NRC FORM 313 (10-2017) 10 CFR 30, 32, 33, 34, 35, 36, 37, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIALS LICENSE

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 06/30/2019

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE CURRENT VOLUMES OF THE NUREG-1556 TECHNICAL REPORT SERIES ("CONSOLIDATED GUIDANCE ABOUT MATERIALS LICENSES") FOR DETAILED INSTRUCTIONS FOR COMPLETING THIS FORM: http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/. SEND TWO COPIES OF THE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

MATERIALS SAFETY LICENSING BRANCH
DIVISION OF MATERIAL SAFETY, STATE, TRIBAL AND RULEMAKING PROGRAMS
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,

SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

03038629

IF YOU ARE LOCATED IN:

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

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

Br.2

IF YOU ARE LOCATED IN:

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING,

SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
1600 E. LAMAR BOULEVARD
ARLINGTON, TX 76011-4511

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 JURISDICTIONS.

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

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER
- [x] C. RENEWAL OF LICENSE NUMBER 47-35053-01

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include zip code)*

American Electric Power
Mountaineer Plant, ATTN: Christopher A. Purdum
U.S. Route 62
New Haven, West Virginia 25265-0419

3. ADDRESS WHERE LICENSED MATERIALS WILL BE USED OR POSSESSED

American Electric Power
Mountaineer Plant
U.S. Route 62
New Haven, West Virginia 25265-0419

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

ATTN: Christopher A. Purdum

BUSINESS TELEPHONE NUMBER	BUSINESS CELLULAR TELEPHONE NUMBER
304-882-4193	304-812-4626

BUSINESS E-MAIL ADDRESS

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. LICENSE FEES (Fees required only for new applications, with few exceptions*)
(See 10 CFR 170 and Section 170.31)
***Amendments/Renewals that increase the scope of the existing license to a new or higher fee category will require a fee.**

FEE CATEGORY: 3P AMOUNT ENCLOSED $: 0.00

PER THE DEBT COLLECTION IMPROVEMENT ACT OF 1996 (PUBLIC LAW 104-134), YOU ARE REQUIRED TO PROVIDE YOUR TAXPAYER IDENTIFICATION NUMBER. PROVIDE THIS INFORMATION BY COMPLETING NRC FORM 531: https://www.nrc.gov/reading-rm/doc-collections/forms/nrc531info.html.

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, 36, 37, 39, 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.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
Bryan K. Mabe, Plant Manager, Mountaineer	B. K. Mabe	12/4/17

FOR NRC USE ONLY

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

NRC FORM 313 (10-2017)

REC'D IN LAT 12/05/17

601937

NMSS/RGN1 MATERIALS-002

Application for Renewal of Materials License Number 47-35053-01

Information Requested in Items 5 through 11 of the U.S. Nuclear Regulatory Commission Form 313

Item 5. Radioactive Material

a. **Element and mass number: Cesium-137, 8 mCi and Americium-241:Be, 40 mCi**
b. **Chemical and/or physical form: Sealed sources – Troxler Dwg. No. A-102112 Troxler model no. 3430, serial no. 37139, one gauge requested.**
c. **Maximum amount which will be possessed at any one time: Not to exceed the maximum activity per device as specified in the Sealed Source Device Registration Certificate.**

Item 6. Purposes for which licensed materials will be used

The sources are to be used in the Troxler 3430 gauge for the measurement of physical properties of materials, i.e. density and moisture. The gauge will only be used as specified in the Sealed Source Device Registration Certificate.

Item 7. Individual(s) responsible for Radiation Safety Program and their training and experience

The Corporate Radiation Safety Officer is Francis A. Ginocchi, Director, Safety & Health – Generation. The Assistant RSO is Christopher A. Purdum, Landfill Supervisor, who is currently listed as the contact for the licensee.

Mr. Purdum is a Registered Professional Engineer and has more than 30 years of civil engineering experience in the power generation industry, specifically landfill construction and operations. He received Nuclear Gauge Training from Troxler in April 1987. He has also received RSO Training from the Radiation Safety Academy in 2004, 2006 and 2009. A copy of the certificates received from this training is included with this application.

Item 8. Training for Individual(s) working in or frequenting restricted areas

Before using licensed materials, authorized users will have successfully completed one of the training courses described in the "Criteria" part of the section titled, "Training for Individuals Working in or Frequenting Restricted Areas" in NUREG-1556, Vol. 1, Rev. 2, "Consolidated Guidance About Materials Licenses: Program-Specific Guidance about Portable Gauge Licenses."

Item 9. Facilities and Equipment

The gauge is stored, with the source rod locked, in a locked cage, with a secondary lock & cable on the case and cage. The cage is located in a non-occupied storage room inside an office building at the secured plant site. The storage room is also locked when the building is not in use. This information satisfies the sections titled, "Public Dose and Operating , Emergency, and Security Procedures" in NUREG-1556, Vol. 1, Rev. 2, "Consolidated Guidance about Materials Licenses: Program-Specific Guidance about Portable Gauge Licenses."

Item 10. Radiation Safety Program

10.1 No response required.

10.2 AEP will either possess and use, or have access to and use, a radiation survey meter that meets the criteria in the section titled "Radiation Safety Program – Radiation Monitoring Instruments" in NUREG-1556, Vol. 1, Rev. 2, "Consolidated Guidance About Materials Licenses: Program-Specific Guidance about Portable Gauge Licenses," in the event of an incident.

10.3 Physical inventories will be conducted every 6 months or at other intervals approved by the NRC to account for all sealed sources and devices received and possessed under the license.

10.4 AEP will maintain, for inspection by the NRC, documentation demonstrating that unmonitored individuals are not likely to receive a radiation dose in excess of the limits in 10 CFR20.1502(a).

10.5 No response required.

10.6 Enclosed is a copy of the "American Electric Power Radiation Safety and Health Program, Revision 13, effective July 15, 2017. Copies of these procedures will be provided to all users and accompanies the gauge.

10.7 Leak tests will be performed at intervals approved by the NRC and specified in the SSD Registration Certificate. Leak tests will be performed by an organization authorized by the NRC to provide leak testing services to other licensees, or by using a leak test kit supplied by an organization licensed by the NRC to provide leak test kits and/or analysis services to other licenses and according to the kit supplier's instructions. Records of leak test results will be maintained.

10.8 AEP will implement and maintain procedures for routine maintenance of the gauge according to the manufacturer's written recommendations and instructions. The gauge manufacturer or other person licensed by the NRC will perform non-routine maintenance or repair operations that require detaching the source or source rod from the gauge.

10.9 No response required.

Item 11. Waste Management

No response required.

American Electric Power

RADIATION SAFETY AND HEALTH PROGRAM

Revised June 2017
Approved by Radiation Safety Committee on xx/xx/xx:

Signed xxxxx xxxxxx _____
Corporate Radiation Safety Officer

Approved: signed Frank Ginocchi_____
Director, Safety and Health - Generation

Revision 13
Effective 07/15/17

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1.0 TITLE{ TC "1.0 TITLE" \f C \l "1" }

Radiation Safety Program

2.0 PURPOSE AND SCOPE{ TC "2.0 PURPOSE AND SCOPE" \f C \l "1" }

2.1 Purpose{ TC "2.1 Purpose" \f C \l "2" }

The purpose of this procedure is to provide guidance to AEP personnel in administration and implementation of the AEP Radiation Safety and Health Program, ensure all AEP radioactive material licenses are properly administered, and ensure all work done under those licenses is performed safely.

Note: Corresponding Ohio Department of Health (ODH) regulations are listed in parentheses and italics after the Nuclear Regulatory Commission requirements throughout this document.

Note: XRF analyzers are covered separately in Attachment 13, "AEP X-Ray Fluorescence Analyzer (XRF) Radiation Protection Program."

Note: Radiography Guidance is provided in Attachment 14, "Radiography Guidance."

This procedure meets the requirements of:

- 10 CFR 20.1101(a) *(Chapter 3701:1-38-11(D)(1))*,
- the NRC and Agreement State licenses held throughout the AEP system at non-nuclear facilities,
- the pertinent requirements of the Code of Federal Regulations Parts 10 (Energy) and 49 (Transportation) listed in section 3, and the Ohio Administrative Code,
- the applicable Regulatory Guide requirements

2.2 Scope{ TC "2.2 Scope" \f C \l "2" }

The AEP Radiation Safety and Health Program covers administration and implementation of all AEP radioactive materials licenses, general or specific, issued by NRC or an agreement state. It does not cover use of radiation-producing machines (except XRF analyzers) or operation of nuclear power plants. Radiography guidance is provided for AEP facilities although licensing and operation is the responsibility of the radiography contractor.

3.0 REFERENCES{ TC "3.0 REFERENCES" \f C \l "1" }

3.1 10 CFR 19, "Instructions and Reports to Workers: Inspection and Investigations" *(Chapters 3701:1-38-09 and 3701:1-38-10)*

3.2 10 CFR 20, "Standards for Protection against Radiation" *(Chapter 3701:1-38)*

3.3 10 CFR 21, "Reporting of Defects and Noncompliance" *(Chapter 3701:1-38-23)*

3.4 10 CFR 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material" *(Chapter 3701:1-40)*

3.5 10 CFR 31, "General Domestic Licenses for Byproduct Material" *(Chapter 3701:1-40)*

3.6 10 CFR 71, "Packaging and Transportation of Radioactive Material" *(Chapter 3701:1-50)*

3.7 49 CFR 172, "Hazardous Material Table, Special Material, Hazardous Materials Communications, Emergency Response Information and Training Requirements" *(Chapter 3701:1-50-05)*

3.8 49 CFR 173, "Shippers—General Requirements for Shipments and Packaging" *(Chapter 3701:1-50-05)*

3.9 49 CFR 177, "Carriage by Public Highway" *(Chapter 3701:1-50-05)*

3.10 Regulatory Guide 8.29, "Instruction Concerning Risks from Occupational Radiation Exposure,"

3.11 Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure,"

3.12 "Troxler Nuclear Gauge Safety Training Program." Troxler Electronic Laboratories. May, 1996.

*3.13*NUREG-1556, Volume 4, Consolidated Guidance about Material Licenses, Specific Guidance About Portable Gauge Licenses, November 2001 *(NMS-LIC-01, "Guidance about Portable Gauges")*

*3.14*NUREG-1556, NUREG-1556, Volume 4, Revision 1: Consolidated Guidance about Material Licenses: Program-Specific Guidance About Fixed Gauge Licenses, Final Report, July 2016

3.15 NUREG-1556, Volume 19, Guidance for Agreement States About NRC Form 241, "Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters" and Guidance for NRC Licensees Proposing to Work in Agreement State Jurisdiction (Reciprocity), November 2000

4.0 GENERAL INFORMATION AND REQUIREMENTS{ TC "4.0 GENERAL INFORMATION AND REQUIREMENTS" \f C \l "1" }

4.1 Definitions{ TC "4.1 Definitions" \f C \l "2" }

4.1.1 AEP Corporate Radiation Safety Officer. Individual assigned to oversee American Electric Power Byproduct Material Licenses (non-nuclear power) programs. Individual may serve as the RSO for individual sites or licenses in lieu of an RSO on-site.

4.1.2 ALARA: Acronym for "as low as reasonably achievable". Means making every reasonable effort to maintain exposures to radiation as far below applicable dose limits as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

4.1.3 Authorized user: An authorized user is an individual who has met all of the requirements (usually training-related) to perform work on or with licensed materials or devices, under a particular license. The specific requirements vary, depending on the license conditions and the work to be performed. At AEP, the term is usually used to refer to the following:

- For installed nuclear gauges, an authorized user is an individual who tests, inspects, or works around installed nuclear gauges, or performs other activities associated with the gauges, under the direction of the RSO.
- For portable gauges (e.g., Troxler soil density gauges), an authorized user is an individual who is qualified to use, maintain, test, store, and transport the gauge.

4.1.4 General License: A non-facility specific document issued by the NRC or Agreement State Authority that authorizes the facility to own, possess, use, or transfer certain devices (e.g., nuclear gauges) for authorized purposes. This document spells out the terms and conditions of possession of the byproduct material. General licenses are typically required for use of devices that present a lower level of risk to plant workers and the general public, either because they are equipped with smaller sources of radiation or because they are designed to be inherently safer. The general license (along with the manufacturer's instructions) specifies a limited set of actions the user can perform. These actions are usually limited to inspection and inventory, collecting leak test samples (normally every three years), and testing of safety devices (such as shutters). All other actions (such as repair) must be performed by a company (like the manufacturer) that is specifically licensed to perform that work. In return, there is a limited set of regulatory requirements that the facility must comply with.

4.1.5 Specific License: A facility specific document issued by the NRC or Agreement State Authority that authorizes the user to own, possess, use, or transfer specific devices, and is owned and managed by the AEP facility. This document spells out the terms and conditions of ownership of the byproduct material. Specific licenses are typically required for use of devices that present a higher level of risk to plant workers or to the general public, either because they are equipped with larger sources of radiation, or because their design or construction requires additional safeguards or technical expertise to be used safely. The specific license is written individually for each facility's situation and equipment, and includes authorized actions and requirements that are tailored for each situation. Therefore the list of allowable actions, and the list of regulatory requirements that must be met by the user, vary from license to license. The specific license holder is usually authorized to perform more types of actions involving greater potential hazards than is the general license holder, but the specific license holder usually has to comply with a longer list of regulatory requirements (such as radiation worker training, radiation monitoring, maintaining a formal radiation safety program, etc.).

4.1.6 RSO: Acronym for "Radiation Safety Officer". Means the individual responsible for oversight and direction of a radiation safety program, who meets the minimum requirements in Attachment 3. A specific license usually requires a formally designated RSO at the licensed facility ("formally designated" means that the RSO's name appears on the license, and the RSO has to meet specific expectations as to training and qualification). A general license usually does not require a formally designated RSO, but does require a responsible individual to administer the license. AEP normally maintains RSO-qualified individuals as both the corporate RSO and as the assistant RSO at each facility.

4.1.7 Assistant-RSO: A qualified individual responsible for implementing this procedure at a particular facility, who meets the minimum requirements in Attachment 3. Most Assistant RSO's at AEP administer general licenses, but some administer specific licenses.

4.1.8 Voluntary Monitoring: Personnel radiation exposure monitoring provided to a facility worker even though it is not required by regulation (10 CFR 20 or the corresponding Agreement State regulation) *(Chapter 3701:1-38).*

4.1.9 Temporary Location: For portable gauges (e.g. Troxler device or XRF Analyzer or equivalent), a temporary location is a site to which a device has been transferred for a temporary period of time.

4.1.10 Non-nuclear facility: Any AEP facility other than a nuclear power plant.

4.1.11 Should, shall:
Should: Denotes a recommendation (ANSI N18.7-1976)
Shall: Denotes a requirement (ANSI N18.7-1976)

4.1.12 Radiation Safety Committee (RSC): A group consisting of, as a minimum, the RSO, one Assistant-RSO from one of the sites, and at least one representative of management who is neither an authorized user nor an RSO.

4.1.13 XRF Analyzer: An X-Ray Fluorescence (XRF) Analyzer is a small portable device which emits X rays or soft gamma radiation from a radioactive source, used to analyze alloy or element composition of various materials.

4.2 Responsibilities{ TC "4.2 Responsibilities" \f C \l "2" }

4.2.1 The AEP Corporate RSO is responsible for the applicable items listed on Attachment 1.

4.2.2 The Assistant-RSO(s) is (are) responsible for the applicable items listed on Attachment 1.

4.2.3 Authorized users are responsible for the applicable items listed on Attachment 1.

4.2.4 The RSC is responsible for the applicable items listed on Attachment 1.

4.3 Limitations and Actions{ TC "4.3 Limitations and Actions" \f C \l "2" }

4.3.1 This procedure supersedes any existing radiation safety program. The document(s) this procedure replaces shall be maintained in an archive file by the AEP Corporate RSO.

4.3.2 An annual review of this procedure and supplemental procedures is required. The review shall include:

- A review by the Radiation Safety Committee
- A review by each Assistant-RSO/RSO, who shall note any recommended changes, ensure that the program implementation is consistent with this procedure, ensure that site-specific emergency and operating procedures are correct , and submit any comments or requests for change to the AEP Corporate RSO.
- Fixed Gauge Licensees – An audit checklist similar to that found in NUREG-1556, Volume 4, Attachment H should be used (appropriate

sections depending on license type and specifics*)(NMS-LIC-04, Appendix H).*

- Portable Gauge Licensees – An audit checklist similar to that found in NUREG-1556, Volume 1, Appendix F *(NMS-LIC-01, Appendix F)* should be used.

4.3.3 Not all parts of this procedure apply at all sites, as indicated in each section.

4.3.4 Attachment 4 shows the authority structure. If a personnel change occurs, then the RSC should fill the vacant position and ensure that the new individual meets the applicable training requirements.

4.3.5 All applicable requirements pertaining to approval or licensing of service providers (training, leak testing, etc.) by the appropriate regulatory authority shall be followed.

5.0 DETAILED PROCEDURE{ TC "5.0 DETAILED PROCEDURE" \f C \l "1" }

5.1 ALARA{ TC "5.1 ALARA" \f C \l "2" }

5.1.1 Portable gauges should never be used in such a way that the source rod (if so equipped) is exposed.

5.1.2 Portable gauge users should maintain a safe distance from the device when it is in operation.

5.1.3 Fixed gauge users should never attempt to enter fly ash hoppers when the source shutter is open.

5.2 Regulatory Inspections and AEP Evaluations{ TC "5.2 Regulatory Inspections and AEP Evaluations" \f C \l "2" }

5.2.1 Upon inspection by the NRC or Agreement State authority, the Assistant RSO should present this program, any supplemental procedures, and copies of leak test (normally leak tests are required every three years), training, dosimetry and inspection records, as requested by the inspector.

5.2.2 Upon completion of the inspection:

- request a copy of the inspection results
- forward a copy of the inspection results to the AEP Corporate RSO.

5.2.3 AEP evaluations are performed to verify and document compliance. They should be performed at intervals not to exceed 3 years or as specified by the AEP Corporate RSO.

5.3 Postings{ TC "5.3 Postings" \f C \l "2" }

Postings shall be in accordance with 10 CFR 19.11, 10 CFR 21.6, 20.1902(e), as applicable, and applicable Agreement State requirements *(Chapter 3701:1-38-18).*

5.4 Inventory and Inspection of Devices{ TC "5.4 Inventory and Inspection of Devices" \f C \l "2" }

5.4.1 All devices containing byproduct material shall be accounted for on a semi-annual basis or as otherwise directed by the license or manufacturer's instructions. The inventory results should be recorded on Attachment 6, or equivalent.

5.4.2 The shutter (on/off) mechanism shall be tested on fixed level gauges on a semi-annual basis or as otherwise directed by the license or manufacturer's instructions. The inspection results should be recorded on Attachment 6, or equivalent.

5.5 Records{ TC "5.5 Records" \f C \l "2" }

5.5.1 Inventory and inspection records (Attachment 6 or equivalent) shall be maintained for three years, or longer if required by the applicable regulations.

5.5.2 Leak test (normally leak tests are required every three years) records (Attachment 7, or equivalent) shall be maintained for three years, or longer if required by the applicable regulations.

5.5.3 Use "N/A" on any forms to denote "not applicable" where data need not be entered.

5.5.4 Training records for initial and annual re-qualification should be maintained for at least three years.

5.5.5 Records of Radiation Safety Program review, conducted per section 4.3.2, shall be maintained for at least three years.

5.6 Emergency Response{ TC "5.6 Emergency Response" \f C \l "2" }

5.6.1 In the event of an emergency, contact the Assistant RSO and the AEP Corporate RSO immediately.

5.6.2 Attachment 2, or equivalent, provides a general emergency plan for various device types.

5.6.3 A site-specific emergency plan shall be developed and maintained by each facility, with up-to-date telephone numbers and contacts.

5.7 Survey Instruments{ TC "5.7 Survey Instruments" \f C \l "2" }

NOTE:
THIS SECTION DOES NOT APPLY TO SITES USING ONLY GAS CHROMATOGRAPH DEVICES OR ALLOY ANALYZERS.

5.7.1 A survey instrument may be used to isolate the location of the source in the event of an emergency. At least one survey meter per site should be maintained at sites with only installed nuclear gauges. At least one survey meter per site shall be maintained at sites with portable nuclear gauges.

5.7.2 Survey meters shall be calibrated on an annual basis.

5.8 Leak Tests{ TC "5.8 Leak Tests" \f C \l "2" }

5.8.1 Leak tests shall be performed at the frequency specified in the license (normally required every three years).

5.8.2 Sufficient time should be allowed for analysis of results to prevent exceeding the due date. If the due date is exceeded, then inform the Assistant RSO and the AEP Corporate RSO.

5.8.3 Positive leak tests (leak tests which exceed 0.005 µCi, 11,000 dpm, or 185 bq per sample) shall be reported to the RSO and the appropriate regulatory body.

5.8.4 For portable moisture density gauges transported on public highways, a current leak test must be on file but does not need to accompany the transportation paperwork (Section 5.12).

5.8.5 The Cook Nuclear Plant is capable of performing leak test analysis for alpha and beta emitters. Attachment 7 provides recommended guidance and a form if use of this service is desired.

5.9 Dosimetry{ TC "5.9 Dosimetry" \f C \l "2" }

5.9.1 Dosimetry (e.g., thermoluminescent dosimeters, film badges) shall be worn:

- if the results of a prospective evaluation for any AEP specific license show that 2% of any applicable dose limit is likely to be exceeded in a year (100 mrem for whole body dose).
- to comply with license requirements.
- if voluntary monitoring is desired.

5.9.2 If any of the above criteria are met, then dosimetry shall be worn as directed by the Assistant RSO or AEP Corporate RSO.

5.9.3 Dosimetry shall be stored in a location separate from the device (e.g. in a storage cabinet away from the device).

5.9.4 Routine (e.g. monthly, quarterly, etc.) exposure records shall be made available to the monitored individual for review.

5.9.5 Annual exposure reports shall be made available to the individual as a permanent record.

5.9.6 Dosimetry reports shall be provided to an individual upon request.

5.10 Lockout Procedure For Fixed Gauge Users{ TC "5.10Lockout Procedure For Fixed Gauge Users" \f C \l "2" }

NOTE:
THIS SECTION ONLY APPLIES TO FACILITIES USING FIXED GAUGES.

5.10.1 Individuals authorized to perform maintenance on fly ash hoppers or other vessels, chutes, or conveyors with installed nuclear gauges shall be trained on the lockout procedure.

5.10.2 Attachment 8 provides a sample lockout procedure.

5.10.3 Each facility shall prepare and maintain a site-specific lockout procedure consistent with the content and intent of Attachment 8, good radiation safety practices, and good attention to the ALARA principle.

5.11 Training{ TC "5.11 Training" \f C \l "2" }

5.11.1 The radiation safety content of authorized user training shall be in accordance with 10 CFR 19.12 *(Chapter 3701:1-38-10)* or the equivalent Agreement State regulations, and will be commensurate with the potential radiological hazard, as specified by the Assistant RSO or the AEP Corporate RSO.

5.11.2 Formal radiation worker training (per 10 CFR 19.12 or equivalent) *(Chapter 3701:1-38-10)*, as described in Attachment 3, is required for authorized users of any AEP specific license if the prospective evaluation for that license shows that authorized users are likely to exceed 50 mrem in a year. Prospective evaluations are performed in accordance with section 5.16.

5.11.3 The training prerequisites for the AEP Corporate RSO and Assistant RSO are presented in Attachment 3.

5.11.4 If any prescribed training re-qualification frequency is not met, then inform the Assistant RSO or Corporate RSO.

5.11.5 Authorized users of portable moisture density gauges shall attend an appropriate operator's training and safety course and maintain a certificate that indicates the course was successfully completed.

5.11.6 Authorized users of portable moisture density gauges who perform activities related to transportation of portable gauges shall attend a hazardous materials ("hazmat") transportation course, and shall requalify at least every three years.

5.11.7 Other individuals who perform activities related to transportation (including packaging and preparing documentation) of radioactive devices may also be required to attend a hazardous materials ("hazmat") transportation course, and requalify at least every three years, as specified by the AEP Corporate RSO.

5.11.8 Refer to Attachment 3 for additional specific training requirements and information.

5.12 Transportation of Portable Moisture Density Gauges.{ TC "5.12 Transportation of Portable Moisture Density Gauges and Other Devices." \f C \l "2" }

NOTE:
THE FOLLOWING INSTRUCTIONS ARE FOR THE TRANSPORTATION OF PORTABLE MOISTURE DENSITY GAUGES. CONTACT THE CORPORATE RADIATION SAFETY OFFICER FOR THE TRANSPORTATION OF OTHER RADIOACTIVE MATERIALS.

5.12.1 Type A packages (as used for Troxler moisture density gauges and other equipment) require engineering documentation for the package to be on file. Refer to 49 CFR 173.415

5.12.2 Special Form radioactive sources (as used for Troxler moisture density gauges and other equipment) require Special Form approvals. Refer to 49 CFR 173.476

5.12.3 Package the device in accordance with vendor requirements and the Type A package documentation.

5.12.4 Verify/complete two Radioactive Yellow –II labels (to be installed on the package on opposite sides). Complete the labels:

5.12.4.1 Contents: List each radionuclide present (e.g. Cs-137, Am-241/Be)

5.12.4.2 Activity: List the total activity in the package in SI units (e.g. 1.78 GBq)

5.12.4.3 Transport Index (TI): List the TI to the nearest tenth (ex: 0.4)

5.12.5 Verify/complete package markings

5.12.5.1 Mark the package with the Basic Description (UN3332, Radioactive material, Type A package, special form, RQ). This should be located near one of the labels.

5.12.5.2 Mark the package with both the receivers and senders addresses. This may not be required. Refer to 49 CFR 172.301(d).

5.12.5.3 Mark the package "USA DOT 7A Type A".

5.12.5.4 Install security seal on the outside of the package.

5.12.6 Vehicle placards

5.12.6.1 Vehicle placards are not required when transporting Radioactive Yellow –II labeled packages.

5.12.7 Shipping papers

5.12.7.1 Prepare a shipping paper (Bill of Lading or other document)

5.12.7.1.1 List the UN number: e.g. UN3332

5.12.7.1.2 List the hazard class: 7

5.12.7.1.3 List the proper shipping name: Radioactive material, Type A package, special form

5.12.7.1.4 List RQ if applicable: RQ

5.12.7.1.5 List the type and number of packages in the shipment:

5.12.7.1.6 List the label type: Radioactive Yellow II

5.12.7.1.7 List the package contents: (same as label)

5.12.7.1.8 List the package activity: (same as label)

5.12.7.1.9 List the package TI: (same as label)

5.12.7.1.10 List the 24 hour emergency response telephone number

5.12.7.1.11 List the DOT certification statement. Refer to 49 CFR 172.204

5.12.7.1.12 Sign the shipping paper

5.12.7.2 Emergency Response Information – Attach appropriate emergency response information to the shipping paper (Refer to the 2008 DOT Emergency Response Guidebook).

5.12.7.3 Maintain a copy of the shipping paper.

5.12.8 Secure device in the vehicle, blocked and braced to prevent movement during transport

5.13 Maintenance, Installation, and Handling{ TC "5.13 Maintenance, Installation, and Handling" \f C \l "2" }

5.13.1 Fixed gauges normally may be uncrated, mounted and wired under the direction of the RSO / Assistant-RSO. Each facility shall verify acceptability of this practice per applicable Agreement State regulations. The shutter may only be unlocked or unbolted by someone specifically licensed to perform that work.

5.13.2 The RSO / Assistant RSO may maintain fixed gauges in accordance with the instructions in Reference 3.14, or equivalent, and applicable license requirements. This includes cleaning and lubrication of the shutter device.

5.14 Use of Portable Moisture Density Gauges{ TC "5.14 Use of Portable Moisture Density Gauges" \f C \l "2" }

5.14.1 Portable gauge users shall not leave the device unattended while it is in use.

5.14.2 Whenever a portable gauge is unattended (not under constant surveillance), it shall be secured by at least two independent physical controls that provide tangible barriers to unauthorized removal. This requirement applies during use, transportation, and temporary or permanent storage.

5.14.3 A use log shall be maintained by the RSO / Assistant-RSO. Attachment 9, or equivalent, should be used for this purpose.

5.14.4 The portable gauge shall be stored in its Type A package or other sturdy container, which shall be maintained in a locked cabinet or room which is at least 15 feet from any permanently occupied work area.

5.14.5 Keys for the source rod and cabinet shall be maintained by the RSO / Assistant-RSO. Keys for the room should be maintained by the RSO / Assistant-RSO and individuals authorized to enter the room.

5.14.6 Key control for alloy analyzers shall be maintained.

5.15 Temporary Locations For Portable Moisture Density Gauges{ TC "5.15 Temporary Locations For Portable Moisture Density Gauges" \f C \l "2" }

NOTE:
TRANSPORTATION BETWEEN AN AGREEMENT STATE AND A NRC REGULATED STATE, OR BETWEEN TWO AGREEMENT STATES, MUST BE CONDUCTED CAREFULLY. REVIEW OF LICENSE CONDITIONS FOR THE SHIPPER AND THE RECEIVER MUST OCCUR TO ENSURE REGULATORY COMPLIANCE IS MAINTAINED. APPROVAL FROM THE APPLICABLE REGULATORY AGENCY MUST BE RECEIVED PRIOR TO TRANSPORT IF NOT ALREADY CONSIDERED IN LICENSE CONDITIONS.

5.15.1 The sender of a portable moisture density gauge to a temporary location shall include the proper shipping paperwork (section 5.12).

5.15.2 The receiver of a portable moisture density gauge at a temporary location shall send written confirmation of receipt to the sender.

5.15.3 The RSO / Assistant-RSO shall ensure that the gauge user at the temporary site:

- is qualified to use the device, as evidenced by current training as an authorized user and current hazmat training,
- maintains this program and adheres to the radiation safety procedures outlined in this program as well as any site-specific emergency procedures,
- returns the device within the specified time period

5.16 Prospective Evaluations{ TC "5.16 Prospective Evaluations" \f C \l "2" }

5.16.1 A prospective evaluation of likely radiation exposures should be performed for each AEP specific license at least once every five years (see Attachment 5). This time period may be extended by the Corporate Radiation Safety Officer if no significant changes in source usage have occurred.

5.16.2 A prospective evaluation of likely radiation exposures should be performed any time the devices or activities authorized under any AEP specific license change significantly.

5.17 XRF Analyzers{ TC "5.17 XRF Analyzers" \f C \l "2" }

5.17.1 Requirements for XRF analyzers are listed in Attachment 13, "AEP X-Ray Fluorescence Analyzer (XRF) Radiation Protection Program."

5.18 Radiography Guidance{ TC "5.18 Radiography Guidance" \f C \l "2" }

5.18.1 Guidance for the performance of radiography is provided in Attachment 14, "Radiography Guidance."

Attachment 1 - Responsibilities{ TC "**Attachment 1 - Responsibilities**" \f C \l "1" }

AEP Corporate RSO Responsibilities

1. Provide management oversight to site RSO or Assistant-RSOs.
2. Designate site evaluation frequencies and ensure their performance.
3. Review and approve documentation resulting from site evaluations.
4. Serve as a liaison to the NRC or Agreement State authority.
5. Develop and maintain a generic Radiation Safety Program for the general and specific licenses at AEP non-nuclear facilities.
6. Recommend corrective or preventative actions following the report of past-due or positive leak-tests.
7. Stop any unsafe operations.
8. Review changes to pertinent licensing documents, and any impact on the AEP Radiation Safety Program.

RSO / Assistant-RSO Responsibilities—Site Specific

1. Provide overall coordination of the site radiation safety program.
2. Control procurement and disposal of licensed material, maintain associated records and ensure that licensed materials that are possessed or used by the application are limited to those specified in the license.
3. Ensure the provider of leak test analysis is qualified to perform this task.
4. Where necessary, establish and maintain a personnel dosimetry program
5. Notify the AEP Corporate RSO if unexpected or unusual dose is received by an individual.
6. Understand the definition of "ALARA" listed in part 4.1.
7. Establish and conduct the training program, in conjunction with the AEP corporate training group.
8. Examine and determine the competency of personnel, in conjunction with the AEP corporate training group.
9. Ensure that licensed materials are used only by those individuals who have satisfactorily completed appropriate training programs or who are authorized by the license.
10. Ensure that licensed material is properly secured against unauthorized removal at all times.
11. Establish and maintain the leak test program and perform or supervise leak testing of sealed sources.
12. Develop and maintain up-to-date site-specific operating and emergency procedures.
13. Ensure that the terms and conditions of the license are met and that required records, such as personnel exposure records, leak test records, etc., are maintained and periodically reviewed for compliance with NRC or Agreement State regulations and license conditions.
14. Conduct inventories and maintain utilization logs.
15. Review and ensure maintenance of those records kept by others (e.g., training, dosimetry, or calibration).
16. Establish and maintain records of radioactive material shipments.
17. Establish and maintain annual internal review programs.
18. Conduct radiation safety inspections of licensed activities periodically to ensure compliance with the regulations and license conditions.
19. Serve as a point of contact and give assistance in case of emergency, (e.g., theft of licensed materials, fire, etc.) and ensure that emergency procedures are followed.
20. Investigate the cause of incidents and determine necessary preventive action.
21. Act in an advisory capacity to the facility's management and personnel.
22. Maintain a procedure for evaluating and reporting equipment defects and noncompliance pursuant to 10 CFR Part 21 *(Chapter 3701:1-38-23).*
23. Report any problems associated with the performance of site-specific RSO responsibilities to the AEP Corporate RSO.
24. Maintain portable moisture density gauge training certificates and a current "Certificate of Competent Authority".
25. Stop any unsafe operations.

Authorized User Responsibilities:

1. Operate devices in accordance with training instructions.
2. Report any defects to the Assistant-RSO.
3. Perform routine tasks (e.g. perform leak tests, inspections, inventories, train other users in annual re-qualification) as directed by Assistant-RSO.
4. For individuals transporting portable gauges, a current record of Hazmat training is required. This requirement is satisfied by the Operator's Safety Course and a requalification at least every three years.

Radiation Safety Committee Responsibilities:

1. Meet at least twice per year.
2. Prepare meeting minutes and distribute to pertinent RSOs / Assistant-RSOs.
3. To oversee the use of licensed material, the committee shall:

    a. Ensure the radiation protection programs meet the requirements of 10 CFR 20.1101 *(Chapter 3701:1-38-11).*
    b. Ensure the implementation of written policies and procedures.
    c. Review the training and experience of, and approve or disapprove, the application of any Assistant-RSO.
    d. Review the training and qualification status of authorized users.
    d. Review, on the basis of radiation safety, and approve or disapprove, each proposed use of byproduct material, including periodic re-evaluations and approved uses.
    e. Review and approve all radiation safety program changes.
    f. Review personnel monitoring results at least annually via the NRC Form 5, or equivalent.
    g. Review all incidents or reports made to the NRC or other regulatory authority involving byproduct material.
    h. Establish, as needed, investigation levels for occupational doses that, when exceeded, require investigations and considerations of action by the RSO / AEP Corporate Radiation Safety Officer.
    i. Review annually, with the assistance of the Corporate RSO, the radiation safety program.
    j. Maintain the authority structure presented in Attachment 4.
    k. Communicate relevant industry events to the RSOs / Assistant-RSOs.

Attachment 2 – Sample Emergency Response Plan{ TC "**Attachment 2 - Emergency Response**" \f C \l "1" }

In the event of an accident, fire or unusual occurrence or malfunction which may lead to any unplanned radiation exposure or release of radioactive material to the environment, initial lifesaving and safety considerations should be attended to, then:

1. **CLEAR THE AREA OF ALL PERSONNEL.**
2. Maintain 25 feet clearance from the device.
3. Contact the following individuals, in the following order:

1. RSO/Assistant RSO: _____ (W) _____ (H) _____

   a. Alternate 1: _____ (W) _____ (H) _____

   b. Alternate 2: _____ (W) _____ (H) _____

   c. Alternate 3: _____ (W) _____ (H) _____

2. RSO: _____ (W) _____ (H) _____

   AEP Corporate RSO _____ (W) _____ (H) _____

   a. Alternate 1: _____ (W) _____ (H) _____

   b. Alternate 2: _____ (W) _____ (H) _____

4. The RSO will determine if a survey is required, and if notification of Federal or State regulators is necessary. Written notifications to the regulatory authority should be mailed with a "Return Receipt Requested" or sent as certified mail to ensure receipt.

5. During an emergency, the following ALARA information should be understood:

   The three elements of radiation protection are time, distance, and shielding.

   1. Time: The less time a person remains in the area of radiation, the less of a radiation dose that person will receive.
   2. Distance: The intensity of radiation and its effects fall off sharply as you move further away from the radioactive source. For example, by moving twice as far away from a radioactive source, you are exposed to one-quarter the amount of radiation.
   3. Shielding: Protective material placed between you and the source reduces the level of radiation passing through, and thus the amount to which you will be exposed. For nuclear gauges, the source housing provides this protection.

6. If the source rod becomes stuck outside the device, then immediate corrective actions may be required to return the source to the shielded position. These actions shall include:

   - **CLEAR THE AREA OF ALL PERSONNEL**
   - **NOTIFY THE RSO**, who will recommend as a minimum:
     - Planning corrective actions to minimize the time spent near the device
     - Maintaining a safe distance from the source end of the rod
     - Wearing personnel dosimetry if appropriate
     - To abandon the effort and restrict the area if the corrective action fails

Attachment 3 - Training{ TC "Attachment 3 - Training" \f C \l "1" }

Several different training requirements are associated with the Radiation Safety Program, depending on the type of license, the duties of the individual, and the type of work planned. This section describes the minimum training requirements for each position, based on the type of license. This section also describes the circumstances under which formal radiation worker training would be required to conduct licensed activities.

The training courses as they appear in AEP Learning Management System are listed below. The required training courses below also list the description of the course satisfying that requirement.

Item ▲	Title
COURSE **IH-RADIATION-O** (Rev 1 - 1/8/2009 12:00 AM America/New York)	Radiation Awareness (Online)
COURSE **IH-RADIATION-V** (Rev 1 - 2/28/2009 12:00 AM America/New York)	Radiation Fundamentals (Radiation Safety Officer 20hr)

Note that some AEP facilities have both installed nuclear gauges under a general license, and one or more portable nuclear gauges (soil density gauges) under a specific license. In that case both sets of requirements would apply to individuals working under both licenses (i.e., the RSO, and authorized users who work with both types of gauges). Authorized users who work with only one type of gauge must meet only the training requirements for that license.

The minimum training requirements are:

Radiation Safety Officer:

1. Assistant RSO – generally licensed facility with installed nuclear gauges only
   a. Initial: RSO training (IH-RADIATION-V)
   b. Requal: None

2. Assistant RSO – specifically licensed facility with installed nuclear gauges only
   a. Initial: RSO training (IH-RADIATION-V)
   b. Requal: None
   c. Additional training may be required, depending on the requirements and scope of the license.

3. Assistant RSO – specifically licensed facility with portable nuclear gauges
   a. Initial: RSO training, portable gauge operator training, hazardous material transportation training (IH-RADIATION-V and Manufacturer's gauge training)
   b. Requal: Hazardous material transportation requal training every three years (IH-RADIATION-V)

4. Assistant RSO – facilities with other types of devices, such as alloy analyzers, gas chromatographs, etc. Either generally licensed or exempt from licensing.
   a. Initial: RSO training. The AEP Corporate RSO may modify or waive this requirement, depending on the specifics of the device, manufacturer's recommendations, and applicable regulations.
   b. Requal: None

5. AEP Corporate RSO
   a. Initial: RSO training, portable gauge operator training, hazardous material transportation training (IH-RADIATION-V and Manufacturer's gauge training)
   b. Requal: Hazardous material transportation requal training every three years (IH-RADIATION-V)

c. RSO training may be waived for any RSO/Assistant RSO if the individual has substantial equivalent professional experience as a Health Physicist.. This waiver should be approved by the Radiation Safety Committee.

Authorized Users:

1. Authorized user – generally licensed facility with installed nuclear gauges only
   a. Annual training covering lockout/tagout procedure, emergency procedure, and other operational safety requirements (IH-RADIATION-O)
   b. Lockout/tagout procedure to be covered during pre-job briefs

2. Authorized user - specifically licensed facility with installed nuclear gauges only
   a. Annual training covering lockout/tagout procedure, emergency procedure, and other operational safety requirements (IH-RADIATION-O)
   b. Training required by the individual license or applicable regulations
   c. Lockout/tagout procedure to be covered during pre-job briefs

3. Authorized user - specifically licensed facility with portable nuclear gauges
   a. Initial: Portable gauge operator training, hazardous material transportation training (both from the manufacturer)
   b. Requal: Hazardous material transportation requal training every three years
   c. Annual training (if required by applicable regulations) covering portable gauge use and security, emergency response procedures, other operational safety requirements, and applicable portions of the AEP radiation Safety Program, including reporting of defects and non-compliances (10 CFR 21) *(Chapter 3701:1-38-23)*
   d. Portable gauge use and security to be covered during pre-job briefs

4. Authorized user - facilities with other types of devices, such as alloy analyzers, gas chromatographs, etc. Either generally licensed or exempt from licensing.
   a. Annual training covering emergency procedure and any operational safety requirements (e.g., manufacturer's training video)

   Note: Hand held XRF Analyzer training requirements are covered in Attachment 13).

Radiation Worker Training –

Operations under AEP general or specific licenses normally do not entail any significant radiation exposure. If working conditions are such that any authorized users under a specific license are likely to exceed 50 mrem in a year, then radiation worker training meeting the requirements of 10 CFR 19.12, or the equivalent agreement state regulations *(Chapter 3701:1-38-10)*, shall be conducted. This determination is made by performance of a prospective evaluation per section 5.16.

Because of the nature of a general license, work performed under a general license does not require formal radiation worker training. Annual safety training conducted for authorized users of general licenses should include basic principles of radiation safety (time, distance, and shielding) as part of emergency response training.

Radiation worker training is normally tailored to meet the needs of the work to be performed. For on-going license operations requiring formal radiation worker training, each authorized user should receive initial training prior to beginning work, then annual requalification training. For one-time or infrequent operations, training should be conducted prior to starting work. The AEP Corporate RSO should specify the scope of radiation worker training required in each situation.

10 CFR 19.12 (or equivalent) *(Chapter 3701:1-38-10)* specifies the required training content in general terms. The AEP Corporate RSO is responsible for determining the scope and depth of the training, based

on the specifics of the job, and to ensure that the content complies with the requirements of 10 CFR 19 *(Chapter 3701:1-38-10).*

Description of Radiation Safety Officer training -

The minimum training requirement for a radiation safety officer is listed below. This training would typically be sufficient for an Assistant RSO at a generally licensed facility with only installed nuclear gauges. It may also be sufficient for an Assistant RSO at a specifically licensed facility with only installed nuclear gauges. For a portable gauge license, content specific to portable gauges would need to be added, as well as the nuclear gauge operator and hazmat training described above.

A minimum of 1 day of classroom instruction in applicable sections of 10 CFR Parts 19, 20 *(Chapter 3701:1-38)* and other parts applicable to given operations, terms and conditions of the licensee's NRC or Agreement State license, and operating and emergency procedures. The following is a sample of topics that should be covered by the course.

1. The handling and use of licensed material.
2. Methods and occasions for conducting radiation surveys.
3. Minimizing personnel exposures.
4. Locking and securing stored licensed materials.
5. Personnel monitoring and use of personnel monitoring equipment.
6. Transportation of licensed materials, packaging of licensed material for transport in vehicles, placarding of vehicles when needed, and physically securing materials in transport vehicles to prevent load shift, accidental loss, tampering, or unauthorized removal.
7. Picking up, receiving and opening packages containing licensed materials.
8. Maintenance of records.
9. Inspection and maintenance of sealed sources, source holders, source handling tools, storage container, and transport containers.
10. Identify defects and non-compliance in reporting to NRC or Agreement State.
11. Notifying the proper persons in the event of an accident.
12. Actions to be taken if a sealed source is ruptured, including actions to prevent the spread of contamination, minimize inhalation and ingestion of licensed material, and actions to obtain suitable radiation survey instruments.
13. Fundamentals of radiation safety, including
    a) Characteristics of radiation
    b) Units of radiation dose
    c) Hazards of exposure to radiation
    d) Levels of radiation from licensed material
    e) Methods of controlling radiation dose (time, distance, and shielding)
14. Radiation safety practices including prevention of contamination, and methods of contamination control.
15. Requirements of pertinent Federal Regulations.

Responsibility
It is the responsibility of the RSO / Assistant-RSO to determine the scope of personnel that require re-qualification training, and the pertinent topics based on the devices in use. If there are any questions, contact the AEP Corporate RSO.

Resources for questions about radiation exposure

The following training supplements are recommended to help the Assistant-RSO provide answers to common risk-related questions.

1. Regulatory Guide 8.29, "Instruction concerning risks from occupational radiation exposure," Rev. 1, February 1996.

2. Regulatory Guide 8.13, "Instruction concerning prenatal radiation exposure," Rev. 3, June 1999.

Attachment 4 - Authority Structure{ TC "**Attachment 4 - Authority Structure**" \f C \l "1" }

AEP Corporate RSO:

XXXX XXXXXX
D.C. Cook Nuclear Plant, 1 Cook Place, Bridgman, MI 49106
Tel: 269-466-xxxx
E-mail: xxxx@aep.com

Other AEP contacts:

Cook Nuclear Plant contact:
AEP corporate contact: Frank Ginocchi (Audinet 8-200- 1710)

Assistant RSOs:

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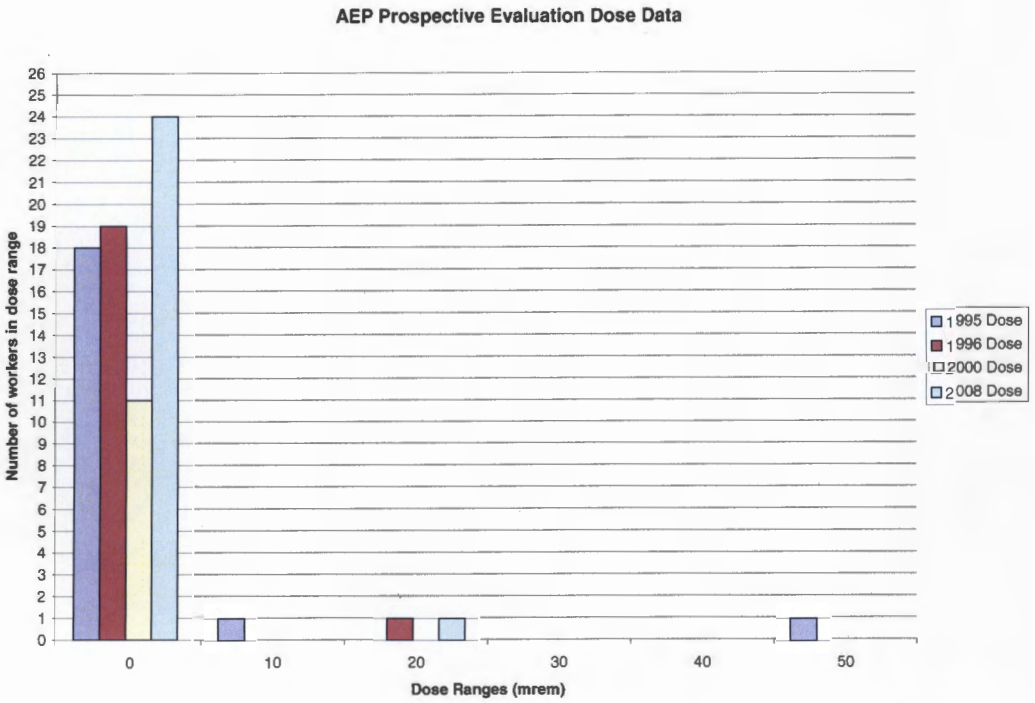
Gregory Sargent	Big Sandy	285-1463	(606-686-1463)	gsargent@aep.com	23000 Highway 23	Louisa	KY	41230
Brent Ogden	John W Turk	759-1511	(903-831-1511)	dbogden@aep.com	3711 Highway 355 South	Fulton	AR	71838
James Alford	Pirkey	752-5876	(903-738-9526)	jwalford@aep.com	2400 FM Rd 3430	Hallsville	TX	75650-9448
Mac Soules	Pirkey	9039275877	(9037205899)	masoules@aep.com	2400 FM Rd 3430	Hallsville	TX	75650-9448
Lyle Logan	Oklaunion	793-2715	(940-886-2715)	lslogan@aep.com	12567 FM Rd 3430	Vernon	TX	76384-8825
Jeremy Anzaldua	Oklaunion	793-2715	(940-886-2715)	jbanzaldua@aep.com	12567 FM Rd 3430	Vernon	TX	76384-8825
							TX	76373
Richard Wiltse	Welsh	757-4859	(903-853-4959)	rdwiltse@aep.com	1187 County Road 4865	Pittsburg	TX	75686
Richard Martinez	Welsh	757-4951	(903-853-4951)	rrmartinez2@aep.com	1187 County road 4865	Pittsburg	TX	75686
							OH	73137
Matt Miller	Northeastern 3&4	719-0802	(918-581-0802)	mrmiller@aep.com	7300 E. Highway 88	Oologah	OK	74053-0220
Gary Cousatte	Northeastern 3&4		(918-581-0015)	gwcousatte@aep.com	7300 E. Highway 88	Oologah	OK	74053-0220
Jeremiah Rice	Northeastern PS	719-0053	(918-581-0053)	jgrice@aep.com	7300 E. Highway 88	Oologah	OK	74053-0220

ATTACHMENT 4
Authority Structure

Jim Silk	AEP – 1 RP	200-2187	(614-716-2187)	jsilk@aepes.com	1 Riverside Place	Columbus	OH	43215
Bill Meester	GET SVP Eng Proj Field Svcs	757-4891	275-6549 (740-416-8751)	wmmeester@aepes.com	306 Count Road 7 East	Brilliant	OH	43913
Jeffery Smith	Fossil & Hydro Generation	267-1672	(304-882-1672)	jhsmith2@aep.com	3567 Graham St. Rd	New Haven	WV	25265-0389
Ginger MacKnight	OVEC/IKEC Corporate	230-7728		gmacknig@OVEC.com	POBox 468	Piketon	OH	45661
John Kay	OVEC – Kyger Creek	241-5408		jkay@OVEC.com	5758 St. Rt. 7N	Cheshire	OH	45620
Tye Schwall	OVEC – Kyger Creek	241-5076		tschwall@OVEC.com	5758 St. Rt. 7N	Cheshire	OH	45620
Paul de Lamerens	OVEC – Clifty Creek	240-3715	(812-265-8715)	pdelamer@OVEC.com	P.O. Box 97	Madison	IN	47250
Steven Wathen	OVEC			swathen@ovec.com				
Catherine Burch	GET Eng	703-3866	(918-858-3866)	cburch@aep.com	3600 S Elwood Ave.	Tulsa	OK	74107
Shaun Raley Tulsa								
Justin Tolpa	AEP Corporate	200-1090	(614-716-1090)	jptolpa@aepes.com	1 Riverside Plaza	Columbus	OH	43215
John McCorkle	AEP – Dolet Hills		(318-871-3801)	jrmccorkle@aep.com	377 Hwy 522	Mansfield	LA	71052
Frank Ginocchi	Corporate – Columbus	200-1710	(614-716-1710)	fmginocchi@aep.com	1 Riverside Plaza	Columbus	OH	43215

Attachment 5 - Prospective Evaluation{ TC "**Attachment 5 - Prospective Evaluation**" \f C \l "1" **}**

10 CFR 20.1502(a)(1) *(Chapter 3701:1-38-14)* requires personnel monitoring for individuals likely to exceed 10% of the annual whole body dose equivalent limit (500 millirem). Portable gauge users (e.g., Troxler devices, or equivalent) have worn dosimetry and records are available for several past years. Also, dosimetry was used for several fixed gauge change-out jobs assisting the manufacturer. Typical results show annual exposure in the non-detectable range (less than 10 mrem, shown as "0" below). Dosimetry was supplied by Cook Nuclear Plant. Cook Nuclear Plant maintains a contract for dosimetry services with a NVLAP certified dosimetry processor. Doses shown below represent annual dose totals for all of the monitored workers.



The fixed gauge dosimetry data above represents non-routine work involving higher than normal radiation exposures. For normal operations, manufacturer's information indicates that fixed gauges emit less than 5 mR/hour of gamma radiation at one foot. The gauges are typically positioned out of reach and in unfrequented areas. Furthermore (for fly ash hoppers) a lockout procedure prevents access to the direct radiation beam when the shutter is open. When the source is on, the location of the sources with respect to walkways prevents the accidental irradiation of personnel.

The portable gauge dosimetry data above represents normal use and maintenance. Dosimetry data indicates that users of portable gauges do not receive measurable dose.

The 2008 dose data includes neutron monitoring for personnel working around the newer cross belt analyzers which use Californium 252 sources. A detailed report of the 2008 prospective analysis is available by contacting the Corporate Radiation Safety Officer.

Alloy analyzers and gas chromatograph devices do not have measurable dose rates when used in accordance with manufacturer's instructions.

Based on this information, personnel monitoring is not required for AEP general or specific license activities, because the likely worker doses are not measurable, and the maximum yearly dose (50 mrem)

measured is far less than the 500 mrem threshold for monitoring. Training in accordance with 10 CFR 19.12 *(Chapter 3701:1-38-10)* is not required, based on the same information.

The need for personnel monitoring, worker training, and monitoring of declared pregnant workers and occupationally exposed minors is reevaluated if prospective evaluation shows that worker doses are likely to exceed 50 mrem in a year, or as required by other applicable regulations.

Attachment 6 - Inventory and Inspection{ TC "**Attachment 6 - Inventory and Inspection**" \f C \l "1" **}**

Recommended procedure for inventory and inspection:

NOTE:
THE INFORMATION REQUIRED IN THIS PROCEDURE SHOULD BE RECORDED ON THE ATTACHED FORM, OR EQUIVALENT. COPY THE FORM AND USE AS NEEDED

Inventory:

1. First locate the device, then circle "sat" on the form.
2. An answer of "unsat" requires contacting the RSO and the AEP Corporate RSO.

Inspection:

1. Inspect the device for obvious damage or defects. Ensure the label is clear and legible.
2. For fixed gauges, actuate the shutter mechanism while in contact with the control room (or control panel, etc.). **If** the indicator light illuminates, **then** circle "sat" on the form.
3. An answer of "unsat" requires contacting the RSO and the AEP Corporate RSO.
4. The RSO / Assistant-RSO shall review the record before filing.

Page _____ of _____

Data Form for Inventory and Inspection

Facility Name: ____

Signature of RSO / Assistant-RSO: ____________________________

Date	Device	Inventory (circle one)	Inspection (circle one)
		sat / unsat	sat / unsat
		sat / unsat	sat / unsat
		sat / unsat	sat / unsat
		sat / unsat	sat / unsat
		sat / unsat	sat / unsat
		sat / unsat	sat / unsat
		sat / unsat	sat / unsat
		sat / unsat	sat / unsat
		sat / unsat	sat / unsat
		sat / unsat	sat / unsat
		sat / unsat	sat / unsat
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		sat / unsat	sat / unsat
		sat / unsat	sat / unsat
		sat / unsat	sat / unsat

Attachment 7 - Leak Test Procedure and Data Form{ TC "**Attachment 7 - Leak Test Procedure and Data Form**" \f C \l "1" }

NOTE:

- **ADHERE TO THE MANUFACTURER'S REQUIREMENTS FOR PERFORMING LEAK TESTS**
- **THE INFORMATION REQUIRED IN THIS PROCEDURE MUST BE RECORDED. THE ATTACHED FORM, OR EQUIVALENT, MAY BE USED. COPY THE FORM AND USE AS NEEDED**
- **NUCLIDES LISTED ON THE FORM ARE TYPICAL. ADDITIONAL NUCLIDES WILL BE CONSIDERED ON A CASE BY CASE BASIS**

Recommended Procedure (when using the attached form)(other qualified vendors can also provide this service):

1. Obtain leak test kits from the RSO / AEP Corporate RSO.
2. Record the Facility Name, Name and Date.
3. Record Device Number and Smear Date for each numbered smear.
4. Moisten the smear with a mild soap and water solution. Do not soak.
5. Smear the device near the aperture using a dowel or equivalent implement to maintain ALARA, then fold the smear closed. For Troxler devices, opening the cover and smearing the Americium-241 source is also required. Two different smears may be used, one for each source.
6. When all smears have been completed, place them in a plastic bag in such a way to prevent cross-contamination.
7. Seal the bag and send it to the RSO.
8. The RSO / AEP Corporate RSO will obtain the services of a qualified individual to perform the counting analysis and complete the remainder of the form.
9. A copy of the form and results will be maintained by the RSO / AEP Corporate RSO and the original will be sent to the RSO / Assistant-RSO.

ATTACHMENT 7
Leak Test Procedure and Data Form

Leak Test Data Form:

Facility Name:_____

Smears Performed by (Assistant-RSO):_____ Date:_____

Leak Test Analysis Performed by:_____ Date:_____

Leak Test Analysis Approved by:_____ Date:_____

Counter S/N:_____ Cal Due Date:_____ Count Date:_____

Smear Number	Device Number	Smear Date	Nuclide(s) of Interest Check as needed	Smear Results
1			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
2			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
3			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
4			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
5			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
6			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
7			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
8			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
9			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
10			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
11			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
12			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
13			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
14			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
15			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
16			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
17			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
18			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
19			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
20			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
21			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
22			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
23			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
24			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
25			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
26			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
27			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
28			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
29			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
30			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
31			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative
32			☐ Cs-137 ☐ Ni-63 ☐ Am-241	☐ Positive ☐ Negative

Negative result = < 0.005 uCi of removable contamination

Attachment: Leak Test Results

Attachment 8 - Sample Lockout Procedure{ TC "Attachment 8 - Sample Lockout Procedure" \f C \l "1" }

NOTE:
THE ASSISTANT-RSO SHALL BE NOTIFIED OF ANY WORK THAT IS PERFORMED WITHIN A FLY ASH HOPPER WHICH USES FIXED LEVEL GAUGES

This procedure was excerpted from the radiation safety program at the **John E. Amos Plant**. A site specific lockout procedure is required.

Unit 3 Hopper Lockout Procedure

This procedure is for gaining access to the precipitator hoppers on Unit 3. It requires using a key interlock system with a series of five steps which are described below.

1. The first set of keys is located in the precipitator control room. Each rectifier console has an individual key on the front of the control console. The rectifier must be turned off before the key can be removed. There are a total of 66 keys in the precipitator control room, one for each rectifier cabinet. There are 72 fields, but the first two fields in each group are energized from the same T/R set. Therefore, the system only requires 66 keys.

2. Once the keys are removed from the T/R control consoles, they need to be placed in the transformer located above the hoppers. Each key removed from the control console will correspond to the associated transformer. When the key is placed on top of the transformer and the transformer is turned off, another key can be removed from the top of the transformer.

3. After the keys are removed from the transformer (66 keys), they need to be inserted in lock boxes located in the precipitator elevator building. There will be 11 keys associated with each group (e.g., 3 upper, 3 lower), and these are placed in one of the lock boxes in the elevator building. When the 11 keys are in place, this will in turn release another key to be used in one of six boxes located on the upper and lower hopper decks. There is one key associated with each upper and lower group for a total of six boxes.

4. When the single key is placed in the group box this will lock out the electrical side of the system. In addition to the electrical side is the nuclear level detection system. There are 24 nuclear level sources on the precipitators. Each of these sources has an on/off mechanism located on the hoppers. Each hopper group has four nuclear sources with associated keys to allow access to the hoppers. The nuclear source has to be placed in the off position before the interlock key will release from the detector. Verify that the nuclear source is closed by viewing the on/off positioner on the source container. Once the four keys are released, place them in the associated hopper group box along with the electrical key.

5. Once the single electrical key and the four nuclear keys are inserted in the six boxes, it will then release 12 keys for each of the hopper doors. These keys are for the hoppers associated with each individual group box.

This procedure explains how to lock out the entire system. However, a single system (hopper group) can be locked out by following the same sequence. Only the keys and equipment associated with that group need to be used.

Attachment 9 - Use Log for Portable Moisture Density Gauges{ TC "**Attachment 9 - Use Log for Portable Moisture Density Gauges**" \f C \l "1" }

Device Number:______________________________

Date Out	Time Out	Signature	Date In	Time In

Attachment 10 - Reporting of Defects and Non-Compliance per 10 CFR 21 *(Chapter 3701:1-38-23).*{ TC "Attachment 10 - Reporting of Defects and Non-Compliance per 10 CFR 21." \f C \l "1" }

1.0 TITLE

Reporting of defects and non-compliance per 10 CFR 21

2.0 PURPOSE

To establish guidelines and requirements for compliance with 10 CFR 21, "Reporting of Defects and Non-Compliance."

3.0 REFERENCES

3.1 10 CFR 21, "Reporting of Defects and Non-Compliance."

3.2 Federal Register, Vol. 56, No. 147, July 31, 1991.

4.0 INITIAL CONDITIONS

4.1 Definitions

4.1.1 Byproduct Material:

Byproduct material means— (1) Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material;

(2)(i) Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or

(ii) Any material that—

(A) Has been made radioactive by use of a particle accelerator; and

(B) Is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and

(3) Any discrete source of naturally occurring radioactive material, other than source material, that—

(i) The Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and

(ii) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or
research activity.

4.1.2 Defects:

- a deviation in a nuclear device delivered to a purchaser for use in a facility, or an activity subject to regulation in 10 CFR 21 if, on the basis of an evaluation, the deviation could create a substantial safety hazard; or,
- the installation, use or operation of such a device containing a defect; or,
- a condition or circumstance involving a nuclear device that could contribute to a substantial safety hazard.

4.1.3 Deviation: a departure from the technical requirements identified in a procurement document.

4.1.4 Nuclear Device: a device that contains a radioactive source (byproduct material), such as density gauges, level detectors, etc.

4.1.5 Substantial Safety Hazard: a loss of a safety function to the extent that there is a major reduction in the degree of protection provided to personnel health and safety for any facility or activity.

4.2 Responsibilities

4.2.1 The person or organization that discovers (or is notified by the manufacturer) a potential 10 CFR 21 item is responsible for reporting this discovery to their immediate supervisor and to the RSO.

4.2.2 The RSO / Assistant RSO are responsible for evaluating such potential 10 CFR 21 items for reportability.

4.2.3 The RSO / Assistant RSO are responsible for reporting such 10 CFR 21 items to the NRC within the prescribed time requirements of 10 CFR 21.

4.3 Limitations and Actions

4.3.1 The guidelines and requirements of this procedure are applicable to only those non-nuclear facilities within the AEP system that have in their possession nuclear devices that contain byproduct material.

4.3.2 Known or suspected 10 CFR 21 items identified shall be processed in accordance with this procedure.

5.0 DETAILED PROCEDURE

5.1 10 CFR 21 Posting Requirements

5.1.1 Copies of a "Notice" similar to that shown in the attached sample pertaining to the Energy Reorganization Act of 1974, and 10 CFR 21 shall be posted permanently in a conspicuous locations at all non-nuclear facilities within the AEP system that have nuclear devices or byproduct material at their facility.

5.1.2 The above posting shall be permanent and shall be removed only at the direction of authorized personnel.

5.2 Known or Suspected 10 CFR 21 Items

5.2.1 **If** any individual discovers, or suspects that one of their nuclear devices is defective, or is not in compliance with its intended function, **then** that person shall notify immediately his/her immediate supervisor and within 24 hours, the RSO/Assistant RSO. Otherwise, immediately notify the AEP Corporate RSO at 269-465-5901 x2262, Audinet 8-280-2262, or Cook Nuclear Plant radiation protection personnel at Audinet 1-280-2695.

5.2.2 When notifying the RSO / AEP Corporate RSO, the following information should be ready for discussion:

- Is the manufacturer aware of the possible defect or noncompliance?
- The nature of the defect, as much detail as possible.
- Type of device in question.
- The date when the possible defect was discovered.
- Who maintains the byproduct license for the device.

5.3 Evaluation and Reportability

5.3.1 The RSO / AEP Corporate RSO or designees shall evaluate the potential problem for a safety hazard as soon as practicable, and in all cases within 60 days of discovery.

5.3.2 **If** it is deemed reportable, **then** the RSO / AEP Corporate RSO will contact the manufacturer of the nuclear device to inform them of the problem, and determine who will make the notification to the NRC or Agreement State Authority.

5.3.3 **If** it is determined that AEP personnel will initiate the notification to the NRC or Agreement State Authority, **then** the RSO / AEP Corporate RSO or designees shall notify the NRC by either facsimile or by telephone within two days, and by writing within 30 days.

5.3.4 The written report that is required shall include, but need not be limited to, the following information to the extent known:

- Name and address of the individual or individuals informing the Nuclear Regulatory Commission or Agreement State Authority.
- Identification of the facility, the activity, or the nuclear device supplied for such facility that fails to comply or contain a defect.
- Identification of the firm supplying the nuclear device which fails to comply or contain a defect.
- Nature of the defect or failure to comply and the safety hazard which is created or could be created by such a defect or failure to comply.
- The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.

5.4 Records

5.4.1 Retain evaluation records of all deviations and failures to comply for a minimum of five years after the date of the evaluation.

5.5 Procurement Documents

5.5.1 Procurement documents shall specify, when provisions of 10 CFR Part 21 apply.

6.0 Attachment

6.1 Attachment - Sample of a 10 CFR 21 Posting Notice.

Sample of a 10 CFR 21 Posting Notice

NOTICE

- ENERGY REORGANIZATION ACT OF 1974 - SECTION 206
- 10 CFR PART 21 - "REPORTS TO THE COMMISSION (NRC) CONCERNING DEFECTS AND NON-COMPLIANCE"
- PROCEDURE FOR NON-NUCLEAR FACILITIES - "REPORTING OF DEFECTS AND NON-COMPLIANCE PER 10 CFR 21"

Section 206 of the Energy Reorganization Act of 1974 as amended reads as follows:

"NON COMPLIANCE

Sec. 206

(a) Any individual director, or responsible officer of a firm constructing, owning, operating or supplying the components of any facility or activity which is licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954, as amended, or pursuant to this Act, who obtains information reasonably indicating that such facility or activity or basic components supplied to such facility or activity--

(1) Fails to comply with the Atomic Energy Act of 1954, as amended, or any applicable rule, regulation, order, or license of the Commission relating to substantial safety hazards, or

(2) Contains a defect which could create a substantial safety hazard as defined by regulations which the Commission shall promulgate, shall immediately

notify the Commission of such failure to comply, or of such defect, unless such person has actual knowledge that the Commission has been adequately informed of such defect or failure to comply.

(b) Any person who knowingly and consciously fails to provide the notice required by subsection (a) of this section shall be subject to a civil penalty in an amount equal to the amount provided by section 234 of the Atomic Energy Act of 1954, as amended.

(c) The requirements of this section shall be prominently posted on the premises of any facility licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954, as amended.

(d) The commission is authorized to conduct such reasonable inspections and other enforcement activities as needed to insure compliance with the provisions of this section."

On July 6, 1977, the US Nuclear Regulatory Commission placed into effect 10 CFR Part 21 which implements Section M of Publications L.93-438, "The Energy Reorganization Act of 1974 as amended". This regulation set forth the purpose, scope, definition, interpretation, communication, posting requirements, and the requirements for notification, procurement documents, inspection, records, and enforcement pertaining to the reporting of defects and non-compliance.

The American Electric Power System has placed into effect a Procedure for non-nuclear facilities, "Reporting of Defects and Non-compliance per 10 CFR 21" which provides guidelines and requirements for the implementation of 10 CFR 21.

Copies of 10 CFR 21 and this procedure are available for examination in the office of the Assistant-RSO at this site, or in the Radiation Protection Department at the Cook Nuclear Plant.

Employees of the American Electric Power System are to report any defects or non-compliance as defined in Procedure for non-nuclear facilities to their immediate supervisor, the Assistant-RSO at this site, or the AEP Corporate RSO.

Copies of 10 CFR 19, 10 CFR 20, 10 CFR 21, the site Radiation Protection Program, and pertinent Licensee operating procedures pertaining to radiation safety are available with the Assistant-RSO at this site.

Copies of reports of defects and non-compliance reported to the NRC and NRC notices of violations are available for review with the Assistant-RSO at this site.

Attachment 11 - Site-Specific Emergency and Operating Procedures{ TC "**Attachment 11 - Site-Specific Emergency and Operating Procedures**" \f C \l "1" }

Attach Here

Sample contents may include, but are not limited to:

1. **Emergency Plan**
2. **Device description and location**
3. **Lock out procedure**
4. **Records information**
5. **Location of postings**
6. **Leak test frequency**
7. **Statement on personnel monitoring**
8. **Shipping information**
9. **Maintenance procedures**
10. **Specific use instructions**

Attachment 12 – Kentucky Requirements for Reciprocal Recognition{ TC "**Attachment 12 - Kentucky Requirements for Reciprocal Recognition** " \f C \l "1" }

KENTUCKY

References:

11. 902 KAR 100:065. Reciprocal recognition. Section 2.

12. 902 KAR 100:012E. Fee Schedule

NOTE

- **KENTUCKY LAW REQUIRES THAT PERSONS CONDUCTING ACTIVITIES IN ACCORDANCE WITH AN NRC SPECIFIC LICENSES REQUEST AUTHORIZATION TO BRING THE DEVICES INTO KENTUCKY.**
- **THIS PROCEDURE APPLIES TO PORTABLE MOISTURE DENSITY GAUGES**

Procedure:

1) Notify the Cabinet for Health Resources in writing at least three (3) days prior to engaging in the activity:

COMMONWEALTH OF KENTUCKY
CABINET FOR HEALTH SERVICES
DEPARTMENT FOR PUBLIC HEALTH
FRANKFORT, KY 40621-0001
Dept. of Radiation Protection: 502-564-3700

2) The Notification for "reciprocal recognition" shall include:
   a) The date of arrival
   b) The duration of use
   c) Nature and scope of the use
   d) The company where the radioactive material is to be used,
   e) The person in charge (Assistant-RSO and/or Qualified Users),
   f) The exact location and type of proposed possession within Kentucky.
   g) A copy of the specific license
   h) A check for $300 made out to "**Kentucky State Treasurer**"

3) The "general license" issued in reply to the request is valid for 180 days, however, the cabinet may waive the requirement for filing additional written notifications during the remainder of the calendar year following the receipt of the initial notification.

ATTACHMENT 13 – XRF ANALYZER RADIATION PROTECTION PROGRAM

American Electric Power

X-Ray Fluorescence Analyzer (XRF) Radiation Protection Program

1. Purpose

1.1. The purpose of this Radiation Protection Program (RPP) is to keep radiation exposures to workers using a portable, X-Ray tube fluorescence based (XRF) analyzer to levels that are as low as reasonably achievable (ALARA), and

1.2. Ensure that use of the XRF analyzers are in compliance with all applicable State and Federal regulations.

2. Scope

2.1. This RPP applies to any XRF analyzers which use an X ray tube, at any American Electric Power (AEP) Facility. XRF analyzers using a radioactive source (typically Cd-109) are subject to more requirements and the user should contact the Corporate Radiation Safety Officer for more information.

3. Responsibilities

3.1. The individual in charge (commonly called Radiation Safety Officer or RSO) of the RPP will be responsible for maintaining and implementing the RPP which will minimize the risks associated with using portable X-Ray producing machines and which will ensure compliance with the regulations in the state of use. If the analyzer is used in more than one state reciprocity (normally involves registration) will be obtained from the other state prior to use in that state. Analyzers using a radioactive source are typically not transferred outside their site (location) of use. The specific actions to be performed by the individual in charge are as follows:

3.1.1. Receive Radiation Safety Training at a one day course provided by the analyzer' manufacturer or by a qualified expert. This will be documented by a certificate of completion which is to be kept on file with other RPP documents for review by

regulators. Training provided by the manufacturer or qualified expert must be recorded in the AEP Learning Management System.

3.1.2. Maintain a list of authorized users and ensure that only authorized users operate the Analyzers.

3.1.3. Notify staff of additions to or subtractions from the authorized user list.

3.1.4. Schedule and/or conduct training for employees prior to authorizing their use of the analyzer without direct supervision. Maintain records of training including a copy or a summary of the training material. Training shall include Radiation Safety, Operational and Emergency Procedures.

3.1.5. Ensure that all users are following appropriate operating procedures while using Analyzers.

3.1.6. Maintain manufacturer provided instruction manuals, and operations and maintenance records.

3.1.7. Ensure proper disposal of unneeded Analyzers.

3.1.8. Ensure that labels on Analyzers are intact and legible. Notify the manufacturer for assistance with labeling that is damaged or illegible.

3.1.9. Review, as needed, the RPP content, implementation, and effectiveness.

3.2. Authorized Workers are responsible for using only approved safe techniques and procedures in operations involving the analyzer. The specific actions to be performed are as follows:

3.2.1. Follow proper operating procedures as described in training and ensure other individuals also adhere to these requirements.

3.2.2. Ensure that the label on the Analyzer is intact and legible.

3.2.3. Be familiar with emergency procedures and know how to recognize and terminate unsafe operations.

3.2.4. Ensure extremity dosimetry (e.g. finger rings) are worn on each hand by each authorized user when operating the analyzer. If exposures demonstrate that dosimetry is not required, it may be discontinued if documented and allowed by the regulations in the state of use.

3.2.5. There are no transportation requirements for XRF analyzers using X ray tubes. However, it should not be left unattended unless locked and controlled by the authorized user.

3.2.6. XRF analyzers with a radioactive source must not be transported on public highways without complying with Department of Transportation (DOT) regulations. Contact the Corporate Radiation Safety Officer if this becomes necessary.

4. Safe Operating Procedures

4.1. A copy of the Users Manual or Operating and Emergency Procedures shall be made available to all workers using the analyzer. A copy will be kept with the analyzer and another copy shall be kept on file with other RPP records.

4.2. Only authorized personnel with training on state regulations, operating and emergency procedures shall be allowed to operate the analyzer. All authorized personnel are responsible for complying with the requirements of this RPP and will report any and all incidents involving the analyzer to the individual in charge.

4.3. Each facility will maintain a utilization log (similar to Appendix A) documenting use of the analyzer that contains, at a minimum, the unit serial number, date/time removed, test location, responsible individual and date/time returned. At the front of this log will also be a list of authorized users.

4.3.1. The operator will fill out the utilization log upon removing or returning the analyzer.

4.4. Prior to each use:

4.4.1. The operator will inspect and maintain the window and all labels on the analyzer.

4.5. The operator is responsible for ensuring that no part of a person's body is at or near the measurement point, and no closer than one foot during a measurement (trigger finger excluded).

4.6. The operator must be aware when the analyzer is emitting radiation (such as lights flashing).

5. Emergency Procedures

5.1. In any case where one suspects that the x-ray tube remains on when the measurement is terminated:

5.1.1. Disconnect the battery pack immediately to turn off the x-ray tube, and

5.1.2. Call manufacturer's service department (Thermo is 800-875-1578).

5.2. Suspect accidental exposure to primary beam

5.2.1. Notify the individual in charge.

5.2.2. The individual in charge will assess impact and if necessary call manufacturer for assistance.

5.3. Severe Physical Damage

5.3.1. There is no radioactive material unless the analyzer contains a radioactive source, so a fire or severe damage poses no radiation hazard.

6. Radiation Safety Training

6.1. The individual in charge will be responsible for receiving Radiation Safety Training from the manufacturer or a qualified expert. It will then be this individual's responsibility to train the rest of the workers, whether the workers are trained by the individual in charge, the manufacturer, or by a qualified expert. This training will be documented by a sign-off sheet that includes the topics covered in the radiation safety training which is to be kept with all the RPP documents. The following Thermo Fisher analyzer training course is available in the KEY learning system to aid the individual in charge when training other workers:

XRF Analyzer (Thermo Fisher) (IH-XRFAnalyzer) - Audience: Employees that use the analyzer. http://aepsp/sites/fhgtraining/Lists/Training%20Resourc%20dB/DispForm.aspx?ID=126

6.2. The individual in charge is also responsible for ensuring the testing of authorized workers annually to ensure they are competent. This test has been requested by some state regulators even though not directly required in the regulations. AEP has made it a company requirement to ensure meeting the state regulations regardless of the state of operation. Competency is demonstrated by a written test available in the AEP KEY learning system as follows:

XRF Analyzer - Refresher (IH-XRF Analyzer-Refresher) - Audience: Employees that use the analyzer must complete this annual quiz. (10 questions/10 minutes)

http://aepsp/sites/fhgtraining/Lists/Training%20Resourc%20dB/DispForm.aspx?ID=325

7. Posting and Labeling

7.1. There is a relatively low radiation hazard associated with the Analyzer, and because the authorized user will be with the Analyzer at all times it is operational, posting radiation area signs will not be necessary. A copy of the state of use Notice to Employees will be kept in the analyzer case as well as on file with other RPP documents and will be available for review at any time. Analyzers containing a radioactive source require labeling and posting when in storage.

7.2. The label and warning lights on the Analyzer will be checked every 6 months by the Individual in charge as well as the workers using the Analyzer. The label will be checked for integrity and legibility. If the label becomes faded, worn, damaged, or defaced, the Analyzer will be promptly returned to the manufacturer for relabeling.

7.3. Analyzers containing a radioactive source, require leak testing and an inventory every six months.

8. Record Keeping

8.1. The individual in charge will be responsible for all the records associated with the RPP. These records will be kept in an identified location and will be made available for review by any worker or state official upon request. The following is a list of records that will be kept at minimum:

8.1.1. Personnel training records

8.1.2. Manufacturer provided instruction manuals and service & maintenance records

8.1.3. Authorized Users

8.1.4. State Analytical X-Ray Regulations and Notice to Radiation Workers

8.1.5. Analyzer usage log

8.1.6. Dosimetry records or proof of dosimetry not required

8.1.7. Annual safety checks including interlocks, lights, and labels by a qualified user.

9. Quality Assurance / Annual Review

9.1. At the minimum, items on the following list will be done annually:

9.1.1. Radiation Safety Review for all authorized users

9.1.2. Operational & Emergency Procedures Review for all authorized users

9.1.3. Review of the RPP content, implementation, and effectiveness

10. References:

10.1. DOE G 441.1-5 "Radiation-Generating Devices Guide"

10.2. Thermo NITON Analyzers Sample Radiation Safety Program

10.3. NBS Handbook 111, Revised 1977

10.4. Radiation Safety Topics "Writing a Radiation Protection Program For the Industrial X-Ray Program For a Facility with Cabinet Radiographic or Analytical X-Ray Machines"

10.5. Table 11.4.9 "Good Work Practice for X-Ray Diffraction and X-Ray Fluorescence Units" The Health Physics and Radiological Health Handbook

Appendix A

XRF Analyzer

Utilization Log

Unit Serial #	Date Removed	Time Removed	Test Location	Responsible Individual	Date Returned	Time Returned

Job Hazard Analysis

Job Name: Radiography Work	**Department: Maintenance**	**Job Title: Radiography Work Date: 2/16/11**
Job Location (Plant):	**Special or Primary Hazard: Radiation**	**Personal Protective Equipment Required: Routine PPE (Dosimeter Badge if entering radiation area)**

Step Number	Job Steps	Hazard	Protection or Control	Responsible Party
1	Radiography Contractor arrives onsite.	Contractor not aware of American Electric Power (AEP) safety requirements	Conduct contractor orientation for all contractors who have not received one in the last 365 days.	AEP Representative
2	Review Job Hazard Analysis (JHA), AEP Barricade Policy, and the AEP Radiation Safety & Health Program with the contractor. Use the attached Radiography Checklist	Not understanding all potential hazards and exposing personnel to radiation.	Contractor representative and all other affected parties, as determined by the onsite AEP Representative, discuss the JHA step by step and assure all potential hazards are identified. ***(Use the attached Radiography Checklist attached to the JHA)***	AEP Representative
3	Develop Job Safety Analysis (JSA)	Not being aware of all potential hazards of the work site.	Develop JSA. Identify all potential hazards of the work area. Identify permits needed to safely perform the work. Define required PPE for the work area. Determine which Human Performance Improvement (HPI) Tools will be used before, during, and after the job. Confirm contractor's qualifications through their training records.	Contractor and AEP Representative

4	Obtain proper clearance permit if applicable.	Exposure to energized equipment.	If it is determined that a Clearance Permit is required use the Clearance Permit Procedure/Policy to determine the proper steps to follow to assure energy isolation. Obtain Clearance Permit sign on sheet as instructed through the Clearance Permit Procedure.	Contractor and AEP Representative
5	Obtain Confined Space Permit if applicable	Confined space hazards	Follow AEP Confined Space policy. Monitor air as required by the policy. Use ADE tags upon any entry.	Contractor and AEP Representative
6	Obtain other applicable permits	Exposed to hazardous conditions without any protections or safeguards	Authorized permits assure that all safeguards are in place and all affected people are notified of the conditions and the protections that are put in place.	Contractor and AEP Representative
7	Determine the radiation source, size, type, and exclusion zone required.	Radiation amount, and exposure potential	After the radiation source has been identified, calculate the exclusion zone. Use approved boundary rope, tape, or ribbon, warning lights, and signage. See pictures attached.	Contractor
8	Determine if a hard barricade is required to effectively provide maximum protection for all employees and contractors in high use pathways.	Radiation exposure	Use the JHA/JSA and discuss the potential for radiation exposure to personnel. Identify the high traffic areas that normally pass through the exclusion zone and the need for added protection through the use of hard barricades and/or a posted sentry's). Provide alternate routes for personnel to use during radiography activities and use appropriate signage for directions if needed.	Contractor and AEP Representative

9	Determine the time frame in which to allow the area to be exposed to radiography/X- rays. Consider the surrounding work area, activities in that area and shift change challenges.	Radiation exposure	Use the JHA/JSA and discuss the potential for radiation exposure to personnel with consideration given to other plant activities and shift change schedules. (The Team Leader or his/her designee, the contractor, and the AEP representative should be included in this discussion) Schedule radiography when there is minimum activity and the minimum number of personnel on site. **DO NOT** conduct radiography during shift changes or during a time when employees are accessing the area and/or arriving on site.	Contractor and AEP Representative
10	Use signage to communicate areas and times that radiography will take place.	Radiation exposure	Place information signs at all exterior gates of the facility. Information should include area where radiography will take place and the times radiography will take place. If applicable place the same signs at all access points of the building where the radiography is to take place.	AEP Representative
11	Read and follow the Work Plan established during the pre-work discussion.	Radiation exposure,	Identify HPI tools that will be used to mitigate all potential hazards identified through the JSA, review the entire JHA, and review the work plan. As the job progresses periodically review the JSA, JHA, and the work plan to assure the desired results are being achieved.	Contractor and AEP Representative

12	Mobilize to the work site and set up work area and lay out tools.	Slips, trips, falls, hot surfaces, falls, etc	Review HPI tools selected in step 11 to mitigate all potential hazards identified through the JSA and review the entire JHA. Assure that all walking and working surfaces are clean, clear of obstacles, and are in good structural shape. The radiographer should perform an initial radiography equipment inspection to insure all equipment is in good working condition and will operate as expected.	Contractor and AEP Representative
13	Barricade the radiography work area. (Exclusion Zone)	Slips, trips, falls, hot surfaces, falls, etc	Barricade all access points to the exclusion zone and hang radiation signage and barricade tape that is yellow with purple stripe to indicate radiation hazard. See attached pictures. The AEP representative will walk down the area with the Contractor.	Contractor and AEP Representative
14	Place warning lights in affected areas to raise awareness of radiography work.	Radiation exposure.	Place warning lights at the barricaded areas in high use walkways where personnel may require access on a routine basis.	Contractor responsibility to furnish lights and AEP Representative to work with Contractor to identify areas required to have warning lights.
15	Verify there are no unauthorized personnel within the boundary area.	Radiation exposure.	Walk down the boundaries and evaluate the area to be certain that all unauthorized personnel are out of the area and that all access points are secure.	Contractor and AEP Representative

16	Run out the radiation source and survey the barricade	Radiation exposure	Check the radiation levels at the barricade perimeter to verify adequate radiation protection. Insure all access lanes have signs and linear runs have signage every 20 feet. Insure all radiation warning lights are working properly.	Contractor
17	Announce on radios and plant paging system that the radiography is about to commence and to stay clear of the area.	Radiation exposure.	Use the plant PA system, radios, or other warning devices to announce the start of radiography work. If radios are used assure that the correct channel is being used by verifying with Three Way communication to the Team Leader or his designee.	Contractor, Team Leader, and AEP Representative
18	Perform radiography Tests.	Radiation exposure	Maintain all barricades and signage.	Contractor
19	Continually monitor barricades during the radiography work.	Radiation exposure	During radiography process, continually monitor barricades for structural integrity. Assure unauthorized personnel have not breeched the barricaded area.	Contractor
20	Following each shot the Radiographer shall check source in the shielded position.	Radiation exposure	Use a measuring device to assure the source is adequately shielded.	Contractor
21	Close, lock, and verify radiation source is shielded upon completion of radiography process.	Radiation Exposure	Once radiography is complete and the source is in the shielded position with the safety plug or cover installed, the Radiographer performs a on documents a radiation survey of the radiographic exposure device and radiography equipment.	Contractor

22	Tear down, pack up and clean up work site. Obtain approval of AEP representative of work site before exit meeting.	Leaving signage and barricades in place. Slips, trips, falls, hot surfaces, etc.	Remove all barricade tape, signage, warning lights, and account for all barricades and signs.	Contractor
23	Conduct exit meeting discuss all issues (good or bad) that were encountered during work.	Review of job process	Close out JSA. Review the JHA and make recommendations for any needed changes. Discuss positives and negatives of the entire process. Capture needed action items and identify owner and establish date of expected completion.	Contractor and AEP Representative

RADIOGRAPHY CHECKLIST LINK
Reference Radiography Checklist

Pictures below are examples of the required radiation barriers and signage


CAUTION
RADIATION AREA
AUTHORIZED
PERSONNEL ONLY


MODEL
RCBX-12

Radiography Checklist	Radiographers Initials	DATE	TIME
1. Plant contact communicated the radiography shot plan to all personnel on site through direct verbal communication.			
2. Radiography boundaries set, posted, and cleared of personnel.			
3. Final walk down completed by radiographer and AEP contact.			
4. Area is verified that there are no unauthorized personnel in the boundary area.			
5. Radiography area boundaries and postings are set and the Camera Operator has control of the radiography area.			
6. Radiographer performed initial equipment inspection.			
7. Announcement on radios and plant page to warn personnel that radiography is about to commence.			
8. Supervisor verifies steps 1 - 7 are complete and notifies Radiographer that RT may commence.			
9, Boundaries verified during source exposure.			
10. Following each shot, the Radiographer checks source in shielded position.			
11. Once radiography is complete and the source is in the shielded position with the safety plug or cover installed, the Radiographer performs/documents a radiation survey of the radiographic exposure device and radiography equipment.			
12. Post job walk down completed by radiographer and AEP contact.			

*RETURN TO THE SAFETY SUPERVISOR WHEN COMPLETE

TROXLER ELECTRONIC LABORATORIES, INC.

HEREBY CERTIFIES THAT

CHRISTOPHER A. PURDUM

of

AMERICAN ELECTRIC POWER SERVICE

HAS SUCCESSFULLY COMPLETED THE TROXLER ELECTRONIC LABORATORIES, INC. TRAINING COURSE FOR THE USE OF NUCLEAR TESTING EQUIPMENT.

SUBJECTS INCLUDED IN THIS COURSE WERE AS FOLLOWS:

Radiological Safety

1. *Principles and practices of radiation protection.*
2. *Leak testing procedures.*
3. *Mathematics and calculations basic to the use and measurement of radioactivity.*
4. *Biological effects of radiation.*
5. *Radioactivity measurement standardization and monitoring techniques and instruments.*
6. *Accident and incident procedures.*
7. *Procedures for nuclear gauge storage and transportation.*
8. *General safety precautions.*

Gauge Operation

1. *Instrument theory*
2. *Operating procedures*
3. *Maintenance*
4. *Field application*
5. *Gauge calibration*

INSTRUCTOR

05/15/87
DATE

W.F. Troxler
PRESIDENT

№ 17926