

Advanced Medical Systems, Inc.

ALARA PROGRAM

Procedure: RSP-005

Revision No.: 000

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Date: December 28, 1995

Approved by (Vice President):

Approved by (RSO):

Approved by (RSC Chair):

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1 PURPOSE

This procedure describes the Advanced Medical Systems, Inc. (AMS) ALARA (as low as reasonably achievable) program regarding exposures to ionizing radiation and radioactive material. This procedure is applicable to all operations, activities, and personnel at the London Road facility.

2 SCOPE

This procedure applies to all AMS employees, visitors, and contractors performing work for AMS at the London Road facility.

3 REFERENCES

- 3.1 Title 10, Code of Federal Regulations, Part 20, "Standards for Protection Against Radiation".
- 3.2 U. S. Nuclear Regulatory Commission Radioactive Material License Number 34-19089-01.
- 3.3 U. S. Nuclear Regulatory Commission, Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable", 1982.
- 3.4 U. S. Nuclear Regulatory Commission, Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Is Reasonably Achievable", 1977.
- 3.5 Advanced Medical Systems, Inc. Radiation Safety Procedure No. RSP-001, "Radiation Protection Program Plan"
- 3.6 Advanced Medical Systems, Inc., Radiation Safety Procedure No. RSP-004, "Radiation Protection Records".
- 3.7 Advanced Medical Systems, Inc., Radiation Safety Procedure No. RSP-010, "Exposure Control".
- 3.8 Advanced Medical Systems, Inc., Radiation Safety Procedure No. RSP-017, "Stop Work Authority"

4 DEFINITIONS

The definition of terms used in this RSP that may not be commonly understood shall be found in RSP-002, "Definitions".

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5 PROCEDURE

5.1 Responsibilities

5.1.1 The Vice President shall:

- 5.1.1.1 Ensure that facility personnel are aware and supportive of management's commitment to keep occupational radiation exposures ALARA.
- 5.1.1.2 Ensure that revisions to operating and maintenance procedures, and modifications to equipment and facilities are made if they will substantially reduce exposures at a reasonable cost.
- 5.1.1.3 Appoint and empower members of the Radiation Safety Committee (RSC).
- 5.1.1.4 Ensure that the resources needed to achieve ALARA goals are made available to the RSO and the RSC.

5.1.2 The Radiation Safety Officer (RSO) shall:

- 5.1.2.1 Ensure performance of radiological surveys in order to provide comprehensive and current information on the radiological status of the London Road facility and its equipment.
- 5.1.2.2 Ensure that posting and labeling is appropriate and commensurate with the hazards.
- 5.1.2.3 Provide appropriate radiation protection information on Radiation Work Permits.
- 5.1.2.4 Ensure radiation monitoring and surveillance instruments are functional, calibrated, and available in adequate quantities to perform both routine and emergency tasks.
- 5.1.2.5 Serve as a permanent member of the RSC.
- 5.1.2.6 Determine the need for and provide a listing of ALARA goals to the RSC for consideration.

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- 5.1.2.7 Participate in design reviews for facilities and equipment that may affect potential radiation exposures.
 - 5.1.2.8 Identify locations, operations, and conditions that have the potential for causing significant exposures to radiation;
 - 5.1.2.9 Initiate and implement an exposure control program
 - 5.1.2.10 Develop plans, procedures and methods for keeping radiation exposures of AMS personnel ALARA;
 - 5.1.2.11 Review, comment on, and recommend changes in job procedures to maintain exposures ALARA.
 - 5.1.2.12 Maintain and exercise stop work authority as described in RSP-017.
- 5.1.3 The Radiation Safety Committee (RSC) shall
- 5.1.3.1 Ensure that a corporate program that integrates management philosophy and regulatory requirements is established, with specific goals and objectives for implementation included.
 - 5.1.3.2 Ensure that measurement system results are reviewed on a periodic basis and that corrective actions are taken when attainment of specific objectives appears to be jeopardized.
 - 5.1.3.3 Ensure that the authority for providing procedures and practices by which the specific goals and objectives will be achieved is delegated.
 - 5.1.3.4 Review and approve ALARA goals at a frequency of not less than once per calendar quarter.
 - 5.1.3.5 Support the RSO in formulating and implementing the program for maintaining radiation exposures ALARA.
- 5.1.4 AMS personnel shall:
- 5.1.4.1 Follow the basic radiation protection principles of "time", "distance", "shielding" and "contamination control" whenever possible.
 - 5.1.4.2 Comply with instructions contained on Radiation Work Permits or given by the RSO.
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5.1.4.3 Obtain special briefings pursuant to RSP-008 when advised by the RSO.

5.1.4.4 Comply with the listing of individual worker responsibilities for ALARA (Attachment 1)

5.2 ALARA Objectives at AMS

5.2.1 A program for maintaining occupational radiation doses ALARA shall be established.

5.2.2 Facilities and select equipment shall be designed with consideration for the ALARA concept;

5.2.3 Radiation controls shall be established in programs, plans, and procedures.

5.2.4 Supporting equipment, instrumentation, and facilities shall be made available.

5.3 Program for Maintaining Personnel Radiation Doses ALARA

5.3.1 A formal management policy and commitment to ALARA shall be established (See Attachment 2).

5.3.2 The policy should make clear that all personnel shall be responsible for ensuring that the work they perform is in accordance with the ALARA Policy.

5.3.3 Responsibility and authority for the programs shall be clearly delegated by the Vice President.

5.3.4 A training program in the fundamentals of radiation protection and ALARA procedures shall be established.

Note: AMS has established an effective program which addresses these topics. The program is described in RSP-007.

5.4 Designing Facilities and Selecting Equipment Using ALARA Concepts

5.4.1 Whenever applicable, the design of facilities and selection of equipment shall be based upon the concept of ALARA.

5.4.2 These reviews shall be conducted by the RSC.

5.4.3 Reviews shall be based upon the guidance of Regulatory Guide 8.8, Section 2.

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5.5 Establishing Radiation Controls

5.5.1 Radiation controls shall be established for work operations to ensure radiation exposures are ALARA, and should be included in:

- 5.5.1.1 Work planning and preparation,
- 5.5.1.2 Actual work operations, and
- 5.5.1.3 Post operation reviews.

5.5.2 The specific requirements for implementing radiation controls shall be described in job-specific procedures and/or work plans.

5.6 Supporting Equipment, Instrumentation, and Facilities

5.6.1 Appropriate support equipment, instrumentation, and facilities shall be provided for all AMS work involving ionizing radiation.

5.6.2 Support may include:

- 5.6.2.1 A sample counting area
- 5.6.2.2 Radiation survey instrumentation (portable and non-portable)
- 5.6.2.3 Personnel monitoring devices
- 5.6.2.4 Protective clothing
- 5.6.2.5 Respiratory protection
- 5.6.2.6 Decontamination areas for personnel and equipment
- 5.6.2.7 Change rooms
- 5.6.2.8 Communication equipment
- 5.6.2.9 Office space and equipment

5.7 ALARA Goals

5.7.1 The RSC shall establish radiological goals to direct all levels of management and workers at AMS toward improvement in radiological performance.

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5.7.2 ALARA goals, as necessary, shall be established, reviewed, and documented at least once per calendar quarter.

Note: Examples of alara goals are square footage of contaminated areas, maximum individual dose for employees, and maximum dose to a member of the general population.

5.7.3 The following steps for establishing an ALARA goal shall be included in the goal-setting process:

5.7.3.1 The RSC, with input from the RSO, shall determine which areas need improvement.

5.7.3.2 The RSC shall:

5.7.3.2.1 Evaluate the existing condition(s), root cause(s), and corrective action(s).

5.7.3.2.2 Determine the improvement needed and propose the goal.

5.7.3.2.3 Periodically review performance in achieving the goal and modify the action plan, if necessary.

5.7.3.3 The RSO shall document radiological goals, their status, and performance, and shall present them to the RSC at planned and periodic meetings.

6 EXEMPTION PROVISIONS

Variances and exceptions to the requirements of this Radiation Safety Procedure shall be permitted pursuant to the written authorization of the RSO and the Vice President.

7 DOCUMENTATION

7.1 All records pertinent to this procedure shall be maintained pursuant to RSP-004.

7.2 A listing of annual radiological goals, and method/date of closure shall be maintained.

7.3 The minutes of the RSC meetings shall reflect RSC action in establishing and monitoring ALARA goals.

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8 ATTACHMENTS

8.1 Attachment 1 - Individual Worker's Responsibilities for ALARA

8.2 Attachment 2 - Management Policy Statement on Radiation Protection

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ATTACHMENT 1 INDIVIDUAL WORKER'S RESPONSIBILITIES FOR ALARA

1. Obey promptly "stop work" and "evacuate" instructions issued by RSO.
2. Follow all procedures and instructions.
3. Wear monitoring devices as required by procedures and instructions, signs, or the RSO.
4. Keep track of your own radiation dose status.
5. Remain in as low a radiation area as practical to accomplish work.
6. Leave radiation areas or airborne radioactivity areas when not working, and use "wait areas" when designated.
7. **DO NOT** smoke, eat, or drink in restricted areas, or bring smoking, eating, or drinking materials into such areas.
8. Wear protective clothing and respirators properly and whenever required by signs, RWPs, the RSO, procedures and instructions.
9. Remove protective clothing and respirators properly to minimize spread of contamination.
10. Frisk yourself or be frisked for contamination when leaving contamination areas.
11. Minimize the spread of a known or possible radioactivity spill and notify the RSO promptly.
12. Avoid unnecessary contact with contaminated surfaces, including your clothing (if contaminated), tools and other equipment.
13. If directed by the RSO, place contaminated tools, equipment, and solid waste on disposable surfaces (e.g., sheet plastic) when not in use, and inside plastic bags when work is finished.
14. Minimize the amount of materials brought into contaminated areas.
15. Report the presence of treated or open wounds to the RSO before working in areas where radioactive contamination exists. Exit the area promptly if a wound occurs while in such an area.
16. Report promptly unsafe or noncompliance situations to the RSO.
17. Report prior or concurrent occupational radiation exposure to the RSO.
18. Report pregnancy in accordance with AMS procedures and instructions.

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ATTACHMENT 2 MANAGEMENT POLICY STATEMENT ON RADIATION PROTECTION

Advanced Medical Systems, Inc. (AMS) has the responsibility for providing a work-place environment in which employees, visitors and contractors are adequately protected from hazards, including the hazards associated with exposure to radiation and radioactive material. At AMS, some individuals, by nature of their work, will be exposed to these hazards to varying degrees.

While the majority of occupational radiation exposures are low, all exposures are assumed to entail some risk to the employee. Therefore, AMS has adopted the following three principles to govern all work activities with the potential for exposure to radiation or radioactive materials:

1. No activity or operation will be conducted unless its performance will produce a net positive benefit.
2. All radiation exposures will be kept as low as reasonably achievable (ALARA) considering economic and societal costs.
3. No individual will receive radiation doses in excess of federal limits.

The first principle is self-explanatory. AMS personnel will not be exposed to radiological hazards unless there is some benefit to be gained from the activity involving the exposure. The third principle is also self-explanatory. Federal authorities and AMS management have identified an upper limit on radiation doses to which workers may be exposed without incurring unacceptable risks. The second principle, ALARA, is the basis for much of our radiation protection program, other than demonstrating compliance with regulations. ALARA is an operating policy that is integrated into each of our Radiation Safety Procedures.

Incorporated into the AMS radiation protection program plan are the following goals:

1. Individual exposures will be ALARA.
2. Collective exposures will be ALARA.
3. Measures to keep radiation exposures ALARA will not result in an increased total risk to workers from other hazards.

The objective of these goals is to minimize the total risk to our employees. Working at AMS should not expose our workers to greater risk than is incurred by workers in other "safe" industries of occupations. These risks should also be no greater than those commonly accepted by each of us in our daily lives.

The AMS radiation protection policy can only be effective through the concern and commitment of employees and management and must be integrated into each aspect of our operations. As individuals, each of us must assume the responsibility to maintain our radiation exposures ALARA. Each supervisor must also

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assume additional responsibilities. They shall ensure that potential radiation hazards are assessed before workers are exposed to them, that measures to address these hazards are documented in appropriate health and safety plans, and that workers have adequate training to understand the hazards and protective measures. Supervisors shall maintain continual oversight and evaluate means by which radiation exposures to their employees can be minimized. They shall institute programs of exposure control, and encourage employee participation in ALARA activities.

In support of the employees and supervisors, AMS will maintain an effective radiation protection program designed to comply with our three principles, and a radiation protection staff of qualified personnel. Each AMS employee should become familiar with the procedures for radiation safety. This will ensure that all of our workday activities are conducted according to our three radiation protection principles and that we will meet our ALARA goals.

David Cesar

Vice President and Treasurer
