

Management System: Radiological Protection		
Program Description: Radiological Protection Program Description		
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Introduction

This Radiological Protection program description supports Oak Ridge National Laboratory's (ORNL's) agenda for scientific and operational excellence while performing radiological work. The program is specifically designed to meet the requirements of Title 10 Code of Federal Regulations Part 835, [Occupational Radiation Protection](#) (10 CFR 835), in establishing radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE activities. Individuals responsible for developing and implementing measures necessary for ensuring compliance with the requirements of 10 CFR 835 shall have the appropriate education, training, and skills to discharge these responsibilities.

Program Elements

1. Radiological Protection Program Submission, Approval, and Implementation

ORNL activities are conducted in compliance with a documented Radiation Protection Program (RPP) as approved by DOE.

- A. The RPP is commensurate with the nature of the activities performed and includes formal plans and measures for applying the ALARA process to occupational exposure.
- B. The RPP specifies the existing and/or anticipated tasks that are intended to be within the scope of the RPP.
- C. Any task outside the scope of the RPP is not initiated until an update of the RPP is approved by DOE.
- D. The content of the RPP addresses, but is not necessarily limited to, each requirement in 10 CFR 835.

- E. The RPP include plans, schedules, and other measures for achieving compliance with 10 CFR 835.
- F. Compliance with amendments to 10 CFR 835 is achieved no later than 180 days following approval of the revised RPP by DOE, unless otherwise specified by the Rule.
- G. An update of the RPP is submitted to DOE:
 - 1. Whenever a change or addition to the RPP is made.
 - 2. Prior to the initiation of a task not within the scope of the RPP.
 - 3. Within 180 days of the effective date of any modifications to 10 CFR 835, unless otherwise specified by the Rule.
- H. Changes, additions, or updates to the RPP may become effective without prior DOE approval only if the changes do not decrease the effectiveness of the RPP and the RPP, as changed, continues to meet the requirements of 10 CFR 835.
- I. Proposed changes that decrease the effectiveness of the RPP shall not be implemented without submittal to and approval by DOE.
- J. An update to the RPP shall be considered approved 180 days after its submission unless rejected by DOE at an earlier date.

2. Radiological Procedures

The subject areas and procedures in the Radiological Protection Management System implement the requirements for the conduct of radiological work at ORNL and do not apply to: background radiation; radiation doses received as a patient for the purposes of medical diagnosis or therapy; radiation doses received from participation as a subject in medical research programs; or ORNL employees working on non-ORNL managed projects. Other radiological procedures are found in the internal procedures of the Nuclear and Radiological Protection Division (NRPD).

- A. These procedures reflect ORNL's positions and views on the best courses of action currently available in the area of radiological controls.
- B. These procedures are intended to be consistent with all relevant statutory and regulatory requirements and policies and are commensurate with the radiological hazard created by the activity and consistent with the education, training, and skills of the individuals exposed to those hazards.
- C. Requirements of these procedures pertain to radiological protection and may not be all of the actions necessary to protect health and safety.
- D. Requirements of these procedures may be suspended by ORNL emergency procedures.
- E. Where specific requirements are not addressed directly in these procedures, references will be made to the organization or group responsible for that requirement.
- F. The contents of these procedures are the responsibility of the NRPD.
- G. The radiological quantities used in these procedures shall be in units of the curie, rad, or rem, including multiples and subdivisions of these units.
- H. Requirements are reflected in the "steps" in the procedures within subject areas, "shoulds" are contained in notes and guidelines.
- I. The method for requesting an SBMS variance to the procedural steps may be found in the procedure [SBMS Variance Requests](#) in the subject area [SBMS Documents - New and Revised](#).

3. Suspending Radiological Work

Note: Stop work authority is defined in the subject area [Stop/Suspend Work](#).

- A. Every worker has the authority and the responsibility to suspend radiological work activities for any of the following reasons:
 - 1. inadequate radiological controls,
 - 2. radiological controls not being implemented,
 - 3. radiological control hold point not being satisfied, or
 - 4. any imminent danger associated with the work activity.

- B. Upon identification of such concerns, workers immediately suspend work and report the concern to line supervision or to the NRPD as per this procedure.
- C. Once radiological work has been suspended, it shall not be resumed until line management and radiological workers are satisfied that radiological control has been reestablished.

4. Interaction with Other Prime Contractors

Other DOE prime contractors performing radiological work at ORNL will be responsible for implementing their own radiation protection program unless the other prime contractors have an approved Memorandum of Understanding or other approved document with the ORNL NRPD.

5. Functional Element Reviews

The NRPD ensures that internal audits of the radiation protection program, including examination of program content and implementation, are conducted so that all functional elements are reviewed no less frequently than every 36 months. Functional elements include:

- A. Organization and Administration, Subpart B
- B. ALARA Program 10 CFR 835.101(c), Subpart K
- C. External Dosimetry Program 10 CFR 835.401 (a), 402(a), (b)
- D. Internal Dosimetry Program 10 CFR 835.401(a), 402(c), (d)
- E. Area Monitoring and Control
 - 1. Area Radiation Monitoring 10 CFR 835.401(a)
 - 2. Airborne Radioactivity Monitoring 10 CFR 835.209, 401(a), 403
 - 3. Contamination Monitoring and Control 10 CFR 835.401(a), Subpart L
 - 4. Instrument Calibration and Maintenance 10 CFR 835.401(b)
- F. Radiological Controls
 - 1. Radiological Work Planning 10 CFR 835.501(d), 1001(b), 1003
 - 2. Entry and Exit Controls 10 CFR 835, Subpart F
 - 3. Radiological Work Controls 10 CFR 835, Subpart F, 1003
 - 4. Posting and Labeling 10 CFR 835, Subpart G
 - 5. Release of Materials and Equipment 10 CFR 835.1101
 - 6. Sealed Radioactive Source Accountability and Control 10 CFR 835, Subpart M
- G. Emergency Exposure Situations 10 CFR 835.1301, 1302, DOE O 151
- H. Nuclear Accident Dosimetry 10 CFR 835.1304
 - I. Records 10 CFR 835, Subpart H
 - J. Reports to Individuals 10 CFR 835, Subpart I
 - K. Radiation Safety Training 10 CFR 835, Subpart J
 - L. Limits for the Embryo/Fetus 10 CFR 835, Subpart C.

6. Radiological Performance Indicators

Radiological performance indicators consist of data collected from various sources including assessments, functional element reviews, Radiological Event Reports, Occurrence Reports, etc. The NRPD periodically reviews these indicators, analyzes them for adverse trends, and presents them to the Radiological Protection Program Review Board.

7. ALARA Program

The ORNL As Low As Reasonably Achievable (ALARA) Program is based on the premise that individuals should not receive measurable radiation dose without a corresponding benefit. The ALARA Program is promoted by the Radiological Protection Program Review Board (RPPRB) and a staff of technical and support personnel from the NRPD. Line management, with the support of NRPD and the ALARA Program, ensures that radiation exposures to the

work force are ALARA and below ORNL administrative control levels. ALARA reviews of work and/or projects are detailed in [Radiological Work: Preparing for Work](#). ALARA reviews of new/modified equipment and facilities is detailed in [Radiological Design Requirements](#).

- A. The RPPRB is staffed by senior line managers who are responsible for the implementation of ALARA principles within their organizations. The board is responsible to and is chartered by the director of Environment, Safety, Health and Quality.
 - 1. The duties of the RPPRB include:
 - a. periodic evaluation of ORNL's radiological performance and recommendations to the the ESH&Q Director as appropriate;
 - b. approval of changes to the Laboratory Annual ALARA Control Level as necessary to reflect anticipated radiological operations and in accordance with the applicable elements of the ORNL Laboratory Agenda;
 - c. approval of requests to extend established individual annual ALARA Control Levels for personnel exposure;
 - d. review radiological trending information to identify adverse trends and make recommendations as necessary;
 - e. upon request, preview and critique work planning for activities that may result in significant personnel radiation exposure;
 - f. review of operations that resulted in significant unplanned personnel radiation exposure;
 - g. additional responsibilities may be assigned by the ESH&Q Director.
- B. The Nuclear and Radiological Support Services (NRSS) group provides technical support for the ORNL ALARA Program. The NRSS assists the line organizations by reviewing radiological designs, work practices, engineering controls, technical work documents, and ALARA plans.
- C. Line Management and supervisors of individuals doing radiological work or designing radiological facilities have the following responsibilities with regard to keeping exposures ALARA:
 - 1. establish operating practices that use dose-reduction measures;
 - 2. assure that employees are trained as required according to [Radiation Safety Training and Administrative Access Control](#).
 - 3. keep informed as to the current dose status of each individual worker within the work group;
 - 4. maintain facilities in a safe radiological condition;
 - 5. alert individuals to unsafe radiological conditions;
 - 6. assure that required reviews of campaigns, operations, modifications, and new facilities are done; and
 - 7. respond to the requests of the RPPRB .
 - 8. periodically inspect radiological work areas and observe radiological work as part of the organization's self-assessment program, consistent with ALARA considerations, to identify problems such as inadequate posting and poor work practices;
 - 9. set division and task-specific ALARA goals and adopt radiological performance indicators;
- D. Individuals who do radiological work have the following responsibilities with regard to keeping exposure ALARA:
 - 1. employ dose-minimizing work practices, consistent with training, postings, and instructions by supervision and radiation protection personnel; and
 - 2. report unsafe radiological conditions or practices promptly.
- E. The division radiological control officer liaison, part of the NRPD technical staff, provides a point of contact between NRPD, the division radiological control officers (DRCOs), and the ORNL ALARA Program.