



OFFICE OF THE  
GENERAL COUNSEL

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

April 12, 1995

DOCKETED  
USNRC

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OFFICE OF SECRETARY  
DOCKETING SERVICE  
WASHINGTON

Marshall E. Miller  
Presiding Officer  
1920 South Creek Boulevard  
Spruce Creek Fly-In  
Daytona Beach, FL 32124

Dr. Harry Foreman  
Special Assistant  
1564 Burton Avenue  
St. Paul, MN 55108

In the Matter of  
ADVANCED MEDICAL SYSTEMS, INC.  
Material License No. 34-19089-01  
Docket No. 30-16055-ML-REN

Dear Administrative Judges:

Pursuant to 10 C.F.R. §§ 2.1231 and 2.1203(c), I am forwarding to you and the parties copies of the documents set forth in the attached Index which comprise, as of this date, the hearing file for this proceeding. Please note that the Staff's review of the application for license renewal submitted by Advanced Medical Systems, Inc. (AMS) is not complete. At this time the Staff currently estimates that its review of the application will be completed within three to six months. The Staff will update the hearing file in accordance with 10 C.F.R. § 2.1231(c).

Sincerely,

*Marian L. Zabler*  
Marian L. Zabler  
Counsel for NRC Staff

Enclosures: As stated

cc w/encls: Service List

SECY-030

0503

16625

## AMS HEARING FILE INDEX

April 12, 1995

1. Materials License Number 34-19089-01, as amended, September 27, 1994.
2. Letter to Mr. John R. Madera, Section Chief for Licensing, U.S. Nuclear Regulatory Commission from David Cesar, Treasurer, Advanced Medical Systems, Inc., Re: Application for Renewal of Material License No. 34-19089-01, November 29, 1994.
3. Letter to Advanced Medical Systems, Inc., Attn: David Cesar, Treasurer from John A. Grobe, Chief, Nuclear Materials Inspection Section 2, Re: Application for Renewal of NRC License No. 34-19089-01, December 22, 1994 (without attachments).
4. Letter to Mr. Jack Grobe, Nuclear Materials Inspection, Section 2, U.S. Nuclear Regulatory Commission from David Cesar, Treasurer, Advanced Medical Systems, Inc., Re: Response to Letter dated December 22, 1994, December 29, 1994.
5. Letter to John A. Grobe, Chief, Nuclear Materials Inspection, Section 2, U.S. Nuclear Regulatory Commission from David Cesar, Treasurer, Advanced Medical Systems, Inc., Re: Application for Renewal of NRC License No. 34-19089-01, Control No. 397891, enclosing application for renewal of NRC License, January 26, 1995, with enclosed application (three parts). Please note that section 3, Decommissioning Cost Estimate for the London Road Site in Cleveland, Ohio, has been withheld, pursuant to the proprietary statement contained in the document until the Staff makes a determination with respect to the applicant's request to withhold this document. The Presiding Officer and parties will be promptly notified of the Staff's determination.
6. Telefacsimile to John A. Grobe, Chief, Nuclear Materials Inspection, Section 2, U.S. Nuclear Regulatory Commission from David Cesar, Treasurer, Advanced Medical Systems, Inc., Re: W.H.U.T. Room report, March 6, 1995.
7. Letter to John A. Grobe, Chief, Nuclear Materials Inspection, Section 2, U.S. Nuclear Regulatory Commission from David Cesar, Treasurer, Advanced Medical Systems, Inc., Re: enclosing two copies of W.H.U.T. Room Survey, with enclosed Survey, March 8, 1995.
8. Letter to Advanced Medical Systems, Inc., Attn: David Cesar, Treasurer from John A. Grobe, Chief, Nuclear

Materials Inspection Section 2, Re: Review of Decommission Funding Plan, March 13, 1995.

9. Materials License No. 34-19089-01, as amended, March 17, 1995.
10. Letter to Advanced Medical Systems, Inc., Attn: David Cesar, Treasurer from John A. Grobe, Chief, Nuclear Materials Inspection Section 2, Re: Cost Estimate for Decommissioning, March 30, 1995.
11. Letter to Advanced Medical Systems, Inc., Attn: David Cesar, Treasurer from John A. Grobe, Chief, Nuclear Materials Inspection Section 2, Re: Emergency Plan and Notice of Violation, March 31, 1995.
12. Letter to Distribution List from David Cesar, Treasurer, Advanced Medical Systems, Inc., Re: Enclosing copies of AMS' Emergency Plan, March 31, 1995.
13. Letter to Mr. John A. Grobe, Chief, Nuclear Materials Inspection, Section II, U.S. Nuclear Regulatory Commission From David Cesar, Treasurer, Advanced Medical Systems, Inc., Re: Modified and Restated Decommissioning Trust, March 31, 1995 (with enclosures). Please note that this document is a facsimile copy, a copy of the original document will be forwarded to the Presiding Officer and the parties as soon as possible.

# DOCUMENT 1

Materials License Number 34-19089-01, as amended,  
September 27, 1994.

MATERIALS LICENSE

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.

<p>Licensee</p> <p>1. Advanced Medical Systems, Inc.</p> <p>2. 1020 London Road Cleveland, OH 44110</p>		<p>In accordance with letter dated September 21, 1994</p> <p>3. License number 34-19089-01 is amended in its entirety to read as follows:</p>	
		<p>4. Expiration date December 31, 1994</p>	
		<p>5. Docket or Reference No. 030-16055/040-08764/030-17154</p>	
<p>Byproduct, source, and/or special nuclear material</p> <p>A. Cobalt-60</p> <p>B. Cobalt-60</p> <p>C. Cesium-137</p> <p>D. Depleted Uranium</p> <p>E. Cobalt-60</p>	<p>7. Chemical and/or physical form</p> <p>A. Solid Metal</p> <p>B. Sealed sources (teletherapy/ radiography sealed sources which have been evaluated and approved for commercial distribution by the NRC or an Agreement State)</p> <p>C. Sealed sources (teletherapy/ radiography sealed sources which have been evaluated and approved for commercial distribution by the NRC or an Agreement State)</p> <p>D. Nickel Plated</p> <p>E. Sealed Sources</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 150,000 curies</p> <p>B. 135,000 curies (no single source to exceed 13,700 curies)</p> <p>C. 40,000 curies (no single source to exceed 2,200 curies)</p> <p>D. 4,040 kilograms</p> <p>E. 15,000 curies</p>	

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C PDR

COPY 4

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License number

34-19089-01

Docket or Reference number

030-16055/040-08764/030-17154

Amendment No. 31

- |   |                                  |  |
|---|----------------------------------|--|
| 6. Byproduct, source, and/or special nuclear material | 7. Chemical and/or physical form | 8. Maximum amount that licensee may possess at any one time under this license |
|---|----------------------------------|--|

F. Cobalt-60

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

F. 15 millicuries

9. Authorized Use:

- A. For storage only incident to waste disposal or transfer to an authorized recipient. This license does not authorize the manufacture of sealed sources.
- B. For installation, maintenance, 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, one 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.

COPY

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License number

34-19089-01

Docket or Reference number

030-16055/040-08764/030-17154

Amendment No. 31

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 Robert Meschter.

The licensee shall not perform service operations described in Subitems 9.B. and 9.C. until Robert Meschter has completed the required training.

- 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 600	C 1000	C 2000	C 3000	C 5000	C 10,000	C4	C8	C9	C12	Cyclops
USER											
Curtis Perry				3	1,2	1,2	1,2	1,2	1,2		1,2
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										
Curtis Perry		1,2	1,2	1,2	1,2	1,2				
Haddock	5	5	5	5	5	5				

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MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License number

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Docket or Reference number

030-16055/040-08764/030-17154

Amendment No. 31

11. (Continued)

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.

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 designated for the purpose of emitting alpha particles shall be tested at intervals not to exceed 3 months.

COPY



MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License number

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Docket or Reference number

030-16055/040-08764/030-17154

Amendment No. 31

12. (Continued)

- 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 what 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, 801 Warrenville Road, Lisle, Illinois 60532-4851. ATTN: Chief, Nuclear Materials Safety Branch describing the equipment involved, the test results, and the corrective action.
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 June 1, 1993. Thereafter, a physical inventory of all radioactive material possessed under this license will be completed within 60 months of the previous physical inventory.
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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License number

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Docket or Reference number

030-16055/040-08764/030-17154

Amendment No. 31

16. The licensee shall follow the recommend survey frequencies outlined in Regulatory Guide 8.21, Revision 1, October 1979, in work areas where 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, May 27, 1992 and April 26, 1993. The licensee shall make no change in the emergency plan submitted pursuant to 10 CFR [30.32(i), 40.31(j), 70.22(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, DC 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

COPY

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License number

34-19089-01

Docket or Reference number

030-16055/040-08764/030-17154

Amendment No. 31

19. (Continued)

- 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.
- G. Letters dated April 16, 1992 (with enclosures), June 15, 1992 (with attachments), August 10, 1992, September 18, 1992, December 29, 1992 (with enclosures), January 20, 1993, March 30, 1993, March 31, 1994 (with enclosure), April 11, 1994, and September 21, 1994.



FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date

9/27/94

By

Materials Licensing Section, Region III

COPY

## DOCUMENT 2

Letter to Mr. John R. Madera, Section Chief for Licensing, U.S. Nuclear Regulatory Commission from David Cesar, Treasurer, Advanced Medical Systems, Inc., Re: Application for Renewal of Material License No. 34-19089-01, November 29, 1994.

# Advanced Medical Systems, Inc.

21 North Eagle Street • Geneva, Ohio 44041  
466-4671 FAX (216) 466-0186

November 29, 1994

Mr. John R. Madera  
Section Chief for Licensing  
U.S. Nuclear Regulatory Commission  
801 Warrenville Road  
Lisle, IL 60532-4351

RE: License No. 34-19089-01

Dear John:

Enclosed are two (2) copies of our Application for Renewal of our Material License No. 34-19089-01 along with our renewal fee in the amount of \$2,200.00.

There are several issues which remain open at the time of this mailing which we realize need to be resolved. The first item is the Decommissioning Funding Plan has been prepared. We are not submitting it at this time pending the completion of the WHUT Room evaluation requested by the NRC. SEG has completed the first phase of the project which consisted of obtaining soil samples from outside the WHUT Room. These samples are being tested and we expect the results this week.

The second phase of this project would be to look into the WHUT Room, assess the contamination levels and obtain a videotape of the interior. This work is scheduled to be completed sometime the week of December 5. The Decommissioning Funding Plan is subject to change pending the results of the WHUT Room evaluation. The Decommissioning Funding Plan and WHUT Room Evaluation Report will be submitted to the NRC not later than December 31, which is the expiration date of our license.

The second item which needs to be resolved is the completion of our physical inventory. ALARON was in the week of November 14 with the contractor who will perform the destructive removal of the stuck floor plug. They observed the cell firsthand, took measurements and got an understanding on how helpful the manipulators will be during the operation. I hope to have a proposal from them the week of November 28. This is a priority project for us as it is our intention to remove all sealed sources and bulk capsules from our facility. Once the WHUT Room evaluation is complete, we will be able to concentrate on completion of the physical inventory.

Enclosed are the changes to our Materials License we wish to make at this time. Under Item 19 of our Materials License, numerous letters are referenced. I have reviewed these and provided comments on each in the Material License Renewal Application. It is my intention to remove references and conditions which no longer apply.

DEC 1  
REGIONAL


Mr. John R. Madera

-2-

November 29, 1994

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

Sincerely,

A handwritten signature in dark ink, appearing to read "D. Cesar", written in a cursive style.

DAVID CESAR  
Treasurer

DC/mz  
Enclosures

397871

(6-93)

10 CFR 30, 32, 33

34, 35, 36, 39 and 40

## APPLICATION FOR MATERIAL LICENSE

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST, 9 HOURS. SUBMITTAL OF THE APPLICATION IS NECESSARY TO DETERMINE THAT THE APPLICANT IS QUALIFIED AND THAT ADEQUATE PROCEDURES EXIST TO PROTECT THE PUBLIC HEALTH AND SAFETY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0122), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

## APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY  
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS  
U.S. NUCLEAR REGULATORY COMMISSION  
WASHINGTON, DC 20555-0001

## ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

## IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND,  
MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA,  
RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

LICENSING ASSISTANT SECTION  
NUCLEAR MATERIALS SAFETY BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION I  
15 ALLENDALE ROAD  
BRIDGEMAN, PA 15405-1415

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO  
RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,  
SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION II  
101 MARIETTA STREET, NW, SUITE 2900  
ATLANTA, GA 30323-0199

## IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN,  
SEND APPLICATIONS TO:

MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION III  
801 WARRENVILLE RD.  
LISLE, IL 60532-4351

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW  
MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING,  
SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TX 76011-8064

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S.  
TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

RADIOACTIVE MATERIALS SAFETY BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION V  
1450 MARIA LANE  
WALNUT CREEK, CA 94596-5368

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

## 1. THIS IS AN APPLICATION FOR (Check appropriate item)

- ☐ A. NEW LICENSE  
☐ B. AMENDMENT TO LICENSE NUMBER \_\_\_\_\_  
☒ C. RENEWAL OF LICENSE NUMBER 34-19089-01

## 2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip code)

Advanced Medical Systems, Inc.  
121 North Eagle Street  
Geneva, OH 44041

## 3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

1020 London Road  
Cleveland, OH 44110  
121 North Eagle Street  
Geneva, OH 44041

397891

## 4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

David Cesar

## TELEPHONE NUMBER

(216) 466-4671

SUBMIT ITEMS 5 THROUGH 11 ON 6-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE

5. RADIOACTIVE MATERIAL a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.	6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED
7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.	8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS
9. FACILITIES AND EQUIPMENT	10. RADIATION SAFETY PROGRAM.
11. WASTE MANAGEMENT	12. LICENSEE FEES (See 10 CFR 170 and Section 170.31) FEE CATEGORY <u>3B</u> AMOUNT ENCLOSED \$ <u>2,200.00</u>
13. CERTIFICATION: (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE SINCERE UPON THE APPLICANT THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39 AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF. WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION	

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

David Cesar, Treasurer

SIGNATURE

DATE

11-29-94

## FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		NEC

APPROVED BY

DATE

397891  
34-19089-01

ADVANCED MEDICAL SYSTEMS, INC.  
LICENSE RENEWAL  
LICENSE NO. 34-19089-01

The following are the changes and/or deletions to our current Materials License.

Item 5: Radioactive Material - Reduce the possession limits as follows:

A. Byproduct, Source and/or Special Nuclear Material	B. Chemical and/or Physical Form	C. Maximum Amount That Licensee May Possess at Any One Time Under This License
Cobalt-60	Solid Metal	20,000 Curies
Cobalt-60	Sealed sources (teletherapy/radiography sealed sources which have been evaluated and approved for commercial distribution by the NRC or an Agreement State)	60,000 Curies (no single source to exceed 13,700 Curies)
Depleted Uranium	Nickel Plated	4,040 Kilograms
Cobalt-60	Sealed Sources	15,000 Curies
Cobalt-60	Sealed Sources	15 Millicuries
Cesium-137	Sealed Source	1 Millicurie

Delete Cesium-137.

Add 9: Authorized use Cesium-137: for use in devices.

Item 12(b): Delete the words "fabricated by the Licensee" as they reference source fabrication by Advanced Medical Systems. Advanced Medical Systems will not manufacture sealed sources in the future.

Item 14(c): Change To: A physical inventory of all radioactive material possessed under this License will be completed within sixty (60) months of the previous inventory.

Item 19: Add: Licensee will notify the NRC of any structural changes or modifications to the London Road Hot Cell Facility.

Licensee will submit any changes, additions or deletions to their ISP Manual or training programs to the NRC for review and comment.

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Leave in the September 21, 1994 letter as this contains the qualifications of our current RSO, Robert Meschter.

## APPLICATION FOR MATERIAL LICENSE

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 9 HOURS. SUBMITTAL OF THE APPLICATION IS NECESSARY TO DETERMINE THAT THE APPLICANT IS QUALIFIED AND THAT ADEQUATE PROCEDURES EXIST TO PROTECT THE PUBLIC HEALTH AND SAFETY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0120), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

## APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY  
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS  
U.S. NUCLEAR REGULATORY COMMISSION  
WASHINGTON, DC 20555-0001

## ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

## IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT. SEND APPLICATIONS TO:

LICENSING ASSISTANT SECTION  
NUCLEAR MATERIALS SAFETY BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION I  
35 ALLENDALE ROAD  
PRUSSIA, PA 19436-1415

FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA. SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION II  
101 MARIETTA STREET, NW, SUITE 2900  
ATLANTA, GA 30323-0199

## IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN. SEND APPLICATIONS TO:

MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION III  
801 WARRENVILLE RD.  
LISLE, IL 60532-4351

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING. SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TX 76011-8064

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC. SEND APPLICATIONS TO:

RADIOACTIVE MATERIALS SAFETY BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION V  
1450 MARIA LANE  
WALNUT CREEK, CA 94596-5368

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

## THIS IS AN APPLICATION FOR (Check appropriate item)

- ☐ A. NEW LICENSE  
☐ B. AMENDMENT TO LICENSE NUMBER \_\_\_\_\_  
☒ C. RENEWAL OF LICENSE NUMBER 34-19089-01

## 2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip code)

Advanced Medical Systems, Inc.  
121 North Eagle Street  
Geneva, OH 44041

## 3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

1020 London Road  
Cleveland, OH 44110  
121 North Eagle Street  
Geneva, OH 44041

## 4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

David Cesar

## TELEPHONE NUMBER

(216) 466-4671

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE

5. RADIOACTIVE MATERIAL: a. Element and mass number, b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.	6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED
7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE	8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS
9. FACILITIES AND EQUIPMENT	10. RADIATION SAFETY PROGRAM
11. WASTE MANAGEMENT	12. LICENSEE FEES (See 10 CFR 170 and Section 170.31) FEE CATEGORY <u>3B</u> AMOUNT ENCLOSED \$ <u>2,200.00</u>
13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE SINCERE UPON THE APPLICANT. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39 AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF. WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.	

IFYING OFFICER - TYPED/PRINTED NAME AND TITLE

David Cesar, Treasurer

SIGNATURE

DATE

11-29-94

## FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		DEC 1 1994 REGION III 397891
APPROVED BY				DATE	

ADVANCED MEDICAL SYSTEMS, INC.  
LICENSE RENEWAL  
LICENSE NO. 34-19089-01

The following are the changes and/or deletions to our current Materials License.

Item 5: Radioactive Material - Reduce the possession limits as follows:

A. Byproduct, Source and/or Special Nuclear Material	B. Chemical and/or Physical Form	C. Maximum Amount That Licensee May Possess at Any One Time Under This License
Cobalt-60	Solid Metal	20,000 Curies
Cobalt-60	Sealed sources (tele-therapy/radiography sealed sources which have been evaluated and approved for commercial distribution by the NRC or an Agreement State)	60,000 Curies (no single source to exceed 13,700 Curies)
Depleted Uranium	Nickel Plated	4,040 Kilograms
Cobalt-60	Sealed Sources	15,000 Curies
Cobalt-60	Sealed Sources	15 Millicuries
Cesium-137	Sealed Source	1 Millicurie

Delete Cesium-137.

Add 9: Authorized use Cesium-137: for use in devices.

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# Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041  
166-4671 FAX (216) 466-0186

November 29, 1994

Mr. John R. Madera  
Section Chief for Licensing  
U.S. Nuclear Regulatory Commission  
801 Warrenville Road  
Lisle, IL 60532-4351

RE: License No. 34-19089-01

Dear John:

Enclosed are two (2) copies of our Application for Renewal of our Material License No. 34-19089-01 along with our renewal fee in the amount of \$2,200.00.

There are several issues which remain open at the time of this mailing which we realize need to be resolved. The first item is the Decommissioning Funding Plan has been prepared. We are not submitting it at this time pending the completion of the WHUT Room evaluation requested by the NRC. SEG has completed the first phase of the project which consisted of obtaining soil samples from outside the WHUT Room. These samples are being tested and we expect the results this week.

The second phase of this project would be to look into the WHUT Room, assess the contamination levels and obtain a videotape of the interior. This work is scheduled to be completed sometime the week of December 5. The Decommissioning Funding Plan is subject to change pending the results of the WHUT Room evaluation. The Decommissioning Funding Plan and WHUT Room Evaluation Report will be submitted to the NRC not later than December 31, which is the expiration date of our license.

The second item which needs to be resolved is the completion of our physical inventory. ALARON was in the week of November 14 with the contractor who will perform the destructive removal of the stuck floor plug. They observed the cell firsthand, took measurements and got an understanding on how helpful the manipulators will be during the operation. I hope to have a proposal from them the week of November 28. This is a priority project for us as it is our intention to remove all sealed sources and bulk capsules from our facility. Once the WHUT Room evaluation is complete, we will be able to concentrate on completion of the physical inventory.

Enclosed are the changes to our Materials License we wish to make at this time. Under Item 19 of our Materials License, numerous letters are referenced. I have reviewed these and provided comments on each in the Material License Renewal Application. It is my intention to remove references and conditions which no longer apply.

100  
DEC 1  
REGION 11

Mr. John R. Madera

-2-

November 29, 1994

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

Sincerely,

A handwritten signature in dark ink, appearing to read "D. Cesar", written in a cursive style.

DAVID CESAR  
Treasurer

DC/mz  
Enclosures

397871

## DOCUMENT 3

Letter to Advanced Medical Systems, Inc., Attn: David Cesar,  
Treasurer from John A. Grobe, Chief, Nuclear Materials Inspection  
Section 2, Re: Application for Renewal of NRC License No.  
34-19089-01, December 22, 1994 (without attachments).

CRIBE

DEC 22 1994

Advanced Medical Systems, Inc.  
ATTN: David Cesar, Treasurer  
121 North Eagle Street  
Geneva, OH 44041

RE: APPLICATION FOR RENEWAL OF NRC LICENSE 34-19089-01

Dear Mr. Cesar:

The renewal process enables NRC to reevaluate licensed programs which have been in operation for a five year period. During this five year period many licensees find that their programs have changed along with their business goals and operations and that NRC regulations and policy have also changed. Therefore, we require that licensees provide us with a complete license renewal application, describing all aspects of their licensed operations and radiation safety program and procedures as if they were applying for an NRC license for the first time, without reference to previously submitted documents. This renewal process was discussed with you by Roy Caniano and John Madera during a management visit to your facility in April 1994.

We have reviewed your application dated November 29, 1994, and are disappointed to find that you did not provide sufficient information to evaluate your program activities and procedures. Consequently, you will need to resubmit your application with the following subject areas appropriately addressed without any reference to previous correspondence:

1. Radioactive Material

Your application provided the appropriate elements, mass numbers, chemical and physical forms, and maximum amount of the material you will possess at any one time. However, you did not provide the necessary information concerning the disposition of the materials and activity which you have eliminated from previously licensed authorization. Therefore, in order for us to evaluate your request for a reduction in possession limits, please provide appropriate documentation which will account for the material you have transferred and/or disposed of.

Also, please indicate/approximate the type and quantity (activity) of radioactive material currently possessed at your facility. Specifically, provide information concerning your current inventory of radioactive material to include the quantities of material you possess in the form of sealed sources, bulk sources, facility contamination and both liquid and solid radwaste. This should be added to your radioactive material possession limits in items 6., 7., and 8. of your NRC license.

DEC 22 1994

## 2. Intended Use of Radioactive Material

Your application did not provide any information concerning intended use of the materials requested. Please provide information concerning the use of radioactive materials at your London Road facility, including possession incident to decommissioning and/or transfer to an authorized individual or entity. Specifically, you will need to provide detailed information concerning service operations (procedures, etc.).

## 3. Management Control and Responsibility

### a. Senior Management

Resubmit a copy of your organizational chart illustrating the reporting path of the Radiation Safety Committee and/or Chairman of the Committee to Senior Management.

Submit a statement, signed by upper management, empowering the Radiation Safety Officer (RSO). The statement must describe the RSO's authority to oversee the licensed program, the responsibility for control and direction of the radiation safety program, and the authority to terminate licensed activities which pose a health and safety risk.

### b. Radiation Safety Officer Staff (RSOS)

Provide an assessment regarding the adequacy of staff (including both numbers and qualifications) to support and maintain your radiation safety program. The assessment may be general, however, enough information should be provided to relate required services (e.g., audits, retraining, bioassay, response to emergencies, etc.), to facilities covered (e.g., number of laboratories, users, special uses, etc.).

### c. Radiation Safety Officer

Submit a description of the duties and responsibilities of your RSO. The typical duties of a RSO would be:

- (1) To ensure that the use of radioactive materials is by or under the direct supervision of individuals specifically listed on your license.
- (2) To ensure that all users (where appropriate) wear personnel monitoring equipment when using radioactive materials.
- (3) To ensure that radioactive materials are properly secured against unauthorized removal at all times when not in use.

DEC 22 1994

Advanced Medical Systems, Inc.

-3-

- (4) To perform routine inspections of all areas using or storing radioactive materials.
- (5) To ensure that the terms and conditions of your license are met, and that all required records are maintained.
- (6) To immediately halt any activity judged to be a threat to health, safety, the environment or a violation of the conditions of your license or the regulations.

d. Audit Program

Radiation Safety Officer and Staff Audits

Describe the audit mechanism implemented by the RSO and his staff to determine compliance with the terms and conditions of the NRC license. Your audit program should include: (1) routine unannounced inspections of each area where material is used and stored; (2) evaluation of worker/technician training through discussion and observation of work practices, and; (3) performance of independent surveys of work and storage area.

4. Training Program:

Confirm that training provided pursuant to 10 CFR 19.12 will include all occupational workers and ancillary personnel whose duties may require them to work in the vicinity of radioactive material. In addition, please commit to providing this training before new personnel assume their duties with, or in the vicinity of radioactive material, during annual refresher training, and whenever there is a significant change in duties, regulations, or the terms of the license. Also, confirm that you will maintain records of this training. Records should include the names of the attendees, topics, and date of training.

Your formal training program for authorized users (sealed source handlers) and service personnel must be provided. This program can be as previously submitted, however, it should be re-submitted to reflect all pertinent changes, e.g. management structure, administration, technical aspects, etc.

5. Facilities and Equipment

Submit a detailed diagram of the facilities for each location where radioactive material will be used. Include a description of area(s) assigned for receipt and storage (including waste). Your diagram(s) should show:

- a. Adjacent areas across the walls from use and storage areas.
- b. Descriptions of the ventilation system with pertinent airflow rates for locations where radioactive material may become airborne.
- c. A specified scale with indicated dimensions.
- d. Appropriate postings/labels to identify laboratories, work areas, and equipment e.g., fume hoods, special sinks, preparation areas, protective clothing change areas, etc.

6. Radiation Safety Program:

Your radiation safety program must outline the formal requirements necessary to maintain control of your licensed activities. These controls and provisions are related to organization and management, procedures, recordkeeping, material control and accounting, and management review to ensure safe operations under the license. Your radiation safety program description should be in narrative form, and should follow the subject matter presented in Section 10 of the enclosed Regulatory Guide 10.5 Revision 3, as it relates to your program. Specifically, please respond to the following items:

- a. 10.2: Administrative Procedures;
- b. 10.2.1: Control of Procurement and Use;
- c. 10.2.3: Emergency Procedures;
- d. 10.2.4: Operating and Handling Procedures;
- e. 10.2.5: Other Procedures (i.e., Standard Operating Procedures);
- f. 10.3: Inventory and Accountability;
- g. 10.4: Audits and Appraisals;
- h. 10.4.1: Management and Radiation Safety Committee Audits;
- i. 10.4.2: Radiation Safety Officer and Staff Audits
- j. 10.6: Exposure Control and Monitoring;
- k. 10.6.1: External
- l. 10.6.2: Internal
- m. Facility Survey Program (ISP procedures);
- n. Survey Instrument Calibration Program (ISP procedure);
- o. Leak Test Program (ISP procedure); and
- p. 11: Waste Management

The areas addressed in Regulatory Guide 10.5, as outlined above, can also be addressed by referencing specific AMS ISP procedures (your SOP) and/or other procedures that you have instituted to manage your radiation safety program. However, these manuals/procedures must be submitted in their entirety for our review. This was discussed with you and Mr. Meschter on December 6, 1994, during a telephone conference.

DEC 22 1994

7. Emergency Plan:

10 CFR 30.32(i)(3) requires that you provide an Emergency Plan in accordance with the guidance provided in Regulatory Guide 3.67, which has been previously provided to you. This is a requirement for new licensees as well as those who are up for renewal. Your application failed to provide an updated copy of your Emergency Plan. The updated version must reflect changes in management control, administration, technical aspects, etc. that have occurred since initial acceptance of your Emergency Plan by the NRC. Please follow the guidance in Regulatory Guide 3.67, and submit your plan for our review.

8. Decommissioning Funding Plan and Financial Assurance Mechanism:

In order for us to complete our review of your renewal application and issue a renewed license, we need to review and accept your Decommissioning Funding Plan (DFP) and financial assurance mechanism. Pursuant to 10 CFR 30.35(c)(2), you were required to submit your DFP with your license renewal application which was required to be submitted by December 1, 1994 (10 CFR 30.36). While you failed to comply with these requirements, you indicated in your renewal application dated November 29, 1994 that your DFP will be submitted by December 31, 1994. Should your DFP not be submitted by December 31, 1994, this matter will be reviewed for appropriate enforcement action.

9. Waste Management:

You should describe your methods for disposal of radioactive waste. Your application should include, where appropriate for the types of waste involved, provisions for monitoring and segregating waste (radioactive from nonradioactive, short half-life from long, liquid from solid waste). The following items should be considered and addressed in your application:

- a. Transfers to a recipient (usually a waste disposal service company or the original supplier) properly licensed to receive such waste in accordance with paragraph 20.2001(a)(1) of 10 CFR Part 20. State the name and license number of the receiving company.
- b. Storage of radioactive material with half-lives greater than 65 days should be characterized regarding volume and anticipated time in residence at your facility prior to disposal. The NRC does not consider storage as a substitute for final disposal of radioactive waste. Other than storage for radioactive decay, low level radioactive waste (LLW) should be stored only when disposal capacity is unavailable and for no longer than is necessary, e.g., no longer than 2 years. NRC Information Notice No. 90-09, "Extended Interim Storage of Low-Level Radioactive Waste For Fuel



DEC 22 1994

Cycle and Material Licensees", outlines the provisions and requirements for interim storage. If you find that the interim storage provision applies to your program, it will be necessary for you to address in your application the information outlined in the Information Notice.

- c. Release into air or water pursuant to 20.2003(a)(1) of 10 CFR Part 20. You should discuss the monitoring and control mechanisms in place to ensure compliance with the appropriate requirements.

We will continue our review of your application upon receipt of this information. Please reply in duplicate, within 30 days, and refer to Control Number 397891.

If you have any questions or require clarification on any of the information stated above, you may contact me at (708) 829-9834.

Sincerely,

Original Signed By  
John A. Grobe, Chief  
Nuclear Materials Inspection  
Section 2

Enclosures:

1. Regulatory Guide 10.5, Rev.3
2. Regulatory Guide 3.67
3. IN 90-09

cc/w enclosures: Robert Meschter, RSO  
1020 London Rd.  
Cleveland, OH 44110

Mayor Michael White, Cleveland  
Lisa Mehringer, Cleveland  
Irv Ball, Cuyahoga County  
Robert Owen, Ohio  
Erwin Odeal, NEORS

DOCUMENT NAME: M:\03016055.DF4

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"N" = No copy

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NAME	KNull:bt		ORMader		WJSlawinski		JAGrobe	
DATE	12/22/94		12/ /94		12/22/94		12/22/94	

OFFICIAL RECORD COPY

## DOCUMENT 4

Letter to Mr. Jack Grobe, Nuclear Materials Inspection, Section 2, U.S. Nuclear Regulatory Commission from David Cesar, Treasurer, Advanced Medical Systems, Inc., Re: Response to Letter dated December 22, 1994, December 29, 1994.

# Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041  
(216) 488-4871 FAX (216) 488-0188

December 29, 1994

VIA FAX #(708) 515-1259

Mr. Jack Grobe  
Nuclear Materials Inspection, Section 2  
U.S. Nuclear Regulatory Commission  
Region III  
801 Warrenville Road  
Lisle, IL 60532-4351

Dear Jack:

I am in receipt of your letter dated December 22, 1994 which I received today, December 28th. Your letter contains the information John Madera discussed with me during our conversation of December 14th.

The renewal process was discussed between Roy Caniano, John Madera and myself. The majority of this discussion concerned an evaluation of the WHUT Room and the information the NRC was looking for and why. You are aware that an in-depth evaluation has been conducted and we are awaiting receipt of the report. Additional evaluation work was done at the request of the NRC which extended the field work.

The license renewal was completed in accordance with the guidelines I received with the Application for License Renewal. These instructions stated that in order to simplify the license renewal procedures and save paperwork, the Licensee may identify any additions, deletions or other changes to the license. John Madera explained, and you verified in your letter, that the NRC prefer that we re-submit an entire new application without any reference to previous correspondence. I agreed with John that this would simplify working with our license and would provide long-term benefits.

There are, however, two items in your letter which contradict the conversation I had with John Madera. When John informed me that we would have thirty (30) days to submit the information the NRC was requesting, I asked that this include the Decommissioning Funding Plan as the WHUT Room evaluation field work was just winding down and the report still needed to be issued, the findings of which would impact the Decommissioning Funding Plan. This would allow us to accurately and fully address the WHUT Room and Decommissioning Funding Plan. John did not see a problem with this and it was my understanding that the extension at that time was granted to submit the Decommissioning Funding Plan along with the other information contained in your December 22 letter. Accordingly, I informed SEG, who was preparing the Decommissioning Funding Plan, that we would not require a final report until early January. I also informed Bank One, who is issuing a Standby Letter of Credit, that the document was not needed until early January, 1995.

Mr. Jack Grobe

-2-

December 29, 1994

In addition, on December 20th, during the Conference Call, you stated that if we used the Insituform process on the lateral, we would have to take into account the possible removal at the time of decommissioning and this would have to be included in our Decommissioning Funding Plan. I have provided the information to SEG and they are making the appropriate amendment.

As John Madera made the representation that it was acceptable to submit the Decommissioning Funding Plan at the same time the other renewal information was due and I, in turn, relayed the information to our contractor and bank, I disagree with your statement under Item No. 8 that the Plan be submitted by December 31, 1994.

In addition, when John told me that we would have thirty (30) days to respond, I asked for an even cutoff of January 31, 1995. He informed me he did not see a problem. Your letter simply states to reply in duplicate within thirty (30) days. I am assuming that this is thirty (30) days from receipt, which would be January 28th.

Therefore, based on the above, I am requesting clarification that the Decommissioning Funding Plan, financial assurance, WHLT Room Report and renewal information will be submitted by not later than January 31, 1995.

Your cooperation is greatly appreciated.

Sincerely,



DAVID CESAR  
Treasurer

DC/mz

cc: H. Billingsley, Esq.  
D.A. Miller, Esq.

## DOCUMENT 5

Letter to John A. Grobe, Chief, Nuclear Materials Inspection, Section 2, U.S. Nuclear Regulatory Commission from David Cesar, Treasurer, Advanced Medical Systems, Inc., Re: Application for Renewal of NRC License No. 34-19089-01, Control No. 397891, enclosing application for renewal of NRC License, January 26, 1995, with enclosed application (three parts).

2

# Advanced Medical Systems, Inc.

14th Eagle Street • Geneva, Ohio 44041  
66-4671 FAX (216) 466-0186

January 26, 1995

Mr. John A. Grobe, Chief  
Nuclear Materials Inspection  
Section II  
U.S. Nuclear Regulatory Commission  
Region III  
801 Warrenville Road  
Lisle, IL 60532-4351

RE: Application for Renewal of NRC License No. 34-19089-01  
Control No. 397891

Dear Mr. Grobe:

Enclosed are two (2) copies of our Application for Renewal of our above-referenced NRC License. The enclosed information describes all aspects of Advanced Medical Systems' licensed operations, Radiation Safety Program and Procedures.

Advanced Medical Systems' operations have changed significantly since the last renewal five (5) years ago. The introduction discusses the Business Plan and Management Organization for Advanced Medical Systems given its current operations.

Your correspondence dated December 22, 1994 requested that we address specific issues when submitting our License Renewal. This information is enclosed in the Application for License Renewal.

The one item I did not address in this Application for License Renewal is the situation with water in the basement of the facility. This is an abnormal situation and is being addressed as a singular event. As such, I do not feel it is appropriate for it to be a part of the License.

If you have any questions or require clarification on any of the information contained within the Application for License Renewal, please contact me at (216) 466-4671.

Sincerely,



DAVID CESAR  
Treasurer

DC/mz  
Enclosures

## TABLE OF CONTENTS

### MANAGEMENT ORGANIZATION AND DISCUSSION OF BUSINESS PLAN

- SECTION 1    Application for Materials License
- 1.1    Radioactive Material
  - 1.2    Purpose for Which Licensed Material Will Be Used
  - 1.3    Individuals Responsible for Radiation Safety Program and Their Training Experience
  - 1.4    Training for Individuals Working In or Frequenting Restricted Areas
  - 1.5    Facilities and Equipment
  - 1.6    Radiation Safety Program
  - 1.7    Waste Management
  - 1.8    License Fees
  - 1.9    Service
- SECTION 2    Emergency Plan
- SECTION 3    Decommissioning Funding Plan
- SECTION 4    Waste Hold-Up Tank Room Integrity Evaluation
- SECTION 5    Financial Assurance



INTRODUCTION  
DISCUSSION OF BUSINESS PLAN AND MANAGEMENT ORGANIZATION

Business Plan

Advanced Medical Systems' operations have changed since the last License Renewal. Since its founding, when certain assets were acquired from Picker Corporation, Advanced Medical Systems has manufactured sealed sources, performed service work and manufactured a variety of teletherapy and radiography units.

Advanced Medical Systems' market has changed significantly as the domestic medical device field for teletherapy and radiography units has moved to more advanced technology - principally, linear accelerators. The domestic market for Advanced Medical Systems' products has significantly reduced. As the domestic market has shrunk, the export market has realized significant gains. Advanced Medical Systems has always sold and provided services for export primarily to developing countries.

Advanced Medical Systems has recently completed a reevaluation of its distributor base in various countries around the world and has made several changes. This evaluation is paying immediate gains. The company currently has Irrevocable Letters of Credit for six (6) machines with commitments of an additional eight (8) tender offers by the end of the year. Based upon sales projections provided by our distributors, we anticipate a 400% sales increase within the next several years.

Along with the change in marketing strategy, the company has also made the decision back in 1990 to no longer manufacture its own sealed sources. Accordingly, the company has plans to transfer to an authorized third party its current inventory of sealed sources and bulk cobalt. The authorized third parties that have already accepted shipments of existing inventory are Neutron Products and J.L. Shepherd, both of whom are NRC licensees. In addition, several foreign countries have expressed an interest in accepting the donation of low-level sources.

The termination of Advanced Medical Systems' source manufacturing operations drastically simplifies its operations. Advanced Medical Systems will purchase sealed sources from Theratronics and Neutron Products for use in its teletherapy units. These sources, when they are received at the facility located at 1020 London Road, would have their source strength verified and then if they are going into a unit, installed and surveyed prior to shipment.

As Advanced Medical Systems' sales are principally derived from exporting complete units, domestic service will no longer be ordinarily handled internally. It is anticipated the majority of domestic service will be contracted out. Export service is accomplished principally by our distributors and agents who have been trained on Advanced Medical Systems' equipment and Advanced Medical Systems' personnel provide support on an as-needed basis.

In addition, Advanced Medical Systems will maintain its service technicians' training program to train service engineers from foreign countries.

ADVANCED MEDICAL SYSTEMS, INC.  
MANAGEMENT PLAN  
ORGANIZATION OF OPERATIONS

Description of Management Controls and Operation

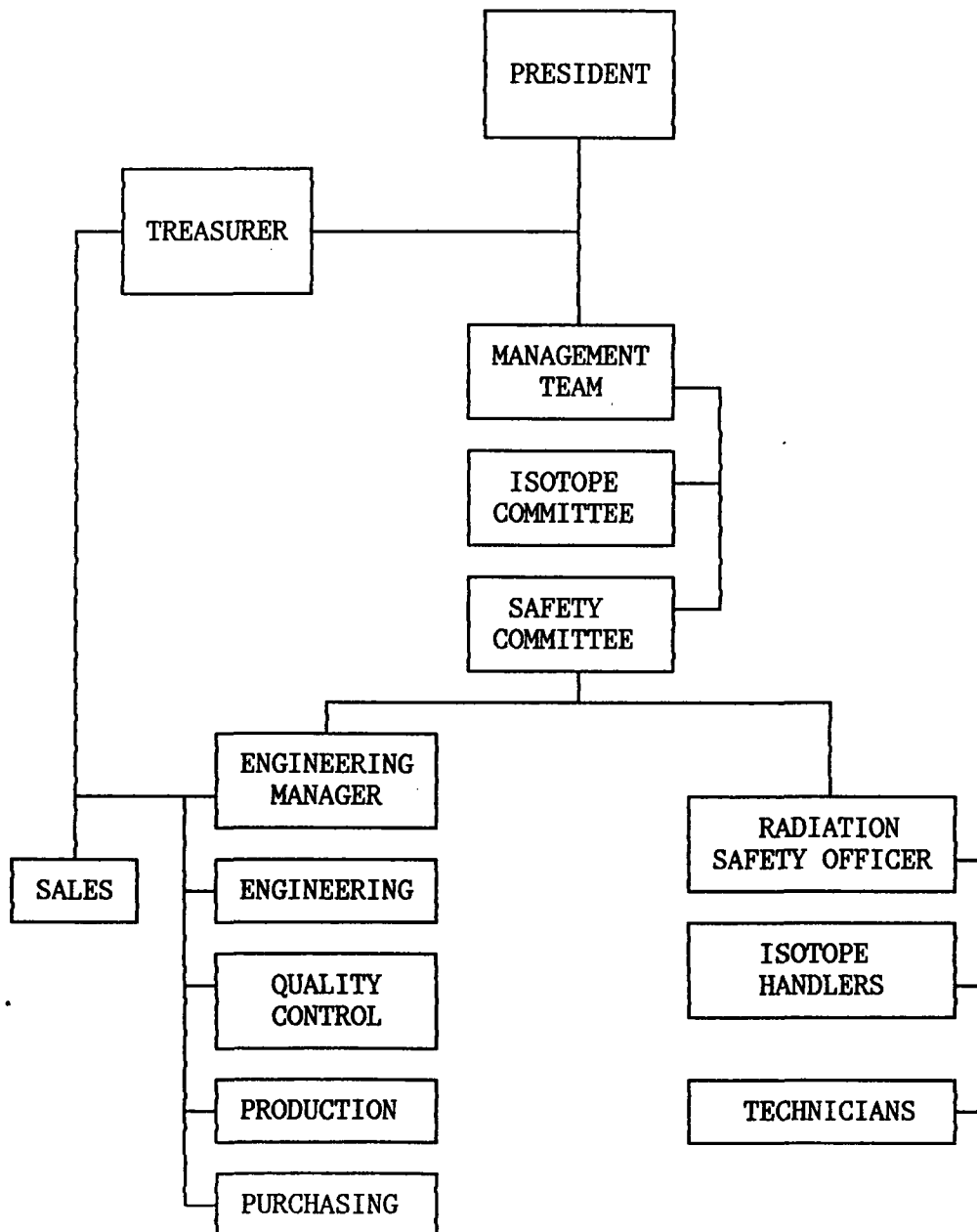
Advanced Medical Systems, Inc. currently has two locations. These are as follows:

121 North Eagle Street  
Geneva, Ohio 44041

1020 London Road  
Cleveland, OH 44110

The operations at the Geneva location include Engineering, Quality Control, Production, Purchasing and Sales. The operations at the London Road facility include Isotope handling, source surveys and receipt and shipment of sources.

The Company's two facilities operate autonomously. Each department/facility head has the authority to manage their respective department/location. The Advanced Medical Systems Organization Chart is as follows:



### Management Team

The Management Team of Advanced Medical Systems is responsible for the operations of the Company. The Management Team consists of the following department heads: Radiation Safety Officer, Engineering Manager and Treasurer. This Team may change as the Company changes and different situations arise.

The Radiation Safety Officer (RSO) occupies a position on the Management Team as he is responsible for all operations at the Isotope Laboratory which is the principal licensee on the NRC's Material License and is also responsible for compliance with regulatory matters.

The Engineering Manager occupies a position on the Management Team as he is responsible for all medical device manufacturing, quality assurance and compliance with FDA regulations.

The Treasurer occupies the third position on the Management Team and is responsible for overseeing sales and all financial functions of the Company.

Each of these individuals brings their own area of expertise to effectively make operating decisions regarding Advanced Medical Systems.

### Isotope Committee

The Isotope Committee is responsible for overseeing all regulatory affairs of Advanced Medical Systems with the Nuclear Regulatory Commission. The Isotope Committee is to meet on a quarterly basis and review the operations of the Isotope Facility and compliance with current regulations. The Isotope Committee is chaired by the company's Radiation Safety Officer.

### Safety Committee

The Safety Committee is to meet quarterly and is chaired by the Engineering Manager. All safety issues regarding the medical devices manufactured by Advanced Medical Systems are to be discussed.

### Facility Managers

The Engineering Manager is responsible for the operations in Geneva. The Radiation Safety Officer is responsible for the operations at the Cleveland facility. As such, the RSO has complete authority and autonomy to manage the facility. Certain financial controls are in position to require approval from the Treasurer for all non-emergency expenditures in excess of \$1,500. In emergency situations, corporate approval is not required.

When a service call is received, the Engineering Manager will make the determination to send an AMS service technician or contract the service request to a third party. It is anticipated the majority of the calls will be contracted. All Customer Service will require approval by the Engineering Manager.

The purpose of this structure of the service organization will allow for the selection of the best-suited individual or entity to be assigned the work. Engineering also serves as a checkpoint for specific service problems.

An AMS employee will, upon completion of AMS performed service activity, record in detail a service report, the type and nature of the work assigned.

Upon completion of each assignment, each Service Report for domestic service will be reviewed by the Engineering Manager and initialed.

For domestic service involving teletherapy equipment with radioactive material, the review and initials of the RSO is required. During regular Isotope and Safety Committee Meetings, the results of the audits on all domestic Service Reports are reviewed.

When the Company subcontracts service work, the Company is acting solely as a sales representative and has no control over the third party's work.

AMS Service Technicians will be audited according to the following schedule if AMS utilizes each individual:

### "FIELD SERVICE AUDITS"

#### Summary of Internal Service Audits

##### A. Field Service Audits

On an annual basis, the RSO will audit the procedures and activities of each licensed service engineer as he performs his duties during a simulated service call or source exchange. An outline of the audit parameters to be considered are attached. (The RSO may, in his discretion, alternatively or additionally audit the procedures and activities of each licensed service engineer as he performs his duties during a field service call.)

##### B. Service Report Audits

Conducted by the Engineering Manager and RSO as domestic service reports are generated. Audit results will be entered on each domestic service report and signed.

##### C. Customer Unit Functions and Service Report Evaluation

Conducted by a qualified member of the customer's staff for each domestic service call. This document will be attached to the AMS Service Report. In addition, a service evaluation questionnaire will be mailed to the facility following each service call. Any adverse comments will immediately be brought to the attention of the Engineering Manager.

##### D. Safety Committee Meetings

These meetings are held quarterly. The members include the AMS Engineering Manager, Radiation Safety Officer and corporate representative (Treasurer). Field Service Reports are reviewed. In addition, any incident reported during the quarter is also reviewed. NOTE: Special Safety Committee Meetings will be held to review incident reports as necessary.

#### E. Isotope Committee Meetings

These meetings are held quarterly. The members include the Engineering Manager, Radiation Safety Officer and corporate representative. Domestic Service Reports involving Cobalt unit installation, dismantling and maintenance are reviewed. In addition, any pending issues relating to the operation of the Isotope Facility or the manufacture of teletherapy equipment will be discussed. Records are maintained as Minutes of the Meeting. NOTE: Special Isotope Committee Meetings will be held to review incident reports as necessary.

SPECIAL NOTE: A corporate representative may or may not be present at any meeting held within the Management Team. A copy of all documents and actions recommended are forwarded to the corporate representative for review. A copy initialed by all members of the Isotope Committee will be placed on permanent file.

External Audits of Service Activities and Documents: The company will engage an external consulting group every two (2) years to review all service documents unless performed by contractors. Although this two-year audit will encompass a complete review of records and documents, this audit deals specifically with the service function.

Training and Qualifications of Service Engineers Involving Radioactive Materials and Teletherapy Devices: The RSO will maintain a continuing training program in the areas of radiation safety and hazards to complement the existing medical device, mechanical and electrical, expertise presently in house. This program will follow the USNRC-authorized AMS training program (Section 1.9 of Materials License Application package). The purpose of this program is to ensure AMS-licensed service engineers are qualified to conduct service work on Cobalt-60 teletherapy units. Under this plan, all service involving the handling of or direct exposure to radioactive materials in teletherapy units will be conducted only by or in the presence of a licensed person. It is equally important that each service engineer has proven his knowledge of the mechanical and electrical systems of the medical device.

Service of units who do not contain radioactive material sources and service of teletherapy units not involving licensed activity will be conducted by service engineers who have been thoroughly trained either by previous experience or within Advanced Medical Systems, Inc. These units do not require a service engineer licensed by the NRC.

Audits and Audit Control System: Audits and audit controls are described under separate cover. The types of audits conducted are listed below. See attachment.

Primary:

1. Customer unit function and Service Report Evaluation.
2. Service Report Audits.
3. Field audits by RSO.

Final:

1. Safety Committee Meeting audits.
2. Isotope Committee Meeting audits.

External audits by outside consultant.

## APPLICATION FOR MATERIAL LICENSE

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 9 HOURS. SUBMITTAL OF THE APPLICATION IS NECESSARY TO DETERMINE THAT THE APPLICANT IS QUALIFIED AND THAT ADEQUATE PROCEDURES EXIST TO PROTECT THE PUBLIC HEALTH AND SAFETY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0120), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

## APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY  
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS  
U.S. NUCLEAR REGULATORY COMMISSION  
WASHINGTON, DC 20555-0001

## ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

## IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND,  
MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA,  
RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

LICENSING ASSISTANT SECTION  
NUCLEAR MATERIALS SAFETY BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO  
RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,  
SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION II  
101 MARIETTA STREET, NW, SUITE 2900  
ATLANTA, GA 30323-0199

## IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN,  
SEND APPLICATIONS TO:

MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION III  
801 WARRENVILLE RD.  
LISLE, IL 60532-4351

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW  
MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING,  
SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TX 76011-8064

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S.  
TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

RADIOACTIVE MATERIALS SAFETY BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION V  
1450 MARIA LANE  
WALNUT CREEK, CA 94596-5368

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED  
MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

## THIS IS AN APPLICATION FOR (Check appropriate item)

- ☐ A. NEW LICENSE  
☐ B. AMENDMENT TO LICENSE NUMBER \_\_\_\_\_  
☒ C. RENEWAL OF LICENSE NUMBER 34-19089-01

## 2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip code)

Advanced Medical Systems, Inc.  
121 North Eagle Street  
Geneva, OH 44041

## 3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

1020 London Road  
Cleveland, OH 44110  
121 North Eagle Street  
Geneva, OH 44041

## 4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

David Cesar

## TELEPHONE NUMBER

(216) 466-4671

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL. a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.	6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.
7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.	8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.
9. FACILITIES AND EQUIPMENT.	10. RADIATION SAFETY PROGRAM.
11. WASTE MANAGEMENT.	12. LICENSEE FEES (See 10 CFR 170 and Section 170.31) FEE CATEGORY <u>2B AND 3P</u> AMOUNT ENCLOSED \$ <u>840.00</u>

## 13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

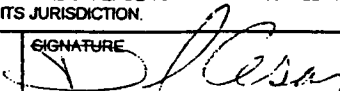
THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39 AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

## CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

David Cesar, Treasurer

## SIGNATURE



## DATE

11-29-94

## FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		
APPROVED BY				DATE	

## SECTION 1.1 - RADIOACTIVE MATERIAL

This section corresponds to Item 5 on the application for Material License. The first page discusses the material and possession limits. The use of the material is briefly discussed. The use is discussed in detail in Section 1.2.

Also included in this section is Advanced Medical Systems' current inventory updated as of October 1, 1994.

### Inventory Requirements

- A. The Company maintains an inventory system that accounts for the receipt, movement, transfer and disposal of all radioactive material possessed under this license. Records of inventories are maintained for ten (10) years from the date of each inventory.
- B. A complete examination of records will be completed every six (6) months to confirm the location of all radioactive material and ensure that possession is within the limits specified in this license.
- C. The physical inventory of radioactive material possessed under this license will be completed on or before June 1, 1995. Thereafter, a physical inventory of all radioactive material possessed under this license will be completed within sixty (60) months of the completion of the previous physical inventory.

NOTE: The Company currently has inventory stored in a stuck floor plug in the hot cell. A purchase order will be issued by February 10, 1995 to a third party to remove the plug. The company has one proposal in-house which would consist of cutting the plug free. The proposal includes a time line of sixty (60) days to complete the project. A second proposal is promised by another third party by January 25, 1995. Once the plug is removed, the actual physical inventory should take approximately five (5) days to complete. The NRC has requested to review the project prior to the contractor starting. The time line will begin with NRC approval.

ADVANCED MEDICAL SYSTEMS, INC.  
SUMMARY OF INVENTORY  
Updated for October 1, 1994

Bulk Cobalt

	<u>Curies</u>
Screw-Top Containers	10,647
Double-Encapsulated Containers	2,915
*Bulk in GE Cask	<u>8,859</u>
 TOTAL BULK	 22,421

Sealed Sources

Picker Wafer Sources	2,015
Picker Sealed Sources	15,358
Competitors' Sealed Sources	<u>30,816</u>
 TOTAL SEALED SOURCES	 <u>48,189</u>
 TOTAL COBALT SOURCES	 <u>70,610</u>
 TOTAL DEPLETED URANIUM	 <u>2,171</u>
 TOTAL CESIUM 137	 <u>664</u>

Included in this inventory is suspected material in the front stuck floor plug. These items are indicated by an asterisk (\*). Not included are the two (2) check sources.



ADVANCED MEDICAL SYSTEMS, INC.

INVENTORY

BULK COBALT INVENTORY  
Updated for October 1, 1994

COBALT IN BULK CAPSULES:

	<u>LOT NO.</u>	<u>CAPSULE NO.</u>	<u>GRAMS</u>	<u>CURIES</u>	<u>C1/gm</u>
1.	B461	XXVI	3.68	362	98.4
2.	B458	XXIV	55.44	1,528	27.6
3.	B457	XXII	263.50	1,603	6.1
4.	B453	XXIII	93.28	1,296	13.9
5.	B450	I	242.78	277	1.1
6.	B449	II	51.45	854	13.9
7.	B430	XXX/IV	289.00	1,370	4.7
8.	B408*	XXVII	164.34	341	2.1
9.	B386*	XI	270.51	476	1.8
10.	B381*	XV	188.04	382	2.0
11.	B378*	IV/VI	631.79	1,143	1.8
12.	B366	XIII/XIV	451.29	420	.9
13.	B308	B-114	284.80	580	2.0
14.	Standard Wafer Sources	SK-64		15	
15.	Bulk III Waste Materials				
16.	Bulk V Waste Materials				
				<u>TOTAL CURIES:</u>	<u>10,647</u>

COBALT IN DOUBLE-ENCAPSULATED BULK CONTAINERS:

	<u>LOT NO.</u>	<u>CONTAINER NO.</u>	<u>LOCATION</u>	<u>GRAMS</u>	<u>CURIES</u>	<u>C1/gm</u>
1.	B354	B107 + B108	GE-500	484.63	441	.91
2.	B344	B106	GE-500	146.31	170	1.16
3.	B341	B101	GE-500	251.45	174	.69
4.	B331	B102 + B105	GE-500	363.31	437	1.20
5.	B329	B103	GE-500	283.78	315	1.11
6.	B323	B104 + B105	GE-500	379.84	313	.82
7.	B309	B113	GE-500	302.05	189	.63
8.	B290	B109 + B110	GE-500	323.92	344	1.06
9.	B281	B110 + B111	GE-500	449.42	368	.82
10.	B270	B112	GE-500	238.16	<u>164</u>	.69
				<u>TOTAL CURIES:</u>	<u>2,915</u>	

BULK COBALT IN GE-500 CASK:

TOTAL CURIES: 8,859

Total Bulk Curies:

22,421

(Rev. 10/13/94)

PICKER  
Cobalt-60 "Wafer" Source (Pellets) Inventory Summary  
Updated for October 1, 1994

	<u>MFR.</u>	<u>S/N</u>	<u>ORIGINAL CURIE DATE</u>	<u>LOT NO.</u>	<u>LOCATION</u>	<u>CURRENT CURIES</u>
1.	Picker	PX446	02/07/66	N/A	8-Y-2	44.9
2.	Picker	PX43	12/05/60	128	4-U-1	12.2
3.	Picker	PX452	03/03/66	396	4-U-3	65.6
4.	Picker	PX439	01/31/66	424	4-U-2	68.4
5.	Picker	PX377	02/15/65	504	7-V-2	57.1
6.	Picker	PX466	03/15/66	521	1-W-2	58.1
7.	Picker	PX376	01/30/65	533	1-W-1	26.2
8.	Picker	PX456	04/15/66	547	3-V-2	44.0
9.	Picker	PX372	12/30/64	548	3-V-3	20.6
10.	Picker	PX477	07/15/66	562	4-T-1	22.5
11.	Picker	PX375	01/30/65	586	6-Y-1	19.7
12.	Picker	PX239 ("1239")	04/18/63	599	7-V-1	28.1
13.	Picker	PX453	10/01/65	604	2-Y-2	48.7
14.	Picker	PX257	07/01/63	618	GE-500	26.2
15.	Picker	PX1249 (old 249)	06/08/63	633	7-X-3	34.6
16.	Picker	PX1385 (old 385)	03/15/65	644	GE-500	34.6
17.	Picker	PX447	01/31/66	675	GE-500	19.7
18.	Picker	PX318	05/28/64	681	1-W-3	52.4
19.	Picker	PX428	10/31/65	682	7-X-1	26.2
20.	Picker	PX405	06/30/65	684	4-Y-3	57.1
21.	Picker	PX1364 (old 364)	11/30/64	730	8-V-3	85.2
22.	Picker	PX1426 (old 426)	10/30/65	742	GE-500	54.3
23.	Picker	PX1410 (old 410)	07/30/65	784	3-X-1	66.5
24.	Picker	PX1404	06/30/65	797	2-V-1	103.0
25.	Picker	PX374	01/30/65	808	GE-500	24.3
26.	Picker	PX1384	03/15/65	815	3-Y-1	41.2
27.	Picker	PX1433 (old 433)	11/30/65	822	2-X-2	66.5
28.	Picker	PX1251 (old 251)	06/20/63	832	GE-500	34.6
29.	Picker	PX1379 (old 379)	02/15/65	834	GE-500	38.4
30.	Picker	PX399	05/31/65	840	7-Y-1	124.5
31.	Picker	PX1425 (old 425)	10/30/65	842	GE-500	78.7
32.	Picker	PX1289 (old 289)	01/15/64	870	Cell (rear plug)	43.1
33.	Picker	PX184	08/26/62	877	2-W-2	37.5
34.	Picker	PX1458 (old 458)	04/15/66	885	GE-500	77.7
35.	Picker	PX440	01/31/66	926	GE-500	39.3
36.	Picker	PX1317 (old 317)	05/25/64	966	7-Z-2	118.0
37.	Picker	PX12	05/13/60	981	GE-500	30.0
38.	Picker	PX1411 (old 411)	07/30/65	1036	GE-500	63.7
39.	Picker	PX430	10/31/65	1095	8-Z-3	122.7

TOTAL CURIES: 2,015.1

Total Sources: 39

(Rev. 10/13/94)

PICKER - AMS  
Sealed Sources  
Updated for October 1, 1994

	<u>MFGR.</u>	<u>S/N</u>	<u>CM</u>	<u>ORIGINAL CURIE DATE</u>	<u>LOT NO.</u>	<u>LOCATION</u>	<u>CURRENT CURIES</u>
1.	Picker	664	2.0	10/15/68	816	W/H590C-179	91.8
2.	Picker	679	1.0	09/01/71	831	6-U-3	67.4
3.	Picker	725	2.0	07/01/69	873	3-W-1	112.4
4.	Picker	PX269	1.0	09/20/63	N/A	3-Z-1	32.8
5.	Picker	2002	1.5	05/01/73	882	GE-500	58.1
6.	Picker	665	2.0	10/15/68	883	3-W-2	131.1
7.	Picker	95	1.0	11/01/61	890	3-X-3	26.2
8.	Picker	2066	1.5	05/15/74	894	2-Z-3	67.4
9.	Picker	1363 (old 363)	2.0	11/30/64	904	5-U-1	106.7
10.	Picker	887	2.0	10/01/71	907	8-V-1	131.1
11.	Picker	789	2.0	04/01/70	915	2-X-3	162.9
12.	Picker	883	2.0	09/01/71	919	GE-500	89.0
13.	Picker	191	1.5	09/09/62	947	1-V-3	20.6
14.	Picker	1513 (old 513)	2.0	12/31/66	978	4-Z-1	88.0
15.	Picker	581	2.0	12/01/67	979	GE-500	78.7
16.	Picker	644	2.5	08/15/88	990	Cell (rear)	255.6
17.	Picker	636	2.0	07/01/68	1012	1-Z-1	63.7
18.	Picker	2168	1.5	12/01/75	1020	9-Y-1	74.0
19.	Picker	999	2.0	05/01/73	1037	6-Z-2	167.6
20.	Picker	816	2.0	09/15/70	1040	1-X-2	180.7
21.	Picker	2076	2.0	07/01/74	1047	1-X-3	134.8
22.	Picker	587	2.0	12/15/67	1060	6-Y-3	170.4
23.	Picker	871	2.0	06/25/71	1073	3-X-2	91.8
24.	Picker	1679 (old 679)	2.0	01/01/69	1108	9-Z-2	101.1
25.	Picker	PX784	2.0	03/09/70	N/A	6-Z-3	238.8
26.	Picker	PX450	2.5	04/02/66	N/A	7-U-2	47.8
27.	Picker	616	2.0	05/01/68	1135	9-Y-3	123.6
28.	Picker	557	1.5	09/01/67	1151	GE-500	54.3
29.	Picker	2117	2.0	05/01/75	1161	1-V-1	262.2
30.	Picker	687	2.0	02/01/69	1164	1-V-1	63.7
31.	Picker	2407	2.0	03/01/81	1166	3-Z-1	534.7
32.	Picker	2394 (old 2060)	2.0	04/01/74	1167	1-X-1	201.3
33.	AMS	2476	2.0	01/01/83	1187	Cell (rear)	1,177.0
34.	AMS	2532	1.6	03/01/85	1189	Cell	442.9
35.	AMS	2411	2.0	05/01/81	1190	Cell	1,214.5
36.	Picker	2245	2.0	05/01/77	1196	Cell	501.9
37.	AMS	2387	1.0	10/01/80	1201	Cell	454.1
38.	Picker	2286	2.5	02/01/78	1202	Cell	430.7
39.	Picker	PX2337	1.0	06/01/79	1204	Cell	320.2
40.	AMS	2487	1.5	03/01/83	1205	Cell	587.1
41.	Picker	2236	1.5	02/01/77	1211	Cell (rear)	238.8
42.	Picker	1202 (old 2021)	2.0	09/01/73	1212	9-W-3	365.2
43.	AMS	2527	2.0	01/01/85	1221	Cell	950.4
44.	Picker	PX347	2.0	09/25/64	N/A	9-V-1	71.2
45.	AMS	2466	2.0	08/20/82	N/A	W/HSE113	1,533.0
46.	(from Turkey - See Note on Page 8)					W/HSE115	2,719.4
47.	Picker	PX292*	1.5	12/23/63	880	Cell	23.0
48.	Picker	PX347*	1.5	04/01/77	1132	Cell	298.0

TOTAL CURIES: 15,357.7

COMPETITORS' SOURCES  
Updated for October 1, 1994

	<u>MFGR.</u>	<u>S/N</u>	<u>CM</u>	<u>ORIGINAL CURIE DATE</u>	<u>LOT NO.</u>	<u>LOCATION</u>	<u>CURRENT CURIES</u>
1.	USN		2.0	09/07/76	740	5-Y-2	138.6
2.	USN		2.0	09/22/75	741	5-Y-3	81.5
3.	NPI	T31	2.0	05/01/83	764	8-W-2	257.5
4.	NPI	T24	2.11	05/01/83	774	8-X-3	338.0
5.	AECL	C-106		06/07/76	777	7-W-2	34.6
	(Radiography Source)						
6.	USN	W87		10/08/76	790	GE-500	18.7
7.	USN			04/05/77	818	4-Y-2	30.9
8.	BUDD	T162			N/A	8-Z-2	205.1
9.	Gamma Ind.	039/GI TS101	2.0	08/01/75	859	2-V-3	222.9
10.	NPI	T52	1.57	05/01/83	861	1-U-1	186.3
11.	Gamma Ind.	032/TS101		02/04/80	939	2-U-2	142.3
12.	NPI	T232	2.0	05/01/83	946	Cell (rear)	172.3
13.	NPI	T131	2.0	05/01/83	963	7-Z-3	222.9
14.	France	CEA2634	2.0	08/13/80	965	Cell (rear)	145.1
15.	NPI	T182	2.0	05/01/76	974	7-W-1	616.1
16.	NPI	T205	1.56	05/01/83	980	1-Y-3	376.4
17.	Gamma Ind.	045/TS101	2.0	07/15/75	986	1-Y-1	377.4
18.	NPI	T95	2.0	05/01/83	987	1-Y-2	461.6
19.	NPI			12/30/80	989	7-Y-2	30.9
20.	NPI	T244	1.5	05/01/83	992	7-W-3	346.5
21.	USN	362		03/03/81	998	3-Z-3	290.3
22.	France	CEA2605		03/16/81	1004	Cell (rear)	262.2
23.	USN			04/10/81	1006	1-Z-3	565.6
24.	NPI	T145	2.16	05/01/83	1011	1-V-2	553.4
25.	NPI	T187	2.03	05/01/83	1017	9-Y-2	308.1
26.	NPI			08/01/81	1024	8-Z-2	89.0
27.	NPI	T454	2.16	11/01/80	N/A	3-T-3	625.5
28.	NPI	T121	1.5	04/25/75	1034	3-Y-3	273.4
29.	NPI	T308	2.0	05/01/83	1038	3-Y-2	537.5
30.	NPI	T189	2.5	05/01/83	1042	5-U-1	453.2
31.	USN		2.0	09/01/82	1071	6-Z-1	216.3
32.	NPI	T462	2.0	05/01/83	1075	2-Z-2	560.9
33.	NPI	T263	2.0	12/15/77	1087	7-Y-3	753.8
34.	USN		1.5	04/25/83	1091	2-Y-1	142.3
35.	USN			04/24/83	1092	2-Y-3	480.4
36.	NPI	T337	2.0	04/27/79	1103	7-Z-1	456.9
37.	NPI	T177	2.12	07/15/76	1114	6-U-2	709.8
38.	NPI	T577	2.06	10/01/82	N/A	9-Z-3	502.8
39.	AECL	C-172			N/A	Cell (rear)	205.1
40.	NPI	T540	1.5	03/01/85	1129	9-Z-1	424.2
41.	NPI	T388	2.0	12/01/79	1134	1-U-3	664.8
42.	NPI	T445	2.08	06/01/85	1138	Cell (rear)	803.4
43.	NPI	T514	2.08	09/18/81	1139	2-W-3	734.1
44.	NPI	T275	2.0	01/20/78	1142	5-U-3	736.9
45.	Amersham	GET-15-15			N/A	Cell (rear)	205.1
46.	NPI	T672	2.0	01/13/84	1148	3-T-1	1,062.8
47.	NPI	RT76	2.0	10/03/80	1150	3-U-2	481.3
48.	NPI	T472	2.0	01/19/81	1154	4-Z-3	623.6

Competitors' Sources (Cont'd)

	<u>MFGR.</u>	<u>S/N</u>	<u>CM</u>	<u>ORIGINAL CURIE DATE</u>	<u>LOT NO.</u>	<u>LOCATION</u>	<u>CURRENT CURIES</u>
49.	NPI	T493	2.0	03/23/81	1162	1-U-2	1,020.6
50.	NPI	T707	2.0	08/01/84	1210	9-W-1	933.6
51.	NPI	T705	2.14	06/02/84	1224	WHSE 590C-176	1,628.3
52.	NPI	T772	2.0	07/01/85	1237	9-W-2	985.1
53.	Theratronics	S3817	1.5	11/01/85	1242	590E-139	2,435.5
54.	NPI	T972	2.1	12/02/86	1253	590-208	2,793.2
55.	Jalapa				1254	S/E 117	453.2
56.	Amersham	0343ET	2.0	10/10/85	1261	S/E 106	1,750.1
57.	ORNL	TS51*	1.0	12/28/55	125	Cell	3.0
58.	ORNL	TS68*	2.0	09/20/73	598	Cell	35.0
59.	NPI	577*			1119	Cell	551.0
					1120	Cell	<u>99.0</u>
						TOTAL CURIES:	<u>30,815.9</u>

DEPLETED URANIUM INVENTORY  
Updated for October 1, 1994

<u>PART NUMBER/DESCRIPTION</u>	<u>CLEVELAND</u>	<u>GENEVA</u>	<u>TOTAL</u>	<u>KG EACH</u>	<u>TOTAL KG</u>
46411 C-9 Shutter Insert	7	0	7	6.58	46.06
46879 C-8, C-9 Saddle	12	0	12	15.60	187.20
58429A C-12 Saddle	10	0	10	106.82	1,068.20
58430 C-12 Shutter Rotor Insert	1	0	1	17.70	17.70
58431A C-12 Shutter Plug Insert	8	0	8	10.90	87.20
200670 C-9, C-12 Saddle	1	0	1	21.80	21.80
16423C Rotor Assembly	18	2	20	6.58	131.60
590D/G Head (C-9 Style)	14	2	16	15.60	249.60
590A Head	1	0	1	15.60	15.60
590G Special (w/o Rotor/Plug)	1	0	1	21.80	21.80
Eldorado 8 with Collimator	1	0	1	40.80	40.80
C-12 Head (w/o Shutter Plug)	0	2	2	106.82	213.64
C-12 Rotor	0	2	2	17.70	35.40
C-12 Shutter Plug	1	0	1	10.90	10.90
Accelerator Shield	4	0	4	5.97	<u>23.88</u>
TOTAL DEPLETED URANIUM (KG):					<u>2,171.38</u>

ADVANCED MEDICAL SYSTEMS, INC.

Cesium Inventory Summary  
Updated for October 1, 1994

	<u>MFGR</u>	<u>S/N</u>	<u>CM</u>	<u>ORIGINAL CURIE DATE</u>	<u>LOCATION</u>	<u>CURRENT CURIES</u>
1.	Picker	CS10*	2.89	10/10/61	Cell	<u>664</u>
					TOTAL CURIES:	<u>664</u>

## SECTION 1.2 - PURPOSE FOR WHICH LICENSED MATERIAL WILL BE USED

This section expands upon the use description under Section 1.1.

Authorized third parties are defined as facilities or individuals in the United States who possess an NRC or Agreement State License authorizing possession of the licensed material or exported to a facility outside of the United States.

6(a): This is bulk cobalt currently stored in screwtop source containers, double-encapsulated containers or the GE-500 cask. Advanced Medical Systems will not be manufacturing sources in the future. This material is only being stored incident to sale or transfer to an authorized third party. It is anticipated that 100% of our bulk cobalt will be transferred within the next twelve (12) months.

6(b), Cobalt-60 Sealed Sources: Current inventory is being stored incident to sale or transfer to an authorized third party. The sealed sources' primary use is for installation into and dismantling of Advanced Medical Systems and Picker Corporation 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. Sealed sources will also be used for training personnel on teletherapy equipment and training in-house personnel per ISP-32.

Advanced Medical Systems expects to transfer the current inventory of Cobalt-60 sealed sources to authorized third parties within the next twelve (12) months.

Future uses of new purchases of sealed sources will be to verify source strength and installation into a teletherapy or radiography unit for testing prior to shipment of the unit to an authorized third party. These sources are anticipated to be in-house for less than 4 weeks.

6(c), Cesium 137: For use in devices approved by the NRC or an Agreement State to calibrate radiation survey instruments. The one Cesium source stored in the front plug is incident to sale or transfer to an authorized third party.

6(d), Depleted Uranium: This is used as shielding material in Advanced Medical Systems, Inc. and Picker Radiography and Teletherapy Devices.

6(f): This item is for use in devices (including a Tech-Op Model 571 Calibrator) approved by the Nuclear Regulatory Commission or an agreement state to calibrate radiation survey instruments.

6(g), Cobalt-60 Waste: This material is being stored incident to disposal, discharge and/or decommissioning. The company does not generate liquid waste in its normal operations. Contaminated liquid radwaste may occur in abnormal situations. This liquid radwaste will be dealt with on a case-by-case basis.



Section 1.2 (Cont'd)

Locations

All licensed material, except in Item 6(d), shall only be stored or used at the Company's facility at 1020 London Road, Cleveland, Ohio or at a facility of an authorized third party.

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 or at an authorized third party facility.

SECTION 1.3 - INDIVIDUALS RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE

Attached are the work histories and both past and present responsibilities for the following individuals. These employees are employed at 1020 London Road on a full-time basis.

Robert Meschter                      Radiation Safety Officer - Approved by the NRC as  
Radiation Safety Officer on October 14, 1994

Stephen Haddock                      Licensed Source Handler on the following  
AMS/Picker Teletherapy Radiography Units: (Not  
authorized for service)

CS-600	C-4	V-3000
C-1000	C-8	V-10000
C-2000	C-12	CV-4
C-3000	Cyclops	CV-9
C-5000	V-1000	
C-10000	V-2000	

Christopher Reed                      Isotope Technician in Training. Currently being  
trained as a Licensed Source Handler

Vince Rocco                              Isotope Technician in Training. Currently being  
trained as a Licensed Source Handler

This staff is adequate for the routine operations described in the Isotope Shop Procedures Manual for AMS, 1020 London Road. Staffing is augmented by outside contract services on an as-needed basis for special projects.

The responsibilities of each of these individuals is discussed in the ISP Manual.

## NUCLEAR EXPERIENCE

### ROBERT MESCHTER

#### RWP Preparation:

Have performed initial radiation, contamination, and airborne radioactivity surveys of high radiation and high contamination areas such as power reactor vessel cavities, pressurized water reactor steam generator primary side channel heads, spent fuel transfer tube equipment repairs, etc. Dose rates encountered in these surveys ranged widely from mrem/h levels to 60 rem/h or more. Contamination levels ranged up to rem/h/smear.

Information from these surveys was used to write RWPs specifying protective closing requirements, respiratory protection requirements, stay times, degree of HP coverage required, types-ranges-placement of dosimeters, pre and post job ALARA review requirements, and special instructions and precautions as appropriate.

#### HP Job Supervision:

Have provided for continuous HP surveillance of high radiation and high contamination work in progress to ensure worker safety and RWP compliance. Typical surveillance was for steam generator entries, reactor vessel head removal, reactor cavity decontamination, preparation of radioactive waste. Area and equipment decontamination supervision for up to 10 individuals at a time was typical.

#### Worker Training:

Have provided training to personnel in the areas of dress and undress procedures, contamination control, ALARA principles and practices, decontamination techniques and methods, personal decontamination techniques, radiation and contamination survey techniques, air sampling methods and techniques, RWP preparation, etc. Have trained off-site radiation monitoring teams for response to the four classes of emergency response at nuclear power plants. Have also provided training to personnel in Health Physics basics such as biological effects of radiation exposure, types and nature of radioactive decay, and radiation protection regulations (100FR20), and respiratory protection (NUREG 0041).

#### Emergency Response:

Have received training in various emergency actions to be taken for contaminated/wounded person, high radiation alert, airborne contamination alert, system breach (spill), fire fighting, basic first aid, etc. Have participated in over 30 practice drills at a nuclear power plant - at least 5 of which were NRC evaluated drills.

The above-listed overview of experience has been gained over the last 20 years in the facilities and educational institution listed in the previously-submitted resume to the USNRC.

## EXPERIENCE ADDENDUM

### ROBERT MESCHTER

I am familiar with the process and gamma sources used. I have provided radiation monitoring and surveillance during radiographic operations and know the 10 CFR 20 requirements specifically for posting and barricading areas during the operations. I can calculate dose rates and exposures based on source strength, distance, and time. Other nuclear experience includes radiological environmental sampling and analysis, knowledge of radon sampling, and operation and calibration of radiation measuring instruments such as G-M detectors, ion chambers, solid and liquid scintillators, etc.

Nuclear experience also includes "nuclear decontamination", or more specifically defined as those processes and methods for removing unwanted material from surfaces and equipment. My experience in this area includes the operation of liquid abrasive systems employing glass bead or cutting abrasives, CO<sub>2</sub> pellet blasting, Freon and other degreasing systems, ultra-sonics, ultra-high pressure water cleaning systems, and other solvent and chemical cleaning processes.

My nuclear background includes two (2) years chemistry laboratory experience. Primary duties in this area involved the operation of a water purification plant (Graver and Pennfield systems) and all sampling and analysis to insure Grade "A" demineralized water. Laboratory testing of samples included the measurement of chlorides, fluorides, conductivity, turbidity, dissolved oxygen, silica, suspended solids, pH, etc. Lab duties also included preparation of reagents and standards and the use of strong acids, caustics, and specialty chemicals such as Hydrazine. Measuring and test equipment experience includes pH meters, ion specific meters, Mettler balance, photometers, hydrometer, conductivity cells, etc. Electronic test equipment experience includes multimeters, oscilloscopes, Meggar and load banks. I also have general knowledge of electricity.

More specifically, my experience is:

Knowledge of 10 CFR Part 19 (§ 19.12) requirements and application sections of Part 20 (§§ 20.1101(a) and 20.1101), 33 (§ 33.13) and 35 (§ 35.21). Was involved in the development and provided Part 19 Radiation Safety instruction to radiation workers while employed at various nuclear power plants.

Hold an Associate of Science Degree in Radiological Health Technology. Have a broad working knowledge of Health Physics principles, practices, and regulations. Routinely reviewed ongoing procedures, proposed procedures, equipment at other facilities and Advanced Medical Systems. Recommended necessary changes for the safe use of radioactive materials and radiation producing devices.

Cognizant of potential airborne/surface contamination hazards when using unsealed sources. Aware that metallic cobalt forms oxides when exposed to air and will result in both airborne and surface contamination. Routinely conducted contamination (dry swipe) surveys and air-monitoring and provided instruction to workers on internal radiation protection, potential contamination risks, contamination control, and protection options.

Knowledge of 10 CFR Subpart H intent and requirements, Part 20 Appendix B derived limits, the ALARA concept, and contents of Advanced Medical Systems' Respiratory Protection Program. Received regular training covering respiratory protection in the workplace and included types of respirators, suitability, protection factors, permissible practice, Respiratory Protection Programs, and applicable regulations (OSHA 29 CFR 191C.134 and NIOSH/MSHA 30 CFR Part 11).

Knowledge of contamination hazards, contamination control, internal radiation protection, and decontamination procedures. Routinely provided instruction to workers and subordinates on the proper use, maintenance, and disposal of protective clothing: lab coats, disposable gloves/booties, and anti-c suits.

Knowledge of internal radiation protection, hood design and air cleaning devices. Routinely evaluated hoods at Livermore Laboratories for use with radioactive gases, vapors, and particulates; measured face velocities and determined air transport velocities; determined the effectiveness of, replaced, and disposed of rough and high efficiency (HEPA) filters; operated and maintained the glove box at various nuclear facilities.

Knowledge of 10 CFR Part 20 (Subpart K and Appendix F) and external and internal radiation protection. Involved in the planning and operation of the Perry Nuclear Power Plant Waste Storage Facility. Prepared procedures for the safe collection, transport, treatment (compaction or solidification), storage, and packaging for transfer to an authorized agent. Routinely supervised and was involved in the collection, transport, treatment, storage, packaging, and disposal of radioactive wastes at various nuclear plants.

Knowledge of organization, management, regulatory, and operational aspects of a Radiation Safety Program operating a Type A broad license. Knowledge of RSO/Radiation Safety Office's responsibilities and functions.

## RESUME

### ROBERT MESCHTER

#### EXPERIENCE

- 1994 - Advanced Medical Systems, Inc.; Radiation Safety Officer
  - Complete authority and responsibility for the Isotope facility at 1020 London Road
  - Responsible for Radiation Safety
  - Responsible for regulatory compliance
  - Rewrote ISP Manual and participated in the rewrite of the Emergency Plan
  - Chairperson of the Isotope Committee
  - Member of the Management Committee and Safety Committee
- 1984 to 1993 - employed by the Cleveland Electric Illuminating Company at the Perry Nuclear Power Plant as a Senior Engineering Technician. Health Physics and other related duties during the past nine years included (but not limited to) engineering analysis and evaluations, project economic and cost benefit analysis, preparation of procurement specifications, bid proposal evaluations, procedure writing, correspondence preparation, emergency planning, regulatory issues review, technical and program reviews, and work crew supervision as assigned.
- 1975 to 1984 - employed in the commercial nuclear power industry in a variety of Health Physics and other related positions including health and safety technician, chemistry technician, consultant and engineering technician; member of American Nuclear Society and Health Physics Society (specific employers and dates available on request).
- The nuclear plants I have obtained training and experience at are as follows:
  - Duke Power, Oconee Nuclear Plant
  - Lawrence Livermore Laboratory
  - PSE&G, Salem Nuclear Plant
  - Jersey Central Power & Light, Oystercreek Nuclear Plant
  - Boston Edison, Pilgrim Nuclear Plant
  - Carolina Power & Light, HB Robison Nuclear Plant
  - TVA, Browns Ferry Nuclear Plant
  - SMUD, Rancho Seco Nuclear Plant
  - Connecticut Yankee, Haddam Neck Nuclear Plant
  - Alabama Power, Farley Nuclear Plant
  - LP&L, Waterford 3 Nuclear Plant
- Vietnam War Era Veteran, U.S. Navy, 1967 to 1972 - Honorable Discharge.

EDUCATION

- Associate of Science Degree in Radiological Health Technology, Central Florida Community College, 1975 - Graduated with Honors (GPA 3.9).
- Other training includes nuclear systems, engineering economics, Kepner-Tregoe Problem Solving and Decision Making, personal development, management and supervision, TQM, and various short technical seminars.
- Computer skills include work processing, Lotus spread sheet, 20/20 spread sheet, and the use of industry specific calculational computer codes. Former training in COBOL and FORTRAN languages.

STEPHEN J. HADDOCK  
1170 East 337th Street  
Eastlake, OH 44095  
(216) 953-3966

WORK EXPERIENCE:

ADVANCED MEDICAL SYSTEMS, INC. - CLEVELAND, OHIO

Isotope Handler and Technician (May 1991 to Present)

Health Physics responsibilities included the following:

- \*Licensed on USNRC #34-19089-01 as a sealed source handler and Isotope Technician; assisted Radiation Safety Officer in all aspects of the facility's operation.
- \*Exposure to contaminated areas with contamination ranging from 100,000-200,000 dpm/100cm<sup>2</sup> throughout the room.
- \*Health physics support in high radiation areas with an accessible dose rates of 1-3 R/hr.
- \*Extensive hot cell maintenance and manipulator use experience.
- \*Transfer and handling of special by-product material with activities ranging from 2,000-9,000Ci Co<sup>60</sup> and potential exposure of 3,000-10,000 Roentgens/hr. @ 1 meter.
- \*Equipment maintenance and calibration.
- \*Packaging radioactive waste.
- \*Shipping and receiving of radioactive material.
- \*Assisted in developing a Decommissioning Plan and Emergency Pre-Plan.
- \*Assisted in developing and implementing plan for replacement of HEPA filter system and for hot cell upgrades, repairs and maintenance.
- \*Responsibilities also included source fabrication; basic radiation safety for the facility; associated maintenance routines for Picker-AMS Cobalt-60 Teletherapy equipment; source transfers and shipments; physical inventorying of sealed sources and basic daily procedures of operation for the facility under AMS and Nuclear Regulatory Commission guidelines.

COYNE-KANGESSER - CLEVELAND, OHIO

Facility Coordinator (February 1990-May 1991)

Managed 15 employees, which involved hiring, payroll, termination and scheduling of personnel as well as marketing functions. Responsible for customer complaints, billing and deposits. Position included a high degree of confidentiality and customer contact.



WORK EXPERIENCE:  
(Cont'd)

BALDWIN-WALLACE COLLEGE - BEREA, OHIO (1982-1986)

Athletic Trainer (1982-1986)

Part-time as a student athletic trainer with the Athletics Department. Duties included all facets of injury assessment including emergency procedures, first-aid including physical therapy and preventative procedures. Assisted doctors with field emergencies and physicals.

EDUCATION:

BALDWIN-WALLACE COLLEGE - BEREA, OHIO (1982-1986)

Bachelor of Arts--Health including 60 Credit Hours in Science  
Related Class and 58 Credit Hours in Teaching  
Related Classes  
3.0 GPA in His Major

HONORS:

Dr. Robert H. Lechner Memorial Service Award

Recipient in 1984, 1985 and 1986. Awarded for outstanding service at Baldwin-Wallace College.

Baldwin-Wallace College Four-Year Honorary Letterman for  
Athletic Training from 1982 to 1986.

CHRISTOPHER N. REED  
317 East Main Street  
Madison, OH 44057  
Phone: (216) 428-1424

WORK EXPERIENCE:

- o Advanced Medical Systems, Inc. (1994 to Present)
  - o Technician Responsibilities
    - o Radiation surveys (routine/non-routine)
    - o Contamination surveys (routine/non-routine)
    - o Calibrate counter/scalers/pocket dosimeters
    - o Count/calculate air samples
    - o Calculate DAC-HRS
    - o Count/evaluate smear samples
    - o Decontamination of tools, equipment, areas
    - o Perform fire/safety inspections of building
    - o Provide Health Physics (ALARA) coverage for work in progress
    - o Respond to emergencies as appropriate
    - o Shipment and receipt of exchange containers, therapy heads/source (when qualified)
    - o Preparation and shipment of radioactive samples
    - o Survey documentation
    - o Operational checks of building equipment; i.e., emergency generator, ventilation system, etc.
    - o Exposure calculations/tracking
    - o Shielding calculations
    - o Radioactive decay calculations
- o Perry Nuclear Power Plant (December 1993 to November 1994)
  - o Junior Health Physics Technician
  - o Duties included:
    - o Area and tool decontamination
    - o Hot particle surveys
    - o Release of material from RCA
    - o Air sampling for particulate and gaseous radionuclides
    - o Instrument repair
    - o Calibration and source check
    - o Respirator wash, issue, inspection and fit test
    - o Setup of MSA Breathing Air Supply Manifold

TRAINING:

- o Training included:
  - o Advanced Radiation Worker II
  - o Confined Space Entry
  - o GET and RCT
  - o Respirator Protection Training

- o Other training includes:
  - o Auburn Career Center certificate for Junior Health Physics Technician
  - o International Brotherhood of Teamsters OSHA 1910.120 Certified Hazwoper

VINCENT J. ROCCO  
4351 State Road, #7  
Cleveland, OH 44109  
Phone: (216) 459-2672

WORK EXPERIENCE:

- o Advanced Medical Systems, Inc. (1994 to Present)
  - o Technician Responsibilities
    - o Radiation surveys (routine/non-routine)
    - o Contamination surveys (routine/non-routine)
    - o Calibrate counter/scalers/pocket dosimeters
    - o Count/calculate air samples
    - o Calculate DAC-HRS
    - o Count/evaluate smear samples
    - o Decontamination of tools, equipment, areas
    - o Perform fire/safety inspections of building
    - o Provide Health Physics (ALARA) coverage for work in progress
    - o Respond to emergencies as appropriate
    - o Shipment and receipt of exchange containers, therapy heads/source (when qualified)
    - o Preparation and shipment of radioactive samples
    - o Survey documentation
    - o Operational checks of building equipment; i.e., emergency generator, ventilation system, etc.
    - o Exposure calculations/tracking
    - o Shielding calculations
    - o Radioactive decay calculations
- o Nuclear Energy Services (1991-1994)
  - o Decontamination Technician/Laborer
  - o Duties included:
    - o Decontamination, smear and contamination surveys
    - o Air and soil sampling
    - o Knowledge and operation of various survey meters and counting equipment

#### SECTION 1.4 - TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

The Company has three (3) training programs for employees and individuals who will be working in or frequenting restricted areas. These training programs are included in the Isotope Shop Procedure Manual and are also included in their entirety in Section 1.4. These programs are as follows:

- ISP-28      Instruction to Ancillary Personnel. This training is for company employees and third parties who do not work in the restricted areas but will be entering a restricted area. An individual will only enter a restricted area upon receiving instructions according to ISP-28.
- ISP-31      Isotope Technician Training Program. This is for company employees who will be assigned full-time to the Isotope Facility at 1020 London Road. This program allows for training and instruction for work within restricted areas. This training does not include source handling.
- ISP-32      Isotope Handler Training Program. This is for company employees who have successfully completed the Isotope Technician Training Program and will be handling and moving sources. Only upon successful completion of this course and NRC approval will employees be authorized to handle sources.

# ADVANCED MEDICAL SYSTEMS OPERATING PROCEDURE

## INSTRUCTIONS TO ANCILLARY PERSONNEL

ISP-28 Rev. 1/95

Page 1 of 4

- 1.0 PURPOSE: To instruct part time or occasional workers on the presence, storage and use of radioactive materials and the associated safety precautions and procedures.
- 2.0 PRECAUTIONS AND LIMITATIONS:
- 2.1 This procedure applies to all part time or occasional workers who will be working in the Restricted Areas of the facility or in the vicinity of radioactive materials. It applies to both AMS and non-AMS personnel.
  - 2.2 The RSO or designee shall be responsible for providing training to these workers.
  - 2.3 Ancillary personnel will receive training prior to performing job assignments.
  - 2.4 Refresher training will be provided on an annual basis to permanent AMS employees, unless the employee requests or the RSO insists upon a more frequent basis.
  - 2.5 Ancillary personnel may be asked general questions relating to the training to determine their overall comprehension.
  - 2.6 Personnel with a previous radiation exposure history should complete Form ISP-28A, Certificate of Prior Dose.
  - 2.7 A copy of the signed record of training will be maintained at the Isotope Facility, and for AMS employees, also in their personnel file.

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Prepared by: Robert Meschter

Approved by: *R Meschter*

Date: 1-24-95

---

3.0 INSTRUCTIONS:

3.1 Outline of Worker Training.

3.1.1 Background discussion.

- a. Radiation.
- b. Radioactive contamination.
- c. Airborne contamination.
- d. Biological effects (acute and chronic).
- e. Prenatal exposure (Reg. Guide 8.13).

3.1.2 Personal monitoring.

- a. Film badges.
- b. Pocket dosimeters.
- c. Whole body frisking.
- d. ALARA concept - time, distance, shielding.
- e. Exposure limits - previous work history.
- f. Expected exposure levels.
- g. Right to receive exposure reports.

3.1.3 Facility tour.

- a. Locations of Restricted Areas.
- b. Areas of storage.
- c. Areas of transfer.
- d. Interpretation of signs and placards.
- e. Areas of unauthorized entry.

3.1.4 Protective devices.

- a. Protective clothing.
- b. Respirators.
- c. Fixed gamma ray detectors.
- d. Shielding materials.
- e. Equipment and tool monitoring.
- f. Trained radiation workers.

3.1.5 Response to warnings and alarms.

- a. Location of emergency exits.
- b. Personal safety first.
- c. Heed instructions of trained radiation worker.

3.1.6 The right to inquire or respond to any condition which they believe to constitute a violation of NRC Regulations.

## CERTIFICATE OF PRIOR DOSE

ISP-28A

This certification is to be completed prior to the first entry into a Restricted Area during a work assignment under such circumstances that the individual could receive a dose in excess of 125mrem.

*I certify that I have had no prior occupational dose during the current calendar year.*

Printed Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

OR

*I certify that my occupational dose for the current calendar year is \_\_\_\_\_ mrem.*

Printed Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reviewed by RSO: \_\_\_\_\_ Date: \_\_\_\_\_



## STATEMENT OF TRAINING

ISP-28B

Name: \_\_\_\_\_ Soc. Sec. No.: \_\_\_\_\_

Employer: \_\_\_\_\_

*I have been trained to Advanced Medical Systems Operating Procedure  
"Instructions to Ancillary Personnel", ISP-28, and Regulatory Guide  
8.13, "Instruction Concerning Prenatal Radiation Exposure".*

Comments: \_\_\_\_\_

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\_\_\_\_\_

Signature of Trainee: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of Trainer: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed by RSO: \_\_\_\_\_ Date: \_\_\_\_\_

# ADVANCED MEDICAL SYSTEMS OPERATING PROCEDURE

## ISOTOPE TECHNICIAN TRAINING PROGRAM

ISP-31 Rev. 01/95

Page 1 of 5

- 1.0 PURPOSE: To develop a staff of training individuals capable of assisting the RSO and Isotope Handler by performing routing radiation safety-related checks and measurements.
- 2.0 SCOPE: This program is applicable to all individuals who will work independently in restricted areas at the London Road Isotope Facility for the performance of specified tasks.
- 3.0 OBJECTIVE: Upon completion of training, the candidate will be able to perform the following tasks:
- A. Safety assurance checks specified in ISP-4 and Form 4A.
  - B. Receipt of radioisotope shipping containers.
  - C. Release of packaged radioactive materials for transportation.
  - D. Calibration of survey instruments and meters.
- 4.0 REQUIREMENTS:
- 4.1 The training program shall consist of (1) approximately 3 days of classroom instruction on basic radiation theory and safety practices; (2) approximately 2 days of training on the procedures, methods and precautions required to perform given tasks; and (3) approximately 1 month of on-the-job training.

---

Prepared by: Robert Meschter

Approved by: *R. Meschter*

Date: 1-24-95

---

- 4.2 A trained health physicist and other qualified instructors, under the direction of the RSO, shall provide the classroom instructions. The job-specific training and the on-the-job training shall be coordinated by the RSO and supervised by the RSO or an approved Isotope Handler.
- 4.3 For the classroom instruction, a written examination(s) shall be administered to determine comprehension of the material presented. The examination(s) shall be prepared, administered and scored by the instructor. The minimum passing grade shall be 80%.
- 4.4 An oral (supported by quiz) walk-through, job performance exam will be administered after completion of the on-the-job training. The examination shall be prepared and administered by the RSO. The minimum passing grade shall be 80%.
- 4.5 A certificate shall be awarded to each candidate who successfully completes the training.
- 4.6 Candidates who do not successfully complete the primary training shall be given additional training and retested.
- 4.7 Refresher training shall be provided on an annual basis and whenever there is a change in duties, procedures or regulations.
- 4.8 Documentation of all training shall be maintained by the RSO.
- 4.9 Prior to assuming duties as an Isotope Technician, the candidate's qualifications must be reviewed and approved by the Isotope Committee.

## 5.0 PROGRAM OF INSTRUCTION

- 5.1 Basic Radiation Therapy and Safety Practices Course  
(24 Hours)
- 5.2 Job Specific Training
  - 5.2.1 Radiation Surveys (1.5 Hours)  
Knowledge of unrestricted and restricted areas;

Proper selection and operation of portable survey instrumentation;

Notification procedures; proper documentation and posting of areas.

5.2.2 Contamination Surveys (2.5 Hours)

Proper technique for sample collection;

Proper selection of counting equipment;

Smear counting and analysis procedures;

Isolation and proper tagging;

Procedures for performing personnel body contamination checks;

Notification procedures

5.2.3 Instrumentation (2 Hours)

Knowledge in procedures for operation and calibration of survey meters, counting equipment, air monitors;

Inspecting and tagging out inoperative instruments.

5.2.4 Air Monitoring (2 Hours)

Knowledge of operation and proper functioning of the permanent air monitoring system;

Location of sampling lines, use and operation of portable air samplers, inspection of air monitor chart and alarms;

Notification procedures.

5.2.5 Radiation Work Permit Coverage (1.5 Hours)

Obtain adequate information about the job;

Identifying, monitoring, mitigating and controlling direct radiation hazards;

Proper methods for locating and controlling contamination hazards;

Demonstrating proficiency in the use of anti-contamination clothing and respiratory equipment.

5.2.6 Waste Management (1 Hour)

Solid waste generation, handling, packaging for disposal;

Liquid waste management;

Designated waste handling and storage areas;

Notification procedures.

5.2.7 Radioactive Material Receipt/Shipping Procedures (1.5 Hours)

Survey and contamination requirements;

Documentation requirements - inventory control;

Handling and storage procedures, storage areas;

Notification procedures.

5.2.8 Emergency Action Plan (4 Hours)

Familiarization with facility alarm system and response activities of civil agencies;

Knowledge of Emergency Pre-Plan;

Maintenance and testing of emergency generator, fire pump;

Location of potential chemical and radiation hazards.

5.3 On-the-Job Training

5.3.1 Performance of each task as outlined in 3.0 a minimum of two times under supervision.

5.4 Copies of written quizzes, exams and evaluation forms are attached.

5.5 Documentation forms for job specific and on-the-job training are attached.

- 5.6 A certificate of training issued to Isotope Technician candidates who successfully complete the training program is attached.

## ISOTOPE TECHNICIAN JOB PERFORMANCE EVALUATION

85 Points

Candidate: \_\_\_\_\_

Date: \_\_\_\_\_

RSO: \_\_\_\_\_

	<u>SATISFACTORY</u>	<u>UNSATISFACTORY</u>
1. Daily Checks	_____	_____
2. Use of Survey Instruments	_____	_____
3. Use of Well Counter	_____	_____
4. Analysis of Wipes	_____	_____
5. Knowledge of Hazards	_____	_____
6. Generator Test	_____	_____
7. Air Monitor Calibration	_____	_____
8. Analysis of Air Samples	_____	_____
9. Gamma Alarm Settings	_____	_____
10. Air Monitor Calibration	_____	_____
11. Receiving Radioactive Material	_____	_____
12. Shipping Radioactive Material	_____	_____
13. Survey and Wipes	_____	_____
14. Calibration of Instruments	_____	_____
15. Application of RWP	_____	_____
16. Emergency Plans	_____	_____
17. Use of Anti-C Clothing	_____	_____
18. Personal Contamination	_____	_____
19. Methods for Reducing Exposure	_____	_____
20. Surface Contamination Limits	_____	_____
21. Decontamination Methods	_____	_____

Comments:

ON-THE-JOB TRAINING RECORD FOR ISOTOPE TECHNICIANS

STUDENT NAME: \_\_\_\_\_

UNIT #	COURSE IDENTIFICATION	# HOURS	STUDY AIDE	LOCATION/DATE ATTENDED	TESTING RESULTS	STUDENT SIGNATURE	INSTRUCTOR SIGNATURE
ISP 4	Daily Checks						
ISP 2	Unrestricted Area Surveys						
ISP 2	Unrestricted Area Wipes						
ISP 5.1	Emergency Generator Test						
ISP 10	Generator Battery Check						
ISP 7	Air Monitor System						
ISP 6	Gamma Alarm Function						
ISP 6	Contaminated Water Level						
ISP 8	Air Monitor Calibration						
ISP 23	Survey Meter & Dosimeter Calibration						
ISP 13	Receipt of Rad. Material						
	Release of Rad. Material to Carrier						
ISP 2	Restricted Area Surveys						
ISP 2	Restricted Area Wipes						

Isotope Committee Review Date: \_\_\_\_\_

Comments: \_\_\_\_\_

Member Officer Signature: \_\_\_\_\_



# JOB SPECIFIC TRAINING RECORD FOR ISOTOPE TECHNICIANS

STUDENT NAME: \_\_\_\_\_

UNIT #	COURSE IDENTIFICATION	# HOURS	STUDY AIDE	LOCATION/DATE ATTENDED	TESTING RESULTS	STUDENT SIGNATURE	INSTRUCTOR SIGNATURE
1	Radiation Surveys						
2	Contamination Surveys						
3	Instrumentation						
4	Air Monitoring						
5	Radiation Work Permits						
6	Waste Management						
7	Rad. Material Receipt/Shipping						
8	Emergency Actions						

Isotope Committee Review Date: \_\_\_\_\_

Comments: \_\_\_\_\_

Member Officer Signature: \_\_\_\_\_

# Advanced Medical Systems, Inc.

121 North Eagle Street • Geneva, Ohio 44041  
(466-4671 FAX (216) 466-0186

## CERTIFICATE OF TRAINING

### ISOTOPE TECHNICIAN

This is to certify that \_\_\_\_\_ has successfully completed the Isotope Technician Training Program offered by Advanced Medical Systems, Inc.

The above-named individual has demonstrated to the Advanced Medical Systems, Inc. Isotope Committee that he/she can safely and competently perform the routine radiation safety procedures at the London Road Isotope Facility under U.S. Nuclear Regulatory Commission License No. 34-19089-01.

Signed,

\_\_\_\_\_  
RADIATION SAFETY OFFICER

\_\_\_\_\_  
Date

# ADVANCED MEDICAL SYSTEMS OPERATING PROCEDURE

## ISOTOPE HANDLER TRAINING PROGRAM

ISP-32 Rev. 01/95

Page 1 of 4

- 1.0 PURPOSE: To develop a staff of trained individuals capable of handling sealed and unsealed sources of radioactive material at the London Road facility.
- 2.0 SCOPE: This program is applicable to all individuals who will work independently and/or who can supervise others in restricted areas at the London Road Facility.
- 3.0 OBJECTIVE: Upon completion of training, the candidate will be approved by the USNRC as a qualified Isotope Handler and will be able to safely perform the following tasks:
- A. Operate the hot cell equipment.
  - B. Operate the source storage garden and related equipment.
  - C. Leak test and calibrate sources.
  - D. Install and remove sealed sources from machine heads and source exchange containers.
  - E. Maintain hot cell and related equipment.
  - F. Handle and package radioactive waste.
  - G. Prepare machine head and source exchange container shipping packages.

---

Prepared by: Robert Meschter

Approved by: *R Meschter*

Date: 1-24-95

---

#### 4.0 REQUIREMENTS:

- 4.1 A prerequisite for the job classification is the successful completion of the Isotope Technician Program (see separate program for content).
- 4.2 The training program shall consist of (1) approximately 13 days of job-specific training on the procedures and equipment; and (2) approximately 3 months of on-the-job training.
- 4.3 Both the job specific and on-the-job training shall be coordinated by the RSO and supervised by a qualified Isotope Handler.
- 4.4 Oral and written examinations will be prepared and administered by the RSO. The minimum passing grade shall be 80%.
- 4.5 For on-the-job training, the performance of the candidate will be evaluated and documented by either the RSO or an approved Isotope Handler.
- 4.6 Candidates who are approved by the NRC will be awarded a Certificate of Training.
- 4.7 Candidates will continue their training until all of the above criteria has been met.
- 4.8 Refresher training shall be provided on an annual basis and whenever there is a change in procedures, regulations or the License.

#### 5.0 PROGRAM OF INSTRUCTION

##### 5.1 Prerequisites (15 Hours)

- (1) Successful completion of Isotope Technician Training Program.
- (2) Parts 5.2.1 - 5.2.3 of the Job Specific Training Program for Class 1 Service Engineers.

##### 5.2 Job Specific Training

###### 5.2.1 Isotope Facility Safety Procedures (6 Hours)

Review of ISP-1 Manual

###### 5.2.2 LAB - Hot Cell Equipment (4 Hours)

Familiarization with manipulators and ancillary fixtures, etc.

5.2.3 LAB - Source Processing and Transfer (8 Hours)

Transfer out of cell;

Calibration;

- ✓ Transfer out of Isotope Shop for shipment;
- Contamination checks.

5.2.4 LAB - Storage Garden Operation (6 Hours)

Equipment;

Radiation hazards and safety.

5.2.5 LAB - Decontamination of Areas and Equipment (2 Hours)

Action levels and techniques.

5.2.6 Solid Waste Management (2 Hours)

Collection, packaging;

Processing for shipment, storage;

Documentation requirements.

5.2.7 Hot Cell Entry (1 Hour)

Review of procedure ISP-11.

5.2.8 Hot Cell Equipment Room (1 Hour)

HEPA Filter System;

Filter change procedure - ISP-12.

5.2.9 London Road Facility Security System (8 Hours)

Supervisory system - alarms, equipment;

Proper response - troubleshooting;

HVAC System;

Fire System.

5.3 On-the-Job Training

5.3.1 Performance of each task as outlined in 3.0 a minimum of two times under supervision.

5.3.2 Performance of source transfer procedures a minimum of six times.

5.4 Copies of written quizzes, exams and evaluation forms are attached.

5.5 Documentation forms for job specific and on-the-job training are attached.

5.6 A Certificate of Training issued to Isotope Handler candidates who successfully complete the training program is attached.

JOB SPECIFIC TRAINING RECORD FOR ISOTOPE HANDLERS

STUDENT NAME: \_\_\_\_\_

UNIT #	COURSE IDENTIFICATION	# HOURS	STUDY AIDE	LOCATION/DATE ATTENDED	TESTING RESULTS	STUDENT SIGNATURE	INSTRUCTOR SIGNATURE
1	ISP-1 Manual Review						
2	Solid Waste Management						
3	Hot Cell Entry						
4	Hot Cell Equipment Room						
5	Facility Systems						
LAB 1	Hot Cell Equipment						
LAB 2	Source Processing & Transfer						
LAB 3	Storage Garden Operation						
LAB 4	Decontamination						

Isotope Committee Review Date: \_\_\_\_\_

Comments: \_\_\_\_\_

Member Officer Signature: \_\_\_\_\_

ISOTOPE HANDLER TRAINING RECORD

CANDIDATE \_\_\_\_\_

OUTLINE OF TECHNICAL TRAINING AND INSTRUCTION	INSTRUCTOR INITIALS	DATE PERFORMED
1. Work Authorization and Radiation Work Permit Requirements		
2. Use of Radiation Monitoring Equipment		
3. Familiarization with Hot Cell Ventilation System and Safety Interlock System		
4. Transfer of Inert Materials Into Hot Cell		
5. Slave Manipulator System - Use and Dexterity		
6. Purpose and Use of Hot Cell Ancillary Equipment  a) Crane and Electromagnets b) Beam Scales c) Miscellaneous Tools and Fixtures		



CANDIDATE \_\_\_\_\_

OUTLINE OF TECHNICAL TRAINING AND INSTRUCTION	INSTRUCTOR INITIALS	DATE PERFORMED
7. Raising Hot Cell Floor Plug and Accessing Isotopes  a) Floor Plug Removal b) Storage Capsule Identification c) Storage Capsule Removal		
8. Bulk Isotopes Storage and Floor Plug Insertion		
9. Decontamination of Cell Deck		
10. Source Receptacle Loading  a) Use of Source Holder b) Application of Retaining Ring c) Inspection of Retaining Ring		
11. Transfer of source Into Cell Wall		
12. Hot Cell Decontamination and Waste Disposal		

CANDIDATE \_\_\_\_\_

OUTLINE OF TECHNICAL TRAINING AND INSTRUCTION	INSTRUCTOR INITIALS	DATE PERFORMED
13. Securing Hot Cell Equipment		
14. Transfer of Source to Transfer Monster from Cell Wall		
15. Source Transfer Between Transfer Monster and Source Exchange Container		
16. Source Transfer Between Exchange Container and Calibration Head		
17. Source Calibration and Documentation		
18. Source Surface Contamination Inspection		

CANDIDATE \_\_\_\_\_

OUTLINE OF TECHNICAL TRAINING AND INSTRUCTION	INSTRUCTOR INITIALS	DATE PERFORMED
19. Source Transfer Between Machine Head and Exchange Container		
20. Packing/Unpacking of Machine Head and Source Exchange Shipping Container		
21. Operation of Source Storage Garden		
22. Hot Cell Machinery Maintenance		
23. Solid Waste Packaging		

# Advanced Medical Systems, Inc.

17 North Eagle Street • Geneva, Ohio 44041  
(216) 466-4671 FAX (216) 466-0186

## CERTIFICATE OF TRAINING

### ISOTOPE HANDLER

This is to certify that \_\_\_\_\_ has successfully completed the Isotope Handler Training Program offered by Advanced Medical Systems, Inc.

The above-named individual has demonstrated to the Advanced Medical Systems, Inc. Isotope Committee that he/she can safely and competently perform the duties necessary in full compliance with the procedures and conditions of U.S. Nuclear Regulatory Commission License No. 34-19089-01.

Signed,

\_\_\_\_\_  
RADIATION SAFETY OFFICER

\_\_\_\_\_  
Date

## SECTION 1.5 - FACILITIES AND EQUIPMENT

The attached facility description is included in Chapter 1 of the Isotope Shop Procedure Manual. For convenience, it is also included in Section 1.5 in its entirety.

The current equipment list of that equipment which is used by personnel in the performance of their surveys is as follows:

- Isotope Handling Equipment
- Portable GM Survey Meters
- Portable Ion Chamber Survey Meters
- Breathing Zone Air Samplers
- Fixed Air Samplers
- Counter/Scales
- GM Rate Meters
- HEPA/Ventilation and Vacuums
- Miscellaneous Computer Support Programs
- Overhead Hoists
- Forklifts
- Shop Tools (Hand and Electric)
- Volt Meters
- Operation of Hot Cell and Manipulators

## CHAPTER 1 - DESCRIPTION OF THE ISOTOPE FACILITY

This chapter describes the physical aspects of the isotope facility, its construction, safety features and evaluation of shielding. It also presents floor plans of the facility as an aid in identifying specific areas that are referenced in later chapters of this manual.

### INTRODUCTION

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 Restricted Areas and zero hazard in Controlled and Unrestricted Areas, with confinement of emergency situations to the Isotope Shop Area (ISA).

The Isotope Facility is situated on 6.3 acres of land which lies on the boundary between industrial and residential areas. Because of the 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 ISA because windows were felt to be of questionable value for the following reasons:

- 1) Safety considerations and protection against unauthorized entry into the ISA.
- 2) The maintenance of proper air flow balance.
- 3) Uniform lighting is difficult to maintain.
- 4) The special procedures required for cleaning windows inside Restricted Areas and the possible radiation hazards of cleaning windows on the outside.
- 5) The noise transmission of windows from the adjacent railroad tracks.

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. It will set off an alarm upon opening.

Starting on page 16 are floor plans of the London Road Isotope Facility. The first floor of the facility contains the Isotope and Shielded Work Areas. The Restricted 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 Hot Cell, the Shielded Storage Room, the Isotope Shop Area, Isotope Shop Warehouse, the Isotope Storage and Irradiation Facility (Garden) and the offices.

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

#### 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 permits large objects to be moved into and out of the room.

This room may be used for development, manufacture and testing of equipment or storage of radioactive material.

#### HOT CELL

The Hot Cell was designed and equipped to encapsulate the largest sources used for medical therapy and industrial radiography. Advanced Medical Systems no longer encapsulates Cobalt into sources. With the exception of the shielding walls, virtually every item in the cell structure is removable to permit changes which the future may require.

The Hot Cell is six (6) feet square inside, five and a half (5 1/2) foot concrete walls and four (4) foot floor and ceiling. The floor pan is stainless steel and the inside walls are one quarter (1/4) inch steel plate up to a height of eleven (11) feet. The cell is closed at the rear by a forty two (42) ton hinged door which provides a full six (6) foot wide entrance to the cell when open. Two small access ports are available for insertion and withdrawal of items less than three (3) inches in diameter. These access ports are located between the Isotope Shop Area and the Hot Cell. Observation of cell operations is possible through a sixty (60) inch glass and zinc bromide window. Remote handling is accomplished with a pair of Model 8 Manipulators and a two (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 Cell Control Area by an intercom system.

The viewing window for the cell is removable from outside the cell. The viewing components consist of an eight (8) inch inside coverplate of non-browning glass, a two (2) inch plate glass, forty eight (48) inches of zinc bromide solution and a two (2) inch outside coverplate of laminated safety glass. This construction provides shielding equivalent to sixty six (66) inches of one hundred fifty (150) lb/ft<sup>3</sup> concrete with only two (2) 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.

To reduce the potential of an electrostatic discharge of the Cell window, a grounding strap has been placed on the Hot Cell window at electrical ground. Therefore, any electrostatic charge on the window and frame will be shunted to ground.

The Model 8 Master Slave Manipulators are mounted above the window using the roller tube mounts. The roller tubes are positioned on twenty eight (28) inch centers in concrete within a twenty four (24) by fifty eight (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 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 forty (40) ton door is removable in case of bearing failure, but due to the low rotational speed and infrequent operation, a long service life is anticipated. The turntable upon which the door rides contains a heavy duty bearing mounted on a hemispherical balljoint 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 nine (9) foot vertical tube to the second floor. The upper bearing is a sealed unit and should require no lubrication. The lower bearing, at floor level, may become dirty or contaminated even though a neoprene wiper rides the edge of the turntable. The lower bearing may be lubricated, or flushed and lubricated if dirty or contaminated, by means of a tube which runs beneath the floor 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 electric 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 from 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 (2) ton overhead crane inside the Hot Cell is electrically powered and controlled. In order to cover the six (6) 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° degrees. The crane assembly is mounted in a removable plug in the cell ceiling.

Storage facilities for isotopes within the cell are provided by two (2) containers inserted in steel sleeves in the floor.

Two (2) prefilters for the Hot Cell are mounted just above the viewing window.

As mentioned previously, the Hot Cell is shielded by five and a half (5-1/2) feet of concrete with one quarter (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. Calculations indicate that the shielding is adequate for 1.5 million Curies of Cobalt-60.

#### 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 material.

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 air conditioning 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 prefilters before entering the building. The heavy burden of industrial air wastes, from neighboring plants and the railroad tracks, is removed at the point where filter changing is accomplished with the least difficulty. The supply air is distributed to the isotope areas by ventilation 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 airflow 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 (2) 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 high temperature prefilter and 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 (2) 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 low 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 100%. 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 (8) feet above roof level. An air monitor located in the Clean Equipment Room with monitoring instrumentation located in the Hot Cell Control Area draws a continuous sample of four (4) to five (5) cubic feet per minute (cfm) for analysis. Any increase of activity above the preset 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 a rupture to the filter media.

The Decontamination Room provides space for opening the cell door without disturbing the air flow through the cell.

The original design of the facility had all drains on the first floor of the Restricted Area, with the exception of the toilet drains, connected to stainless steel holding tanks located in the Shielded Waste Room in the basement of the facility. Circa 1986, these drains were modified to route water to a plastic holding tank in the front basement. This plastic holding tank does not drain and holds water for evaporation.

The original floor drains in the basement were connected to the municipal sanitary system. These drains are sealed with concrete.

The Shielded Waste Hold-Up Tank Room which is not used is curbed twenty four (24) inches high to prevent waste water from running into the sanitary sewer in the event of a leak in one of the holding tanks. The holding tanks had a total capacity of six hundred (600) gallons and the curbed floor area, which has no drain, has a capacity of approximately twenty four hundred (2,400) gallons. Circa 1988, this room was sealed with all services to and from the room disconnected.

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 monitoring devices are connected to an alarm panel in the Cell 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 alarm monitoring company so that malfunctions during non-working hours are reported to a responsible person.

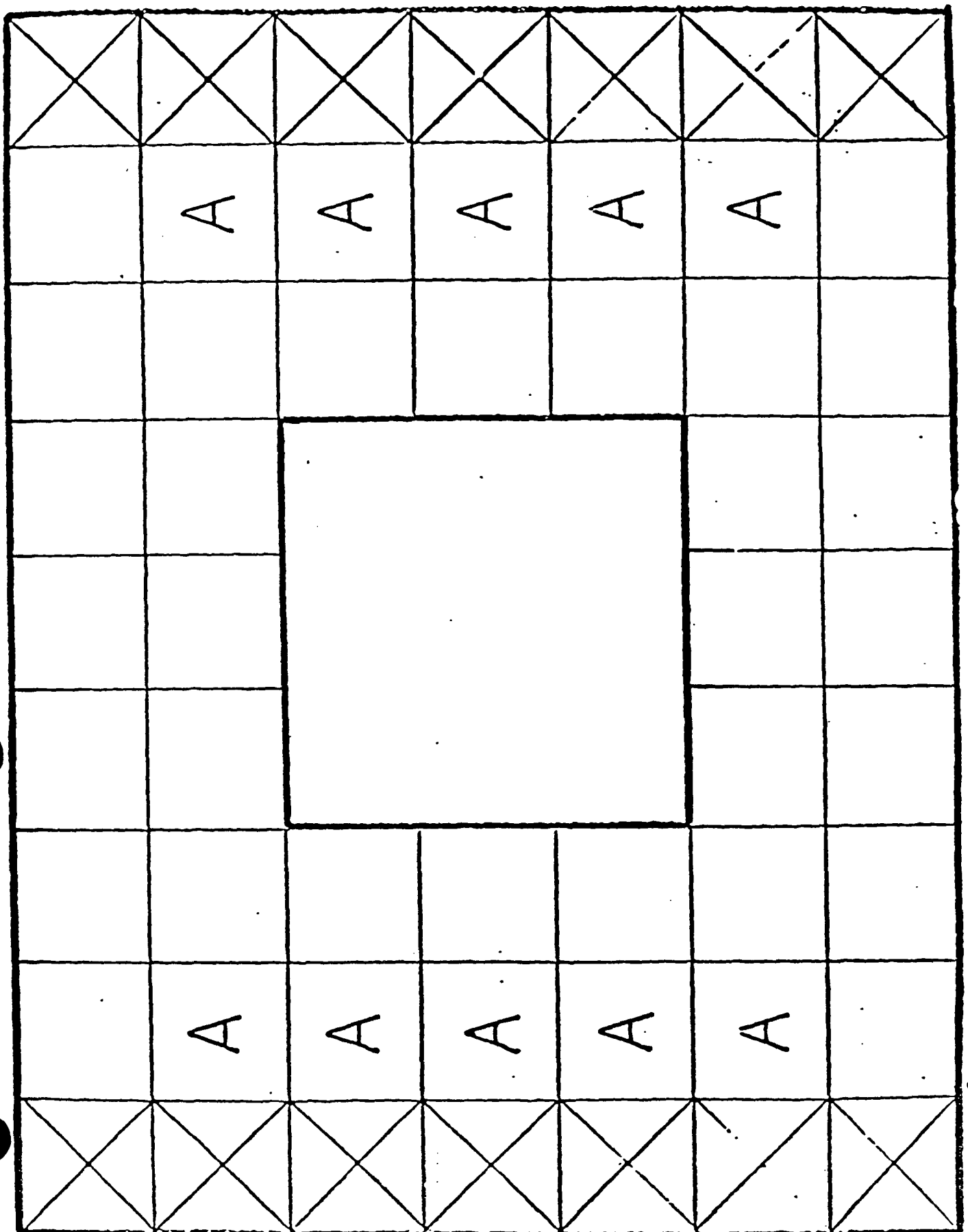
#### STORAGE GARDEN AND IRRADIATION FACILITY

The facility is located in the southwest corner of the building and contains vertical storage tubes in a six (6) 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 (2) sand filled shield rooms that are accessible through manholes in the first floor. Coarse concrete sand with a bulk density of one hundred twenty seven (127) lb/ft<sup>3</sup> was used as the shielding material for a number of reasons. Immediate shielding requirements are easily handled by the use of sand, which can 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 seven (7) lb/ft<sup>3</sup>. 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 fifty four (54) vertical storage tubes in a rectangular array. The tubes are arranged in a 7 x 9 array with the center nine (9) spaces left open (see next page). The center space is fitted with an irradiation plug which can be used to irradiate objects up to eight and one half (8 1/2) inches square by twelve (12) inches high. Each of the tubes marked "A" can also be used for irradiation by placing sources in the four (4) tubes around each which have a common side. The two (2) outer rows of seven (7) tubes, marked by crosses, extend about two (2) feet below the bottom of the tubes in the central 7 x 7 array. This permitted installation of an irradiation facility beneath the garden with two (2) parallel rows of sources between which objects up to a seventeen (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.

SOURCE STORAGE GARDEN ARRAY



## PRELIMINARY EVALUATION OF CELL SHIELDING

On November 13, 1959, a shipping container containing 17,557 Curies in two (2) bulk capsules and 4550 Curies in three (3) therapy capsules (total 22,107 Curies) was opened inside the cell and the capsules placed on the cell table. A radiation survey of the areas around the cell was performed by a Victoreen Model 592 portable survey meter.

For the most part, there was no measurable increase in radiation levels with the exceptions noted below:

- 1) Cell Control Area (east wall of cell) - no measurable increase above background.
- 2) Shielded Work Room Corridor (north wall of cell) - no measurable increase above background.
- 3) Isotope Shop Area (south wall of cell) - no measurable increase above background.
- 4) Decontamination Room (west wall or door of cell) - primary leakage at surface of the door midway up on the door was negligible. Scatter leakage through the 1/8 to 1/4 inch clearance between the floor and the door was a maximum of 40mR/hr. Maximum leakage through a two (2) inch opening at top of cell door was 600mR/hr.
- 5) Cell Machinery Room (above cell) - maximum leakage of 5mR/hr at hoist support plug in the floor of the room.
- 6) Waste Storage Room (beneath cell) - no measurable increase.

To evaluate the adequacy of shielding in the floor storage plugs, the two (2) bulk capsules (17,557 Curies) were placed in the front plug and two (2) therapy sources (3,710 Curies) were placed in the rear plug. Measurements were made inside the cell and in the Waste Room below the cell.

- 1) Inside Cell - maximum leakage was 300mR/hr at the crack between the plug and floor. At floor level in the center of the port plug leakage was 22mR/hr. At waist height over the cell area maximum was 35mR/hr, minimum was 8mR/hr.
- 2) Waste Room - maximum leakage was 300mR/hr at the ceiling directly beneath the front plug. At head height maximum was 100mR/hr. At waist height maximum was 35mR/hr, minimum was 2mR/hr.

It should be pointed out that these high readings occur only in Restricted Areas that are not entered when the cell is in operation except for emergencies. These areas are the Decontamination Room, Cell Machinery Room and the Waste Storage Room.

#### PRESSURE GRADIENT BETWEEN CELL AND CONTROL AREA

The air handling system for the Isotope Shop Area has been carefully balanced to maintain the Cell at negative pressure relative to all other rooms in the building. The remainder of the Isotope Restricted Areas are at negative pressure relative to the Cell Control Area, but slightly above the pressure inside the Cell. These pressure gradients are maintained by supplying less air to the Isotope Shop Area than is removed by the exhaust system (slight negative pressure) and by supplying more air to the Cell Control Area than is removed by its exhaust system (slight positive pressure).

The pressure gradient between the Cell and Cell Control Area is indicated by the inclined tube manometer located directly over the cell window. Normal operation of the system provides a pressure differential of 0.2 to 0.4 inches of water absolute, the exact value depending upon whether fans are on high or low speed, cell door is open or closed, etc.

Experimentation has shown that the Cell pressure remains negative under virtually all abnormal operating conditions, even when all exhaust fans in the Isotope Shop Area are off. (The Cell Control Area is still pressurized by the independent system supplying this area).

In the event of fire or explosion inside the Cell, or in the other areas of the Isotope Shop Area, there may be a brief reversal of pressure gradient. This should cause little or no problem in the Cell Control Area, however, since virtually all of the normal air leakage into the Cell is through the transfer duct over the cell door and the air spaces around the cell door, any rapid pressure rise inside the Cell might be expected to relieve itself along these paths of least resistance.

Any resultant contamination problems would then be confined to Restricted Areas. Since the fans are well shielded from these areas by solid concrete, up to four (4) feet thick, and since the ductwork from the Cell to the fan runs a tortuous path through solid concrete, the exhaust ductwork should remain intact and the exhaust system continue operating.

## EVALUATION OF CELL FILTERS IN FIRE OR EXPLOSIONS INSIDE THE CELL

The filters handling the exhaust from the Isotope Shop Area and Hot Cell are Cambridge Absolute Filters Type 1F-1000-2 (or equivalent) that are of fire-proof construction and rated for 800°F continuous service and should remain in-service even during a fire.

In the event of fire or explosion damage inside the Hot Cell, the following events will occur automatically:-

- A. An in-line smoke/heat detector located in the exhaust trunk from the Hot Cell would secure the Hot Cell and the Isotope Shop exhaust fans and the Isotope Shop supply fan. The associated low leakage spring shut automatic dampers will shut. All forced and induced air flow within the Hot Cell and Isotope Shop Area will cease.

The filters are rigidly mounted in angle frames and most probably the filter media would be ruptured before the filters yield in their frames.

## SAFETY FEATURES

### I. Master Alarm System

Six (6) 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 (2) 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 the other 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 indicated that no unusual hazards exist in these areas under normal Cell operating procedure, but the precautions should be taken nevertheless.



On five (5) of the six (6) major systems, any alarm is transmitted to the local alarm monitoring company so that malfunctions during non-working hours are reported to a responsible person. The emergency generator will not trip the other five (5) alarms if it restores power before the fans stop.

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

A. Cell Exhaust Fan

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

C. Air Monitor

Excessive airborne particulate levels above setpoint as indicated on the effluent air monitor system or electronic malfunction of monitoring equipment.

D. Cell Temperature

Two (2) thermostats, one located in the Cell Control Area and the other located in the 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 Freeze Up

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

F. Emergency Generator

Signal given on power failure when generator starts.

## II. Hot Cell Systems

### A. Door Interlock

An electrical interlock secures the door in the closed position until two (2) 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 a Victoreen Model 510 Rate meter (or equivalent) located on the Cell face in the Cell Control Area. The rate meter is auto-ranging up to 2000R/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 visual alarm (flashing red light) continuously when radiation levels are in excess of the preset level of approximately 2mR/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, signalling improper operation.

## III. 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 low speed which is indicated by a red light on the locked switch control at the Cell face. With the doors opened the fan speed is increased for about 100% 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 yellow light on the locked switch control at the Cell face.

#### IV. 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 5mR/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 Isotope Warehouse, and the last set on the north side of the air lock leads to the Restricted 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.

#### V. Equipment Room

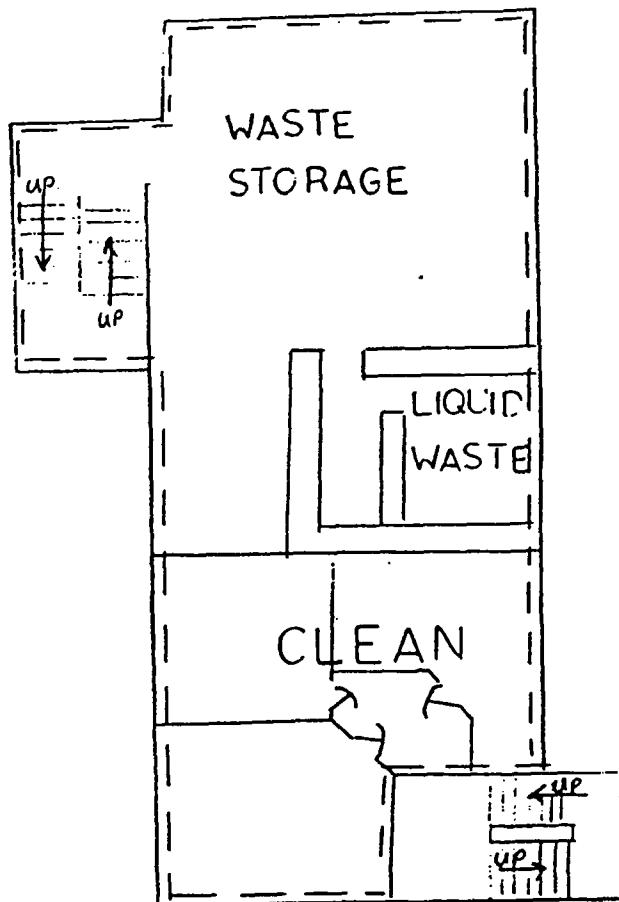
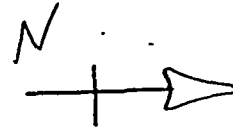
- ##### A.
- This room is directly above the Shielded Work Room. This room contains the heating and intake air fan as well as the air conditioners. The floor is shielded with two (2) feet of concrete. A Technical Operations Gamma Alarm, Model 492B (or equivalent) set at approximately 2mR/hr is mounted 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 (RSO) or designee. In addition, when the door is opened, a steady red light shows on the Master Alarm Panel.

CAUTION: Personnel are not permitted in this room when there is no signal white light or when there is a red light.

VI. Doors

- A. Only authorized personnel have access to keys to any Restricted Areas. Doors to Restricted 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 the 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 alarm monitoring company.

BASEMENT RESTRICTED AREA

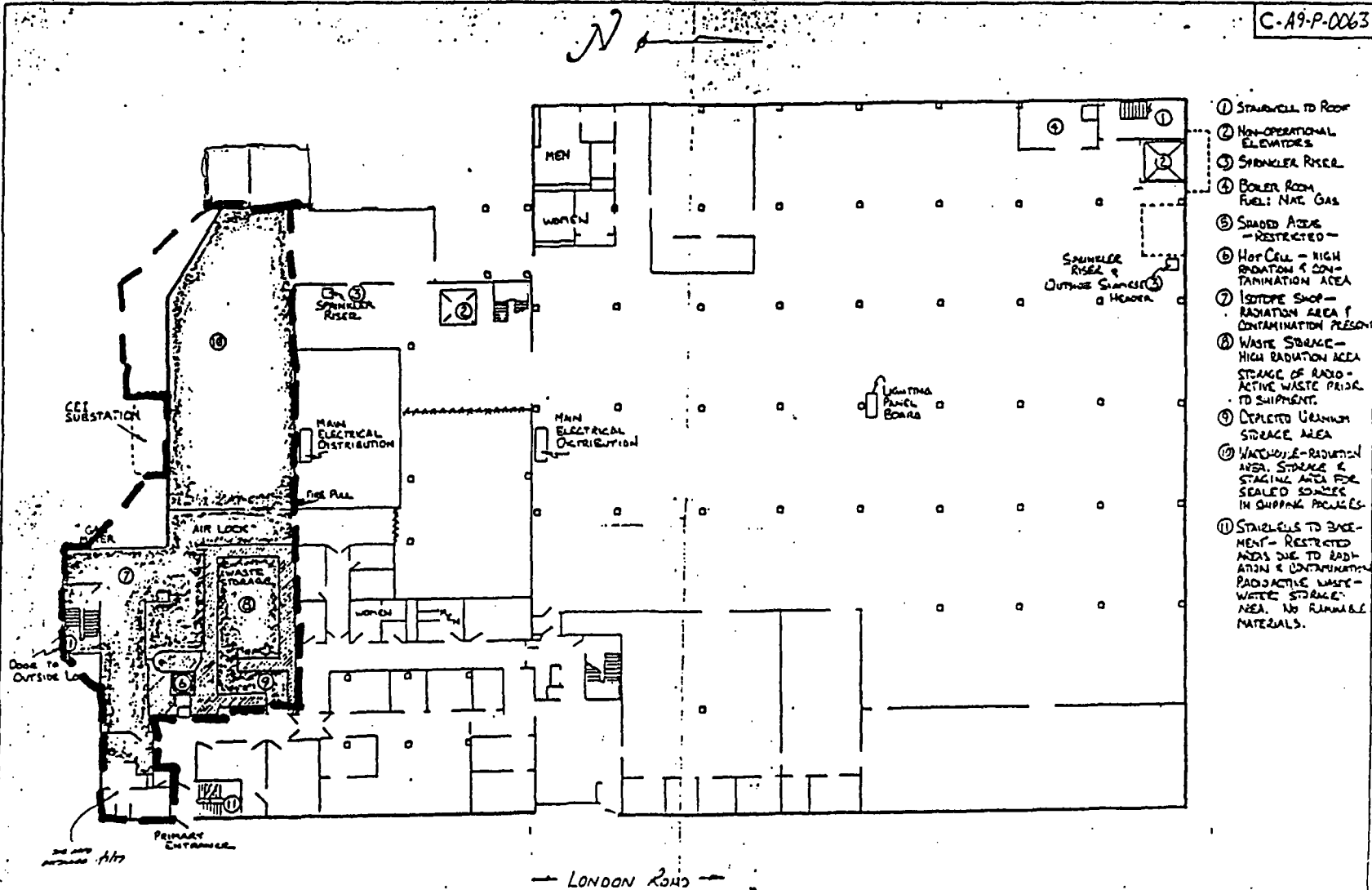


-- -- INDICATES RESTRICTED AREA  
CONTROLLED ACCESS

BASEMENT  
SCALE 1/16"

# FIRST FLOOR RESTRICTED AREA

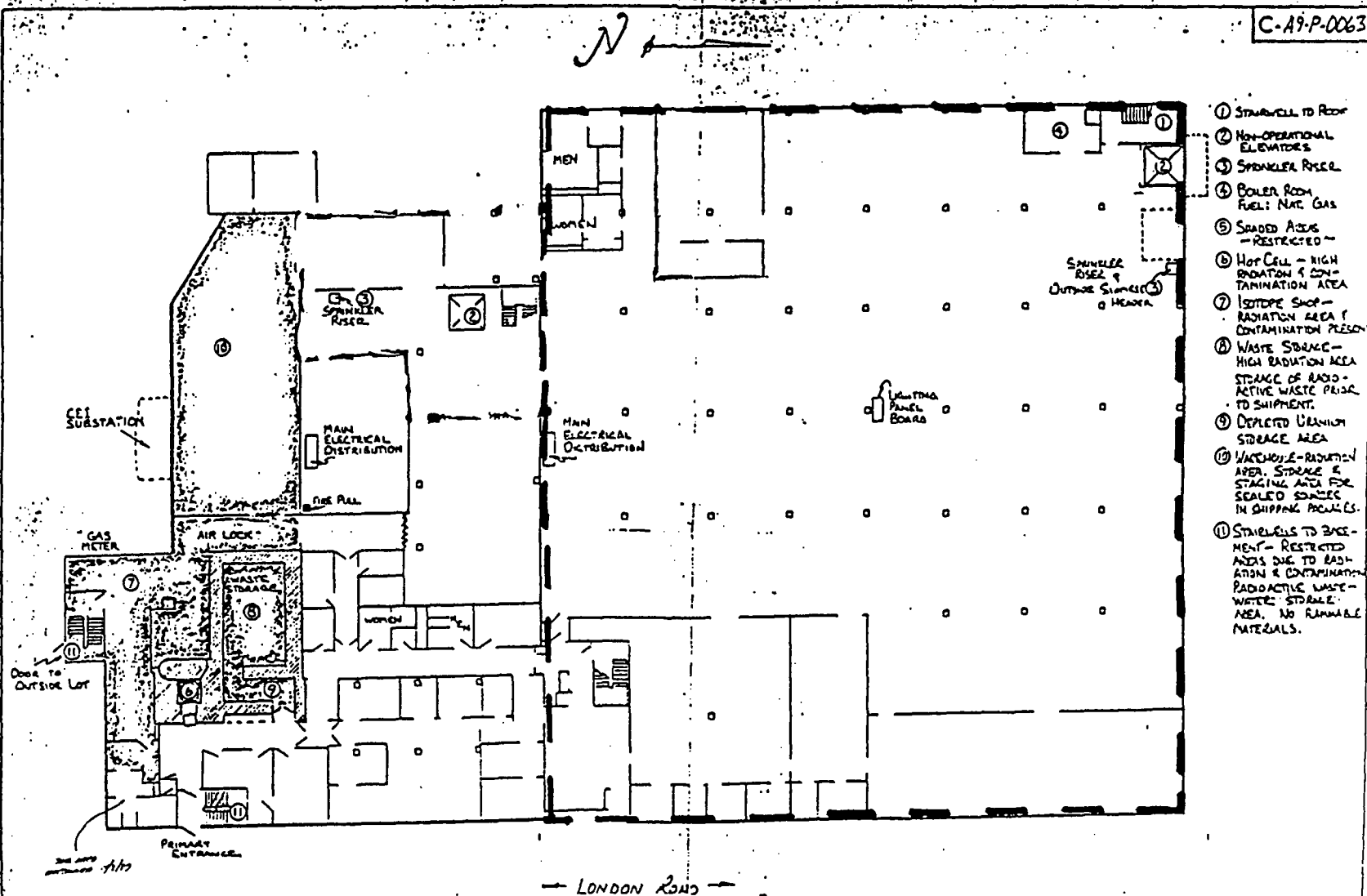
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# FIRST FLOOR UNRESTRICTED AREA

C-A9-P-0063

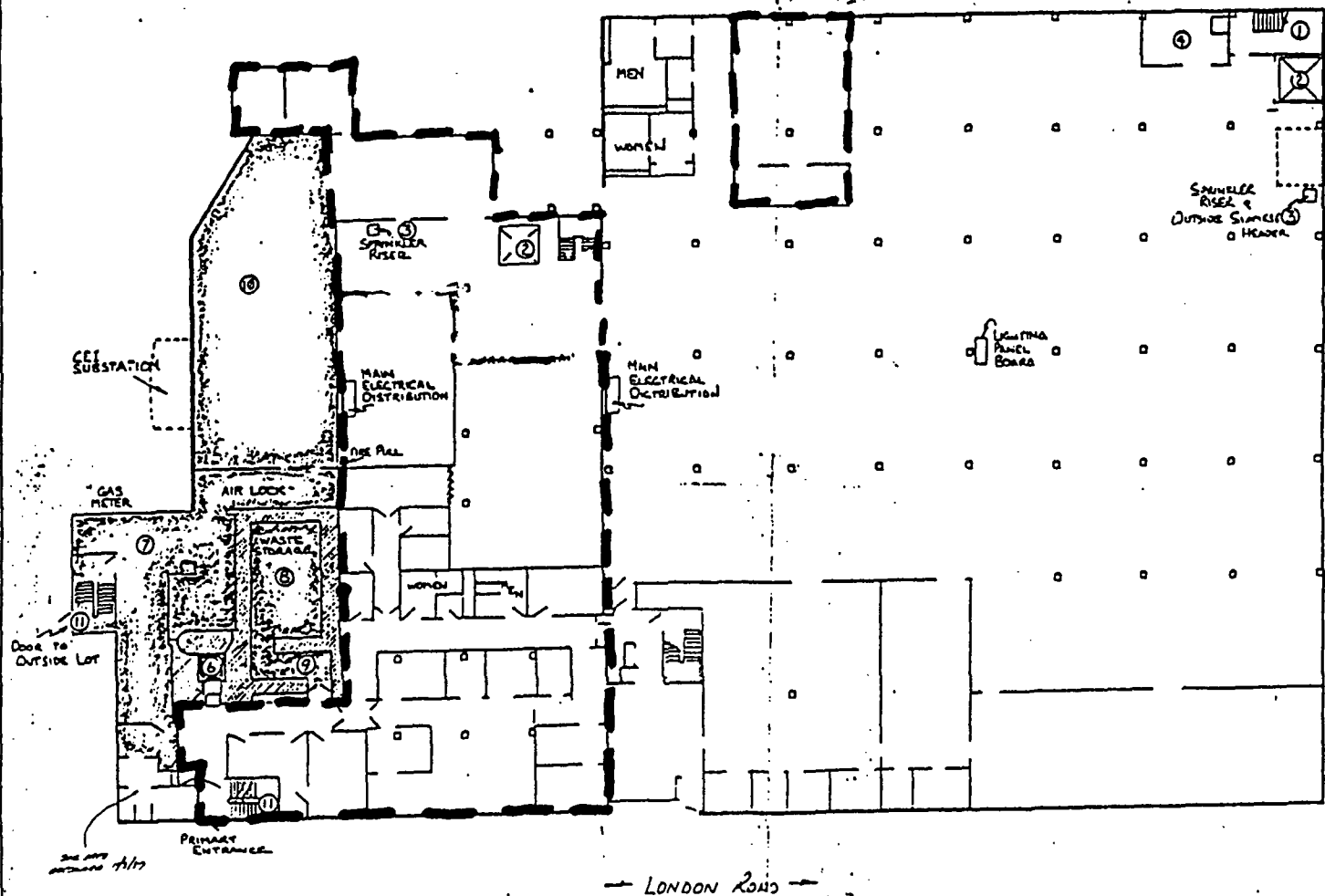


81

UNLESS NOTED • TOLERANCES ON ANGLES & DIMENSIONS ARE SHOWN IN DECIMALS • FRACTIONS • DIMENSIONS ARE SHOWN IN INCHES	
DATE	NAME
PROJECT	DESCRIPTION
BY	DATE
CHECKED	DATE
APPROVED	DATE
LONDON ROAD, 1ST FLOOR, 100-101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000	

# FIRST FLOOR CONTROLLED AREAS

C-A9-P-0063

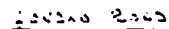


- ① STAIRWELL TO ROOF
- ② NON-OPERATIONAL ELEVATORS
- ③ SPRINKLER RISER
- ④ BOILER ROOM FUEL NAT. GAS
- ⑤ GRADED AREAS - RESTRICTED
- ⑥ HOT CELL - HIGH RADIATION & CONTAMINATION AREA
- ⑦ ISOTOPE SHOP - RADIATION AREA & CONTAMINATION PRESENT
- ⑧ WASTE STORAGE - HIGH RADIATION AREA STORAGE OF RADIOACTIVE WASTE PRIOR TO SHIPMENT
- ⑨ DEPLETED URANIUM STORAGE AREA
- ⑩ WAREHOUSE - RADIATION AREA STORAGE & STAGING AREA FOR SEALED SOURCES IN SHIPPING PACKAGES
- ⑪ STAIRWELLS TO BASEMENT - RESTRICTED AREAS DUE TO RADIATION & CONTAMINATION RADIOACTIVE WASTE - WASTE STORAGE AREA. NO FLAMMABLE MATERIALS.

LONDON ROAD

UNLESS NOTED - TOLERANCES ON ANGLES & DIMENSIONS ARE SHOWN IN DECIMALS & FRACTIONS	
TEXT ASSY NAME	LONDON ROAD 1ST FLOOR 1ST. FLOOR
	PLAN
	MATERIAL
	FINISH
	12/11/11 11/11/11 11/11/11 11/11/11





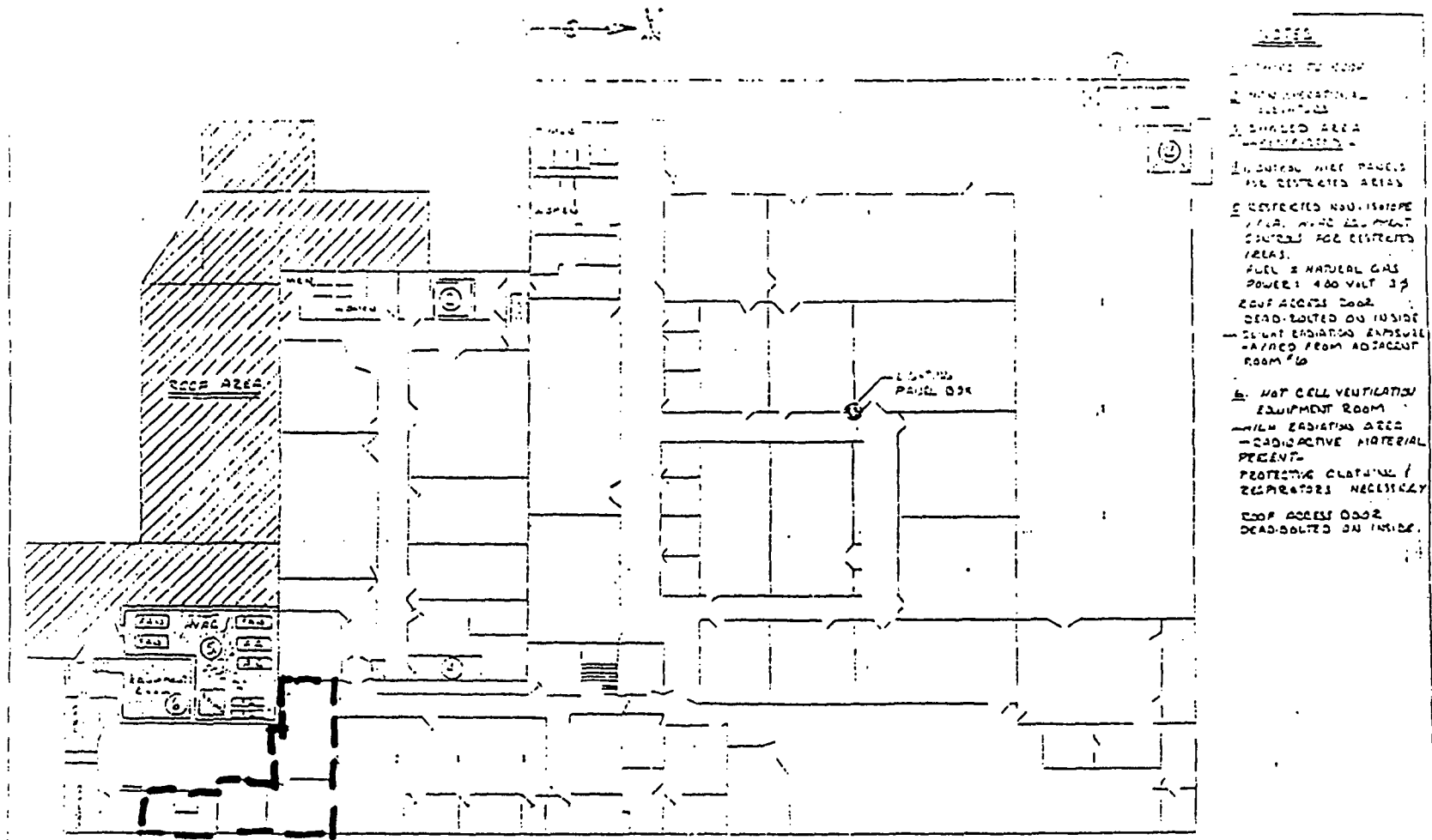
ADVANCED MEDICAL SYSTEMS, INC.  
GENERAL, OHIO 44001

SCALE 1/10" = 1"

C.A.9-P-0062

# SECOND FLOOR CONTROLLED AREA

21

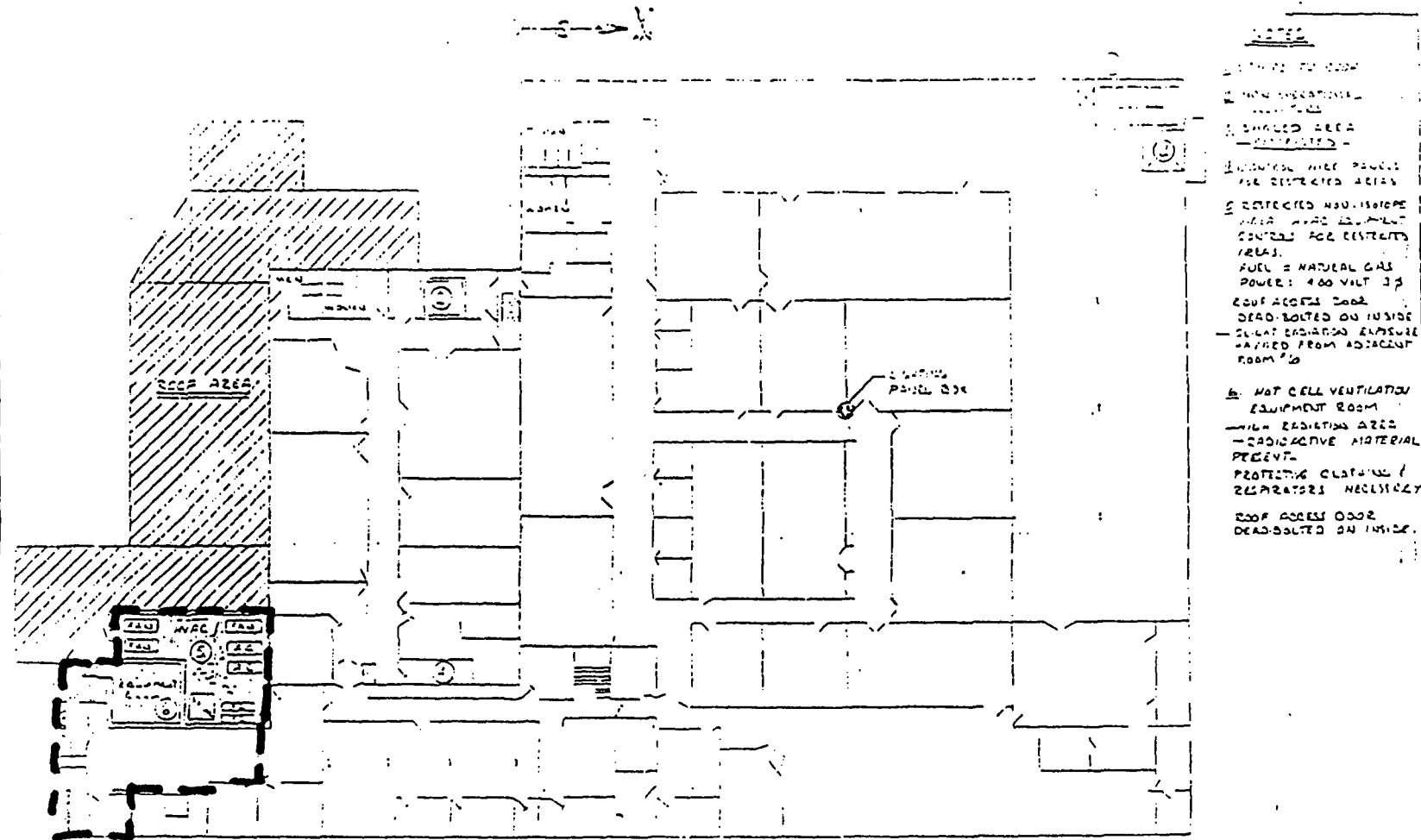


200300 2003

PROJECT NAME	ADVANCED MEDICAL SYSTEMS, INC.
PROJECT NO.	200300 2003
PROJECT LOCATION	GENEVA, OHIO 44041
PROJECT DESCRIPTION	PRE-EMERGENCY PLAN
PROJECT DATE	10/10/02
PROJECT STATUS	COMPLETED
PROJECT OWNER	ADVANCED MEDICAL SYSTEMS, INC.
PROJECT MANAGER	C. A. P. 0062
PROJECT ENGINEER	
PROJECT ARCHITECT	
PROJECT CONTRACTOR	
PROJECT SUBMITTER	
PROJECT REVIEWER	
PROJECT APPROVER	
PROJECT SIGNATURE	
PROJECT DATE	

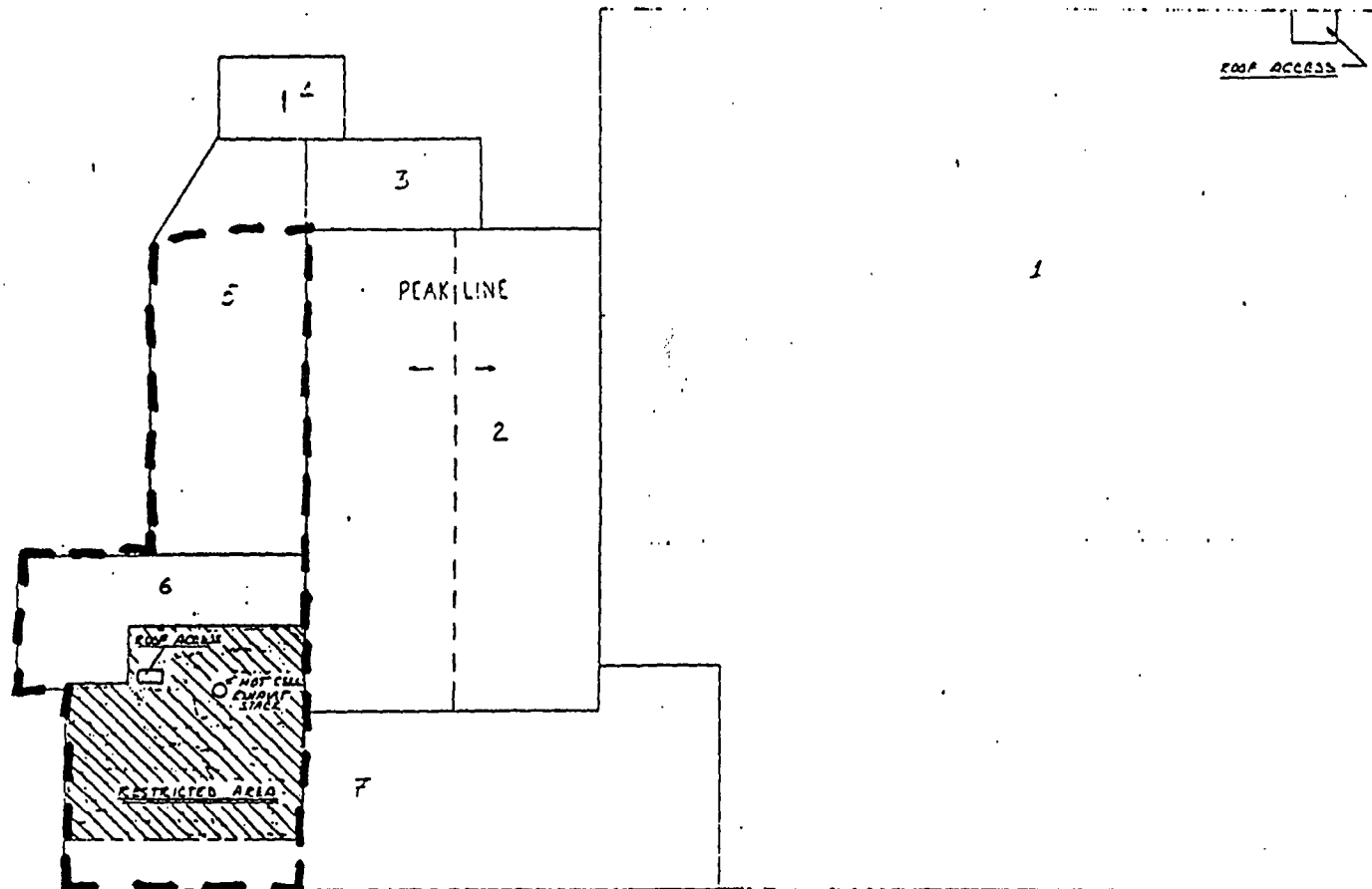
SECOND FLOOR RESTRICTED AREA

22



2020 2020

	INSTRUCTIONS TO BE FOLLOWED BY ALL PERSONS IN THE AREA OF THE EMERGENCY: 1. IF YOU ARE IN THE AREA OF THE EMERGENCY, STOP WHAT YOU ARE DOING AND GO TO THE EMERGENCY EXIT.
	EXIT ASSIGNED TO YOU: 1. EXIT 1 (DOOR 1) 2. EXIT 2 (DOOR 2) 3. EXIT 3 (DOOR 3) 4. EXIT 4 (DOOR 4) 5. EXIT 5 (DOOR 5) 6. EXIT 6 (DOOR 6) 7. EXIT 7 (DOOR 7) 8. EXIT 8 (DOOR 8) 9. EXIT 9 (DOOR 9) 10. EXIT 10 (DOOR 10) 11. EXIT 11 (DOOR 11) 12. EXIT 12 (DOOR 12) 13. EXIT 13 (DOOR 13) 14. EXIT 14 (DOOR 14) 15. EXIT 15 (DOOR 15) 16. EXIT 16 (DOOR 16) 17. EXIT 17 (DOOR 17) 18. EXIT 18 (DOOR 18) 19. EXIT 19 (DOOR 19) 20. EXIT 20 (DOOR 20) 21. EXIT 21 (DOOR 21) 22. EXIT 22 (DOOR 22) 23. EXIT 23 (DOOR 23) 24. EXIT 24 (DOOR 24) 25. EXIT 25 (DOOR 25) 26. EXIT 26 (DOOR 26) 27. EXIT 27 (DOOR 27) 28. EXIT 28 (DOOR 28) 29. EXIT 29 (DOOR 29) 30. EXIT 30 (DOOR 30) 31. EXIT 31 (DOOR 31) 32. EXIT 32 (DOOR 32) 33. EXIT 33 (DOOR 33) 34. EXIT 34 (DOOR 34) 35. EXIT 35 (DOOR 35) 36. EXIT 36 (DOOR 36) 37. EXIT 37 (DOOR 37) 38. EXIT 38 (DOOR 38) 39. EXIT 39 (DOOR 39) 40. EXIT 40 (DOOR 40) 41. EXIT 41 (DOOR 41) 42. EXIT 42 (DOOR 42) 43. EXIT 43 (DOOR 43) 44. EXIT 44 (DOOR 44) 45. EXIT 45 (DOOR 45) 46. EXIT 46 (DOOR 46) 47. EXIT 47 (DOOR 47) 48. EXIT 48 (DOOR 48) 49. EXIT 49 (DOOR 49) 50. EXIT 50 (DOOR 50) 51. EXIT 51 (DOOR 51) 52. EXIT 52 (DOOR 52) 53. EXIT 53 (DOOR 53) 54. EXIT 54 (DOOR 54) 55. EXIT 55 (DOOR 55) 56. EXIT 56 (DOOR 56) 57. EXIT 57 (DOOR 57) 58. EXIT 58 (DOOR 58) 59. EXIT 59 (DOOR 59) 60. EXIT 60 (DOOR 60) 61. EXIT 61 (DOOR 61) 62. EXIT 62 (DOOR 62) 63. EXIT 63 (DOOR 63) 64. EXIT 64 (DOOR 64) 65. EXIT 65 (DOOR 65) 66. EXIT 66 (DOOR 66) 67. EXIT 67 (DOOR 67) 68. EXIT 68 (DOOR 68) 69. EXIT 69 (DOOR 69) 70. EXIT 70 (DOOR 70) 71. EXIT 71 (DOOR 71) 72. EXIT 72 (DOOR 72) 73. EXIT 73 (DOOR 73) 74. EXIT 74 (DOOR 74) 75. EXIT 75 (DOOR 75) 76. EXIT 76 (DOOR 76) 77. EXIT 77 (DOOR 77) 78. EXIT 78 (DOOR 78) 79. EXIT 79 (DOOR 79) 80. EXIT 80 (DOOR 80) 81. EXIT 81 (DOOR 81) 82. EXIT 82 (DOOR 82) 83. EXIT 83 (DOOR 83) 84. EXIT 84 (DOOR 84) 85. EXIT 85 (DOOR 85) 86. EXIT 86 (DOOR 86) 87. EXIT 87 (DOOR 87) 88. EXIT 88 (DOOR 88) 89. EXIT 89 (DOOR 89) 90. EXIT 90 (DOOR 90) 91. EXIT 91 (DOOR 91) 92. EXIT 92 (DOOR 92) 93. EXIT 93 (DOOR 93) 94. EXIT 94 (DOOR 94) 95. EXIT 95 (DOOR 95) 96. EXIT 96 (DOOR 96) 97. EXIT 97 (DOOR 97) 98. EXIT 98 (DOOR 98) 99. EXIT 99 (DOOR 99) 100. EXIT 100 (DOOR 100)
	PRE EMERGENCY PLAN
	WATER PUMP
	EMERGENCY
	DOOR SWELL 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.
	ADVANCED MEDICAL SYSTEMS, INC. GENEVA, OHIO 44041
	SCALE 1/4" = 1'-0" DIA. C-29-P-0062



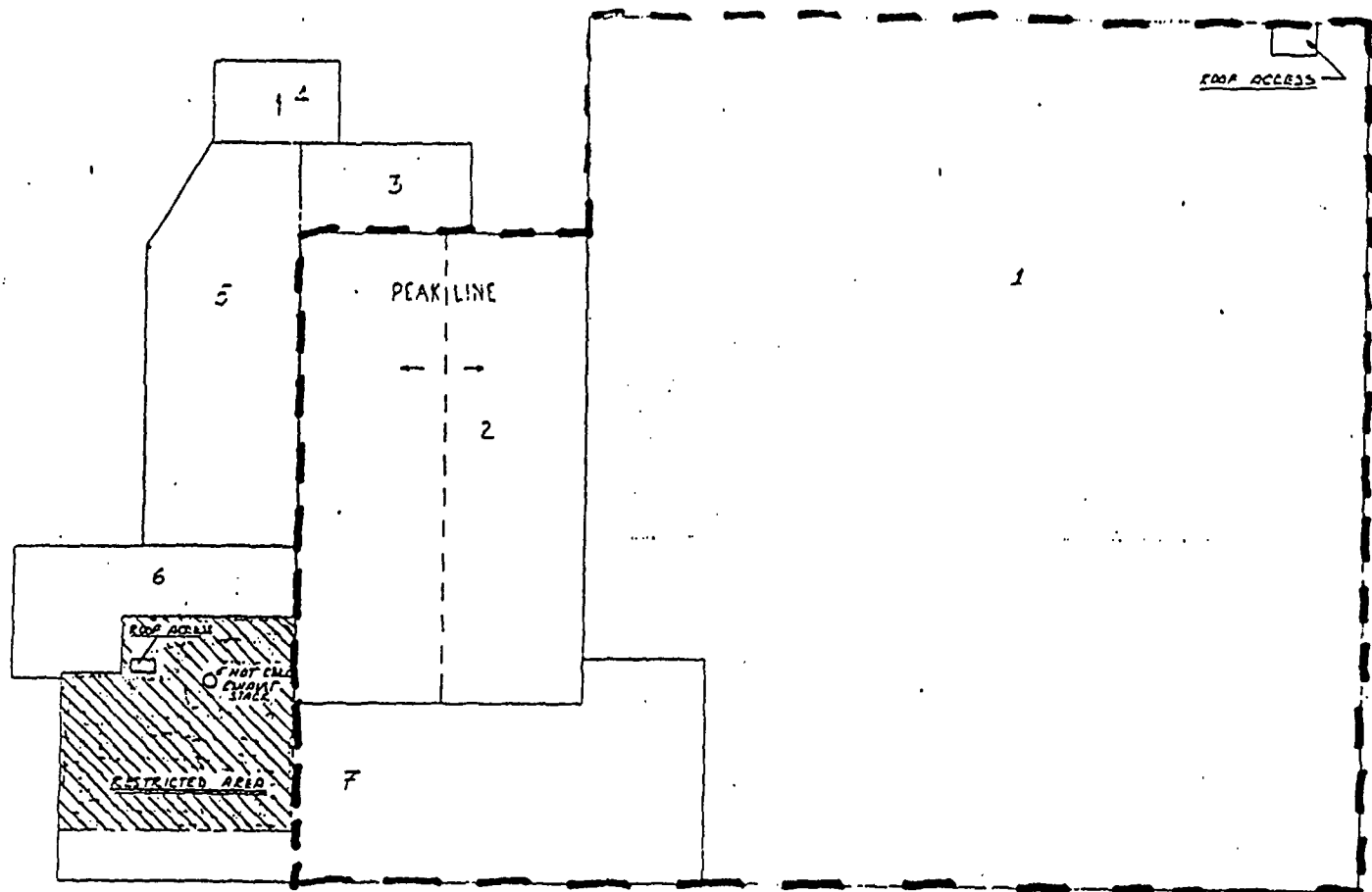
NO.	AGE	TYPE	DECK	COVER	REPAIRS	RECOVERED
1	1982	PLAT.	CONCRETE	ASPH/FLT	1982	
2	1982	GAGE	WIND	CL. ASPH.	1982	
3	1982	PLAT.	STEEL	ASPH/FLT		
4	1982	PLAT.	STEEL	ASPH/FLT		
5	1982	PLAT.	STEEL	ASPH/FLT	1982	
6	1982	PLAT.	STEEL	ASPH/FLT		
7	1982	PLAT.	CONCRETE	ASPH/FLT		

UNLESS NOTED - TOLERANCES ON ANGLES & DECIMALS & FRACTIONS & DIMENSIONS ARE BEFORE APPLYING FINISH	
PROJECT NAME	LONDON ROAD FACILITY
PROJECT NO.	10000
MATERIAL	
FINISH	
DATE	10/1/82
APPROVED	[Signature]
ADVANCED MEDICAL SYSTEMS, INC. GENEVA, OHIO 44041	
SCALE	1/4" = 1'-0"
C-49-R-5518	

# ROOF UNRECOVERED AREA

24

07/10/75

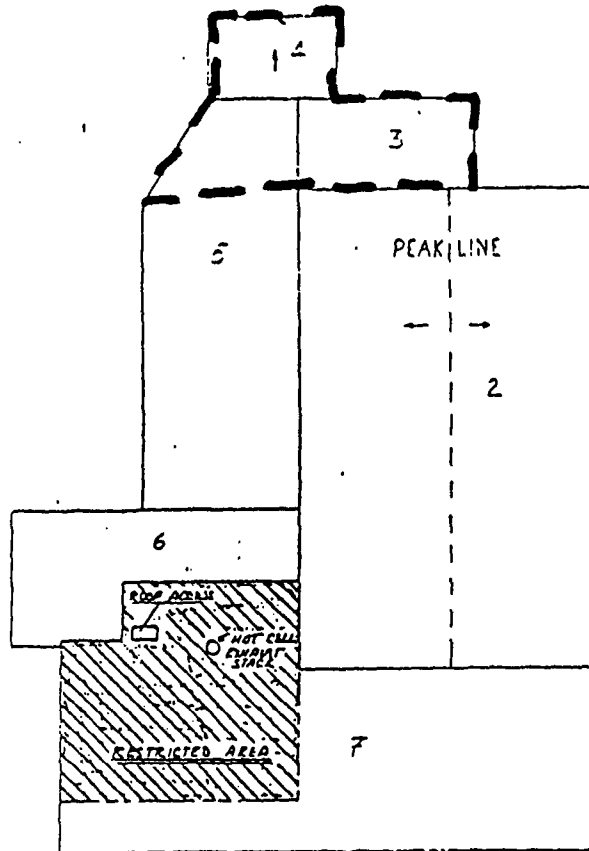


ROOF	AGE	TYPE	DECK	COVER	REPAIRS	RECOVERED
1	1964	FLAT	CONCRETE	200' x 500'	1983	
2	1958	GABLE	WOOD	21' x 21'	1983	
3	1960	FLAT	STEEL	APPROX 100'		
4	1960	FLAT	STEEL	" "		
5	1958	FLAT	STEEL	APPROX 100'	1981	
6	1958	FLAT	STEEL	APPROX 100'		
7	1958	FLAT	CONCRETE	APPROX 100'		

UNLESS NOTED • TOLERANCES ON ANGLES • 0 BREAK ALL SHARP EDGES	
DECIMALS • 0 FRACTIONS • DIMENSIONS ARE BEFORE APPLYING FINISH	
PROJECT ASST	NAME LONDON ROAD FACILITY
	PCCC LAYOUT
	MATERIAL
FINISH	
DATE 07/10/75	APP'D S. G. R.
BY J. HALLER	ADVANCED MEDICAL SYSTEMS, INC.
REVISION	GENEVA, OHIO 44041
DATE	SCALE 1/4" = 1'-0"
	C-99-R-2018

# ROOF CONTROLLED AREA

25



NO.	AGE	TYPE	DECK	COVER	REPAIRS	RECOVERED
1	1984	FLAT	CONCRETE	ASPH/FLY	1983	
2	1984	GABLE	WIND	FLY/ASPH	1983	
3	1980	FLAT	STEEL	ASPH/FLY		
4	1960	FLAT	STEEL	" "		
5	1980	FLAT	STEEL	ASPH/FLY	1981	
6	1980	FLAT	STEEL	ASPH		
7	1980	FLAT	CONCRETE	ASPH/FLY		

UNLESS NOTED • TOLERANCES ON ANGLES •		• BREAK ALL SHARP EDGES	
DECIMALS •		• FRACTIONS •	
NEXT ASSY		NAME	
		LONDON ROAD FACILITY	
		ROOF LAYOUT	
		MATERIAL	
		FINISH	
		DATE	
		SCALE 1/4" = 1'-0"	
		C-AP-R-0018	

ADVANCED MEDICAL SYSTEMS, INC.  
GENEVA, OHIO 44041

5. Radioactive Material

6. <u>Byproduct, source, and/or special nuclear material</u>	7. <u>Chemical and/or physical form</u>	8. <u>CURRENT</u> - Maximum amount that licensee may possess at any one time under this license	<u>REVISED</u> - Maximum amount that licensee may possess at any one time under this license	<u>USE</u>	CHANGE IN MAXIMUM AMOUNT LICENSEE MAY POSSESS <u>Increase (Decrease)</u>	<u>REASON FOR CHANGE</u>
A. Cobalt-60	A. Solid Metal (bulk)	A. 150,000 curies	23,000 curies	Storage incident to sale or transfer to authorized third party	(127,000) curies	AMS never possessed current maximum possession amount. Revised limit accurately represents current inventory. "Bulk" cobalt will not increase as AMS will not manufacture sources in the future. Company has arrangements with authorized third party to take possession of bulk cobalt.
B. Cobalt-60	B. Sealed sources	B. 135,000 curies	75,000 curies	Storage incident to sale or transfer to authorized third party	60,000 curies	AMS never possessed current maximum possession amount. Revised limit accurately represents current inventory and projected purchases from ongoing sealed source purchases for resale. The Company has arrangements with authorized third parties to take possession of approximately 47,000 curies.
C. Cesium-137	C. Sealed sources	C. 40,000 curies	665 curies	For use in devices; storage incident to waste disposal, discharge and/or decommissioning	(39,335) curies	Sealed sources transferred to authorized third party. Remaining sources are in a device and in cell. AMS will not handle Cesium sources for resale in the future.
D. Depleted uranium	D. Nickel plated	D. 4,040 kilograms	4,040 kilograms	Component for shielding in Advanced Medical Systems and Picker teletherapy and radiography units	N/A	N/A
E. Cobalt-60	E. Sealed sources	E. 15,000 curies	-0-	N/A	(15,000) curies	
F. Cobalt-60	F. Sealed sources	F. 15 millicuries	15 millicuries	For use in devices (Tech Ops)	N/A	N/A
G. Cobalt-60 Waste	G. RAD Waste in solid and liquid form	G. -0-	40 curies	Storage incident to waste disposal, discharge and/or decommissioning	40 curies	NRC has requested RAD Waste be a separate line item. Current waste is estimated at 29 curies.