioactive contamination involved, and possible body areas that may be affected.

A gross measurement of the amount of radiation involved may be available; such information is most helpful.

13.2 General Rules

It is the responsibility of the rescue squad to:

For the patient:

- 1.) Give lifesaving emergency assistance if needed.
- 2.) Secure pertinent information including any radiation exposure from those in attendance.
- 3.) Determine if physical injury or open wounds are involved. Cover wound with clean dressing; use elastic bandage to hold wound-cover in place; do not use adhesive.
- 4.) Cover stretcher, including pillow, with open blanket; wrap victim in blanket to limit spread of contamination.
- 5.) Notify Huron Road Hospital by radio or telephone of available information.

For rescue squad personnel:

- 6.) Perform survey of clothing, ambulance, etc. on arrival at Huron Road Hospital before undertaking further activity.
- 7.) If contaminated, discard clothing in container marked "Radioactive--Do Not Discard." Cleanse self by washing and/or showering, as appropriate.
- 8.) If in contaminated area, rescue squad personnel must be surveyed by radiation-survey meter; measurements must be recorded. Cleansing must continue until responsible physician indicates person may leave.

14.0 GENERAL RULES FOR PHYSICIANS AND NURSES

References:

Based on DOE/EV-0017, 0018 and 0019, Department of Energy, October 1978

14.1 Background

The content of each set of general rules will vary with the role of the user; i.e., ambulance or rescue squad, emergency room physician or nurse, or hospital administrator. Additional variations in standing orders can occur if a hospital has: (1) a pre-arranged procedure that is periodically updated and tested, (b) a staff of trained physicians, aides, and

technicians, (c) proper radiation-measuring equipment, and (d) available space for isolation use. What follows is directed to meet the situation of a small community or rural hospital.

14.2 General Rules

If the ambulance or rescue squad that picks up the radiation accident case has a radio or telephone, the emergency room will be alerted to expect a patient who may have had radiation exposure or radioactive contamination.

It is the responsibility of the senior hospital emergency room person on duty, nurse, or physician, on receipt of notification of the momentary arrival of a case involving radiation exposure or contamination, to:

- 1.) Notify responsible staff physician or nurse and aides (trained health physicists or trained technicians from x-ray or nuclear medicine departments).
- 2.) Get appropriate survey meter, if one is on hand in the hospital. If hospital has no meter, notify hospital administrator or responsible hospital official so he/she may obtain a survey meter and other pertinent equipment by calling the Police Department.
- 3.) Notify the hospital administrator so he/she may seek expert professional consultation for technical management of the case.
- 4.) If contamination is suspected, prepare separate space, using either isolation room or cubicle if available. Some hospitals use the morgue, since the autopsy table lends itself to washing with water. The morgue entrance would then be used rather than the emergency room. When the morgue is used, the patient and his/her family must be reassured of why that space is used. If no separate space is available, cover a floor area immediately adjacent to the entranceway to the emergency room with absorbent paper. The area must be adequate for stretcher-cart, disposal hampers, and working space for professional attendants. Mark and close off this area. If dust is involved, be prepared to shut off air circulation system to prevent spread of contamination.

Upon ambulance arrival, the responsible physician or nurse in the emergency room should:

- 1.) Check patient on stretcher for contamination (preferably as stretcher is removed from the ambulance) by use of a survey meter.
- 2.) If seriously injured, give emergency lifesaving assistance immediately.
- 3.) Handle contaminated patient and wound as one would a surgical procedure; i.e., gown, gloves, cap, mask, etc.
- 4.) If possible external contamination is involved, save all clothing and bedding from ambulance, blood, urine, stool, vomitus, and all metal objects (e.g., jewelry, belt buckles, dental plates, etc.). Label with name, body location, time, and date. Save each

in appropriate containers; mark containers clearly, "Radioactive-Do Not Discard."

5.) Decontamination should start, if medical status permits, with cleansing and scrubbing area of highest contamination first. If an extremity alone is involved, clothing may serve as an effective barrier and the affected limb alone may be scrubbed and cleansed. Initial cleansing should be done with soap and warm water. If the body as a whole is involved or clothing generally permeated by contaminated material, showering and scrubbing will be necessary. Pay special attention to hair parts, body orifices, and body folds areas. Remeasure and record measurement after each washing or showering. Non-radioactive wash water waste may be flushed into community sewage system. Follow hospital procedures for radioactive liquid waste.

If a wound is involved, prepare and cover the wound with self-adhering disposable surgical drape. Cleanse neighboring surfaces of skin. Seal off cleansed areas with self-adhering disposable surgical drapes. Remove wound covering and irrigate wound with sterile water, catching the irrigating fluid in a basin. Washings can be marked and handled as described in Rule 4 above. Each step in the decontamination should be preceded and followed by monitoring and recording of the location and extent of contamination.

6.) Save physicians', nurses', and attendants' scrub or protective clothing, as described for patients. Nurses, doctors, and attendants must follow the same monitoring and decontamination routing as the patients.

7.) The physician in attendance in the emergency room, if confronted with a highly contaminated wound with dirt particles and crushed tissue, should be prepared to do a preliminary simple wet debridement. An emergency minor surgical set should be used. Further measurements may necessitate sophisticated wound counting detection instruments supplied by the consultant who will advise if further definitive debridement is necessary.

8.) AMS personnel should be able to inform the rescue squad of the nature of the accident, type of radiation exposure or radioactive contamination involved, and possible areas of the body that may be affected. A gross measurement of the amount of radiation involved is always helpful. An AMS representative may come to the hospital with the patient and can be a source of immediate consultation.

9.) The emergency room's nurses' calm, assured, friendly greeting, attitude, and conversations with the patient can be a tremendous aid.

15.0 GENERAL RULES FOR HOSPITAL ADMINISTRATORS

Reference:

Based on DOE/EV-0019, Department of Energy, October 1978

15.1 Background

The hospital administrator, in contrast to other members of the medical team, is particularly concerned with what the situation will do to his/her other patients or to the hospital as a physical plant, and that relationships with community organizations and specialists are vital.

15.2 General Rules

- 1.) The hospital administrator or senior administrator on duty should inform the DOE and other public officials, such as town, city or county, and/or State health departments, police and fire departments, as appropriate. Before any accidents have occurred, he/she should establish telephone contact with appropriate DOE officials. They can always give immediate advice over the telephone on cleanup of accident site, equipment, etc., and put the hospital's physician in immediate contact with a physician-specialist with knowledge of such accidents. The specialist can be on his way to the hospital within minutes of the first telephone contact.
- 2.) The hospital administrator should also know if the community's police or fire departments have survey meters and who has access to stockpiled civil defense supplies. He/she should also know whether police or fire departments in the community clear up public accident sites.
- 3.) The hospital administrator should have the survey meters checked periodically to be sure that the equipment is operating and fresh batteries are available.

16.0 GENERAL RULES FOR HEALTH PHYSICISTS AND RADIOLOGICAL SAFETY OFFICERS

Reference:

(From Saenger, E.L., Medical Aspects of
Radiation Accidents, USAEC, 1963.)

- 1.) When and if an accident is suspected, evacuate personnel and segregate them. Remove all personnel dosimeters and/or film badges immediately from exposed personnel. Read dosimeters and record the reading. Send dosimeters and film badges immediately to a safe area.
- 2.) Notify Radiological Safety Officer who will then activate emergency plan.
- 3.) Close off radiation area. Shut off air conditioning. Seal area if contamination is likely.
- 4.) Evaluate situation in regard to:

- (a) Extent of contamination
- (b) Level of radiation exposure

5.) Save all samples of clothing, blood, urine, stool, vomitus. Label with name, date, time. Send film badges for emergency processing by standard technique.

6.) Portable battery-operated tape recorder will be very useful in collecting and storing information and for obtaining a complete history of the accident. It is often difficult to record all of the events, opinions, and statements available in an emergency situation. The taped records can be typed later, thus providing a more complete history of the accident.

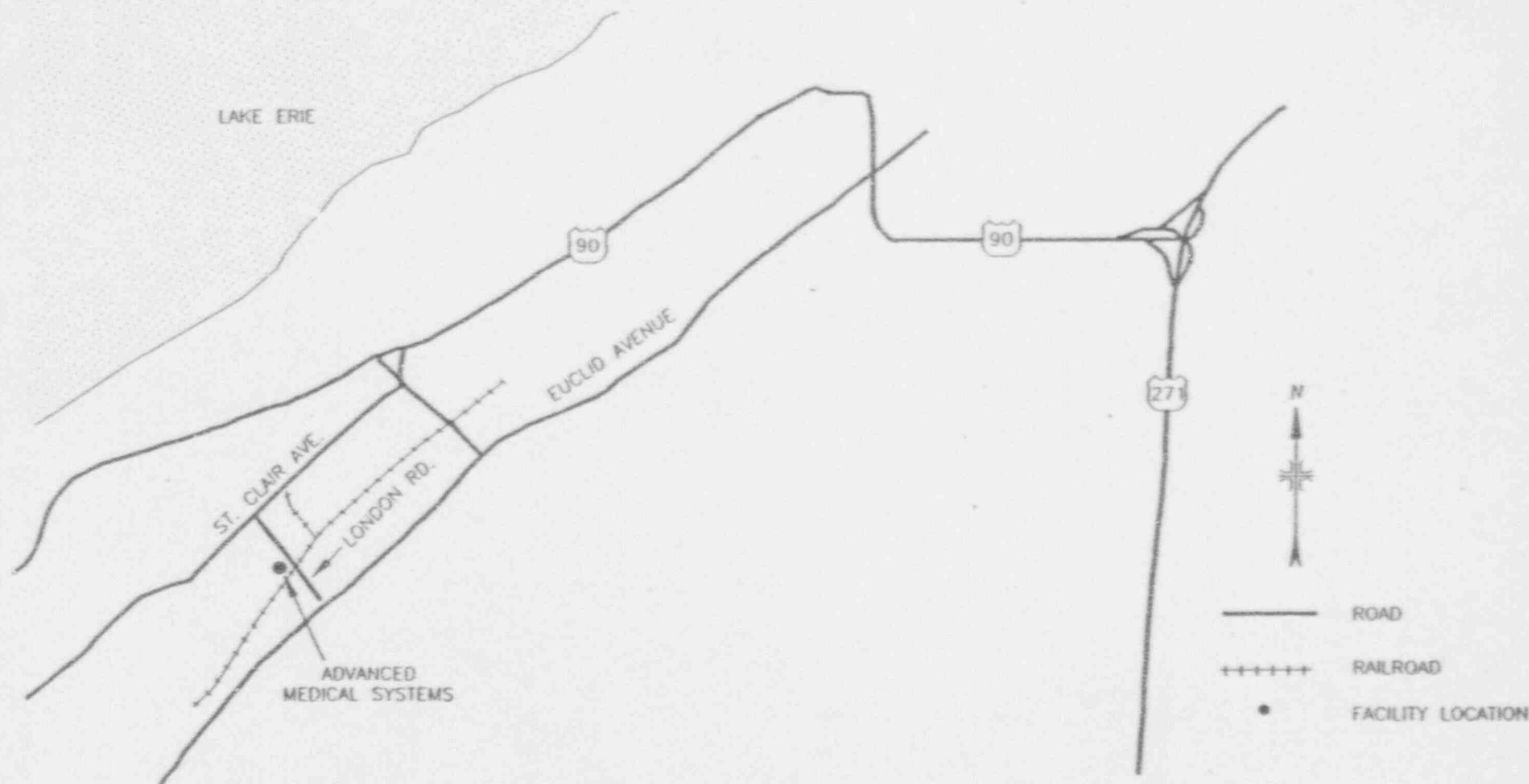
7.) A camera will provide an excellent method of showing exactly what happened. If a movie camera is not available, suitable still photographs will be used.

8.) In a major accident, management should obtain the aid of consulting physicists. These individuals can also be found in neighboring installations and at Perry Nuclear Power Plant and will be essential for the proper handling of the accident during the first week, particularly if it is necessary to work a 24-hour day.

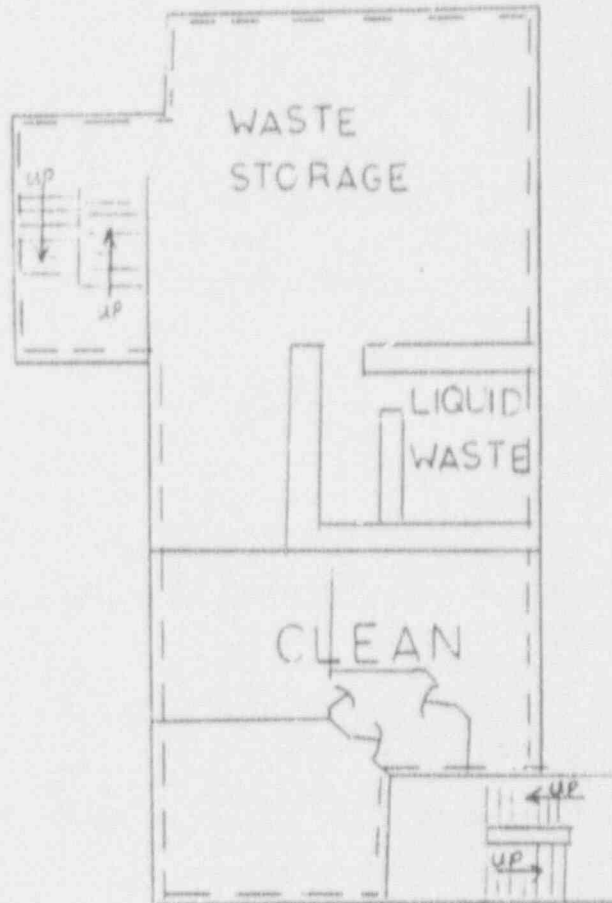
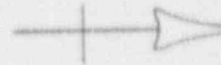
EMERGENCY RESPONSE KIT

Location: Advanced Medical Systems fire pumphouse located on Mandalay Avenue approximately 300 feet west of the London Road facility.

Contents: Frisker
Survey Meter
Flashlight
Batteries for Above
Respirator
Air Sampler
100-foot Extension Cord
Pocket Dosimeters - 200Mr and 5R
Dosimeter Charger
Protective Clothing - Shoe Covers, Head Covers, Coveralls,
Gloves
2-inch Masking Tape
Contamination Wipes, Soap, Spray Bottle
Rope, Signs and Placards
Ziploc Plastic Bags
Polydrum Liners - 6 Mil.
Marking Pens
Graphite Pencils
Survey Data Forms
Facility Drawings
Emergency Phone Numbers
\$3.00 in Quarters
Building Keys



Cleveland, Ohio, Area Indicating the Location of the AMS Facility



-- --INDICATES RESTRICTED AREA
CONTROLLED ACCESS

BASEMENT

SCALE 1/16"

Classification of Fire Extinguishers

Class "A" Fires

Approved Involving

Wood
Paper
Textiles
Rubbish

Characteristics

They are fires in ordinary combustible materials such as wood, paper, textiles, rubbish, etc. where the quenching and cooling effects of the quantities of water or solutions containing large percentages of water is of first importance.

Fire Extinguisher

1. Water Pump
2. Dry Chemical
3. Carbon Dioxide
4. Halon

Class "B" Fires

Approved Involving

Oils
Greases
Paints
Varnish

Characteristics

They are fires of flammable liquids, oils, chemicals, greases, gas, etc. where a blanketing effect is essential.

Fire Extinguisher

1. Dry Chemical
2. Carbon Dioxide
3. Halon

Class "C" Fires

Approved Involving

Live Electrical
Equipment

Characteristics

They are fires of electric equipment where use of non-conducting extinguishing agent is of first importance.

Fire Extinguisher

1. Dry Chemical
2. Carbon Dioxide
3. Dry Chemical

Class "D" Fires

Approved Involving

Burning Metals

Characteristics

They are fires of burning metal, such as depleted uranium.

Fire Extinguisher

1. Dry Powder

JUL 31 1992

Advanced Medical Systems, Inc.
ATTN: Ms. Sherry J. Stein
Regulatory Affairs Officer
1020 London Road
Cleveland, OH 44110

Dear Ms. Stein:

Enclosed is Amendment No. 25 to your NRC License No. 34-19089-01 in accordance with your request.

Please note that we have added License Condition 18. to your license which authorizes your Emergency Plan.

Please review the enclosed document carefully and be sure that you understand all conditions. You must conduct your program involving radioactive materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers; Inspections," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Possess radioactive material only in the quantity and form indicated in your license.
3. Use radioactive material only for the purpose(s) indicated in your license.
4. Notify NRC in writing of any change in mailing address.
5. Request and obtain appropriate amendment if you plan to change ownership of your organization, change locations of radioactive material, or make any other changes in your facility or program which are contrary to your license conditions or representations made in your license application and any supplemental correspondence with NRC. Any amendment request should be accompanied by the appropriate fee specified in 10 CFR Part 170.
6. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date on your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of radioactive material after your license expires is a violation of NRC regulations.

9/080

JUL 31 1992

Advanced Medical Systems, Inc.

2

7. Request termination of your license if you plan to permanently discontinue activities involving radioactive material prior to your expiration date.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations in your license application will result in enforcement action against you in accordance with the General Policy and Procedures for NRC Enforcement Actions, 10 CFR Part 2, Appendix C.

If you have any questions or require clarification of any of the above stated information, contact us at (708) 790-5625.

Sincerely,

John R. Madera
Materials Licensing Section

Enclosure: Amendment No. 25

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

June 1, 1992

Mr. John R. Madera
Materials Licensing Section
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

RE: Your Request for Additional Information Per Control No. 91080;
Revisions to Advanced Medical Systems Onsite Radiological
Contingency Plan, USNRC License No. 34-19089-01

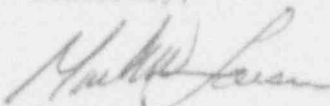
Dear Mr. Madera:

I have reviewed your request for further information regarding "Draft
Regulatory Guide DG-3005."

Enclosed please find several updated pages to be inserted into our "Onsite
Radiological Contingency Plan for the Cleveland, Ohio Facility." Changes
are indicated by a vertical line in the margins of affected pages.

Copies of the letters sent to the relevant government agencies are also
enclosed.

Sincerely,



Mark Loeser
Radiation Safety Officer

ML:jmb
Enclosures

RECEIVED

JUN 05 1992
REGION III

JUN 5 1992

ONSITE RADIOLOGICAL CONTINGENCY PLAN

FOR THE

CLEVELAND, OHIO FACILITY

USNRC LICENSE NO. 34-19089-01

ADVANCED MEDICAL SYSTEMS, INC.

October 25, 1991

Revised May 27, 1992

Approved: _____

Sherry Stein

Sherry Stein
Director of Regulatory Affairs
Advanced Medical Systems, Inc.
121 North Eagle Street
Geneva, Ohio 44041

EMERGENCY CONTACT PERSONNEL
Advanced Medical Systems, Inc.

Mr. Mark Loeser
Mr. Edward Svigel
Ms. Sherry Stein

Radiation Safety Officer
Engineering Manager
Director of Regulatory Affairs

Phone Numbers for AMS Personnel

AMS Geneva	Office: 216/466-4671	
Mark Loeser	Office: 216/692-3269	Home: 216/226-7212
Edmond DeRosa	Office: 216/692-3269	Home: 216/357-1863
Jeff Sizione	Office: 216/692-3269	Home: 216/425-2056
Sherry Stein	Office: 216/466-4671	Home: 216/541-5800
Donna Ely	Office: 216/466-4671	Home: 216/974-2941
Edward Svigel	Office: 216/466-4671	Home: 216/428-6096

Emergency Civil Response Agencies

Meridia Huron Hospital - Emergency Room 13951 Terrace Road, Cleveland 44112	216/761-4242
Cleveland City Fire Department	Dial 911 or 216/621-1212
Cleveland City Police	Dial 911 or 216/621-1234
Cleveland Ambulance - Emergency Medical Services	Dial 911 or 216/623-4545
Ohio State Highway Patrol	216/587-4305
ADT Security Services	216/526-9539
Ohio Emergency Management	614/889-7150
U.S. Nuclear Regulatory Commission - Region III Operations Center	708/790-5500 202/951-0550

REVISION SHEET

<u>Effective Date</u>	<u>Revision Letter</u>	<u>Pages Affected</u>	<u>Description of Change</u>
10/18/91	Initial Release	All	Revised and Reformatted per Reg. Guide DG-3005
1/31/92	Revision "A"	1-7 1-8 2-7 2-8 2-9 3-1 3-2 3-3 4-2 4-3 5-1 5-2 5-5 5-6 6-1 7-1 8-1 8-2 9-1 9-2	Revised to Include Comments of Ohio Emergency Management Agency
5/27/92	Revision "B"	3-1 3-2 5-5 5-6 7-1 7-2	Revised and Reformatted per Reg. Guide DG-3005
	Appendix A: Emergency Contact Personnel Telephone List		Revised to Reflect Current Personnel
		2 3 5 7 9 12 13	Revised and Reformatted per Reg. Guide DG-3005

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Appendix A - Emergency Procedures

Appendix B - Letters to Emergency Agencies Receiving
The Final Version of This Contingency
Plan

3.0 Classes of Radiological Contingencies

3.1 Classification System

The classification system for radiological contingencies is that recommended by the USNRC in their standard format document for radiological contingency plans. Minor changes have been made so that the classification scheme reflects facility-specific conditions.

Section 3.3 of this plan relates the classification scheme to potential accidents within the AMS London Road facility.

3.2 Classification

3.2.1 Class 1 - Alert

Class Description

Events are in process or have occurred which involve an actual or potential minor degradation of the level of safety of the plant. Any releases are expected to be limited to a small fraction of those permitted by 10CFR Part 20.

OffSite License Action

1. Notify Ohio Emergency Management Agency, Columbus, Ohio, providing information contained in OEMA Radiological Incident Response Checklist, Attachment 2 to Emergency Preplan.
2. Notify the NRC Operations Center at (301) 951-0550 within one (1) hour of declaration of alert.
3. Augment resources and bring key personnel to stand-by status
4. Assess and Respond
5. Calculate periodic dose rates for actual release
6. Escalate to a more severe class if appropriate
7. Close out upon completion of duties

3.2.2 Class II - Site Area Emergency

Class Description

Events are in process or have occurred which involve actual or likely failures of plant functions needed for protection of the public. Offsite releases are not expected to exceed those permitted by 10CFR Part 20 except near the site boundary.

License Action

1. Notify OEMA, Columbus, and local authorities of site area emergency status and reason for emergency as soon as discovered. Provide OEMA with information requested in OEMA Radiological Incident Response, Checklist Appendix A, Exhibit 2.
2. Notify the NRC Operations Center at (301) 951-0550 within one (1) hour of declaration of site area emergency.
3. Augment resources and bring key personnel to stand-by status
4. Assess and respond
5. Conduct onsite monitoring
6. Provide dose estimates to offsite authorities for actual releases
7. Provide release and dose projections based on available plant condition information and foreseeable contingencies
8. Close out or reduce class of emergency based on results of actions

3.3 Range of Postulated Accidents

The range of accidents that can be postulated for the AMS London Road facility can be categorized as follows:

- *Radioactive material spills in the hot cell
- *Fire
- *Severe natural phenomenon (earthquake, tornado)

In the event that a radioactive material spill occurred, it will have taken place in the hot cell. All dose and release limits are based on the assumption that the ventilation systems are operating normally since no radioactive handling occurs when the ventilation systems are inoperable.

by personnel under the direction of the RSO. Only personnel designated by the Emergency Manager/RSO will be permitted to enter the area.

Inside the marked area, the RSO will determine the extent and location of contamination and will appropriately mark those areas. Once the areas have been marked and decontamination operations have begun, full scale recovery operations will commence. In order for the facility to return to normal use, contamination must be controlled to the extent that personnel exposure will not exceed normal limits:

Loose surface contamination levels:

Restricted Areas	<40,000 DPM/100cm ²
Unrestricted Areas	<220 DPM/100cm ²

5.5 Exposure Control in Radiological Contingencies

The primary goal of radiological contingency response is to control personnel exposure. In the event of an emergency, however, it may be necessary for members of the emergency response team to receive exposures up to the EPA guidelines: i.e. less than 75 Rem for either a lifesaving action or less than 25 Rem for entry into hazardous areas to protect the facility or control fires.

5.5.1. Emergency Exposure Control

For any accident involving Cobalt ⁶⁰, emergency workers are required to wear appropriate respiratory equipment. To remove injured persons, undertake corrective actions, perform assessment actions or provide first aid, exposures will be limited to 75 Rem. Preliminary decontamination of non-life threatening injured personnel will occur prior to transport, so that the medical and ambulance service personnel exposure will be less than 3 Rem in the event the injury is life threatening. The primary emphasis is on medical attention and secondary emphasis on decontamination. A total exposure of 75 Rem will be allowed for lifesaving activities.

5.5.2 Radiation Protection Program

The Emergency Manager/RSO is the only individual who can authorize workers to receive emergency radiation doses. During the emergency, trained workers will carry survey meters to determine dose rates in the areas in which they are working. The workers, therefore, may not work in areas where the dose rate multiplied by the amount of time

spent in the area exceeds 5 Rem. For lifesaving activities, the dose rate multiplied by the amount of time spent in the area may not exceed 25 Rem.

5.5.3 Monitoring

All emergency response personnel, including firefighters, will wear self-reading dosimeters. Team members will also carry radiation survey meters and pocket dosimeters.

5.5.4 Decontamination of Personnel

Initial decontamination of personnel at the facility will consist of workers removing their normal protective clothing and depositing clothing in a specified location. If decontamination of injured personnel is required, it will be conducted at Meridia Huron Hospital. There, individuals will be decontaminated to background levels. Appropriate decontamination procedures and decontaminates will be used. Radioactive wastes generated during decontamination procedures will be deposited in standard radioactive waste containers or bagged in plastic until such containers are available.

5.6 Medical Transportation

Preliminary first aid will be provided by AMS personnel. All transportation of injured personnel will be provided by the City of Cleveland Fire Department or a commercial ambulance service. They may also provide limited first aid, if possible. Limited decontamination of persons with non-life threatening injuries may be performed by the RSO and his staff prior to transport as described in Section 5.5.4.

5.7 Medical Treatment

AMS has arranged with Meridia Huron Hospital in Cleveland for the care of injuries involving radiological contamination. All injured parties will be transported to this hospital. The regular hospital staff will provide medical services while the Meridia Huron Hospital Department of Radiology staff will provide contamination control. The AMS staff member will provide information assistance as requested.

7.0 Maintenance of Radiological Contingency Preparedness Capability

This chapter describes the administrative procedures for maintaining, reviewing and testing the radiological contingency plan.

7.1 Written Procedures

To ensure that the written implementing procedures for the radiological contingency plan uniformly address the duties and actions of each individual or group responding to an emergency condition, the Director of Regulatory Affairs has been designated as the planning coordinator for the Radiological Contingency Plan. In this capacity, the Director of Regulatory Affairs also reviews the contingency plan and procedures annually and updates them as needed. It is the responsibility of the Director of Regulatory Affairs to forward the plan and procedures to all individuals responsible for implementing the plan.

7.2 Training

Onsite operating personnel are introduced to their responsibilities during an emergency as part of their formal job training, which includes basic radiation protection. Since their only responsibility during an emergency is initial reporting of an abnormal occurrence, no further training is required. Staff with limited emergency responsibilities receive basic radiation protection training as well as limited emergency response training.

The Radiation Safety Officer will ensure onsite operating personnel are trained in basic radiation protection. The RSO will also provide training for emergency response.

7.3 Drills, Exercises and Communication Checks

AMS will conduct in-house drills with AMS personnel at the discretion of the RSO. These drills are designed to test AMS emergency response functions.

AMS will conduct full scale exercises with onsite and offsite personnel. These exercises will be conducted periodically. The interval will be determined through communication with all affected personnel and agencies participating in the exercise.

A full scale biennial exercise will be conducted with AMS emergency response personnel and offsite emergency response personnel. The NRC shall be invited to participate or observe this exercise. The NRC shall be provided with the exercise objectives and scenario at least 60 days before the exercise. This is done to allow the NRC to comment on the exercise.

The RSO or alternate shall conduct quarterly communication checks with offsite response organizations. This is done to verify and update all necessary phone numbers.

7.4 Critiques

AMS will prepare a critique for each drill and exercise conducted. The critique will evaluate the emergency plan procedures, emergency equipment, personnel training and overall effectiveness. The RSO and/or the Isotope Committee will evaluate the critique or determine if any revisions to the emergency procedures, training or equipment need to be made.

7.5 Audits

AMS will have an annual audit to review our emergency response program. The audit will include the emergency plan procedures, training, equipment and supplies. Records associated with offsite support agencies in accordance with Section 7.3 above shall also be audited. Any discrepancy discovered during an audit will be addressed at the next quarterly Safety Committee meeting and corrective action initiated within 90 days of that Safety Committee meeting.

7.6 Maintenance and Inventory of Radiological Emergency Equipment, Instrumentation and Supplies

To assure that emergency equipment and instrumentation are in working condition and that the stock of emergency supplies is maintained.

These items will be inventoried and checked quarterly. Instruments will be calibrated twice yearly. Inoperable or missing equipment will be repaired or replaced as soon as possible.

7.7 Review and Updating of the Plan and Procedures

The RSO is responsible for reviewing the plan annually and/or amend the plan to reflect changes in facilities, personnel and processes. The revisions will be reviewed by the Director of Regulatory Affairs and the Radiation Safety Committee. The revisions in the plan will be approved by the Director of Regulatory Affairs. Revisions and updates to the plan will be transmitted to the USNRC and relevant emergency response agencies.

FIRE/EXPLOSION/MEDICAL EMERGENCY PROCEDURES

1.0 PURPOSE

This procedure is intended to define Advanced Medical Systems' administrative actions on discovery of a fire, explosion, responses to fires, use of fire alarms as well as medical emergencies.

2.0 SCOPE

This procedure applies to fire, explosion, or medical emergency within AMS' London Road facility during working hours as well as procedures to be followed by responding authorities during non-working hours.

3.0 RESPONSIBILITY

1. The Radiation Safety Officer (RSO) or a designated alternative will review this procedure with the Cleveland City Fire Department and Cleveland City Police. This plan shall be periodically updated and verified for correct information.
2. All training of affected personnel will be the responsibility of the Director of Regulatory Affairs or a designated alternate.
3. No one shall make any public announcements/statements concerning an emergency situation except the Director of Regulatory Affairs or designated alternate.
4. A review and update of all names and telephone numbers of personnel listed in this plan will be on a quarterly basis and will be the responsibility of the Director of Regulatory Affairs.
5. Any responsibility or action item assigned to an individual in this procedure may be performed by a designated alternate.

4.0 RSO EMERGENCY RESPONSIBILITIES

- Personnel evacuation
- Fire prevention
- Fire/safety inspections (monthly)
- Safety Committee meetings (quarterly)
- Fire fighter information assistance
- Overseeing of salvage operations (post emergency)

5.0 DEFINITIONS

5.1 Fire

Fire or combustion is an exothermic, self-sustaining reaction involving a solid, liquid and/or gas phase fuel. The process

is usually associated with the emission of light. For purposes of this procedure, any incident that has potential to escalate into a fire condition or non-radiological emergency life-threatening situation shall be acted upon as a fire.

It is the policy of AMS that fire fighting by personnel be limited to fighting incipient stage fires. Incipient stage fires are defined as fires that can be controlled or extinguished with portable fire extinguishers or 1-1/2" hose stream without the use of self-contained breathing apparatus or personal protective equipment.

C.0 EMERGENCY CONTACT PERSONNEL

See Page 1.

7.0 GENERAL EMERGENCY PROCEDURES

7.1 Reporting an Emergency - General

In the event of an emergency, the following action should be taken by the person reporting such emergencies.

7.2 Applicability

All personnel on AMS property are responsible to report life or property-threatening emergencies.

7.3 Fire During Working Hours

The individual who discovers the fire shall:

1. Promptly notify the RSO and nearby personnel through the intercom system at the nearest available telephone.
2. The RSO or alternate will determine if fire will cause release of high airborne activity to the environment. Based on this evaluation, the RSO will direct the manual dampers in the HEPA Equipment Room to be shut as long as there is no significant risk to personnel.
3. The ADT Security Services 24-hour supervisory electronics monitoring sound alarm system will call AMS prior to notifying the Fire Department.
4. Evacuate building and proceed to assigned area.
5. The RSO or designated alternate will notify the Cleveland City Fire Department at 621-1212. The RSO is to provide the following information:
 - a. State your name and that you are calling from Advanced Medical Systems, Inc., at 1020 London Road.
 - b. Describe the location of the fire.

- c. Describe the type of fire: i.e. what is burning.
- d. The approximate fire conditions: i.e. smoke only, smoke with flames, rolling smoke, etc.
- e. Describe any personnel injuries.
- f. If safe to stay at the telephone, will answer all questions and let the person answering hang up before you do.

PROVIDE EMERGENCY ASSISTANCE IF ABLE TO DO SO.

7.4 Fire or Explosion During Unoccupied Hours

1. Background

The 1020 London Road, Cleveland, Ohio facility is equipped with an ADT Security Services 24-hour supervisory electronics monitoring alarm system. In the event of a fire or explosion, the signal is automatically transmitted to the ADT Central Office and the proper response civil service group (Cleveland Fire and Police Departments) is immediately notified. During working hours or periods when AMS personnel are occupying the facility, ADT also calls this location. During periods when the building is unoccupied, ADT calls key AMS emergency response personnel.

2. Procedures

- a. In the event that local fire and police response groups reach the facility before the designated AMS representative, they have been advised to remain outside the building until either the AMS representative or the designated Cleveland City Fire Department Radiation Officer arrives.
- b. In the event of the emission of detectable quantities of smoke or other gases, response personnel and agencies should remain upwind of the emergency site. Police should establish road blocks to prevent normal civilian traffic from passing through the downwind area.
- c. Upon arrival, the AMS representative should confer with the civil authorities as to the nature of the emergency and establish a control point.
- d. Verify the existence and location of radioactive materials.

- e. Using locator floor plans, determine whether the fire/explosion is in restricted or non-restricted area.
- f. If fire/explosion involves a restricted area, obtain emergency protection and detection equipment from the AMS pumphouse storage point.
- g. Primary entry personnel should be issued and instructed in reading a survey meter and pocket dosimeters in order to make an initial radiation hazard survey. Pocket dosimeters must be zeroed prior to use. If radiation levels are acceptable, then additional fire fighters may be authorized to enter. Fire fighters must wear respiratory protection -- SCBA type. The maximum dose allowable to save equipment is 25 REM.
- h. The RSO or alternate will determine if fire will cause release of high airborne activity to the environment. Based on this evaluation, the RSO will direct the manual dampers in the HEPA Equipment Room to be shut as long as there is no significant risk to personnel.
- i. The best method of fire suppression in restricted areas would be determined by both professional firemen and AMS personnel. The method chosen should be the one least likely to spread contamination.
- j. All fire fighting personnel should be monitored for contamination upon exiting the facility before leaving the site.
- k. Exit contamination surveys will be performed to insure that the facility has been restored to a safe condition after an accident.

8.0 MEDICAL EMERGENCIES

The individual discovering the emergency shall notify the RSO who, in turn, shall:

- 1. Call the Cleveland Ambulance Emergency Medical Services at 623-4545 and/or provide the following information:
 - a. Your name and that you are from Advanced Medical Systems located at 1020 London Road.
 - b. Describe the problem.
 - c. Answer all of their questions and let them hang up before you do.

PROVIDE EMERGENCY ASSISTANCE IF ABLE TO DO SO

The first aid supplies are located in the Chemistry Lab.

9.0 MINOR INJURIES

1. Administer first aid to the injured victim.
2. Call or have an emergency call placed for ambulance service (623-4545) and notify the Meridia Huron Hospital (761-4242) of its impending arrival.
 - a. Using a Frisker, assess the injured person for possible radioactive contamination.
 - b. Remove contaminated clothing or cover patient with clean plastic and tape wrap.
3. If victim cannot be moved from the restricted area, the following procedures should be followed:
 - a. Secure all sources of radiation near the location and access path to the victim.
 - b. Roll out a Kraft paper path or similar clean floor covering to the victim for emergency response traffic.
 - c. Using a survey meter, determine the radiation dose rates in the response area.
 - d. Using a Frisker, assess the person for possible radioactive contamination.
 - e. Meet the emergency response team at the entrance and inform them of the situation including:
 1. Nature of injury
 2. Location
 3. Dose rates
 4. Contamination level
 5. Need for exit contamination surveys
 - f. Escort the response team to the victim and advise of potential exposure points along the access path.
 - g. Conduct exit contamination survey to insure that the facility is in safe condition after an accident.
4. Prepare the transport vehicle for use by spreading plastic sheets in the area to be occupied by the patient.
5. Accompany the patient to the hospital if no further emergency exists or if backup AMS response personnel are at the AMS site.
6. The following equipment should be transported with the patient:
 - a. Survey meter
 - b. Frisker
 - c. Plastic waste bags and tape

7. Inform the ambulance personnel that the AMS representative should supervise the decontamination of the transport vehicle before its next response.
8. In all cases, the maximum dose allowable for lifesaving action is 75 R2M.

10.0 POLICE EMERGENCIES

The individual discovering the emergency shall notify the RSO who, in turn, shall:

1. Call the Cleveland City Police Department at 621-1234.
 - a. State your name and that you are from Advanced Medical Systems, Inc., located at 1020 London Road.
 - b. Describe the problem.
 - c. Answer all questions and let them hang up before you do.

11.0 EVACUATION PROCEDURE

11.1 Decision

The decision to evacuate any section of the facility because of fire or other occurrence will be made by the RSO or his/her designee.

11.2 Notification

If time permits, the RSO will notify the Director of Regulatory Affairs located at the Geneva, Ohio office that a portion of the building has been evacuated.

11.3 Evacuation

1. Each employee will, if possible, shut off any electrical equipment being used, including coffee pot, before evacuating the premises.
2. Supervisory personnel will assemble their personnel in the parking lot and stand ready to assist in the control of the emergency.
3. The RSO is responsible for the communication of information to all personnel concerning the resumption of plant operation following an evacuation.

11.4 Training

It is the responsibility of the RSO to inform each employee of their emergency evacuation exit and their alternative exit(s).

11.5 Equipment Alarms

ADT maintains and is responsible for all fire detection and security equipment. ADT conducts monthly inspections and performs all necessary repairs.

12.0 GENERAL RULES FOR SECURITY BREACHES FOR RESPONDING LAW ENFORCEMENT AGENCIES AND ADT

AMS has ADT Security Service throughout the restricted and non-restricted areas of the London Road facility. During unoccupied hours, this system is armed and breaches of security are electronically transmitted to the ADT office. During occupied hours, these systems are disarmed to avoid the inadvertent transmission of alarm signals by the AMS staff.

12.1 Response

1. During occupied hours, any breach of security will be reported by AMS staff personnel to the Cleveland City Police Department at 621-1234.
2. During unoccupied hours, breaches in security are first detected by the ADT supervisory monitoring system.
3. ADT immediately calls AMS emergency response personnel.
4. ADT security personnel (armed guards) or local law enforcement agencies responding to and ADT call report to the London Road site and await the arrival of either trained emergency response personnel or an AMS representative.
5. An escorted and supervised search of the facility is conducted by the law enforcement officers and either an AMS representative or trained emergency response personnel.
6. If possible, the source of the security breach is determined and the nature or type of security breach recorded.
7. All locks and secured entrances are checked for status. If any of the secured systems have been damaged, they should be repaired before the building is vacated by the AMS representative.
8. All sources of radioactive materials storage are checked to determine tampering or accountability. This includes stored radioactive materials, instrument calibration sources and any source of depleted uranium shielding.
9. The AMS representative should check the supervisory panel to assure that all systems are functioning properly.

10. If a breach of security into restricted areas is detected, wipes of the floors will be taken to determine if any radioactive contamination has occurred.
11. Should either the theft of the radioactive material be detected or the release of radioactive contamination occur as a result of the security breach, the NRC will be notified according to the requirements of 10 CFR 20.
12. Following an all-clear situation, ADT systems are reset before exiting the facility.

13.0 GENERAL RULES FOR AMBULANCE-RESCUE SQUADS

REFERENCE: Based on DOE/EV-0020, Department of Energy, October, 1978

13.1 Background

1. Ambulance-rescue squad personnel are usually the first persons of the medical team to see the case of radiation exposure or radioactive contamination. Their first acts will vary in degree. Trained, knowledgeable co-workers, supervisors or health physicists are usually on hand.
2. When the accident has occurred, the health physicist, supervisor, co-workers and the patient(s) should be able to inform members of the rescue squad of the nature of the accident, number of patients and type of radiation exposure or radioactive contamination involved, and possible body areas that may be affected.

A gross measurement of the amount of radiation involved may be available; such information is most helpful.

3. The maximum dose allowable for lifesaving actions is 75 REM.

13.2 General Rules

1. For the patient:
 - a. Give lifesaving emergency assistance if needed.
 - b. Secure pertinent information including any radiation exposure from those in attendance.
 - c. Determine if physical injury or open wounds are involved. Cover wound with clean dressing; use elastic bandage to hold wound-cover in place; do not use adhesive.
 - d. Cover stretcher, including pillow, with open blanket; wrap victim in blanket to limit spread of contamination.

- e. Notify Meridia Huron Hospital by radio or telephone of available information.
2. For rescue squad personnel:
- a. Perform survey of clothing, ambulance, etc., on arrival at Meridia Huron Hospital before undertaking further activity.
 - b. If contaminated, discard clothing in container marked "Radioactive--Do Not Discard". Cleanse self by washing and/or showering, as appropriate.
 - c. If in contaminated area, rescue squad personnel must be surveyed by radiation-survey meter; measurements must be recorded. Cleansing must continue until responsible physician indicates person may leave.

14.0 GENERAL RULES FOR PHYSICIANS AND NURSES

REFERENCES: Based on DOE/EV-0017, 0018 and 0019, Department of Energy, October, 1978

14.1 Background

The content of each set of general rules will vary with the role of the user: i.e., ambulance or rescue squad, emergency room physician or nurse, or hospital administrator. Additional variations in standing orders can occur if a hospital has:

- a. a pre-arranged procedure that is periodically updated and tested;
- b. a staff of trained physicians, aides and technicians;
- c. proper radiation-measuring equipment;
- d. available space for isolation.

What follows is directed to meet the situation of a small community or rural hospital.

14.2 General Rules

If the ambulance or rescue squad that picks up the radiation accident case has a radio or telephone, the emergency room will be alerted to expect a patient who may have had radiation exposure or radioactive contamination.

It is the responsibility of the senior hospital emergency room person on duty, nurse or physician, on receipt of notification of the momentary arrival of a case involving radiation exposure or contamination, to:

- a. Notify responsible staff physician or nurse and aides (trained health physicists or trained technicians from x-ray or nuclear medicine departments).
- b. Get appropriate survey meter, if one is on hand in the hospital. If hospital has no meter, notify hospital administrator or responsible hospital official so he/she may obtain a survey meter and other pertinent equipment by calling the Police Department.
- c. Notify the hospital administrator so he/she may seek expert professional consultation for technical management of the case.
- d. If contamination is suspected, prepare separate space, using either isolation room or cubicle, if available. Some hospitals use the morgue, since the autopsy table lends itself to washing with water. The morgue entrance would then be used rather than the emergency room. When the morgue is used, the patient and his/her family must be reassured of why that space is used. If no separate space is available, cover a floor area immediately adjacent to the entranceway to the emergency room with absorbent paper. The area must be adequate for stretcher-cart, disposal hampers and working space for professional attendants. Mark and close off this area. If dust is involved, be prepared to shut off air circulation system to prevent spread of contamination.

Upon ambulance arrival, the responsible physician or nurse in the emergency room should:

- a. Check patient on stretcher for contamination (preferably as stretcher is removed from the ambulance) by use of a survey meter.
- b. If seriously injured, give emergency lifesaving assistance immediately.
- c. Handle contaminated patient and wound as one would a surgical procedure: i.e., gown, gloves, cap, mask, etc.
- d. If possible external contamination is involved, save all clothing and bedding from ambulance, blood, urine, stool, vomitus, and all metal objects (e.g., jewelry, belt buckles, dental plates, etc.). Label with name, body location, time and date. Save each in appropriate containers. Mark containers clearly, "Radioactive -- Do not Discard."
- e. Decontamination should start, if medical status permits, with cleansing and scrubbing area of highest contamination first. If an extremity alone is involved, clothing may serve as an effective barrier and the affected limb alone may be scrubbed and cleansed. Initial cleansing should be done with soap and warm water. If the body as a whole

is involved or clothing generally permeated by contaminated material, showering and scrubbing will be necessary. Pay special attention to hair parts, body orifices and body folds areas. Remeasure and record measurement after each washing or showering. Non-radioactive wash water waste may be flushed into community sewage system. Follow hospital procedures for radioactive liquid waste.

If a wound is involved, prepare and cover the wound with self-adhering disposable surgical drape. Cleanse neighboring surfaces of skin. Seal off cleansed areas with self-adhering disposable surgical drapes. Remove wound covering and irrigate wound with sterile water, catching the irrigating fluid in a basin. Washings can be marked and handled as described in Rule (d) above. Each step in the decontamination should be preceded and followed by monitoring and recording of the location and extent of contamination.

- f. Save physicians', nurses' and attendants' scrub or protective clothing, as described for patients. Nurses, doctors and attendants must follow the same monitoring and decontamination routing as the patients.
- g. The physician in attendance in the emergency room, if confronted with a highly contaminated wound with dirt particles and crushed tissue, should be prepared to do a preliminary simple wet debridement. An emergency minor surgical set should be used. Further measurements may necessitate sophisticated wound counting detection instruments supplied by the consultant who will advise if further definitive debridement is necessary.
- h. AMS personnel should be able to inform the rescue squad of the nature of the accident, type of radiation exposure or radioactive contamination involved, and possible areas of the body that may be affected. A gross measurement of the amount of radiation involved is always helpful. An AMS representative may come to the hospital with the patient and can be a source of immediate consultation.
- i. The emergency room's nurses' calm, assured, friendly greeting, attitude and conversations with the patient can be a tremendous aid.
- j. The maximum allowable dose for lifesaving actions is 75 REM.

15.0 GENERAL RULES FOR HOSPITAL ADMINISTRATORS

REFERENCE: Based on DOE/EV-0019, Department of Energy, October, 1978

15.1 Background

The hospital administrator, in contrast to other members of the medical team, is particularly concerned with what the situation will do to his/her other patients or to the hospital as a physical plant, and that relationships with community organizations and specialists are vital.

15.2 General Rules

- a. The hospital administrator or senior administrator on duty should inform the DOE and other public officials, such as town, city or county, and/or state health departments, police and fire departments, as appropriate. Before any accidents have occurred, he/she should establish telephone contact with appropriate DOE officials. They can always give immediate advice over the telephone on cleanup of accident site, equipment, etc., and put the hospital's physician in immediate contact with a physician-specialist with knowledge of such accidents. The specialist can be on his way to the hospital within minutes of the first telephone contact.
- b. The hospital administrator should also know if the community's police or fire departments have survey meters and who has access to stockpiled civil defense supplies. He/she should also know whether police or fire departments in the community clear up public accident sites.
- c. The hospital administrator should have the survey meters checked periodically to be sure that the equipment is operating and fresh batteries are available.
- d. The maximum allowable dose for lifesaving action is 75 REM.

16.0 GENERAL RULES FOR HEALTH PHYSICISTS AND RADIOLOGICAL SAFETY OFFICERS

REFERENCE: (From Saenger, E. L., Medical Aspects of Radiation Accidents, USAEC, 1963)

1. When and if an accident is suspected, evacuate personnel and segregate them. Remove all personnel dosimeters and/or film badges immediately from exposed personnel. Read dosimeters and record the reading. Send dosimeters and film badges immediately to a safe area.
2. Notify Radiological Safety Officer who will then activate emergency plan.
3. Close off radiation area. Shut off air conditioning. Seal area if contamination is likely.
4. Evaluate situation in regard to:
 - a. Extent of contamination
 - b. Level of radiation exposure
5. Save all samples of clothing, blood, urine, stool, vomitus. Label with name, date, time. Send film badges for emergency processing by standard technique.

6. Portable battery-operated tape recorder will be very useful in collecting and storing information and for obtaining a complete history of the accident. It is often difficult to record all of the events, opinions and statements available in an emergency situation. The taped records can be typed later, thus providing a more complete history of the accident.
7. A camera will provide an excellent method of showing exactly what happened. If a movie camera is not available, suitable still photographs will be used.
8. In a major accident, management should obtain the aid of consulting physicists. These individuals can also be found in neighboring installations and at Perry Nuclear Power Plant and will be essential for the proper handling of the accident during the first week, particularly if it is necessary to work a 24-hour day.

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

June 1, 1992

Ohio Emergency Management Agency
2825 West Granville Road
Columbus, Ohio 43235-2712
ATTN: Mr. Kenneth Cole

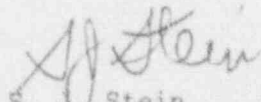
RE: Updates to Advanced Medical Systems, Inc.
"Onsite Radiological Contingency Plan for
the Cleveland, Ohio Facility"
Revised May 27, 1992

Dear Mr. Cole:

Please insert the enclosed updated pages into your copy of
Advanced Medical Systems' Onsite Radiological Contingency
Plan. Changes are indicated by a vertical line in the margins
of the affected pages.

Should you have any questions, please feel free to contact our
Radiation Safety Officer, Mark Loeser, at (216) 692-3269.

Sincerely,



S. A. Stein
Director of Regulatory Affairs

SJS:jmb
Enclosures
cc: John Madera
USNRC Region III

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

June 1, 1992

Mr. Edward Eckart
Cleveland Emergency Medical Service
2001 Payne Avenue
Cleveland, Ohio 44114

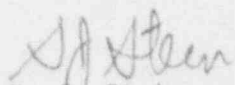
RE: Updates to Advanced Medical Systems, Inc.
"Onsite Radiological Contingency Plan for
the Cleveland, Ohio Facility"
Revised May 27, 1992

Dear Mr. Eckart:

Please insert the enclosed updated pages into your copy of Advanced Medical Systems' Onsite Radiological Contingency Plan. Changes are indicated by a vertical line in the margins of the affected pages.

Should you have any questions, please feel free to contact our Radiation Safety Officer, Mark Loeser, at (216) 692-3269.

Sincerely,



S. J. Stein

Director of Regulatory Affairs

SJS:jmb

Enclosures

cc: John Madera

USNRC Region III

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

June 1, 1992

Pre-Plan Captain Ray Masarek
Cleveland City Fire Department
1645 Superior Avenue
Cleveland, Ohio 44114

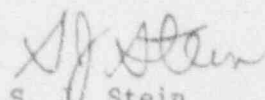
RE: Updates to Advanced Medical Systems, Inc.
"Onsite Radiological Contingency Plan for
the Cleveland, Ohio Facility"
Revised May 27, 1992

Dear Captain Masarek:

Please insert the enclosed updated pages into your copy of
Advanced Medical Systems' Onsite Radiological Contingency
Plan. Changes are indicated by a vertical line in the margins
of the affected pages.

Should you have any questions, please feel free to contact our
Radiation Safety Officer, Mark Loeser, at (216) 692-3268.

Sincerely,



S. J. Stein
Director of Regulatory Affairs

SJS:jmb

Enclosures

cc: John Madera
USNRC Region III

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

June 1, 1992

Chief of Police
Cleveland City Police Department
1300 Ontario Avenue
Cleveland, Ohio 44111

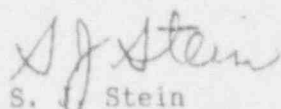
RE: Updates to Advanced Medical Systems, Inc.
"Onsite Radiological Contingency Plan for
the Cleveland, Ohio Facility"
Revised May 27, 1992

To Whom It May Concern:

Please insert the enclosed updated pages into your copy of
Advanced Medical Systems' Onsite Radiological Contingency
Plan. Changes are indicated by a vertical line in the margins
of the affected pages.

Should you have any questions, please feel free to contact our
Radiation Safety Officer, Mark Loeser, at (216) 492-3269.

Sincerely,



S. J. Stein
Director of Regulatory Affairs

SJS:jmb

Enclosures

cc: John Madera
USNRC Region III

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

June 1, 1992

Laura Cizmar RN Co-Chair
Meridia Huron Hospital
Disaster Preparedness Committee
13951 Terrace Road
Cleveland, Ohio 44112

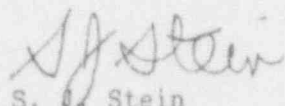
Dear Ms. Cizmar:

RE: Updates to Advanced Medical Systems, Inc.
"Onsite Radiological Contingency Plan for
the Cleveland, Ohio Facility"
Revised May 27, 1992

Please insert the enclosed updated pages into your copy of
Advanced Medical Systems' Onsite Radiological Contingency
Plan. Changes are indicated by a vertical line in the margins
of the affected pages.

Should you have any questions, please feel free to contact our
Radiation Safety Officer, Mark Loeser, at (216) 692-3269.

Sincerely,



S. Stein
Director of Regulatory Affairs

SJS:jmb

Enclosures

cc: John Madera
USNRC Region III

APR 20 1992

Advanced Medical Systems, Inc.
Attn: Ms. Sherry J. Stein, Director
of Regulatory Affairs
1020 London Road
Cleveland, OH 44110

RE: Advanced Medical Systems, Inc.'s Onsite Radiological
Contingency Plan Dated October 25, 1991, Revised January
1992

Dear Ms. Stein:

In order to complete our review, we need additional information
and/or clarification on the following items:

1. Actions for an Alert and Site Area Emergency declaration require notification of the NRC Operations Center as referenced in "Draft Regulatory Guide DG-3005". Please incorporate NRC notification procedures in Sections 3.2.1 and 3.2.2 of your plan.
2. Section 5.5 of your plan uses different life saving and equipment saving radiation exposures than suggested in EPA guidelines. The EPA recommends 75 Rem limit to save a life and 25 Rem to save equipment. Your plan recommends 25 Rem to save a life and 10 Rem for equipment. Please consider adjusting your life saving radiation exposures to meet EPA recommendations. Also, equipment essential to mitigating an accident should be saved using EPA guidelines.
3. Section 5.5.1 of your plan states that preliminary decontamination of injured personnel will occur prior to transport to limit medical personnel exposure to 3 Rem. Guidance for handling contaminated injured personnel places primary emphasis on medical attention to the victim over contamination levels depending on the severity of the injury and the level of contamination. The 25 Rem life saving limit is once again stated in this section of your plan. You need to adjust your plan to provide emphasis on medical attention to the victim and again consider EPA recommendations described in Item 2. for life saving actions.
4. Section 5.6 of your plan states that limited decontamination will be performed prior to transportation. Guidance, once again, makes preliminary or limited decontamination

conditional depending on the injury and levels of contamination. Please address this issue in light of Items 2. and 3. above (the use of may would be more appropriate than will).

5. Section 7.2 of your plan does not address the training requirements of the Emergency Manager. Please address.
6. Section 7 of your plan does not address the drill requirements, verification of telephone numbers, nor letters of agreements as per Sections 7.3, 7.4, 7.5, 7.7, and 7.8 in DG-3005. Please address.
7. The operating procedures in Appendix A of your plan do not provide dose limits for handling medical emergencies. Any dose limits established in the plan should be reflected in the appropriate procedures for ease of access by emergency responders. Please provide.

We will continue our review of your Emergency Plan upon receipt of this information. Please reply in duplicate, within 90 days, and refer to Control Number 91080.

If you have any questions or require clarification on any of the information stated above, you may contact us at (708) 790-5625.

Sincerely,

John R. Madera
Materials Licensing Section

bcc: Norelius
Grobe

Yes
RIII

Madera

4/14/92

Yes
RIII

Cox

Yes
RIII

McCann

4/14/92

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

91080

February 19, 1992

CERTIFIED MAIL

Mr. John R. Madera
Materials Licensing Section
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

RE: Advanced Medical Systems, Inc.'s 1992 Onsite Radiological Contingency Plan
USNRC License No. 34-19089-01

Dear Mr. Madera:

Enclosed please find the final draft of AMS' revised Onsite Radiological Contingency Plan for our Cleveland, Ohio facility which has been sent to the Cleveland City Police Department, Cleveland Emergency Medical Services, Meridia Huron Hospital and Cleveland City Fire Department. We have incorporated the suggestions we received from our October, 1991, draft. Please insert the maps contained on pages 1-10, 1-11 and 1-13 of the draft you received in October, 1991, into the final plan.

If you should have any questions, please do not hesitate to contact me.

Sincerely,



SHERRY J. STEIN
Director of Regulatory Affairs

SJS/cs
Enclosure

RECEIVED

FEB 21 1992

REGION III

FEB 21 1992

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

February 19, 1992

CERTIFIED MAIL

Ohio Emergency Management Agency
2825 West Granville Road
Columbus, Ohio 43235-2712

ATTN: Mr. Kenneth Cole

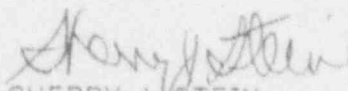
RE: Advanced Medical Systems, Inc.'s 1992 Onsite Radiological Contingency Plan
USNRC License No. 34-19089-01

Dear Mr. Cole:

Enclosed please find the final draft of AMS' revised Onsite Radiological Contingency Plan for our Cleveland, Ohio facility. We have incorporated the suggestions we received from our October, 1991, draft. Please insert the maps contained on pages 1-10, 1-11 and 1-13 of the draft you received in October, 1991, into the final plan.

If you should have any questions, please do not hesitate to contact me.

Sincerely,



SHERRY J. STEIN
Director of Regulatory Affairs

SJS/cs
Enclosure

cc: John Madera, USNRC

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

February 19, 1992

CERTIFIED MAIL

Mr. Edward Eckart
Cleveland Emergency Medical Services
2001 Payne Avenue
Cleveland, Ohio 44114

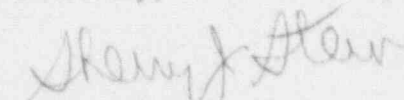
RE: Advanced Medical Systems, Inc.'s 1992 Onsite Radiological Contingency Plan
USNRC License No. 34-19089-01

Dear Mr. Eckart:

Enclosed please find the final draft of AMS' revised Onsite Radiological Contingency Plan for our Cleveland, Ohio facility. We have incorporated the suggestions we received from our October, 1991, draft. Please insert the maps contained on pages 1-10, 1-11 and 1-13 of the draft you received in October, 1991, into the final plan.

If you should have any questions, please do not hesitate to contact me.

Sincerely,



SHERRY J. STEIN
Director of Regulatory Affairs

SJS/cs
Enclosure

cc: John Madera, USNRC

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

February 19, 1992

CERTIFIED MAIL

Chief of Police
Cleveland City Police Department
1300 Ontario Avenue
Cleveland, Ohio 44111

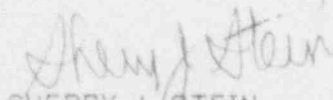
RE: Advanced Medical Systems, Inc.'s 1992 Onsite Radiological Contingency Plan
USNRC License No. 34-19089-01

Dear Sir:

Enclosed please find the final draft of AMS' revised Onsite Radiological Contingency Plan for our Cleveland, Ohio facility. We have incorporated the suggestions we received from our October, 1991, draft. Please insert the maps contained on pages 1-10, 1-11 and 1-13 of the draft you received in October, 1991, into the final plan.

If you should have any questions, please do not hesitate to contact me.

Sincerely,



SHERRY J. STEIN
Director of Regulatory Affairs

SJS/cs
Enclosure

cc: John Madera, USNRC

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4871 TWX 4332-135 ATC UI FAX (216) 466-0186

February 19, 1992

CERTIFIED MAIL

Pre-Plan Captain Ray Masarek
Cleveland City Fire Department
1645 Superior Avenue
Cleveland, Ohio 44114

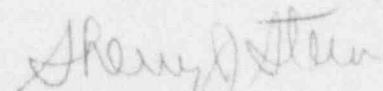
RE: Advanced Medical Systems, Inc.'s 1992 Onsite Radiological Contingency Plan
USNRC License No. 34-19089-01

Dear Captain Masarek:

Enclosed please find the final draft of AMS' revised Onsite Radiological Contingency Plan for our Cleveland, Ohio facility. We have incorporated the suggestions we received from our October, 1991, draft. Please insert the maps contained on pages 1-10, 1-11 and 1-13 of the draft you received in October, 1991, into the final plan.

If you should have any questions, please do not hesitate to contact me.

Sincerely,



SHERRY J. STEIN
Director of Regulatory Affairs

SJS/cs
Enclosure

cc: John Madera, USNRC

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

February 19, 1992

CERTIFIED MAIL

Laura Cizmar, R.N., Co-Chair
Meridia Huron Hospital
Disaster Preparedness Committee
13951 Terrace Road
Cleveland, Ohio 44112

RE: Advanced Medical Systems, Inc.'s 1992 Onsite Radiological Contingency Plan
USNRC License No. 34-19089-01

Dear Ms. Cizmar:

Enclosed please find the final draft of AMS' revised Onsite Radiological Contingency Plan for our Cleveland, Ohio facility. We have incorporated the suggestions we received from our October, 1991, draft. Please insert the maps contained on pages 1-10, 1-11 and 1-13 of the draft you received in October, 1991, into the final plan.

If you should have any questions, please do not hesitate to contact me.

Sincerely,



SHERRY J. STEIN
Director of Regulatory Affairs

SJS, cs
Enclosure

cc: John Madera, USNRC

ONSITE RADIOLOGICAL CONTINGENCY PLAN
FOR THE
CLEVELAND, OHIO FACILITY

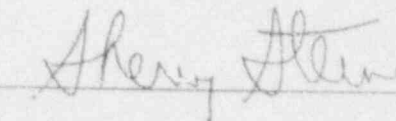
USNRC LICENSE NO. 34-19089-01

ADVANCED MEDICAL SYSTEMS, INC.

October 25, 1991

Revised January, 1992

Approved: _____



Sherry Stein
Director of Regulatory Affairs
Advanced Medical Systems, Inc.
121 North Eagle Street
Geneva, Ohio 44041

REVISION SHEET

<u>Effective Date</u>	<u>Revision Letter</u>	<u>Pages Affected</u>	<u>Description of Change</u>
10/18/91	Initial Release	All	Revised and Reformatted per Reg. Guide DG-3005
1/31/92	Revision "A"	1-7 1-8 2-7 2-8 2-9 3-1 3-2 3-3 4-2 4-3 5-1 5-2 5-5 5-6 6-1 7-1 8-1 8-2 9-1 9-2	Revised to Include Comments of Ohio Emergency Management Agency

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Appendix A - Emergency Procedures

Appendix B - Letters of Agreement

STATEMENT OF POLICY

Authority and responsibility for the direction and control of emergency situations is hereby vested in the Radiation Safety Officer (RSO) of Advanced Medical Systems, Inc., London Road facility. The RSO's duties will include, but not be limited to, the following:

- . . .Direct control of the situation, including termination of the emergency alarm condition;
- . . .Management and coordination of the emergency response staff;
- . . .Authority to obtain all information concerning the event.

Approval: _____

Sherry J. Stein
Sherry J. Stein
Director of Regulatory Affairs
Advanced Medical Systems, Inc.
121 North Eagle Street
Geneva, Ohio 44041

INTRODUCTION

The London Road facility of Advanced Medical Systems, Inc., utilizes radioactive material in the production of sealed Cobalt ⁶⁰ sources used in both teletherapy and radiography units. The material is used in accordance with U. S. Nuclear Regulatory Commission (USNRC) by-product license No. 34-19089-01. This license authorizes possession of up to 300K ci of Cobalt ⁶⁰ for manufacture, installation and servicing of sealed sources. AMS's license also permits possession of up to 40K ci of Cesium-137 sealed sources and up to 4,040 kg of depleted uranium (nickel plated) which is used as shielding material.

This plan has been prepared in accordance with "Draft Regulatory Guide DG-3005".

1.0 General Description of the Plant/Licensed Activity

This chapter provides an overview of the Advanced Medical Systems, Inc., London Road facility. Section 1.1 is a description of the types of radioactivity handled; Section 1.2 is a description of the site and facility; and Section 1.3 is a description of the processes used at the facility for handling radioactive materials.

1.1 Licensed Activity Description

The London Road facility of Advanced Medical Systems, Inc., manufactures and fabricates sealed sources of Cobalt ⁶⁰ for use in teletherapy and radiography machines manufactured by the Geneva, Ohio, facility. AMS manufactures these sealed sources in accordance with USNRC license 34-19089-01 and distributes them to USNRC licensed recipients. The material is used under the supervision of the Radiation Safety Officer.

The types and quantities of licensed materials used or possessed by AMS are summarized below:

<u>By-Product, Source or Special Nuclear Material</u>	<u>Form</u>	<u>Maximum Amount Allowed</u>
Cobalt ⁶⁰	Solid Metal	150,000 curies
Cobalt ⁶⁰	Sealed Sources	135,000 curies
Cesium-137	Sealed Sources	40,000 curies
Depleted Uranium	Nickel Plated	4,040 Kilograms
Cobalt ⁶⁰	Sealed Sources Non-NRC Approval Storage Only	15,000 curies
Cobalt ⁶⁰	Sealed Sources Calibration Sources	15 Millicuries

1.2 Area and Facility Description

The London Road facility of Advanced Medical Systems, Inc., is a controlled access building located at 1020 London Road on the east side of Cleveland, Ohio.

Figure 1-10 shows the region within ten (10) miles of the facility. Figure 1-11 identifies the facility and presents its relative proximity to near-site structures within a one (1) mile radius. Locations of schools, hospitals and fire stations are also shown on Figure .

The facility is located in a manufacturing area. The areas to the west, south and east are mainly industrial facilities. The area to the north of the plant is a mix of small businesses and residential units.

The facility is approximately 8000m² under roof though only 1925m² is actively used. Access to the property is from London Road which is located on the eastern edge of the property. In addition to a perimeter fence, the site security is maintained by A.D.T. using remote security links.

Initial fire and emergency response is provided by the Cleveland City Fire Department. The Cleveland Fire Department HAZ-MAT team will respond to a radiation release at Advanced Medical Systems.

Traffic flow may be impeded along London Road during morning and late afternoon rush hours, although fire response is estimated to be within five (5) minutes.

Figure 1-12 and 1-13 is a general building layout of Advanced Medical Systems and the areas currently being used for the fabrication and storage of radioactive sources.

Transient population within one (1) mile radius of the facility is primarily a function of employment associated with the surrounding factories/businesses.

1.3 Description of Facility and Site

The London Road facility manufactures and stores sealed Cobalt ⁶⁰ sources. Bulk cobalt pellets are purchased from licensed suppliers only a few times per year. The bulk cobalt is shipped to the facility in a GE Model 500 cask. The cask and its overpack are surveyed prior to its unloading from the transport vehicle and movement into the facility (Ref. ISP-16). The cask is then off-loaded and moved into the isotope warehouse. Here surveys and wipes are made and checked. When these steps are completed, the overpack can be removed and the cask prepared for movement into the hot cell. The movement of the cask into the hot cell is performed under the ISP-14 operating procedure. When the cask is in the cell, the targets containing the radioactive Cobalt ⁶⁰ are

remotely removed using the manipulators. The targets can then be placed into the floor plugs for storage while the cask is removed from the hot cell and the work tables assembled. The cask is removed again conforming to ISP-14 and decontaminated.

Sealed sources are fabricated to customers requests of activity and source diameter. Using a computer program, the isotope handler can calculate the number of grams of various activities of Cobalt ⁶⁰ necessary for the source. Targets containing the cobalt pellets are removed from the floor plugs and placed in a vertical lathe. An abrasive grinding wheel is used to trim off the ends of the thin pencil-shaped target. The Cobalt ⁶⁰ pellets are then removed and transferred to either the source or a bulk storage containers. Electromagnets are used to handle the pellets. Sources are fabricated under control of procedure ISP-19.

Completed sources are removed from the hot cell, calibrated and either loaded into customers' heads or source exchange containers.

During the source building procedure, the stack monitor and alarm is closely watched to assure there is no release to the atmosphere through the HEPA System.

Waste that is generated during the source building procedure is cleaned using damp paper towels, sponges, etc. These wastes are placed in a small paint can type container that can be easily handled and placed in a drum prior to waste shipment. No large volumes of water are used in the hot cell nor any large amounts of combustibles. Special ventilation systems are provided in all areas in which radioactive materials are handled. These systems exhaust through a common discharge/stack and are monitored and tied into the alarm systems at the London Road facility.

1.3.1 Description of the Isotope Facility

The design of the facilities follows the philosophy of containment of activity within small working areas. Health and safety considerations have been based on minimum hazard in controlled areas and zero hazard in uncontrolled areas, with confinement of emergency situations to the Isotope Shop Area.

The Isotope Facility is situated on 6.3 acres of land which lies on the boundary between industrial and residential areas. Because of proximity to these areas, special care has been exercised in planning the safety program. The Isotope Shop Area is located in the south end of the building on the first floor. There are no windows in the Isotope Shop Area because windows were felt to be of questionable value for a number of reasons. Safety considerations and protection against unauthorized entry into the Isotope Shop Area are simplified when there are no windows. The maintenance of proper air flow balance and of uniform lighting is also simplified. Other considerations were the noise transmission of windows from the

adjacent railroad tracks and the special procedures required for cleaning windows inside controlled areas and the possible radiation hazards of cleaning windows on the outside.

The one story projection of the southwest corner of the building contains the stairwell to the basement and the source storage garden. The door located in this stairwell is for emergency exit use only.

Figure 1-13 layout is a floor plan of that portion of the first floor of the facility which contains the isotope and shielded work areas. The controlled access areas are enclosed by the heavy dashed line. The location of the heavy shielding for the shielded work room and the cell provides an unbroken radiation barrier between the isotope areas and the high occupancy areas of the rest of the building.

The activity centers of the facility are the high level hot cell, the shielded work room, the offices and the isotope shop area and an isotope storage and irradiation facility.

The areas in which radioisotopes are handled are reached through a change area located in the southeast corner of the building.

1.3.2 The Shielded Work Room

The shielded work room has a minimum of three (3) feet of concrete shielding and a labyrinth entrance. The broad corridor through the labyrinth entrance permits large objects to be moved into the room.

The room is used for storage of depleted uranium and RAD waste.

1.3.3 Hot Cell

The hot cell has been designed and equipped to encapsulate the largest sources used for medical therapy and industrial radiography. With the exception of the shielding walls themselves, virtually every item in the cell structure and equipment is removable to permit changes which the future may require.

The hot cell is six feet square inside, and has 5-1/2 foot concrete walls and 4 foot floor and ceiling. The floor pan is stainless steel and the inside walls are 1/4 inch steel plate to a height of 11 feet. The cell is closed at the rear by a 40-ton hinged door which provides a full 6-foot wide entrance to the cell when open. Numerous small access ports are located on the front and side faces of the cell, and a 20-inch square port opens from each side. Observation of cell

operations is possible through a 60 inch glass and zinc bromide window. Remote handling is accomplished with a pair of Model 8 Manipulators and a 2 ton overhead crane.

All cell operating controls are located on the cell face, so that normal operation does not require entry into the contaminated isotope areas. The isotope areas may be observed from the cell control area by a window through the southeast corner of the cell in line with mirrors placed against the south wall. The isotope areas are connected to the control area by an intercom system.

The viewing window for the cell is removable from the outside of the cell. The viewing components consist of an 8 inch inside coverplate of non-browning glass, a 2-inch plate glass, 48 inches of zinc bromide solution and a 2-inch outside coverplate of safety glass. This construction provides shielding equivalent to 66 inches of 150 lb/ft³ concrete with only two glass/zinc bromide interfaces. The entire metal structure in contact with the zinc bromide solution is coated to prevent introduction of impurities which might cloud the zinc bromide solution. The window was designed and constructed in 1984 by Hot Cell Services Corporation, Kent, Washington.

The Model 8 Master Slave Manipulators are mounted above the window using the roller-tube mounts. The roller tubes are positioned on 28-inch centers in concrete within a 24 by 58-inch steel-lined opening in the cell wall. This method of mounting in an oversized opening will permit installation of new types of manipulators as they become available, or relocation of the present manipulators to a different centerline if required by future operating conditions.

The cell door is located at the rear of the hot cell and opens into the decontamination room. The door is an internally braced steel tank filled with concrete. The upper and lower stub shafts of the door are mounted on bearings which permit the door to rotate about a vertical line through one end without touching the floor or ceiling at any point. This construction permits a smooth unbroken level floor into the cell over which heavy shipping containers can be easily moved. The 40-ton door is removable in case of bearing failure, but due to the low rotational speed and infrequent operation of the door, a long service life is anticipated. The turntable upon which the door rides contains a heavy-duty bearing mounted on a hemispherical ball-joint to permit alignment of the lower bearing with the upper bearing. The upper hinge has the bearing mounted in a block which can be moved by means of wedges and power screws to obtain the necessary alignment for a true axis of rotation. The stub shaft connecting the upper hinge to the door is removable through a 9-foot vertical tube to the second floor level. The upper bearing is a sealed unit and should require no lubrication. The lower bearing, at floor level, may become

dirty even though a neoprene wiper rides the edge of the turntable. The lower bearing may be lubricated, or flushed and lubricated if dirty, by means of a tube which runs beneath the floor level to the service trench on the south side of the cell. The door is opened and closed electrically by means of a motor mechanism mounted on the outside of the door. An electrical interlock prevents the electrical door drive from being actuated until the switch at the cell face and the drive motor switch are simultaneously operated. Release of either button stops the door opening. This safety feature makes it impossible for the cell door to be opened without the knowledge and consent of the cell operator, or for the cell to be opened by a person working alone. The two ton overhead crane inside the hot cell is electrically powered and controlled. In order to cover the six foot square floor area of the cell with a minimum of travel, an electrically powered trolley was mounted on an I-beam rail which can be rotated 180°. The crane assembly is mounted in a removable plug in the cell ceiling.

Storage facilities for isotopes within the cell are provided by two lead containers inserted in steel sleeves in the floor.

As mentioned previously, the hot cell is shielded by 5-1/2 feet of concrete, with 1/4-inch steel plate on the inside faces. The shielding thickness was chosen as sufficient to handle the largest sources currently available with complete safety, and to provide adequate shielding for the larger sources the future may require.

1.3.4 Hot Cell Supporting Facilities

The facilities supporting the operation of the hot cell are primarily concerned with the safety considerations necessary when this type of facility is located in a populated area. Every effort has been made to eliminate possible exposure of the public to radiation or radioactive materials.

The air handling system has received special attention due to the location of a residential area within a block of the facility. The facility has separate systems for the isotope areas, first floor office control area, second floor office area and the lobby and reception area. The isotope shop area and hot cell have a once-through airflow system with carefully balanced flow gradient to the hot cell as the low pressure point of the system. The supply air to the isotope areas is filtered through Aerosolve prefilters before entering the building. The heavy burden of industrial air wastes from neighboring plants and the railroad tracks is therefore removed at the point where filter changing is accomplished with the least difficulty. The supply air is distributed to the isotope areas by ventilating ducts containing manually adjustable dampers. The airflow pattern is adjusted initially by balancing the supply and exhaust systems to obtain the desired flow pattern, and periodic checks of

manometers are made to assure the desired pattern is maintained. The doors at either end of the change area are electrically interlocked to prevent simultaneous opening which might disturb the air flow pattern. The doors at either end of the air lock, which are used to move shipping containers in and out of the isotope areas, are similarly interlocked. The exhaust system has two centrifugal blowers which are located on the second floor directly above the hot cell. Both blowers exhaust through separate filters and a common high-velocity stack. The larger blower removes air from all isotope areas except the hot cell, and requires a 2 x 2 array of absolute filters. The exhaust fan for the hot cell is independently operated, and has a single absolute filter. The balanced air flow pattern is from the change areas through the Isotope Shop area to the decontamination room and finally to the hot cell. The hot cell exhaust fan is driven by a two-speed motor which is controlled by the position of the double doors connecting the decontamination room with the Isotope Shop area. With the doors closed, the fan operates at normal speed and the decontamination room receives its air supply through a duct at the south side of the doorway. When the door is opened, the supply air is diverted from inside to outside the decontamination room by means of a switch which also increases the hot cell exhaust fan capacity by about 50%. This prevents reverse flow of the potentially contaminated air of the decontamination room into the lower level Isotope Shop area.

The air handling system is under continuous control by a monitoring and safety system. The air sampling tube is mounted across a diameter of the air exhaust stack about eight feet above the roof level. An air monitor located in the hot cell control area draws a continuous sample of 5 cfm minimum for analysis. Any increase of activity above the present level immediately stops the exhaust fans and the supply fan. The control system also includes automatic shutdown of either exhaust fan if a sudden pressure drop occurs across its absolute filters, indicating rupture to the filter media.

The operation of the air handling equipment, the monitoring facilities and the liquid waste facilities is insured in the event of electrical power failure by a natural gas burning emergency generator with automatic rapid changeover. An emergency lighting system is also powered by this generator.

All safety and monitor devices are connected to an alarm panel in the control area. Separate lights for each controlled item are always lit on the panel so that faulty operation of the panel itself is indicated by no light. When a controlled item malfunctions, the alarm light increases in intensity and flashes on and off until an acknowledgement button is depressed. An audible alarm also sounds on the first and second floors until acknowledged. This type of alarm will therefore indicate the difficulty even though it has corrected itself before the operator has checked the panel, and the alarm signal will be erased only when the acknowledgement button has been depressed.

Alarms for fan shutdown, excessive heat or cold are also transmitted to a local burglar alarm company so that malfunctions during non-working hours are reported to a responsible person or agency.

1.3.5 Storage Garden and Irradiation Facility (Ref. Figure 1-14)

The facility is located in the southwest corner of the building and contains vertical storage tubes in a six foot square well extending from the first floor level to the basement floor level. An L-shaped shield around the well is provided by two sand filled shield rooms which are accessible through manholes in the first floor. Course concrete sand with a bulk density of 127 lb/ft^3 was used as the shielding material for a number of reasons. Immediate shielding requirements are easily handled by the use of sand, which can, of course, be replaced easily by a higher density material in the future, if desired. The rooms have been waterproofed and a well drilling point extends to the basement floor level beneath each manhole cover so that temporary additional shielding may be obtained by flooding the voids of the sand with water. Flooding increases the shield density by 7 lb/ft^3 . If storage needs ever require it, the rooms can be emptied and filled with concrete, steel shot or other higher density material.

The storage "garden" is constructed with 54 vertical storage tubes in a rectangular array. The tubes are arranged in a 7×9 array with the center nine spaces left open. The center space is fitted with an irradiation plug which can be used to irradiate objects up to $8\frac{1}{2}$ inches square by 12 inches high. Each of the tubes marked "A" can also be used for irradiation by placing sources in the four tubes around each which have a common side. The two outer rows of seven tubes, marked by crosses, extend about two feet below the bottom of the tubes in the central 7×7 array. This permitted installation of an irradiation facility beneath the garden with two parallel rows of sources between which objects up to a 17 inch cube can be irradiated.

The source storage tubes terminate in a metal container through which cooling air is drawn from the room through the "garden" to the absolute filter exhaust system.

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Figure 1-10

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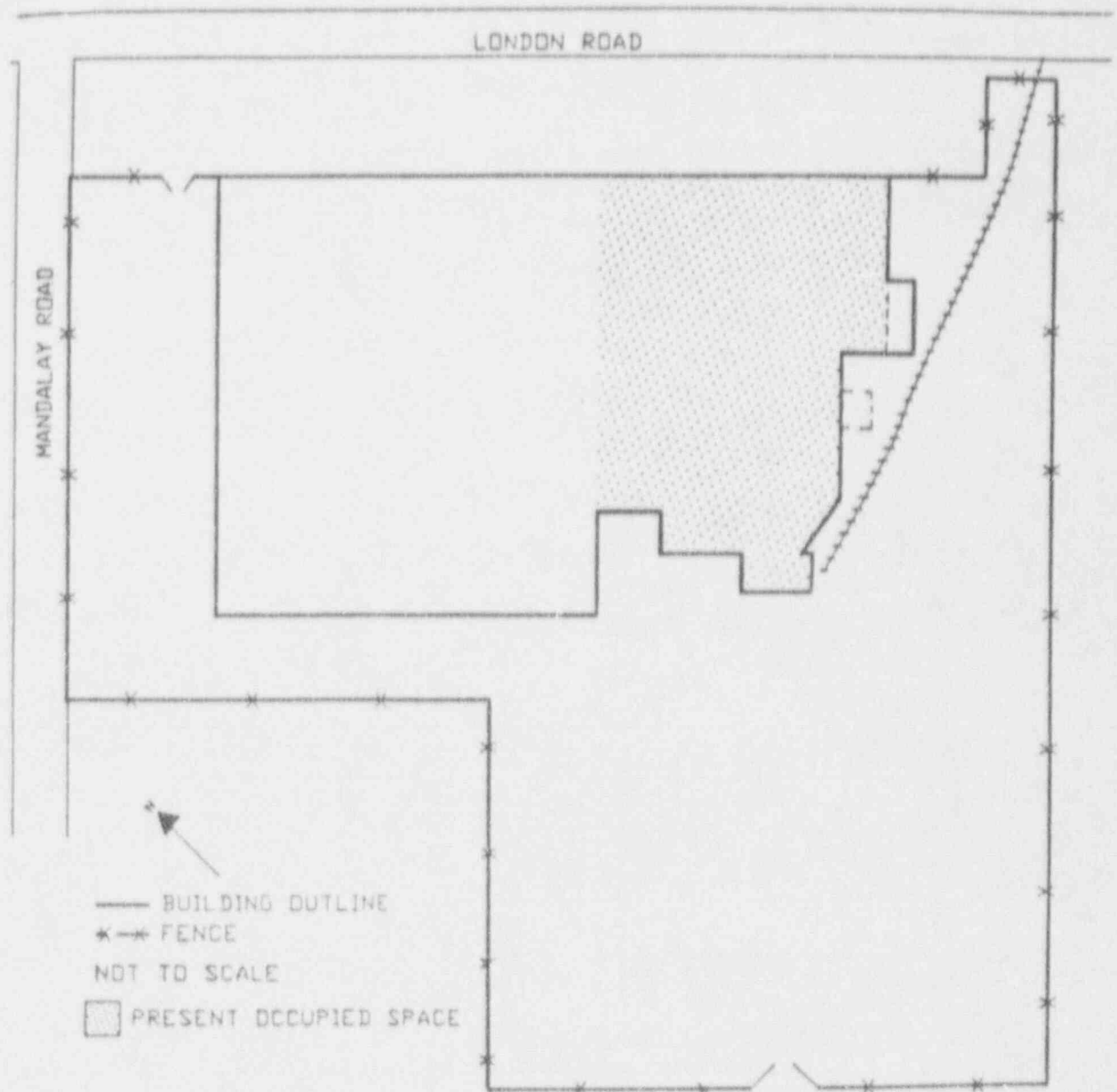


Figure 1-12

STORAGE GARDEN

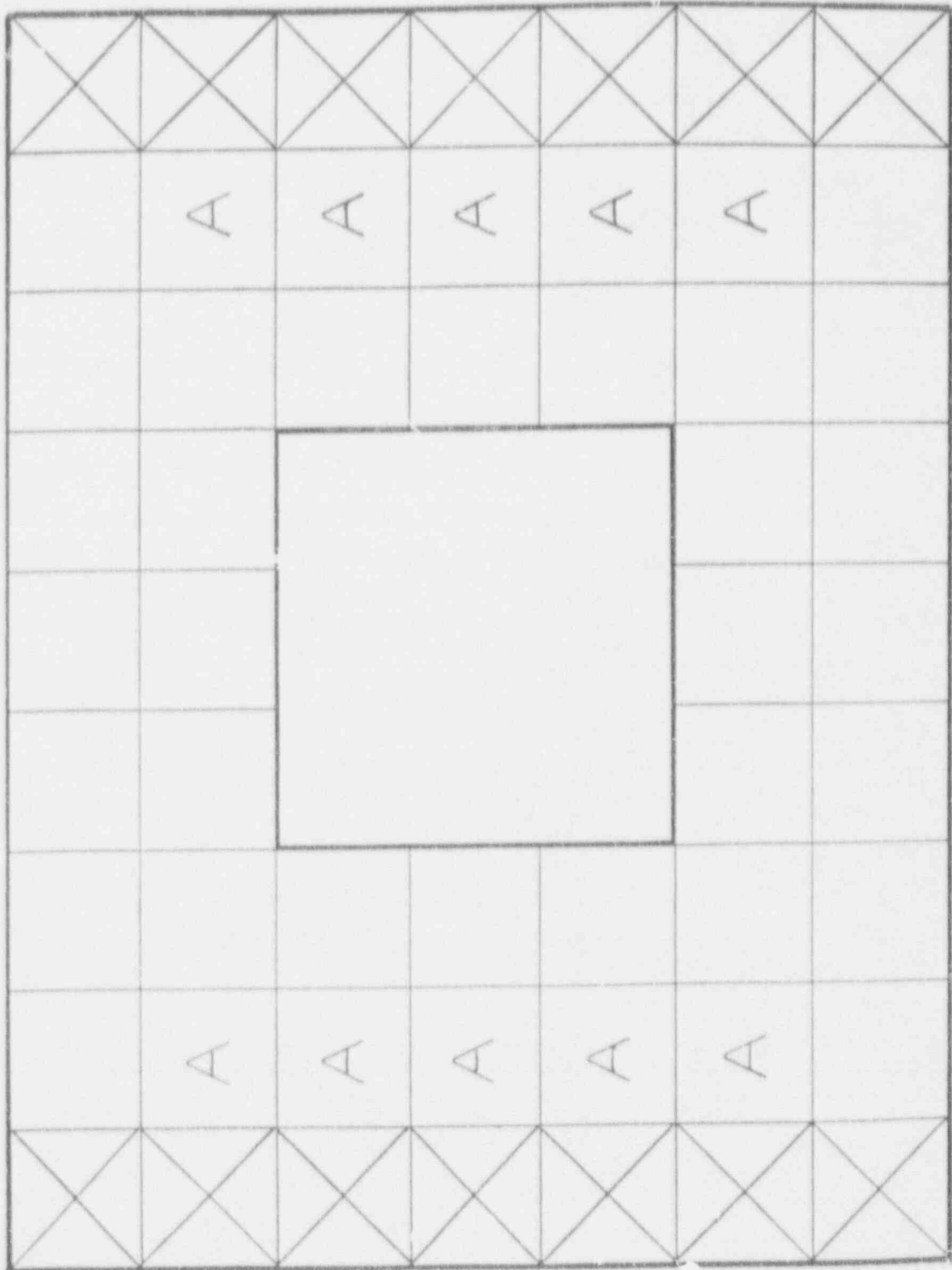


Figure 1-14

2.0 Engineered Provisions for Abnormal Conditions

This section describes facility process and central measures that are designed to detect accidental release, limit further releases and permit safe and prompt recovery actions.

2.1 Criteria for Accommodation of Abnormal Conditions

2.1.1 Process Systems

Most processing of radioactive material is performed by people with essentially no automated processing. As such, process safety systems are not applicable in this facility. However, the people involved in the processing strictly follow operating procedures (ISP's) and are well trained in these procedures, as well as overall plant safety. The operating procedures are designed to maintain product quality in accordance with other federal regulations.

2.1.2 Alarm Systems and Release Prevention

The AMS London Road facility is equipped with a number of systems designed to prevent and detect releases of hazardous materials. These systems include ventilation, radioactive waste handling, fire alarms, personnel reporting, health physics procedures and stack monitors.

2.1.2.1 Master Alarm System

Six safety and monitor devices are connected to the Master Alarm Panel in the Cell Control area and to the Remote Alarm Panel in the Isotope Shop Area. The separate red lights for each controlled item are always dimly lit on the panel, so that faulty operation of the panel itself is indicated by no light. When a controlled item malfunctions, the alarm light is increased in intensity and flashes on and off. In addition, a loud buzzer sounds on and off in synchronism with the flashing lights. This will continue until the acknowledgement button is depressed, causing the buzzer to stop and the flashing light corresponding to the malfunctioning item to change to a steady bright red. The alarm can be erased only by correcting the difficulty after depressing the acknowledgement button. In addition, two

other warning lights show on the Master Alarm Panel; one for the Equipment Room door and for the Cell Machinery Room door on the second floor, and one for the basement door in the Isotope Shop area. These will indicate steady bright red lights when the doors have been opened and indicate to the hot cell operator that personnel are in this area. Evaluation tests indicate that no unusual hazards exist in these areas under normal cell procedure, but the precautions should be taken nevertheless. On five of the six major systems, any alarm is transmitted to the local burglar alarm company so that malfunctions during non-working hours are reported to a responsible person. The emergency generator will not trip the other five alarms if it restores power before the fans stop.

The following are six safety and monitoring systems and conditions which will cause an alarm:

A. Cell Exhaust Fan

1. Shut down from lack of power or switch turned off.
2. Sudden pressure drop across air filter indicating ruptured filter.
3. Improper pressure across filter indicating broken belts, fan inoperative or plugged filter.
4. Excessive radiation on the air monitor.

B. Isotope Shop Area Exhaust Fan

1. Shut down from lack of power or switch turned off.
2. Sudden pressure drop across air filters indicating ruptured filter.
3. Improper pressure across filter indicating broken belts, fan inoperative or plugged filters.
4. Excessive radiation on the air monitor.

C. Air Monitor

1. Excessive radiation on filter paper in air monitor or electronic malfunction of monitoring equipment.

D. Cell Temperature

1. Two thermostats, one located in Cell Control Area, and one located in Decontamination Room immediately behind the cell, are set to give an alarm signal for temperatures below 40° F. or above 85° F.

E. Supply Fan

1. A thermostat in the intake system after the heaters will give an alarm signal for temperatures below 50° F.

F. Emergency Generator

1. Signal given on power failure when generator starts.

Hot Cell Systems

- A. Door Interlock: An electrical interlock secures the door in the closed position until two switches, one on the outside of the door and one on the cell face in the Cell Control Area, are depressed simultaneously. This safety feature makes it impossible for the cell door to be opened without the knowledge and consent of the cell operator, or for the door to be opened by a person working alone.
- B. Cell Probe: A high energy probe, Victoreen Model 550 Series (or equivalent), is used within the cell to locate loose Cobalt ⁶⁰ pellets and other high radiation levels. It is connected to Victoreen Model 510 Ratemeter (or equivalent) located on the cell face in the Cell Control Area. The Ratemeter is autoranging up to 2000 R/min.
- C. Gamma Alarm: A Technical Operations Gamma Alarm Model 492C (or equivalent) is mounted opposite the cell face in the Cell Control Area. Since it is connected to a loud buzzer, it gives both an audible and a visible alarm (flashing red light) continuously when radiation levels are in excess of the preset level of approximately 2 mR/hr. The Gamma alarm features fail-safe circuitry to provide a signal at all times. Failure of any element either turns on the red lamp or turns off the green (safe) lamp, signaling improper operation.

Decontamination Room

- A. The hot cell exhaust fan is driven by a two-speed motor which is controlled by the position of the

double doors connecting the Decontamination Room with the Isotope Shop area. With the doors closed, the fan operates at normal speed which is indicated by a yellow light on the locked switch control at the cell face. With the doors opened, the fan speed is increased for about 50% greater capacity. This prevents reverse flow of potentially contaminated air of the Decontamination Room into the Isotope Shop area. High speed mode is indicated by a red light on the locked switch control at the cell face.

Isotope Shop Area

- A. Gamma Alarm: A Technical Operations Gamma Alarm, Model 492D (or equivalent) is mounted on the west wall between the storage garden and the decontamination room adjacent to the source transfer operation. This will give a visible flashing red light when radiation exceeds the preset level of 5 mR/hr.
- B. Basement Door: When the basement door is opened, a steady red light turns on above the door. Also, a steady red light shows on the Master Alarm Panel.
- C. Air Locks:
1. The doors at either end of the change area are electrically interlocked to prevent simultaneous opening which might disturb the air flow pattern. The entrance to the change area from the cell control area is an air lock by itself. The first door is interlocked with the door on the opposite side of the change area leading into the Isotope Shop area.
 2. The air lock on the west side of the Isotope Shop area has three (3) electrically interlocked doors. One set of doors leads to the Isotope Shop area, one set leads to the warehouse and the last set, on the north side of the air lock, leads to the unrestricted area. When the Isotope Shop area doors are open, the other two doors cannot be opened. When one of the other two doors is open, the Isotope Shop area doors cannot be opened.

Equipment Room

- A. This room is directly above the shielded work room. This room contains the heating and intake air fan as well as the air conditioners. The floor is shielded with two (2) feet of concrete. A Technical Operations Gamma Alarm, Model 492B (or equivalent) set at approximately 2 mR/hr. is mounted in the center of the room. It remotely indicates a signal above the entrance to the room. No one is permitted to enter this room without permission of the Radiation Safety Officer or Supervisor. Also, PERSONNEL ARE NOT PERMITTED IN THIS ROOM WHEN THERE IS NO SIGNAL GREEN LIGHT OR WHEN THERE IS A RED LIGHT. In addition, when the door is opened, a steady red light shows on the Master Alarm Panel.

Shielded Work Room

- A. Gamma Alarm: A Technical Operations Gamma Alarm, Model 492C (or equivalent) set at approximately 5 mR/hr. is mounted at the end of the maze in the room. A remote indication over the entrance shows red when the radiation level is in excess of 5 mR/hr. and white when the radiation level is below the preset level.

Doors

- A. Only authorized personnel have keys to any isotope area. Doors to controlled areas are kept locked at all times. This includes the following:
1. Air lock from cell control area to change area.
 2. Doors from the shop area to the air lock.
 3. Doors from the warehouse to the above air lock.
 4. Doors from the air lock to Isotope Shop area.
 5. Doors from the warehouse to the shop area on the northeast side of warehouse.
 6. Equipment room on second floor.
 7. Cell Machinery Room on second floor.
 8. Room adjacent to Cell Machinery Room.

9. Basement door opening to clean side of basement.
10. In addition to above, the perimeter of the entire facility is tied in with a local burglar alarm company (ADT).

2.1.2.2 Ventilation System

The facility has a HEPA ventilation system. All air from potentially contaminated areas within the building is exhausted through this HEPA filter system. The hot cell ventilation system is redundant if one system fails, the air flow from the hot cell is diverted through the Isotope Shop filter system. The filter banks, located in the cell equipment room have appropriate filters in series. All systems discharge through a common stack penetrating the roof. The HEPA system is connected to various monitoring devices for both local and remote alarms. The ventilation system is connected to the emergency generator which will allow the system to function in case of a power failure.

As a result of these air exhaust systems, all radiation process areas are under negative pressure. The hot cell is also at a greater negative pressure with respect to the other process/work areas. The pressure differential between the inlet and outlet end of the exhaust filters is continuously monitored. A portable HEPA system is available for special isolated area use.

2.1.2.3 Radioactive Waste Handling

Solid radioactive waste is collected, compacted if possible, and placed in a designated container. The waste is surveyed, drummed and stored in shielded locations. Access to these areas is controlled. The packaging and shipment of radioactive wastes are controlled by procedures ISP-34 and ISP-35.

2.1.2.4 Fire Systems

The facility is equipped with a fire alarm system and is an integral part of the fire protection system. The fire alarms are activated by either alarm sensors, pull boxes or when the sprinkler system is activated. The alarm system is connected to a commercial alarm company that notifies off-site fire organizations. In the event of a fire, personnel follow established routes of evacuation from the effected areas.

2.1.2.5 Personnel Reporting

The processing and handling of radioactive material requires the presence of personnel. These individuals are an essential part of the accident alarm system, since the person associated with an abnormal event knows immediately when such a situation has occurred. Following an incident, the individual would immediately report the incident to his/her supervisor.

2.1.2.6 Health Physics Procedures

Personnel check radiation levels throughout the facility in three ways: with wipe tests, air sampling and survey meters. The periodic checks of radiation levels in areas in which radioactivity is handled, alert the RSO and personnel to potential problems. In addition to these area surveys, meters for monitoring area and personnel contamination are located in the work areas. These meters are always on, and, therefore, constantly monitor radiation levels in those areas.

2.1.2.7 Stack Monitor

The exhaust stack is equipped with a stack monitor and chart recorder. The stack monitor is also connected to the ADT alarm panel. A sufficient increase in activity above the preset level immediately stops the exhaust and supply fans. The activation point is set such that if averaged over one year, the air concentrations would be less than the applicable maximum permissible concentrations in air from Appendix B 10CFR Part 20.

2.1.3 Support System

This section describes various support systems, including facility structures, confinement barriers, fire suppression and shielding.

2.1.3.1 Structural Performance

The facility was designed and built to conform with standard building codes and permit requirements of Cuyahoga County. In addition, the hot cell is constructed of concrete and steel walls six foot thick and a zinc bromide viewing window.

2.1.3.2 Confinement Barriers and System

Confinement barriers in use at the London Road facility include the hot cell, ventilation system, shipping containers/casks and radioactive waste storage systems. The primary confinement for the radioactive material is the container that holds it. Raw material for processing comes to AMS in DOT/NRC approved shipping containers. The shipping containers are not opened until they are inside the hot cell. The hot cell is constructed of six foot concrete walls with a zinc bromide viewing window, and is under negative pressure with respect to its surroundings.

Radioactive sources are moved using lead shielded transfer containers. The Isotope Shop area is also under a negative pressure with respect to its surroundings. The ventilation systems that keep these areas under negative pressure are equipped with HEPA filters that confine radioactive material.

Solid radioactive waste is collected, surveyed and packaged and stored in a limited-access area prior to disposal.

Radioactive material is also confined by the sealed sources in which it is placed. The shipping and packaging in which the final product is placed, provides further confinement of the radioactive material. All packages conform to USNRC or DOT regulations. When not being used, all cobalt is stored in bulk storage containers and kept in the shielded floor plugs located in the hot cell floor.

2.1.3.3 Access and Egress of Operational Personnel and Emergency Response Team

During minor incidents, no evacuation will be required and response team access will be through normal access routes. The RSO's staff is responsible for normal facility monitoring and are quite familiar with these routes.

2.1.3.4 Fire and Explosion Resistance and Suppression

The facility is constructed of concrete and steel and is therefore fire resistant. In addition, all areas, except the hot cell, isotope shop and cell equipment room, are equipped with a sprinkler system. In addition, a detection system has been installed in all areas including the cell equipment room. The system detects a sudden rate of temperature rise or smoke and

electronically signals the security company. They in turn report the incident to the local fire department. In addition, pressurized fire extinguishers for various class fires are located throughout the facility. The small amount of highly combustible material within the facility are stored in fire and explosion proof cabinets.

2.1.3.5 Shielding

The hot cell is built of concrete and steel. The walls are 5-1/2 feet of concrete with a 1/4-inch steel plate on the inside faces. The cell is 6' x 6' x 11' high. It has a 4' floor and 4' ceiling. The cell is closed by a 402-ton hinged door that provides a 6' entrance into the cell when opened. The hot cell will provide adequate shielding for the amount of radioactive material that the facility is licensed to possess.

2.1.4 Central Operations

To ensure the proper functioning of systems throughout the facility, AMS routinely checks and documents the performance of these systems. These systems include the ventilation systems, air sampling system and security system.

2.2 Demonstration of Engineered Provisions for Abnormal Conditions

This section addresses the anticipated performance, under abnormal conditions, of the systems described in Section 2.1.

2.2.1 Process Systems

As described in Section 2.1.1, operational personnel are the key aspect of process control. Since all operating personnel are well trained, these personnel are expected to perform as trained under normal and abnormal conditions.

2.2.2 Alarm Systems and Release Prevention

All of the systems presented in Section 2.1, ventilation, fire and evacuation alarms, personnel reporting, health physics procedures and stack monitor, are expected to perform, except under the most severe conditions. Under most conditions, the ventilation systems would confine radioactivity by keeping areas under negative pressure and by removing radioactivity from effluent air with filters. Failure of the ventilation system will not result in radioactive release due to the damper system. Under the most severe conditions, the ventilation system cannot be expected to confine radioactivity.

The fire and area alarms are functional at all times since they are regularly checked and receive power from emergency systems.

Staff personnel are present at all times during which radioactivity is handled, and would generally give the first notification that an abnormal or emergency situation had occurred. During an abnormal situation, personnel would conduct radiation level surveys, according to emergency procedures.

The stack monitor is expected to be operational in all but the most severe conditions. The system receives back-up power from the emergency generator.

2.2.3 Support Systems

Because the facility building conforms to standard building codes, it is expected to maintain its structural integrity under all but the most severe natural phenomena. The same is true of the confinement, shielding and barrier systems in use throughout the facility. The ventilation systems should also be operational under all conditions except those resulting from extremely severe natural phenomena.

2.2.4 Control Operations

Because the systems designed to prevent the release of radioactivity are routinely checked to ensure their integrity, these systems should be fully operational under abnormal conditions. The safety assurance program that ensures that systems designed to prevent the release of radioactivity meet their performance goals are listed in 2.1.4

3.0 Classes of Radiological Contingencies

3.1 Classification System

The classification system for radiological contingencies is that recommended by the USNRC in their standard format document for radiological contingency plans. Minor changes have been made so that the classification scheme reflects facility-specific conditions.

Section 3.3 of this plan relates the classification scheme to potential accidents within the AMS London Road facility.

3.2 Classification

3.2.1 Class I - Alert

Class Description

Events are in process or have occurred which involve an actual or potential minor degradation of the level of safety of the plant. Any releases are expected to be limited to a small fraction of those permitted by 10CFR Part 20

OffSite License Action

1. Notify Ohio Emergency Management Agency, Columbus, Ohio, providing information contained in OEMA Radiological Incident Response Checklist, Attachment 2 to Emergency Preplan.
2. Augment resources and bring key personnel to stand-by status
3. Assess and Respond
4. Calculate periodic dose rates for actual release
5. Escalate to a more severe class if appropriate
6. Close out upon completion of duties

3.2.2 Class II - Site Area Emergency

Class Description

Events are in process or have occurred which involve actual or likely failures of plant functions needed for protection of the public. Offsite releases are not expected to exceed those permitted by 10CFR Part 20 except near the site boundary.

License Action

1. Notify OEMA, Columbus, and local authorities of site area emergency status and reason for emergency as soon as discovered. Provide OEMA with information requested in OEMA Radiological Incident Response, Checklist Appendix A, Exhibit 2. NRC NOTIFICATION ALSO REQUIRED
2. Augment resources and bring key personnel to stand-by status
3. Assess and respond
4. Conduct onsite monitoring
5. Provide dose estimates to offsite authorities for actual releases
6. Provide release and dose projections based on available plant condition information and foreseeable contingencies
7. Close out or reduce class of emergency based on results of actions

3.3 Range of Postulated Accidents

The range of accidents that can be postulated for the AMS London Road facility can be categorized as follows:

- *Radioactive material spills in the hot cell
- *Fire
- *Severe natural phenomenon (earthquake, tornado)

In the event that a radioactive material spill occurred, it will have taken place in the hot cell. All dose and release limits are based on the assumption that the ventilation systems are operating normally since no radioactive handling occurs when the ventilation systems are inoperable.

Following a spill in the hot cell, the responsible operator would notify the Radiation Safety Officer (RSO). The RSO would respond immediately. The RSO would assess the magnitude of the spill by review of records and discussion with the operating personnel. Immediate evacuation of the affected area would not be required since the spill would have occurred in the hot cell. One action taken by the RSO would be to instruct the personnel in the affected area to take immediate corrective action. This immediate action would be to clean up the spilled materials by use of the manipulators and electromagnets, and to secure the material in its storage containers. Analysis of the stack monitoring filters will be required to determine if there has been a potential release of any radioactive material to the atmosphere.

Fires in the AMS London Road facility are very unlikely due to: (1) The fire resistant nature of the structure; (2) the fire suppression system; (3) the small quantities of combustibles used in the source processing procedures; and (4) fire prevention program established at AMS. Minor fires, such as refuse fires, would result in very small releases. Fires in the ventilation system are quite unlikely because the HEPA filters are fire-resistant and because of the lack of combustibles located in the hot cell. Fires that could result in major impacts would be major fires engulfing large portions of the building.

Major fires are extremely difficult to postulate due to their low probability of occurrence. Major fires have been included in this plan due to the potential for offsite impacts. Any major fire requiring building evacuation and offsite fire fighting assistance, will result in the RSO immediately declaring a "Site Area Emergency". The fire fighting crews will be monitored with personnel monitoring devices. Fire fighters and rescue teams entering the building will use appropriate respiratory equipment and will be accompanied by an AMS employee or offsite support personnel trained in the use of and equipped with portable radiation detection equipment. All persons leaving the building will be monitored to control contamination. Re-entry and recovery will be strictly controlled so to limit personnel exposures to regulatory limits.

The risk from tornadoes and earthquakes is in the low range in this area. If a tornado strikes or an earthquake causes visible damage to any of the AMS London Road building, the RSO will declare an "ALERT" condition. Escalation to a more severe class will depend on the results of assessments made through monitoring of the site.

4.0 Organization for Control of Radiological Contingencies

This chapter describes the organization for radiological contingencies, how the organization is activated and the authorities and responsibilities of the organization.

4.1 Normal Plant Operations

The RSO has overall responsibilities for all aspects of the facility. The Director of Regulatory Affairs is organizationally separate and provides regulatory compliance and health physics services. Radiological contingency personnel will be drawn mainly from this branch of the organization.

4.2 Onsite Radiological Contingency Response Organization

This section describes the organizational structure and functions for radiological contingencies. The authority of the contingency organization to perform the functions described herein has received corporate approval as indicated by the Statement of Policy included with this plan.

4.2.1 Direction and Coordination

The RSO will be responsible for all offsite notification and reporting. In his absence, the Director of Regulatory Affairs will contact offsite authorities. The Emergency Manager, a roll filled by the RSO, will have direct control over emergency operations. The Emergency Manager will serve as the first line of communication with the operating and emergency staffs.

Since some classes of radiological contingencies require that offsite authorities be informed of the situation, the RSO is necessarily involved in each of the contingencies. The class of contingency, however, does determine the level of onsite and/or offsite support needed to deal with the situation.

For radioactive material spills, the operational personnel report such an incident to the RSO. The RSO will assess the event and will take appropriate action. In general, the RSO will be capable of handling these situations entirely with no further onsite or offsite support.

In the event of a major fire or severe natural phenomenon, the RSO activates the onsite emergency response. The RSO also informs local/state authorities and the NRC of the situation.

4.2.2 Plant Staff Radiological Contingency Assignments

During an emergency, assignments for the contingency staff are on two levels: local and plant-wide. The RSO is responsible for plant-wide direction of emergency situations. The normal operational staff will provide initial reporting and information and further assistance as requested by the RSO.

4.2.2.1 Radiation Safety Officer (RSO)

The primary responsibility of the RSO will be:

- *Coordination of first aid and medical transport
- *Coordination of evacuation
- *Coordination of offsite fire assistance
- *Coordination of rescue operations.

Staff for medical assistance, fire fighting and rescue operations will be offsite personnel. Area personnel will aid in evacuation, including personnel accountability.

4.2.2.2 Radiation Safety Officer (RSO) and Supporting Staff

The primary responsibility of the RSO and the supporting staff will be the radiological protection of onsite and offsite personnel and assessment of the emergency. Specific responsibilities include:

- *Assessment of accidental releases and doses
- *Personnel monitoring (on and offsite personnel)
- *Personnel and facility decontamination
- *Radiological surveys
- *Assisting in post-accident assessments
- *Overall maintenance of the Radiological Contingency Plan

4.2.2.3 Facility Employees

Facility employees will serve as the first line of communication following radioactivity spills and will assist in evacuation and personnel accountability, as discussed above.

4.3 Offsite Assistance to Facility

In the event of a radiological emergency, it may become necessary to use offsite assistance to supplement the onsite emergency organization. Advanced Medical has arrangements with the local police and fire departments and with local hospitals and ambulance services to respond to these emergencies. Letters indicating to whom this plan has been sent are contained in an Appendix B to this plan. The RSO, through communications with facility employees, assesses the need for offsite support services. He, or his designee, contacts the appropriate offsite organization by telephone to request support.

4.4 Coordination with Participating Government Agencies

The State of Ohio Emergency Management Agency, located in Columbus, Ohio maintains a Governor's response team for radiation accidents.

5.0 Radiological Contingency Measures

This section provides a general description of the measures to be taken during a radiological contingency. The emergency procedures enclosed as an Appendix provide details of the steps to be taken.

5.1 Activation of Radiological Contingency Response Organization

The initial step in any emergency is the activation of the radiological contingency response organization. As described in Section 1.0 of this plan, all radioactive material processing involves operating personnel. As such, the initial reporting of most incidents will depend on these personnel. The activation steps taken from the initial incident through notification of the Emergency Manager/RSO will depend on the incident. Once the Emergency Manager/RSO is notified, further activation and communication will be his/her responsibility. Procedures detailing the activation of the response organization are included as an Appendix to this plan.

5.1.1 Initial Incident Reporting

The initial incident reporting for each type of accident is presented below.

Radioactive Spills Within Hot Cell

These spills will be the result of operator error or minor equipment failure. The operator will verbally inform the RSO of the spill. The RSO will report to the spill area and perform an initial assessment of the spill. He will take into consideration the following:

1. Location of spill;
2. Curies spilled;
3. Status of ventilation system (from visual alarms)
4. Extent of damage.

The Emergency Manager/RSO will determine the class of the accident as described in Section 3.0 of this plan and proceed as outlined in Section 5.1.2

Ventilation System Incidents

Failure of the ventilation system will result in evacuation of the affected area but does not constitute a radiological emergency. Any incident in which ventilation flow is stopped

will be reported to the RSO by the individual observing the ventilation system problems. The RSO will perform an initial assessment of the incident.

Major Fire or Severe Natural Phenomenon

All incidents of this type will be reported to the Emergency Manager/RSO by plant personnel or the offsite security company. The personnel will be aware of fire through the fire alarm system and of severe natural phenomena by the phenomenon itself. Plant personnel will use the intercom system as the first line of communication. During normal working hours, the Emergency Manager/RSO will be contacted through office phones. During off hours, the Emergency Manager/RSO (or his alternate) will be contacted at home. Also during off hours, the RSO will contact other key personnel summoning them to the site as required.

5.1.2 Response Organization Activation

Incidents Other Than Major Fires and Severe Natural Phenomenon

For all such incidents the RSO will report immediately to the affected area and assess the situation. The RSO, based on his assessment, will determine what class of emergency, if any, is applicable. The action to be taken under each emergency class are outlined in Section 3.2 and detailed in the attached procedures. The RSO will contact by telephone the Director of Regulatory Affairs, the Cleveland Fire Department, the Ohio Emergency Management Agency and the USNRC, as detailed in Section 8.3. These parties will be instructed to place a return call and repeat the information provided by the RSO to authenticate the call.

Major Fires and Severe Natural Phenomenon

These classes of incidents are described in Section 3.3. The Emergency Manager/RSO will receive reports of these types of incidents from plant personnel or the offsite security company. The Emergency Manager/RSO will immediately declare an "ALERT". He will assure that the facility is being evacuated. He will instruct his personnel to assess the emergency via environmental monitoring. He will then activate the emergency response team and make offsite contacts as described above.

5.2 Assessment Actions

Assessment of the emergency condition will be the primary responsibility of the RSO. The initial step in each emergency sequence will be on initial assessment by the RSO. This assessment will be via three (3) methods depending on the severity of the accident:

1. Inspection
2. Release estimates
3. Air monitoring and dose monitoring

The simplest method is visual observation. For all incidents, the RSO will report to the affected area and determine what has happened. He will characterize the incident as a contained spill, ventilation system failure, fire or natural phenomenon. He will also assess the extent of physical damage and injuries.

For all but the most severe incident, the RSO will estimate the amount of radioactivity that has been released through inspection of process records and discussion with the operating personnel.

Air and dose monitoring is the most reliable assessment method. Air monitoring will be performed for all accidents of "Site Area Emergency". This type of monitoring will occur around the site as well as inside the structure to collect samples of airborne particulates in filter paper for analysis: (ie. air concentrations).

Throughout any emergency situation external doses will be monitored continuously for the purpose of protecting personnel. This monitoring will include personnel film badges and self-reading dosimeters as well as portable survey instruments.

5.3 Corrective Actions

As described in Chapter 3, there are three (3) types of accidents that have been postulated for the AMS London Road facility: spills, fire and natural phenomena. The corrective actions that follow each of these incidents are presented below. Similar corrective action will be taken for localized fires in which release of radioactivity are suspected. In addition, minor fires will not be of sufficient severity to cause breach of containment. Corrective action for ventilation failure is to have personnel restore proper airflow.

The most probable incident is a spill of radioactive material in the hot cell. Normally this incident would be classified as an "ALERT". For this type of situation, the RSO will determine the spill magnitude by reviewing process records. If the spill is inside the hot cell, it is contained there. Outside of the hot cell, the RSO will perform a survey to assess the extent of the contamination. The RSO will also begin immediate clean-up of the spill, and if necessary, will decontaminate the affected area. This clean-up will result in most of the activity being secured in storage containers and floor plugs for safekeeping.

In the event of an all-engulfing fire or tornado or earthquake, there are essentially no corrective actions that can be taken. Actions to be taken are of a recovery nature, after the initiating event has ceased. One corrective action, however, is for the RSO to survey around the affected building to locate any contamination. If such areas are located, the RSO will mark and decontaminate them.

5.4 Protective Actions

This section discusses the action necessary to prevent or minimize exposure to radiation during the emergency.

5.4.1 Personnel Evacuation from Site and Accountability

The incident producing the emergency determines if evacuation is necessary. When material is spilled inside the hot cell, evacuation will not be necessary. When material is spilled outside of the hot cell, that area will be evacuated. For any other emergency (fires, tornadoes, etc.), evacuation will be immediately ordered. Personnel will follow established routes, and reassemble at designated areas as described in the attached procedures. The RSO or his designate will check for missing persons. At the assembly point, the RSO will survey individuals to determine whether any evacuees should be decontaminated. The RSO or his designate will also assess the need for medical attention.

5.4.2 Use of Protective Equipment and Supplies

Respiratory devices and protective clothing are located in various areas throughout the facility. This equipment is also part of the Emergency Response Kit located in the Advanced Medical Systems fire pumphouse approximately 300 feet west of the London Road facility on Mandalay Avenue. Personnel are trained in the use of the equipment as part of their initial radiation protection training. The RSO will determine the need for using this equipment. Appropriate respiratory devices will be worn for corrective action during fires. Protective clothing will be worn during corrective actions for any material spills. All other equipment will be used as needed.

5.4.3 Contamination Control Measures

To prevent further spread of radioactive materials and thereby minimize exposure due to these materials, the area in which the emergency occurred will be marked and secured

by personnel under the direction of the RSO. Only personnel designated by the Emergency Manager/RSO will be permitted to enter the area.

Inside the marked area, the RSO will determine the extent and location of contamination and will appropriately mark those areas. Once the areas have been marked and decontamination operations have begun, full scale recovery operations will commence. In order for the facility to return to normal use, contamination must be controlled to the extent that personnel exposure will not exceed normal limits:

Loose surface contamination levels:

Restricted Areas	<40,000 DPM/100cm ²
Unrestricted Areas	<220 DPM/100cm ²

3.5 Exposure Control in Radiological Contingencies

The primary goal of radiological contingency response is to control personnel exposure. In the event of an emergency, however, it may be necessary for members of the emergency response team to receive exposures up to the EPA guidelines: i.e. less than 25 Rem for either a lifesaving action or less than 10 Rem for entry into hazardous areas to protect the facility or control fires.

5.5.1. Emergency Exposure Control

For any accident involving Cobalt ⁶⁰, emergency workers are required to wear appropriate respiratory equipment. To remove injured persons, undertake corrective actions, perform assessment actions or provide first aid, exposures will be limited to 25 Rem. Preliminary decontamination of injured personnel will occur prior to transport, so that the medical and ambulance service personnel exposure will be less than 3 Rem. A total exposure of 25 Rem will be allowed for lifesaving activities.

5.5.2 Radiation Protection Program

The Emergency Manager/RSO is the only individual who can authorize workers to receive emergency radiation doses. During the emergency, trained workers will carry survey meters to determine dose rates in the areas in which they are working. The workers, therefore, may not work in areas where the dose rate multiplied by the amount of time

spent in the area exceeds 5 Rem. For lifesaving activities, the dose rate multiplied by the amount of time spent in the area may not exceed 25 Rem.

5.5.3 Monitoring

All emergency response personnel, including firefighters, will wear self-reading dosimeters. Team members will also carry radiation survey meters and pocket dosimeters.

5.5.4 Decontamination of Personnel

Initial decontamination of personnel at the facility will consist of workers removing their normal protective clothing and depositing clothing in a specified location. If additional decontamination of injured personnel is required, it will be conducted at Meridia Huron Hospital. There, individuals will be decontaminated to background levels. Appropriate decontamination procedures and decontaminates will be used. Radioactive wastes generated during decontamination procedures will be deposited in standard radioactive waste containers or bagged in plastic until such containers are available.

5.6 Medical Transportation

Preliminary first aid will be provided by AMS personnel. All transportation of injured personnel will be provided by the City of Cleveland Fire Department or a commercial ambulance service. They may also provide limited first aid, if possible. Limited decontamination of injured persons will be performed by the RSO and his staff prior to transport as described in Section 5.5.4.

5.7 Medical Treatment

AMS has arranged with Meridia Huron Hospital in Cleveland for the care of injuries involving radiological contamination. All injured parties will be transported to this hospital. The regular hospital staff will provide medical services while the Meridia Huron Hospital Department of Radiology staff will provide contamination control. The AMS staff member will provide information assistance as requested.

6.0 Equipment and Facilities

This chapter describes AMS's equipment and facilities designated for use during a radiological emergency.

6.1 Control Point

During a radiological contingency with possible offsite impact, emergency response control will be conducted from the fire pumphouse on Mandalay Avenue, approximately 300 feet west of the facility. This location should be minimally affected by an accident inside the facility.

6.2 Communication Equipment

During normal operations at the London Road facility telephone and P.A. systems are used for communications. In addition, fire alarms, discussed in an earlier chapter, inform the personnel of the need to evacuate the building. During an emergency, the RSO would be working closely with the City of Cleveland Fire Department and their response teams, and communications would be made through their system at the site.

Facility for Assessment Teams

Assessment teams will also operate out of the fire pumphouse. The equipment and supplies located in this building are described in Section 6.4.

6.4 Onsite Medical Facilities and Contamination Control Equipment

Any injuries requiring medical attention will receive first aid from offsite ambulance crews, although initial first aid will be provided by onsite personnel. Injured individuals will be taken offsite to Meridia Huron Hospital with which AMS has arrangements.

Offsite supplies for personnel decontamination are stored in the fire pumphouse located on Mandalay Avenue, approximately 300 feet west of the facility.

The supplies located in the fire pumphouse include:

- Emergency Plan, Emergency Procedures and extra Report Forms
- Frisker
- Survey Meter
- Flashlight
- Batteries for above
- Respirator
- Air Sampler
- 100-foot Extension Cord
- Pocket Dosimeters - 200Mr and 5R
- Dosimeter Charger
- Protective Clothing - Shoe Covers, Head Covers, Coveralls
and Gloves
- 20-inch Masking Tape
- Contamination Wipes, Soap, Spray Bottle
- Rope, Signs and Placards
- Ziploc Plastic Bags
- Polydrum Liners - 6 Mil.
- Marking Pens
- Graphite Pencils
- Survey Data Forms
- Facility Drawings
- Emergency Phone Numbers
- \$3.00 in Quarters
- Building Keys

6.5 Emergency Monitoring Equipment

Equipment for assessing and handling the emergency include:

- *Pocket Dosimeter and Dosimeter Charger
- *Low and High Level Survey Meters
- *Anti-Contamination Clothing and Respirators
- *Friskers

All emergency equipment is calibrated and checked regularly according to normal ISP practices. Equipment should therefore be operational at the time of use.

7.0 Maintenance of Radiological Contingency Preparedness Capability

This chapter describes the administrative procedures for maintaining, reviewing and testing the radiological contingency plan.

7.1 Written Procedures

To ensure that the written implementing procedures for the radiological contingency plan uniformly address the duties and actions of each individual or group responding to an emergency condition, the Director of Regulatory Affairs has been designated as the planning coordinator for the Radiological Contingency Plan. In this capacity, the Director of Regulatory Affairs also reviews the contingency plan and procedures annually and updates them as needed. It is the responsibility of the Director of Regulatory Affairs to forward the plan and procedures to all individuals responsible for implementing the plan.

7.2 Training

Onsite operating personnel are introduced to their responsibilities during an emergency as part of their formal job training, which includes basic radiation protection. Since their only responsibility during an emergency is initial reporting of an abnormal occurrence, no further training is required. Staff with limited emergency responsibilities receive basic radiation protection training as well as limited emergency response training.

AMS will conduct an biennial training seminar for key fire department personnel that will include notification procedures, radiological protection and their expected role in an emergency.

7.3 Review and Updating of the Plan and Procedures

The RSO is responsible for reviewing the plan annually and/or amend the plan to reflect changes in facilities, personnel and processes. The revisions will be reviewed by the Director of Regulatory Affairs and the Radiation Safety Committee. The revisions in the plan will be approved by the Director of Regulatory Affairs.

Minor changes and updates in this plan will be transmitted to the USNRC. Substantive changes in the plan, due to major changes in the licensed activity or those which significantly alter the intent of the plan, may require a license amendment.

7.4 Maintenance and Inventory of Radiological Emergency Equipment,
Instrumentation and Supplies

To assure that emergency equipment and instrumentation are in working condition and that the stock of emergency supplies is maintained.

These items will be inventoried and checked quarterly. Instruments will be calibrated twice yearly. Inoperable or missing equipment will be repaired or replaced as soon as possible.

8.0 Records and Reports

8.1 Records of Incidents

All incidents which result in a declaration of any of the emergency classes discussed in Section 3.2 of this plan will be recorded and reported in accordance with emergency procedures. During the incident, records will be maintained so that an incident report, including the following, can be prepared:

- *Cause of event
- *Extent of damage and/or personnel injuries
- *Radiological data
- *Personnel and/or equipment (physical plant) involved
- *Corrective action taken
- *Offsite assistance requested and received
- *Fraction of response equipment used
- *Records of offsite contacts
- *Re-entry/recovery plans

This information will be compiled on forms which will be used as post incident reports. These reports along with supporting documentation will be maintained as emergency records until the license is terminated. A Radiological Incident Response Checklist found in Appendix A, Exhibit 2, will also be completed.

8.2 Records of Preparedness Assurance

Section 7.0 of this plan details the steps that will be taken to assure radiological contingency preparedness. Records documenting this preparedness will be maintained for a five (5) year period following the activity being recorded. These records will include:

- *Attendance records of training and retraining
- *Report forms and critiques for drills and exercises
- *Inventory check-off sheets
- *Test and maintenance records for emergency equipment
- *Review and update records for the plan and procedures

All reviews and updates of the plan and associated procedures will be scheduled so that annual retraining will include all such changes.

8.3 Reporting Arrangements

Offsite reporting related to the radiological contingency plan will be the responsibility of the RSO and will include:

- *The plan itself as well as updates
- *Initial reporting and subsequent status updates for emergencies
- *Post incident reports

For distribution of the plan and subsequent updates, a list of holders of the plan will be maintained. Individuals receiving the plan and update will acknowledge receiving the material.

Initial offsite reporting and subsequent status reports of radiological contingencies will be made by the RSO. The initial report will be made within one hour of the initiating event. The RSO will make the initial report in the following order:

1. Director of Regulatory Affairs, AMS
2. State of Ohio Emergency Management Agency
3. U.S. Nuclear Regulatory Commission -
Emergency Operations Center

The report will be made following specific procedures and will include the following information:

- *Contingency Class
- *The cause of the contingency
- *The status of the facility
- *Personnel exposure and injuries
- *Offsite doses
- *Recovery steps taken

Post incident reports will be prepared by the RSO and his/her support staff and submitted in accordance with Section 3.2 of this plan. The content of these reports is outlined in Section 8.1.

9.0 Recovery

Recovery from a radiological accident will involve re-entering the facility, restoring the facility and the resumption of normal operations. All of these activities will be conducted in such a way as to minimize personnel exposures and radioactivity releases.

9.1 Re-entry

Re-entry obviously applies to emergencies which involve evacuation. For minor, uncontained radioactive material spills (i.e., airborne contamination in the HEPA Room) limited areas will be evacuated. Re-entry will be made by the RSO's staff at the direction of the Emergency Manager/RSO to assess the level of contamination and to perform corrective actions (decontamination). The staff will be equipped with appropriate respiratory equipment to limit internal exposures. Whole body exposures will be limited to 3 Rem/quarter during re-entry and restoration following such an accident.

During a major fire, or immediately following a severe natural phenomena, re-entry will only occur to save human life. Exposures for re-entry personnel will be consistent with the EPA Emergency Worker and Lifesaving Activity Protective Action Guides (EPA 520/1-75/001) of less than 25 Rem whole body gamma for either emergency workers or lifesaving activities. The use of appropriate respiratory equipment by all re-entry personnel will limit hazards of inhaled radioactive material. Re-entry following such an accident will be at the direction of the RSO. Re-entry personnel will be equipped with portable radiation detectors.

The decision to re-enter the facility is based on an evaluation by the RSO and other supervisors that emergency conditions have terminated or have stabilized to a level that would safely permit re-entry. Re-entry teams will make the initial assessment of the extent of contamination and damage. This assessment will form the basis of plans for plant restoration.

9.2 Plant Restoration

During all plant restoration operations, all personnel radiation exposures will be kept as low as reasonably achievable (ALARA) so that the exposures will be below the limits of 10 CFR Part 20.

Restoration falls into three categories: regulatory compliance, maintenance and health and safety. The supervisor of each of these sections is responsible for plant restoration involving each of these categories. The specific restoration plans for these categories are presented below.

The Radiation Safety Officer ensures that:

- *Contaminated areas have been defined and posted and decontamination operations are proceeding
- *Radiation detection equipment, especially survey meters, are functioning properly and all restoration parties are trained and equipped with these meters
- *Ensures that all enclosures and shielding used to contain radioactivity are functional
- *Ensures that the ventilation systems and their associated alarms are functional

The RSO staff will make certain that:

- *Evacuation and fire alarms are functional
- *The contents of the emergency lockers have been replenished

Based on information provided to the Emergency Manager/RSO by these individuals, the Emergency Manager/RSO will declare that the plant has been safely restored.

9.3 Resumption of Operations

Following the plant restoration, described in Section 9.2, operations will not be resumed until precautions have been taken to prevent recurrence of the incident. An investigation into the cause of the incident will be conducted by the RSO, who will report his/her findings to the Radiation Safety Committee. The investigation will identify any actions that could have been taken to prevent the accident, and the RSO will ensure that these actions are taken.

For all accidents other than minor spills, radiation surveys and engineering checks of all process, alarm and support systems will be conducted prior to the resumption of operations to be certain that all facility equipment conforms to the specifications described in Chapter 2 of this report.

APPENDIX A

EMERGENCY PRE-PLAN
OPERATING PROCEDURES

ADVANCED MEDICAL SYSTEMS, INC.
1020 LONDON ROAD
CLEVELAND, OHIO 44110

REV. OCTOBER, 1991

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EMERGENCY CONTACT PERSONNEL
Advanced Medical Systems, Inc.

Mr. Michael Ginzel
Mr. Edward Svigel
Ms. Sherry Stein

Radiation Safety Officer
Engineering Manager
Director of Regulatory Affairs

Phone Numbers for AMS Personnel

AMS Geneva	Office: 216/466-4671	
Michael Ginzel	Office: 216/692-3269	Home: 216/752-5854
Edmond DeRosa	Office: 216/692-3269	Home: 216/357-1863
Sherry Stein	Office: 216/466-4671	Home: 216/541-5800
Donna Ely	Office: 216/466-4671	Home: 216/354-8590
Edward Svigel	Office: 216/466-4671	Home: 216/428-6096

Emergency Civil Response Agencies

Meridia Huron Hospital - Emergency Room 13951 Terrace Road, Cleveland 44112	216/761-4242
Cleveland City Fire Department	Dial 911 or 216/621-1212
Cleveland City Police	Dial 911 or 216/621-1234
Cleveland Ambulance - Emergency Medical Services	Dial 911 or 216/623-4545
Ohio State Highway Patrol	216/587-4305
ADT Security Services	216/526-9539
Ohio Emergency Management	614/889-7150
U.S. Nuclear Regulatory Commission - Region III Operations Center	708/790-5500 202/951-0550

FIRE/EXPLOSION/MEDICAL EMERGENCY PROCEDURES

1.0 PURPOSE

This procedure is intended to define Advanced Medical Systems' administrative actions on discovery of a fire, explosion, responses to fires, use of fire alarms as well as medical emergencies.

2.0 SCOPE

This procedure applies to fire, explosion, or medical emergency within AMS' London Road facility during working hours as well as procedures to be followed by responding authorities during non-working hours.

3.0 RESPONSIBILITY

1. The Radiation Safety Officer (RSO) or a designated alternative will review this procedure with the Cleveland City Fire Department and Cleveland City Police. This plan shall be periodically updated and verified for correct information.
2. All training of affected personnel will be the responsibility of the Director of Regulatory Affairs or a designated alternate.
3. No one shall make any public announcements/statements concerning an emergency situation except the Director of Regulatory Affairs or designated alternate.
4. A review and update of all names and telephone numbers of personnel listed in this plan will be on a quarterly basis and will be the responsibility of the Director of Regulatory Affairs.
5. Any responsibility or action item assigned to an individual in this procedure may be performed by a designated alternate.

4.0 RSO EMERGENCY RESPONSIBILITIES

- Personnel evacuation
- Fire prevention
- Fire/safety inspections (monthly by consultant)
- Safety Committee meetings (monthly)
- Fire fighter information assistance
- Overseeing of salvage operations (post emergency)

5.0 DEFINITIONS

5.1 Fire

Fire or combustion is an exothermic, self-sustaining reaction involving a solid, liquid and/or gas phase fuel. The process

is usually associated with the emission of light. For purposes of this procedure, any incident that has potential to escalate into a fire condition or non-radiological emergency life-threatening situation shall be acted upon as a fire.

It is the policy of AMS that fire fighting by personnel be limited to fighting incipient stage fires. Incipient stage fires are defined as fires that can be controlled or extinguished with portable fire extinguishers or 1-1/2" hose streams without the use of self-contained breathing apparatus or personal protective equipment.

6.0 EMERGENCY CONTACT PERSONNEL

See Page 1.

7.0 GENERAL EMERGENCY PROCEDURES

7.1 Reporting an Emergency - General

In the event of an emergency, the following action should be taken by the person reporting such emergencies.

7.2 Applicability

All personnel on AMS property are responsible to report life or property-threatening emergencies.

7.3 Fire During Working Hours

The individual who discovers the fire shall:

1. Promptly notify the RSO and nearby personnel through the intercom system at the nearest available telephone.
2. The ADT Security Services 24-hour supervisory electronics monitoring sound alarm system will call AMS prior to notifying the Fire Department.
3. Evacuate building and proceed to assigned area.
4. The RSO or designated alternate will notify the Cleveland City Fire Department at 621-1212. The RSO is to provide the following information:
 - a. State your name and that you are calling from Advanced Medical Systems, Inc., at 1020 London Road.
 - b. Describe the location of the fire.

- c. Describe the type of fire: i.e. what is burning.
- d. The approximate fire conditions: i.e. smoke only, smoke with flames, rolling smoke, etc.
- e. Describe any personnel injuries.
- f. If safe to stay at the telephone, will answer all questions and let the person answering hang up before you do.

PROVIDE EMERGENCY ASSISTANCE IF ABLE TO DO SO.

7.4 Fire or Explosion During Unoccupied Hours

1. Background

The 1020 London Road, Cleveland, Ohio facility is equipped with an ADT Security Services 24-hour supervisory electronics monitoring alarm system. In the event of a fire or explosion, the signal is automatically transmitted to the ADT Central Office and the proper response civil service group (Cleveland Fire and Police Departments) is immediately notified. During working hours or periods when AMS personnel are occupying the facility, ADT also calls this location. During periods when the building is unoccupied, ADT calls key AMS emergency response personnel.

2. Procedures

- a. In the event that local fire and police response groups reach the facility before the designated AMS representative, they have been advised to remain outside the building until either the AMS representative or the designated Cleveland City Fire Department Radiation Officer arrives.
- b. In the event of the emission of detectable quantities of smoke or other gases, response personnel and agencies should remain upwind of the emergency site. Police should establish road blocks to prevent normal civilian traffic from passing through the downwind area.
- c. Upon arrival, the AMS representative should confer with the civil authorities as to the nature of the emergency and establish a control point.

- d. Verify the existence and location of radioactive materials.
- e. Using locator floor plans, determine whether the fire/explosion is in restricted or non-restricted area.
- f. If fire/explosion involves a restricted area, obtain emergency protection and detection equipment from the AMS pumphouse storage point.
- g. Primary entry personnel should be issued and instructed in reading a survey meter and pocket dosimeters in order to make an initial radiation hazard survey. Pocket dosimeters must be zeroed prior to use. If radiation levels are acceptable, then additional fire fighters may be authorized to enter. Fire fighters must wear respiratory protection -- SCBA type.
- h. The best method of fire suppression in restricted areas would be determined by both professional firemen and AMS personnel. The method chosen should be the one least likely to spread contamination.
- i. All fire fighting personnel should be monitored for contamination upon exiting the facility before leaving the site.
- j. Exit contamination surveys will be performed to insure that the facility has been restored to a safe condition after an accident.

8.0 MEDICAL EMERGENCIES

The individual discovering the emergency shall notify the RSO who, in turn, shall:

- 1. Call the Cleveland Ambulance Emergency Medical Services at 623-4545 and/or provide the following information:
 - a. Your name and that you are from Advanced Medical Systems located at 1020 London Road.
 - b. Describe the problem.
 - c. Answer all of their questions and let them hang up before you do.

PROVIDE EMERGENCY ASSISTANCE IF ABLE TO DO SO

The first aid supplies are located in the Chemistry Lab.

9.0 MINOR INJURIES

1. Administer first aid to the injured victim.
2. Call or have an emergency call placed for ambulance service (623-4545) and notify the Meridia Huron Hospital (761-4242) of its impending arrival.
 - a. Using a Frisker, assess the injured person for possible radioactive contamination.
 - b. Remove contaminated clothing or cover patient with clean plastic and tape wrap.
3. If victim cannot be moved from the restricted area, the following procedures should be followed:
 - a. Secure all sources of radiation near the location and access path to the victim.
 - b. Roll out a Kraft paper path or similar clean floor covering to the victim for emergency response traffic.
 - c. Using a survey meter, determine the radiation dose rates in the response area.
 - d. Using a Frisker, assess the person for possible radioactive contamination.
 - e. Meet the emergency response team at the entrance and inform them of the situation including:
 1. Nature of injury
 2. Location
 3. Dose rates
 4. Contamination level
 5. Need for exit contamination surveys
 - f. Escort the response team to the victim and advise of potential exposure points along the access path.
 - g. Conduct exit contamination survey to insure that the facility is in safe condition after an accident.
4. Prepare the transport vehicle for use by spreading plastic sheets in the area to be occupied by the patient.
5. Accompany the patient to the hospital if no further emergency exists or if backup AMS response personnel are at the AMS site.
6. The following equipment should be transported with the patient:
 - a. Survey meter
 - b. Frisker
 - c. Plastic waste bags and tape

7. Inform the ambulance personnel that the AMS representative should supervise the decontamination of the transport vehicle before its next response.

10.0 POLICE EMERGENCIES

The individual discovering the emergency shall notify the RSO who, in turn, shall:

1. Call the Cleveland City Police Department at 621-1234.
 - a. State your name and that you are from Advanced Medical Systems, Inc., located at 1020 London Road.
 - b. Describe the problem.
 - c. Answer all questions and let them hang up before you do.

11.0 EVACUATION PROCEDURE

11.1 Decision

The decision to evacuate any section of the facility because of fire or other occurrence will be made by the RSO or his/her designee.

11.2 Notification

If time permits, the RSO will notify the Director of Regulatory Affairs located at the Geneva, Ohio office that a portion of the building has been evacuated.

11.3 Evacuation

1. Each employee will, if possible, shut off any electrical equipment being used, including coffee pot, before evacuating the premises.
2. Supervisory personnel will assemble their personnel in the parking lot and stand ready to assist in the control of the emergency.
3. The RSO is responsible for the communication of information to all personnel concerning the resumption of plant operation following an evacuation.

11.4 Training

It is the responsibility of the RSO to inform each employee of their emergency evacuation exit and their alternative exit(s).

11.5 Equipment Alarms

ADT maintains and is responsible for all fire detection and security equipment. ADT conducts monthly inspections and performs all necessary repairs.

12.0 GENERAL RULES FOR SECURITY BREACHES FOR RESPONDING LAW ENFORCEMENT AGENCIES AND ADT

AMS has ADT Security Service throughout the restricted and non-restricted areas of the London Road facility. During unoccupied hours, this system is armed and breaches of security are electronically transmitted to the ADT office. During occupied hours, these systems are disarmed to avoid the inadvertent transmission of alarm signals by the AMS staff.

12.1 Response

1. During occupied hours, any breach of security will be reported by AMS staff personnel to the Cleveland City Police Department at 621-1234.
2. During unoccupied hours, breaches in security are first detected by the ADT supervisory monitoring system.
3. ADT immediately calls AMS emergency response personnel.
4. ADT security personnel (armed guards) or local law enforcement agencies responding to and ADT call report to the London Road site and await the arrival of either trained emergency response personnel or an AMS representative.
5. An escorted and supervised search of the facility is conducted by the law enforcement officers and either an AMS representative or trained emergency response personnel.
6. If possible, the source of the security breach is determined and the nature or type of security breach recorded.
7. All locks and secured entrances are checked for status. If any of the secured systems have been damaged, they should be repaired before the building is vacated by the AMS representative.

8. All sources of radioactive materials storage are checked to determine tampering or accountability. This includes stored radioactive materials, instrument calibration sources and any source of depleted uranium shielding.
9. The AMS representative should check the supervisory panel to assure that all systems are functioning properly.
10. If a breach of security into restricted areas is detected, wipes of the floor areas will be taken to determine if any radioactive contamination has occurred.
11. Should either the theft of the radioactive material be detected or the release of radioactive contamination occur as a result of the security breach, the NRC will be notified according to the requirements of 10 CFR 20.
12. Following an all-clear situation, ADT systems are reset before exiting the facility.

13.0 GENERAL RULES FOR AMBULANCE-RESCUE SQUADS

REFERENCE: Based on DOE/EV-0020, Department of Energy, October, 1978

13.1 Background

1. Ambulance-rescue squad personnel are usually the first persons of the medical team to see the case of radiation exposure or radioactive contamination. Their first acts will vary in degree. Trained, knowledgeable co-workers, supervisors or health physicists are usually on hand.
2. When the accident has occurred, the health physicist, supervisor, co-workers and the patient(s) should be able to inform members of the rescue squad of the nature of the accident, number of patients and type of radiation exposure or radioactive contamination involved, and possible body areas that may be affected.

A gross measurement of the amount of radiation involved may be available; such information is most helpful.

13.2 General Rules

1. For the patient:
 - a. Give lifesaving emergency assistance if needed.
 - b. Secure pertinent information including any radiation exposure from those in attendance.

- c. Determine if physical injury or open wounds are involved. Cover wound with clean dressing; use elastic bandage to hold wound-cover in place; do not use adhesive.
 - d. Cover stretcher, including pillow, with open blanket; wrap victim in blanket to limit spread of contamination.
 - e. Notify Meridia Huron Hospital by radio or telephone of available information.
2. For rescue squad personnel:
- a. Perform survey of clothing, ambulance, etc., on arrival at Meridia Huron Hospital before undertaking further activity.
 - b. If contaminated, discard clothing in container marked "Radioactive--Do Not Discard". Cleanse self by washing and/or showering, as appropriate.
 - c. If in contaminated area, rescue squad personnel must be surveyed by radiation-survey meter; measurements must be recorded. Cleansing must continue until responsible physician indicates person may leave.

14.0 GENERAL RULES FOR PHYSICIANS AND NURSES

REFERENCES: Based on DOE/EV-0017, 0018 and 0019, Department of Energy, October, 1978

14.1 Background

The content of each set of general rules will vary with the role of the user: i.e., ambulance or rescue squad, emergency room physician or nurse, or hospital administrator. Additional variations in standing orders can occur if a hospital has:

- a. a pre-arranged procedure that is periodically updated and tested;
- b. a staff of trained physicians, aides and technicians;
- c. proper radiation-measuring equipment;
- d. available space for isolation.

What follows is directed to meet the situation of a small community or rural hospital.

14.2 General Rules

If the ambulance or rescue squad that picks up the radiation accident case has a radio or telephone, the emergency room will be alerted to expect a patient who may have had radiation exposure or radioactive contamination.

It is the responsibility of the senior hospital emergency room person on duty, nurse or physician, on receipt of notification of the momentary arrival of a case involving radiation exposure or contamination, to:

- a. Notify responsible staff physician or nurse and aides (trained health physicists or trained technicians from x-ray or nuclear medicine departments).
- b. Get appropriate survey meter, if one is on hand in the hospital. If hospital has no meter, notify hospital administrator or responsible hospital official so he/she may obtain a survey meter and other pertinent equipment by calling the Police Department.
- c. Notify the hospital administrator so he/she may seek expert professional consultation for technical management of the case.
- d. If contamination is suspected, prepare separate space, using either isolation room or cubicle, if available. Some hospitals use the morgue, since the autopsy table lends itself to washing with water. The morgue entrance would then be used rather than the emergency room. When the morgue is used, the patient and his/her family must be reassured of why that space is used. If no separate space is available, cover a floor area immediately adjacent to the entranceway to the emergency room with absorbent paper. The area must be adequate for stretcher-cart, disposal hampers and working space for professional attendants. Mark and close off this area. If dust is involved, be prepared to shut off air circulation system to prevent spread of contamination.

Upon ambulance arrival, the responsible physician or nurse in the emergency room should:

- a. Check patient on stretcher for contamination (preferably as stretcher is removed from the ambulance) by use of a survey meter.
- b. If seriously injured, give emergency lifesaving assistance immediately.
- c. Handle contaminated patient and wound as one would a surgical procedure: i.e., gown, gloves, cap, mask, etc.

- d. If possible external contamination is involved, save all clothing and bedding from ambulance, blood, urine, stool, vomitus, and all metal objects (e.g., jewelry, belt buckles, dental plates, etc.). Label with name, body location, time and date. Save each in appropriate containers. Mark containers clearly, "Radioactive -- Do not Discard."
- e. Decontamination should start, if medical status permits, with cleansing and scrubbing area of highest contamination first. If an extremity alone is involved, clothing may serve as an effective barrier and the affected limb alone may be scrubbed and cleansed. Initial cleansing should be done with soap and warm water. If the body as a whole is involved or clothing generally permeated by contaminated material, showering and scrubbing will be necessary. Pay special attention to hair parts, body orifices and body folds areas. Remeasure and record measurement after each washing or showering. Non-radioactive wash water waste may be flushed into community sewage system. Follow hospital procedures for radioactive liquid waste.

If a wound is involved, prepare and cover the wound with self-adhering disposable surgical drape. Cleanse neighboring surfaces of skin. Seal off cleansed areas with self-adhering disposable surgical drapes. Remove wound covering and irrigate wound with sterile water, catching the irrigating fluid in a basin. Washings can be marked and handled as described in Rule (d) above. Each step in the decontamination should be preceded and followed by monitoring and recording of the location and extent of contamination.

- f. Save physicians', nurses' and attendants' scrub or protective clothing, as described for patients. Nurses, doctors and attendants must follow the same monitoring and decontamination routing as the patients.
- g. The physician in attendance in the emergency room, if confronted with a highly contaminated wound with dirt particles and crushed tissue, should be prepared to do a preliminary simple wet debridement. An emergency minor surgical set should be used. Further measurements may necessitate sophisticated wound counting detection instruments supplied by the consultant who will advise if further definitive debridement is necessary.
- h. AMS personnel should be able to inform the rescue squad of the nature of the accident, type of radiation exposure or radioactive contamination involved, and possible areas of the body that may be affected. A gross measurement of the amount of radiation involved is always helpful. An AMS representative may come to the hospital with the patient and can be a source of immediate consultation.

- i. The emergency room's nurses' calm, assured, friendly greeting, attitude and conversations with the patient can be a tremendous aid.

15.0 GENERAL RULES FOR HOSPITAL ADMINISTRATORS

REFERENCE: Based on DOE/EV-0019, Department of Energy, October, 1978

15.1 Background

The hospital administrator, in contrast to other members of the medical team, is particularly concerned with what the situation will do to his/her other patients or to the hospital as a physical plant, and that relationships with community organizations and specialists are vital.

15.2 General Rules

- a. The hospital administrator or senior administrator on duty should inform the DOE and other public officials, such as town, city or county, and/or state health departments, police and fire departments, as appropriate. Before any accidents have occurred, he/she should establish telephone contact with appropriate DOE officials. They can always give immediate advice over the telephone on cleanup of accident site, equipment, etc., and put the hospital's physician in immediate contact with a physician-specialist with knowledge of such accidents. The specialist can be on his way to the hospital within minutes of the first telephone contact.
- b. The hospital administrator should also know if the community's police or fire departments have survey meters and who has access to stockpiled civil defense supplies. He/she should also know whether police or fire departments in the community clear up public accident sites.
- c. The hospital administrator should have the survey meters checked periodically to be sure that the equipment is operating and fresh batteries are available.

16.0 GENERAL RULES FOR HEALTH PHYSICISTS AND RADIOLOGICAL SAFETY OFFICERS

REFERENCE: (From Saenger, E. L., Medical Aspects of Radiation Accidents, USAEC, 1963)

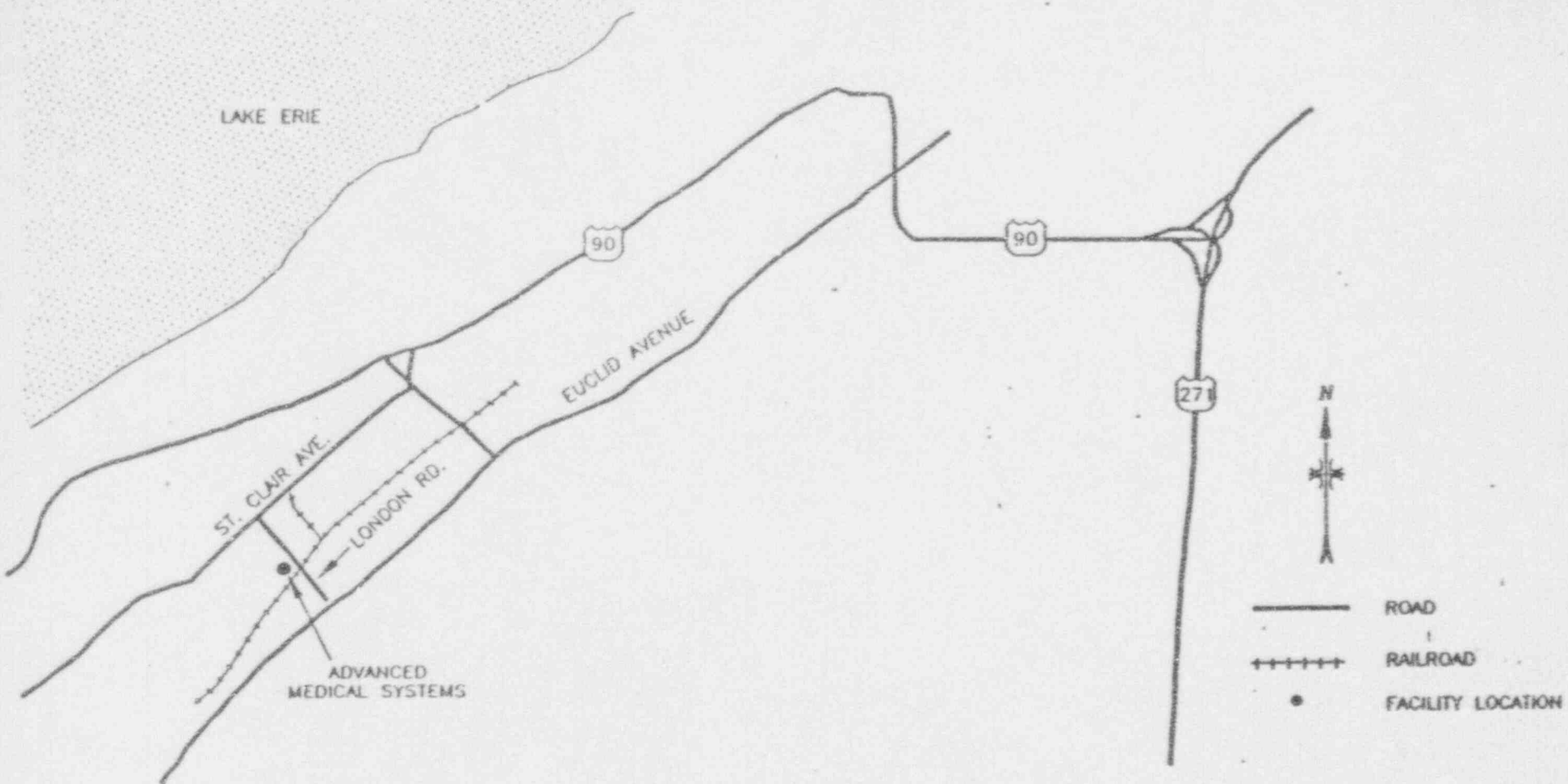
1. When and if an accident is suspected, evacuate personnel and segregate them. Remove all personnel dosimeters and/or film badges immediately from exposed personnel. Read dosimeters and record the reading. Send dosimeters and film badges immediately to a safe area.
2. Notify Radiological Safety Officer who will then activate emergency plan.

3. Close off radiation area. Shut off air conditioning. Seal area if contamination is likely.
4. Evaluate situation in regard to:
 - a. Extent of contamination
 - b. Level of radiation exposure
5. Save all samples of clothing, blood, urine, stool, vomitus. Label with name, date, time. Send film badges for emergency processing by standard technique.
6. Portable battery-operated tape recorder will be very useful in collecting and storing information and for obtaining a complete history of the accident. It is often difficult to record all of the events, opinions and statements available in an emergency situation. The taped records can be typed later, thus providing a more complete history of the accident.
7. A camera will provide an excellent method of showing exactly what happened. If a movie camera is not available, suitable still photographs will be used.
8. In a major accident, management should obtain the aid of consulting physicists. These individuals can also be found in neighboring installations and at Perry Nuclear Power Plant and will be essential for the proper handling of the accident during the first week, particularly if it is necessary to work a 24-hour day.

EMERGENCY RESPONSE KIT

Location: Advanced Medical Systems fire pumphouse located on Mandalay Avenue, approximately 300 feet west of the London Road facility.

Contents: Frisker
Survey Meter
Flashlight
Batteries for above
Respirator
Air Sampler
100-foot Extension Cord
Pocket Dosimeters - 200MR and 5R
Dosimeter Charger
Protective Clothing - Shoe Covers, Head Covers, Coveralls and Gloves
2-inch Masking Tape
Contamination Wipes, Soap, Spray Bottle
Rope, Signs and Placards
Ziploc Plastic Bags
Polydrum Liners - 6 Mil.
Marking Pens
Graphite Pencils
Survey Data Forms
Facility Drawings
Emergency Phone Numbers
\$3.00 in Quarters
Building Keys



Cleveland, Ohio, Area Indicating the Location of the AMS Facility

EMERGENCY RESPONSE KIT

Location: Advanced Medical Systems fire pumphouse located on Mandalay Avenue, approximately 300 feet west of the London Road facility.

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Ziploc Plastic Bags
Polydrum Liners - 6 Mil.
Marking Pens
Graphite Pencils
Survey Data Forms
Facility Drawings
Emergency Phone Numbers
\$3.00 in Quarters
Building Keys

RESPONSE NO: _____

Ohio Emergency Management Agency

RADIOLOGICAL INCIDENT RESPONSE CHECKLIST

DATE _____ TIME _____ DUTY OFFICER _____

1. Incident reported by _____ ()
NAME TELEPHONE

_____ TITLE AGENCY

2. Type of Incident - _____
- _____ A. Improper Disposal/Handling
 - _____ B. Industrial
 - _____ C. Well Logging
 - _____ D. Power Plant (complete Initial Notification Form for the affected site - see TAB 4)
 - _____ E. Transportation: 1) Highway 2) Air
3) Rail 4) Water
 - _____ F. Other _____

3. Description of Incident _____

4. Incident Location _____

5. Date and Time of Incident _____

6. Type of Material/Packaging Involved _____

7. Amount/Type of Contamination _____

8. Type of Assistance Required _____

9. Public or Private Property _____

10. Hazard to Public _____

11. Other Agencies Notified - _____

12. Response Team Members/Man-Hours _____

13. Resolution/Remarks:
(Continue on back)

CONVERSATION RECORD

TIME

11:20(P)

DATE

11/12/91

TYPE

☐ VISIT

☐ CONFERENCE

☒ TELEPHONE

☐ INCOMING

☒ OUTGOING

ROUTING

NAME/SYMBOL

INT

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU

Sherry Stein

ORGANIZATION (Office, dept., bureau, etc.)

AMS

TELEPHONE NO.

216/466-4677

SUBJECT

E.P. Plan

ON-91080

SUMMARY

Called to inform you that you need to send a copy of your Emergency Plan to the State of OH. agency responsible for Radiological Health.

ACTION REQUIRED

60 days for their comments

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

J. R. Made

DATE

11/12/91

ACTION TAKEN

SIGNATURE

TITLE

DATE

92-05

NOV 12 1991

MEMORANDUM FOR: William G. Snell, Chief, Radiological Controls
And Emergency Preparedness Section

THRU: George M. McCann, Chief, Materials Licensing
Section

FROM: John R. Madera, Senior Licensing Reviewer

SUBJECT: REQUEST FOR GUIDANCE AND TECHNICAL ASSISTANCE
REGARDING THE REVIEW OF AN EMERGENCY PLAN FOR A
MATERIALS LICENSEE, ADVANCED MEDICAL SYSTEMS,
INC. LICENSE NO. 34-19089-01

The subject emergency plan has been reviewed following the current Draft Regulatory Guide DG-3005 dated September 1990. The licensee was given this draft guide for assistance in preparing their emergency plan.

After review of the plan, it appears that the licensee has made a good faith effort in preparation. However, prior to the issuance of an acceptance amendment, we need to consider any comments/suggestions which your section deems necessary/important. Therefore, I have inclosed a copy of the subject emergency plan, dated October 25, 1991, for your review.

I would appreciate your guidance and technical assistance with this case, and hope that your review can be completed as soon as possible.

John R. Madera
Materials Licensing Section

Enclosure: As stated

yes
RIII
Madera
11/12/91

RIII
McCann 11/14/91

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041

(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

July 12, 1991

Mr. John R. Madera
Materials Licensing Section
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

RE: Mail Control No. 91080; Advanced Medical Systems, Inc. Emergency Pre-Plan Revision

Dear Mr. Madera:

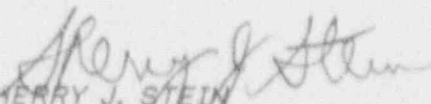
You are aware, although your letter requesting revisions to our October, 1990 Emergency Pre-plan was dated April 18, 1991, we did not receive it until May 14, 1991, when you were kind enough to FAX us a copy.

Although we have undergone extensive revisions to our Pre-plan, the bulk of our energies these past few weeks have been devoted to Isotope Handler Training. Because of this, our Radiation Safety Officer, Mr. Michael Ginzler, has not had a chance to adequately review the current draft, neither has he had the opportunity to present this draft to the Isotope Committee.

We are, therefore, requesting an extension until September 13, 1991, to permit us to complete Isotope Handler Training and resume our review and modifications of the revised plan.

Thank you in advance for your consideration of this matter.

Sincerely,


SHERRY J. STEIN
Director of Regulatory Affairs

SJS/cs

RECEIVED

JUL 16 1991

REGION III

JUL 16 1991

APR 19 1991

Advanced Medical Systems, Inc.
ATTN: Ms. Sherry J. Stein, Director
of Regulatory Affairs
1020 London Road
Cleveland, OH 44110

RE: Advanced Medical Systems, Inc. Emergency Pre-Plan Revised October 1990

Dear Ms. Stein:

In September 1990, NRC issued Draft Regulatory Guide DG-3005, Standard Format and Content For Emergency Plans For Fuel Cycle and Materials Facilities. The draft guide was not available prior to the submittal of your Emergency Pre-Plan forwarded by letter dated November 6, 1990.

In order to complete our review, you should resubmit your Emergency Pre-Plan in its entirety, following the format/guidance outlined in the enclosed Draft Regulatory Guide DG-3005. The items that need to be addressed or re-addressed in your submitted plan are too numerous to elaborate on at this time. However, examples of certain key items are as follows:

1. Licensed Activities

Describe in greater detail your licensed activities, in particular the use of unsealed cobalt-60 in the manufacture of teletherapy and radiography sealed sources. Discuss the potential problem areas (hot cell, equipment room, isotope lab, source garden, etc.) during accident conditions.

2. Accident Scenarios

Your description of possible accidents does not follow the draft guidance. You will need to discuss possible causes, complicating factors, and possible onsite and offsite consequences (see Item 2. of enclosed guide).

3. Classification System

Your proposed emergency classification scheme (Alert and Site Area Emergencies) is acceptable; however, it fails to describe the specific conditions which warrant each type of emergency classification (see Item 3.1 of enclosed guide).

4. Direction and Coordination

It is acceptable to name the Radiation Protection Officer as the individual with the overall responsibility for implementing and directing the emergency response; however, you need to discuss in greater detail this person's duties and authority (see Item 4.2.1 of enclosed guide).

5. Information To Be Communicated

The information to be communicated to the NRC during the reporting of an emergency situation requires greater detail. Specifically, facility status, releases of radioactive or other hazardous materials and recommendations for protective actions to be implemented by offsite response organizations are not discussed and/or lack detail (see Item 3.3 of enclosed guide).

6. Emergency Response Measures

Specific emergency response measures should be identified for each class of emergency and related to action levels or criteria that specify when the measures are to be effected (see Item 5. of enclosed guide).

As stated previously, the above outline is only a general description of some of the areas where your Emergency Pre-Plan requires revision and/or further detail. Again, we have enclosed a copy of Draft Regulatory Guide DG-3005 for your review and guidance and require that you restructure your Emergency Pre-Plan to incorporate the information outlined in this guide.

We will continue our review of your Emergency Plan upon receipt of this information. Please reply in duplicate, within 90 days, and refer to Control Number 91080.


If you have any questions or require clarification on any of the information stated above, you may contact us at (708) 790-5625.

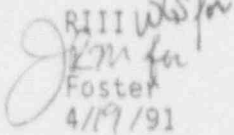
Sincerely,

Original Signed By
John R. Madera
Materials Licensing Section

Enclosure: Draft Regulatory
Guide DG-3005

bcc: Norelius
Grobe

RIM

Madera/mc
4/19/91

RIM WJS for

Foster
4/19/91



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

APR 2 1991

MEMORANDUM FOR: George M. McCann, Chief, Materials Licensing section
THRU: William Snell, Chief, Radiological Control Emergency Preparedness Section
FROM: James E. Foster, Senior Emergency Preparedness Analyst
SUBJECT: REVIEW OF MATERIALS LICENSEE (AMS) EMERGENCY PLAN

As requested, we have reviewed the Emergency Plan submitted by Advanced Medical Systems, Inc., Cleveland, Ohio, Dated October 1990. NUREG-0810 and draft (for review) NUREG DG-3005 were utilized for this review.

Sufficient items were found either lacking from the submitted plan, or significantly deviating from current guidance that it was not worthwhile to comment on each individual item. As you have already noted, the submitted plan does not meet current guidance.

As a very general overview, the description of licensed activities is marginally acceptable. The description of possible accidents is not acceptable. The classification scheme (Alert and Site Area Emergencies) is acceptable as to classes of emergencies, but the plan needs to describe the conditions which fall into these categories. The Radiation Safety Officer is acceptable as the individual in control during an emergency, but his duties will need to be better defined. The agencies to be notified will need to be expanded to include the NRC, through the Headquarters Duty Officer. Emergency response actions will need better definition.

The procedures included with the plan approach what are expected to be found in implementing procedures, and are a good starting point for such procedures.

We concur with your decision to return the Emergency Plan as currently unacceptable, and recommend that copies of current guidance be provided to the licensee. We also suggest that the licensee contact Mallinckrodt Medical, Inc. of Maryland Heights, Missouri, and obtain a copy of their Emergency Plan for general review. They can be reached at (314) 344-3800.

Please offer the services of the RC&EP Section in working with the licensee to develop an acceptable Emergency Plan. They may contact Mr. James E. Foster of my staff at (708) 790-5655.

William Snell
William Snell, Chief
Radiological Controls &
Emergency Preparedness Section

MAR 27 1991

MEMORANDUM FOR: William G. Snell, Chief, Radiological Controls
And Emergency Preparedness Section

THRU: George M. McCann, Chief, Materials Licensing
Section

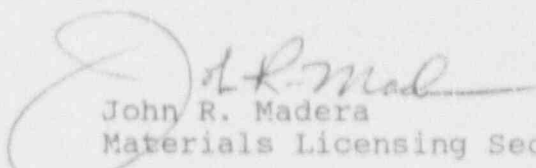
FROM: John R. Madera, Senior Licensing Reviewer

SUBJECT: REQUEST FOR GUIDANCE AND TECHNICAL ASSISTANCE
REGARDING THE REVIEW OF AN EMERGENCY PLAN FOR A
MATERIALS LICENSEE

The subject emergency plan has been reviewed following the current Draft Regulatory Guide DG-3005 dated September 1990. The licensee did not use this draft guide in preparing their emergency plan, hence, numerous deficiencies were found. It is my intention to provide a copy of DG-3005 to the licensee and request that they resubmit their emergency plan following the structured outlined in the guide with the necessary information.

Prior to the issuance of a deficiency letter, I want to incorporate any comments/suggestions which your section deems necessary/important. Therefore, I have inclosed a copy of the subject emergency plan, revised October 1990, for your review.

I would appreciate your guidance and technical assistance with this case, and hope that your review can be completed as soon as possible.


John R. Madera
Materials Licensing Section

Enclosure: As stated



Advanced Medical Systems, Inc.

1020 London Rd.
Cleveland, Ohio 44110
1-800 321-5803

EMERGENCY PRE-PLAN

ADVANCED MEDICAL SYSTEMS, INC.
1020 London Road
Cleveland, OH 44110

Rev. October, 1990

CONTENTS

<u>DESCRIPTION</u>	<u>PAGE NO.</u>
Emergency Contact Personnel	1
I. Emergency Pre-Plan	2
II. Fire/Explosion/Medical Emergency Procedures	6
Attachments	18

ADVANCED MEDICAL SYSTEMS, INC.

I. EMERGENCY PRE-PLAN

1.0 INTRODUCTION

Advanced Medical Systems, Inc. (AMS), located in Cleveland, Ohio, manufactures and fabricates sealed sources of Cobalt-60 for teletherapy and radiography machines manufactured by its Geneva, Ohio division. AMS is licensed by the U.S. Nuclear Regulatory Commission (NRC) under License No. 34-19089-01. This license authorizes possession of up to 300 kCi of Cobalt-60 for manufacture, installation, and servicing of sealed sources. AMS' license also permits possession of up to 40 kCi of Cesium-137.

1.1 Purpose

This Emergency Pre-Plan was prepared to establish responsibilities and operational procedures in the event of an emergency at Advanced Medical Systems, Inc. located at 1020 London Road, Cleveland, Ohio.

2.0 SITE DESCRIPTION

Advanced Medical Systems is a controlled-access building located in an industrial/residential neighborhood at 1020 London Road, on the east side of Cleveland. AMS occupies approximately 25% (1925m²) of the total floor space of 8000m² including the southeastern end of the building which contains the hot cell. The remainder of the building is not currently being used. There are three (3) floors in the facility. The main floor includes an office area, an Isotope Shop area, a Hot Cell, a shielded work room, a storage area, and miscellaneous unoccupied areas.

The second floor includes additional unoccupied office space, a mechanical equipment room, and the Exhaust Ventilation Equipment Room. The basement includes a former Dry Waste Storage Area, a Liquid Waste Holding Room, additional unoccupied space, and a former liquid waste holdup tank (WHUT) room.

AMS, with the permission of the NRC, sealed the Waste Holdup Tank (WHUT) Room. It is routinely monitored.

AMS has established a temporary dry waste storage area on the south side of the warehouse area. The waste is stored in a locked room with rope barriers delineating the area as restricted. The building is monitored by ADT Security Services ("ADT").

An emergency response kit is stored in the fire pumphouse located on Mandalay Avenue approximately 300 feet west of the London Road facility. The contents includes the items listed in Attachment 1.

2.1 Description of the Hot Cell

The hot cell is designed to manufacture sealed Cobalt 60 sources used for medical teletherapy and industrial radiography, with the teletherapy sources containing activities in the kilocurie range.

The hot cell is square with an inner dimension of 6 feet, extends to a height of 11 feet and has 5½-foot-thick concrete walls and 4-foot-thick floor and ceiling. A stainless steel floor pan lines the cell floor and its inside walls are lined with a ¼-inch steel plate. The cell is closed at the rear by a 42-ton hinged door which provides a full 6-foot wide entrance into the cell when open.

Numerous small access ports are located on the front and side faces of the cell. Observation of all operations is possible through a 60-inch-thick glass and zinc bromide window. Remote handling is accomplished with a pair of manipulators and a 2-ton capacity overhead crane.

All cell operating controls are located on the outside of the cell so that normal operation, other than pass box operations, do not require entry into the controlled isotope shop area. The isotope shop may be observed from the cell control area through a window by the southeast corner of the cell and in line with mirrors placed against the south wall of the isotope shop. An intercom system is utilized to communicate between the isotope shop and cell control area.

When Cobalt-60 pellets are received, they are shipped in a G.E. cask weighing 6,300 lbs. The cask, its base, and protective jacket weigh 8,100 lbs. total. The cask is placed in the hot cell for remote removal of the cobalt pellets.

The cobalt targets are removed from the cask by use of manipulators. After the cobalt is removed from the cask, the cask is removed from the cell, so that sources can be built.

2.2 Attached Maps

Location of Facility: Attachment 2
First Floor: Attachment 3
ADT System Layout - First Floor: Attachment 4
Second Floor: Attachment 5
ADT System Layout - Second Floor: Attachment 6
Roof Layout: Attachment 7
Basement: Attachment 8

3.0 TYPE OF ACCIDENT - FIRE, EXPLOSION OR MEDICAL EMERGENCY

Fire, explosions and medical emergencies are covered by specific procedures beginning on Page 6.

4.0 CLASSIFICATION

- a) Alerts - unusual event. No notification of actions by emergency response agencies required.
- b) Site Area Emergency - Notification received. Action required.

5.0 DETECTION OF UNUSUAL EVENTS/ACCIDENTS

- a) Visual by employee.

b) All safety and monitor devices are connected to an alarm panel in the control area. Since six of the eight separate lights for each controlled item are always lit on the panel, faulty operation of the panel itself is indicated by the absence of light. When a controlled item malfunctions, the six lit alarm lights increase in intensity and the other two light up to indicate a specific problem. The lights remain on until an acknowledgement button is depressed. An audible alarm also sounds on the first and second floors until acknowledged. This type of alarm will, therefore, indicate the difficulty even though it has corrected itself before the operator has checked the panel. The alarm signal will be erased only when the acknowledgement button has been depressed.

Alarms for fan shutdown, excessive heat or cold are also transmitted to ADT so that malfunctions during non-working hours are reported to a responsible person.

6.0 MITIGATION OF CONSEQUENCES

The building is equipped with an ADT 24-hour supervisory electronics monitoring and alarm system as well as two wet pipe sprinkler systems. Both carbon dioxide and dry chemical extinguishers are located throughout the building. All fire detection alarms are transmitted to the ADT central station. Also included are burglar alarms, sprinkler valve tamper switches, sprinkler overflow, ventilation system shutdown, a manual pull alarm (located outside of the airlock area), fire pump operation, and fire pump power failure.

The air handling system is under continuous control by a monitoring and safety system. The air sampling tube is mounted across a diameter of the air exhaust block about 8 feet above the roof level. An air monitor located in the clean equipment room draws a continuous sample of 5cfm minimum for analysis. The recorder and alarm panel are located in the hot cell control area. Any increase of activity above the preset level immediately stops the exhaust fans and the supply fan. The control system also includes alternative shutdown of either exhaust fan if a sudden pressure drop occurs across its absolute filters, indicating rupture to the filter media.

The operation of the air handling equipment, the monitoring equipment and the liquid waste facilities is insured in the event of electrical power failure by a natural gas burning emergency generator with automatic rapid changeover. An emergency lighting system is also powered by this generator.

7.0 ASSESSMENT OF RELEASES

- Air monitoring surveys
- Probes
- Survey meters
- Friskers

8.0 RESPONSIBILITIES

The Radiation Safety Officer ("RSO") or designated alternate will notify off-site response as necessary providing:

- a) their name and that they are calling from Advanced Medical Systems at 1020 London Road;

- b) a brief description of the type of problem;
- c) a brief description of the location of the problem.

The RSO or designated alternate is to remain on the telephone until the response agency hangs up.

9.0 NOTIFICATION AND COORDINATION

The RSO or designated alternate will work with off-site response organizations in the event of an emergency organizations and will assist them in setting up a traffic control point.

Not later than 1 hour after an emergency is declared, the RSO or designated alternate will notify the NRC Region III at (312) 790-5500.

10.0 INFORMATION TO BE COMMUNICATED

The RSO or designated alternate will communicate to emergency organizations:

- a) the location of the emergency;
- b) the type of emergency;
- c) recommended protective actions, if necessary; and
- d) that a SmR dosimeter should be used.

11.0 TRAINING

The RSO or designated alternate will, on an biennial basis, offer facility tours to fire, police, medical and other emergency personnel to familiarize them with the site specific emergency procedures.

AMS personnel will be similarly trained.

See Section II, AMS Fire/Explosion/Medical Emergency Procedures.

12.0 SAFE SHUTDOWN

Following any necessary decon work, the facility will be restored to safe condition after an incident.

13.0 EXERCISES

Quarterly communication checks to check and update all necessary telephone numbers with off-site response organizations and biennial on-site exercises to test response are performed.

14.0 HAZARDOUS CHEMICALS

Not applicable, although personnel are trained under Emergency Planning and Community Right-To-Know and are also trained in the use of Material Safety Data Sheets.

II. FIRE/EXPLOSION/MEDICAL EMERGENCY PROCEDURES

1.0 PURPOSE

This procedure is intended to define Advanced Medical Systems' administrative actions on discovery of a fire, explosion, responses to fires, use of fire alarms as well as medical emergencies.

2.0 SCOPE

This procedure applies to fire, explosion, or medical emergency within AMS' London Road facility during working hours as well as procedures to be followed by responding authorities during non-working hours.

3.0 RESPONSIBILITY

- a) The Radiation Safety Officer (RSO) or a designated alternative will review this procedure with the Cleveland City Fire Department and Cleveland City Police. This plan shall be periodically updated and verified for correct information.
- b) All training of affected personnel will be the responsibility of the Director of Regulatory Affairs or a designated alternate.
- c) No one shall make any public announcements/statements concerning an emergency situation except the Director of Regulatory Affairs or designated alternate.
- d) A review and update of all names and telephone numbers of personnel listed in this plan will be on a quarterly basis and will be the responsibility of the Director of Regulatory Affairs.
- e) Any responsibility or action item assigned to an individual in this procedure may be performed by a designated alternate.

4.0 RSO EMERGENCY RESPONSIBILITIES

- Personnel evacuation
- Fire prevention
- Fire/safety inspections (monthly by consultant)
- Safety Committee Meetings (monthly)
- Fire Fighter information assistance
- Overseeing of salvage operations (post emergency)

5.0 DEFINITIONS

5.1 Fire

Fire or Combustion is an exothermic, self-sustaining reaction involving a solid, liquid, and/or gas phase fuel. The process is usually associated with the emission of light. For purposes of this procedure, any incident that has potential to escalate into a fire condition or non-radiological emergency life-threatening situation shall be acted upon as a fire.

a) It is the policy of AMS that fire fighting by personnel be limited to fighting incipient stage fires. Incipient stage fires are defined as fires that can be controlled or extinguished with portable fire extinguishers or 1½" hose streams without the use of self-contained breathing apparatus or personal protective equipment.

5.2 Classification of Fire Extinguishers

See Attachment 9.

6.0 EMERGENCY CONTACT PERSONNEL

See Page 1.

7.0 GENERAL EMERGENCY PROCEDURES

7.1 Reporting An Emergency - General

In the event of an emergency, the following action should be taken by the person reporting such emergencies.

7.2 Applicability

All personnel on AMS property are responsible to report life or property-threatening emergencies.

7.3 Fire During Working Hours

The individual who discovers the fire shall:

- 1.) Promptly notify the Radiation Safety Officer and nearby personnel through the intercom system at the nearest available telephone.
- 2.) The ADT Security Services 24-hour supervisory electronics monitoring sound alarm system will call AMS prior to notifying the Fire Department.
- 3.) Evacuate building and proceed to assigned area.
- 4.) The Radiation Safety Officer or designated alternate will notify the Cleveland City Fire Department at 621-1212. The RSO is to provide the following information:
 - a) State your name and that you are calling from Advanced Medical Systems at 1020 London Road.
 - b) Describe of the location of the fire.
 - c) Describe of the type of fire; i.e., what is burning.
 - d) The approximate fire conditions; e.g., smoke only, smoke with flames, rolling smoke, etc.
 - e) A description of any personnel injuries.

- f) If safe to stay at the telephone, will answer all questions and let the person answering hang up before you do.

PROVIDE EMERGENCY ASSISTANCE IF ABLE TO DO SO.

7.4 Fire or Explosion During Unoccupied Hours

1.) Background

The 1020 London Road, Cleveland, Ohio facility is equipped with an ADT Security Services 24-hour supervisory electronics monitoring and alarm system. In the event of a fire or explosion, the signal is automatically transmitted to the ADT Central Office and the proper response civil service group (Cleveland Fire and Police Departments) is immediately notified. During working hours or periods when AMS personnel are occupying the facility, ADT also calls this location. During periods when the building is unoccupied, ADT calls key AMS emergency response personnel.

2.) Procedures

a.) In the event that local fire and police response groups reach the facility before the designated AMS representative, they have been advised to remain outside the building until either the AMS representative or the designated Cleveland City Fire Department Radiation Officer arrives.

b.) In the event of the emission of detectable quantities of smoke or other gases, response personnel and agencies should remain upwind of the emergency site. Police should establish road blocks to prevent normal civilian traffic from passing through the downwind area.

c.) Upon arrival, the AMS representative should confer with the civil authorities as to the nature of the emergency and establish a control point.

d.) Verify the existence and location of radioactive materials.

e.) Using locator floor plans, determine whether the fire/explosion is in restricted or non-restricted areas.

f.) If fire/explosion involves a restricted area, obtain emergency protection and detection equipment from the AMS pumphouse storage point.

g.) Primary entry personnel should be issued and instructed in reading a survey meter and pocket dosimeters in order to make an initial radiation hazard survey. Pocket dosimeters must be zeroed prior to use. If radiation levels are acceptable, then additional firefighters may be authorized to enter. Fire-fighters must wear respiratory protection - SCBA type.

h.) The best method of fire suppression in restricted areas would be determined by both professional firemen and AMS personnel. The method chosen should be the one least likely to spread contamination.

i.) All firefighting personnel should be monitored for contamination upon exiting the facility before leaving the site.

j.) Extra contamination surveys will be performed to insure that the facility has been restored to a safe condition after an accident.

8.0 MEDICAL EMERGENCIES

The individual discovering the emergency shall notify the RSO who, in turn, shall:

1.) Call the Cleveland Ambulance Emergency Medical Services at 623-4545 and/or provide the following information:

a) Your name and that you are from Advanced Medical Systems located at 1020 London Road.

b) Describe the problem.

c) Answer all of their questions and let them hang up before you do.

PROVIDE EMERGENCY ASSISTANCE IF ABLE TO DO SO.

The first aid supplies are located in the Chemistry Lab.

9.0 MINOR INJURIES

1.) Administer first aid to the injured victim. First aid kits are located in First Floor Areas 10 and 12.

2.) Call or have an emergency call placed for ambulance service (623-4545) and notify the Huron Road Hospital (761-4242) of its impending arrival.

3.) If within the limits of good emergency treatment, move the injured person out of the restricted area (shaded area on Attachments 3 and 5, Drawings A9-P-0063 and 0062).

a.) Using a Frisker, assess the injured person for possible radioactive contamination.

b.) Remove contaminated clothing or cover patient with clean plastic and tape wrap.

4.) If victim cannot be moved from the restricted area, the following procedures should be followed:

- a.) Secure all sources of radiation near the location and access path to the victim.
- b.) Roll out a Kraft paper path or similar clean floor covering to the victim for emergency response traffic.
- c.) Using a survey meter, determine the radiation dose rates in the response area.
- d.) Using a Frisker, assess the person for possible radioactive contamination.
- e.) Meet the emergency response team at the entrance and inform them of the situation including:
 - 1.) Nature of injury
 - 2.) Location
 - 3.) Dose rates
 - 4.) Contamination level
 - 5.) Need for exit contamination surveys
- f.) Escort the response team to the victim and advise of potential exposure points along the access path.
- g.) Conduct exit contamination survey to insure that the facility is in safe condition after an accident.
- 5.) Prepare the transport vehicle for use by spreading plastic sheets in the area to be occupied by the patient.
- 6.) Accompany the patient to the hospital if no further emergency exists or if backup AMS response personnel are at the AMS site.
 - a.) The following equipment should be transported with the patient:
 - 1.) Survey meter
 - 2.) Frisker
 - 3.) Plastic waste bags and tape
- 7.) Inform the ambulance personnel that an AMS representative should supervise the decontamination of the transport vehicle before its next response.

10.0 POLICE EMERGENCIES

The individual discovering the emergency shall notify the RSO who, in turn, shall:

- 1.) Call the Cleveland City Police Department at 621-1234.
 - a) State your name and that you are from Advanced Medical Systems, Inc. located at 1020 London Road.
 - b) Describe the problem.

- c) Answer all questions and let them hang up before you do.

11.0 EVACUATION PROCEDURE

11.1 Decision

The decision to evacuate any section of the facility because of fire or other occurrence will be made by the RSO or his/her designee.

11.2 Notification

If time permits, the RSO will notify the Engineering Manager located at the Geneva, Ohio office that a portion of the building has been evacuated.

11.3 Evacuation

- 1.) Each employee will, if possible, shut off any electrical equipment being used including the coffee pot, before evacuating the premises.
- 2.) Supervisory personnel will assemble their personnel in the parking lot and stand ready to assist in the control of the emergency.
- 3.) The RSO is responsible for the communication of information to all personnel concerning the resumption of plant operation following an evacuation.

11.4 Training

It is the responsibility of the RSO to inform each employee of their emergency evacuation exit and their alternative exit(s).

11.5 Equipment Alarms

ADT maintains and is responsible for all fire detection and security equipment. ADT conducts monthly inspections and performs all necessary repairs.

12.0 GENERAL RULES FOR SECURITY BREACHES FOR RESPONDING LAW ENFORCEMENT AGENCIES AND ADT

AMS has ADT Security Service throughout the restricted and non-restricted areas of the London Road facility. During unoccupied hours, this system is armed and breaches of security are electronically transmitted to the ADT office. During occupied hours, these systems are disarmed to avoid the inadvertent transmission of alarm signals by the AMS staff.

12.1 Response

- 1.) During occupied hours, any breach of security will be reported by AMS staff personnel to the Cleveland City Police Department at 621-1234.

- 2.) During unoccupied hours, breaches in security are first detected by the ADT supervisory monitoring system.
- 3.) ADT immediately calls AMS emergency response personnel.
- 4.) ADT security personnel (armed guards) or local law enforcement agencies responding to an ADT call report to the London Road site and await the arrival of either trained emergency response personnel or an AMS representative.
- 5.) An escorted and supervised search of the facility is conducted by the law enforcement officers and either an AMS representative or trained emergency response personnel.
- 6.) If possible, the source of the security breach is determined and the nature or type of security breach recorded.
- 7.) All locks and secured entrances are checked for status. If any of the secured systems have been damaged, they should be repaired before the building is vacated by the AMS representative.
- 8.) All sources of radioactive materials storage are checked to determine tampering or accountability. This includes stored radioactive materials, instrument calibration sources, and any source of depleted uranium shielding.
- 9.) The AMS representative should check the supervisory panel to assure that all systems are functioning properly.
- 10.) If a breach of security into restricted areas is detected, wipes of the floor areas will be taken to determine if any radioactive contamination has occurred.
- 11.) Should either the theft of the radioactive material be detected or the release of radioactive contamination occur as a result of the security breach, the NRC will be notified according to the requirements of 10 CFR 20.
- 12.) Following an all-clear situation, ADT systems are reset before exiting the facility.

13.0 GENERAL RULES FOR AMBULANCE-RESCUE SQUADS

Reference:

Based on DOE/EV-0020, Department of Energy, October 1978

13.1 Background

- 1.) Ambulance-rescue squad personnel are usually the first persons of the medical team to see the case of radiation exposure or radioactive contamination. Their first acts will vary in degree. Trained, knowledgeable co-workers, supervisors, or health physicists are usually on hand.

2.) When the accident has occurred, the health physicist, supervisor, co-workers, and the patient(s) should be able to inform members of the rescue squad of the nature of the accident, number of patients and type of radiation exposure or radioactive contamination involved, and possible body areas that may be affected.

A gross measurement of the amount of radiation involved may be available; such information is most helpful.

13.2 General Rules

It is the responsibility of the rescue squad to:

For the patient:

- 1.) Give lifesaving emergency assistance if needed.
- 2.) Secure pertinent information including any radiation exposure from those in attendance.
- 3.) Determine if physical injury or open wounds are involved. Cover wound with clean dressing; use elastic bandage to hold wound-cover in place; do not use adhesive.
- 4.) Cover stretcher, including pillow, with open blanket; wrap victim in blanket to limit spread of contamination.
- 5.) Notify Huron Road Hospital by radio or telephone of available information.

For rescue squad personnel:

- 6.) Perform survey of clothing, ambulance, etc. on arrival at Huron Road Hospital before undertaking further activity.
- 7.) If contaminated, discard clothing in container marked "Radioactive--Do Not Discard." Cleanse self by washing and/or showering, as appropriate.
- 8.) If in contaminated area, rescue squad personnel must be surveyed by radiation-survey meter; measurements must be recorded. Cleansing must continue until responsible physician indicates person may leave.

14.0 GENERAL RULES FOR PHYSICIANS AND NURSES

References:

Based on DOE/EV-0017, 0018 and 0019, Department of Energy, October 1978

14.1 Background

The content of each set of general rules will vary with the role of the user; i.e., ambulance or rescue squad, emergency room physician or nurse, or hospital administrator. Additional variations in standing orders can occur if a hospital has: (1) a pre-arranged procedure that is periodically updated and tested, (b) a staff of trained physicians, aides, and

technicians, (c) proper radiation-measuring equipment, and (d) available space for isolation use. What follows is directed to meet the situation of a small community or rural hospital.

14.2 General Rules

If the ambulance or rescue squad that picks up the radiation accident case has a radio or telephone, the emergency room will be alerted to expect a patient who may have had radiation exposure or radioactive contamination.

It is the responsibility of the senior hospital emergency room person on duty, nurse, or physician, on receipt of notification of the momentary arrival of a case involving radiation exposure or contamination, to:

- 1.) Notify responsible staff physician or nurse and aides (trained health physicists or trained technicians from x-ray or nuclear medicine departments).
- 2.) Get appropriate survey meter, if one is on hand in the hospital. If hospital has no meter, notify hospital administrator or responsible hospital official so he/she may obtain a survey meter and other pertinent equipment by calling the Police Department.
- 3.) Notify the hospital administrator so he/she may seek expert professional consultation for technical management of the case.
- 4.) If contamination is suspected, prepare separate space, using either isolation room or cubicle if available. Some hospitals use the morgue, since the autopsy table lends itself to washing with water. The morgue entrance would then be used rather than the emergency room. When the morgue is used, the patient and his/her family must be reassured of why that space is used. If no separate space is available, cover a floor area immediately adjacent to the entranceway to the emergency room with absorbent paper. The area must be adequate for stretcher-cart, disposal hampers, and working space for professional attendants. Mark and close off this area. If dust is involved, be prepared to shut off air circulation system to prevent spread of contamination.

Upon ambulance arrival, the responsible physician or nurse in the emergency room should:

- 1.) Check patient on stretcher for contamination (preferably as stretcher is removed from the ambulance) by use of a survey meter.
- 2.) If seriously injured, give emergency lifesaving assistance immediately.
- 3.) Handle contaminated patient and wound as one would a surgical procedure; i.e., gown, gloves, cap, mask, etc.
- 4.) If possible external contamination is involved, save all clothing and bedding from ambulance, blood, urine, stool, vomitus, and all metal objects (e.g., jewelry, belt buckles, dental plates, etc.). Label with name, body location, time, and date. Save each

in appropriate containers; mark containers clearly, "Radioactive-Do Not Discard."

5.) Decontamination should start, if medical status permits, with cleansing and scrubbing area of highest contamination first. If an extremity alone is involved, clothing may serve as an effective barrier and the affected limb alone may be scrubbed and cleansed. Initial cleansing should be done with soap and warm water. If the body as a whole is involved or clothing generally permeated by contaminated material, showering and scrubbing will be necessary. Pay special attention to hair parts, body orifices, and body folds areas. Remeasure and record measurement after each washing or showering. Non-radioactive wash water waste may be flushed into community sewage system. Follow hospital procedures for radioactive liquid waste.

If a wound is involved, prepare and cover the wound with self-adhering disposable surgical drape. Cleanse neighboring surfaces of skin. Seal off cleansed areas with self-adhering disposable surgical drapes. Remove wound covering and irrigate wound with sterile water, catching the irrigating fluid in a basin. Washings can be marked and handled as described in Rule 4 above. Each step in the decontamination should be preceded and followed by monitoring and recording of the location and extent of contamination.

6.) Save physicians', nurses', and attendants' scrub or protective clothing, as described for patients. Nurses, doctors, and attendants must follow the same monitoring and decontamination routing as the patients.

7.) The physician in attendance in the emergency room, if confronted with a highly contaminated wound with dirt particles and crushed tissue, should be prepared to do a preliminary simple wet debridement. An emergency minor surgical set should be used. Further measurements may necessitate sophisticated wound counting detection instruments supplied by the consultant who will advise if further definitive debridement is necessary.

8.) AMS personnel should be able to inform the rescue squad of the nature of the accident, type of radiation exposure or radioactive contamination involved, and possible areas of the body that may be affected. A gross measurement of the amount of radiation involved is always helpful. An AMS representative may come to the hospital with the patient and can be a source of immediate consultation.

9.) The emergency room's nurses' calm, assured, friendly greeting, attitude, and conversations with the patient can be a tremendous aid.

15.0 GENERAL RULES FOR HOSPITAL ADMINISTRATORS

Reference:

Based on DOE/EV-0019, Department of Energy, October 1978

15.1 Background

The hospital administrator, in contrast to other members of the medical team, is particularly concerned with what the situation will do to his/her other patients or to the hospital as a physical plant, and that relationships with community organizations and specialists are vital.

15.2 General Rules

- 1.) The hospital administrator or senior administrator on duty should inform the DOE and other public officials, such as town, city or county, and/or State health departments, police and fire departments, as appropriate. Before any accidents have occurred, he/she should establish telephone contact with appropriate DOE officials. They can always give immediate advice over the telephone on cleanup of accident site, equipment, etc., and put the hospital's physician in immediate contact with a physician-specialist with knowledge of such accidents. The specialist can be on his way to the hospital within minutes of the first telephone contact.
- 2.) The hospital administrator should also know if the community's police or fire departments have survey meters and who has access to stockpiled civil defense supplies. He/she should also know whether police or fire departments in the community clear up public accident sites.
- 3.) The hospital administrator should have the survey meters checked periodically to be sure that the equipment is operating and fresh batteries are available.

16.0 GENERAL RULES FOR HEALTH PHYSICISTS AND RADIOLOGICAL SAFETY OFFICERS

Reference:

(From Saenger, E.L., Medical Aspects of
Radiation Accidents, USAEC, 1963.)

- 1.) When and if an accident is suspected, evacuate personnel and segregate them. Remove all personnel dosimeters and/or film badges immediately from exposed personnel. Read dosimeters and record the reading. Send dosimeters and film badges immediately to a safe area.
- 2.) Notify Radiological Safety Officer who will then activate emergency plan.
- 3.) Close off radiation area. Shut off air conditioning. Seal area if contamination is likely.
- 4.) Evaluate situation in regard to:

- (a) Extent of contamination
- (b) Level of radiation exposure

5.) Save all samples of clothing, blood, urine, stool, vomitus. Label with name, date, time. Send film badges for emergency processing by standard technique.

6.) Portable battery-operated tape recorder will be very useful in collecting and storing information and for obtaining a complete history of the accident. It is often difficult to record all of the events, opinions, and statements available in an emergency situation. The taped records can be typed later, thus providing a more complete history of the accident.

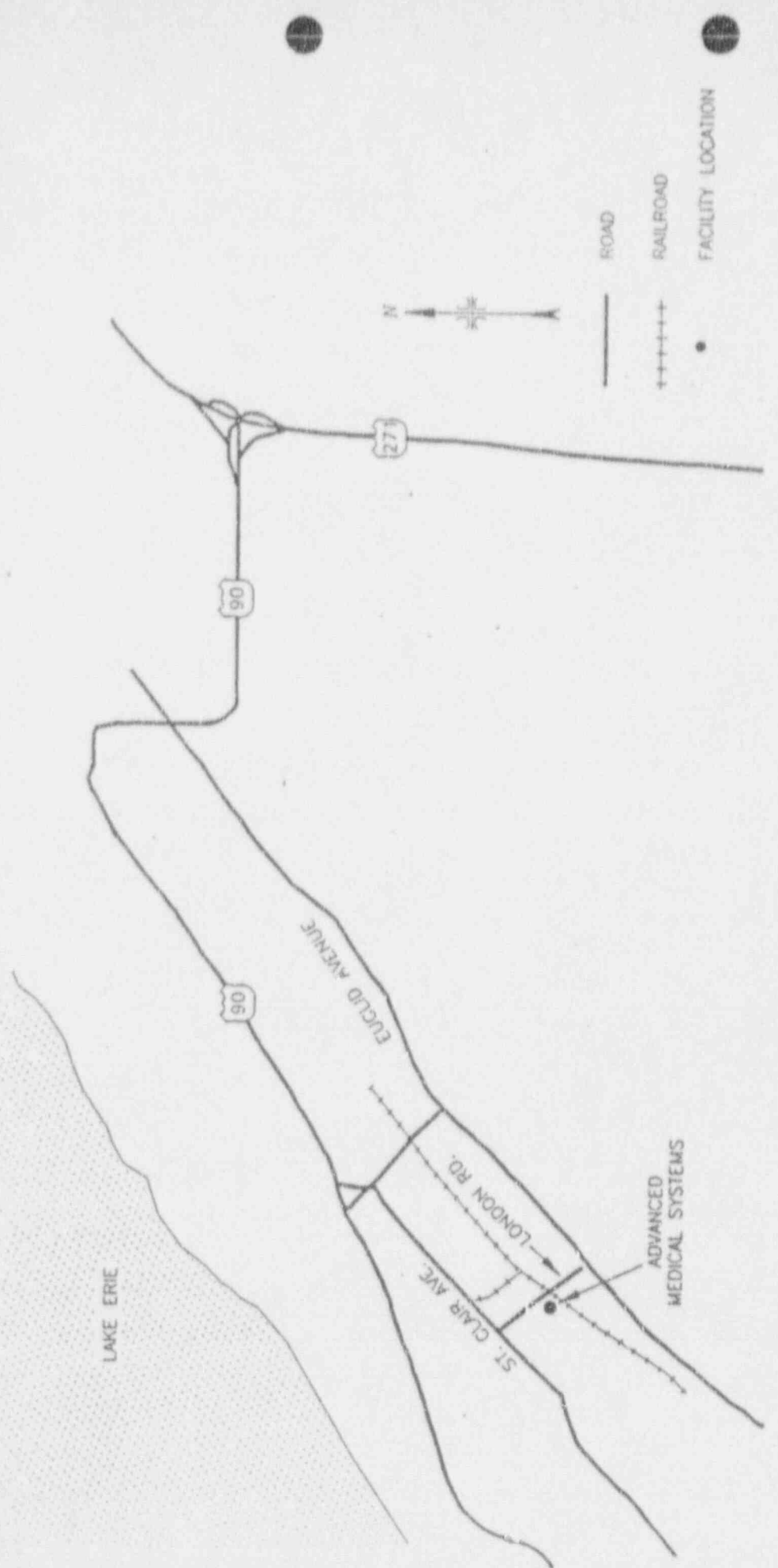
7.) A camera will provide an excellent method of showing exactly what happened. If a movie camera is not available, suitable still photographs will be used.

8.) In a major accident, management should obtain the aid of consulting physicists. These individuals can also be found in neighboring installations and at Perry Nuclear Power Plant and will be essential for the proper handling of the accident during the first week, particularly if it is necessary to work a 24-hour day.

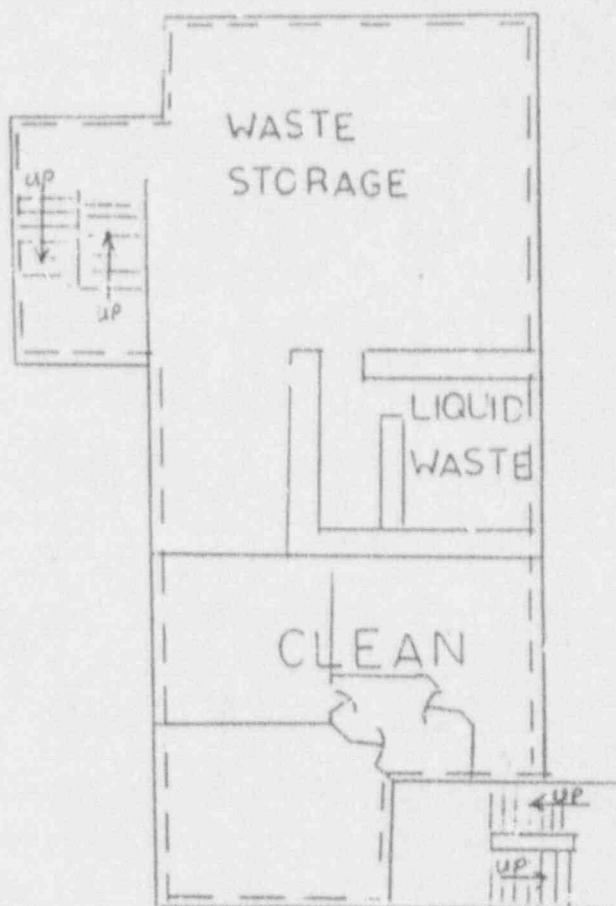
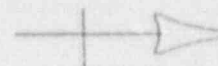
EMERGENCY RESPONSE KIT

Location: Advanced Medical Systems fire pumphouse located on Mandalay Avenue approximately 300 feet west of the London Road facility.

Contents: Frisker
Survey Meter
Flashlight
Batteries for Above
Respirator
Air Sampler
100-foot Extension Cord
Pocket Dosimeters - 200Mr and SR
Dosimeter Charger
Protective Clothing - Shoe Covers, Head Covers, Coveralls, Gloves
2-inch Masking Tape
Contamination Wipes, Soap, Spray Bottle
Rope, Signs and Placards
Ziploc Plastic Bags
Polydrum Liners - 6 Mil.
Marking Pens
Graphite Pencils
Survey Data Forms
Facility Drawings
Emergency Phone Numbers
\$3.00 in Quarters
Building Keys



Cleveland, Ohio, Area Indicating the Location of the AMS Facility



---INDICATES RESTRICTED AREA
CONTROLLED ACCESS

BASEMENT

SCALE 1/16"

Classification of Fire Extinguishers

Class "A" Fires

Approved Involving

Wood
Paper
Textiles
Rubbish

Characteristics

They are fires in ordinary combustible materials such as wood, paper, textiles, rubbish, etc. where the quenching and cooling effects of the quantities of water or solutions containing large percentages of water is of first importance.

Fire Extinguisher

1. Water Pump
2. Dry Chemical
3. Carbon Dioxide
4. Halon

Class "B" Fires

Approved Involving

Oils
Greases
Paints
Varnish

Characteristics

They are fires of flammable liquids, oils, chemicals, greases, gas, etc. where a blanketing effect is essential.

Fire Extinguisher

1. Dry Chemical
2. Carbon Dioxide
3. Halon

Class "C" Fires

Approved Involving

Live Electrical
Equipment

Characteristics

They are fires of electric equipment where use of non-conducting extinguishing agent is of first importance.

Fire Extinguisher

1. Dry Chemical
2. Carbon Dioxide
3. Dry Chemical

Class "D" Fires

Approved Involving

Burning Metals

Characteristics

They are fires of burning metal, such as depleted uranium.

Fire Extinguisher

1. Dry Powder

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 466-0186

March 13, 1991

Mr. Mack McCloud
ADT Security Systems, Inc.
9100 Market Place
Cleveland, OH 44147

RE: Advanced Medical Systems, Inc., 1020 London Road, Cleveland

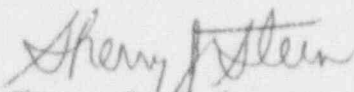
Dear Mr. McCloud:

On February 23, 1991, I spoke with Mr. Dave Earl of your office who informed me that the previous ADT inspector for Advanced Medical Systems, Inc., 1020 London Road location had retired and that a new inspector was going to be assigned to our facility. He also asked me to contact you to arrange for a meeting so that I could follow your inspector around to document his month'y checks and to discuss fire detection device(s) to be installed in the HEPA equipment room.

Please contact me at your earliest possible convenience with a date so that I may make proper arrangements. You can reach me at 466-4671.

Thank you for your prompt attention to this matter.

Sincerely,



Sherry J. Stein
Director of Regulatory Affairs

cc: Mr. John Maders

RECEIVED

MAR 15 1991

REGION III

MAR 15 1991

Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 TWX 4332-135 ATC UI FAX (216) 36-0186

March 6, 1991

Mr. Mike Kingery
Meridia Huron Hospital
13951 Terrace Road
Cleveland, Ohio 44122

RE: Advanced Medical Systems, Inc.
1020 London Road
Cleveland, Ohio 44110
Draft Emergency Pre-Plan

Dear Mr. Kingery:

Enclosed please find a copy of AMS' Draft Emergency Pre-Plan which, as we discussed, was sent to your hospital on November 6, 1990. Your comments and suggestions are welcomed. A final copy will be submitted to you after all comments have been received. Please retain the set of maps for your files, as they will not be resubmitted.

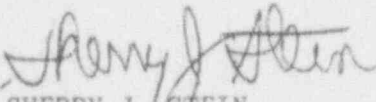
This draft is also being reviewed by the Cleveland Emergency Medical Services, Cleveland City Police and Fire Departments and Region III of the Nuclear Regulatory Commission.

As I explained, AMS purchased the London Road facility, as it is commonly referred to, from Picker Corporation. AMS has a hot cell wherein it builds cobalt 60 sources for use in cobalt teletherapy units.

We are in the process of coordinating a three-day biennial tour of the facility for the emergency response agencies. Either I or Michael Ginzel, who is based at the London Road facility, will be contacting you shortly to arrange for representatives from Meridia Huron to participate in the tour.

In the meantime, please feel free to contact me should you have any questions.

Sincerely



SHERRY J. STEIN
Director of Regulatory Affairs

SJS/jmb
Enclosures

cc: John Madera, USNRC Region III
Michael Ginzel

CERTIFIED MAIL #P228723990
RETURN RECEIPT REQUESTED

RECEIVED

MAR 08 1991

REGION III

MAR 8 1991