



NUREG-1556
Volume 2, Revision 1
Supplement 1

Consolidated Guidance About Materials Licenses

Program-Specific Guidance About
Industrial Radiography Licenses

Final Report

AVAILABILITY OF REFERENCE MATERIALS IN NRC PUBLICATIONS

NRC Reference Material

As of November 1999, you may electronically access NUREG-series publications and other NRC records at the NRC's Library at www.nrc.gov/reading-rm.html. Publicly released records include, to name a few, NUREG-series publications; *Federal Register* notices; applicant, licensee, and vendor documents and correspondence; NRC correspondence and internal memoranda; bulletins and information notices; inspection and investigative reports; licensee event reports; and Commission papers and their attachments.

NRC publications in the NUREG series, NRC regulations, and Title 10, "Energy," in the *Code of Federal Regulations* may also be purchased from one of these two sources:

1. The Superintendent of Documents

U.S. Government Publishing Office
Washington, DC 20402-0001
Internet: <https://bookstore.gpo.gov>/Telephone:
(202) 512-1800
Fax: (202) 512-2104

2. The National Technical Information Service

5301 Shawnee Road
Alexandria, VA 22312-0002
Internet: <https://www.ntis.gov/>
1-800-553-6847 or, locally, (703) 605-6000

A single copy of each NRC draft report for comment is available free, to the extent of supply, upon written request as follows:

Address: **U.S. Nuclear Regulatory Commission**
Office of Administration
Digital Communications and Administrative
Services Branch
Washington, DC 20555-0001
Email: Reproduction.Resource@nrc.gov
Facsimile: (301) 415-2289

Some publications in the NUREG series that are posted at the NRC's website address www.nrc.gov/reading-rm/doc-collections/nuregs are updated periodically and may differ from the last printed version. Although references to material found on a website bear the date the material was accessed, the material available on the date cited may subsequently be removed from the site.

Non-NRC Reference Material

Documents available from public and special technical libraries include all open literature items, such as books, journal articles, transactions, *Federal Register* notices, Federal and State legislation, and congressional reports. Such documents as theses, dissertations, foreign reports and translations, and non-NRC conference proceedings may be purchased from their sponsoring organization.

Copies of industry codes and standards used in a substantive manner in the NRC regulatory process are maintained at—

The NRC Technical Library

Two White Flint North
11545 Rockville Pike
Rockville, MD 20852-2738

These standards are available in the library for reference use by the public. Codes and standards are usually copyrighted and may be purchased from the originating organization or, if they are American National Standards, from—

American National Standards Institute

11 West 42nd Street
New York, NY 10036-8002
Internet: www.ansi.org
(212) 642-4900

Legally binding regulatory requirements are stated only in laws; NRC regulations; licenses, including technical specifications; or orders, not in NUREG-series publications. The views expressed in contractor prepared publications in this series are not necessarily those of the NRC.

The NUREG series comprises (1) technical and administrative reports and books prepared by the staff (NUREG-XXXX) or agency contractors (NUREG/CR-XXXX), (2) proceedings of conferences (NUREG/CP-XXXX), (3) reports resulting from international agreements (NUREG/IA-XXXX), (4) brochures (NUREG/BR-XXXX), (5) compilations of legal decisions and orders of the Commission and the Atomic and Safety Licensing Boards and of Directors' decisions under Section 2.206 of the NRC's regulations (NUREG-0750), (6) knowledge management documents prepared by NRC staff or agency contractors (NUREG/KM-XXXX).

DISCLAIMER: This report was prepared as an account of work sponsored by an agency of the U.S. Government. Neither the U.S. Government nor any agency thereof, nor any employee, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use, or the results of such use, of any information, apparatus, product, or process disclosed in this publication, or represents that its use by such third party would not infringe privately owned rights.

Consolidated Guidance About Materials Licenses

Program-Specific Guidance About Industrial Radiography Licenses

Final Report

Manuscript Completed: May 2024
Date Published: May 2024

Prepared by:
M. Hammond
D. White
R. Ragland
G. Warren
R. Torres

Paperwork Reduction Act Statement

This NUREG contains voluntary guidance for implementing the mandatory information collections in 10 CFR Part 34 and NRC Form 313 that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et. seq.). These information collections were approved by the Office of Management and Budget (OMB), approval numbers 3150-0007 and 3150-0120. Send comments regarding this information collection to the FOIA, Library, and Information Collections Branch (T6-A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by email to Infocollects.Resource@nrc.gov, and to the OMB reviewer at: OMB Office of Information and Regulatory Affairs (3150-0007 and 3150-0120), ATTN: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street, NW, Washington, DC 20503.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

TABLE OF CONTENTS

1	INTRODUCTION	1
2	GUIDANCE FOR THE REINTERPRETATION OF 10 CFR 34.41(a) “CONDUCTING INDUSTRIAL RADIOGRAPHIC OPERATIONS”	3
2.1	10 CFR 34.41, "Conducting Industrial Radiographic Operations" (Subpart D, "Radiation Safety Requirements")	3
3	CHECKLIST	5

1 INTRODUCTION

The following guidance was developed for the reinterpretation of the rule regarding the licensing requirements for conducting industrial radiographic operations. Specifically, it describes how the Commission has reinterpreted the “two-person rule” as related to conducting industrial radiographic operations. On June 1, 2021, the U.S. Nuclear Regulatory Commission issued a notification of interpretation on industrial radiographic operations at temporary radiography jobsites and an Agreement State Compatibility Category change (86 FR 29173). The interpretation and Compatibility Category change were effective immediately with a 30-day post-promulgation comment period. This guidance supplements the information provided in NUREG-1556, Volume 2, Revision 1, “Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Industrial Radiography Licenses, issued February 2016” and should be used in addition to guidance in section 8.10.9.3 of NUREG-1556, Volume 2, Revision 1. Applicants and licensees should use this guidance in the completion and submission of materials license applications and amendments for items containing byproduct material for radiographic operations.

2 GUIDANCE FOR THE REINTERPRETATION OF 10 CFR 34.41(a)

2.1 10 CFR 34.41. "Conducting Industrial Radiographic Operations" (Subpart D, "Radiation Safety Requirements")

Applicants must obtain a specific license under Title 10 of the Code of Federal Regulations (10 CFR) 34.1, "Purpose and Scope", for the use of sealed sources containing byproduct material and meet radiation safety requirements for persons using these sealed sources in industrial radiography.

As stated in 10 CFR 34.41, "Conducting industrial radiographic operations," whenever radiography is performed at a location other than a permanent radiographic installation, the radiographer must be accompanied by at least one other qualified radiographer or an individual who has at a minimum met the requirements of 10 CFR 34.43(c). The additional qualified individual shall observe the operations and be capable of providing immediate assistance to prevent unauthorized entry. Radiography may not be performed if only one qualified individual is present.

The NRC interprets 10 CFR 34.41 such that the requirements contained in the sentence "[t]he additional qualified individual shall observe the operation and be capable of providing immediate assistance to prevent unauthorized entry" are met if the second qualified individual is in sufficiently close proximity to the operation and sufficiently aware of the ongoing activities to be able to provide immediate assistance or take charge when necessary and to prevent unauthorized entry. If the second individual does not have sufficient awareness and proximity to the radiographic operation to perform these functions, then the requirement is not met. For example, if the second individual is in the darkroom and is not able to hear or see the radiographic operations, then the second individual is not meeting the requirements as the NRC has interpreted them. However, the second individual could, for example, use an open radio channel or cell phone to maintain awareness of ongoing radiographic operations from a nearby darkroom. The second individual may perform other tasks nearby so long as the individual is cognizant of the site-specific circumstances when radiographic operations are in progress. In addition to adopting the new interpretation, the NRC changed the compatibility category of 10 CFR 34.41(a) from B to C; Agreement States should therefore not need to revise their implementations of 10 CFR 34.41.

This interpretation does not affect the NRC's existing guidance for temporary jobsites that have multiple access points. As explained in NUREG-1556, Volume 2, Revision 1, licensees may need two or more individuals present to prevent unauthorized entry at temporary jobsites at facilities with multiple levels and multiple access points, or where members of the public are close to the radiographic operations.

The regulation at 10 CFR 34.45(a)(3) requires the applicant to provide operating and emergency procedures, including instructions in methods for controlling access to radiographic areas. Each licensee should include the following information when

developing, implementing, and maintaining operating and emergency procedures for controlling access and the capability of providing immediate assistance to prevent unauthorized entry:

- a description of active surveillance or communications technology that will be used to maintain sufficient awareness, such as advanced surveillance by drones, robotics, artificial intelligence (AI)¹
- a description of scenarios in which radiographic personnel directly observe that no one is near or approaching the boundaries
- a description of testing and maintenance of the equipment or advanced technology, or both that will be used to assist radiographic personnel in controlling access into the restricted area
- instruction to radiographers on the limited circumstances to maintain sufficient awareness, including, but not limited to, making announcements over the public address system before and during radiographic operations; ability to provide immediate assistance; and medical emergency considerations

¹ The NRC continues to improve its skills and capabilities to review and evaluate the application of AI to NRC-regulated activities, maintain awareness of technological innovations, and ensure the safe and secure use of AI in NRC-regulated activities. (refer to NUREG-2261, "Artificial Intelligence Strategic Plan: Fiscal Years 2023-2027," issued May 2023). These technologies are currently in use for non-destructive testing and railway infrastructure industry.

3 CHECKLIST

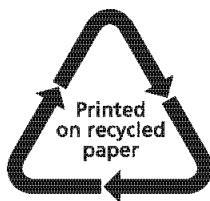
Checklist of Example Scenarios Included in Operating and Emergency Procedures for Applications under 10 CFR 34.41(a)

A checkmark in each box in the table below indicates that the application package includes the appropriate information for each of the example scenarios for maintaining sufficient awareness in site-specific circumstances.²

Temporary JobSite	Operating and Emergency Procedures	Testing and Maintenance of the Equipment (including advanced technology)	Instructions to Radiographic Personnel (including description of active communication)
Oil/gas pipeline remote location	[]	[]	[]
Short duration of radiographic exposure (i.e., 8 seconds) when the source is quickly retracted	[]	[]	[]
Direct observation of multiple access points or jobsite with complex geometry	[]	[]	[]
Limited access (i.e., one access point)	[]	[]	[]

² Applicants may include site-specific circumstances or scenarios not listed. Examples described in the checklist may include but are not limited to scenarios in section 03.01 (Risk Module 1) of Inspection Procedure 87121, "Industrial Radiography Programs."

<p>NRC FORM 335 (12-2010) NRCMD 3.7</p> <p style="text-align: center;">U.S. NUCLEAR REGULATORY COMMISSION</p> <p style="text-align: center;">BIBLIOGRAPHIC DATA SHEET <i>(See instructions on the reverse)</i></p>	<p>1. REPORT NUMBER (Assigned by NRC, Add Vol., Supp., Rev., and Addendum Numbers, if any.) NUREG-1556 Volume 2, Revision 1 Supplement 1</p>	
<p>2. TITLE AND SUBTITLE</p> <p>Consolidated Guidance About Materials Licenses Program-Specific Guidance About Industrial Radiography Licenses</p> <p>Final Report</p>	<p>3. DATE REPORT PUBLISHED</p>	
	<p>MONTH May</p>	<p>YEAR 2024</p>
<p>5. AUTHOR(S)</p> <p>Michelle Hammond, Duncan White, Randolph Ragland, Geoffrey Warren, Roberto Torres</p>	<p>6. TYPE OF REPORT NUREG Supplement</p>	
	<p>7. PERIOD COVERED (Inclusive Dates)</p>	
<p>8. PERFORMING ORGANIZATION - NAME AND ADDRESS (If NRC, provide Division, Office or Region, U. S. Nuclear Regulatory Commission, and mailing address; if contractor, provide name and mailing address.) Division of Materials Safety, Security, State, and Tribal Programs Office of Nuclear Material Safety and Safeguards U.S. Nuclear Regulatory Commission Washington, DC 20555-0001</p>		
<p>9. SPONSORING ORGANIZATION - NAME AND ADDRESS (If NRC, type "Same as above", if contractor, provide NRC Division, Office or Region, U. S. Nuclear Regulatory Commission, and mailing address.) Same as above</p>		
<p>10. SUPPLEMENTARY NOTES</p>		
<p>11. ABSTRACT (200 words or less)</p> <p>The supplemental guidance was developed for the reinterpretation of the rule regarding the licensing requirements for conducting industrial radiographic operations. Specifically, it describes how the Commission has reinterpreted the "two-person rule" as related to conducting industrial radiographic operations. On June 1, 2021, the NRC issued a notification of interpretation on industrial radiographic operations at temporary radiography jobsites and an Agreement State Compatibility Category change (86 FR 29173). The interpretation and Compatibility Category change were effective immediately with a 30-day post-promulgation comment period. The guidance supplements the information provided in NUREG-1556, Volume 2, Revision 1, "Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Industrial Radiography Licenses issued February 2016," and should be used in addition to the guidance in section 8.10.9.3 of NUREG-1556, Volume 2, Revision 1. Applicants and licensees should use the guidance in the completion and submission of materials license applications and amendments for items containing byproduct material for radiographic operations.</p>		
<p>12. KEY WORDS/DESCRIPTORS (List words or phrases that will assist researchers in locating the report.)</p> <p>industrial radiography</p>	<p>13. AVAILABILITY STATEMENT unlimited</p>	
	<p>14. SECURITY CLASSIFICATION <i>(This Page)</i> unclassified</p>	
	<p><i>(This Report)</i> unclassified</p>	
	<p>15. NUMBER OF PAGES</p>	
<p>16. PRICE</p>		



Federal Recycling Program



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

OFFICIAL BUSINESS



@NRCgov



**NUREG-1556, Vol. 2, Rev. 1
Supplement 1, Final**

**Consolidated Guidance About Materials Licenses: Program-Specific
Guidance About Industrial Radiography Licenses**

May 2024