

American Electric Power
John E. Amos Plant
PO Box 4000
St. Albans, WV 25177-7229
304 755-5301



NM583

September 4, 2007

LL 31274
03037538
03120

Licensing Assistance team
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region 1
475 Allendale Road
King of Prussia, Pa. 19406-1415

(47-31274-01)

Dear Licensing Assistance Team:

The enclosed application for Material License and one copy is being submitted for the purpose of obtaining a specific license from the United States Nuclear Regulatory Commission to obtain two cross belt analyzers. The analyzers would be utilized at the Appalachian Power Company's John E. Amos Plant in West Virginia. The Appalachian Power Company and the John E. Amos Plant are included in American Electric Power.

If I can be of any further assistance please give me a call at my office telephone number (304) 759-3156.

A handwritten signature in cursive script that reads 'R. T. Carroll'.

R. T. Carroll

Cc: Greg Massey – John E. Amos Plant
Joe Beer – Corporate Radiation Safety Officer – Donald C. Cook PLant

2007 SEP - 7 PM 12: 16
RECEIVED
REGION 1

141032
NMSS/RGN1 MATERIALS-002

NRC FORM 313
(10-2005)
10 CFR 30, 32, 33,
34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0120

EXPIRES: 10/31/2008

Estimated burden per response to comply with this mandatory collection request: 4.4 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 Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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.

APPLICATION FOR MATERIAL LICENSE

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

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
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, MISSISSIPPI, 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
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

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

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, 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
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-4005

LL 31274
030 37538
03120

647-31274-01

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 _____
- C. RENEWAL OF LICENSE NUMBER _____

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

Appalachian Power Company (dba American Electric Power)
John E. Amos Plant
P.O. Box 4000
St. Albans, West Virginia 25177

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Appalachian Power Company (dba American Electric Power)
John E. Amos Plant
State Route # 35
1530 Winfield Road
Winfield, West Virginia 25213

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Raymond T. Carroll

TELEPHONE NUMBER

(304) 759-3156

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 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 (See 10 CFR 170 and Section 170.31)

FEE CATEGORY 3 E AMOUNT ENCLOSED \$ 2,500.00

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, 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
Gregory W. Massey / Plant Manager

SIGNATURE
Gregory W. Massey

DATE
9/4/07

FOR NRC USE ONLY

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

141032

Application for Radioactive Material License
American Electric Power
Appalachian Power Company – John E. Amos Plant

Item 5: Radioactive Material

- a. Californium 252
- b. Sealed neutron sources Frontier Technology Corporation Model 100 Series
- c. No single source to exceed that specified in the certificate or registration issued by the U.S. Nuclear Regulatory Commission or an Agreement State

The fixed gauge(s) will be used for the purposes described on the SSD Registration Certificate (Thermo Electron Corporation, 10010 Mesa Rim, San Diego, CA 92121) Cross-Belt Elemental Analyzer, No. CA-0305-D-113-S, December 14, 2006, model CBX. The Californium 252 sealed sources are manufactured by Frontier Technology, AEA or Amersham. They are leak tested in accordance with ANSI N542-1997 and are classified as C64545 or E66343.

Item 6: Purpose(s) for Which Licensed Material Will Be Used

The fixed gauge(s) will be used for the purposes listed on the SSD Registration Certificate.

The neutron sources are used in Cross Belt Analyzers (model CBX) for coal blending and are manufactured by Thermo Electron Corporation. The devices measure the physical properties of material passing between the source and detector on a conveyor belt.

Item 7: Individual(s) Responsible for Radiation Safety Program and Their Training Experience

The Radiation Safety Officer for this license is:

Raymond T. Carroll

The Radiation Safety Officer (RSO) and any future RSO will have successfully completed training equivalent to that described in Criteria in the section entitled "Radiation Safety Officer" in NUREG-1556, Vol. 4, "consolidated guidance about Materials Licenses: Program-Specific guidance about Fixed Gauges Licenses," dated October 1998. Within 30 days of naming a new RSO, we will submit the new RSO's name to NRC to include in our license.

Raymond T. Carroll has completed a 2 ½ day training course given by Ray Johnson, President of Radiation Safety Academy on November 7-9, 2006. The course description is provided in Attachment 1.

Application for Radioactive Material License
American Electric Power
Appalachian Power Company – John E. Amos Plant

Licensed material will be used by or under the supervision of (directs personnel in operations involving the material) Raymond T. Carroll has successfully completed the 2 ½ day training course given by Ray Johnson, President of Radiation Safety Academy on November 7-9, 2006. Jeffrey H. Smith has successfully completed 2 days of the 2 ½ day training course given by Ray Johnson, President of Radiation Safety Academy on November 7-9, 2006. These individuals will also attend any training or instruction given at the time of the installation.

Item 8: Training for Individuals Who in the Course of Employment are Likely to Receive Occupational Doses of Radiation in Excess of 1 mSv (100 mrem) in a Year (Occupationally Exposed Workers) and Ancillary Personnel

A prospective evaluation was performed by the manufacturer in the SSD Registration Certificate for normal use conditions and a maximum load of Californium 252 and empty belt. Total dose to any user was conservatively estimated to be less than 24 mrems in one year. Source replacement and maintenance other than routine will only be performed by qualified Thermo Electron personnel. After installation by Thermo Electron personnel, radiation surveys will be performed and provided to the licensee to confirm compliance with the published dose rates in the SSD Registration Certificate.

Since the total dose is unlikely to exceed 100 mrems in a year, training is not required for the general worker population (ancillary staff).

Item 9: Facilities and Equipment

The fixed gauge will be installed by authorized Thermo Electron personnel to meet the “Conditions of Normal Use” specified in the SSD Registration Certificate and secured to prevent unauthorized use.

Item 10: Radiation Safety Program

Surveys will be performed by a person specifically authorized by the NRC or an Agreement State to perform these surveys (e.g. the manufacturer). Thermo Electron authorized personnel will perform radiation surveys after the initial installation of the gauge to ensure radiation levels do not exceed those published in the SSD Registration Certificate. Non-routine maintenance such as relocation, removal from service, dismantling, alignment, replacement, disposal of sealed sources and repair of components related to radiological safety of the gauge shall only be performed by authorized Thermo Electron personnel. Thermo Electron personnel will also perform a radiation survey during the six month leak test.

Application for Radioactive Material License
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Emergency conditions such as fires and accidents are unlikely to cause the sealed source to lose its' containment. However, under emergency conditions, assistance could be provided by the manufacturer or the Cook Nuclear Power Plant which is also an American Electric Power facility.

Physical inventories will be conducted at least 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.

The radiation levels will be verified to be less than or equal to those specified in the SSD Registration Certificate by Thermo Electron personnel at the time of installation. These dose rates are less than 3 mrem/hr at 30 cm for accessible areas. Also, access to areas around the device that exceed 2 mrem/hr is restricted by physical barriers or by the conveyor belt itself. The physical barriers extend as needed up to 2 meters outward from the two faces of the device that have openings. Normal operation of this device requires no routine maintenance and occupancy is less than 15 minutes per day for any worker. Time near the device is also limited due to the safety hazard presented by the moving belts. The most conservative estimation of dose under these conditions would be 0.5 mrem per day (0.25 hour x 2 mrem/hr) and 100 mrems (200 working days x 0.5 mrem per day) per year. This is less than 10% of the 5000 mrem/year limit. The analysis in the SSD Registration Certificate conservatively estimates less than 24 mrems to the maximum exposed individual. Therefore, personnel monitoring is not required during normal operation of the device.

Operating and emergency procedures will be developed, implemented, maintained, and distributed, and will meet the Criteria in the section entitled "Radiation Safety Program – Operating and Emergency Procedures" in NUREG – 1556, Vol. 4, "Consolidated Guidance about Materials Licenses: Program – Specific Guidance about Fixed Gauge Licenses," dated October 1998.

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

Procedures will be implemented and maintained for routine maintenance of the gauge(s) according to the manufacturer's or distributor's written recommendations and instructions.

Application for Radioactive Material License
American Electric Power
Appalachian Power Company – John E. Amos Plant

The gauge manufacturer, distributor or other person authorized by NRC or an Agreement State will perform non-routine operations such as installation, initial radiation survey, repair, and maintenance of components related to the radiological safety of the gauge, gauge relocation, replacement, and disposal of sealed sources, alignment, or removal of a gauge from service.

The fixed gauge(s) will not be used at temporary job sites.

The American Electric Power, "Radiation Safety and Health Program," revision 4, applicable to all American Electric Power general and specific licensees is included as Attachment 2 for information only.

Item 11: Waste Management

No response provided.

Application for Radioactive Material License
American Electric Power
Appalachian Power Company – John E. Amos Plant

Attachment 1

Radiation Safety Training Course Description

Fundamentals of Radiation Safety

An Eight-Hour Class
November 7, 2006

Coordinated By
Richard Granburg and Kathy Fiala

for
American Electric Power Company
Cheshire, Ohio

Presented By
Ray Johnson, MS, PE, FHPS, CHP
Director

Radiation Safety Academy

481 N. Frederick Ave., Suite 302

Gaithersburg, MD 20877

800-871-7930

RadiationSafetyAcademy.com

RadiationSafetyAcademy.com
Radiation Safety Academy

Fundamentals of Radiation Safety

American Electric Power Company

November 7, 2006

Agenda

- 8:00 Radiation Safety Awareness**
- 9:00 What is Radiation, Radioactivity, and Contamination?**
- 12:00 Lunch**
- 1:00 Understanding Sources of Radiation Around Us**
- 2:00 Interactions of Radiation with Matter**
- 2:30 Internal vs External Exposure**
- 2:45 Principles of ALARA (Time, Distance, and Shielding)**
- 3:00 What are the Health Effects of Radiation?**
- 4:30 Review and Answer Questions**
- 5:00 Adjourn**

Presenter By: Ray Johnson, MS, PE, FHPS, CHP
Director, *Radiation Safety Academy*

Radiation Safety **at** **AEP Facilities**

An Eight-Hour Class
November 8, 2006

Coordinated By
Richard Granburg and Kathy Fiala

for
American Electric Power Company
Cheshire, Ohio

Presented By
Ray Johnson, MS, PE, FHPS, CHP
Director

Radiation Safety Academy
481 N. Frederick Ave., Suite 302
Gaithersburg, MD 20877
800-871-7930

Radiation Safety Academy

Radiation Safety at AEP Facilities

American Electric Power Company

November 8, 2006

Agenda

- 8:00** **Review of Radiation Fundamentals**
- 8:30** **Radioactive Gauges Used by AEP**
- 9:15** **Regulatory Requirements for Radiation Safety
(Licensing and Inspection)**
- 11:00** **Requirements of AEP's Radiation Safety Program**
- 12:00** **Lunch**
- 1:00** **AEP's Radiation Safety Program**
- 1:30** **Leak Testing, Maintenance, and Inventory Control**
- 2:30** **Radiation Detection Instruments Used by AEP**
- 3:00** **Inspection and Measurements of AEP Gauges (hands-on)**
- 3:45** **Safe Operating Procedures and Emergency Response**
- 4:00** **Review**
- 4:30** **Multiple Choice Exam**
- 5:00** **Review Exam, Course Critique, and Adjourn**

Presenter By: Ray Johnson, MS, PE, FHPS, CHP
Director, *Radiation Safety Academy*

DOT Requirements for Shipping and Receiving AEP Gauges

A Four-Hour Class
November 9, 2006

Coordinated By
Richard Granburg and Kathy Fiala

for
American Electric Power Company
Cheshire, Ohio

Presented By
Ray Johnson, MS, PE, FHPS, CHP
Director

Radiation Safety Academy

481 N. Frederick Ave., Suite 302

Gaithersburg, MD 20877

800-871-7930

RadiationSafetyAcademy.com

Radiation Safety Academy

DOT Requirements for Shipping and Receiving AEP Gauges

American Electric Power Company

November 9, 2004

Agenda

- 8:00** **Training Requirements and Classification of
Radioactive Materials**

- 8:45** **Packaging Requirements, Radiation Limits,
Quality Control**

- 9:30** **Labeling, Marking, Shipping Papers, Emergency
Response**

- 10:30** **Receiving and Opening Packages**

- 11:00** **Written Exam**

- 12:00** **Review Exam, Course Critique, and Adjourn**

Presenter By: Ray Johnson, MS, PE, FHPS, CHP
Director, *Radiation Safety Academy*



Raymond H. Johnson, Jr; MS, PE, FHPS, CHP

President & Director, *Radiation Safety Academy, Inc.* (301-990-6006)

- ❖ *B.S., Civil Engineering, (1961) University of Vermont*
- ❖ *M.S., Sanitary Engineering, (1963) Massachusetts Institute of Technology*
- ❖ *Professional Engineering Degree, (1963) MIT and Harvard University*
- ❖ *Ph.D. Studies, Radiochemistry (1966-1972) Rensselaer Polytechnic Institute*
- ❖ *Greater Washington Institute for Transactional Analysis (1977-1980)*
- ❖ *American Board of Health Physics Certification (1983- present)*
- ❖ *Johns Hopkins Fellow, Organizational Systems (1984-1985)*
- ❖ *Past President and Fellow of the Health Physics Society (2000)*
- ❖ *Commissioned Stephen Minister, United Methodist Church (2003)*

Experience

- 1984-Pres. President and Director of Radiation Safety Academy, Inc. Providing x-ray and radiation safety training, audits, and consulting to nuclear industry, universities, research companies, and professional organizations. Specialist in helping people understand radiation, risk communication, and dealing with fears of radiation and nuclear terrorism for homeland security.
- 1988-2006 Manager and Contractor to National Institutes of Health (NIH) for radiation safety audits of 3,500 research laboratories and 2,500 instrument calibrations a year, along with environmental monitoring, hot lab and analytic lab operations, and cyclotron and x-ray inspections.
- 1990-2005 President of Key Technology, Inc. a manufacturer and primary laboratory for radon analysis with over 1,500,000 measurements since 1985. Primary instructor at Rutgers University 1990-1998 for radon, radiation risks, radiation instruments, and radon risk communication courses.
- 1986-1988 Laboratory Director, RSO, Inc. Directed analytical programs and QA for samples from N.I.H., Aberdeen Proving Ground, radiopharmaceutical companies, and the nuclear industry.
- 1970-1985 Chief, Radiation Surveillance Branch, EPA, Office of Radiation Programs. Directed studies of radiological quality of US, coordinated 7 Federal agencies for nuclear fallout events, QA officer 8 years. Head of US delegations to I.A.E.A and N.E.A. on radioactive waste disposal. ANSI N-13; (1975-1985). Retired PHS Commissioned Officer (0-6) in 1985 with 29 years of service.
- 1963-1970 U.S.P.H.S. Directed development of radiation monitoring techniques at DOE National Labs, nuclear plants, and shipyards in the US and Chalk River Nuclear Laboratory in Canada.

Health Physics and Professional Activities

Health Physics Society (HPS) plenary member 1966; President-elect, President, Past President (1998-2001), Fellow (2000), Treasurer (1995-1998); Secretary (1992-1995); Executive Cmte. (1992-2001), Chair, Finance Cmte. (1996-1998); Head of U.S. delegation to IRPA X (2000). RSO Section Founder and Secretary/Treasurer (1997-2000); President, Radon Section (1995-1996). Co-Chair Local Arrangements Cmte. Annual Meeting in DC (1991); Public Info. Cmte. (1985-1988); PEP, CEL and AAHP instructor; Journal reviewer; Baltimore-Washington Chapter: President (1990-1991) and Honorary Life Member; Newsletter Editor (1983-2005); Public Info. Chair (1983-1991), Science Teacher Workshop Leader (1995 – Pres.). New England Chapter: Newsletter Editor, Board of Directors, Education Chair (1968-1972). President, American Association of Radon Scientists and Technologists (1995-1998) and Honorary Life Member, Charter Member; Board of Directors; Newsletter Editor (1990-1993). Founder and President, National Radon Safety Board (1997-1999). Member of Sigma Xi (1966-Pres.); ANS(1983-Pres.), Society for Risk Analysis (1984-Pres.); AIHA, CRPA, CRCPD (1997-Pres.), Studied H.P. communication styles and presented Myers-Briggs seminars to over 3500 H.P.s since 1984. Over 30 professional society awards. Registered Professional Engineer 1965.

Publications

Authored over 500 books, articles, professional papers, and presentations on radiation safety. Author of monthly column, "Insights in Communication" HPS Newsletter 1984 - 1989 and 1994 -2001.

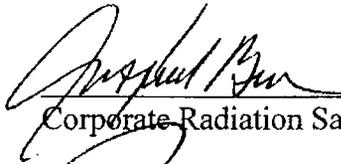
Application for Radioactive Material License
American Electric Power
Appalachian Power Company – John E. Amos Plant

Attachment 2

American Electric Power – Radiation Safety and Health Program, rev. 4

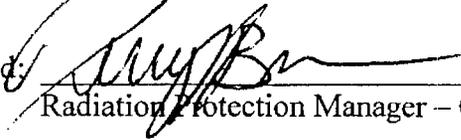
American Electric Power
**RADIATION SAFETY
AND HEALTH
PROGRAM**

Approved by Radiation Safety Committee on 10/10/2006:



Corporate Radiation Safety Officer

Approved:



Radiation Protection Manager – Cook Nuclear Plant

Approved:



Manager, Environmental Safety and Health - Generation

Revision 4
Effective 10/10/2006

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1.0 TITLE

Radiation Safety Program

2.0 PURPOSE AND SCOPE

2.1 Purpose

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.

This procedure meets the requirements of:

- 10 CFR 20.1101(a),
- 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 applicable Regulatory Guide requirements

2.2 Scope

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 or operation of nuclear power plants.

3.0 REFERENCES

- 3.1 10 CFR 19, "Instructions and Reports to Workers: Inspection and Investigations"
- 3.2 10 CFR 20, "Standards for Protection against Radiation"
- 3.3 10 CFR 21, "Reporting of Defects and Noncompliance"
- 3.4 10 CFR 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material"
- 3.5 10 CFR 31, "General Domestic Licenses for Byproduct Material"
- 3.6 10 CFR 71, "Packaging and Transportation of Radioactive Material"
- 3.7 49 CFR 172, "Hazardous Material Table, Special Material, Hazardous Materials Communications, Emergency Response Information and Training Requirements"
- 3.8 49 CFR 173, "Shippers—General Requirements for Shipments and Packaging"
- 3.9 49 CFR 177, "Carriage by Public Highway"

- 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 1, Consolidated Guidance about Material Licenses, Specific Guidance About Portable Gauge Licenses, November 2001
- 3.14 NUREG-1556, Volume 4, Consolidated Guidance about Material Licenses, Specific Guidance About Fixed Gauge Licenses, October 1998
- 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

4.1 Definitions

- 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 to 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, 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.

- 4.1.4 **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.).
- 4.1.5 **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.
- 4.1.6 **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.
- 4.1.7 **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).
- 4.1.8 **Temporary Location:** For portable gauges (e.g. Troxler device or equivalent), a temporary location is a site to which a device has been transferred for a temporary period of time.
- 4.1.9 **Non-nuclear facility:** Any AEP facility other than a nuclear power plant.
- 4.1.10 **Should, shall:**
Should: Denotes a recommendation (ANSI N18.7-1976)

Shall: Denotes a requirement (ANSI N18.7-1976)

4.1.11 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.

4.2 Responsibilities

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

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).
- Portable Gauge Licensees – An audit checklist similar to that found in NUREG-1556, Volume 1, 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

5.1 ALARA

- 5.1.1 Portable gauges should never be used in such a way that the source rod 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

- 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, 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

Postings shall be in accordance with 10 CFR 19.11, 10 CFR 21.6, 20.1902(e), as applicable, and applicable Agreement State requirements.

5.4 Inventory and Inspection of Devices

- 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

- 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 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 RSP review, conducted per section 4.3.2, shall be maintained for at least three years.

5.6 Emergency Response

- 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

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

- 5.8.1 Leak tests shall be performed at the frequency specified in the license.
- 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.
- 5.8.4 For portable moisture density gauges transported on public highways, a copy of the most recent leak test shall 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

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

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

5.11.1 The radiation safety content of authorized user training shall be in accordance with 10 CFR 19.12 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), 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 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 and Other Devices.

- 5.12.1 The device shall be transported in a certified Type A package with appropriate labels on the outside of the package. In most cases, an appropriate label is a "Radioactive, Yellow-II" sticker. The outside of vehicles are NOT required to be placarded when the shipment includes only White-I or Yellow-II packages.
- 5.12.2 A package of shipping papers in accordance with the applicable regulations (References 3.6 through 3.9), prepared as described in Reference 3.14, or equivalent, shall accompany the device. The package will typically include (as required by current regulations):

A Bill of Lading, which includes:

- The name and signature of the shipper.
- The applicable DOT proper shipping name from 49 CFR 172.101. For Troxler devices (or equivalent portable moisture density gauge), this is "RQ, Radioactive material, special form, n.o.s."
- The applicable ID number from 49 CFR 172.101. For Troxler or CPN devices (or equivalent), this number is "UN2974".
- The name of each radionuclide, and the activity in Curies.
- A description of the physical and chemical form of the material. For Troxler or CPN devices (or equivalent), this is "special form".
- Emergency response telephone number.
- The transport index (radiation level at one meter) assigned to each package bearing Yellow-II or Yellow-III.

- The category of label applied to each package (Yellow-II, etc.).

Other Requirements:

- A copy of the most recent leak test.
- Type A package certification documentation.
- A current Certificate of Competent Authority.
- An emergency response sheet similar to the one shown in Reference 3.14, or equivalent.

5.12.3 The device shall be secured in the vehicle, blocked and braced, to prevent movement during transport.

5.12.4 Other devices (e.g., alloy analyzers) shall be shipped per the manufacturer's instructions.

5.13 Maintenance, Installation, and Handling

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 portable 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

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

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 5.12.2).
- 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

- 5.16.1 A prospective evaluation of likely radiation exposures should be performed for each AEP specific license at least once every five years.
- 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.

ATTACHMENT 1
RESPONSIBILITIES

Attachment 1 - Responsibilities

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 proper transportation labels, placards, forms and records.
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.
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.

ATTACHMENT 1
RESPONSIBILITIES

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.
 - 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
EMERGENCY RESPONSE

Attachment 2 – Sample Emergency Response Plan

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.
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

Attachment 3 - Training

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.

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
 - b. Requal: None
2. Assistant RSO – specifically licensed facility with installed nuclear gauges only
 - a. Initial: RSO training
 - 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
 - b. Requal: Hazardous material transportation requal training every three years
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
 - b. Requal: Hazardous material transportation requal training every three years
 - 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
 - b. Lockout/tagout procedure to be covered during pre-job briefs

ATTACHMENT 3 TRAINING

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
 - 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
 - b. Requal: Hazardous material transportation requal training every three years
 - c. Annual training 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)
 - 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)

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, 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) 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.

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 and other parts applicable to given operations, terms and conditions of the licensee's NRC or Agreement State license, and

ATTACHMENT 3 TRAINING

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

Attachment 4 - Authority Structure

(Turnover from Acting to AEP Corporate RSO effective upon completion of required training)

AEP Corporate RSO:

Joe Beer
 D.C. Cook Nuclear Plant, 1 Cook Place, Bridgman, MI 49106
 Tel: 269-465-5901 x2262 Audinet 8-280-2262
 E-mail: jlbeer@aep.com

Acting AEP Corporate RSO:

Dick Granberg (based out of D.C. Cook Nuclear Plant, 1 Cook Place, Bridgman, MI 49106)
 Tel: (H) 269-679-3152, (Cell) 269-330-5199
 E-mail: dgranber@net-link.net

Backup AEP Corporate RSO:

Dan Mihalik
 D.C. Cook Nuclear Plant, 1 Cook Place, Bridgman, MI 49106
 Tel: 269-465-5901 x2429 Audinet 8-280-2429
 E-mail: drmihalik@aep.com

Other AEP contacts:

Cook Nuclear Plant contact: Bill Hart (Audinet 8-280-2695)
 AEP corporate contact: Ken McCullough (Audinet 8-220-7722)

Assistant RSOs:

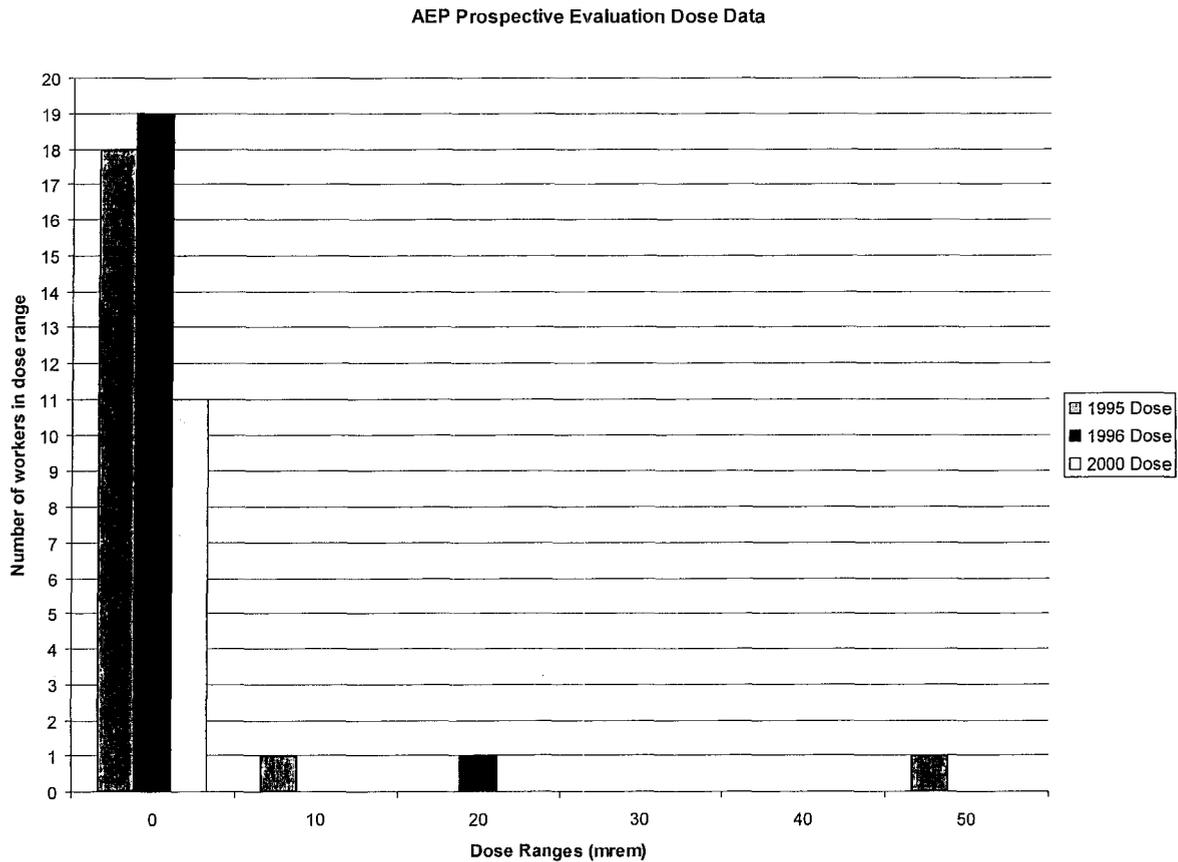
Name	Plant	Telephone	E-mail	Address	City	State	Zip
Floyd Clark	B1, Spy Run	500-3297 (Fax only)	fjclark@aep.com	1201 Spy Run	Fort Wayne	IN	46802
Jay Zarnoth	Rockport	282-2127	jrzarnoth@aep.com	2791 North US Hwy 231	Rockport	IN	447635
Ed Janoski	Rockport	282-3205	ejjanoski@aep.com	2791 North US Hwy 231	Rockport	IN	47635
Jim Ludwig	Muskingum River	273-3527	jdudwig@aep.com	P.O. Box 140	Beverly	OH	45715
<u>Ron Weisenborn</u>	Cardinal	275-6574	rjweisenborn@aep.com	P.O. Box Drawer B	Brilliant	OH	43913
<u>G.E Campbell</u>	<u>John E. Dolan Engineering Laboratory</u>	<u>210-4210</u>	gecampbell@aep.com	<u>4001 Bixby Road</u>	<u>Groveport</u>	<u>OH</u>	<u>43125</u>
Terry Tucker	John E. Dolan Engineering Laboratory	210-4205	ttucker@aep.com	4001 Bixby Road	Groveport	OH	43125
Georgeanne Hammond	Conesville	288-4065	gmhammond@aep.com	47201 CR 273	Conesville	OH	43811
Jeff Magers	Conesville Coal Preparation Plant	288-4141	jwmagers@aep.com	14561 Twp. Rd. 263	Conesville	OH	43811
Doug Workman	Gavin	277-3135	deworkman@aep.com	P.O. Box 271	Cheshire	OH	45620
R. Dean Lovelace	Gavin--Landfill	220-4208		P.O. Box 272	Cheshire	OH	45621
Chris Purdum	Mountaineer	266-4193	capurdum@aep.com	Route 33	Newhaven	WV	25265-0419

ATTACHMENT 4
 Authority Structure

Ginger MacKnight	Sporn	267-1683	jlmacknight@aep.com	P.O. Box 389	New Haven	WV	25265-0389
Al Tinnel	Central Machine Shop	260-5500	actinnel@aep.com	3100 MacCorkle Ave.	South Charleston	WV	25303
Leslie Calhoun	Kanawha River	264-3526	lcalhoun@aep.com	Route 60	Glasgow	WV	25086-0110
Tom Carroll	Amos	262-3156	rtcarrroll@aep.com	1530 Winfield Road	Winfield	WV	25213
Woodrow McClanahan	Clinch River	268-7378	wmccclanahan@aep.com	Route 82	Cleveland	VA	24225-0157
Joe Ryder	Glen Lyn	263-1212	jaryder@aep.com	Route 460	Glen Lyn	VA	24093-9726
Randy Suto	Kammer-Mitchell	276-6026	resuto@aep.com	State Route 2	Moundsville	WV	26041
Vern Anderson	Kammer-Mitchell	276-6059	tvanderson@aep.com	State Route 2	Moundsville	WV	26041
Tom Utter	Tanner's Creek	283-3141	trutter@aep.com	800 AEP Drive	Lawrenceville	IN	47025-0312
Michael Meade	Big Sandy	(606) 686-2415.	mameade@aep.com	23000 Highway 23	Louisa	KY	41230
Brent Ogden	Pirkey	752-5885	dboogden@aep.com	2400 FM 3251	Hallsville	TX	75650-9448
Frank Martinez	Oklaunion	783-2731	fmartinez@aep.com	12567 FM Rd 3430	Vernon	TX	76373
Tony M Hall	Welsh	757-5428	tmhall@aep.com	1187 County Road 4865	Pittsburg	TX	75686
Warren A. Jeffers	Picway	289-3003	wajeffers@aep.com	9301 U.S. RTE. 23	Lockbourne	OH	
Dave Lehman	Northeastern 3&4	719-0817	dlehman@aep.com	7300 E. Highway 88	Oologah	OK	74053-0220

Attachment 5 - Prospective Evaluation

10 CFR 1502(a)(1) 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.

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

ATTACHMENT 5
Prospective Evaluation

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 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

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.

Attachment 7 - Leak Test Procedure and Data Form

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):

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 Results

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			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
2			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
3			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
4			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
5			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
6			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
7			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
8			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
9			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
10			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
11			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
12			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
13			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
14			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
15			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
16			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
17			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
18			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
19			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
20			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
21			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
22			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
23			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
24			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
25			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
26			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
27			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
28			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
29			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
30			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
31			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative
32			<input type="checkbox"/> Cs-137 <input type="checkbox"/> Ni-63 <input type="checkbox"/> Am-241	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative

Attachment: Leak Test Results

Attachment 8 - Sample Lockout Procedure

**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 10 - Reporting of Defects and Non-Compliance per 10 CFR 21.

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: any radioactive material yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

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.

ATTACHMENT 10

Reporting of Defects and Non-compliance

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 Attachment 1 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.

ATTACHMENT 10
Reporting of Defects and Non-compliance

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 1 - 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 at the following location:

American Electric Power, Donald C. Cook Nuclear Plant, 1 Cook Place, Bridgman, MI 49085

ATTACHMENT 11
Site Specific Emergency and Operating Procedures

Attachment 11 - Site-Specific Emergency and Operating Procedures

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

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.

This is to acknowledge the receipt of your letter/application dated

9/4/2007, and to inform you that the initial processing which includes an administrative review has been performed.

NEW LICENSE APPLICATION (03037532)
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

Please provide to this office within 30 days of your receipt of this card

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 141032.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

BETWEEN: : (FOR LFMS USE)
 License Fee Management Branch, ARM : INFORMATION FROM LTS
 and : -----
 Regional Licensing Sections :
 : Program Code: 03120
 : Status Code: 3
 : Fee Category: _____
 : Exp. Date: 0
 : Fee Comments: _____
 : Decom Fin Assur Req'd: _
 : ::

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED
 Applicant/Licensee: APPALACHIAN POWER COMPANY
 Received Date: 20070907
 Docket No: 3037538
 Control No.: 141032
 License No.: 47-31274-01
 Action Type: New Licensee

2. FEE ATTACHED \$ 2,500.00
 Amount: 3000078447
 Check No.:

3. COMMENTS

Signed M. A. Perbin
 Date 9/9/07

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered /___/)

1. Fee Category and Amount: _____

2. Correct Fee Paid. Application may be processed for:
 Amendment _____
 Renewal _____
 License _____

3. OTHER _____

Signed _____
 Date _____