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REGULATORY GUIDE

OFFICE OF NUCLEAR REGULATORY RESEARCH

REGULATORY GUIDE 10.6
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GUIDE FOR THE PREPARATION OF APPLICATIONS FOR USE OF SEALED SOURCES AND DEVICES FOR PERFORMING INDUSTRIAL RADIOGRAPHY

1. INTRODUCTION

1.1 Purpose of Guide

The purpose of this guide is to provide assistance in the preparation of an application for a Nuclear Regulatory Commission (NRC) license for possession and use of sealed sources and devices for performing industrial radiography. "Radiography," as used in this guide, means the examination of the structure of materials by nondestructive methods that use sealed sources of byproduct materials (radioisotopes). The radioisotopes most commonly used for radiography are cobalt-60 and iridium-192.

This guide is intended only for general guidance in preparation of the license application and should not be considered a substitute for the applicant's careful safety evaluation of the proposed use of sealed sources and devices. The applicant must ensure that the application correctly and adequately describes the radiation safety measures and procedures to be followed to provide adequate protection.

1.2 Applicable Regulations

Commission regulations that apply to radiography and that should be used in conjunction with this guide are 10 CFR Part 19, "Notices, Instructions and Reports to Workers; Inspections"; 10 CFR Part 20, "Standards for Protection Against Radiation"; 10 CFR Part 21, "Reporting of Defects and Noncompliance"; 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material"; 10 CFR Part 34, "Licenses for Radiography and Radiation Safety Requirements for Radiographic Operations"; 10 CFR Part 40, "Domestic Licensing of Source

Material"; 10 CFR Part 71, "Packaging of Radioactive Material for Transport and Transportation of Radioactive Material Under Certain Conditions"; and 10 CFR Part 170, "Fees for Facilities and Materials Licenses and Other Regulatory Services Under the Atomic Energy Act of 1954, as Amended." The applicant should carefully read these regulations and this guide and should submit all information requested.

1.3 As Low As Is Reasonably Achievable (ALARA)

Paragraph 20.1(c) of 10 CFR Part 20 states, in part, "... persons engaged in activities under licenses issued by the Nuclear Regulatory Commission pursuant to the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974 should, in addition to complying with the requirements set forth in this part, make every reasonable effort to maintain radiation exposures, and releases of radioactive materials in effluents to unrestricted areas, as low as is reasonably achievable." Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Is Reasonably Achievable," provides the NRC staff position on this important subject. License applicants should give consideration to the ALARA philosophy, as described in Regulatory Guide 8.10, in the development of plans for work with licensed radioactive materials.

2. LICENSE FEES

A license fee is required for most types of licenses and renewals and amendments to licenses. The applicant should refer to §170.31, "Schedule of Fees for Materials Licenses and Other Regulatory Services," of 10 CFR Part 170 to determine the amount of fee that must accompany the application. Review of the application will not begin until

* The substantial number of changes in this revision has made it impractical to indicate the changes with lines in the margin.

USNRC REGULATORY GUIDES

Regulatory Guides are issued to describe and make available to the public methods acceptable to the NRC staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission.

This guide was issued after consideration of comments received from the public. Comments and suggestions for improvements in these guides are encouraged at all times, and guides will be revised, as appropriate, to accommodate comments and to reflect new information or experience.

Comments should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

The guides are issued in the following ten broad divisions:

1. Power Reactors
2. Research and Test Reactors
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the proper fee is received by the NRC. Checks should be made payable to the U.S. Nuclear Regulatory Commission.

3. FILING AN APPLICATION

An application for a license must be filed on Form NRC-313R, "Application for Byproduct Material License—Use of Sealed Sources in Radiography" (Exhibit A), and should contain all the information specified in the application form. The space provided on the form is limited; therefore, the applicant should append additional sheets to provide complete information.

The application should be completed in triplicate. The original and one copy should be mailed to the Materials Licensing Branch, Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. One copy of the application with all attachments should be retained by the applicant, since the license will require, as a condition, that the licensee follow the statements and representations set forth in the application and any supplements to it.

4. CONTENTS OF AN APPLICATION

The following discussion deals with specific items on the application form. The information specified in Items 1 through 3 of the application is explained in the instruction sheet accompanying the application form, and Item 7 is self-explanatory. The information needed for Items 4, 5, and 6 of the application form is discussed below. In completing the application, especially Items 4 and 5, the applicant should cover anticipated expansion and changes in the program and thus reduce the need for future license amendments.

Item 4. The sealed sources, including calibration sources that the applicant will possess and use, should be listed by radioisotope, manufacturer, and model number. The maximum amount of radioactivity in each source should be specified. The number of sources that the applicant will possess at any one time need not be specifically stated unless any one source contains more than 100 curies of cobalt-60.

Item 5. Radiographic exposure devices should be designated by manufacturer and model number and should be keyed alphabetically to the sources listed in Item 4 with which they will be used (specify in 5(a) of the application form).

If source changers will be used, the source changers should be identified by manufacturer and model number and should be keyed alphabetically to the source-device combinations with which they will be used (specify in 5(b) of the application form).

If necessary, the suppliers of equipment should be contacted concerning the model numbers of sources, devices, and source changers to ensure that the information

contained in the application is accurate. Improperly identified equipment may require additional correspondence.

Item 6(a). If a permanent radiographic installation will be used for performance of radiography, a detailed description of the installation that includes the following information should be submitted:

a. Annotated drawings or sketches of the installation and its surroundings, including (1) dimensions of each enclosed area; (2) thickness, density, and type of shielding material on all sides, above, and below; (3) identification of entranceways; and (4) a description of the nature of and distances to all areas adjacent to, above, and below each exposure area.

b. A description of the area security safeguards, such as locks, signs, warning lights and alarms, and interlocking systems for each enclosed exposure area and adjacent areas. Particular attention should be given to the description of the high radiation area entrance controls that are required by § 34.29. The applicant should describe the means for ensuring that the interlock systems required by § 34.29 are not easily defeated by the radiographer. This may be accomplished through system design, e.g., replacement of simple switches by direct wiring or key switches under control of the radiation safety officer, or through strict control procedures, e.g., direct supervision of the operation by the radiation safety officer.

c. The results of calculations or radiation level measurements showing maximum anticipated radiation levels in all areas adjacent to each exposure area, including the roof or ceiling. As a basis for calculations, the type of source, activity of the source, and position of the source within the installation should be identified.

Particular attention should be given to radiation levels on the roof of the installation. If those levels may exceed 2 milliroentgens per hour, the application should show how access to the roof will be controlled. If the calculations or measurements show that radiation levels on the roof might exceed 100 milliroentgens per hour, the applicant should consider the use of collimating devices or additional shielding in the roof or ceiling.

A properly shielded installation will permit the performance of radiography within the facility with the areas outside the facility considered as unrestricted areas if they meet the radiation level limitations in paragraph 20.105(b) of 10 CFR Part 20. A radiation level of not more than 2 milliroentgens per hour at a distance of 18 inches from any external surface of the facility will be considered acceptable for considering the area as an unrestricted area.

If field radiography will be performed, the applicant should describe how radiography equipment will be stored at temporary job sites.

Item 6(b). Survey instruments should be identified by type (i.e., ionization, G.M., scintillation) and exposure

range. Instruments to be used for surveys are required by § 34.24 to measure from a minimum of two milliroentgens per hour through one roentgen per hour.

Item 6(c). Section 34.24 requires that radiation survey instruments used in radiographic operations be calibrated at intervals not to exceed 3 months and after each instrument servicing. Appendix A contains a description of an acceptable procedure for calibrating survey instruments.

If instrument calibration will be performed by an organization other than the applicant, the application should include the name, address, and NRC or Agreement States' license number of the organization.

If an applicant wishes to calibrate survey instruments in-house, the following information should be submitted:

- a. The type (radioisotope, manufacturer, and model number) and activity of any source to be used for calibration.
- b. The accuracy* of the source.
- c. The specific procedures to be used for calibration, including radiation safety procedures to be followed for use of the source.
- d. The name and pertinent experience of each individual who will perform instrument calibration. This information may be omitted if the individual is a radiographer and the applicant has an adequate program for the training of radiographers (see 6(f)) that includes instrument calibration procedures. If radiographers will perform instrument calibration, specific instructions and procedures should be written for use by radiographers and should be included in the operating and emergency procedures (see 6(e)).

Item 6(d). The applicant should specify the type of personnel monitoring device (for example, film badge or thermoluminescence dosimeter) that will be used, and the names and addresses of the suppliers that may be used. The frequency of change of film badges or thermoluminescence dosimeters should be specified.

The range of pocket dosimeters to be used should be identified. Section 34.33 requires that pocket dosimeters have a range from zero to at least 200 milliroentgens. Dosimeters with an extremely high range, for example, dosimeters designed for Civil Defense purposes, which have a range from zero to 100 roentgens, are difficult to read in the zero to 200 milliroentgens range and are not considered acceptable. Procedures for checking pocket dosimeter exposure and energy response, as required by paragraph 34.33(c), should be described.

Item 6(e). The applicant should describe the operating and emergency procedures that will be followed by radiography personnel. Appendix B describes items and procedures that should be included.

*Accuracy is the maximum deviation of the nominal value of the source from the true value. This information is normally provided by the manufacturer.

Item 6(f). The applicant should provide a description of the complete training program for radiographers, radiographers' assistants, and experienced radiographers and radiographers' assistants. This description should include appropriate references to any instructions given by outside service agencies. The name, training, and experience with radiation of each person who will provide substantial input for the instruction, examination, or qualification of trainees should be given in sufficient detail to establish his or her qualifications to perform these services. If an individual will teach only certain parts of the course, this should be specified. Appendix C describes the elements of an acceptable training program.

In certain cases where a radiography program is limited to a few individuals and personnel turnover is not anticipated, a training program may not be necessary provided each individual has had adequate training and experience. In such a situation, the application should request that specific individuals be named on the license in lieu of submitting details of a complete training program. The application should explain why it is not necessary to establish a training program. The qualifications of each individual designated as a radiographer or radiographer's assistant should be described and should include the following information:

- a. The individual's name and the capacity in which that individual will function (radiographer or radiographer's assistant).
- b. A detailed description of each individual's training and experience in the principles of radiation and radiation safety. The information provided should specify when (dates) and where training was received. The name of the individual who provided the training should be indicated if training other than that of a commercially offered program was used.
- c. The specific experience of each individual in the use and handling of the type of equipment specified in the application. The information should include names of previous employers, dates employed, type of equipment used, and length of time the equipment was used for each previous employer.
- d. A description of the instruction that each prospective radiographer and radiographer's assistant has received in the applicant's operating and emergency procedures.
- e. A description of the means used to determine competence of individuals to act as radiographers and by whom such determination is made. Copies of examinations given to determine knowledge and understanding of the topics in Appendix A of Part 34, the applicant's operating and emergency procedures, Commission regulations, and use of equipment should be submitted.

f. A description of the means used to determine competence of individuals to act as radiographers' assistants and by whom such determination is made. Copies of examinations given to determine understanding of the licensee's operating and emergency procedures and means

used to determine competence to use radiographic and related equipment should be submitted.

g. A description of the periodic training program for personnel.

The limitations imposed in licenses when the applicant has not established a complete program for training radiographers and radiographers' assistants should be clearly understood. The license will specifically name each individual authorized to act as a radiographer or radiographer's assistant. Should all radiographers who are named in the license become unavailable, the licensee would not be permitted to perform radiography under the license and therefore would have, in effect, authorization to possess the licensed byproduct material for storage purposes only. The individuals named on the license must be qualified to perform all radiographic operations conducted under the license, including the manipulation of equipment and the performance of radiation surveys. Although application may be made for the addition or substitution of names of other individuals in the license, the time needed for preparation and submission of the application and for the Commission to issue an amendment could delay the program. No individual may act as a radiographer's assistant unless the license has been amended to provide for an individual to act in that capacity. An individual should not enter into on-the-job training until the license has been amended to permit that training.

Item 6(g). The applicant should provide a description of the internal inspection system for controlling the receipt, possession, and use of radioactive material. The description should show how the system ensures that license conditions, Commission regulations, and operating and emergency procedures are followed by radiographers and radiographers' assistants as required by paragraph 34.11(d).

Other management controls should be specified in the application. These controls should include a description of (1) the type of internal inspections to be made and their frequency, (2) the qualifications of each person responsible for maintaining such control, (3) the responsibilities of each person in the program, (4) the procedure for recording and reporting deficiencies to appropriate management personnel, and (5) the education and followup program to be used in correcting deficiencies noted during inspections. The type and extent of the radiography program to be conducted will usually determine the nature of the system and the inspection frequency. Paragraph 34.11(d) requires that an internal inspection be performed at intervals not exceeding three months and that records of such inspection be retained for two years.

Internal inspections, including evaluation of radiographers, should be made by a person of authority in management. These inspections may be announced or unannounced as necessary to ensure compliance with Part 34. This person should have a thorough knowledge of equipment, procedures, and regulations and level of competence at or above that expected of a radiographer. Management should make a continuing review of quarterly inventories, utilization logs, records of receipt and disposal of licensed material, personnel monitoring results, and survey results.

Item 6(h). Paragraph 34.11(e) requires that the license applicant submit a description of the overall organizational structure pertaining to the radiography program, including specific delegations of authority and responsibility for the program. The applicant should describe how active control over the radiography program is exercised by management personnel in positions of authority. Each individual in the line of authority should be identified by name and title. In addition, the applicant should provide the name, training, and experience of that individual in management who will be assigned duties established by the licensee for maintaining an active management control of the radiation program and radiographic operations. Appendix D describes acceptable qualifications for such individuals and the responsibilities of the positions. If persons of lesser authority will assume some of the duties and responsibilities normally reserved for management, the application should identify those persons and specify how management will ensure that their duties are properly performed.

Item 6(i). The applicant should submit a description of the leak-testing program for the sealed sources as follows:

a. If the applicant wishes to be licensed by the Commission to use a commercially available leak-test kit, the application should identify each kit to be used by designating the kit supplier and the kit model number. Only leak-test kits that are identified will be authorized. The application should also identify the individuals who will perform the leak test (using the kit).

b. If the services of a consultant or commercial organization licensed by the Commission to take the necessary test samples (smears), evaluate the samples, and report the results to the customer are used, the name, address, and license number of the consultant or commercial organization should be specified.

c. If an applicant wishes to be licensed by the Commission to perform leak tests, including taking and evaluating the smears, paragraph 34.11(f) requires the applicant to describe the procedures to be used. The following information should be included:

(1) a description of the instrumentation to be used in evaluating the smears, including its sensitivity and accuracy;

(2) a description of the calibrating and standardizing procedures with a sample calculation showing conversion of results to the required microcurie units. Survey instruments are generally not designed for such measurements and may not be acceptable for this use;

(3) a description of the material to be used in taking the smears, the points on the equipment that will be smeared (smears are not normally taken directly from the surface of a source; see paragraph 34.25(c));

(4) the radiation safety procedures to be followed during the smearing process, the method for handling and disposing of the smears; and

(5) a description of the pertinent training and experience of each person who will take or evaluate the smears.

Distributors of sealed sources usually supply a certificate with each source giving the results and date of the last leak test performed on a source. If such a certificate is not received, the source may not be used until a leak test has been performed and the results of the test showing that the source is not leaking or contaminated have been received. Thereafter, the source must be tested for leakage and contamination at intervals not to exceed 6 months. Records of the testing identifying each source tested, the date of the test, and the results of the test in units of microcuries must be maintained for Commission inspection.

5. AMENDMENTS TO LICENSES

Licensees are required to conduct their programs in accordance with statements, representations, and procedures contained in the license application and supportive documents and in the conditions of the license. The license must therefore be amended if the licensee plans to make any changes in facilities, equipment (including monitoring and survey instruments), procedures, personnel, or byproduct material to be used.

Applications for license amendments may be filed either on the application form or in letter form. The application should identify the license by number and should clearly describe the exact nature of the requested changes, addi-

tions, or deletions. References to previously submitted information and documents should be clear and specific and should identify the pertinent information by date, page, and paragraph.

The application for license amendment must be accompanied by the proper fee (see § 170.31).

6. RENEWAL OF A LICENSE

Byproduct material licenses are issued for a period not exceeding 5 years.

An application for renewal of a license must be filed at least 30 days prior to the expiration date as provided for in paragraph 30.37(b) to ensure that the license does not expire until final action on the application has been taken by the NRC.

Renewal applications must be filed on Form NRC-313R appropriately supplemented and should contain complete and up-to-date information about the applicant's current program. The renewal application must be accompanied by the proper fee (see § 170.31).

To facilitate the review process, the application for renewal should be submitted without reference to previously submitted documents and information. If such references cannot be avoided, they should be clear and specific and should identify the pertinent information by date, page, and paragraph.

APPENDIX A

CALIBRATION OF INSTRUMENTS

1. Calibration of survey meters should be performed with radionuclide sources* that approximate point sources.

a. The source activities should be traceable within 5% accuracy to the U.S. National Bureau of Standards (NBS) calibrations.

b. Section 34.24 requires that survey instruments be calibrated at intervals not exceeding 3 months and after servicing.

c. Each scale in the range from two milliroentgens per hour through one roentgen per hour is required to be calibrated. Other scales should also be calibrated.

d. The highest and lowest points used to calibrate each scale of the instrument should be separated by at least 50% of the scale.

e. The exposure rate measured by the instrument should be within $\pm 20\%$ of the exposure rate specified for the standard source.

f. A calibration chart or graph containing the calibration factor, the date of last calibration, and due date of next calibration should be affixed to the survey meter.

2. The use of the small check source that is incorporated into some survey meters is not appropriate or acceptable for calibration purposes.

3. Section 34.24 requires that records of the calibrations discussed in Item 1 be maintained.

4. The inverse square law and radioactive decay law may be used for calibration. A calibrated source will have a calibration certificate giving its output at a given distance measured on a specified date by the manufacturer. The

inverse square law may be used with any point source to calculate the exposure rate at other distances. The radioactive decay law may be used to calculate the output at any time after the specified date.

a. Inverse Square Law

If R_a is the exposure rate at a distance D_a from a point source and R_b is the exposure rate at a distance D_b from the same point source, then

$$R_a D_a^2 = R_b D_b^2$$

Note: R_a and R_b must be in the same units of exposure rate (e.g., mR/hour, R/hour, etc.) and D_a and D_b must be in the same units of distance (e.g., centimeters, meters, etc.).

If R_a , D_a , and D_b are known, R_b can be calculated from

$$R_b = \frac{D_a^2}{D_b^2} \times R_a$$

b. Radioactive Decay Law

The exposure rate of a standard source at a time, t , after a specified calibration date is given by

$$R_t = R_o e^{-\left(0.693 \frac{t}{T_{1/2}}\right)}$$

where

R_t is the exposure rate at a time t after the source calibration date

R_o is the exposure rate on the day of calibration

t is the time elapsed since the calibration date

$T_{1/2}$ is the radionuclide half-life

Note: R_t and R_o must be in the same units of exposure rate (e.g., mR/hour, R/hour, etc.) and t and $T_{1/2}$ must be in the same units of time (e.g., seconds, days, years, etc.).

*Sources of cesium-137, radium-226, or cobalt-60 are appropriate for use in calibrations. The activity of the calibration standard should be sufficient to calibrate the survey meters on all ranges up to one roentgen per hour. If there are higher ranges, they should at least be checked for operation and approximately correct response to radiation.

APPENDIX B

OPERATING AND EMERGENCY PROCEDURES

Section 34.32 of 10 CFR Part 34 requires each licensee to provide radiography personnel with operating and emergency procedures. The purpose of this requirement is to provide radiography personnel with clear and specific instructions in the topics listed in § 34.32 and in other duties and responsibilities that radiography personnel may have. Other duties could include instrument calibration, leak testing, quarterly inspection and preventive maintenance of equipment, and shipment of sources and devices. The operating and emergency procedures for personnel should not contain information that does not apply specifically to the duties of radiography personnel; for example, neither the training program nor the management control program should be included in the operating and emergency procedures.

The operating and emergency procedures should be tailored to fit the program proposed in the application. The procedures and instructions should be complete and self-contained in a single document or in a clearly designated part of a broader scope document that includes related material such as a description of the management control program. Information contained in equipment manuals and other publications should be extracted and inserted into the operating and emergency procedures so that the instructions to personnel are clear, specific, and appropriate for the proposed program. The instructions contained in the operating and emergency procedures should be in language that can be easily understood by radiography personnel. Where applicable, instructions for use and handling of devices incorporated into permanent radiographic installations should be separate and distinct from those for mobile or portable devices.

There is no specific format for operating and emergency procedures. However, a sequential set of instructions that covers radiography operations from the beginning of the workday to the end of the workday is an acceptable format. Topics that should be included in the operating and emergency procedures are:

a. Handling and Use of Licensed Sealed Sources, Radiographic Exposure Devices, Source Exchangers, and Instrument Calibration Equipment.

(1) Step-by-step instructions of the "cookbook" type for the use and handling of radiographic exposure devices and related equipment should be provided. When appropriate, the procedures should include instructions for use of radiation collimating cones or other auxiliary shielding material.

(2) If source exchange will be performed by radiography personnel, step-by-step instructions for source exchange, including surveys to be performed during the source exchange and for shipment and acceptable radiation levels for these surveys, should be in the procedures. Such

instruction should also state the steps to be taken if the survey levels exceed acceptable limits.

(3) If radiography personnel will perform instrument calibration, step-by-step instructions should be in the procedures.

(4) If radiography personnel will perform leak testing of sealed sources, specific instructions for performing the leak test should be in the procedures. If the applicant will use commercially available leak-test kits, the instructions and procedures provided by the kit suppliers should be modified to fit the applicant's program. For example, many kit procedures indicate that the manufacturer of the source should be notified if a survey of the leak-test sample indicates a potentially leaking source. Instructions should indicate that management will be informed since dealing with suppliers is usually a management function.

b. Methods and Occasions for Conducting Radiation Surveys. The procedures should identify when surveys should be made, what should be surveyed, acceptable radiation levels for the surveys, the steps to be taken if acceptable levels are exceeded, and records of survey results. In general, a survey should be performed each time a source is manipulated or moved. Surveys that need to be performed include:

(1) Determination after each exposure that the source has returned to the safe storage position. The entire circumference of the radiographic device must be surveyed. If the radiographic exposure device has a source guide tube, the survey must include the guide tube.

(2) Determination of the boundary of the restricted area.

(3) Determination of radiation levels at external surfaces of storage facilities.

(4) Determination of radiation levels in and around vehicles used for transporting or storing sources and devices.

(5) Determination that the source is in a safe storage position prior to securing a radiographic exposure or storage container.

(6) Determination that containers prepared for shipment comply with the requirements in Department of Transportation regulations (for example, 10 mR/hr at 3 feet from any surface and 200 mR/hr at the surface of the container).

The acceptable radiation levels for surveys should be expressed in milliroentgens per hour.

Section 20.401 and paragraph 34.43(c) require that records of specific surveys be maintained. Judgment by

NRC licensees is required for maintaining records of other surveys required by the regulations in which maintenance of the records is not specified in the regulations. NRC does not expect radiographers to record each and every reading taken during a survey. However, records should be complete enough to show clearly that proper surveys have been done.

c. Methods for Controlling Access to Radiographic Areas. Instructions for controlling access to radiographic areas should be specifically stated in the procedures.

The boundaries of radiation areas and high radiation areas are required to be posted. "Caution* Radiation Area" signs should be posted at the boundary of the restricted area, and "Caution* High Radiation Area" signs should be posted at the boundary of the high radiation area. High radiation area signs should not be used at the boundary of a restricted area; these signs should be used only at the boundary of a high radiation area.

Signs, by themselves, do not provide an adequate means of access control. For radiographic operations performed outside a permanent radiographic installation, instructions requiring surveillance of the area to prevent unauthorized persons from entering the area are necessary. For permanent radiographic installations, specific instructions concerning use of interlocking devices and systems, locking of the facility, security of keys, use of warning lights and alarms, etc., should be included in the procedures.

The instructions for control of access to permanent radiographic installations should be separate and distinct from the instructions for temporary job-site operations.

A specification of a radiation level of 2 milliroentgens per hour for the boundary of the restricted area and 100 milliroentgens per hour for the boundary of the high radiation area is acceptable. A physical survey with a survey meter should be performed to confirm the 2 milliroentgens per hour radiation level for the restricted area boundary after the source has been exposed. It is neither necessary nor desirable for a physical survey to be made to confirm the radiation level at the boundary of the high radiation area since such a survey could lead to unnecessary exposure of personnel.

Applicants may wish to train their radiographers in the use of the 2 millirem in any one hour criterion and thus permit radiation levels in unrestricted areas to exceed 2 milliroentgens per hour. In this case the operating and emergency procedures should include step-by-step instructions for controlling the duration of and recording each exposure to ensure that the limits of 2 millirem in any one hour and 100 millirem in any 7 consecutive days are not exceeded.

d. Methods and Occasions for Locking and Securing Radiographic Exposure Devices, Storage Containers, and Sealed Sources. Instructions requiring securing of the exposure device after completion of the exposure should be

*Or Danger

written and available. Instructions should further specify that surveys to determine that the sealed source has returned to the shielded position after an exposure are required by § 34.43 and, in the case of a radiographer's assistant they must be made under the personal supervision of a radiographer (§ 34.44). Section 34.43 requires that record of the last survey made prior to locking the radiographic exposure device and ending direct surveillance be maintained for two years.

Instructions and procedures for storage of sources and devices at both permanent and temporary job sites, including locking of devices, posting of storage areas, and surveys around the storage areas, should be in the procedures. The area outside storage areas should meet the requirements for an unrestricted area.

e. Personnel Monitoring and the Use of Personnel Monitoring Equipment. The instructions should contain requirements for radiography personnel to wear their personnel monitoring devices so that any exposure received will be accurately reflected by the devices. The instructions should be specific.

Frequent reading of pocket dosimeters should be required so that personnel may be aware of the exposure that they may have received. An instruction concerning steps that must be taken immediately by radiography personnel in the event a dosimeter is found to be off scale should be included in the procedures. This instruction should include the requirement stated in paragraph 34.33(c) that an individual's film badge or TLD be processed immediately if that individual's pocket dosimeter is discharged beyond its range. Instructions for storage of personnel monitoring devices should be included in the procedures.

f. Transporting Sealed Sources to Field Locations, Packaging of Exposure Devices and Storage Containers in the Vehicles, Posting of Vehicles, and Control of Sealed Sources During Transportation. Most transport of radiography sources in exposure devices or storage containers over public roads is subject to the regulations of the Department of Transportation (49 CFR Parts 170-189, 390-397). These regulations cover, among other things, permissible radiation levels around and within a vehicle and placarding of the vehicle during transport. Even in those cases in which the Department of Transportation regulations are not normally applicable (such as intrastate transportation), 10 CFR Part 71 of the Nuclear Regulatory Commission's regulations requires conformance to the standards and requirements of the Department of Transportation.

The procedures should contain instructions on how exposure devices or storage containers will be secured within the transporting vehicle to prevent shifting within the vehicle. There should be instructions for placarding of the vehicle during transport. The Department of Transportation regulations require "RADIOACTIVE" placards on all four sides of the vehicle when a package with a "Radioactive Yellow-III" label is shipped. There should be instructions for surveys in and around the vehicle. The radiation level in the passenger compartment should not exceed 2 milliroentgens per hour.

gens per hour. Although it is not specifically required for transport, there are occasions when the area outside the vehicle should be considered an unrestricted area so that a specification of a radiation level of 2 milliroentgens per hour at a distance of 18 inches from any external surface of the vehicle should be provided.

When a vehicle is used for storage, i.e., when the sources are not being transported, the posting requirements in 10 CFR Part 20 are applicable, and the vehicle should therefore be posted with "Caution-Radioactive Material" signs. The area outside a vehicle used for storage is an unrestricted area, and the radiation level at 18 inches from the surface of the vehicle should not exceed 2 milliroentgens per hour.

g. Minimizing Exposure of Persons in the Event of an Accident. Instructions to personnel should include procedures for minimizing the exposure of persons in the event of an accident or other unusual occurrence. Possible malfunctions of equipment should be considered, and steps to follow in each case of malfunction should be specifically set forth.

The procedures should contain clear and specific instructions concerning emergency situations. The steps to be taken by radiography personnel should, in general, be limited to (1) surveying the area, (2) establishing a restricted area, (3) notifying appropriate persons, and (4) maintaining direct surveillance and control over the area until the situation is corrected. Limitations on action that may be taken by radiography personnel should be clearly specified. The attempted recovery of a source that has become detached from an exposure device, an operation that may result in exposure to high levels of radiation, should not be attempted by radiography personnel unless specifically trained and experienced in source retrieval.

h. Procedure for Notifying Proper Persons in the Event of an Accident. The names and telephone numbers of the persons to be contacted in case of an accident should be specified.

i. Recordkeeping. The instructions to personnel should specify those records that must be maintained by personnel during the course of their work. Among the records that are normally kept by radiography personnel are dosimeter readings, surveys, and daily inspection of equipment. Other records should be included if they are the responsibility of radiography personnel. Records for which management and supervisory personnel have responsibility should not be included in the operating and emergency procedures.

j. Inspection and Maintenance of Radiography Exposure Devices, Storage Containers, and Source Changers. Section 34.28 requires a check for obvious defects in radiographic exposure devices, storage containers, and source changers prior to use each day the equipment is used. The procedures

should contain specific instructions for inspection of equipment and the actions to be taken if any defects are found. A checklist should be contained in the procedures listing the items that should be covered in the daily inspection. Equipment manufacturers may be helpful in providing information concerning daily inspections.

Inspection and preventive maintenance of equipment at intervals not to exceed three months or prior to the first use thereafter are also required by § 34.28. If radiography personnel will conduct these inspections, the procedures should contain clear and specific instructions for inspection and maintenance. As part of the inspection and preventive maintenance program, all connectors, drive cables, source guide tubes, on-off indicator mechanisms, and moving parts should be checked for defects and excessive wear. Cables should be cleaned and lubricated, and all defective and excessively worn components repaired or replaced. If components essential to the safe operation of the device are found to be defective or in poor operating condition, the device should be immediately removed from service until repairs can be made. An instruction to be followed in this event should be written. Records of quarterly inspections and maintenance must be kept for two years.

Visible and audible warning systems used in a permanent radiographic installation should be tested and records made thereof at intervals not to exceed three months pursuant to § 34.28. Other area safeguards, which may include door and equipment interlocks or access-door locking devices, should be tested for proper operation at least once every six months. The procedures should contain instructions for performing such inspections if they are to be performed by radiography personnel.

k. Off-Scale Pocket Dosimeter Readings. Procedures to be taken immediately by radiography personnel in the event a pocket dosimeter is found to be offscale should include the following instructions:

(1) Stop work immediately;

(2) Initiate emergency procedures if the source is exposed and cannot be retracted; otherwise, retract the source safely;

(3) Notify the radiation safety officer immediately. In this regard the name of the radiation safety officer and the manner in which this individual can be reached should be included.

l. Product Malfunctions and Defects. If the radiographer discovers any malfunction or defect in the equipment, the radiographer should notify the radiation safety officer. Procedures to be followed in such an event should tell the radiographer what to report, when to report the problem, and the individual to whom it should be reported.

APPENDIX C
TRAINING PROGRAM

An applicant for a radiography license is required to have an adequate program for the training of radiographers and radiographers' assistants. With respect to radiography personnel, two important points should be understood:

(1) The duties and responsibilities of the radiographer may not be delegated to the radiographer's assistant. A radiographer must be physically present at the location where radiography is being performed. A radiographer's assistant may perform source manipulation, surveys of the radiographic device to determine source location, etc., only in the physical presence of a radiographer, in accordance with § 34.44.

(2) Any individual who assists a radiographer by manipulating radiographic exposure devices, sealed sources, related handling tools, or survey instruments is acting in the capacity of a radiographer's assistant and must meet the requirements of paragraph 34.31(b).

The description of the complete training program should include the sequence of events in the training of a person to become a radiographer or radiographer's assistant from the time of hiring through the time the job begins. Since Part 34 has different requirements for radiographers and radiographers' assistants, separate narratives pertaining to the training of individuals for each category should be submitted. In addition, a third narrative pertaining to the training of individuals who are hired with previous training and experience may be desirable. The narrative should include appropriate references to the more detailed description of each of the various parts of the training program described in accordance with the items identified below.

1. Initial Training

a. Radiographers

(1) *Classroom Training.* A description of the manner in which radiographer trainees will be instructed in all areas of Appendix A to 10 CFR Part 34 should be given. The course content should include a detailed outline of the topics in Appendix A to Part 34 and the approximate time to be spent on each major area of instruction should be specified. For individuals with no previous training, approximately 40 hours of classroom training should be provided in the subjects identified in Appendix A to Part 34.

A training course given by an outside service organization usually will not instruct the trainee with respect to an applicant's particular equipment, facilities, and procedures. Therefore, if outside training is to be used, instruction given to supplement that training with respect to the applicant's own equipment, facilities, and procedures

and the method to be used to determine each trainee's competence in accordance with § 34.31 should be included in the program description.

(2) *On-the-Job Training.* The period of on-the-job training under the supervision of experienced personnel, including trainee use and observation of the use of radiographic exposure devices and associated equipment, should be specified. However, no individual should be permitted to enter into on-the-job training until completing the requirements for a radiographer's assistant. The content of on-the-job training and the minimum time that will be spent in it will be dictated by the applicant's scope of operation, the variety of the work, and the aptitude of the trainee and should be specified in the application. Usually a minimum of three months of full-time equivalent work as a radiographer's assistant should be provided.

(3) *Examinations.* A comprehensive examination containing approximately 50 questions covering all items in Appendix A to Part 34 would be considered to be an adequate examination to qualify individuals as radiographers. In addition, a practical or field examination should be administered to determine the competency of radiographic trainees to perform surveys, posting, operate equipment, etc. Additional information is provided in Item 3, "Testing Procedures." Successful candidates should be given additional instruction in those areas where the examination indicates weakness.

b. Radiographers' Assistants

(1) *Classroom Training.* A description of the training program for radiographers' assistant trainees should be given. Paragraph 34.31(b) specifies training requirements and the subjects in which radiographers' assistants must demonstrate understanding and competence. The description should contain a detailed outline of those items covered in the operating and emergency procedures and the use of radiographic equipment and should specify the approximate time to be spent on each major item listed in the outline.

(2) *Examinations.* A comprehensive examination containing approximately 25 questions covering the applicant's operating and emergency procedures and the use of radiographic equipment would be considered to be an adequate examination to qualify individuals as radiographers' assistants. Additional information is provided in Item 3, "Testing Procedures." Successful candidates should be given additional instruction in those areas where the examination indicates weakness.

c. *Experienced Radiographers and Radiographers' Assistants*

Because of differences in procedures, equipment, etc., it is unlikely that a new employee will be adequately prepared to work in a particular program without some training specifically related to that program. Also, each licensee is required by § 34.31 to determine that each individual is qualified to act as a radiographer or radiographer's assistant in its own program. The applicant should therefore describe the procedure for determining the knowledge and competency of individuals and for providing additional training if needed.

2. Periodic Training

Periodic training should include a description of the content and scheduling of training sessions given for the purpose of ensuring (1) the knowledge and proficiency of radiographers and radiographers' assistants with respect to new regulations, procedures, policies, and equipment and (2) continuing proficiency with present equipment and procedures. Periodic training should be conducted at least annually.

3. Testing Procedures

A description of each test to be given should be submitted. Radiographers must successfully complete a written test and a field examination of the subjects covered in training. Radiographers' assistants must successfully complete a written or oral test and a field examination of the subjects covered in training. A description of an oral or written test may be given by submitting a sample test with an answer for each question.

The effectiveness of any test is reduced if the test is given repeatedly so that the students gain knowledge of its content. The course description should clearly indicate that each test is a sample only and that the test content will be changed at a stated minimum frequency.

A description of an oral examination should be given in the same form as a written examination.

A list of subject areas for the field examination should be given and should include, as a minimum, performance of radiation surveys, posting, operation of equipment, emergency procedures, and other items of radiation safety that may be encountered in the discharge of duties.

A description of the testing procedure is not complete without a clear and specific description of the criteria and procedure to be followed in evaluating test results and determining whether an individual is qualified to act as a radiographer or radiographer's assistant. The relative importance assigned to each question or area of performance, the minimum acceptable number of correct answers or proper responses, and retesting procedures should all be given.

The points within the training program at which each test will be given should be clearly indicated. For example, some training programs include a written or oral exam following the initial training phase, followed by an oral and practical exam at the close of the on-the-job training phase.

Note that testing procedures must ensure compliance with § 34.31. If a trainee is to be utilized as a radiographer's assistant during the training period, the trainee should be tested and qualified as a radiographer's assistant before assuming those duties.

4. Instructor's Qualifications

The person who makes the final determination of the adequacy of a trainee's knowledge and competency should be a qualified radiographer with a strong background of training and experience with radiation. On-the-job training must be given by someone who is, as a minimum, a qualified radiographer.

5. Records

A copy of tests given to each trainee, records showing trainee performance in each examination (including oral and practical examinations), and the examiner's overall evaluation of the trainee as qualified to act as a radiographer or radiographer's assistant must be maintained for a period of three years.

APPENDIX D

PROGRAM RESPONSIBILITIES AND MANAGER QUALIFICATIONS

The individual assigned the duties of maintaining active management control of the program should be a qualified radiographer with training in the use of the types of equipment proposed in the application and should bear the title of Radiation Safety Officer, Radiation Protection Officer, or other similar designation. Thorough knowledge of management policies, company administrative and operating procedures, and safety procedures related to protection against radiation exposures should be prerequisites for the position. Alternates meeting the same qualifications should be designated to assume these functions when necessary.

A list of the duties that may be performed by the licensee's management personnel is presented below. It is not intended to be all inclusive nor should it be interpreted as a requirement that any one person assume all of the listed duties. Some duties may be delegated to persons of lesser authority.

1. Serving as the licensee's liaison officer with the Nuclear Regulatory Commission on license matters.
2. Maintaining control of procurement and disposal of licensed material.
3. Developing and maintaining up-to-date operating and emergency procedures.
4. Establishing and maintaining a personnel monitoring program.
5. Procuring and maintaining radiation survey instruments.
6. Establishing and conducting the training program for radiographers and radiographers' assistants.
7. Examining and determining competence of radiographic personnel.
8. Establishing and maintaining storage facilities.
9. Maintaining exposure devices, radiography facilities, and associated equipment.
10. Establishing and maintaining the leak-testing program.
11. Establishing and maintaining the internal inspection system.
12. Performing source replacement operations.
13. Conducting quarterly inventories and maintaining utilization logs.
14. Establishing and conducting a survey instrument calibration program.
15. Establishing and maintaining the licensee's record-keeping system.
16. Reviewing and ensuring maintenance of those records kept by others.
17. Assuming control and instituting corrective action in emergency situations.
18. Investigating the cause of incidents and determining necessary preventive action.
19. Acting in an advisory capacity to the licensee's management and radiography personnel.
20. Establishing a procedure for evaluating and reporting defects and noncompliance pursuant to 10 CFR Part 21.

EXHIBIT A

Form NRC-313R (7-77) 10 CFR 34	U.S. NUCLEAR REGULATORY COMMISSION APPLICATION FOR BYPRODUCT MATERIAL LICENSE— USE OF SEALED SOURCES IN RADIOGRAPHY	Approved by GAO B-180255(R0335)
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(SEE ATTACHED FORM NRC-313R INSTRUCTIONS AND NRC REGULATORY GUIDE 10.6—USE SUPPLEMENTAL SHEET WHERE NECESSARY) BE SURE ALL ITEMS ARE COMPLETED AND THAT ALL NECESSARY ATTACHMENTS ARE FURNISHED. IF ANY PORTION OF THE APPLICATION IS NOT APPLICABLE SPECIFICALLY SO STATE. DEFICIENT OR INCOMPLETE APPLICATIONS MAY BE RETURNED WITHOUT CONSIDERATION. LICENSE FEE REQUIRED, SEE ITEM 7 OF INSTRUCTIONS.

1(a) NAME AND ADDRESS OF APPLICANT AND TELEPHONE NUMBER	2. THIS IS AN APPLICATION FOR: <i>(Check appropriate item)</i> A. <input type="checkbox"/> NEW LICENSE B. <input type="checkbox"/> AMENDMENT TO LICENSE NO. _____ C. <input type="checkbox"/> RENEWAL OF LICENSE NO. _____
1(b) TELEPHONE NO.: Area Code () _____	3. LOCATION(S) WHERE SEALED SOURCES WILL BE USED AND/OR STORED. <i>(If use will be made in states other than named in 1(a), they should be listed here.)</i>
1(c) APPLICANT IS: An individual <input type="checkbox"/> A partnership <input type="checkbox"/> A Corporation <input type="checkbox"/> An Unincorporated Association <input type="checkbox"/> Other <input type="checkbox"/> If applicant is other than an individual, the applicable section on the reverse side must be completed.	

4. SEALED SOURCES TO BE USED IN RADIOGRAPHY (Attach supplementary pages, if necessary)

BYPRODUCT MATERIAL <i>(Element and Mass No.)</i>	SOURCE MODEL NUMBER	NAME OF MANUFACTURER	MAXIMUM ACTIVITY PER SOURCE	NUMBER OF SOURCES
A.	A.	A.	A.	A.
B.	B.	B.	B.	B.
C.	C.	C.	C.	C.

5(a) RADIOGRAPHIC EXPOSURE DEVICES (Attach supplementary pages, if necessary)

MODEL NUMBER	NAME OF MANUFACTURER <i>(Include description if custom made)</i>
A.	A.
B.	B.
C.	C.

5(b) RADIOGRAPHIC SOURCE CHANGERS (Attach supplementary pages, if necessary)

MODEL NUMBER	NAME OF MANUFACTURER <i>(Include description if custom made)</i>
A.	A.
B.	B.
C.	C.

6. THE FOLLOWING INFORMATION IS ATTACHED AS A PART OF THIS APPLICATION: *(Check appropriate blocks and attach information called for in the instructions with this form.)*

	Not Applicable	Attached	Previously Submitted
(a) Description of radiographic facilities (Instruction 6-a)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> on _____ (DATE)
(b) Description of radiation detection instruments to be used (Instruction 6-b)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> on _____ (DATE)
(c) Instrument calibration procedures (Instruction 6-c)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> on _____ (DATE)
(d) Personnel monitoring equipment (Instruction 6-d)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> on _____ (DATE)
(e) Operating and emergency procedures (Instruction 6-e)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> on _____ (DATE)
(f) Training program (Instruction 6-f)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> on _____ (DATE)
(g) Internal inspection system or other management control (Instruction 6-g)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> on _____ (DATE)
(h) Overall organizational structure (Instruction 6-h)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> on _____ (DATE)
(i) Leak testing procedures (Instruction 6-i)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> on _____ (DATE)

CERTIFICATE (This item must be completed by applicant)

7. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PART 30, AND THAT ALL INFORMATION CONTAINED HEREIN, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

LICENSE FEE ENCLOSED \$ _____ BY: _____
(Signature)

 (Type or print name of certifying official)

DATE _____

 (Title of certifying official)

WARNING.—18 U.S.C., Section 1001, Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

EXHIBIT A (Page 2)

FORM NRC-313R (7-77)

LEGAL STRUCTURE OF APPLICANT

If applicant is a corporation, complete Items 8 through 11; if applicant is a partnership, complete Items 12 through 14; if applicant is an unincorporated association or a legal entity other than a partnership or corporation, complete Items 15 and 16. Attach separate sheets where space provided proves inadequate.

CORPORATION

8. STOCK OF APPLICANT CORPORATION

NO. OF SHARES AUTHORIZED	NO. OF SHARES ISSUED	NO. OF SHARES SUBSCRIBED	TOTAL NUMBER OF:	
			(a) Stockholders	(b) Subscribers

9. Is applicant corporation directly or indirectly controlled by another corporation or other legal entity? YES NO
 If answer is "YES" give name and address of other corporation or other legal entity and describe how such control exists and the extent thereof.

10. (a) Identify by name and address any individual, corporation, or other legal entity (1) owning 10 percent or more of the stock of applicant corporation issued and outstanding or (2) subscribing to 10 percent or more of the authorized but unissued stock of the corporation.
 (b) Identify by name and address all officers and directors of the corporation.

11. Identify the State, District, Territory, or possession under the laws of which the applicant is incorporated.

PARTNERSHIP

12. Name and address of each individual or legal entity owning a partnership interest in the applicant.

13. State the percent of ownership of the applicant partnership held by each of the individuals or legal entities listed in Item 12.

14. Identify the State, District, Territory, or possession under the laws of which the applicant partnership is organized.

OTHER

15. Describe the nature of the applicant and identify the State, District, Territory, or possession under the laws of which it is organized.

16. State the total number of members or persons holding an ownership in the applicant, identify each by name and address, and indicate the ownership interest thereof.

VALUE/IMPACT STATEMENT

1. BACKGROUND

Industrial radiography accounts for more than two-thirds of overexposures greater than 5 rems to the whole body and greater than 75 rems to extremities and 90% of overexposures greater than 25 rems to the whole body and greater than 375 rems to extremities.

Effective March 3, 1980, 10 CFR Part 34 was revised to reduce operator exposure. The new amendments place stricter requirements on training, supervision, and periodic performance evaluation of radiographers and radiographers' assistants. Also, stricter inspection and survey procedures for exposure devices and sources before use each day and each time the source is retracted to its shielded position will reduce exposures caused by equipment malfunction and operator error. Further requirements on alarms for permanent radiographic installations, on availability of survey instruments, and on use of personnel monitoring devices are designed to make the operator more aware of the hazards of radiation.

2. THE PROPOSED ACTION

2.1 Description

The applicant for a license to use industrial radiography sources is required to develop a program that complies with Commission regulations and to describe this program in the application for the license. Regulatory Guide 10.6 details radiography program requirements and provides guidance in establishing a comprehensive radiation safety program. The proposed revision incorporates the latest amendments to the regulations.

2.2 Need

The recent amendments to 10 CFR Part 34 necessitate extensive revision to the regulatory guide. The amendments and guide changes are as follows:

1. Section 34.11 was amended to require that an internal inspection program of a licensee's operations be conducted at intervals not exceeding 3 months. The present guide only recommends a program of inspection; revision is necessary to reflect the new requirement.

2. Section 34.22 was amended to require securing of the source in each radiographic exposure device each time the source is returned to its shielded position. The present guide only recommends that such procedures be implemented; revision is necessary to reflect the new requirement.

3. Section 34.28 was amended to require that radiographic exposure devices, storage containers, and source changers be checked for obvious damage each day before use and be comprehensively inspected and maintained each

quarter. The present guide only recommends that such procedures be implemented; revision is necessary to reflect the new requirement.

4. Section 34.29 was amended to require an alarm system for warning anyone entering a permanent radiographic installation during source exposure. The present guide asks for a description of such a system only if it is present in the facility. Revision of the guide is necessary to reflect the new requirement.

5. Section 34.31 was amended to require documented testing of radiographers (written and practical) and radiographers' assistants (written or oral and practical). The present guide only recommends testing and does not specify the type; revision is necessary to reflect the new requirement and to specify the manner of testing and the materials to be covered.

6. Section 34.43 was amended to require surveys of radiographic exposure devices, including the source guide tube, after each exposure. The present guide only recommends that the survey of the guide tube be made; revision is necessary to reflect the new requirement.

7. Section 34.44 was amended to require the physical presence of a radiographer at the site where sources are being used by radiographers' assistants. The present guide does not address itself to this situation; revision is necessary to reflect the requirement.

2.3 Value/Impact

2.3.1 NRC

The review and approval of applications for use of radiography sources are considerably facilitated by the use of a standard format, the instructions for which are provided in the regulatory guide. The guide clearly details the regulations to be followed and the information required for licensing and implementing an acceptable program for the use of industrial radiography sources. Staff review time is shortened because of the use of the standard format and the reduction of unnecessary correspondence resulting from the lack of sufficient detail in license applications. Revision of the guide will reduce additional correspondence that would result because of the regulation changes.

2.3.2 Other Government Agencies

Other government agencies should not be affected.

2.3.3 Industry

The regulatory guide contributes to the reduction in time required for industry's preparation of a license application. Industry will spend less time trying to interpret NRC

regulations and requirements for submission of information. More importantly, the revised guide will provide information for the design and implementation of a more effective radiation safety program, thereby minimizing the radiation to workers.

2.3.4 Public

No impact on the public is foreseen.

2.3.5 Worker

The worker will benefit from the revision of the guide through reduced radiation exposure discussed in Item 2.3.3 above.

2.4 Decision

The revision of this regulatory guide should be initiated because of the benefits previously discussed.

3. TECHNICAL APPROACH

This section is not applicable since the proposed action is procedural, i.e., revision of a regulatory guide necessitated by regulation changes.

4. PROCEDURAL APPROACH

4.1 Alternatives

The regulatory guide presently exists. Revision of the guide is necessary because of amendments to the regulation. The only alternative is to discontinue use of the guide altogether in favor of individual letters to licensees.

4.2 Discussion

A guide is the more effective way to transmit information about regulations and licensing requirements. A guide ensures uniform transmission of information to the licensee. Individual letters would be inefficient and, depending on the reviewing official, may not uniformly convey the same information to each licensee. Continuance and revision of the guide is the most effective alternative.

5. STATUTORY CONSIDERATIONS

5.1 NRC Authority

This guide interprets regulations promulgated in 10 CFR Part 34.

5.2 Need for NEPA Assessment

The proposed action is not a major action as defined by 10 CFR § 51.5 and does not require an environmental impact statement.

6. RELATIONSHIP TO OTHER EXISTING OR PROPOSED REGULATIONS OR POLICIES

No conflicts or overlaps appear to exist.

7. SUMMARY AND CONCLUSIONS

The proposed revision to Regulatory Guide 10.6, when disseminated, will assist the NRC in its review of applications for use of industrial radiographic sources and will provide industry with guidelines for submitting applications and implementing optimum radiation safety programs. The proposed revision should be issued.



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

July 1984

ERRATA

REGULATORY GUIDE 10.6, Revision 1

GUIDE FOR THE PREPARATION OF APPLICATIONS FOR USE
OF SEALED SOURCES AND DEVICES FOR PERFORMING INDUSTRIAL RADIOGRAPHY

Revision 1 of Regulatory Guide 10.6 provides directions for using Form NRC-313R in preparing applications for a license to use sealed sources and devices for performing industrial radiography. The NRC is now using a new NRC Form 313 for all byproduct material applications and is discontinuing the use of Form NRC-313R. The NRC is developing Revision 2 of Regulatory Guide 10.6 to conform to the new NRC Form 313. Until Revision 2 is issued, this errata sheet provides the information needed to use the new NRC Form 313.

The new NRC Form 313 does not have space for providing the information requested in Items 5 through 11. Please provide the information on 8½ x 11 inch paper.

In the left-hand column of the following table are listed items of the old Form NRC-313R, most of which are also called out in Regulatory Guide 10.6, Revision 1. The middle column identifies the corresponding item of the new NRC Form 313 in which responses should be made.

<u>Guide and Old Form NRC-313R</u>	<u>New NRC Form 313</u>	<u>Remarks</u>
Item 1	Item 2	
Item 2	Item 1	
Item 3	Item 3	
Items 4 & 5	Item 5	
Item 6(a)	Item 9	
Items 6(b) & 6(c)	Part of Item 10	Identify as Item 10.2
Item 6(d)	Part of Item 10	Identify as Item 10.1
Item 6(e)	Part of Item 10	Identify as Item 10.4
Item 6(f)	Item 8	
Item 6(g)	Part of Item 10	Identify as Item 10.3
Item 6(h)	Item 7	
Item 6(i)	Part of Item 10	Identify as Item 10.5
Item 7*	Item 12	License fee information
Item 7*	Item 13	Signature and date

* Not called out in Regulatory Guide 10.6, Revision 1.

The following table lists items in the new NRC Form 313 that do not appear in the old Form NRC-313R along with some information that may be helpful in using the new form.

<u>NRC Form 313</u>	<u>Remarks</u>
Item 4	Specify the name and telephone number of the person who knows about your program. This should be a person who may be contacted and can answer questions concerning your program.
Item 6	An acceptable response is to state that the radiographic exposure devices will be used for performance of industrial radiography and that source changers in Item 5 will be used for source exchange. If you will possess a source and device for performing instrument calibration, the use for the source-device combination may be stated as "Calibration of radiation survey instruments."
Item 11	State briefly how you will dispose of sources; for example, "Return to supplier."

The following cross-reference table may be helpful to you:

<u>New NRC Form 313</u>		<u>Old Form NRC-313R</u>
Item 1	was	Item 2
Item 2	was	Item 1
Item 3	was	Item 3
Item 4		N/A
Item 5	was	Items 4 and 5
Item 6		N/A
Item 7	was	Item 6(h)
Item 8	was	Item 6(f)
Item 9	was	Item 6(a)
Item 10	was	Items 6(b), 6(c), 6(d), 6(e), 6(g), and 6(i)
Item 11		N/A
Item 12	was	Part of Item 7
Item 13	was	Part of Item 7

APPLICATION FOR MATERIAL LICENSE

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

FEDERAL AGENCIES FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS, IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIAL SECTION B
631 PARK AVENUE
KING OF PRUSSIA, PA 19406

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
MATERIAL RADIATION PROTECTION SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
MATERIAL RADIATION PROTECTION SECTION
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
MATERIAL RADIATION PROTECTION SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

- A. NEW LICENSE
 B. AMENDMENT TO LICENSE NUMBER _____
 C. RENEWAL OF LICENSE NUMBER _____

2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip Code)

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED.

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

TELEPHONE NUMBER

SUBMIT ITEMS 5 THROUGH 11 ON 8 1/2 x 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSEE FEES (See 10 CFR 170 and Section 170.37)

FEE CATEGORY	AMOUNT ENCLOSED \$
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13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN, IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948, 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

SIGNATURE—CERTIFYING OFFICER

TYPED/PRINTED NAME

TITLE

DATE

14. VOLUNTARY ECONOMIC DATA

a. ANNUAL RECEIPTS

<\$250K	\$1M-3.5M
\$250K-500K	\$3.5M-7M
\$500K-750K	\$7M-10M
\$750K-1M	>\$10M

b. NUMBER OF EMPLOYEES (Total for entire facility excluding outside contractors)

c. NUMBER OF BEDS

d. WOULD YOU BE WILLING TO FURNISH COST INFORMATION (Jailer and/or staff hours) ON THE ECONOMIC IMPACT OF CURRENT NRC REGULATIONS OR ANY FUTURE PROPOSED NRC REGULATIONS THAT MAY AFFECT YOU? (NRC regulations permit it to protect confidential commercial or financial—proprietary—information furnished to the agency in confidence)

YES

NO

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS	APPROVED BY
AMOUNT RECEIVED	CHECK NUMBER			DATE

PRIVACY ACT STATEMENT

Pursuant to 5 U.S.C. 552a(e)(3), enacted into law by section 3 of the Privacy Act of 1974 (Public Law 93-579), the following statement is furnished to individuals who supply information to the Nuclear Regulatory Commission on NRC Form 313: This information is maintained in a system of records designated as NRC-3 and described at 40 Federal Register 45334 (October 1, 1975).

1. **AUTHORITY:** Sections 81 and 161(b) of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2111 and 2201(b)).
2. **PRINCIPAL PURPOSE(S):** The information is evaluated by the NRC staff pursuant to the criteria set forth in 10 CFR Parts 30, 32, 33, 34, 35 and 40 to determine whether the application meets the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations, for the issuance of a radioactive material license or amendment thereof.
3. **ROUTINE USES:** The information may be (a) provided to State health departments for their information and use; and (b) provided to Federal, State, and local health officials and other persons in the event of incident or exposure, for their information, investigation, and protection of the public health and safety. The information may also be disclosed to appropriate Federal, State, and local agencies in the event that the information indicates a violation or potential violation of law and in the course of an administrative or judicial proceeding. In addition, this information may be transferred to an appropriate Federal, State, or local agency to the extent relevant and necessary for an NRC decision or to an appropriate Federal agency to the extent relevant and necessary for that agency's decision about you.
4. **WHETHER DISCLOSURE IS MANDATORY OR VOLUNTARY AND EFFECT ON INDIVIDUAL OF NOT PROVIDING INFORMATION:** Disclosure of the requested information is voluntary. If the requested information is not furnished, however, the application for radioactive material license, or amendment thereof, will not be processed. A request that information be held from public inspection must be in accordance with the provisions of 10 CFR 2.790. Withholding from public inspection shall not affect the right, if any, of persons properly and directly concerned need to inspect the document.
5. **SYSTEM MANAGER(S) AND ADDRESS:** U.S. Nuclear Regulatory Commission
Director, Division of Fuel Cycle and Material Safety
Office of Nuclear Material Safety and Safeguards
Washington, D.C. 20555

APPLICATION FOR MATERIAL LICENSE

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

FEDERAL AGENCIES FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS, IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIAL SECTION B
631 PARK AVENUE
KING OF PRUSSIA, PA 19406

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
MATERIAL RADIATION PROTECTION SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
MATERIAL RADIATION PROTECTION SECTION
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
MATERIAL RADIATION PROTECTION SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

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

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