



DEFENSE NUCLEAR FACILITIES SAFETY BOARD Washington, D.C. 20004

DIRECTIVE

Subject: OCCUPATIONAL RADIATION EXPOSURE MONITORING PROGRAM

Number: D-321.1

Approved: 1/XX/2018

Review: 1/XX-1/2023

Certified:

Responsible Office: Office of the General Manager

1. **PURPOSE.** The purpose of this document is to establish the Defense Nuclear Facilities Safety Board's (Board) policies and procedures required to manage the occupational radiation exposure information for employees¹ of the Board. The Board is committed to having an occupational radiation exposure monitoring program that meets the requirements and intent of 10 CFR Part 835, codifying the Department of Energy's (DOE) standards for occupational radiation protection of workers at its facilities, and relevant federal employee occupational health and safety requirements.
2. **CANCELLATION.** This directive supersedes D-321.1, *Occupational Radiation Exposure Monitoring Program, dated August 1, 2011*, which superseded DNFSB AD 321.1, *Managing Radiation Exposure Information*, dated April 29, 2002.
3. **APPLICABILITY.** The policy and guidance in this directive apply to the management of radiation exposure information for all employees, who have or may obtain occupational radiation exposure during their employment by the Board. This directive does not apply to non-Board employees (e.g., contractors, consultants), and does not apply to exposures from background radiation, medical exposures, or voluntary participation in medical research programs

Contractors and consultants working under Board contracts are bound by the same DOE occupational radiation exposure requirements and restrictions as Board employees when visiting DOE sites and facilities

4. **POLICY.**
 - A. Employees must adhere to DOE rules and directives applicable to radiation protection while at DOE facilities.

¹ The use of the term "employees" includes Board Members in this Directive.

- B. The Board must maintain and make available occupational radiation exposure records to employees.
 - C. The Board must promote the principle of as low as reasonably achievable (ALARA) when employees may be exposed to occupational radiation
 - D. Employees may not participate in DOE planned special radiation exposure activities unless the Technical Director authorizes, in writing, a particular planned special radiation exposure for an employee, which documents the conditions necessary to satisfy 10 CFR Part 835 requirements regarding a planned special radiation exposure.
5. **REQUIREMENTS.** Detailed operating procedures for this directive are described in DNFSB OP-321.1-1, *Occupational Radiation Exposure Monitoring Program Operating Procedures*, which supplements this Directive.
- A. The Board will ensure that the exposure of the Board's employees to ionizing radiation at each DOE site is monitored, controlled, and reported by DOE and its contractors in accordance with DOE rules, directives, and site-specific requirements that cover the exposure of workers and members of the public.
 - B. The Board will utilize DOE's Occupational Radiation Exposure Monitoring System (REMS), managed by Oak Ridge Associated Universities under DOE contract, as the basis for collecting data from the employees.
 - i. Radiation exposure data from non-DOE sites will be integrated into the Board's recordkeeping system if and when required.
 - ii. Dose determination and monitoring methods for a declared pregnant worker will be conducted per the instructions provided in DOE Guide 441.1-1C, Section 8.5. <https://www.directives.doe.gov/directives-documents/400-series/0441.1-EGuide-01c-admchg1>
 - C. The Board must ensure that the employees meet, at a minimum, the DOE radiological training requirements for general employees as defined in 10 CFR Part 835, regardless of access restrictions (i.e., escorted vs. unescorted access) or occupational dose expectations when accessing a radiologically controlled area.
 - i. 10 CFR Part 835 requires that all individuals receive some level of radiation safety training commensurate with the hazards and controls associated with the areas they are allowed to access.
 - ii. Such training is expected to be provided whenever there is a significant change to radiation policies and procedures, and at intervals not to exceed 24 months.

- iii. In addition, employees traveling to DOE sites and facilities need to have a demonstrated understanding of radiation risks and controls that may be encountered during their work assignments. Attachment 1 provides the minimum radiation safety training requirements expected of the Board's employees.
- D. Temporary employees with a 6 months or less hiring authority will not be required to complete radiological safety training. Temporary employees traveling to a DOE Site where radiological training is required will be escorted by trained personnel. In accordance with 10 CFR 835, temporary employees will be considered to be members of the public and will be subject to the work restrictions and radiation dose limits established for members of the public entering into controlled areas.
- E. The completion of Radiological Worker II training is optional for Board Members. Board Members visiting DOE sites and facilities are escorted by DOE, contractor, and/or the Board's staff with the required Radiological Worker training.
- F. The Board will maintain a system of records for tracking individual employee exposure information while serving with the Board. The Board will safeguard this system of records to protect the rights of individuals from unnecessary invasion of personal privacy in accordance with the System of Record Notice (SORN) DNFSB-5, *Occupational Radiation Exposure Records*.
- G. The Board will maintain an Operating Procedures in accordance with this Directive.

6. RESPONSIBILITIES.

- A. Chairman:
 - i. Ensures that the Board has an effective and comprehensive occupational safety and health program for its employees, of which the occupational radiation exposure monitoring program is a part.
 - ii. Reviews and approves any required communications of any severe occupational radiation exposure incidents involving the Board's employees to the Department of Labor or other reporting entities.
- B. Board:

- i. Approves substantive changes and amendments to the Board's policy covering the scope and operation of the occupational radiation exposure monitoring program.

C. General Manager:

- i. Upon learning of or notification by the Technical Director or General Counsel of any incident involving significant exposure of a Board's employee to radiation per the standards established in 10 CFR Part 835, notifies the Chairman and the Board of the situation and request that the Technical Director establish a technical team to evaluate and report on the exposure and the circumstances within which it occurred. If the exposure occurred in association with staff activity at a DOE facility, the Board should request that DOE collaborate with the Board on evaluation of the occurrence. The evaluation report shall be consistent with the requirements of paragraph 29(d) of 29 CFR Part 1960, *Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters*. The Board shall approve the final report, and a copy of the report shall be filed in the exposed employee's radiation exposure records.
- ii. Reviews the quarterly summary report prepared by the designated Radiation Safety Officer (RSO) documenting any unusually high exposures or any exposures above the Board's established administrative control levels or dose limits for the five Board Members and Office of the General Manager (OGM) staff employees. Reports to the Chairman any unusually high exposures above the established administrative control levels or dose limits.
- iii. Serves as the Board official with overall responsibility and accountability for ensuring the implementation of the Board's occupational radiation exposure monitoring program, including the Board's full compliance with applicable federal laws, regulations, and policies relating to occupational radiation exposure.
- iv. Coordinates with the General Counsel and the Technical Director to ensure that all employees under their jurisdiction are informed of the provisions of this directive and associated operating procedures, and that they comply with these provisions.
- v. Ensures internal controls are in place so that the Board has viable technical safeguards for the preservation of data integrity and security for this system of records under the Privacy Act and other information that is considered Personally Identifiable Information sensitive, i.e., as defined in the SORN.

- vi. Reviews and approves requests by a current or former employee to remove radiation exposure information in a current or former employee's file.
- vii. Retains the occupational radiation exposure records of former employees, and disposes of these records in accordance with the appropriate records retention requirement of 75 years, which the Board has submitted to National Archives Records Administration to be added to the Board's proposed new and updated retention schedules.
- viii. Prepares *Federal Register* notices regarding the description of the records maintained in this Privacy Act system of records.
- ix. Directs the Board's internal audits and other reviews of the occupational radiation exposure monitoring program every three years per the requirements in 10 CFR § 835.102.

D. Deputy General Manager:

- i. Designates the Occupational Radiation Exposure Records Clerk (RC) and other OGM or contractor resources that are responsible for the operation of the Board's monitoring program.
- ii. Serves as the Occupational Health and Safety Officer for the Board, and designates the Program Manager for the Board's occupational radiation exposure monitoring program.

E. Technical Director:

- i. Designates the RSO, who assists in the operation of the Board's occupational radiation exposure monitoring program.
- ii. Reviews the quarterly summary report prepared by the designated RSO documenting any unusually high exposures or any exposures above the Board's established administrative control levels or dose limits for technical staff employees. Reports to the Chairman and General Manager any unusually high exposures and exposures above the established administrative control levels or dose limits.
- iii. Ensures that technical staff employees and supervisors receive radiological worker training commensurate with Board policy and 10 CFR Part 835.

- iv. Works with the employee's immediate supervisor (e.g., Associate Technical Director), controls staff assignments, as necessary, to limit radiation exposures

F. General Counsel:

- i. Reviews the quarterly summary report prepared by the designated RSO documenting any unusually high exposures or any exposures above the Board's established administrative control levels or dose limits for the General Counsel's staff employees. Reports to the Chairman and General Manager any unusually high exposures and exposures above the established administrative control levels or dose limits.
- ii. Provides legal advice relating to the development and implementation of the Board's program on occupational radiation exposure.
- iii. Provides legal advice relating to requests to gain access to radiation exposure records or to correct or amend records, and other matters under the Privacy Act.
- iv. Provides legal advice relating to the development of a new and revised system of records and associated SORN in the *Federal Register*.

H. RSO for Occupational Radiation Exposure:

- i. Provides technical expertise concerning occupational radiation exposure for the Board's monitoring program.
- ii. Reviews the quarterly REMS report for each of the Board's employees to assess exposure trends and accumulated annual exposures. Prepares a summary report for the cognizant office directors documenting any unusually high exposures and exposures above the established administrative control levels or dose limits.
- iii. Interprets and evaluates radiation exposure data for the Board's employees.

I. Occupational Radiation Exposure Records Clerk:

- i. Creates and maintains radiation exposure files and reports in compliance with the Operating Procedures for this Directive, and the Board's Privacy Act Program Directive and accompanying Operating Procedures.
- ii. Serves as the Board's primary interface with REMS.

ARCHIVE: 2018-300-020, D-321.1 Radiation Exposure

- iii. Makes radiation exposure records available to the Board's employees based on an established schedule and as requested.
- iv. Maintains records and reports showing the status of each employee's radiological worker training.
- v. Resolves discrepancies with REMS data and other sources of radiation exposure data received by employees from any trip to DOE sites and/or facilities.

J. Board's Employees:

- i. Take responsibility for maintaining their exposures ALARA, consistent with work assignments and with DOE Regulations, Standards, and Manuals of Practice for occupational radiation exposure monitoring and control.
- ii. Report any actual or suspected exposures above the established administrative control levels or dose limits to their supervisors as soon as possible.
- iii. Report any current occupational exposures to radiation sources received from non-DOE sources to their supervisors and the Records Clerk, including for example, third year Professional Development Program (PDP) assignments, visits to facilities licensed by the U.S. Nuclear Regulatory Commission, exposures during military reserve duty, outside consulting, or hospital volunteer work. Medical exposure for diagnosis or treatment should not be reported.
- iv. Know and understand their year-to-date radiation exposure by reviewing their individual site visit radiation exposure reports, as well as cumulative exposure data in their quarterly REMS reports.
- v. Report any discrepancies or questions concerning the information in their REMS reports to the Board's Records Clerk for resolution.
- vi. Complete the "receipt of dosimetry" information section on the Board's Travel Voucher Expense Sheet (Form F 221.1-2:11/2010) after each trip to a DOE site or facility
- vii. Understand and follow the monitoring, reporting, and training requirements in OP-321.1-1, *Occupational Radiation Exposure*.

- viii. Understand site training requirements regarding access to defense nuclear facilities, and request appropriate Radiation Worker II training to gain appropriate access to defense nuclear facilities.

K. Supervisors:

- i. Ensure that employees under their cognizance understand and abide by the requirements in the Board's occupational radiation exposure monitoring program.
- ii. Determine the Group designation (as defined in attachment 1) for each employee under their cognizance, and ensure that appropriate training is arranged and maintained.
- iii. Engage in an interactive process with an employee requesting information or guidance on occupational radiation issues such as training needs, reporting of prior exposure information, and work assignment options for a declared pregnancy.
- iv. Review any employee training requests for appropriate Radiation Worker II training.

L. Privacy Officer:

- i. Ensures that all the Board's staff and contractors who maintain or have access to the occupational radiation exposure monitoring system databases and files receive annual training on protection of systems containing Privacy Act information and/or Personally Identifiable Information.

M. Director, Division of Acquisition and Finance:

- i. Works with the assigned Contracting Officer's technical representatives to ensure that contracts with all Board contractors or consultants performing work assignments at DOE sites and facilities where occupational radiation exposures may occur contain provisions requiring the contractor to maintain its own 10 CFR Part 835-consistent occupational radiation protection information.

7. REFERENCES

- A. Executive Order 12196, 3 CFR, *Occupational Safety and Health Programs for Federal Employees*, (45 FR 12769, 3 CFR 1980 Comp. p. 145), February 26, 1980.
- B. *Occupational Radiation Protection*, 10 CFR Part 835.

- C. *Occupational Safety and Health Standards*, 29 CFR Part 1910.
- D. *Environment, Safety and Health Reporting Order*, DOE O 231.1B
- E. *Radiation Protection Programs Guide*, DOE G 441.1-1C, for use with 10 CFR Part 835, *Occupational Radiation Protection*.

8. **DEFINITIONS.**

- A. ALARA. “As Low As Reasonably Achievable,” which is the approach to radiation protection to manage and control exposures (both individual and collective) to the work force and to the general public to as low as is reasonable, taking into account social, technical, economic, practical, and public policy considerations. ALARA is not a dose limit but a process that has the objective of attaining doses as far below the applicable limits as are reasonably achievable.
- B. Declared Pregnant Worker. A woman who has voluntarily declared to her employer, in writing, her pregnancy for the purpose of being subject to the occupational exposure limits to the embryo/fetus as provided in 10 CFR § 835.206. This declaration may be revoked, in writing, at any time by the declared pregnant worker.
- C. General Employee. An individual who is either a DOE or DOE contractor employee; an employee of a subcontractor to a DOE contractor; or an individual who performs work for or in conjunction with DOE or uses DOE facilities.
- D. Occupational Radiation Exposure. An individual’s ionizing radiation dose (external and internal) as a result of that individual’s work assignment. Occupational radiation exposure does not include doses received as a medical patient or doses resulting from background radiation or participation as a subject in medical research programs.
- E. Radiation. Ionizing radiation: alpha particles, beta particles, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in 10 CFR Part 835, does not include non-ionizing radiation, such as radio waves or microwaves, or visible, infrared, or ultraviolet light.
- F. Radiological Worker. A general employee whose job assignment involves operation of radiation producing devices or working with radioactive materials, or who is likely to be routinely occupationally exposed to more than 0.1 rem (0.001 Sv) per year total effective dose.

9. **CONTACT.** Address questions concerning this Directive to the Office of the General Manager

Sean Sullivan
Chairman

Attachment 1:

Radiation Safety Training Matrix

Designation	Nature of Assignment ¹	Training Requirements ²
Group A	No work-related exposure to ionizing radiation anticipated. May enter DOE controlled areas . Will only enter DOE radioactive material areas or radiation areas for escorted tours, but will not perform active work.	<ul style="list-style-type: none"> • Initial general employee training on ionizing radiation; • Attendance in at least one staff briefing on the Board’s radiation protection program in each two year period; and • Satisfaction of site-specific requirements prior to entering authorized areas.
Group B	May enter any level of DOE radiological area as necessary and may perform active work within area.	<ul style="list-style-type: none"> • Initial Radiation Worker II (RW-II) training course at a DOE site; • Biennial RW-II refresher course at a DOE site; • Attendance in at least one staff briefing on the Board’s radiation protection program in each two year period; and • Satisfaction of site-specific requirements prior to entering authorized areas.
Group C	Resident inspectors and Cognizant Engineers. (Provides same level of access as Group B.)	<ul style="list-style-type: none"> • Initial RW-II training course at assigned DOE site; • Biennial RW-II refresher course at assigned DOE site; • Attendance in at least one staff briefing on the Board’s radiation protection program in each two year period; and • Satisfaction of site-specific requirements at assigned site for unescorted access to all areas.

¹ Bolded terms are to be used as defined in 10 CFR 835.2, *Definitions*.

² As required by 10 CFR 835.901, radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards. Also, each individual shall demonstrate knowledge of these training topics by an examination and, as appropriate, performance demonstrations.

- (1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;
- (2) Basic radiological fundamentals and radiation protection concepts;
- (3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions;
- (4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;
- (5) Individual responsibilities for implementing ALARA measures required by § 835.101; and
- (6) Individual exposure reports that may be requested in accordance with § 835.801.

AFFIRMATION OF BOARD VOTING RECORD

SUBJECT: D-321.1 Radiation Exposure

Doc Control#2018-300-020


The Board, with Board Member(s) Sean Sullivan, Bruce Hamilton, Jessie H. Roberson, Daniel J. Santos, Joyce L. Connery *approving*, Board Member(s) none *disapproving*, Board Member(s) none *abstaining*, and Board Member(s) none *not participating*, have voted to approve the above document on January 22, 2018.

The votes were recorded as:

	APRVD	DISAPRVD	ABSTAIN	NOT PARTICIPATING*	COMMENT	DATE
Sean Sullivan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	01/22/18
Bruce Hamilton	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	01/22/18
Jessie H. Roberson	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	01/22/18
Daniel J. Santos	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	01/22/18
Joyce L. Connery	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	01/22/18

*Reason for Not Participating:

This Record contains a summary of voting on this matter together with the individual vote sheets, views and comments of the Board Members.



 Executive Secretary to the Board

Attachments:

1. Voting Summary
2. Board Member Vote Sheets

cc: Board Members
 OGC
 OGM Records Officer
 OTD

**DEFENSE NUCLEAR FACILITIES SAFETY BOARD
NOTATIONAL VOTE RESPONSE SHEET**

FROM: Sean Sullivan

SUBJECT: D-321.1 Radiation Exposure

Doc Control#2018-300-020

Approved *Y* **Disapproved** **Abstain**
Recusal – Not Participating

COMMENTS: **Below** **Attached** **None** *Y*



Sean Sullivan

 1/22/18
Date

**DEFENSE NUCLEAR FACILITIES SAFETY BOARD
NOTATIONAL VOTE RESPONSE SHEET**

FROM: Bruce Hamilton

SUBJECT: D-321.1 Radiation Exposure

Doc Control#2018-300-020

Approved X Disapproved Abstain

Recusal – Not Participating

COMMENTS: Below Attached None X


Bruce Hamilton

22 JAN 2018
Date

**DEFENSE NUCLEAR FACILITIES SAFETY BOARD
NOTATIONAL VOTE RESPONSE SHEET**

FROM: Jessie H. Roberson

SUBJECT: D-321.1 Radiation Exposure

Doc Control#2018-300-020

Approved X **Disapproved** _____ **Abstain** _____
Recusal – Not Participating _____

COMMENTS: **Below** _____ **Attached** _____ **None** X

Jessie H. Roberson
Jessie H. Roberson
Jan 22, 2018
Date

**DEFENSE NUCLEAR FACILITIES SAFETY BOARD
NOTATIONAL VOTE RESPONSE SHEET**

FROM: Daniel J. Santos

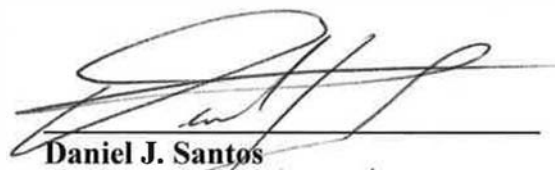
SUBJECT: D-321.1 Radiation Exposure

Doc Control#2018-300-020

Approved X **Disapproved** **Abstain**

Recusal – Not Participating

COMMENTS: **Below** **Attached** **None** X



Daniel J. Santos

1/22/18
Date

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
NOTATIONAL VOTE RESPONSE SHEET


FROM: Joyce L. Connery

SUBJECT: D-321.1 Radiation Exposure

Doc Control#2018-300-020

Approved **Disapproved** **Abstain**
Recusal – Not Participating

COMMENTS: **Below** **Attached** **None**



Joyce L. Connery

1/22/18
Date