

AE07-1 023

PDR



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

MAY 24 1993

MEMORANDUM FOR: Robert M. Bernero, Director, Office of Nuclear Material Safety and Safeguards

Martin G. Malsch, Deputy General Counsel for Licensing and Regulations, Office of the General Counsel

Carlton C. Kammerer, Director, Office of State Programs

James Lieberman, Director, Office of Enforcement

Joseph J. Fouchard, Director, Office of Public Affairs

Patricia G. Norry, Director, Office of Administration

Gerald F. Cranford, Director, Office of Information Resources Management

FROM: C. J. Heltemes, Jr., Deputy Director for Generic Issues and Rulemaking, Office of Nuclear Regulatory Research

SUBJECT: OFFICE CONCURRENCE ON PART 34 (RADIOGRAPHY) RULEMAKING

Please review and provide comments and office concurrence on the enclosed draft proposed rule, "Licenses for Radiography and Radiation Safety Requirements for Radiographic Operation," 10 CFR Part 34. Copies are being sent to the regional offices and they may provide comments at their discretion.

The following is a summary of this request:

1. Title: Licenses for Radiography and Radiation Safety Requirements for Radiographic Operation, 10 CFR Part 34. Copies are being sent to the regional offices and they may provide comments at their discretion.
2. RES Contacts: Dr. Donald O. Nellis, RPHEB/DRA/RES (301) 492-3628  
Mary L. Thomas, RPHEB/DRA/RES (301) 492-3886
3. Requested Action: Review and provide comments and concurrence for your office.
4. Due Date: June 14, 1993
5. Cognizant Individuals: NMSS: Bruce Carrico  
OGC: Marjorie Rothschild  
ADM: Mike Lesar  
SP: James Myers

MAY 24 1993

- 6. Background: There has not been an overall revision of Part 34 in many years while a number of Agreement States have updated their regulations. The decision to develop an overall revision to 10 CFR Part 34 was made with the intent of clarifying the regulation so that licensees may have a better understanding of what is expected in radiographic operations. In addition, the format of the proposed rule has been revised to place requirements into categories which better describe the type of requirements that are found in the subpart.
- 7. Resources to complete this rulemaking have been included in the current working draft of the Five-Year Plan, FY 1993-1997. If NMSS believes additional resources will be required for its implementation, please provide proposed revision to the attached Commission Paper. A copy of this concurrence package has been forwarded to the Office of the Controller for coordination of resource issues per the EDO memorandum of June 14, 1991.

ORIGINAL SIGNED BY

*Eric S. Beckjord*  
 for C. J. Heltemes, Deputy Director  
 for Generic Issues and Rulemaking  
 Office of Nuclear Regulatory Research

Enclosure:  
Commission Paper w/att

- cc w/encls.:
- R. M. Scroggins, OC
  - D. C. Williams, IG
  - R. W. Cooper, Region I
  - J. P. Stohr, Region II
  - C. E. Norelius, Region III
  - L. J. Callan, Region IV
  - R. A. Scarano, Region V

DISTRIBUTION w/encl:

RPHEB R/F - DCool [OFFCON.P34]  
 CJHeltemes MLesar, ADM  
 BMorris SBaggett, NMSS  
 FCostanzi BCarrico, NMSS  
 CTrottier MRothschild, OGC  
 DONellis JMyers, OSP  
 MLThomas

\*See Previous Concurrences

OFFC:RPHEB:DRA*	RPHEB:DRA*	RPHEB:DRA*	DD:DRA:RES	D:DRA:RES	DD:RES
NAME:MLThomas	CTrottier	DCool	FCostanzi	BMorris	CJHeltemes
Date: 03/24/93	03/24/93	03/24/93	5/17/93	5/17/93	5/24/93

OFFICIAL RECORD COPY

*Administrative*

FOR: The Commissioners  
FROM: James M. Taylor, Executive Director for Operations  
SUBJECT: PROPOSED RULEMAKING - REVISION TO PART 34, LICENSES FOR  
RADIOGRAPHY AND RADIATION SAFETY REQUIREMENTS FOR  
RADIOGRAPHIC OPERATIONS

PURPOSE:

To obtain Commission approval of the proposed revision.

BACKGROUND:

By an SRM, dated April 25, 1991, the Commission directed the staff to revise Part 34 to clarify the requirements in Section 34.27 and bring Part 34 more into line with the approach taken in Part E of the "Suggested State Regulations for Control of Radiation" and Part 31 of the Texas Regulations. Commissioner Curtiss encouraged the staff to work closely with the States, in particular, those States that have taken an active role in radiography issues.

The staff solicited recommendations on radiography issues from the Agreement

CONTACT:

Donald O. Nellis, RES  
492-3628  
Mary L. Thomas, RES  
492-3886

States at the October 1991 All-Agreement States meeting, as well as from NRC regional offices and radiography equipment manufacturers and radiography licensees. Also, an Agreement State workshop was held on November 18, 1992, in Dallas, Texas, to discuss the recommendations received from the Agreement States and licensees.

A petition for rulemaking was filed by the International Union of Operating Engineers (IUOE), Local No. 2, in October 1992, requesting that Part 34 be revised to require a minimum of two radiographic personnel when performing operations with radioactive material at temporary jobsites.

#### DISCUSSION:

The format of the proposed rule has been revised to place requirements into categories which describe the type of requirements that are found in the subpart. This organization follows the same general format used in 10 CFR Part 39, which addresses radiation safety requirements for well logging. This has been done to clarify and simplify the safety requirements of Part 34 in an effort to make the regulation a more easily understood document and to facilitate compliance. Enclosure 1 provides the current and proposed rule in a column format for ease of review in comparing the proposed requirements with the existing rule.

The proposed revision to Part 34 contains a number of changes which would bring NRC requirements more into line with Agreement State regulations. These are discussed in detail in the Federal Register Notice (Enclosure 2). The

major issues are discussed below.

The first major change is a proposal to require two radiographers or a radiographer and a radiographer's assistant to be present any time radiographic operations occur outside of a permanent radiographic installation, and is based, in part, on the Suggested State Regulations taking into account comments received on the IUOE petition. By requiring two qualified individuals to always be present when radiographic operations are being conducted, there will be a significant increase in assurance that operational safety measures and emergency procedures will be implemented effectively. The expectation is that violations that have involved failures to perform adequate radiation surveys of radiographic exposure devices and the surrounding area, failures to adequately post and monitor the restricted area, and failures to lock and secure the camera when not in use will become less frequent. Furthermore, if an incapacitating injury to a radiographer should occur at a remote location the presence of a second individual could be an important factor in preventing unnecessary radiation exposures.

The cost for the adoption of this provision in the proposed rule may be quite high as estimated in the draft Regulatory Analysis (enclosure 3). While a number of Agreement States have already adopted similar requirements, the staff has not been able to determine actual costs associated with these provisions. However, the estimates used in the draft Regulatory Analysis are believed to reasonably reflect the potential burden on licensees and are based on information supplied by the Regions as to the percentage of licensees not

currently using two individuals. The use of two qualified individuals is already required under current NRC regulations for any situation where a single radiographer could not maintain direct surveillance of the operation to protect against unauthorized entry into a high radiation area. Most licensees use radiographer's assistants to fulfill this function. This proposal would require licensees to hire additional employees only for those jobs where they are not currently providing additional qualified staff to maintain adequate surveillance. However, because of the potential for high costs to some licensees the proposed rule includes a discussion of the use of the exemption provision to allow some flexibility for special circumstances. Furthermore, the Federal Register Notice requests proposals for alternatives to the two-person requirement.

The second major issue involves a requirement to provide additional training for radiographer's assistants. Under the current regulation, radiographer's assistants are only required to receive copies of the licensees' operating and emergency procedures and to be tested in their knowledge and understanding of those procedures. Under the proposed rule, they would be required to receive additional training in Parts 19, 20, 34, portions of 30 and 71, and 49 CFR 171-173. The additional training is needed to ensure that radiographer's assistants are thoroughly knowledgeable of NRC requirements. There have been a number of cases where radiographer's assistants have been overexposed because they failed to comply with NRC requirements.

A third major issue involves the definition of a permanent radiographic

installation. In the past, there has been some confusion on what the NRC intended in requiring a permanent radiographic installation to have special access control devices. The proposed rule clarifies what is required by removing the ambiguous language in the definition of a permanent radiographic installation.

A fourth major issue addressed in the proposed rule involves requirements for the Radiation Safety Officer (RSO) and was adopted from the Texas regulations. The RSO is the key licensee individual charged with the responsibility to ensure that the requirements in the license are followed. The proposed rule specifies the qualifications and duties of the RSO. Currently the only requirement has been to specify an individual to act as the RSO in the license application. No duties were specified for this individual. By listing the specific duties of the RSO, and requiring additional training for this position, there will be an individual qualified to provide the appropriate attention to radiation safety.

Prior to submitting the proposed rule to the Commission, the staff provided the draft rule to the Agreement States for their review and comment. Responses were received from about half of the Agreement States. Many had no comments and agreed with the proposed rule. The major comments are summarized below:

- 1) Regarding the two-person rule, of the 19 states who responded, 5 already have requirements for a two-person crew, and one has proposed adding the requirement. Of the States who currently require a two-

person crew, none were aware of significant hardships on licensees resulting from the additional costs. However, one State suggested including a provision that would permit licensees to request an exemption from the requirement with adequate compensatory measures. This recommendation has been addressed in the Statement of Considerations.

2) Several States questioned the need for special training for Radiation Safety Officers. The staff has changed the wording of the proposed requirements to clarify what information should be addressed in the specialized training.

3) One State recommended that when an individual has not participated in any radiographic operations for 3 months they be tested before using the device. The proposed rule was revised to incorporate this recommendation.

4) One State recommended dropping the use of alarm ratemeters, as they encourage radiographers to rely on the ratemeter and not use the survey meter to confirm that the source is secured. The staff did not adopt this recommendation on the basis that the alarm ratemeter has proven to be effective in warning radiographers when they have failed to verify source location with a survey meter.

5) Several States objected to the proposed allowance for an individual to return to work once their pocket dosimeter has been found to be off-scale for reasons other than radiation exposure (i.e., the pocket dosimeter was dropped). There may be cases where an unreasonable burden would result by preventing a radiographer from returning to work when a



determination can be made that no overexposure occurred, so the staff has not changed the proposed rule. To prevent misuse, language has been added to the Statement of Considerations to clarify when the provision can be applied.

RECOMMENDATION:

That the Commission:

1. Approve the Notice of Proposed Rulemaking for publication (Enclosure 2) for a 75-day public comment period.
  
2. Certify that this rule, if adopted, will not have a negative economic impact on a substantial number of small entities in order to satisfy requirements of the Regulatory Flexibility Act, 5 U.S.C. 605(b).
  
3. Note:
  - a. That the rulemaking would be published in the Federal Register for a 75-day public comment period;
  
  - b. That a draft regulatory analysis will be available in the Public Document Room (Enclosure 3);
  
  - c. The staff has prepared an environmental assessment (Enclosure 4). The assessment concludes that the action will not significantly affect the quality of the human environment;
  
  - d. That the Chief Counsel for Advocacy of the Small Business

Administration will be informed of the certification regarding economic impact and the reasons for it as required by the Regulatory Flexibility Act;

- e. That the proposed rule contains information collection requirements that are subject to review by OMB. Upon Commission approval, formal request for OMB review and clearance will be initiated;
- f. That the Agreement States have been provided with a copy of the proposed rule during the office concurrence process and their comments have been considered in developing the proposed rule;
- g. A public announcement will be issued (Enclosure 5);
- h. The appropriate congressional committees will be informed (Enclosure 6); and

- i. Copies of the Federal Register Notice of proposed rulemaking will be distributed to all Commission licensees. The notice will be sent to other interested parties upon request.

James M. Taylor  
Executive Director  
for Operations

Enclosures:

- 1. Comparative rule text
- 2. Federal Register Notice
- 3. Draft Regulatory Analysis
- 4. Draft Environmental Assessment
- 5. Draft Public Announcement
- 6. Draft Congressional Letters

RECORD NOTE: A draft copy of the proposed/final rule was sent to OIG for information on \_\_\_\_\_.

\*See Previous Concurrence

Offc: RPHEB:DRA*	RPHEB:DRA*	RPHEB:DRA*	DD:DRA:RES	D:DRA:RES	DD/GIR:RES
Name: MLThomas	CTrottier	DCool	FCostanzi	BMorris	CJHeltemes
Date: 03/24/93	03/24/93	03/24/93	/ /93	/ /93	/ /93
Offc: GC	D:OE	D:IRM	D:SP	D:NMSS	D:PA
Name: WParler	JLieberman	GCranford	CKammerer	RBernero	JFouchard
Date: / /93	/ /93	/ /93	/ /93	/ /93	/ /93
Offc: D:ADM	D:RES	EDO			
Name: PNorry	ESBeckjord	JMTaylor			
Date: / /93	/ /93	/ /93			

OFFICIAL RECORD COPY

Enclosure 1 Comparative Rule Text

CURRENT RULE

PART 34 -- LICENSES FOR RADIOGRAPHY  
AND RADIATION SAFETY  
REQUIREMENTS FOR RADIOGRAPHIC  
OPERATIONS

Sec.

34.1 Purpose and scope.

34.2 Definitions.

34.3 Applications for specific  
licenses.

34.4 Maintenance of records.

34.8 Information collection  
requirements: OMB approval.

Subpart A -- Specific Licensing  
Requirements

See § 34.3.

34.11 Issuance of specific licenses  
for use of sealed sources in  
radiography.

Subpart B -- Radiation Safety  
Requirements

Equipment Control

34.20 Performance requirements for  
radiography equipment.

34.21 Limits on levels of radiation  
for radiographic exposure devices  
and storage containers.

34.22 Locking of radiographic  
exposure devices, storage  
containers, and source changers.

STRAWMAN RULE LANGUAGE

PART 34 -- LICENSES AND RADIATION  
SAFETY REQUIREMENTS  
FOR RADIOGRAPHIC OPERATIONS

Subpart A -- General Provisions

Sec.

34.1 Purpose and scope.

34.3 Definitions.

See § 34.11.

34.5 Interpretations.

See § 34.87.

34.8 Information collection  
requirements: OMB approval.

Subpart B -- Specific Licensing  
Requirements

34.11 Application for a specific  
license.

34.13 Specific license for  
radiography.

Subpart C -- Equipment

34.20 Performance requirements for  
radiography equipment.

34.21 Limits on levels of radiation  
for radiographic exposure devices,  
storage containers, and source  
changers.

34.23 Locking and relocation of  
radiographic exposure devices,  
storage containers, and source  
changers.

34.23 Storage precautions.  
34.24 Radiation survey instruments.  
34.25 Leak testing, repair, tagging, opening, modification and replacement of sealed sources.  
34.26 Quarterly inventory.  
34.27 Utilization logs.  
34.28 Inspection and maintenance of radiographic exposure devices, storage containers, and source changers.  
34.29 Permanent radiographic installations.

See § 34.23.

#### Reporting

34.30 Reporting requirements.

#### Personal Radiation Safety Requirements for Radiographers and Radiographers' Assistants

34.31 Training.  
34.32 Operating and emergency procedures.  
34.33 Personnel monitoring.

#### Precautionary Procedures in Radiographic Operations

34.41 Security.  
34.42 Posting.  
34.43 Radiation surveys.

See § 34.35.

34.25 Radiation survey instruments.

34.27 Leak testing and replacement of sealed sources.

34.29 Quarterly inventory.

See § 34.71.

34.31 Inspection and maintenance of radiographic exposure devices, storage containers, associated equipment, and source changers.

34.33 Permanent radiographic installations.

34.35 Labels, storage, and transportation precautions.

See Subpart F, § 34.101.

#### Subpart D -- Radiation Safety Requirements

34.41 Radiation Safety Officer.

34.43 Training.

34.45 Operating and emergency procedures.

34.47 Personnel monitoring.

See § 34.51.

See § 34.53.

34.49 Radiation surveys.

See § 34.41.

See § 34.42.

34.44 Supervision of radiographers' assistants.

#### Exemptions

34.51 Applications for exemptions.

#### Appendix A

See § 34.24.

See § 34.25(c).

See § 34.26.

See § 34.27.

See § 34.28(b).

See § 34.31(c).

See § 34.32.

See § 34.33(b and e).

34.51 Security.

34.53 Posting.

34.55 Supervision of radiographers' assistants.

34.57 Requirements for radiographic operations conducted outside of a permanent radiographic installation.

See Subpart G, § 34.111.

See § 34.43(f).

#### Subpart E -- Records

34.61 Records of specific license for radiography.

34.63 Records of receipt and transfer of sealed sources.

34.65 Records of radiation survey instruments.

34.67 Records of leak testing and replacement of sealed sources.

34.69 Records of quarterly inventory.

34.71 Utilization logs.

34.73 Records of inspection and maintenance of radiographic exposure devices, storage containers, associated equipment, and source changers.

34.75 Records of permanent radiographic installations.

34.79 Records of training.

34.81 Records of operating and emergency procedures.

34.83 Records of personnel monitoring.

See § 34.43(d).

See § 34.4.

See § 34.30.

See § 34.51.

Authority: Secs. 81, 161, 182, 183, 68 Stat. 935, 948, 953, 954, as amended (42 U.S.C. 2111, 2201, 2232, 2233); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841).

Section 34.32 also issued under sec. 206, 88 Stat. 1246 (42 U.S.C. 5846).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); Section 34.20(a)-(e), 34.21 (a) and (b), 34.22, 34.23, 34.24, 34.25 (a), (b), and (d), 34.28, 34.29, 34.31 (a) and (b), 34.32, 34.33 (a), (c), (d), and (f), 34.41, 34.42, 34.43 (a), (b), and (c) and 34.44 are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); and Section 34.11(d), 34.25 (c) and (d), 34.26, 34.27, 34.28(b), 34.29(c), 34.30, 34.31(c), 34.33 (b) and (e) and 34.43(d) are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

34.85 Records of radiation surveys.

34.87 Forms of records.

34.89 Documents and records required at field stations.

34.91 Documents and records required at temporary jobsites.

Subpart F -- Notification of incidents

34.101 Notification of incidents.

Subpart G -- Exemptions

34.111 Applications for exemptions.

Subpart H -- Enforcement

34.121 Violations.

34.123 Criminal penalties.

Authority: Secs. 81, 161, 182, 183, 68 Stat. 935, 948, 953, 954, as amended (42 U.S.C. 2111, 2201, 2232, 2233); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841).



## Subpart A -- General Provisions

### Section 34.1 Purpose and scope.

This part prescribes requirements for the issuance of licenses for the use of sealed sources containing byproduct material and radiation safety requirements for persons using such sealed sources in radiography. The provisions and requirements of this part are in addition to, and not in substitution for, other requirements of this chapter. In particular, the provisions of Part 30 of this chapter apply to applications and licenses subject to this part. Nothing in this part shall apply to uses of byproduct material for medical diagnosis or therapy.

### Section 34.2 Definitions.

As used in this part:

### Section 34.1 Purpose and scope.

This part prescribes requirements for the issuance of licenses for the use of sealed sources containing byproduct material and radiation safety requirements for persons using such sealed sources in industrial radiography. This rule does not apply to medical uses of byproduct material. The provisions and requirements of this part are in addition to, and not in substitution for, other requirements of this chapter. In particular, the requirements and provisions of Parts 19, 20, 21, 30, 71, 150, 170 and 171 of this chapter apply to applications and licenses subject to this part.

### Section 34.3 Definitions.

As used in this part:

"ALARA" (acronym for as low as reasonably achievable) means making every reasonable effort to maintain exposures to radiation as far below the dose limits specified in Part 20 as is practical and consistent with the purpose for which the licensed activity is undertaken.

"Associated Equipment" means equipment that is used in conjunction with a radiographic exposure device to make radiographic exposures that drive, guide or come in contact with the source, (i.e., guide tube, control tube, crank, removable source stop, "J" tube).

"Becquerel" (Bq) means one disintegration per second.

"Collimator" means a device used to limit the size, shape, and direction of the primary radiation beam.

"Control (crank-out) device" means the control cable, the protective sheath, and control drive mechanism used to move the sealed source from its shielded position in the radiographic device or camera to an unshielded position outside the device for the purpose of making a radiographic exposure.

"Control tube" means protective sheath for guiding the control cable. The control tube connects the control drive mechanism to the radiographic exposure device.

"Exposure head" means a device that locates the gamma radiography sealed source in the selected working position. An exposure head is also known as a source stop.

"Field examination" means a demonstration of practical application of the principles learned in the classroom that should include use of all appropriate equipment and procedures.

"Field station" means a facility where licensed material may be stored or used and from which equipment is dispatched.

"Periodic training" means a periodic review conducted or provided by the licensee for its employees on radiation safety aspects of radiography. The review may include, as appropriate, the results of internal inspections, new procedures or equipment, accidents or errors that have been observed, and opportunities for employees to ask safety questions.

"Permanent radiographic installation" means a shielded installation or structure designed or intended for radiography and in which radiography is regularly performed.

"Permanent radiographic installation" means an enclosed shielded room, cell, or vault in which radiography is performed.

"Projection sheath" (guide tube) means a flexible or rigid tube (i.e., "J" tube) for guiding the source assembly and the attached control cable from the exposure device to the exposure head or working position.

"Radiation Safety Officer" means an individual named by the licensee who has knowledge of, responsibility for, and authority to ensure compliance with appropriate radiation protection rules, standards, and practices on behalf of the licensee and who meets the requirements of 34.41.

"Radiographer" means any individual who performs or who, in attendance at the site where the sealed source or sources are being used, personally supervises radiographic operations and who is responsible to the licensee for assuring compliance with the requirements of the Commission's regulations and the conditions of the license;

"Radiographer" means any individual who performs or who, in attendance at the site where the sealed source or sources are being used, personally supervises radiographic operations and who is responsible to the licensee for ensuring compliance with the requirements of the Commission's regulations and the conditions of the license.

"Radiographer's assistant" means any individual who under the personal supervision of a radiographer, uses radiographic exposure devices, sealed sources or related handling tools, or radiation survey instruments in radiography;

"Radiographer's assistant" means any individual, who under the personal supervision of a radiographer, uses radiographic exposure devices, sealed sources or related handling tools, or radiation survey instruments in radiography.

"Radiographic exposure device" means any instrument containing a sealed source fastened or contained therein, in which the sealed source or shielding thereof may be moved, or otherwise changed, from a shielded to unshielded position for purposes of making a radiographic exposure;

"Radiographic exposure device" means any instrument containing a sealed source fastened or contained therein, in which the sealed source or shielding thereof may be moved, or otherwise changed, from a shielded to unshielded position for purposes of making a radiographic exposure, (i.e., a camera or a projector).

“Radiography” means the examination of the structure of materials by nondestructive methods, utilizing sealed sources of byproduct materials;

“Sealed source” means any byproduct material that is encased in a capsule designed to prevent leakage or escape of the byproduct material;

"Radiography" means the examination of the structure of materials by nondestructive methods, utilizing sealed sources of byproduct materials.

"Sealed source" means any byproduct material that is encased in a capsule designed to prevent leakage or escape of the byproduct material.

"Shielded position" means the location within the radiographic exposure device or source changer where the sealed source is secured and restricted from movement. In this position the radiation exposure will be at a minimum. This position incorporates maximum shielding for the radioactive source.

"Sievert" means the SI unit of any of the quantities expressed as dose equivalent. The dose equivalent in rems is equal to the absorbed dose in rads multiplied by the quality factor (1 Sv = 100 rems).

"Source assembly" means an assembly that consists of the sealed source and a connector that attaches the source to the control cable. The source assembly may also include a stop ball used to secure the source in the shielded position.

“Source changer” means a device designed and used for replacement of sealed sources in radiographic exposure devices, including those also used for transporting and storage of sealed sources;

"Source changer" means a device designed and used for replacement of sealed sources in radiographic exposure devices, including those also used for transporting and storage of sealed sources.

“Storage area” means any location, facility, or vehicle which is used to store, to transport, or to secure a radiographic exposure device, a storage container, or a sealed source when it is not in use and which is locked or has a physical barrier to prevent

"Storage area" means any location, facility, or vehicle which is used to store or to secure a radiographic exposure device, a storage container, or a sealed source when it is not in use and which is locked or has a physical barrier to prevent accidental

accidental exposure, tampering with, or unauthorized removal of the device, container, or source.

"Storage container" means a device in which sealed sources are transported or stored.

exposure, tampering with, or unauthorized removal of the device, container, or source.

"Storage container" means a device in which sealed sources are stored.

"Temporary jobsite" means a place where licensed materials are present for the purpose of performing radiography other than any permanent radiographic installation.

#### Section 34.5 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission, other than a written interpretation by the General Counsel, will be recognized to be binding upon the Commission.

#### Section 34.3 Applications for specific licenses.

A person may file an application for specific license for use of sealed sources in radiography in duplicate on NRC Form 313, "Application for Material License," in accordance with the provisions of Section 30.32 of this chapter.

See § 34.11.

#### Section 34.4 Maintenance of records.

Each record required by this part must be legible throughout the retention period specified by each Commission regulation. The record may be the original of a reproduced copy of a microform provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of producing a clear copy throughout the required retention period. The record may also be

See § 34.87.

stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records such as letters, drawings, specifications, must include all pertinent information such as stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and loss of records.

Section 34.8 Information collection requirements: OMB approval.

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). OMB has approved the information collection requirements contained in this part under control number 3150-0007.

(b) The approved information collection requirements contained in this part appear in Section 34.11, 34.24, 34.25, 34.26, 34.27, 34.28, 34.29, 34.31, 34.32, 34.33, and 34.43.

(c) This part contains information collection requirements in addition to those approved under the control number specified in paragraph (a) of this section. These information collection requirements and the control numbers under which they are approved are as follows:

(1) In Section 34.3, Form NRC-313R is approved under control number 3150-0023.

Section 34.8 Information collection requirements: OMB approval.

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). OMB has approved the information collection requirements contained in this part under control number 3150-0023.

(b) The approved information collection requirements contained in this part appear in §§ 34.13, 34.20, 34.25, 34.27, 34.29, 34.31, 34.33, 34.43, 34.45, 34.47, 34.49, 34.61, 34.63, 34.65, 34.67, 34.69, 34.71, 34.73, 34.75, 34.79, 34.81, 34.85, 34.89, 34.91, 34.101, and 34.111.

(c) This part contains information collection requirements in addition to those approved under the control number specified in paragraph (a) of this section. The additional information collection requirements in § 34.11, Form NRC 313 are approved under control number 3150-0120.

Subpart A -- Specific  
Licensing Requirements

See § 34.3.

Section 34.11 Issuance of specific  
licenses for use of sealed sources  
in radiography.

An application for a specific  
license for use of sealed sources in  
radiography will be approved if:

(a) The applicant satisfies the  
general requirements specified in  
Section 30.33 of this chapter;

(b) The applicant will have an  
adequate program for training  
radiographers and radiographers'  
assistants and submits to the  
Commission a schedule or description  
of such program which specifies the:

- (1) Initial training;
- (2) Periodic training;
- (3) On-the-job training;
- (4) Means to be used by the  
licensee to determine the  
radiographer's knowledge and  
understanding of and ability to  
comply with Commission  
regulations and licensing  
requirements, and the operating and  
emergency procedures of the  
applicant; and

Subpart B -- Specific Licensing  
Requirements

Section 34.11 Application for a  
specific license.

A person may file an  
application for specific license for  
use of sealed sources in radiography  
in duplicate on NRC Form 313,  
"Application for Material License,"  
in accordance with the provisions of  
§ 30.32 of this chapter.

Section 34.13 Specific license for  
radiography.

The Commission will approve an  
application for a specific license  
for the use of licensed material in  
radiography if the applicant meets  
the following requirements:

(a) The applicant shall satisfy  
the general requirements specified  
in § 30.33 of this chapter for  
byproduct material, as appropriate,  
and any special requirements  
contained in this part.

(b) The applicant shall develop  
an adequate program for training  
radiographers and radiographer's  
assistants and submit to the  
Commission a description of this  
program which specifies the --

- (1) Initial and periodic  
training;
- (2) On-the-job training;
- (3) Means the applicant will  
use to demonstrate the  
radiographer's knowledge and  
understanding of and ability to  
comply with the Commission's  
regulations and licensing  
requirements and the applicant's  
operating and emergency procedures;  
and

See § 34.11(b)(6).

(5) In lieu of describing its initial training program for radiographers in the subjects outlined in Appendix A of this part, and the description of and the means to determine the radiographer's knowledge and understanding of these subjects, the applicant affirms that all individuals acting as radiographers will be certified in radiation safety through the Certification Program for Industrial Radiography Radiation Safety Personnel of the American Society for Nondestructive Testing, Inc. (ASNT-IRRSP) prior to commencing duties as radiographers. From April 18, 1991, to the date of the renewal of an existing license, an approved license application is deemed to include the option, for individuals who are certified in radiation safety through the ASNT-IRRSP, to substitute ASNT-IRRSP certification in lieu of the described means to determine a radiographer's knowledge and understanding of the subjects in § 34.31(a)(1). (This paragraph does not affect the licensee's responsibility to assure that radiographers are properly trained in accordance with § 34.31(a)).

(6) Means to be used by the licensee to determine the radiographer's assistant's knowledge and understanding of and ability to comply with the operating and emergency procedures of the applicant;

(c) The applicant has established and submits to the Commission satisfactory written

(4) Means the applicant will use to determine the radiographer's assistant's knowledge and understanding of and ability to comply with the applicant's operating and emergency procedures.

(c) In lieu of describing its initial training program for radiographers in the subjects outlined in § 34.43(f), and the description of and the means to determine the radiographer's knowledge and understanding of these subjects, the applicant affirms that all individuals acting as radiographers will be certified in radiation safety through the Certification Program for Industrial Radiography Radiation Safety Personnel of the American Society for Nondestructive Testing, Inc. (ASNT-IRRSP) prior to commencing duties as radiographers. From April 18, 1991, to the date of the renewal of an existing license, an approved license application is deemed to include the option, for individuals who are certified in radiation safety through the ASNT-IRRSP, to substitute ASNT-IRRSP certification in lieu of the described means to determine a radiographer's knowledge and understanding of the subjects in § 34.43(a)(1). This paragraph does not affect the licensee's responsibility to ensure that radiographers are properly trained in accordance with § 34.43(a).

See § 34.13(b)(4).

(d) The applicant shall submit to the Commission written adequate operating and emergency procedures as described in § 34.45.



operating and emergency procedures as described in Section 34.32;

(d) The applicant has established and submits to the Commission a description of its inspection program adequate to ensure that its radiographers and radiographers' assistants follow the Commission's regulatory requirements and the applicant's operating and emergency procedures. The inspection program must:

(1) Include observation of the performance of each radiographer and radiographer's assistant during an actual radiographic operation at intervals not to exceed three months;

(2) Provide that, if a radiographer or a radiographer's assistant has not participated in a radiographic operation for more than three months since the last inspection, that individual's performance must be observed and recorded the next time the individual participates in a radiographic operation; and

(3) Include the retention of inspection records on the performance of radiographers or radiographers' assistants for three years.

(e) The applicant submits a description of its over-all organizational structure pertaining to the radiography program, including specified delegations of authority and responsibility for operation of the program; and

(f) The applicant who desires to conduct his own leak tests has

(e) The applicant shall establish and submit to the Commission its program for semiannual inspections of the job performance of each radiographer and radiographer's assistant as described in § 34.43(d).

See § 34.43(d)(1).

See §34.43(d)(2).

See § 34.79.

(f) The applicant shall submit a description of its overall organizational structure as it applies to the radiation safety responsibilities in radiography, including specified delegations of authority and responsibility.

(g) The applicant shall designate a Radiation Safety Officer responsible for implementing the licensee's radiation safety program. The Radiation Safety Officer shall meet the qualifications and duties described in § 34.41.

(h) If an applicant intends to perform leak testing of sealed

established adequate procedures to be followed in leak testing sealed sources, for possible leakage and contamination and submits to the Commission a description of such procedures including:

- (1) Instrumentation to be used,
- (2) Method of performing test, e.g., points on equipment to be smeared and method of taking smear, and
- (3) Pertinent experience of the person who will perform the test.

Subpart B --  
Radiation Safety Requirements

EQUIPMENT CONTROL

Section 34.20 Performance requirements for radiography equipment.

Equipment used in industrial radiographic operations must meet the following minimum criteria:

- (a) Each radiographic exposure device and all associated equipment must meet the requirements specified in American National Standard N432-1980 "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography," (published as NBS Handbook 136, issued January 1981). This publication has been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a). This publication may be purchased

sources, the applicant shall identify the manufacturers and the model numbers of the leak test kits to be used. If the applicant intends to analyze its own wipe samples, the applicant shall establish procedures to be followed and submit a description of these procedures to the Commission. The description must include the --

- (1) Instruments to be used;
- (2) Methods of performing the analysis; and

- (3) Pertinent experience of the person who will analyze the wipe samples.

- (i) The applicant shall submit to the Commission a list and description of permanent radiographic installations which are at their place of business and storage locations where radioactive material is stored for more than 180 days in a calendar year.

Subpart C -- Equipment

Section 34.20 Performance requirements for radiography equipment.

Equipment used in industrial radiographic operations must meet the following minimum criteria:

- (a) Each radiographic exposure device and all associated equipment must meet the requirements specified in American National Standard N432-1980 "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography," (published as NBS Handbook 136, issued January 1981). This publication has been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a). This publication may be purchased

from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 and from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018, Telephone (212) 642-4900. Copies of the document are available for inspection at the Nuclear Regulatory Commission Public Document Room, 2120 L Street NW., Lower Level, Washington, DC 20555. A copy of the document is also on file at the Office of the Federal Register, 1100 L Street NW., Room 8301, Washington, DC 20408.

(b) In addition to the requirements specified in paragraph (a) of this section, the following requirements apply to radiographic exposure devices and associated equipment.

(1) Each radiographic exposure device must have attached to it by the user, a durable, legible, clearly visible label bearing the --

(i) Chemical symbol and mass number of the radionuclide in the device;

(ii) Activity and the date on which this activity was last measured;

(iii) Model number and serial number of the sealed source;

(iv) Manufacturer of the sealed source; and

(v) Licensee's name, address, and telephone number.

(2) Radiographic exposure devices intended for use as Type B transport containers must meet the applicable requirements of 10 CFR part 71.

from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 and from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018, Telephone (212) 642-4900. Copies of the document are available for inspection at the Nuclear Regulatory Commission Library, 7920 Norfolk Avenue, Lower Level, Bethesda, Maryland, 20814. A copy of the document is also on file at the Office of the Federal Register, 800 North Capitol Street NW., Washington, DC 20408.

(b) In addition to the requirements specified in paragraph (a) of this section, the following requirements apply to radiographic exposure devices and associated equipment.

(1) Each radiographic exposure device must have attached to it by the user, a durable, legible, clearly visible label bearing the --

(i) Chemical symbol and mass number of the radionuclide in the device;

(ii) Activity and the date on which this activity was last measured;

(iii) Model number and serial number of the sealed source;

(iv) Manufacturer of the sealed source; and

(v) Licensee's name, address, and telephone number.

(2) Radiographic exposure devices intended for use as Type B transport containers must meet the applicable requirements of 10 CFR Part 71, including documentation of the QA program requirements outlined in § 71.105.

(3) Modification of any exposure devices and associated equipment is prohibited, unless the design of any replacement component, including source holder, source assembly, controls or guide tubes would not compromise the design safety features of the system.

(c) In addition to the requirements specified in paragraphs (a) and (b) of this section, the following requirements apply to radiographic exposure devices and associated equipment that allow the source to be moved out of the device for routine operation.

(1) The coupling between the source assembly and the control cable must be designed in such a manner that the source assembly will not become disconnected if cranked outside the guide tube. The coupling must be such that it cannot be unintentionally disconnected under normal and reasonably foreseeable abnormal conditions.

(2) The device must automatically secure the source assembly when it is cranked back into the fully shielded position within the device. This securing system may only be released by means of a deliberate operation on the exposure device.

(3) The outlet fittings, lock box, and drive cable fittings on each radiographic exposure device must be equipped with safety plugs or covers which must be installed during storage and transportation to protect the source assembly from water, mud, sand or other foreign matter.

(4) Each sealed source or source assembly must have attached to it or engraved in it, a durable,

(3) Modification of any exposure devices and associated equipment is prohibited.

(c) In addition to the requirements specified in paragraphs (a) and (b) of this section, the following requirements apply to radiographic exposure devices, source assemblies, and associated equipment that allow the source to be moved out of the device for routine operation.

(1) The coupling between the source assembly and the control cable must be designed in such a manner that the source assembly will not become disconnected if cranked outside the guide tube. The coupling must be such that it cannot be unintentionally disconnected under normal and reasonably foreseeable abnormal conditions.

(2) The device must automatically secure the source assembly when it is cranked back into the fully shielded position within the device. This securing system may only be released by means of a deliberate operation on the exposure device.

(3) The outlet fittings, lock box, and drive cable fittings on each radiographic exposure device must be equipped with safety plugs or covers which must be installed during storage and transportation to protect the source assembly from water, mud, sand or other foreign matter.

(4) Each sealed source or source assembly must have attached to it or engraved in it, a durable,

legible, visible label with the words:

"DANGER -- RADIOACTIVE." The label must not interfere with the safe operation of the exposure device or associated equipment.

(5) The guide tube must have passed the crushing tests for the control tube as specified in ANSI N432 and a kinking resistance test that closely approximates the kinking forces likely to be encountered during use.

(6) Guide tubes must be used when moving the source out of the device.

(7) An exposure head or similar device designed to prevent the source assembly from passing out of the end of the guide tube must be attached to the outermost end of the guide tube during radiographic operations.

(8) The guide tube exposure head connection must be able to withstand the tensile test for control units specified in ANSI N432.

(9) Source changers must provide a system for assuring that the source will not be accidentally withdrawn from the changer when connecting or disconnecting the drive cable to or from a source assembly.

(d) All newly manufactured radiographic exposure devices and associated equipment acquired by licensees after January 10, 1992 must comply with the requirements of this section.

(e) All radiographic exposure devices and associated equipment in use after January 10, 1996 must comply with the requirements of this section.

legible, visible label with the words:

"DANGER -- RADIOACTIVE." The label must not interfere with the safe operation of the exposure device or associated equipment.

(5) The guide tube must have passed the crushing tests for the control tube as specified in ANSI N432 and a kinking resistance test that closely approximates the kinking forces likely to be encountered during use.

(6) Guide tubes must be used when moving the source out of the device.

(7) An exposure head or similar device designed to prevent the source assembly from passing out of the end of the guide tube must be attached to the outermost end of the guide tube during radiographic operations.

(8) The guide tube exposure head connection must be able to withstand the tensile test for control units specified in ANSI N432.

(9) Source changers must provide a system for ensuring that the source will not be accidentally withdrawn from the changer when connecting or disconnecting the drive cable to or from a source assembly.

(d) All newly manufactured radiographic exposure devices and associated equipment acquired by licensees after January 10, 1992, must comply with the requirements of this section.

(e) All radiographic exposure devices, source assemblies, and associated equipment in use after January 10, 1996, must comply with the requirements of this section.

(f) All associated equipment acquired after January 10, 1996, must be labelled to identify that the components have met the requirements of this section.

Section 34.21 Limits on levels of radiation for radiographic exposure devices and storage containers.

(a) Radiographic exposure devices measuring less than four (4) inches from the sealed source storage position to any exterior surface of the device shall have no radiation level in excess of 50 milliroentgens per hour at six (6) inches from any exterior surface of the device.

Radiographic exposure devices measuring a minimum of four (4) inches from the sealed source storage position to any exterior surface of the device, and all storage containers for sealed sources or for radiographic exposure devices, shall have no radiation level in excess of 200 milliroentgens per hour at any exterior surface, and ten (10) milliroentgens per hour at one meter from any exterior surface. The radiation levels specified are with the sealed source in the shielded (i.e., "off") position.

(b) Paragraph (a) of this section applies to all equipment manufactured prior to January 10, 1992. After January 10, 1996, radiographic equipment other than storage containers and source changers must meet the requirements of Section 34.20, and Section 34.21 applies only to storage containers (source changers).

Section 34.21 Limits on levels of radiation for radiographic exposure devices, storage containers, and source changers.

(a) Radiographic exposure devices measuring less than 10 centimeters (4 inches) from the sealed source storage position to any exterior surface of the device must not have a radiation level in excess of 0.5 millisieverts (50 millirems) per hour at 15 centimeters (6 inches) from any exterior surface of the device.

Radiographic exposure devices measuring a minimum of 10 centimeters (4 inches) from the sealed source storage position to any exterior surface of the device, and all storage containers for sealed sources or for radiographic exposure devices, must not have a radiation level in excess of 2 millisieverts (200 millirems) per hour at any exterior surface, and 0.1 millisieverts (10 millirems) per hour at one meter from any exterior surface. The radiation levels specified are with the sealed source in the shielded (i.e., "off") position.

(b) Paragraph (a) of this section applies to all equipment manufactured prior to January 10, 1992. After January 10, 1996, radiographic equipment other than storage containers and source changers must meet the requirements of § 34.20. Section 34.21 applies only to storage containers.

Section 34.22 Locking of radiographic exposure devices, storage containers, and source changers.

(a) Each radiographic exposure device shall have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The exposure device or its container shall be kept locked when not under the direct surveillance of a radiographer or a radiographer's assistant or as otherwise may be authorized in Section 34.41. In addition, during radiographic operations the sealed source assembly shall be secured in the shielded position each time the source is returned to that position.

(b) Each sealed source storage container and source changer shall have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. Storage containers and source changers shall be kept locked when containing sealed sources except when under the direct surveillance of a radiographer or a radiographer's assistant.

Section 34.23 Locking and relocation of radiographic exposure devices, storage containers, and source changers.

(a) Locked radiographic exposure devices and storage containers must be physically secured to prevent tampering.

(1) Each radiographic exposure device must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The exposure device or its container must be kept locked (and if a keyed lock, with the key removed at all times), when not under the direct surveillance of a radiographer or a radiographer's assistant or as otherwise may be authorized in § 34.51. In addition, during radiographic operations the sealed source assembly must be manually secured in the shielded position each time the source is returned to that position in those exposure devices manufactured prior to January 10, 1992.

(2) Each sealed source storage container and source changer must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. Storage containers and source changers must be kept locked when containing sealed sources except when under the direct surveillance of a radiographer or a radiographer's assistant.

(b) Radiographic exposure devices, source changers, and storage containers, prior to being moved from one location to another, must be disassembled, safety plugs or covers applied, locked and physically secured to prevent

accidental loss, tampering or removal of licensed material and must be surveyed to assure that the sealed source is in the shielded position.

Section 34.23 Storage precautions.

Locked radiographic exposure devices and storage containers shall be physically secured to prevent tampering or removal by unauthorized personnel.

See § 34.35.

Section 34.24 Radiation survey instruments.

The licensee shall maintain sufficient calibrated and operable radiation survey instruments to make physical radiation surveys as required by this part and Part 20 of this chapter. Each radiation survey instrument shall be calibrated at intervals not to exceed three months and after each instrument servicing and a record shall be maintained of the results of each instrument calibration and date thereof for three years after the date of calibration. Instrumentation required by this section shall have a range such that two milliroentgens per hour through one roentgen per hour can be measured.

Section 34.25 Radiation survey instruments.

(a) The licensee shall keep sufficient calibrated and operable radiation survey instruments at each location where radioactive material is present to make the radiation surveys required by this part and by Part 20 of this chapter. Instrumentation required by this section must be capable of measuring a range from 0.02 millisieverts (2 millirems) per hour through 0.01 Sievert (1 rem) per hour. Survey instruments must be checked for operability prior to use. This may be accomplished by evaluating the instrument response to the previously measured fields at the projection sheath port or the control cable sheath port on a radiographic exposure device.

(b) The licensee shall have each radiation survey instrument required under paragraph (a) of this section calibrated --

(1) At intervals not to exceed 6 months and after instrument servicing, except for battery changes;

(2) For linear scale instruments, at two points located



approximately 1/3 and 2/3 of full-scale on each scale; for logarithmic scale instruments, at midrange of each decade, and at two points of at least one decade; and for digital instruments, at appropriate points; and

(3) So that an accuracy within plus or minus 20 percent of the calibration standard can be demonstrated on each scale.

(c) The licensee shall maintain records of the results of the instrument calibrations in accordance with § 34.65.

Section 34.25 Leak testing, repair, tagging, opening, modification and replacement of sealed sources.

(a) The replacement of any sealed source fastened to or contained in a radiographic exposure device and leak testing, repair, tagging, opening or any other modification of any sealed source shall be performed only by persons specifically authorized by the Commission to do so.

(b) Each sealed source shall be tested for leakage at intervals not to exceed 6 months. In the absence of a certificate from a transferor that a test has been made within the 6 months prior to the transfer, the sealed source shall not be put into use until tested.

(c) The leak test must be capable of detecting the presence of 0.003 microcurie of removable contamination on the sealed source.

Section 34.27 Leak testing and replacement of sealed sources.

(a) The replacement of any sealed source fastened to or contained in a radiographic exposure device and leak testing of any sealed source must be performed only by persons specifically authorized by the Commission or an Agreement State to do so.

(b) Testing and recordkeeping requirements.

(1) Each licensee who uses a sealed source shall have the source tested for leakage at intervals not to exceed 6 months.

(2) The licensee shall maintain records of the leak tests in accordance with § 34.67.

(3) In the absence of a certificate from the transferor that a test has been made within the 6 months before the transfer, the sealed source may not be used until tested.

(c) Method of testing. The wipe of a sealed source must be performed using a leak test kit or method approved by the Commission or

An acceptable leak test for sealed sources in the possession of a radiography licensee would be to test at the nearest accessible point to the sealed-source storage position, or other appropriate measuring point, by a procedure to be approved pursuant to Section 34.11(f). Each record of leak test results must be kept in units of microcuries [or disintegrations per minute (dpm)] and retained for inspection by the Commission for three years after it is made.

(d) Any test conducted pursuant to paragraphs (b) and (c) of this section which reveals the presence of 0.005 microcurie or more of removable radioactive material shall be considered evidence that the sealed source is leaking. The licensee shall immediately withdraw the equipment involved 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 test, with the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 describing the equipment involved, the test results, and the corrective action taken. A copy of such report shall be sent to the Administrator of the appropriate Nuclear Regulatory Commission's Regional Office listed in Appendix D of Part 20 of this chapter "Standards for Protection Against Radiation."

(e) A sealed source which is not fastened to or contained in a radiographic exposure device shall have permanently attached to it a durable tag at least one (1) inch square bearing the prescribed radiation caution symbol in conventional colors, magenta or purple on a yellow background, and at least the instructions: "Danger -- Radioactive Material -- Do Not

an Agreement State. The wipe sample must be taken from the nearest accessible point to the sealed source where contamination might accumulate. The wipe sample must be analyzed for radioactive contamination. The analysis must be capable of detecting the presence of 185 Bq (0.005 microcuries) of radioactive material on the test sample and must be performed by a person approved by the Commission or an Agreement State to perform the analysis.

(d) Any test conducted pursuant to paragraphs (b) and (c) of this section which reveals the presence of 185 Bq (0.005 microcuries) or more of removable radioactive material must be considered evidence that the sealed source is leaking. The licensee shall immediately withdraw the equipment involved from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report must be filed, within 5 days of the test, with the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, describing the equipment involved, the test results, and the corrective action taken. A copy of such the must be sent to the Administrator of the appropriate Nuclear Regulatory Commission's Regional Office listed in Appendix D of Part 20 of this chapter "Standards for Protection Against Radiation."

(e) A sealed source which is not fastened to or contained in a radiographic exposure device must have permanently attached to it a durable tag at least one (1) inch square bearing the prescribed radiation caution symbol in conventional colors, magenta, purple or black on a yellow background, and at least the instructions: "Danger -- Radioactive Material -- Do Not

Handle -- Notify Civil Authorities if Found."

Handle -- Notify Civil Authorities if Found."

(f) Each exposure device using DU shielding and an "S" tube configuration must be periodically tested for depleted uranium contamination. This test may be performed by the licensee using available test kits or the exposure device may be returned to the manufacturer for such testing. This test must be undertaken at intervals not to exceed 12 months and should such testing reveal the presence of DU contamination, the exposure device must be removed from use and arrangements for proper disposal in accordance with 10 CFR Part 61 must be made. A record of the DU leak-test must be made in accordance with § 34.67.

#### Section 34.26 Quarterly inventory.

Each licensee shall conduct a quarterly physical inventory to account for all sealed sources received and possessed under this license. The records of the inventories shall be maintained for three years from the date of the inventory for inspection by the Commission, and shall include the quantities and kinds of byproduct material, location of sealed sources, and the date of the inventory.

#### Section 34.27 Utilization logs.

Each licensee shall maintain current logs, which shall be kept available for three years from the date of the recorded event, for inspection by the Commission, at the address specified in the license, showing for each sealed source the following information:

(a) A description (or make and model number) of the radiographic

#### Section 34.29 Quarterly inventory.

(a) Each licensee shall conduct a quarterly physical inventory to account for all sealed sources received and possessed under this license.

(b) The licensee shall maintain records of the quarterly inventory in accordance with § 34.69.

See § 34.71 .

exposure device or storage container in which the sealed source is located;

(b) The identity of the radiographer to whom assigned; and

(c) The plant or site where used and dates of use.

Section 34.28 Inspection and maintenance of radiographic exposure devices, storage containers, and source changers.

(a) The licensee shall check for obvious defects in radiographic exposure devices, storage containers, and source changers prior to use each day the equipment is used.

(b) The licensee shall conduct a program for inspection and maintenance of radiographic exposure devices, storage containers, and source changers at intervals not to exceed three months or prior to the first use thereafter to ensure proper functioning of components important to safety. The licensee shall retain records of these inspections and maintenance for three years.

Section 34.29 Permanent radiographic installations.

(a) Permanent radiographic installations having high radiation area entrance controls of the types described in Section

Section 34.31 Inspection and maintenance of radiographic exposure devices, storage containers, associated equipment, and source changers.

(a) The licensee shall visually check for obvious defects in radiographic exposure devices, storage containers, associated equipment, and source changers prior to use each day the equipment is used to ensure that the equipment is in good working condition and that required labeling is present. If defects are found, the equipment must be removed from service until repaired, and a record must be made in accordance with § 34.73.

(b) Each licensee shall have a program for inspection and routine maintenance of radiographic exposure devices, source changers, associated equipment and storage containers at intervals not to exceed 3 months and prior to the first use thereafter to ensure the proper functioning of components important to safety. Records of these inspections and maintenance performed must be made in accordance with § 34.73. If defects are found, the equipment must be removed from service until repaired, and a record must be made in accordance with § 34.73.

Section 34.33 Permanent radiographic installations.

(a) Permanent radiographic installations must have high

20.203(c)(2)(ii), (2)(iii), or (4) of this chapter shall also meet the following special requirement.

(b) Each entrance that is used for personnel access to the high radiation area in a permanent radiographic installation to which this section applies shall have both visible and audible warning signals to warn of the presence of radiation. The visible signal shall be actuated by radiation whenever the source is exposed. The audible signal shall be actuated when an attempt is made to enter the installation while the source is exposed.

(c) The alarm system must be tested at intervals not to exceed three months or prior to the first use thereafter of the source in the installation. The licensee shall retain records of these tests for three years.

## REPORTING

Section 34.30 Reporting requirements.

(a) In addition to the reporting requirements specified under other sections of this chapter, each licensee shall provide a written report to the U.S. Nuclear Regulatory Commission; Division of Industrial and Medical Nuclear Safety; Medical, Academic and Commercial Use Safety Branch; Washington, DC 20555, with a copy to the Director, Office for Analysis

radiation area entrance controls of the types described in § 20.1601(a)(2), (a)(3), or (b) of this chapter and must also meet the following special requirements.

(b) Each entrance that is used for personnel access to the high radiation area in a permanent radiographic installation to which this section applies must have both visible and audible warning signals to warn of the presence of radiation. The visible signal must be actuated by radiation whenever the source is exposed. The audible signal must be actuated when an attempt is made to enter the installation while the source is exposed.

(c) The alarm system must be tested for proper operation at intervals not to exceed 3 months and the beginning of each day of equipment use. The equipment use test must include a check of the visible and audible signals by a crank out of the exposure device prior to use of the room. If a control device or alarm is operating improperly, it must be immediately labeled as defective and repaired before industrial radiographic operations are resumed. Test records must be maintained in accordance with § 34.75.

See § 34.101.

and Evaluation of Operational Data,  
U.S. Nuclear Regulatory  
Commission, Washington, DC 20555,  
within 30 days of the occurrence of  
any of the following incidents  
involving radiographic equipment:

(1) Unintentional disconnection  
of the source assembly from the  
control cable.

(2) Inability to retract the  
source assembly to its fully  
shielded position and secure it in  
this position.

(3) Failure of any component  
(critical to safe operation of the  
device) to properly perform its  
intended function.

(b) The licensee shall include  
the following information in each  
report submitted under paragraph (a)  
of this section:

(1) A description of the  
equipment problem.

(2) Cause of each incident, if  
known.

(3) Manufacturer and model  
number of equipment involved in the  
incident.

(4) Place, time and date of the  
incident.

(5) Actions taken to establish  
normal operations.

(6) Corrective actions taken or  
planned to prevent recurrence.

(7) Qualifications of personnel  
involved in the incident.

(c) Reports of overexposure  
submitted under 10 CFR 20.405 which  
involve failure of safety components  
of radiography equipment must also  
include the information specified in  
paragraph (b) of this section.

See § 34.23.

Section 34.35 Labels, storage, and  
transportation precautions.

(a) Labels.

(1) The licensee may not use a  
source changer or container to store  
licensed material unless the source  
changer or the container has

securely attached to it a durable, legible, and clearly visible label. The label must contain the radiation symbol specified in § 20.1904 of this chapter and the wording

CAUTION (OR DANGER)  
RADIOACTIVE MATERIAL--DO NOT HANDLE  
NOTIFY CIVIL AUTHORITIES (OR NAME OF COMPANY)

(2) The licensee may not transport licensed material unless the material is packaged, labeled, marked, and accompanied with appropriate shipping papers in accordance with regulations set out in 10 CFR Part 71, including documentation of the QA program requirements outlined in § 71.105.

(b) Security precautions during storage and transportation.

(1) Locked radiographic exposure devices and storage containers must be physically secured to prevent tampering or removal by unauthorized personnel. The licensee shall store licensed material in a manner which will minimize danger from explosion or fire.

(2) The licensee shall lock and physically secure the transport package containing licensed material in the transporting vehicle to prevent accidental loss, tampering, or unauthorized removal of the licensed material from the vehicle.

Subpart D -- Radiation Safety Requirements

Section 34.41 Radiation Safety Officer.

The Radiation Safety Officer shall ensure that radiation safety activities are being performed in accordance with approved procedures and regulatory requirements in the

daily operation of the licensee's program.

(a) The RSO's qualifications must include:

(1) Completion of the training and testing requirements of § 34.43(a); and

(2) 2000 hours of documented experience in industrial radiographic operations, with at least 40 hours of formal classroom training with respect to the establishment and maintenance of radiation protection programs.

(b) The specific duties of the RSO include, but are not limited to, the following:

(1) To establish and oversee operating, emergency, and ALARA procedures, and to review them regularly to ensure that the procedures are current and conform with these rules;

(2) To oversee and approve all phases of the training program for radiographic personnel so that appropriate and effective radiation protection practices are taught;

(3) To ensure that required radiation surveys and leak tests are performed and documented in accordance with these rules, including any corrective measures, when levels of radiation exceed established limits;

(4) To ensure that personnel monitoring devices are calibrated and used properly by occupationally-exposed personnel, that records are kept of the monitoring results, and that timely notifications are made as required by § 20.2203; and

(5) To ensure that operations are conducted safely and to assume control and have the authority to institute corrective actions including stopping of operations when necessary in emergency situations or unsafe conditions.



(a) The licensee shall not permit any individual to act as a radiographer until such individual:

(1) Has been instructed in the subjects outlined in Appendix A of this part;

(2) Has received copies of and instruction in NRC regulations contained in this part and in the applicable sections of Parts 19 and 20 of this chapter, NRC license(s) under which the radiographer will perform radiography, and the licensee's operating and emergency procedures;

(3) Has demonstrated competence to use the licensee's radiographic exposure devices, sealed sources, related handling tools, and survey instruments; and

(4) Has demonstrated understanding of the instructions in this paragraph (a) by successful completion of a written test and a field examination on the subjects covered.

(b) The licensee shall not permit any individual to act as a radiographer's assistant until such individual:

(1) Has received copies of and instruction in the licensee's operating and emergency procedures;

(2) Has demonstrated competence to use, under the personal supervision of the radiographer, the radiographic exposure devices, sealed sources, related handling tools, and radiation survey instruments that the assistant will use; and

(3) Has demonstrated understanding of the instructions in this paragraph (b) by successfully

(a) The licensee shall not permit any individual to act as a radiographer until the individual --

(1) Has been instructed in the subjects outlined in § 34.43(f) of this part;

(2) Has received copies of and instruction in NRC regulations contained in this part; in § 30.7, 30.9, and 30.10; and in the applicable sections of Parts 19, 20, and 71 of this chapter, in 49 CFR Parts 171-173, in the NRC license(s) under which the radiographer will perform radiography, and the licensee's operating and emergency procedures;

(3) Has demonstrated competence to use the licensee's radiographic exposure devices, sealed sources, related handling tools, and survey instruments; and

(4) Has demonstrated understanding of the instructions in this paragraph (a) by successful completion of a written test and a field examination on the subjects covered in § 34.43(f).

(b) The licensee shall not permit any individual to act as a radiographer's assistant until the individual --

(1) Has received copies of and instruction in NRC regulations contained in this part; in § 30.7, 30.9, and 30.10; and in the applicable sections of Parts 19, 20, and 71 of this chapter, in 49 CFR Parts 171-173, in the NRC license(s) under which the radiographer's assistant will perform radiography, and the licensee's operating and emergency procedures;

(2) Has demonstrated competence to use, under the personal supervision of the radiographer, the radiographic exposure devices, sealed sources, related handling tools, and radiation survey instruments that the assistant will use; and

(3) Has demonstrated understanding of the instructions in

completing a written or oral test and a field examination on the subjects covered.

See § 34.11(d).

(c) Records of the above training, including copies of written tests and dates of oral tests and field examinations, shall be maintained for three years.

See Appendix A

this paragraph (b) by successfully completing a written or oral test and a field examination on the subjects covered.

(c) The licensee shall provide periodic training for radiographers and radiographer's assistants at least once during each calendar year.

(d) The licensee shall conduct a semiannual inspection program of the job performance of each radiographer and radiographer's assistant to ensure that the Commission's regulations, license requirements, and the applicant's operating and emergency procedures are followed. The inspection program must --

(1) Include observation of the performance of each radiographer and radiographer's assistant during an actual radiographic operation at intervals not to exceed 6 months; and

(2) Provide that, if a radiographer or a radiographer's assistant has not participated in a radiographic operation for more than 3 months since the last inspection, that individual's performance must be observed and recorded before the individual participates in a radiographic operation.

(e) The licensee shall maintain records of the above training to include written, oral and field examinations, periodic training, and semiannual inspections of job performance in accordance with § 34.79.

(f) The licensee shall include the following subjects in the training required in paragraph (a)(1) of this section:

(1) Fundamentals of radiation safety including --

(i) Characteristics of gamma radiation;

(ii) Units of radiation dose and quantity of radioactivity;

(iii) Hazards of exposure to radiation;

- (iv) Levels of radiation from licensed material; and
- (v) Methods of controlling radiation dose (time, distance, and shielding);
- (2) Radiation detection instruments including --
  - (i) Use, operation, calibration, and limitations of radiation survey instruments;
  - (ii) Survey techniques; and
  - (iii) Use of personnel monitoring equipment;
- (3) Equipment to be used including --
  - (i) Operation and control of radiographic exposure equipment, remote handling equipment, and storage containers, including pictures or models of source assemblies (pigtailed).
  - (ii) Storage, control, and disposal of licensed material; and
  - (iii) Maintenance of equipment.
- (4) The requirements of pertinent Federal regulations; and
- (5) Case histories of accidents in radiography.

Section 34.32 Operating and emergency procedures.

The licensee shall retain a copy of current operating and emergency procedures as a record until the Commission terminates the license that authorizes the activity for which the procedures were developed and, if superseded, retain the superseded material for three years after each change. These procedures must include instructions in at least the following:

- (a) The handling and use of licensed sealed sources and radiographic exposure devices to be employed such that no person is likely to be exposed to radiation doses in excess of the limits established in Part 20 of this

Section 34.45 Operating and emergency procedures.

(a) Operating and emergency procedures must include instructions in at least the following:

- (1) The handling and use of licensed sealed sources and radiographic exposure devices to be employed such that no person is likely to be exposed to radiation doses in excess of the limits established in Part 20 of this

chapter "Standards for Protection Against Radiation";

- (b) Methods and occasions for conducting radiation surveys;
- (c) Methods for controlling access to radiographic areas;
- (d) Methods and occasions for locking and securing radiographic exposure devices, storage containers and sealed sources;
- (e) Personnel monitoring and the use of personnel monitoring equipment;
- (f) Transporting sealed sources to field locations, including packing of radiographic exposure devices and storage containers in the vehicles, posting of vehicles and control of the sealed sources during transportation;

(g) Minimizing exposure of persons in the event of an accident;

(h) The procedure for notifying proper persons in the event of an accident; and

(i) Maintenance of records.

(j) The inspection and maintenance of radiographic exposure devices and storage containers.

(k) Steps that must be taken immediately by radiography personnel in the event a pocket dosimeter is found to be off-scale.

(l) The procedure(s) for identifying and reporting defects and noncompliance, as required by Part 21 of this chapter.

See § 34.32(h).

See § 34.32(g).

See § 34.32(i).

chapter "Standards for Protection Against Radiation";

(2) Methods and occasions for conducting radiation surveys;

(3) Methods for controlling access to radiographic areas;

(4) Methods and occasions for locking and securing radiographic exposure devices, storage containers and sealed sources;

(5) Personnel monitoring and the use of personnel monitoring equipment;

(6) Transporting sealed sources to field locations, including packing of radiographic exposure devices and storage containers in the vehicles, placarding of vehicles, when needed, and control of the sealed sources during transportation (refer to 49 CFR Parts 171-173);

See § 34.45(a)(11).

See § 34.45(a)(10).

See § 34.45(a)(13).

(7) The inspection and maintenance of radiographic exposure devices and storage containers;

(8) Steps that must be taken immediately by radiography personnel in the event a pocket dosimeter is found to be off-scale;

(9) The procedure(s) for identifying and reporting defects and noncompliance, as required by Part 21 of this chapter;

(10) The procedure for notifying proper persons in the event of an accident;

(11) Minimizing exposure of persons in the event of an accident;

(12) Source recovery procedure if licensee will perform source recovery; and

(13) Forms of records.

(b) The licensee shall maintain copies of current operating

Section 34.33 Personnel monitoring.

(a) The licensee may not permit any individual to act as a radiographer or a radiographer's assistant unless, at all times during radiographic operations, each such individual wears a direct reading pocket dosimeter, an alarm ratemeter, and either a film badge or a thermoluminescent dosimeter (TLD) except that for permanent radiography facilities where other appropriate alarming or warning devices are in routine use, the wearing of an alarming ratemeter is not required. Pocket dosimeters must have a range from zero to at least 200 milliroentgens and must be recharged at the start of each shift. Each film badge and TLD must be assigned to and worn by only one individual.

(b) Pocket dosimeters must be read and exposures recorded daily. The licensee shall retain each record of these exposures for three years after the record is made.

(c) Pocket dosimeters shall be checked at periods not to exceed one year for correct response to radiation. Acceptable dosimeters shall read within plus or minus 30 percent of the true radiation exposure.

and emergency procedures in accordance with § 34.81.

Section 34.47 Personnel monitoring.

(a) The licensee shall not permit any individual to act as a radiographer or a radiographer's assistant unless, at all times during radiographic operations, each such individual wears a direct reading pocket dosimeter, an alarm ratemeter, and either a film badge or a thermoluminescent dosimeter (TLD) except that for permanent radiography facilities where other appropriate alarming or warning devices are in routine use, the wearing of an alarming ratemeter is not required. Pocket dosimeters must have a range from zero to 2 millisieverts (200 millirems) and must be recharged at the start of each shift. In cases where the exposure will be greater than 2 millisieverts (200 millirems) an exemption must be applied for to use a pocket dosimeter with a higher endpoint. Each film badge and TLD must be assigned to and worn by only one individual. Film badges and TLDs must be replaced at least monthly. After replacement, each film badge or TLD must be promptly processed.

(b) Pocket dosimeters must be read and the exposures recorded at the beginning and end of each shift, and records must be maintained in accordance with § 34.83.

(c) Pocket dosimeters must be checked at periods not to exceed 12 months for correct response to radiation, and records must be maintained in accordance with § 34.83. Acceptable dosimeters must read within plus or minus 30 percent of the true radiation exposure.

(d) If an individual's pocket dosimeter is discharged beyond its range, his film badge or TLD shall be immediately sent for processing.

(d) If an individual's pocket dosimeter is found to be off-scale, and the possibility of radiation exposure cannot be ruled out as the cause, the individual's film badge or TLD must be immediately sent for processing. In addition, the individual shall not work with licensed material until a determination of the individual's radiation exposure has been made. This determination must be made by the RSO or designee. The results of this determination must be included in the records maintained in accordance with § 34.83.

(e) If a film badge or TLD is lost or damaged, the worker shall cease work immediately until a replacement film badge or TLD is provided and the exposure is calculated for the time period from issuance to loss or damage of the film badge or TLD. The results of the calculated exposure and the time period for which the film badge or TLD was lost or damaged must be included in the records maintained in accordance with § 34.83.

(e) Reports received from the film badge or TLD processor must be retained for inspection until the Commission terminates each license that authorizes the activity that is subject to the recordkeeping requirement.

(f) Reports received from the film badge or TLD processor must be retained in accordance with § 34.83.

(f) Each alarm ratemeter must --

(1) Be checked to ensure that the alarm functions properly (sounds) prior to use at the start of each shift;

(2) Be set to give an alarm signal at a preset dose rate of 500 Mr/hr.;

(3) Require special means to change the preset alarm function; and

(g) Each alarm ratemeter must --

(1) Be checked to ensure that the alarm functions properly (sounds) prior to use at the start of each shift;

(2) Be set to give an alarm signal at a preset dose rate of 5 mSv/hr (500 mrem/hr); with an accuracy of plus or minus 20 percent of the true radiation dose rate.

(3) Require special means to change the preset alarm function; and

(4) Be calibrated at periods not to exceed one year for correct response to radiation: Acceptable ratemeters must alarm within plus or minus 20 percent of the true radiation dose rate.

(4) Be calibrated at periods not to exceed 12 months for correct response to radiation. The licensee shall maintain records of alarm ratemeter calibrations in accordance with § 34.83.

#### PRECAUTIONARY PROCEDURES IN RADIOGRAPHIC OPERATIONS

##### Section 34.41 Security.

See § 34.51.

During each radiographic operation the radiographer or radiographer's assistant shall maintain a direct surveillance of the operation to protect against unauthorized entry into a high radiation area, as defined in Part 20 of this chapter, except (a) where the high radiation area is equipped with a control device or an alarm system as described in Section 20.203(c)(2) of this chapter, or (b) where the high radiation area is locked to protect against unauthorized or accidental entry.

##### Section 34.42 Posting.

See § 34.53.

Notwithstanding any provisions in Section 20.204(c) of this chapter, areas in which radiography is being performed shall be conspicuously posted as required by Section 20.203(b) and (c)(1) of this chapter.

##### Section 34.43 Radiation surveys.

##### Section 34.49 Radiation surveys.

The licensee shall ensure that:

The licensee shall:

(a) At least one calibrated and operable radiation survey instrument is available at the location of its radiographic operations whenever radiographic operations are being performed, and at the storage area, as defined in Section 34.2, whenever a radiographic exposure device, a

(a) Maintain at least one calibrated and operable radiation survey instrument that meets the requirements of § 34.25 at each location of its radiographic operations whenever radiographic operations are being performed,

storage container, or source is being placed in storage.

(b) A survey with a calibrated and operable radiation survey instrument is made after each exposure to determine that the sealed source has been returned to its shielded position. The entire circumference of the radiographic exposure device must be surveyed. If the radiographic exposure device has a source guide tube, the survey must include the guide tube.

(c) A survey with a calibrated and operable radiation survey instrument is made at any time a radiographic exposure device is placed in a storage area, as defined in Section 34.2, to determine that the sealed source is in its shielded position. The entire circumference of the radiographic exposure device must be surveyed.

(d) A record of the storage survey required in paragraph (c) of this section is made and is retained for three years when that storage survey is the last one performed in the work day.

See § 34.41.

including a source exchange, and at the storage area (as defined in § 34.3), whenever a radiographic exposure device, a storage container, or source is being placed in storage.

(b) Conduct a survey of the camera with a radiation survey instrument after each exposure to determine that the sealed source has been returned to its shielded position.

(c) Conduct a survey as you approach the guide tube prior to exchanging films, repositioning the collimator, or dismantling equipment.

(d) Conduct a survey with a radiation survey instrument any time the source is exchanged and whenever a radiographic exposure device is placed in a storage area (as defined in § 34.3), to determine that the sealed source is in its shielded position.

(e) For recordkeeping requirements see § 34.85.

Section 34.51 Security.

During each radiographic operation the radiographer or radiographer's assistant shall maintain a continuous direct visual surveillance of the operation to protect against unauthorized entry into a high radiation area, as defined in Part 20 of this chapter,



except (a) where the high radiation area is equipped with a control device or an alarm system as described in § 20.1601(a)(1), (a)(2), or (a)(3) of this chapter, or (b) where the high radiation area is locked to protect against unauthorized or accidental entry.

See § 34.42.

Section 34.53 Posting.

Areas in which radiography is being performed must be conspicuously posted as required by § 20.1902(a) and (b) of this chapter. Exceptions listed in § 20.1903 of this chapter do not apply to radiographic operations.

Section 34.44 Supervision of radiographers' assistants.

Whenever a radiographer's assistant uses radiographic exposure devices, uses sealed sources or related source handling tools, or conducts radiation surveys required by Section 34.43(b) to determine that the sealed source has returned to the shielded position after an exposure, he shall be under the personal supervision of a radiographer. The personal supervision shall include: (a) The radiographer's personal presence at the site where the sealed sources are being used, (b) the ability of the radiographer to give immediate assistance if required, and (c) the radiographer's watching the assistant's performance of the operations referred to in this section.

Section 34.55 Supervision of radiographers' assistants.

Whenever a radiographer's assistant uses radiographic exposure devices, uses sealed sources or related source handling tools, or conducts radiation surveys required by § 34.49(b) to determine that the sealed source has returned to the shielded position after an exposure, the assistant shall be under the personal supervision of a radiographer. The personal supervision must include: (a) the radiographer's personal presence at the site where the sealed sources are being used, (b) the ability of the radiographer to give immediate assistance if required, and (c) the radiographer's watching the assistant's performance of the operations referred to in this section.

Section 34.57 Requirements or radiographic operations conducted outside of a permanent radiographic installation.

Whenever radiography will be performed outside of a permanent radiographic installation the

radiographer shall be accompanied by another qualified radiographer or an individual with, at least, the qualifications of a radiographer's assistant, who is observing the operations and is capable of providing immediate assistance to prevent unauthorized entry. Radiography may not be performed if only one qualified individual is present.

## EXEMPTIONS

Section 34.51 Applications for exemptions.

See § 34.111.

The Commission may, upon application by any licensee or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not result in undue hazard to life or property.

## APPENDIX A

See § 34.43(f).

### I. Fundamentals of Radiation Safety

A. Characteristics of gamma radiation.

B. Units of radiation dose (mrem) and quantity of radioactivity (curie).

C. Hazards of exposure to radiation.

D. Levels of radiation from licensed material.

E. Methods of controlling radiation dose:

1. Working time.
2. Working distances.
3. Shielding.

II. Radiation Detection  
Instrumentation To Be Used

- A. Use of radiation survey instruments:
  - 1. Operation.
  - 2. Calibration.
  - 3. Limitations.
- B. Survey techniques.
- C. Use of personnel monitoring equipment:
  - 1. Film badges and thermoluminescent dosimeters (TLD's).
  - 2. Pocket dosimeters.
  - 3. Alarm ratemeters

III. Radiographic  
Equipment To Be Used

- A. Remote handling equipment.
- B. Radiographic exposure devices.
- C. Storage containers.

IV. Inspection and Maintenance  
Performed by the Radiographers

V. Case Histories of  
Radiography Accidents

\*\*\* END OF DOCUMENT \*\*\*

Subpart E -- Records

Section 34.61 Records of specific license for radiography.

Each licensee shall maintain a copy of their license until the Commission terminates the license.

Section 34.63 Records of receipt and transfer of sealed sources.

Each licensee shall maintain records showing the receipts and transfers of sealed sources:

(a) records must include the date, the individual making the record, the radionuclide, number of curies, and make, model, and serial

number of each sealed source and device, as appropriate.

(b) records must be retained for 3 years after the record is made.

See § 34.24.

Section 34.65 Records of radiation survey instruments.

Each licensee shall maintain records of the calibrations of their radiation survey instruments. The record must be retained for 3 years after the record is made.

See § 34.25(c).

Section 34.67 Records of leak testing and replacement of sealed sources.

Each licensee shall maintain records of leak test results in units of Becquerels (curies). The records must be retained for 3 years after the record is made.

See § 34.26.

Section 34.69 Records of quarterly inventory.

Each licensee shall maintain records of the quarterly inventory.

(a) The record must include the quantities and kinds of byproduct material (including the model number, the serial number and manufacturer), location of sealed sources, the name of the individual conducting the inventory, and the date of the inventory.

(b) The records must be retained for 3 years after the record is made.

See § 34.27.

Section 34.71 Utilization logs.

(a) Each licensee shall maintain current utilization logs at the address specified in the license, showing for each sealed source the following information:

(1) A description, including the make, model number, and serial number of the radiographic exposure device or storage container in which the sealed source is located;

(2) The identity and signature of the radiographer to whom assigned; and

(3) The plant or site where used and dates of use, including the dates removed and returned to storage.

(b) The logs must be retained for 3 years after the log is made.

See § 34.28(b).

Section 34.73 Records of inspection and maintenance of radiographic exposure devices, storage containers, associated equipment, and source changers.

(a) Each licensee shall maintain records of inspection and maintenance of radiographic exposure devices, storage containers, associated equipment, and source changers.

(b) The record must include the date of check, name of inspector, equipment involved, any defects found, and repairs made.

(c) The record must be retained for 3 years after the record is made.

See § 34.29(c).

Section 34.75 Records of permanent radiographic installations.

(a) Each licensee shall maintain records of alarm system tests.

(b) The records must be retained for 3 years after the record is made.

See § 34.31(c).

Section 34.79 Records of training.

Each licensee shall maintain the following records of training:

(a) records of training of each radiographer and each radiographer's assistant, to include copies of written tests, dates of oral tests, and field examinations.

(b) records of periodic training for each radiographer and each radiographer's assistant. The records must list the topics discussed, the dates of the reviews, and the attendees.

(c) records must be retained for 3 years after the record is made.

See § 34.32.

Section 34.81 Copies of operating and emergency procedures.

Each licensee shall maintain a copy of current operating and emergency procedures and retain the procedures until the Commission terminates the license. Superseded material must be retained for 3 years after each change.

Section 34.83 Records of personnel monitoring.

Each licensee shall maintain the following exposure records:

(a) daily pocket dosimeter readings and yearly operability checks for 3 years after the record is made.

(b) records of reports received from the film badge or TLD processor until the Commission terminates the license.

(c) records of estimates of exposures as a result of off-scale pocket dosimeters or lost or damaged film badges or TLDs until the Commission terminates the license.

See § 34.33(b).

See § 34.33(e).

See § 34.43(d).

Section 34.85 Records of radiation surveys.

(a) Each licensee shall maintain records of exposure device surveys when it is the last one performed in the work day and prior to placing the device in storage.

(b) The licensee shall retain the records required by paragraph (a) of this section for 3 years after the record is made.

See § 34.4.

Section 34.87 Forms of records.

Each record required by this part must be legible throughout the specified retention period. The record may be the original or a reproduced copy or a microform provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of reproducing a clear copy

throughout the required retention period. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records, such as letters, drawings, and specifications, must include all pertinent information, such as stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and loss of records.

Section 34.89 Documents and records required at field stations.

Each licensee shall maintain copies of the following documents and records at the field station:

- (a) A copy of Parts 19, 20, and 34 of NRC regulations;
- (b) The license authorizing the use of licensed material;
- (c) Operating and emergency procedures required by § 34.45;
- (d) The record of radiation survey instrument calibrations required by § 34.65;
- (e) The record of leak test results required by § 34.67;
- (f) Physical inventory records required by § 34.69;
- (g) Utilization records required by § 34.71;
- (h) Records of inspection and maintenance required by § 34.73;
- (i) Training records required by § 34.79; and
- (j) Survey records required by § 34.85.

Section 34.91 Documents and records required at temporary jobsites.

Each licensee conducting operations at a temporary jobsite shall maintain copies of the following documents and records at the temporary jobsite until the radiographic operation is completed:

- (a) Operating and emergency procedures required by § 34.45;

(b) Evidence of latest calibration of the radiation survey instruments in use at the site required by § 34.65;

(c) Latest survey records required by § 34.85;

(d) The shipping papers for the transportation of radioactive materials required by § 71.5 of this chapter; and

(e) When operating under reciprocity pursuant to § 150.20 of this chapter, a copy of the Agreement State license authorizing use of licensed materials.

Subpart F -- Notification of incidents

See § 34.30.

Section 34.101 Notification of incidents.

(a) In addition to the reporting requirements specified in § 30.50 and under other sections of this chapter, each licensee shall provide a written report to the U.S. Nuclear Regulatory Commission; Division of Industrial and Medical Nuclear Safety; Medical, Academic, and Commercial Use Safety Branch; Washington, DC 20555, with a copy to the Director, Office for Analysis and Evaluation of Operational Data, U.S. Nuclear Regulatory Commission, Washington, DC 20555, within 30 days of the occurrence of any of the following incidents involving radiographic equipment:

(1) Unintentional disconnection of the source assembly from the control cable;

(2) Inability to retract the source assembly to its fully shielded position and secure it in this position; or

(3) Failure of any component (critical to safe operation of the device) to properly perform its intended function;

(b) The licensee shall include the following information in each report submitted under paragraph (a)



of this section, and in each report of overexposure submitted under 10 CFR 20.2203 which involve failure of safety components of radiography equipment:

- (1) A description of the equipment problem;
- (2) Cause of each incident, if known;
- (3) Manufacturer and model number of equipment involved in the incident;
- (4) Place, time and date of the incident;
- (5) Actions taken to establish normal operations;
- (6) Corrective actions taken or planned to prevent recurrence; and
- (7) Qualifications of personnel involved in the incident.

#### Subpart G -- Exemptions

See § 34.51.

Section 34.111 Applications for exemptions.

The Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

#### Subpart H -- Enforcement

Section 34.121 Violations.

(a) An injunction or other court order may be obtained to prohibit a violation of any provision of this part.

(b) A court order may be obtained for the payment of a civil penalty imposed for violation of this part.

(c) Any person who willfully violates any provision of this part issued under section 161 b., i., or

o. of the Atomic Energy Act of 1954, as amended, or the provisions cited in the authority citation at the beginning of this part may be guilty of a crime and, upon conviction, may be punished by fine or imprisonment, or both, as provided by law.

Section 34.123 Criminal penalties.

(a) Section 223 of the Atomic Energy Act of 1954, as amended, provides for criminal sanctions for willful violation of, or conspiracy to violate, any regulation issued under sections 161b, 161i, or 161o of the Act. For purposes of section 223, all the regulations in part 34 are issued under one or more of section 161b, 161i, or 161o, except for the sections listed in paragraph (b) of this section.

(b) The regulations of part 34 that are not issued under sections 161b, 161i, or 161o for the purposes of section 223 are as follows: § § 34.1, 34.2, 34.3, 34.4, 34.8, 34.11, 34.51, 34.61, and 34.63.

\*\*\* END OF DOCUMENT \*\*\*

*Enclosure*

[7950-01]

NUCLEAR REGULATORY COMMISSION

10 CFR Part 34

RIN 3150-

Licenses for Radiography

and

Radiation Safety Requirements for Radiographic Operations

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is proposing to revise its regulations governing industrial radiography. The revision would include additional safety requirements to enhance the level of protection of radiographers and the public and would clarify the regulations so that licensees may have a better understanding of what is expected in radiographic operations. There has not been an overall revision of Part 34 in many years while a number of Agreement States have updated their radiography regulations. This revision incorporates certain of the provision of the updated regulation. The format of the proposed rule has been revised to place requirements into categories which describe the type of requirements that are found in the subpart.

DATES: Submit comments by 75 days after publication. Comments received after this date will be considered if it is practical to do so, but the Commission is able to assure consideration only for comments received on or before this date.

ADDRESSES: Mail written comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington DC 20555, Attention: Docketing and Service Branch. Hand deliver comments to 11555 Rockville Pike, Rockville, Maryland between 7:45 am and 4:15 pm Federal workdays.

Examine comments received, the environmental impact, and the regulatory analysis at: The NRC Public Document Room at 2120 L Street NW. (Lower Level), Washington, DC.

FOR FURTHER INFORMATION CONTACT: Dr. Donald O. Nellis or Mary L. Thomas, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington DC 20555; Telephone: (301) 492-3628 or 492-3886.

#### SUPPLEMENTARY INFORMATION:

##### I. Background

10 CFR Part 34 was first published in 1965 as part of the recodification of Parts 30 and 31 for the purpose of simplifying and clarifying the format of the then current regulations so that persons subject to byproduct material licensing regulations could conveniently use and understand them. Numerous modifications to the original Part 34 have been made since 1965, many of which have been directed toward the safety aspects of field radiography, such as the

performance requirements on radiography equipment and additional reporting requirements on equipment malfunctions, both published in 1990.

There are approximately 200 NRC radiography licensees with an additional 500 Agreement State licensees. Radiography licensees often conduct business under both NRC and Agreement State jurisdiction.

There has not been an overall revision of Part 34 in many years while a number of Agreement States have updated their radiography regulations. The decision to develop an overall revision to 10 CFR Part 34 was made with the intent of establishing new safety requirements for radiography licensees and clarifying the regulation so that licensees may have a better understanding of what is expected in radiographic operations. The format of the proposed rule has been revised to place requirements into categories which better describe the type of requirements that are found in the subpart.

The NRC solicited recommendations on radiography issues at the 1991 Agreement States meeting in Sacramento, CA, as well as from NRC regional offices and radiography equipment manufacturers and radiography licensees. A workshop was held on November 18, 1992, in Dallas, Texas to discuss the recommendations received from the Agreement States and licensees on an overall revision of the radiography regulations. The transcript of the meeting, which is available for inspection and copying in the NRC Public Document Room, was reviewed in further developing the proposed revision.

Part E of the "Suggested State Regulations for Control of Radiation" developed by the Conference of Radiation Control Program Directors, Inc., Part 31 of the Texas Regulations for Control of Radiation, Chapter 5 of the Louisiana regulations and the Canadian "Atomic Energy Control Regulations,"

that apply to radiography were utilized in developing this proposed revision of Part 34.

A petition was received in October 1992, from the International Union of Operating Engineers (IUOE), Local No. 2, requesting an amendment to the radiography regulations to require a minimum of two radiographic personnel when performing industrial radiography at temporary jobsites. The petition was published in the Federal Register on December 4, 1992. Thirty-eight comment letters were received, 35 were in favor of granting the petition. Resolution of this petition has been addressed in this proposed revision to Part 34.

## II. Petition for Rulemaking

In October 1992, the International Union of Operating Engineers (IUOE), Local No. 2 petitioned the NRC to amend its regulations regarding radiography to require a minimum of two radiographic personnel when performing industrial radiography at temporary jobsites. The petition offered three options for the makeup of the two-person crew: 1) two radiographers; 2) one radiographer and one radiographer's assistant; and 3) one radiographer and one trainee, with the trainee having completed 40 hours of approved radiation safety training and passed an examination. The petitioners identified a number of problems associated with the use of licensed material by one radiographer at temporary jobsites. Some of these included: 1) difficulty keeping the area under constant surveillance while radiographic operations are ongoing; 2) difficulty in maintaining surveillance when working in trenches; and 3) difficulty in obtaining assistance in the event of an emergency if there is only one

Furthermore, the Commission is interested in receiving proposals for alternatives to the two radiographer requirement which would achieve comparable enhancements in safety with less of a burden on licensees.

In summary the Commission believes that by requiring two qualified individuals to always be present when radiographic operations are being conducted, there will be a significant increase in assurance that operational safety measures and emergency procedures will be implemented effectively. The expectation is that violations that have involved failures to perform adequate radiation surveys of radiographic exposure devices and the surrounding area, failures to adequately post and monitor the restricted area, and failures to lock and secure the camera when not in use will become less frequent. Furthermore, if an incapacitating injury to a radiographer should occur at a remote location the presence of a second individual could be an important factor in preventing unnecessary radiation exposures.

### III. General Discussion of Proposed Rule Changes

The proposed amendments contain requirements which are intended to improve radiography safety. The first major change is a proposal to require two qualified individuals (two radiographers or a radiographer and an individual with training at least equivalent to a radiographer's assistant) to be present any time radiographic operations occur outside of a permanent radiographic installation. This issue has already been addressed under Section II. Petition for Rulemaking.

Another issue involves the definition of a permanent radiographic installation. In the past, there has been some confusion on what the NRC intended in requiring a permanent radiographic installation to have special access control devices. The proposed rule changes the definition of a "permanent radiographic installation" to be an enclosed shielded room, cell, or vault in which radiography is performed. The terms "designed or intended for radiography" and "regularly performed" have been removed from the definition to reduce any ambiguity in what is intended. Under the existing rule, if a licensee has a room, cell, or vault that meets the definition of a "permanent radiographic installation" then it must meet the special safety requirements of § 34.33 and must be listed on the license. The proposed rule adds one additional requirement to perform a daily check of the visible and audible signals. Under the proposed rule, radiography can only be performed in one of two ways; 1) in a permanent radiographic installation with a qualified radiographer, or 2) at any other location with two qualified individuals.



The proposed rule includes requirements specifying the qualifications and duties of the Radiation Safety Officer (RSO). The RSO is the key licensee individual charged with the responsibility to ensure that the requirements in the license are followed. These requirements have previously been based on similar requirements included in specific license conditions on a case-by-case basis.

The format of the proposed rule has been revised to more appropriately group requirements within subparts of 10 CFR 34. This has been done to clarify and simplify the safety requirements of Part 34 in an effort to make the regulation a more easily understood document and to facilitate compliance.

#### IV. Discussion of the Proposed Amendments

##### Table of Contents

The new Table of Contents contains eight subparts. The organization is as follows:

- Subpart A-General Provisions
- Subpart B-Specific Licensing Provisions
- Subpart C-Equipment
- Subpart D-Radiation Safety Requirements
- Subpart E-Recordkeeping Requirements
- Subpart F-Notification of Incidents
- Subpart G-Exemptions
- Subpart H-Enforcement

This organization follows the same general format used in 10 CFR Part 39, which addresses radiation safety requirements for well logging. Each subpart will be discussed separately.

#### Subpart A-General Provisions

This subpart covers items of a general nature, such as listing definitions, and OMB approvals. It also describes the purpose and scope of the rule.

Section 34.1 Purpose and scope, is basically unchanged from the existing regulation. Other NRC regulations which apply to radiography licenses are referenced in this section.

Section 34.3 Definitions, contains the following new terms: "ALARA," "Becquerel," "Collimator," "Field station," "Radiation Safety Officer," "Sievert," and "Temporary jobsite". These definitions were added to define terms used in requirements not previously addressed in Part 34. The term "ALARA," which means as low as reasonably achievable, has been added to include procedures now explicitly required in Part 20. Previously this was only addressed in regulatory guides. The terms "Becquerel" and "Sievert" were added to reflect the Commission's policy on use of metric units in all new or revised regulations. The term "Collimator" was added to the proposed rule since it is a piece of equipment that is often used in conducting radiography operations and must be included when conducting a radiation survey. The terms "Field station" and "Temporary jobsite" were added to the proposed rule, since the use of radioactive material frequently occurs at sites that may not be listed on the license and there has been some confusion on whether special requirements must be met at these locations. The term "field station" is

being used to designate those locations where radiography equipment is stored and from which equipment is dispatched to "temporary jobsites" where radiography is to be conducted. The term "Radiation Safety Officer" was added to clearly specify the duties and qualifications of this individual. While the role of the RSO has long been recognized by the NRC as a vital function in the safe use of radioactive material, the current Part 34 does not address the duties and qualifications of this individual.

The terms "Associated equipment," "Control device," "Control Tube," "Exposure head," "Field examination," "Periodic training," "Projection sheath," "Shielded position," and "Source assembly," while used in the existing regulation, were not previously defined. Both licensees and Agreement State representatives requested clarification of these terms. Discussion of changing the definition of "radiographer's assistant" occurred at the November 1992 workshop in Dallas, Texas. Some Agreement States use the term, "trainee" to refer to a "radiographer's assistant" and require training similar to that required of a radiographer. The NRC has decided to retain the term "radiographer's assistant" and has proposed upgrading the training requirements to provide additional assurance that radiographer's assistants are sufficiently knowledgeable of NRC regulations. Although the NRC is not adopting the term "trainee," the proposed rule has been written to provide the flexibility for the second person to have training beyond that of a radiographer's assistant. This position could then equally be filled by a "trainee."

The definition of a "Permanent radiographic installation" was modified to define what is meant by permanent, since some licensee's have been confused on when a facility was required to meet the requirements of a permanent

radiographic installation. The definitions of "storage area" and "storage container" were modified to remove references to transportation. Specific transportation requirements are addressed in § 34.35.

Section 34.5 Interpretations, is standard regulatory language to state that only the General Counsel of the NRC has the authority to provide interpretations of the regulations which will be binding on the Commission.

Section 34.8 Information collection requirements: OMB approval, is unchanged from the current regulation, except for changing the section numbers which apply to the new format of the proposed rule and any new requirements. The Commission has submitted the proposed rule for OMB clearance. Final OMB clearance will be obtained prior to publication of a final rule.

#### Subpart B-Specific Licensing Provisions

This proposed subpart provides the basic requirements for submittal of a license application. This proposed subpart contains sections basically unchanged from the existing Subpart A of Part 34.

Section 34.11 Application for a specific license, is worded the same as Section 34.3 in the current Part 34.

Section 34.13 Specific license for radiography, is basically worded the same as Section 34.11 in the current Part 34, except for the following: Section 34.13(e), proposes a reduction in the frequency of field inspections of radiographers and radiographer's assistants from quarterly to semiannually. The NRC is proposing to reduce the frequency of the inspections of job performance to semiannual inspections for individuals regularly conducting radiographic operations. For individuals who have not performed radiographic

operations for more than three months, an inspection of job performance would be required as in the existing rule prior to their participation in a radiographic operation. This reduction was done primarily in response to comments made at the Radiography Workshop conducted in November, 1992. The basic requirements for conducting the field inspections have been relocated to § 34.43(d) to more accurately reflect its role in the training program. In addition, a new requirement for conducting annual safety reviews has also been added in § 34.43(c) to provide additional assurance that radiographers will be knowledgeable of current procedures and requirements. Section 34.13(g) is proposed which requires the licensee to designate an individual on the license to fulfill the duties of the RSO. The qualifications and duties of this individual are specified in § 34.41.

Section 34.13(i) is a new section which, as proposed, would require a list and description of all permanent radiographic installations and all permanent storage locations to be included in the license application. A permanent storage location is described as one where radioactive material is stored for more than 180 days in a calendar year. The time under which an area could be used temporarily for storage was chosen to agree with the length of time an Agreement State licensee may operate in NRC jurisdiction under reciprocity.

#### Subpart C-Equipment

This proposed subpart describes the requirements for radiographic equipment performance and use. Some of the requirements in this proposed subpart are changed from the current Part 34 as described below.

Section 34.20 Performance requirements for radiography equipment, is slightly changed from Section 34.20 of the current rule. Section 34.20(b)(2) has been revised to specify that radiographic exposure devices used as Type B transport containers must meet the QA program requirements outlined in §71.105. While this always has been true many licensees have been unaware of this requirement. Section 34.20(b)(3) is revised to prohibit modification of any exposure device. Many licensees have expressed confusion over what the current rule intended in permitting modification. Modification of any safety component was never intended. The proposed rule removes this ambiguity. Modification of any non-safety equipment would still be permitted under the proposed rule. The term "Source Assembly" was added to §§ 34.20(c) and (e) so that it would be included as a piece of equipment that must meet the requirements of § 34.20. Section 34.20(f) is added to require labeling of all associated equipment acquired after January 10, 1996 to identify that the components have met the requirements of this section.

Section 34.21 Limits on levels of radiation for radiographic exposure devices, storage containers, and source changers, is basically unchanged from Section 34.21 of the current rule, with the following exceptions. Metric equivalents to the values previously cited have been included. While it is recognized that radiation exposure instruments currently use units of roentgens to measure radioactivity, the rule has been modified to use the terms millisieverts and millirems. Rather than making the transition from roentgens to coulombs per kilogram (in air), the terms millisieverts and millirems were chosen since a quality factor of 1 is appropriate in dealing with gamma-ray emitting radiography sources. Measurements taken in roentgens

may be recorded in terms of millisieverts or millirems for purposes of demonstrating compliance with the rule.

Section 34.23 Locking and relocation of radiographic exposure devices, storage containers, and source changers, is slightly changed from section 34.22 of the current rule, as described below. Section 34.23(a) describes locking of radiographic exposure devices. A requirement to remove the key of any keyed lock is proposed. Should the key remain in the camera there is an increased likelihood of the accidental or intentional removal of the sealed source when the radiographic camera is unattended. The term "manually" is added to clarify what is meant by securing the source assembly for radiographic exposure devices manufactured prior to January 10, 1992. Section 34.23(b) is added which specifies requirements for ensuring that the sealed source is in the shielded position prior to movement of the device and associated equipment, since a number of overexposures have occurred while radiographic devices were being moved from one location to another.

Section 34.25 Radiation survey instruments, that replaces § 34.24 in the current rule, has been updated to reflect current calibration standards for different types of survey meters. This is to provide appropriate guidance to address the variety of survey instruments currently available. An additional requirement to perform an operability check prior to use is proposed. While this is routinely part of all survey instrument specifications, a failure to determine whether an instrument was operable prior to use has been a contributing factor in overexposures during radiographic operations.

Section 34.27 Leak testing and replacement of sealed sources. The words "repair, tagging, opening, and modification" of sealed sources have been

removed since these activities are only approved for individuals specifically licensed to do so, and are not considered routine activities that should be performed by anyone holding a radiography license. The language in the current rule is confusing as written, since it was never intended that radiographers would be permitted to perform these activities without special authorization from the Commission or an Agreement State. Most of the language in the proposed rule is the same as section 34.25 of the existing rule, but the organization has been modified for purposes of clarification. The requirement that performance of a source exchange or a leak test must be done by persons approved by the Commission has been modified to include Agreement States. Recordkeeping requirements have been moved to § 34.67.

Section 34.27(f) is proposed which requires surveys for depleted uranium (DU) contamination in the "S" tube of radiographic devices at least once every 12 months. The depleted uranium is used as a shielding material in most radiographic devices, replacing the lead shielding that was used in older models. The presence of DU contamination in the "S" tube, (a hard metal tube, such as titanium, through which the radioactive source travels), is an indication that the control cable has worn a groove through the "S" tube into the uranium shielding. This condition could cause binding of the control cable in the groove with the resultant inability to retract the source, and could result in unwarranted exposures. Recordkeeping requirements have been moved to § 34.67.

Section 34.29 Quarterly inventory, is basically unchanged from the existing regulation, with the exception of moving all recordkeeping requirements to Section 34.69.



Section 34.31 Inspection and maintenance of radiographic exposure devices, storage containers, associated equipment, and source changers, includes several proposed changes from § 34.28 in the current rule, which are described below. A listing of associated equipment has been added to the proposed rule. This listing would include various items used for specific tasks which may not be supplied with the radiographic device. Experience has shown that defects in associated equipment can have an effect on safety. Section 34.31 (a) has been revised to clarify the intent of the daily visual check, and the required actions if defects are found. In Section 34.31(b) the term "routine maintenance" is now used to clarify that licensees are not required to perform all maintenance. Many equipment repairs may require returning the device to the manufacturer. Language has been added to specify that defective equipment is to be removed from service until repaired and that a record of the defect, as well as corrective actions taken, is to be made. While this seems to be obvious, there have been numerous instances where the use of defective equipment continued and overexposures of personnel occurred as a direct result of the defects. Recordkeeping requirements have been moved to § 34.73. The records required to be kept are now specified in the rule, and include: date of check, individual performing check, equipment involved, any defects found, and repairs made.

Section 34.33 Permanent radiographic installations, is basically unchanged from the existing requirements in Part 34, with the exceptions noted below. Section 34.33 (c) is revised to require an alarm system check at the beginning of each day of use. This is to be performed by checking the warning light and audible alarm with the source exposed, and is to be performed prior to use of the room each day. A defective alarm would require repair before

radiographic operations could resume. This requirement is included because there have been instances where failures in alarm systems have resulted in personnel overexposures upon entry into a high radiation area.

Section 34.35 Labels, storage, and transportation precautions, is a new section proposed to place requirements into Part 34 which specify labeling and security precautions for radioactive material storage and transportation. Section 34.23 of the current rule describes storage precautions for exposure devices and storage containers but did not address transportation or labeling requirements. In § 34.35 of the proposed rule, there are labeling requirements for source changers and storage containers. The proposed rule has specific requirements to lock and physically secure transport packages. The rule also requires licensees to store licensed material in a manner to minimize the danger from explosions or fire. The requirement for a QA program, as described in § 71.105, has been added to the proposed rule. While radiography licensees have always had to comply with § 71.105, there have been numerous cases where radiography licensees were unaware of this requirement and failed to comply. The addition of these requirements addressing labeling and transportation are necessary because in the past personnel and public exposures have occurred from the failure to properly safeguard radioactive material during storage and transportation.

#### Subpart D-Radiation Safety Requirements

This subpart describes basic radiation safety requirements for radiographic operations and includes training, safety procedures, personnel monitoring and surveys. New requirements describing the duties of the radiation safety officer are proposed.

Section 34.41 Radiation Safety Officer, is proposed which lists the qualifications and duties of the RSO. This section is added to place the requirements for this key individual into the regulations which were previously only referenced in regulatory guides and included as license conditions on a case-by-case basis. The NRC believes that the RSO is the key individual for ensuring safe operations. While this function has not previously been a requirement, it has been general practice to name an individual on the license to be the RSO. The qualifications listed for the RSO in the proposed rule include: 1) completion of the training required for a radiographer as described in Part 34; and 2) 2000 hours of documented experience in industrial radiography with at least 40 hours of formal classroom training with respect to the establishment and maintenance of radiation protection programs. The duties of the RSO in the proposed rule include overseeing procedure implementation and employee training, and monitoring radiation surveys, leak tests, and personnel monitoring results. A key duty of the RSO is to ensure the safe conduct of operations and to stop unsafe operations and institute corrective actions.

Section 34.43 Training, contains several new requirements which are discussed below. Section 34.43(a) has been revised to include training in 10 CFR Parts 30.7, 30.9, and 30.10, applicable sections of 10 CFR Part 71, and in 49 CFR 171-173, in addition to other parts of NRC regulations. Section 34.43(b), which lists training requirements for radiographer's assistants, has been revised to require training in §§ 30.7, 30.9, 30.10, and Parts 19, 20, 34, 71, and 49 CFR 171-173 in addition to the licensee's operating and emergency procedures. These changes are to ensure that radiographers and radiographer's assistants are knowledgeable of the safety requirements

applicable to handling radioactive material in the conduct of radiography. Section 34.43(c) describes a proposed requirement to conduct periodic training of radiographers and radiographer's assistants. In the current rule, periodic training is required although there are no requirements on topics to be addressed. A number of violations involving personnel overexposures have resulted from licensee's failure to provide adequate training. The proposed requirement includes training on revised operating and emergency procedures, new equipment, and safety issues. This review can be combined with the semiannual inspection of job performance required by § 34.43(d).

Section 34.43(d) has been relocated from § 34.13(d), and describes the requirements for routine inspections of job performance for radiographers and radiographer's assistants. The proposed rule reduces the frequency of these inspections from quarterly to semiannually. The NRC is proposing to reduce the frequency of inspections of job performance for individuals regularly conducting radiographic operations. For individuals who have not performed radiographic operations for more than three months, an inspection of their job performance would be required prior to their participation in a radiographic operation. With several of the other requirements proposed in this rulemaking, such as, specifying requirements for periodic training and having two individuals at a temporary jobsite, the Commission believes that the need for a quarterly review can be modified to semiannual.

Proposed § 34.43(e) specifies that recordkeeping requirements can be found in § 34.79. The requirements for records are unchanged from the current Part 34. Proposed § 34.43(f) contains the subjects currently listed in Appendix A of Part 34. Several proposed additional requirements are included. These include: pictures or models of source assemblies; training in

storage, control, and disposal of licensed materials; and pertinent Federal regulations, i.e., Dept. of Transportation, and Occupational Safety and Health Administration.

Section 34.45 Operating and emergency procedures. Minor changes were made to the existing Part 34 requirements to include: procedures for source recovery if the licensee intends to perform emergency source recovery. This is added since many of the steps in a source recovery would be the same in any circumstance and, in the past, a number of personnel overexposures have occurred during emergency source recovery operations because basic radiation protection precautions were overlooked. Additional requirements are proposed for transportation procedures to include placarding of vehicles, and reference to the DOT regulations in 49 CFR Parts 171-173. A number of violations have resulted from licensees failing to follow DOT regulations in the transportation of radioactive material. Section 34.45(b) is proposed which specifies that the recordkeeping requirements can be found in § 34.81. Sections 34.89 and 34.91 specify that copies of current operating and emergency procedures are to be maintained at field stations and temporary jobsites, to ensure that adequate documents are available where radiographic operations occur.

Section 34.47 Personnel monitoring. Several changes are proposed as follows. The existing requirement specifies that pocket dosimeters have a range from zero to at least 200 milliroentgens. The proposed rule has dropped the term "at least." This is to prevent the use of pocket dosimeters with very high ranges where the users would be unable to properly determine their exposure. Use of pocket dosimeters with a range higher than 200 milliroentgens will be approved on a case by case basis. Additional

requirements are proposed on the replacement frequency for film and TLDs. In the existing regulation no replacement frequency is specified. A monthly frequency is proposed because the high intensity sources used in radiography can lead to significant exposures, so that monthly monitoring is necessary to maintain an adequate knowledge of the individuals exposure to date and to prevent overexposures.

Section 34.47(b) addresses the use of pocket dosimeters. A requirement is proposed to read dosimeters at the beginning and end of each shift. This is added to ensure that the dose is correctly estimated. The existing regulation only specifies a daily reading which does not provide sufficient instruction on how licensees should handle any readings which remain on the pocket dosimeter after recharging. Since it is nearly impossible to recharge a pocket dosimeter to zero, licensees must take a reading before and after use and subtract the difference to accurately determine the dose. Section 34.47(d) addresses an off-scale pocket dosimeter. The proposed rule requires that in the case of a pocket dosimeter being off-scale the individual will not be permitted to work with licensed material until a determination of the worker's radiation exposure by the RSO or a designee of the RSO is made. The current rule requires sending the film badge or TLD for processing but did not specify when the individual could return to work. The proposed revision provides the criteria that must be met to permit the individual to return to work. A provision is included which will permit the individual to return to work when the circumstances are clearly known and justified by the RSO that there was no possibility of overexposure, as in the case that any radiographic operations had occurred since the dosimeter was last read.

Section 34.47(e) is proposed which requires a worker to cease work whenever a film badge or TLD is lost or damaged, until a replacement is available. This is added to ensure that there is a means to accurately determine the worker's radiation dose.

Section 34.49 Radiation surveys. There are several proposed changes from the existing regulation. The existing regulation requires a survey of the camera circumference and the guide tube. A number of violations have occurred because of failure to follow this requirement. In reviewing the regulation the NRC has decided to revise the survey requirements to remove the current requirements and specify a requirement to turn on the survey instrument on approaching the guide tube. A requirement has been added to survey the camera to determine that the sealed source has returned to the shielded position. The rule places the responsibility for conducting an adequate survey with the licensee. In the majority of cases, a survey of the camera ports should be adequate to make this determination.

Section 34.51 Security. This section is unchanged from § 34.41 of the current rule.

Section 34.53 Posting. This section is unchanged from § 34.42 of the current rule.

Section 34.55 Supervision of radiographer's assistants. This section is unchanged from § 34.44 of the current rule.

Section 34.57 Requirements for conducting radiographic operations outside of a permanent radiographic installation, are added to address the practice of conducting radiography at sites where the special safety features of a shielded facility are not available. The proposed requirement specifies that either two radiographers or a radiographer and an individual with

training at least equivalent to a radiographer's assistant must be present to observe the operations and to provide assistance and control of the area against unauthorized entry. The basis for this requirement is to ensure that in the absence of the safety features outlined in Section 34.33, there will be a significant increase in assurance that operational safety measures will be implemented effectively. The expectation is that violations that have involved failures to perform adequate radiation surveys of radiographic exposure devices and the surrounding area, failures to adequately post and monitor the restricted area, and failures to lock and secure the camera when not in use will become less frequent. Furthermore, if an incapacitating injury to a radiographer should occur at a remote location the presence of a second individual could be an important factor in preventing unnecessary radiation exposures.

#### Subpart E-Recordkeeping Requirements

This subpart does not appear in the current Part 34. It is proposed to place all recordkeeping and notification requirements in one location. Most of the recordkeeping requirements are unchanged from the existing Part 34. Proposed changes are discussed below.

Section 34.61 Specific license for radiography. This section requires the licensee to maintain a copy of the license until it is terminated by the Commission.

Section 34.63 Records of receipt and transfer of sealed sources. This new section is added to provide a record showing the disposition of sources to verify source location in the event of loss or theft.



Section 34.65 Records of radiation survey instruments. This section is proposed as currently written in Section 34.24. Licensees would be required to maintain calibration records for radiation survey instruments for 3 years after the record is made.

Section 34.67 Records of leak testing, repair, tagging, opening, modification and replacement of sealed sources. This section is proposed as currently written in § 34.25(c), and requires licensees to maintain records of leak tests for 3 years after the record is made.

Section 34.69 Records of quarterly inventory. This section is proposed as currently written § 34.26, and requires licensees to maintain records of quarterly inventories for 3 years after the record is made.

Section 34.71 Utilization logs. This section is proposed much as currently written in § 34.27, and would require licensees to maintain utilization logs for 3 years after the record is made. The proposed rule has added several additional pieces of information to the logs including the serial number of device in which the sealed source is located, the radiographer's signature, and the dates the device is removed and returned to storage. This information is necessary in order to locate sources in the case of theft or loss.

Section 34.73 Records of inspection and maintenance of radiographic exposure devices, storage containers, associated equipment, and source changers. This section is proposed much as currently written in § 34.28(b), and requires licensees to maintain inspection and maintenance records for 3 years after the record is made. The proposed rule has added what information must be included in the inspection records: date of check, name of inspector, equipment inspected, any defects found and repairs made.

Section 34.75 Records of permanent radiographic installations. This section is proposed as currently written in § 34.29(c) and requires licensees to maintain records of alarm system checks for 3 years after the record is made.

Section 34.79 Records of training. This section is proposed as currently written in § 34.31(c), with the additional requirement for maintaining records of periodic training, and requires licensees to maintain records of initial and periodic training, and field examinations, including copies of tests, dates administered, and topics covered in the periodic retraining.

Section 34.81 Copies of operating and emergency procedures. This section is proposed as currently written in § 34.32 and requires licensees to maintain copies of emergency and operating procedures until the Commission terminates the license.

Section 34.83 Records of personnel monitoring. This section is proposed as currently written in § 34.33(b), and requires licensees to maintain records of pocket dosimeter readings and operability checks for 3 years from the date the record was made, and to maintain records of film badge or TLD reports until the Commission terminates the license.

Section 34.85 Records of radiation surveys. This section is proposed as currently written in § 34.43(d), and requires records of the exposure device surveys for 3 years from the date the record was made.

Section 34.87 Form of records. This section is proposed as currently written in § 34.4, and specifies how records must be maintained, including permitting records to be stored in electronic media.

Section 34.89 Documents and records required at field stations. This new proposed section, which list documents and records required at field stations, was added to ensure that licensees have available sufficient records to demonstrate compliance with NRC regulations. The field station is often far removed from the home office, therefore records necessary to maintain safe operation should be readily available. The records listed are only a subset of the records required at a licensee's normal place of business. These records include copies of pertinent regulations, copies of operating and emergency procedures, instrument calibration records, leak test results, inventory records, utilization logs, training and survey records. These records are those required for licensees to safely handle radioactive material.

Section 34.91 Documents and records required at temporary jobsites. This proposed section, which list documents and records required at temporary jobsites, was added to ensure that licensees have available sufficient records to demonstrate compliance with NRC regulations and to have the records necessary to maintain safe operations. The records listed are a smaller subset of the records required for a field station. These records include copies of pertinent regulations, evidence of latest instrument calibrations, latest survey records, shipping papers, and Agreement State licensee if operating under reciprocity. These records are those required for licensees to safely handle radioactive material.

#### Subpart F - Notification of Incidents

This subpart is basically unchanged from § 34.30 with the exception of minor wording changes.

#### Subpart G - Exemptions

This subpart addresses exemptions and is basically the same as § 34.51 with the exception of minor wording changes.

#### Subpart H - Enforcement

This subpart addresses enforcement and is not in the current Part 34. The language used in this subpart is the same as appears in all newer NRC regulations and describes what legal action the NRC may take for any failure to comply with applicable regulations.

#### Agreement State Compatibility

The rule will be a matter of compatibility between the NRC and the Agreement States, thereby providing consistency between Federal and State safety requirements. With regard to basic radiation standards and definitions, identified as a matters of Division One level of compatibility, the Agreement States will be expected to adopt, essentially verbatim, the proposed Part 34 standards and definitions into their equivalent regulations. The remainder of the rule will be a Division Two level of compatibility allowing the Agreement State co-regulators the flexibility to adopt additional requirements based on their radiation protection experience, professional judgments and community values.

Finding of No Significant Environmental: Availability

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that the rule, if adopted, would not be a major Federal action, therefore an impact statement is not required. The revision of 10 CFR Part 34 should have no environmentally significant impact since radiography only involves the use of seal sources, and no environmental impact will be involved. The environmental assessment and finding of no significant impact on which this determination is based are available for inspections at the NRC Public Document Room at 2120 L Street, N.W. (Lower Level), Washington DC.

#### Paperwork Reduction Act Statement

This proposed rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). This rule has been submitted to the Office of Management and Budget for review and approval of these requirements.

Public reporting burden for this collection of information is estimated to average 2,400 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information including suggestions for reducing this burden, to the Information and Records Management Branch (MNBB-7714), U.S. Nuclear Regulatory Commission, Washington, DC 20555; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-3019, (3150-0007), Management and Budget, Washington, DC 20503.

## Regulatory Analysis

The Commission has prepared a draft regulatory analysis on this proposed regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The draft analysis is available for inspection in the NRC Public Document Room at 2120 L Street NW. (Lower Level), Washington, DC.

## Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605 (b)), the Commission certifies that this rule may, if promulgated, have a significant economic impact on a substantial number of small entities.

The radiography industry consists of approximately 700 firms that perform radioisotope radiography either at fixed locations or at multiple temporary job sites. This industry employs about 3,500 radiographers, radiographer's assistants, and an additional 3,500 radiography supervisors on a full time basis. Of these firms approximately 200 are NRC licensees and the remainder are licensees of the Agreement States. Roughly one quarter of the firms conduct their radiography at a single location and the other three quarters work at multiple locations generally referred to as temporary job sites. Approximately 90 percent are considered to be "small entities" under the criterion established in Section 605(b) of the Regulatory Flexibility Act of 1980. The industry uses an estimated 3,500 radiographic exposure devices that employ either cobalt-60 or iridium-192 radioisotope sources. Most of the radiography licensees are in the business of non-destructive testing in which

radiography represents only a part of their total income. A few small firms work only in radiography. Much of the work in the field involves the inspection of welds in bridges, oil, gas, and other pipelines and in the steel framework of commercial buildings under construction so that the success and viability of the industry is closely tied to the economic health of the country.

### Backfit Analysis

The NRC has determined that the backfit rule, 10 CFR 50.109, does not apply to this proposed rule and, therefore, that a backfit analysis is not required for this proposed rule. The proposed rule does not involve any provisions that would impose backfits as defined in 10 CFR 50.109(a)(1).

### List of Subjects in 10 CFR Part 34

#### 10 CFR Part 34

Byproduct material, Criminal Penalty, Nuclear material, Packaging and containers, Radiation Protection, Radiography, Reporting and recordkeeping requirements, Scientific equipment, Security measures.

For reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is proposing to adopt the following amendments to 10 CFR 34.

PART 34 - LICENSES FOR RADIOGRAPHY AND RADIATION SAFETY  
REQUIREMENTS FOR RADIOGRAPHIC OPERATIONS

1. The authority citation for Part 34 is revised to read as follows:

AUTHORITY: Secs. 81, 161, 182, 183, 68 Stat. 935, 948, 953, 954,  
as amended (42 U.S.C. 2111, 2201, 2232, 2233); sec. 201, 88 Stat. 1242, as  
amended (42 U.S.C. 5841).

Section 34.45 also issued under sec. 206, 88 Stat. 1246 (42 U.S.C.  
5846).

2. Section 34.1 is revised to read as follows:

§ 34.1 Purpose and scope.

This part prescribes requirements for the issuance of licenses for the use of sealed sources containing byproduct material and radiation safety requirements for persons using such sealed sources in industrial radiography (this rule is not to be applied to medical uses of byproduct material). The provisions and requirements of this part are in addition to, and not in substitution for, other requirements of this chapter. In particular, the requirements and provisions of Parts 19, 20, 21, 30, 71, 150, 170 and 171 of this chapter apply to applications and licenses subject to this part.

3. Section 34.2 is redesignated as § 34.3, and is revised to include the following:

§ 34.3 Definitions.

*ALARA* (acronym for as low as reasonably achievable) means making every reasonable effort to maintain exposures to radiation as far below the



dose limits specified in Part 20 as is practical consistent with the purpose for which the licensed activity is undertaken.

*Associated Equipment* means equipment that is used in conjunction with a radiographic exposure device to make radiographic exposures that drives, guides or comes in contact with the source, (i.e., guide tube, control tube, crank, removable source stop, "J" tube).

*Becquerel (Bq)* means one disintegration per second.

*Collimator* means a device used to limit the size, shape, and direction of the primary radiation beam.

*Control (crank-out) device* means the control cable, the protective sheath and control drive mechanism used to move the sealed source from its shielded position in the radiographic device or camera to an unshielded position outside the device for the purpose of making a radiographic exposure.

*Control tube* means protective sheath for guiding the control cable. The control tube connects the control drive mechanism to the radiographic exposure device.

*Exposure head* means a device that locates the gamma radiography sealed source in the selected working position. (An exposure head is also known as a source stop.)

*Field examination* means a demonstration of practical application of the principles learned in the classroom that should include use of all appropriate equipment and procedures.

*Field station* means a facility where licensed material may be stored or used and from which equipment is dispatched.

*Periodic training* means a periodic review conducted or provided by the licensee for its employees on radiation safety aspects of radiography. The review may include, as appropriate, the results of internal inspections, new procedures or equipment, accidents or errors that have been observed, and opportunities for employees to ask safety questions.

*Permanent radiographic installation* means an enclosed shielded room, cell, or vault in which radiography is performed.

*Projection sheath (guide tube)* means a flexible or rigid tube (i.e., "J" tube) for guiding the source assembly and the attached control cable from the exposure device to the exposure head or working position.

*Radiation Safety Officer* means an individual named by the licensee who has knowledge of, responsibility for, and authority to ensure compliance with appropriate radiation protection rules, standards, and practices on behalf of the licensee and who meets the requirements of 34.41.

*Shielded position* means the location within the radiographic exposure device or source changer where the sealed source is secured and restricted from movement. (In this position the radiation exposure will be at a minimum. This position incorporates maximum shielding for the radioactive source.)

*Sievert* means the SI unit of any of the quantities expressed as dose equivalent. The dose equivalent in rems is equal to the absorbed dose in rads multiplied by the quality factor (1 Sv = 100 rems)

*Source assembly* means an assembly that consists of the sealed source and a connector that attaches the source to the control cable. The source assembly may also include a stop ball used to secure the source in the shielded position.

*Storage container* means a device in which sealed sources are stored.

*Temporary jobsite* means a place where licensed materials are present for the purpose of performing radiography other than any permanent radiographic installation.

4. Section 34.5 is added to read as follows:

§ 34.5 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission, other than a written interpretation by the General Counsel, will be recognized to be binding upon the Commission.

5. Section 34.8 is revised to read as follows:

§ 34.7 Information collection requirements: OMB approval.

(a) \* \* \* \* \*

(b) The approved information collection requirements contained in this part appear in Section 34.13, 34.20, 34.25, 34.27, 34.29, 34.31, 34.33, 34.43, 34.45, 34.47, 34.49, 34.61, 34.63, 34.65, 34.67, 34.69, 34.71, 34.73, 34.75, 34.79, 34.81, 34.85, 34.89, 34.91, 34.101, and 34.111.

(c) This part contains information collection requirements in addition to those approved under the control number specified in paragraph (a) of this section. The additional information collection requirements in § 34.11, Form NRC 313 are approved under control number 3150-0120.

6. Section 34.11 is revised to read as follows:

§ 34.11 Application for a specific license.

A person may file an application for specific license for use of sealed sources in radiography in duplicate on NRC Form 313, "Application for Material License," in accordance with the provisions of § 30.32 of this chapter.

7. Section 34.13 is added to read as follows:

§ 34.13 Specific license for radiography.

The Commission will approve an application for a specific license for the use of licensed material in radiography if the applicant meets the following requirements:

(a) The applicant shall satisfy the general requirements specified in § 30.33 of this chapter for byproduct material, as appropriate, and any special requirements contained in this part.

(b) The applicant shall develop a program for training radiographers and radiographer's assistants and submit to the Commission a description of this program which specifies the --

(1) Initial and periodic training;

(2) On-the-job training;

(3) Means the applicant will use to demonstrate the radiographer's knowledge and understanding of and ability to comply with the Commission's regulations and licensing requirements and the applicant's operating and emergency procedures; and

(4) Means the applicant will use to determine the radiographer's assistant's knowledge and understanding of and ability to comply with the applicant's operating and emergency procedures.

(c) In lieu of describing its initial training program for radiographers in the subjects outlined in § 34.43(f) of this part, and the description of and the means to determine the radiographer's knowledge and understanding of these subjects, the applicant affirms that all individuals acting as radiographers will be certified in radiation safety through the Certification Program for Industrial Radiography Radiation Safety Personnel of the American Society for Nondestructive Testing, Inc. (ASNT-IRRSP) prior to commencing duties as radiographers. From April 18, 1991, to the date of the renewal of an existing license, an approved license application is deemed to include the option, for individuals who are certified in radiation safety through the ASNT-IRRSP, to substitute ASNT-IRRSP certification in lieu of the described means to determine a radiographer's knowledge and understanding of the subjects in § 34.43(a)(1). (This paragraph does not affect the licensee's responsibility to assure that radiographers are properly trained in accordance with § 34.43(a).)

(d) The applicant shall submit to the Commission written operating and emergency procedures as described in § 34.45.

(e) The applicant shall establish and submit to the Commission its program for semiannual inspections of the job performance of each radiographer and radiographer's assistant as described in § 34.43(d).

(f) The applicant shall submit a description of its overall organizational structure as it applies to the radiation safety responsibilities in radiography, including specified delegations of authority and responsibility.

(g) The applicant shall designate a Radiation Safety Officer responsible for implementing the licensee's radiation safety program. The Radiation

Safety Officer shall meet the qualifications and duties described in § 34.41.

(h) If an applicant intends to perform leak testing of sealed sources, the applicant shall identify the manufacturers and the model numbers of the leak test kits to be used. If the applicant wants to analyze its own wipe samples, the applicant shall establish procedures to be followed and submit a description of these procedures to the Commission. The description must include the --

- (1) Instruments to be used;
- (2) Methods of performing the analysis; and
- (3) Pertinent experience of the person who will analyze the wipe samples.

(i) The applicant shall submit to the Commission a list and description of permanent radiographic installations which are at their place of business and all storage locations where radioactive material is stored for more than 180 days in a calendar year.

8. Section 34.20 is revised to read as follows:

§ 34.20 Performance requirements for radiography equipment.

\* \* \* \* \*

(b) \* \* \*

(2) Radiographic exposure devices intended for use as Type B transport containers must meet the applicable requirements of 10 CFR Part 71, including documentation of the QA program requirements outlined in § 71.105.

(3) Modification of any exposure devices and associated equipment is prohibited.

(c) \* \* \*

(f) All associated equipment acquired after January 10, 1996, must be labelled to identify that the components have met the requirements of this section.

9. Section 34.21 is revised to read as follows:

§ 34.21 Limits on levels of radiation for radiographic exposure devices storage containers, and source changers.

(a) Radiographic exposure devices measuring less than 10 centimeters (4 inches) from the sealed source storage position to any exterior surface of the device must not have a radiation level in excess of 0.5 millisieverts (50 millirems) per hour at 15 centimeters (6 inches) from any exterior surface of the device. Radiographic exposure devices measuring a minimum of 10 centimeters (4 inches) from the sealed source storage position to any exterior surface of the device, and all storage containers for sealed sources or for radiographic exposure devices, must not have a radiation level in excess of 2 millisieverts (200 millirems) per hour at any exterior surface, and 0.1 millisieverts (10 millirems) per hour at one meter from any exterior surface. The radiation levels specified are with the sealed source in the shielded (i.e., "off") position.

(b) \* \* \* \* \*

10. Section 34.22 redesignated as § 34.23, and revised to read as follows:

§ 34.23 Locking and relocation of radiographic exposure devices, storage containers and source changers.

(a) Locked radiographic exposure devices and storage containers must be physically secured to prevent tampering.

(1) Each radiographic exposure device must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The exposure device and/or its container must be kept locked (and if a keyed lock, with the key removed at all times) when not under the direct surveillance of a radiographer or a radiographer's assistant or as otherwise may be authorized in § 34.51. In addition, during radiographic operations the sealed source assembly must be manually secured in the shielded position each time the source is returned to that position, in those exposure devices manufactured prior to January 10, 1992.

(2) Each sealed source storage container and source changer must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. Storage containers and source changers must be kept locked when containing sealed sources except when under the direct surveillance of a radiographer or a radiographer's assistant.

(b) Radiographic exposure devices, source changers, and storage containers, prior to being moved from one location to another, must be disassembled, safety plugs or covers applied, locked and physically secured to prevent accidental loss, tampering or removal of licensed material, and must be surveyed to assure that the sealed source is in the shielded position.

11. Section 34.24 redesignated as § 34.25, and revised to read as follows:

§ 34.25 Radiation survey instruments.

(a) The licensee shall keep sufficient calibrated and operable radiation survey instruments at each location where radioactive material is present to



make the radiation surveys required by this part and by Part 20 of this chapter. Instrumentation required by this section must be capable of measuring a range from 0.02 millisieverts (2 millirems) per hour through 0.01 Sievert (1 rem) per hour. Survey instruments must be checked for operability prior to use. This may be accomplished by evaluating the instrument response to the previously measured fields at the projection sheath port or the control cable sheath port on a radiographic exposure device.

(b) The licensee shall have each radiation survey instrument required under paragraph (a) of this section calibrated --

(1) At intervals not to exceed 6 months and after instrument servicing, except for battery changes;

(2) For linear scale instruments, at two points located approximately 1/3 and 2/3 of full-scale on each scale; for logarithmic scale instruments, at midrange of each decade, and at two points of at least one decade; and for digital instruments, at appropriate points; and

(3) So that an accuracy within plus or minus 20 percent of the calibration standard can be demonstrated on each scale.

(c) The licensee shall maintain records of the results of the instrument calibrations in accordance with § 34.65.

12. Section 34.25 redesignated as § 34.27, and is revised to read as follows:

§ 34.27 Leak testing and replacement of sealed sources.

(a) The replacement of any sealed source fastened to or contained in a radiographic exposure device and leak testing of any sealed source must be

performed only by persons specifically authorized by the Commission or an Agreement State to do so.

(b) Testing and recordkeeping requirements.

(1) Each licensee who uses a sealed source shall have the source tested for leakage at intervals not to exceed 6 months.

(2) The licensee shall maintain records of the leak tests in accordance with § 34.67.

(3) In the absence of a certificate from the transferor that a test has been made within the 6 months before the transfer, the sealed source may not be used until tested.

(c) Method of testing. The wipe of a sealed source must be performed using a leak test kit or method approved by the Commission or an Agreement State. The wipe sample must be taken from the nearest accessible point to the sealed source where contamination might accumulate. The wipe sample must be analyzed for radioactive contamination. The analysis must be capable of detecting the presence of 185 Bq (0.005 microcuries) of radioactive material on the test sample and must be performed by a person approved by the Commission or an Agreement State to perform the analysis.

(d) Any test conducted pursuant to paragraphs (b) and (c) of this section which reveals the presence of 185 Bq (0.005 microcuries) or more of removable radioactive material must be considered evidence that the sealed source is leaking. The licensee shall immediately withdraw the equipment involved from use and shall cause it to be decontaminated and repaired or to be disposed of, in accordance with Commission regulations. A report must be filed, within 5 days of the test, with the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 describing the

equipment involved, the test results, and the corrective action taken. A copy of such report must be sent to the Administrator of the appropriate Nuclear Regulatory Commission's Regional Office listed in Appendix D of Part 20 of this chapter "Standards for Protection Against Radiation."

(e) A sealed source which is not fastened to or contained in a radiographic exposure device must have permanently attached to it a durable tag at least one (1) inch square bearing the prescribed radiation caution symbol in conventional colors, magenta, purple or black on a yellow background, and at least the instructions: "Danger -- Radioactive Material -- Do Not Handle -- Notify Civil Authorities if Found."

(f) Each exposure device using DU shielding and an "S" tube configuration must be periodically tested for depleted Uranium contamination. This test could be performed by the licensee using available test kits or the exposure device could be returned to the manufacturer for such testing. This test must be undertaken at intervals not to exceed 12 months and should such testing reveal the presence of DU contamination, the exposure device must be removed from use and arrangements for proper disposal in accordance with 10 CFR part 61 must be made. A record of the DU leak-test must be made in accordance with § 34.67.

13. Section 34.26 redesignated as § 34.29, and is revised to read as follows:

§ 34.29 Quarterly inventory.

(a) Each licensee shall conduct a quarterly physical inventory to account for all sealed sources received and possessed under this license.

(b) The licensee shall maintain records of the quarterly inventory in accordance with § 34.69.

14. Section 34.28 redesignated as § 34.31, and is revised to read as follows:

§ 34.31 Inspection and maintenance of radiographic exposure devices, storage containers, associated equipment, and source changers.

(a) The licensee shall visually check for obvious defects in radiographic exposure devices, storage containers, associated equipment, and source changers prior to use each day the equipment is used to ensure that the equipment is in good working condition and that required labeling is present. If defects are found, the equipment must be removed from service until repaired, and a record must be made in accordance with § 34.73.

(b) Each licensee shall have a program for inspection and routine maintenance of radiographic exposure devices, source changers, associated equipment and storage containers at intervals not to exceed 3 months and prior to the first use thereafter to ensure the proper functioning of components important to safety. Records of these inspections and maintenance performed must be made in accordance with § 34.73. If defects are found, the equipment must be removed from service until repaired, and a record must be made in accordance with § 34.73.

15. Section 34.29 redesignated as § 34.33, and is revised to read as follows:

§ 34.33 Permanent radiographic installations.

(a) Permanent radiographic installations must have high radiation area entrance controls of the types described in § 20.1601(a)(2), (a)(3), or (b) of this chapter and must also meet the following special requirements.

(b) \* \* \* \* \*

(c) The alarm system must be tested for proper operation at intervals not to exceed 3 months and the beginning of each day of equipment use. The equipment use test must include a check of the visible and audible signals by a crank out of the exposure device prior to use of the room. If a control device or alarm is operating improperly, it must be immediately labeled as defective and repaired before industrial radiographic operations are resumed. Test records must be maintained in accordance with § 34.75.

16. Section 34.35 is added to read as follows:

§ 34.35, Labels, storage, and transportation precautions.

63p8]6Xlabels.

(1) The licensee may not use a source changer or container to store licensed material unless the source changer or the container has securely attached to it a durable, legible, and clearly visible label. The label must contain the radiation symbol specified in § 20.1904 of this chapter and the wording

CAUTION (OR DANGER)

RADIOACTIVE MATERIAL--DO NOT HANDLE

NOTIFY CIVIL AUTHORITIES (OR NAME OF COMPANY)

(2) The licensee may not transport licensed material unless the material is packaged, labeled, marked, and accompanied with appropriate shipping papers in accordance with regulations set out in 10 CFR Part 71, including documentation of the QA program requirements outlined in § 71.105.

(b) Security precautions during storage and transportation.

(1) Locked radiographic exposure devices and storage containers must be physically secured to prevent tampering or removal by unauthorized personnel.

The licensee shall store licensed material in a manner which will minimize danger from explosion or fire.

(2) The licensee shall lock and physically secure the transport package containing licensed material in the transporting vehicle to prevent accidental loss, tampering, or unauthorized removal of the licensed material from the vehicle.

17. Section 34.41 is added to read as follows:

§ 34.41 Radiation Safety Officer.

The Radiation Safety Officer shall ensure that radiation safety activities are being performed in accordance with approved procedures and regulatory requirements in the daily operation of the licensee's program.

(a) The RSO's qualifications must include:

(1) completion of the training and testing requirements of § 34.43(a);

and

(2) 2000 hours of documented experience in industrial radiographic operations, with at least 40 hours of formal classroom training with respect to the establishment and maintenance of a radiation protection program.

(b) The specific duties of the RSO include, but are not limited to, the following:

(1) to establish and oversee operating, emergency, and ALARA procedures, and to review them regularly to ensure that the procedures are current and conform with these rules;

(2) to oversee and approve all phases of the training program for radiographic personnel so that appropriate and effective radiation protection practices are taught;

(3) to ensure that required radiation surveys and leak tests are performed and documented in accordance with these rules, including any corrective measures when levels of radiation exceed established limits;

(4) to ensure that personnel monitoring devices are calibrated and used properly by occupationally-exposed personnel, that records are kept of the monitoring results, and that timely notifications are made as required by § 20.2203; and

(5) to ensure that operations are conducted safely and to assume control and have the authority to institute corrective actions including stopping of operations when necessary in emergency situations or unsafe conditions.

18. Section 34.31 redesignated as § 34.43, and revised to read as follows:

§ 34.43 Training.

(a) \* \* \*

(1) Has been instructed in the subjects outlined in § 34.43(f) of this part;

(2) Has received copies of and instruction in NRC regulations contained in this part; in §§ 30.7, 30.9, and 30.10; and in the applicable sections of Parts 19, 20, and 71 of this chapter, in 49 CFR Parts 171-173, in the NRC license(s) under which the radiographer will perform radiography, and the licensee's operating and emergency procedures;

(3) \* \* \* \* \*

(4) Has demonstrated understanding of the instructions in this paragraph (a) by successful completion of a written test and a field examination on the subjects covered in § 34.43(f).

(b) \* \* \*

(1) Has received copies of and instruction in NRC regulations contained in this part; in §§ 30.7, 30.9, and 30.10; and in the applicable sections of Parts 19, 20, and 71 of this chapter, in 49 CFR Parts 171-173, in the NRC license(s) under which the radiographer's assistant will perform radiography, and the licensee's operating and emergency procedures;

(2) \* \* \*

(3) \* \* \*

(c) The licensee shall provide periodic training for radiographers and radiographer's assistants at least once during each calendar year.

(d) The licensee shall conduct a semiannual inspection program of the job performance of each radiographer and radiographer's assistant to ensure that the Commission's regulations, license requirements, and the applicant's operating and emergency procedures are followed. The inspection program must:

(1) Include observation of the performance of each radiographer and radiographer's assistant during an actual radiographic operation at intervals not to exceed 6 months; and

(2) Provide that, if a radiographer or a radiographer's assistant has not participated in a radiographic operation for more than 3 months since the last inspection, that individual's performance must be observed and recorded before the individual participates in a radiographic operation.

(e) The licensee shall maintain records of the above training to include written, oral and field examinations, periodic training, and semiannual inspections of job performance in accordance with § 34.79.

(f) The licensee shall include the following subjects in the training required in paragraph (a)(1) of this section:



- (1) Fundamentals of radiation safety including --
  - (i) Characteristics of gamma radiation;
  - (ii) Units of radiation dose and quantity of radioactivity;
  - (iii) Hazards of exposure to radiation;
  - (iv) Levels of radiation from licensed material; and
  - (v) Methods of controlling radiation dose (time, distance, and shielding);
- (2) Radiation detection instruments including --
  - (i) Use, operation, calibration, and limitations of radiation survey instruments;
  - (ii) Survey techniques; and
  - (iii) Use of personnel monitoring equipment;
- (3) Equipment to be used including --
  - (i) Operation and control of radiographic exposure equipment, remote handling equipment, and storage containers, including pictures or models of source assemblies (pigtailed).
  - (ii) Storage, control, and disposal of licensed material; and
  - (iii) Maintenance of equipment.
- (4) The requirements of pertinent Federal regulations; and
- (5) Case histories of accidents in radiography.

19. Section 34.32 redesignated as § 34.45, and revised to read as follows:

§ 34.45 Operating and emergency procedures.

(a) Operating and emergency procedures must include, as a minimum, instructions in at least the following:

(1) The handling and use of licensed sealed sources and radiographic exposure devices to be employed such that no person is likely to be exposed to radiation doses in excess of the limits established in Part 20 of this chapter "Standards for Protection Against Radiation";

(2) Methods and occasions for conducting radiation surveys;

(3) Methods for controlling access to radiographic areas;

(4) Methods and occasions for locking and securing radiographic exposure devices, storage containers and sealed sources;

(5) Personnel monitoring and the use of personnel monitoring equipment;

(6) Transporting sealed sources to field locations, including packing of radiographic exposure devices and storage containers in the vehicles, placarding of vehicles, when needed, and control of the sealed sources during transportation, (refer to 49 CFR Parts 171-173);

(7) The inspection and maintenance of radiographic exposure devices and storage containers;

(8) Steps that must be taken immediately by radiography personnel in the event a pocket dosimeter is found to be off-scale;

(9) The procedure(s) for identifying and reporting defects and noncompliance, as required by Part 21 of this chapter;

(10) The procedure for notifying proper persons in the event of an accident;

(11) Minimizing exposure of persons in the event of an accident;

(12) Source recovery procedure if licensee will perform source recovery;

and

(13) Form of records.

(b) The licensee shall maintain copies of current operating and emergency procedures in accordance with § 34.81.

20. Section 34.33 redesignated as § 34.47, and is revised to read as follows:

§ 34.47 Personnel monitoring.

(a) The licensee shall not permit any individual to act as a radiographer or a radiographer's assistant unless, at all times during radiographic operations, each such individual wears a direct reading pocket dosimeter, an alarm ratemeter, and either a film badge or a thermoluminescent dosimeter (TLD) except that for permanent radiography facilities where other appropriate alarming or warning devices are in routine use, the wearing of an alarming ratemeter is not required. Pocket dosimeters must have a range from zero to 2 millisieverts (200 millirems) and must be recharged at the start of each shift. In cases where the exposure will be greater than 2 millisieverts (200 millirems) an exemption must be applied for to use a pocket dosimeter with a higher endpoint. Each film badge and TLD must be assigned to and worn by only one individual. Film badges and TLDs must be replaced at least monthly. After replacement, each film badge or TLD must be promptly processed.

(b) Pocket dosimeters must be read and the exposures recorded at the beginning and end of each shift, and records must be maintained in accordance with § 34.83.

(c) Pocket dosimeters must be checked at periods not to exceed 12 months for correct response to radiation, and records must be maintained in

accordance with § 34.83. Acceptable dosimeters must read within plus or minus 30 percent of the true radiation exposure.

(d) If an individual's pocket dosimeter is found to be off-scale, and the possibility of radiation exposure cannot be ruled out as the cause, the individual's film badge or TLD must be immediately sent for processing. In addition, the individual shall not work with licensed material until a determination of the individual's radiation exposure has been made. This determination must be made by the RSO or designee. The results of this determination must be included in the records maintained in accordance with § 34.83.

(e) If a film badge or TLD is lost or damaged, the worker shall cease work immediately until a replacement film badge or TLD is provided and the exposure is calculated for the time period from issuance to loss or damage of the film badge or TLD. The results of the calculated exposure and the time period for which the film badge or TLD was lost or damaged must be included in the records maintained in accordance with § 34.83.

(f) Reports received from the film badge or TLD processor must be retained in accordance with § 34.83.

(g) Each alarm ratemeter must --

(1) Be checked to ensure that the alarm functions properly (sounds) prior to use at the start of each shift;

(2) Be set to give an alarm signal at a preset dose rate of 5 mSv/hr (500 mrem/hr); with an accuracy of plus or minus 20 percent of the true radiation dose rate.

(3) Require special means to change the preset alarm function; and

(4) Be calibrated at periods not to exceed 12 months for correct response to radiation. The licensee shall maintain records of alarm ratemeter calibrations in accordance with § 34.83.

21. Section 34.43 redesignated as § 34.49, and is revised to read as follows:

§ 34.49 Radiation surveys.

The licensee shall:

(a) Maintain at least one calibrated and operable radiation survey instrument that meets the requirements of § 34.25 at each location of its radiographic operations whenever radiographic operations are being performed, including a source exchange, and at the storage area, (as defined in § 34.3), whenever a radiographic exposure device, a storage container, or source is being placed in storage.

(b) Conduct a survey of the camera with a radiation survey instrument after each exposure to determine that the sealed source has been returned to its shielded position.

(c) Conduct a survey as you approach the guide tube prior to exchanging films, repositioning the collimator, or dismantling equipment.

(d) Conduct a survey with a radiation survey instrument any time the source is exchanged and whenever a radiographic exposure device is placed in a storage area, (as defined in § 34.3), to determine that the sealed source is in its shielded position.

(e) For recordkeeping requirements see § 34.85.

22. Section 34.41 redesignated as § 34.51, and is revised to read as follows:

§ 34.51 Security.

During each radiographic operation the radiographer or radiographer's assistant shall maintain a continuous direct visual surveillance of the operation to protect against unauthorized entry into a high radiation area, as defined in Part 20 of this chapter, except (a) where the high radiation area is equipped with a control device or an alarm system as described in § 20.1601(a)(1), (a)(2), or (a)(3) of this chapter, or (b) where the high radiation area is locked to protect against unauthorized or accidental entry.

23. Section 34.42 redesignated as § 34.53, and revised to read as follows:

§ 34.53 Posting.

Areas in which radiography is being performed must be conspicuously posted as required by § 20.1902(a) and (b) of this chapter. Exceptions listed in § 20.1903 of this chapter do not apply to radiographic operations.

24. Section 34.44 redesignated as § 34.55, and is revised to read as follows:

§ 34.55 Supervision of radiographers' assistants.

Whenever a radiographer's assistant uses radiographic exposure devices, uses sealed sources or related source handling tools, or conducts radiation surveys required by § 34.49(b) to determine that the sealed source has returned to the shielded position after an exposure, the assistant shall be under the personal supervision of a radiographer. The personal supervision

must include: (a) the radiographer's personal presence at the site where the sealed sources are being used, (b) the ability of the radiographer to give immediate assistance if required, and (c) the radiographer's watching the assistant's performance of the operations referred to in this section.

25. Section 34.57 is added to read as follows:

§ 34.57 Requirements for conducting radiographic operations outside of a permanent radiographic installation.

Whenever radiography will be performed outside a permanent radiographic installation, the radiographer must be accompanied by another qualified radiographer or an individual with, at least, the qualifications of a radiographer's assistant, who is observing the operations and is capable of providing immediate assistance to prevent unauthorized entry. Radiography may not be performed if only one qualified individual is present.

26. A new heading "RECORDS" is added and new § 34.61-85, 89 and 91 were added under that heading to read as follows:

§ 34.61 Records of specific license for radiography.

(a) Each licensee shall maintain a copy of their license until the Commission terminates the license.

§ 34.63 Records of receipt and transfer of sealed sources.

(a) Each licensee shall maintain records showing the receipts and transfers of sealed sources.

(b) These records must include the date, the individual making the record, the radionuclide, number of curies, and make, model, and serial number of each sealed source and device, as appropriate.

(c) The licensee shall retain the records required by paragraph (a) of this section for 3 years after the record is made.

§ 34.65 Records of radiation survey instruments.

(a) Each licensee shall maintain records of the calibrations of their radiation survey instruments.

(b) The licensee shall retain the records required by paragraph (a) of this section for 3 years after the record is made.

§ 34.67 Records of leak testing, and replacement of sealed sources.

(a) Each licensee shall maintain records of leak test results in units of Becquerels (curies).

(b) The licensee shall retain the records required by paragraph (a) of this section for 3 years after the record is made.

§ 34.69 Records of quarterly inventory.

(a) Each licensee shall maintain records of the quarterly inventory.

(b) The record must include the quantities and kinds of byproduct material (including the model number, the serial number and manufacturer), location of sealed sources, the name of the individual conducting the inventory, and the date of the inventory.

(c) The licensee shall retain the records required by paragraph (a) of this section for 3 years after the record is made.



§ 34.71 Utilization logs.

(a) Each licensee shall maintain current utilization logs at the address specified in the license, showing for each sealed source the following information:

(1) A description, including the make, model number, and serial number of the radiographic exposure device or storage container in which the sealed source is located;

(2) The identity and signature of the radiographer to whom assigned; and

(3) The plant or site where used and dates of use, including the dates removed and returned to storage.

(b) The licensee shall retain the logs required by paragraph (a) of this section for 3 years after the log is made.

§ 34.73 Records of inspection and maintenance of radiographic exposure devices, storage containers, associated equipment, and source changers.

(a) Each licensee shall maintain records of inspection and maintenance of radiographic exposure devices, storage containers, associated equipment, and source changers.

(b) The record must include the date of check, name of inspector, equipment involved, any defects found, and repairs made.

(c) The licensee shall retain the records required by paragraph (a) of this section for 3 years after the record is made.

§ 34.75 Records of permanent radiographic installations.

(a) Each licensee shall maintain records of alarm system tests.

(b) The licensee shall retain the records required by paragraph (a) of this section for 3 years after the record is made.

§ 34.79 Records of training.

(a) Each licensee shall maintain records of training of each radiographer and each radiographer's assistant, to include copies of written tests, dates of oral tests, and field examinations.

(b) Each licensee shall maintain records of periodic training for each radiographer and each radiographer's assistant. The records must list the topics discussed, the dates of the reviews, and the attendees.

(c) The licensee shall retain the records required by paragraphs (a) and (b) of this section for 3 years after the record is made.

§ 34.81 Copies of operating and emergency procedures.

(a) Each licensee shall maintain a copy of current operating and emergency procedures.

(b) The licensee shall retain the records until the Commission terminates the license.

(c) If procedures are superseded the licensee shall retain the superseded material for 3 years after each change.

§ 34.83 Records of personnel monitoring.

(a) Each licensee shall maintain records of daily exposures recorded from pocket dosimeter readings and yearly operability checks,.

(b) The licensee shall retain the records required by paragraph (a) of this section for 3 years after the record is made.

(c) Each licensee shall maintain records of reports received from the film badge or TLD processor.

(d) The licensee shall retain the records required by paragraph (c) until the Commission terminates the license.

§ 34.85 Records of radiation surveys.

(a) Each licensee shall maintain records of exposure device surveys when it is the last one performed in the work day and prior to placing the device in storage.

(b) The licensee shall retain the records required by paragraph (a) of this section for 3 years after the record is made.

§ 34.89 Documents and records required at field stations.

Each licensee shall maintain copies of the following documents and records at the field station:

(a) A copy of Parts 19, 20, and 34 of NRC regulations;

(b) The license authorizing the use of licensed material;

(c) Operating and emergency procedures required by § 34.45;

(d) The record of radiation survey instrument calibrations required by § 34.65;

(e) The record of leak test results required by § 34.67;

(f) Physical inventory records required by § 34.69;

(g) Utilization records required by § 34.71;

(h) Records of inspection and maintenance required by § 34.73;

(i) Training records required by § 34.79; and

(j) Survey records required by § 34.85.

§ 34.91 Documents and records required at temporary jobsites.

Each licensee conducting operations at a temporary jobsite shall maintain copies of the following documents and records at the temporary jobsite until the radiographic operation is completed:

- (a) Operating and emergency procedures required by § 34.45.
- (b) Evidence of latest calibration of the radiation survey instruments in use at the site required by § 34.65.
- (c) Latest survey records required by § 34.85.
- (d) The shipping papers for the transportation of radioactive materials required by § 71.5 of this chapter; and
- (e) When operating under reciprocity pursuant to § 150.20 of this chapter, a copy of the Agreement State license authorizing use of licensed materials.

27. Section 34.4 redesignated as § 34.87.

§ 34.87 Form of records

28. A new heading "NOTIFICATION OF INCIDENTS" is added and § 34.30 was redesignated as 34.101 is added under that heading to read as follows:

§ 34.101 Notification of incidents.

(a) \* \* \* \* \*

(b) The licensee shall include the following information in each report submitted under paragraph (a) of this section, and in each report of overexposure submitted under 10 CFR 20.2203 which involve failure of safety components of radiography equipment:

29. Section 34.51 redesignated as § 34.111, and is revised to read as follows:

§ 34.111 Applications for exemptions.

The Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

30. A new heading "ENFORCEMENT" is added and a new § 34.121 is added under that heading to read as follows:

§ 34.121 Violations.

(a) An injunction or other court order may be obtained to prohibit a violation of any provision of this part.

(b) A court order may be obtained for the payment of a civil penalty imposed for violation of this part.

(c) Any person who willfully violates any provision of this part issued under section 161 b., i., or o. of the Atomic Energy Act of 1954, as amended, or the provisions cited in the authority citation at the beginning of this part may be guilty of a crime and, upon conviction, may be punished by fine or imprisonment, or both, as provided by law.

Dated at Rockville, Maryland, this \_\_\_\_ day of \_\_\_\_\_ 1993.

For the Nuclear Regulatory Commission.

---

Samuel J. Chilk,  
Secretary of the Commission.

DRAFT REGULATORY ANALYSIS  
OVERALL REVISION OF 10 CFR PART 34

1.0 Statement of the Problem

10 CFR Part 34 was first published in 1965 as part of the recodification of Parts 30 and 31 for the purpose of simplifying and clarifying the format of the then current regulations so that persons subject to byproduct material licensing regulations could better use and understand them. Numerous modifications of the original Part 34 have been issued since 1965, many of which have been directed toward the safety aspects of field radiography, such as the performance requirements for radiography equipment and additional requirements related to equipment malfunctions, both of which were published in 1990, and the modification which gives licensees the option to have their radiographers certified by the ASNT in lieu of certain training requirements which was published in 1991.

In spite of numerous modifications to the original Part 34, the regulatory requirements have been misinterpreted repeatedly and have led to increased numbers of enforcement actions. Also, the radiography industry seems to be prone to incidents involving radiation overexposures of its personnel in the field. In the period 1980 through 1988, NRC exposure data indicates that radiography accounted for over 25 percent of all radiation overexposures reported by NRC licensees although radiographers make up only 4 percent of NRC non-reactor licensees. It is believed that misinterpretation of some of the regulatory requirements coupled with a lack of sufficient training could be at least partially responsible. In view of this, it has been recommended that an

overall revision to Part 34 be undertaken to make it more clear and more compatible with other radiography regulations currently in use. Following the recommendations of the Commission, the staff has been reviewing Part E of the "Suggested State Regulations for Control of Radiation" developed by the Conference of Radiation Control Program Directors Inc.(CRCPD), Part 31 of the Texas Regulations for the Control of Radiation, Chapter 5 of the Louisiana Radiation Regulations, and Section 18 of the Canadian "Atomic Energy Control Regulations" for the purpose of determining what revisions should be made to Part 34. In addition, recommendations made at the All Agreement States Meeting held in Sacramento, California, in October 1991 and at the Office of State Programs Workshop held in Irving, Texas, in November 1992 have been taken into consideration in developing the proposed revision.

### 1.1 The Industry

The radiography industry, which is the concern of this regulatory analysis, consists of approximately 700 firms that perform radioisotope radiography either at fixed locations or at multiple temporary job sites. This industry employs full time about 12,000 radiographers and radiographer's assistants. Of these firms approximately 200 are NRC licensees, employing about 4000 workers and the remainder are licensees of the Agreement States. Roughly one quarter of the firms conduct their radiography at a single location, the other three quarters work at multiple locations generally referred to as temporary job sites. Approximately 90 percent of the licensees are considered to be "small entities" under the criterion established in Section 605(b) of the Regulatory Flexibility Act of 1980. The industry uses an estimated 3,500 devices, 1400 of these devices are in use by NRC licensees. Typically, radiographic



exposure devices employ either cobalt-60 or iridium-192 radioisotope sources. Most of the radiography licensees are in the business of non-destructive testing, in which radiography represents only part of their total income. However, a few small firms work only in radiography. Much of the work in the field (temporary jobsites) involves the inspection of welds in bridges, oil, gas and other pipelines, and in the steel framework of commercial buildings under construction.

### 1.2 Proposed Changes

The changes proposed in this revision of 10 CFR Part 34 are directed toward improving the safety performance, primarily in field operations, by radiographers. The proposed revision specifies new requirements for two-person crews, a re-definition of a permanent radiographic installation, the designation of and the qualifications for a Radiation Safety Officer, specification of required documents at various radiography operations sites, some additional training for radiographer's assistants, recordkeeping and labeling requirements, and a requirement for additional testing of radiographic devices. In addition, a number of the changes involve a reorganization of the regulations for the purpose of clarification, and also includes some new definitions, as well as redefinition of some terms in the present regulation.

### 2.0 Objectives

The Nuclear Regulatory Commission (NRC) is proposing to revise its regulations governing industrial radiography. The revision would include additional safety requirements to enhance the level of protection of radiographers and

the public and would clarify the regulations so that licensees may have a better understanding of what is expected in radiographic operations. There has not been an overall revision of Part 34 in many years while a number of Agreement States have updated their radiography regulations. This revision incorporates certain provisions of the updated Agreement State regulations. The format of the proposed revision has been modified to place requirements into categories which describe the type of requirements that are found in the subpart.

### 3.0 Alternatives

The alternatives are to revise Part 34 as planned, to take no action at this time and continue in the status quo, or to clarify and update the existing Part 34, but pose no new substantive requirements.

#### Alternative 1 - Revise Part 34 as Planned

Adoption of this alternative would result in a comprehensive revision of 10 CFR Part 34. Since many of the proposed changes involve rearrangement of sections of the current regulation and rewording to make them more understandable, adoption of this alternative should serve to reduce the number of misinterpretations of the regulation which often result in enforcement actions for failing to follow safety requirements. The revision would also make Part 34 more consistent with Agreement State regulations.

The requirements for two-person crews and Radiation Safety Officers are the most costly changes to Part 34. Most of changes to Part 34 that would be brought about by this rulemaking, e.g., recordkeeping, labeling, additional

training for radiographer's assistants, and additional testing of certain radiographic exposure devices, should not have significant impacts on either large or small licensees. When compared to the potential safety benefits to be derived, the requirements for two-person crews should not pose an unnecessarily onerous burden since many licensees already utilize radiographer's assistants. The major impact of imposing the two-person rule will be on small licensees which currently only employ one or two radiographers and would need to possibly double their workforce by hiring radiographer's assistants.

#### Alternative 2 - No Action

Alternative 2 is to take no action at this time and continue in the status quo. The impacts of taking this alternative would be to continue in a situation in which radiography contributes disproportionately to the number of overexposures occurring each year. In addition, this would leave in place those portions of the current Part 34 that are inconsistent with the regulation of many Agreement States, which would continue to lead to confusion on what requirements are in place when radiographers work in Agreement States and in states which are under NRC jurisdiction.

#### Alternative 3 - Clarify and Update the Existing Part 34, but Impose No New Substantive Requirements

Under this alternative, the NRC would modify the current Part 34 to clarify and update ambiguous and out-moded requirements. However, provisions such as the requirement for the two-person rule that would impact on licensees would

not be proposed. This alternative ignores some of the primary benefits sought in the revision of Part 34.

#### 4.0 Impacts

##### Alternative 1 - Revise Part 34 as Planned

###### 1. NRC

Adopting Alternative 1 will require the NRC to spend more time reviewing the license applications due to the additional requirements in the proposed revision. Additional time will also be needed to inspect implementation of the additional requirements. Currently it takes several weeks to review a license application, and three quarters to one day to inspect a licensee. The additional requirements specified in the proposed rule may increase the application review time by several days to review additional information, and increase inspection time by a few hours to inspect against the additional requirements. However, these increases are not considered to be significant.

###### 2. Licensees

The discussion of the impacts of the proposed rulemaking on NRC licensees is divided into those that are major impacts resulting from substantive new requirements, and those that are minor impacts resulting from requirements such as additional recordkeeping and device testing.

###### a. Major Impacts

###### i. Two Person Crews

Two-person crews add to the costs of performing radiography at locations where there is no permanent radiographic installation. Nonetheless, a number of

Agreement States have had such a requirement in their regulations for several years, and consider it both necessary and beneficial. In many of these states the requirement is to have a minimum of two fully qualified radiographers to be in compliance. In these states radiographer's assistants or radiographer trainees, although present and working at the jobsite, are not considered to be part of the required two-person crews. The NRC however, is proposing that the two-person crew need to be composed of only one qualified radiographer and that the other person may be a qualified radiographer's assistant.

Radiographer's helpers, who are used by some of the larger radiography licensees to patrol and survey radiation boundaries, and who are not trained in radiation safety to the level of a radiographer's assistant, would not be considered to be members of the two-person crews.

As stated previously, some three-quarters of the industrial isotope radiography occurs at locations other than permanent radiographic installations. It is assumed that approximately one third (1,300) of the radiography personnel discussed in Section 1.1 are radiographer's assistants. It is further assumed for the purpose of estimating the cost of the two-person crew amendment that assistants are employed at 75 percent of the jobsites under the present regulations. NRC regulations have always required licensees to maintain surveillance of radiographic operations to protect against unauthorized entry into a high radiation area. In many cases, this would require the presence of more than one qualified individual, so that many NRC licensees are already using two individuals at temporary job sites. This means that two-person crews that meet the minimal NRC requirements specified in the previous paragraph already exist. Therefore, imposition of this

requirement will impose additional costs only in those cases where licensees are in the habit of using only single person crews. Further, it was pointed out at a recent All Agreement States meeting, that if this requirement were imposed on all radiography licensees uniformly (which would include Agreement State licensees, many of whom already require two-person crews), all licensees would be operating on a level playing field with no licensee having an economic advantage over the others by virtue of being able to use a single person crew. The additional cost of implementing this requirement impacting on the licensees is estimated to be \$30,000 per licensee to hire an additional assistant. This figure was arrived at using the following: a radiographer's assistant paid \$15 per hour (including benefits), working for 2,000 hours per year, comes to \$30,000 per assistant per year. For the majority of licensees, this should not result in any impact since many are already using two-person crews. It is estimated that approximately 30-40 percent of NRC licensees would be required to hire additional staff to meet this requirement. These licensees could be expected to hire 5-6 additional workers, and at \$30,000 per assistant per year, the resulting licensee cost would be \$180,000. The annual cost to industry would be approximately \$14.4 million, if 80 licensees each were required to hire 6 radiographer's assistants at a cost of \$30,000 per assistant per year.

The primary reason for specifying a two-person crew is to reduce the likelihood that members of the public would be inadvertently exposed to radiation resulting from improper surveillance of the restricted area, or if an incapacitating injury to a radiographer should occur at a remote location while the source is exposed the presence of a second individual could be an

important factor in preventing unnecessary radiation exposures. It should be noted that while the cost of hiring and maintaining an additional assistant may be more expensive than installing and maintaining alarms on a "permanent installation," licensees would have the option of constructing a "permanent installation" at jobsites, where feasible, in lieu of providing a second person. However, the NRC recognizes that establishing a "permanent installation" per \$34.33 at a jobsite is not possible in many, if not most instances.

ii. Additional Training of Radiographer's Assistants

The proposed paragraph 34.43(b)(1) will require that the radiographer's assistants be given instruction in the following parts of 10 CFR: §§ 30.7, 30.9, 30.10, and applicable sections of Parts 19, 20, and 71, they also are required to be given instruction in 49 CFR Parts 171-173, and in the NRC license(s) under which the radiographer will perform radiography. This is in addition to the current requirements to provide instruction in the licensees operating and emergency procedures. It is estimated that this requirement will require an additional day of training for all radiographer's assistants, assuming that there are 1300 assistants for 200 licensees, and the assistants are paid a salary of \$15 per hour (including benefits), times 8 hours of instruction, this would result in a cost of \$120 per assistant per licensee, plus a cost of \$320 in salary and benefits of the RSO's time to conduct the training. By using the estimate that one-third of the workers are assistants this would result in a one-time cost of \$1,160 per licensee, assuming the RSO conducted the training of all assistants at the same time. This would result

in an additional one-time impact of \$232,000 for the estimated 200 NRC licensees. For licensees required to hire additional assistants (using the assumption in Section i) the cost would be an additional \$1,040, or an additional one-time cost to industry of \$83,200 assuming that 40 percent of licensees would need to hire additional workers. There could be an additional annual cost of \$440 per licensee to train any additional staff hired, which would result in an industry cost of \$88,000.

iii. Radiation Safety Officer

The requirement to designate a Radiation Safety Officer (RSO) specified in Section 34.13(g) is new. Previously, Regulatory Guide 10.6 which describes the preparation of license applications for radiography called for the name of the individual who would be responsible for the supervision of the radiation safety program to be specified on the application. In addition, the guide stated that this individual should have had a minimum of one year of actual experience as a radiographer using radioisotope radiography with no credit being given for the use of x-ray devices, but the guide did not specifically list the duties of this individual. Section 34.41(b) lists both the qualifications and the specific duties of the RSO.

The first item listed under the RSO's qualifications in Section 34.41(a), namely the requirement to complete the training and testing requirements for a qualified radiographer, should not have any significant impact since most persons working as radiographers would normally have met these requirements. The second item requires that the RSO have 2 years of documented experience in industrial radiography as a qualified radiographer with at least 40 hours of



formal classroom training with respect to oversight of radiation protection programs. However, the specific duties listed in the proposed § 34.41(b) imply training beyond that required to qualify as a radiographer, such as additional training in calibration and leak testing. Hence, 2 years of documented experience as a radiographer alone would not qualify an individual to be an RSO. While the impact of this additional training can only be estimated at this time, it is believed that the additional required 40 hours of formal classroom training in oversight of radiation protection programs will cost each licensee \$4,100 -- \$1,500 for the training, \$500 for the transportation to and from the training, \$500 for the per diem while attending the training, and \$1,600 in salary and benefits (\$40 per hour X 40 hours). This results in a total impact of \$820,000 for the estimated 200 NRC licensees. (It should be noted that this training is a one time cost.) Also, this estimate assumes that there are currently no RSOs who would meet the requirements of the proposed revision, which is unlikely.

#### iv. Permanent Radiographic Installations

Although the current regulation was intended to require both visible and audible warning signals to be installed at "permanent radiographic installations," it was apparently ambiguous in that some licensees misinterpreted the requirement and continued to use what the NRC considered to be permanent installations as temporary jobsites. The proposed rulemaking would both revise the definition of permanent radiographic installations and require two-person crews when radiographic operations are being conducted outside of a permanent radiographic installation. As noted above,

approximately 50, or one quarter of the NRC licensees operate at single locations which are permanent facilities. With an estimated cost of \$3,000 per facility for installation of alarms this would result in an initial cost of \$150,000 to NRC licensees, and an annual cost of \$200 per licensee, assuming of course that no NRC licensee now uses "permanent radiographic installations" in conformance with current requirements. Of the remaining 150, many do much of their radiography at jobsites where they will now be required to use two-person crews.

## 2.b. Minor Impacts

### i. Monthly Replacement of TLDs

Exchange periods for either personnel film badge dosimeters or personnel thermoluminescent dosimeters (TLDs) are not included in the existing 10 CFR Part 34 but the proposed revision will require that both types of personnel dosimeters be replaced monthly. Current practice is for film badge dosimeters to be replaced on a monthly basis because of their sensitivity to environmental factors which cause them to fog or fade, so that it is unlikely there will be an impact on licensees who use film for their personnel dosimeters. In the case of TLDs, however, the replacement period has customarily been three months, in part because the old 10 CFR Part 20.401 required reporting for periods of time not exceeding one calendar quarter. Recent surveys of the dosimetry processing industry indicate that approximately 80 percent of personnel dosimetry is conducted using film badges and only 20 percent use TLDs. In the case of NRC licensees this means that some 20 percent of the 4,000 radiographers and assistants (or 800) use TLDs. If the licensees are assumed to use a quarterly exchange of TLDs, the annual

cost involves processing 3,200 (4 X 800) dosimeters at an average cost of \$4 per processing or a total of \$12,800. The proposed revision would require the processing of 6,400 (8 X 800) additional TLDs at an annual cost of \$25,600 to NRC licensees, or \$128 per licensee.

ii. Testing for Depleted Uranium (DU)

The proposed revision requires that licensees leak-test those radiographic exposure devices in which the source is moved from its shielded position in the device to an unshielded position outside the device by means of a control cable. The purpose of the leak-test is to verify that the "S" tube, through which the cable moves, has not been degraded to a state where the control cable is eroding the depleted uranium shielding. Such leak-tests are to be performed at intervals not to exceed 12 months and may be performed by the licensee using acceptable leak-test kits. Alternatively, the licensee may return the device to the manufacturer for performance of the leak-test. The estimated cost for such a leak-test is estimated to be \$25 if the licensee performs the leak-test and \$75 if the leak-test is performed by the manufacturer. Using an average cost of \$50, the cost to NRC licensees to perform the leak-test on the approximately such 1,400 devices in use is \$70,000 annually, or approximately \$350 per licensee.

iii. Documents Required at Field Stations and Temporary Jobsites

Sections 34.89 and 34.91, respectively, will require certain documents to be available at field stations and temporary jobsites. A field station is a location where radiography equipment is stored and from which equipment is dispatched to "temporary jobsites" where radiography is to be conducted. The

impact on licensees to have these documents available will be a \$150 cost per licensee per year and to all NRC licensees the cost would be \$3000. This was determined assuming a \$10 per hour labor rate (including benefits), accomplished in 15 hours.

iv. Recordkeeping and Labelling

Other changes that appear in the proposed revision fall into the realm of recordkeeping and include the addition of required signatures, listing of serial numbers of devices in use in the utilization logs and records of DU tests performed. Except for new requirements for making certain documents and records present at field stations and temporary jobsites, (previously discussed), these changes should have little impact on licensees. The impacts for the additional recordkeeping requirements are addressed in the OMB Clearance Package required under the Paperwork Reduction Act (P.L. 96-511).

v. Field Inspections of Radiographers and Radiographer's Assistants

The frequency of field inspections of radiographers and radiographer's assistants has been changed from every 3 months to every 6 months. However, for those radiographers who have not performed radiography on a regular basis, the requirement for a field inspection prior to their re-participation in radiography remains for 3 months. These changes will provide some relief to licensees by reducing the costs of field inspections for continuously performing radiographers by 50 percent. Assuming that the licensee's RSO performs the field inspections, and assuming further that each inspection takes 3 hours and the RSO's salary and benefits are of the order of \$40 per hour, the cost to each licensee is about \$620 per inspection, assuming a cost

of \$500 for travel expenses for the RSO per inspection. Under the current regulation, inspections are required every 3 months for each worker. Assuming that each licensee has an average of 7 teams in the field based on the number of registered radiography devices, the current cost to each licensee is \$17,360 per year or about \$3,472,000 to the NRC licensed industry. The proposed revision would change the inspection period to every 6 months which would result in an annual savings to all NRC licensees of \$1,736,000 per year, or an average of about \$8,680 per licensee.

#### Alternative 2 - No Action

The primary consequence of this alternative would be that the NRC would not implement the Agreement States' recommendations. Licensees would be free to voluntarily implement some or all of the recommendations, however, they would not be required to do so under 10 CFR Part 34. This would continue the status quo of having different standards in the Agreements States and would not have the potential benefit of reducing the frequency of overexposures in radiography.

#### Alternative 3 - Clarify and Update the Existing Part 34, but Impose No New Substantive Requirements

The consequences of this alternative would be threefold. First, the modification would lessen the consistency of the revision with the Agreement States' regulations. A number of Agreement States presently have incorporated a two-person rule. Second, the Petition of the International Union of Operating Engineers for the two-person rule would not be addressed. As identified in the petition, this could result in the following problems

occurring: 1) When working in a congested area, it is extremely difficult to keep the area under constant surveillance; 2) when working in deep trenches, it is difficult to keep above ground areas under surveillance; 3) Whenever possible, radiographers often work after other trades and crafts have left the area. In case of an accident involving licensed material, the radiographer cannot leave the area if a radiation danger exists in order to notify the proper authorities; and 4) In the event of an accident involving physical injury at a remote jobsite, the radiographer could be placed in a life threatening situation. Third, as a result of the radiographer being injured the source may be left exposed and there would be no one available to place the source in its stored position, no one available to prevent the public from entering into the area and receiving an unwarranted exposure.

#### 5.0 Decision Rationale

As indicated in the Alternative section above, the decisions available are to revise 10 CFR Part 34, modify the revision and proceed with the rulemaking, and taking no action at this time. The first alternative incorporates the recommendations of the Agreement States and thus improves the consistency of the revision with Agreement States regulations, and provides additional assurance of public health and safety with the incorporation of the two-person rule. The second alternative is to make no changes at all and remain in the status quo. The third alternative would not provide the added assurance of public health and safety from the most effective of the new requirements under consideration, and the modification would lessen the consistency of the revision with the Agreement States' regulations. The changes presented in the proposed revision were carefully chosen on the basis of recommendations from

the radiography industry, including users and manufacturers of radiography equipment, and the Agreement States.

#### 6.0 Implementation

The proposed revision will be published in the Federal Register and comments will be solicited on the rule as well as on the supporting documents, including this draft regulatory analysis. Appropriate changes will be made to the proposed revision based on comments received, after which a final rule will be published in the Federal Register. The final rule will include an effective date for implementation of the changes to allow licensees time to make the required changes.

#### 7.0 Costs

A summary of the costs of the above amendments, based on the estimates made above are given in Tables 1 and 2.

Table 1  
Implementation and Annual Operating and Maintenance Costs  
for the New Requirements

New Requirement	Implementation Costs (US Dollars)		Annual Operating and Maintenance Costs (US Dollars)	
	All NRC Licensees	Per NRC Licensee	All NRC Licensees	Per NRC Licensee
Two-Person Rule(a)	14,400,000	180,000	14,400,000	180,000
Additional Training of Radiographer's Assistants(b)	232,000 83,200	1,160 1,040	88,000	440
Radiation Safety Officer	700,000	4,100	0	0
Permanent Facility Alarms	150,000	3,000	10,000	200
Additional TLD Exchanges	25,600	128	25,600	128
Depleted Uranium Tests	70,000	350	70,000	350
Documents required at Field Stations and Temporary Jobsites	30,000	150	30,000	150
Recordkeeping and Labelling(c)				
Reduced Field Inspection Costs	-1,736,000	-8,050	-1,736,000	-8,050
Total(d)	13,722,800	180,718	12,887,600	173,218

(a) The costs for the Two-Person Rule only reflect those licensees that would have to hire additional radiographer's assistants.

(b) The cost of \$1,160 would apply to all NRC licensees. The additional costs of \$83,200 and \$1,040 only applies to those licensees that would have to hire additional radiographer's assistants.

(c) The cost for these is insignificant and has not been itemized.

(d) The total costs represent costs likely to be incurred by those licensees that would have to hire six additional radiographer's assistants. It is unlikely that these high costs will apply to more than 40% of NRC licensees. For the majority of licensees the initial costs will be \$9,928, with an annual cost of \$828.



Table 2  
Implementation Costs for An Individual NRC Licensee

New Requirement	An NRC Licensee that would have to hire six additional assistants  (US Dollars)	An NRC Licensee that would not have to hire six additional assistants  (US Dollars)
Two-Person Rule	180,000	0
Additional Training of Radiographer's Assistants	1,040	1,160
Radiation Safety Officer	4,100	4,100
Permanent Facility Alarms	3,000	3,000
Additional TLD Exchanges	128	128
Depleted Uranium Tests	350	350
Documents Required at Field Stations	150	150
Recordkeeping and Labeling(e)		
Reduced Field Inspection Costs	-8,050	-8,050
Total	180,718	838

(e) The cost for these is insignificant and has not been itemized.

2-10-1979

ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

REVISION OF 10 CFR PART 34  
SAFETY REQUIREMENTS FOR INDUSTRIAL RADIOGRAPHY

The Nuclear Regulatory Commission is amending its regulations that apply to industrial radiography to improve radiography safety.

Environmental Assessment

Identification of Final Action

10 CFR Part 34 specifies the radiation safety requirements for radiographic operations, including performance requirements for industrial radiographic devices, personal radiation safety requirements for radiographers and precautionary procedures in radiographic operations. This revision will specify additional requirements for designating a Radiation Safety Officer (§34.41), a requirement for labels, storage and transportation of radiographic exposure devices and storage containers (§34.35),

Need for the Final Action

A number of revisions to the Suggested State regulations have made the NRC regulations incompatible with many of the agreement State regulations. There has not been an overall revision of Part 34 in many years while a number of other NRC rules have been updated. A decision was made to develop an overall revision to 10 CFR Part 34 with the intent of enhancing and clarifying the regulation so that licensees may have a better understanding of what is expected in radiographic

operations. In addition, the format of the proposed rule has been revised to place requirements into categories which describe the type of requirements that are found in the subpart.

#### Environmental Impacts of the Final Action

The revision of 10 CFR Part 34 should have no environmentally significant impact. The proposed requirements will not result in any releases to air or water and no environmental radiation impact will be involved.

#### Alternatives to the Final Action

As required by §102(2)(E) of NEPA (42 USC 4322(2)(E)), possible alternatives to the final action have been considered. The first alternative was to take no action.

A second alternative considered was to adopt the revisions.

Amendment of the existing regulations was chosen as the best alternative.

#### Alternative Use of Resources

No alternative use of resources was considered.

#### Agencies and Persons Consulted

Consultations on the rule have been held with both Agreement State and industry representatives at the November 1992 workshop, which was held in Irving Texas.

Finding of No Significant Impact

The Commission has determined not to prepare an environmental impact statement for the final rule.

Based on the foregoing environmental assessment we concluded that this amendment will not have a significant effect of the quality of the environment.

The Honorable Joseph Lieberman, Chairman  
Subcommittee on Clean Air and Nuclear Regulation  
Committee on Environment and Public Works  
United States Senate  
Washington, DC 20510

Dear Mr. Chairman:

The NRC has sent to the Office of the Federal Register for publication the enclosed proposed amendment to the Commission's rules in 10 CFR Part 34. The amendment if adopted would require licensees to list and describe permanent radiographic installation; to designate a Radiation Safety Officer (RSO); and to require two radiographers or a radiographer and a radiographer's assistant to be present any time radiographic operations occur outside of a permanent radiographic installation.

The Commission is issuing the proposed rule for public comment.

Sincerely,

Dennis K. Rathbun, Director  
Office of Congressional Affairs

Enclosures:

1. Public Announcement
2. Federal Register Notice

cc: Senator Alan K. Simpson

The Honorable Joseph Lieberman, Chairman  
Subcommittee on Clean Air and Nuclear Regulation  
Committee on Environment and Public Works  
United States Senate  
Washington, DC 20510

Dear Mr. Chairman:

The NRC has sent to the Office of the Federal Register for publication the enclosed proposed amendment to the Commission's rules in 10 CFR Part 34. The amendment if adopted would require licensees to list and describe permanent radiographic installation; to designate a Radiation Safety Officer (RSO); and to require two radiographers or a radiographer and a radiographer's assistant to be present any time radiographic operations occur outside of a permanent radiographic installation.

The Commission is issuing the proposed rule for public comment.

Sincerely,

Dennis K. Rathbun, Director  
Office of Congressional Affairs

Enclosures:

1. Public Announcement
2. Federal Register Notice

cc: Senator Alan K. Simpson

DISTRIBUTION:

RPHEB R/F - DCool  
Cir./Chron  
DRathbun  
EBeckjord  
CJHeltemes  
BMorris  
NCostanzi  
CTrottier  
MLThomas

OFFC:RPHEB:DRA	RPHEB:DRA	RPHEB:DRA	DD:DRA	D:DRA
NAME:MLThomas	CTrottier	DCool	NCostanzi	BMorris
DATE: / /93	/ /93	/ /93	/ /93	/ /93

OFFC:DD:RES	R:RES	D:OCA
NAME:CJHeltemes	EBeckjord	DRathbun
DATE: / /93	/ /93	/ /93

OFFICIAL RECORD COPY

The Honorable Philip R. Sharp, Chairman  
Subcommittee on Energy and Power  
Committee on Energy and Commerce  
United States House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

The NRC has sent to the Office of the Federal Register for publication the enclosed proposed amendment to the Commission's rules in 10 CFR Part 34. The amendment if adopted would require licensees to list and describe permanent radiographic installation; to designate a Radiation Safety Officer (RSO); and to require two radiographers or a radiographer and a radiographer's assistant to be present any time radiographic operations occur outside of a permanent radiographic installation.

The Commission is issuing the proposed rule for public comment.

Sincerely,

Dennis K. Rathbun, Director  
Office of Congressional Affairs

Enclosures:

1. Public Announcement
2. Federal Register Notice

cc: Representative Michael Bilirakis

The Honorable Philip R. Sharp, Chairman  
Subcommittee on Energy and Power  
Committee on Energy and Commerce  
United States House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

The NRC has sent to the Office of the Federal Register for publication the enclosed proposed amendment to the Commission's rules in 10 CFR Part 34. The amendment if adopted would require licensees to list and describe permanent radiographic installation; to designate a Radiation Safety Officer (RSO); and to require two radiographers or a radiographer and a radiographer's assistant to be present any time radiographic operations occur outside of a permanent radiographic installation.

The Commission is issuing the proposed rule for public comment.

Sincerely,

Dennis K. Rathbun, Director  
Office of Congressional Affairs

Enclosures:

1. Public Announcement
2. Federal Register Notice

cc: Representative Michael Bilirakis

DISTRIBUTION:

RPHEB R/F - DCool  
Cir./Chron  
DRathbun  
EBeckjord  
CJHeltemes  
BMorris  
NCostanzi  
CTrottier  
MLThomas

OFFC:RPHEB:DRA	RPHEB:DRA	RPHEB:DRA	DD:DRA	D:DRA
NAME:MLThomas	CTrottier	DCool	NCostanzi	BMorris
DATE: / /93	/ /93	/ /93	/ /93	/ /93

OFFC:DD:RES	R:RES	D:OCA
NAME:CJHeltemes	EBeckjord	DRathbun
DATE: / /93	/ /93	/ /93

OFFICIAL RECORD COPY



The Honorable Richard H. Lehman, Chairman  
Subcommittee on Energy and Mineral Resources  
Committee on Natural Resources  
United States House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

The NRC has sent to the Office of the Federal Register for publication the enclosed proposed amendment to the Commission's rules in 10 CFR Part 46. The amendment if adopted would require licensees to list and describe permanent radiographic installation; to designate a Radiation Safety Officer (RSO); and to require two radiographers or a radiographer and a radiographer's assistant to be present any time radiographic operations occur outside of a permanent radiographic installation.

The Commission is issuing the proposed rule for public comment.

Sincerely,

Dennis K. Rathbun, Director  
Office of Congressional Affairs

Enclosures:

1. Public Announcement
2. Federal Register Notice

cc: Representative Barbara Vucanovich

The Honorable Richard H. Lehman, Chairman  
Subcommittee on Energy and Mineral Resources  
Committee on Natural Resources  
United States House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

The NRC has sent to the Office of the Federal Register for publication the enclosed proposed amendment to the Commission's rules in 10 CFR Part 34. The amendment if adopted would require licensees to list and describe permanent radiographic installation; to designate a Radiation Safety Officer (RSO); and to require two radiographers or a radiographer and a radiographer's assistant to be present any time radiographic operations occur outside of a permanent radiographic installation.

The Commission is issuing the proposed rule for public comment.

Sincerely,

Dennis K. Rathbun, Director  
Office of Congressional Affairs

Enclosures:

1. Public Announcement
2. Federal Register Notice

cc: Representative Barbara Vucanovich

DISTRIBUTION:

RPHEB R/F - DCool  
Cir./Chron  
DRathbun  
EBeckjord  
CJHeltemes  
BMorris  
NCostanzi  
CTrottier  
MLThomas

OFFC:RPHEB:DRA	RPHEB:DRA	RPHEB:DRA	DD:DRA	D:DRA
NAME:MLThomas	CTrottier	DCool	NCostanzi	BMorris
DATE: / /93	/ /93	/ /93	/ /93	/ /93

OFFC:DD:RES	R:RES	D:OCA
NAME:CJHeltemes	EBeckjord	DRathbun
DATE: / /93	/ /93	/ /93

OFFICIAL RECORD COPY