

## MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

302467

Licensee		3. License Number 21-26795-01
1. Americian Electric Power		4. Expiration Date June 30, 2007
2. One Cook Place Bridgman, MI 49106		
5. Docket or Reference No. 030-34426		
6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum Amount that Licensee May Possess at Any One Time Under This License
A. Cesium-137	A. Sealed source (Troxler Dwg. No. A-102112)	A. 50 sources not to exceed 10 millicuries each
B. Americian-241	B. Sealed source (Troxler Dwg. No. A-102451)	B. 50 sources not to exceed 50 millicuries each
C. Cesium-137	C. Sealed source (Boart Longyear Company, CPN Products Model CPN-131)	C. 50 sources not to exceed 10 millicuries each
D. Americum-241	D. Sealed source (Boart Longyear Company, CPN Products Model CPN-131)	D. 50 sources not to exceed 50 millicuries each

## 9. Authorized Use:

- A. and B. To be used in Troxler Model 3400 Series moisture/density gauges.
- B. To be used in Troxler Model 3216, 3217 or 3218 moisture/density gauges.
- C. and D. To be used in Boart Longyear Company, CPN Products Model MC-Series moisture/density gauges.

9706180378 970528  
PDR ADOCK 03034426  
C PDR



COPY

2m  
230  
50

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License Number

21-26795-01

Docket or Reference Number

030-34426

CONDITIONS

10. Licensed material may be used at:

John E. Amos Plant  
1530 Winfield Road  
St. Albans, WV

Kanawha River Plant  
U.S. Route 60  
Glasgow, WV

Gavin Plant  
Route 7  
Cheshire, OH

Clinch River Plant  
U.S. Route 82  
Cleveland, VA

Mountaineer Plant  
U.S. Route 33  
New Haven, WV

Rockport Plant  
Route 2  
Rockport, IN

Glen Lyn Plant  
U.S. Route 460  
Glen Lyn, VA

John E. Dolan Engineering  
Laboratory  
4001 Bixby Road  
Groveport, OH

Windsor Coal  
Locust Grove Road  
Route 88  
West Liberty, WV

and at temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.

11. Licensed material shall only be used by, or under the supervision and in the physical presence of, Douglas Noble or individuals who have successfully completed the manufacturer's training program for gauge users, have been instructed in the licensee's routine and emergency operating procedures and who have been designated by the Radiation Safety Officer.
12. The Radiation Safety Officer for this license is Douglas Noble.
13. A. Sealed sources and detector cells shall be tested for leakage and/or contamination at intervals not to exceed 6 months or at such other intervals as specified by the certificate of registration referred to in 10 CFR 32.210.
- B. In the absence of a certificate from a transferor indicating that a leak test has been made within 6 months prior to the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.
- C. Sealed sources need not be leak tested if:
- (i) they contain only hydrogen-3; or
  - (ii) they contain only a radioactive gas; or
  - (iii) the half-life of the isotope is 30 days or less; or

COPY

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License Number

21-26795-01

Docket or Reference Number

030-34426

- (iv) they contain not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material; or
- (v) they are not designed to emit alpha particles, are in storage, and are not being used. However, when they are removed from storage for use or transferred to another person, and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source or detector cell shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.
- D. The leak test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(b)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. The report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region III, ATTN: Chief, Nuclear Materials Safety Branch, 801 Warrenville Road, Lisle, Illinois 60532-4351. The report shall specify the source involved, the test results, and corrective action taken.
- E. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commission or an Agreement State to Perform such services.
14. Each portable nuclear gauge shall have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The gauge or its container must be locked when in transport, storage, or when not under the direct surveillance of an authorized user.
15. Any cleaning, maintenance, or repair of the gauge(s) that requires removal of the source rod shall be performed only by the manufacturer or by other persons specifically licensed by the Commission or an Agreement State to perform such services.
16. The licensee is authorized to transport licensed material only in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
17. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
18. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license.

COPY

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License Number

21-26795-01

Docket or Reference Number

030-34426

19. When performing tests at temporary job sites, the authorized user shall not leave the moisture/density gauge unattended. Upon completion of tests the device shall be locked in the licensee's vehicle or a secure building to prevent unauthorized use, loss, or theft.
20. The licensee may not possess and use materials authorized in Items 6, 7, and 8 until:
- A. The licensee has constructed the facilities and obtained the equipment described in the application and supporting documentation; and
  - B. The U. S. Nuclear Regulatory Commission, Region III, ATTN: Chief, Materials Licensing Branch, 801 Warrenville Road, Lisle, IL 60532-4351 has been notified that activities authorized by the license will be initiated.
21. Within 30 days of the date of a decision not to complete the facility, acquire equipment, or possess and use authorized material, the licensee must notify the Commission in writing, of the decision.
22. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.
- A. Letter dated April 30, 1997.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date MAY 28 1997

By *Deborah A. Brown*  
Materials Licensing Branch, Region III

COPY



(FOR LFMS USE)  
INFORMATION FROM LTS

BETWEEN:

License Fee Management Branch, ARM  
and  
Regional Licensing Sections

Program Code: \_\_\_\_\_  
Status Code: 3 \_\_\_\_\_  
Fee Category: \_\_\_\_\_  
Exp. Date: 0 \_\_\_\_\_  
Fee Comments: \_\_\_\_\_  
Decon Fin Assur Req'd: \_\_\_\_\_

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED  
Applicant/Licensee: AMERICAN ELECTRIC POWER  
Received Date: 970325  
Docket No: 3034426  
Control No.: 302467  
License No.:  
Action Type: New License

2. FEE ATTACHED

Amount: 300  
Check No.: 3A-29884

3. COMMENTS

Signed  
Date

A. Hersey  
3-23-97

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

1. Fee Category and Amount: 3P \$300

2. Correct Fee Paid. Application may be processed for:  
Amendment \_\_\_\_\_  
Renewal \_\_\_\_\_  
License ☒

3. OTHER

Signed  
Date

SC 4/1/97

APR 03 1997

Log: MAR 13 III  
Remitter: \_\_\_\_\_  
Check No.: 3A-29884  
Amount: \$300  
Fee Category: 3P  
Type of Fee: APP (and)  
Date Check Rec'd: 3/31/97  
Date Completed: 4/1/97  
By: SC

1997 MAR 31 PM 4:26

NOTE: mailing address  
change from OH to  
MI.

# APPENDIX A

NRC FORM 313

U. S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO 3150-0120

EXPIRES 6-30-96

(10-94)  
10 CFR 30.32, 33  
34, 35, 36, 39 and 40

## APPLICATION FOR MATERIAL LICENSE

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 9 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. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0120), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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:

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

LICENSING ASSISTANT SECTION  
NUCLEAR MATERIALS SAFETY BRANCH  
U. S. NUCLEAR REGULATORY COMMISSION, REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

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

NUCLEAR MATERIALS LICENSING SECTION  
U. S. NUCLEAR REGULATORY COMMISSION, REGION II  
101 MARIETTA STREET, NW, SUITE 2900  
ATLANTA, GA 30323-0199

IF YOU ARE LOCATED IN:

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

MATERIALS LICENSING SECTION  
U. S. NUCLEAR REGULATORY COMMISSION, REGION III  
801 WARRENVILLE RD.  
Lisle, IL 60532-4351

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 SECTION  
U. S. NUCLEAR REGULATORY COMMISSION, REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TX 76011-8084

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

21-26795-01  
34-24830-01, A45

2 NAME AND MAILING ADDRESS OF APPLICANT (Include Zip code)

Douglas Noble  
American Electric Power  
One Cook Place  
Bridgman, MI 49106

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

See Attached

4 NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Ryan M. Fard

TELEPHONE NUMBER

(616) 465-5901 x1542

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 LICENSEE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY 3-P AMOUNT ENCLOSED \$ 300

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

SIGNATURE

DATE

### FOR NRC USE ONLY

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

APPROVED BY

DATE

302467

RECEIVED

MAR 25 1997

PRINTED ON RECYCLED PAPER

REGION III

American Electric Power  
Cook Nuclear Plant  
One Cook Place  
Bridgman, MI 49106  
616 465 5901

Douglas Noble



March 12, 1997

Materials Licensing Section  
U.S. Nuclear Regulatory Commission, Region III  
801 Warrenville Road  
Lisle, IL 60532-4351

Dear Sir or Madam:

Enclosed is the application for amendment 5 to license number 34-24830-01. This application includes the NRC Form 313, an attachment to NRC Form 313 with answers to items 5-11, and a copy of our Radiation Safety Program.

In addition to these materials, this letter also includes an application for disposition of materials. A moisture density gauge is being transferred permanently from one site to another within AEP, allowing us to terminate the unused license. For questions regarding either of these applications, please contact Ryan M. Fard at (616) 465-5901 ext. 1542.

Sincerely,

Douglas Noble

A handwritten signature in cursive script, appearing to read 'Douglas Noble'.

Attachments

RECEIVED

MAR 25 1997

REGION III

PM: 3-25-97

MAR 25 1997

Note:

The application for disposition of materials has been placed on hold until confirmation of shipment is obtained. This application will be sent under separate cover at a later date.

Ryan Fard

March 24, 1997



Introduction:

These continuation pages provide answers to questions 3 and 5-11 of NRC Form 313. Many of the answers refer to the Radiation Safety Program (RSP), which is included in this submittal package. The RSP is intended to meet the requirements of the references listed within the RSP, which includes the proposed 1997 draft of 10 CFR 31, "General Domestic Licenses for Byproduct Material" and DG-0008, "Applications for the Use of Sealed Sources in Portable Measuring Gauges". The RSP is intended to be a document separate from the license. Items in the RSP should not be specified within the license (e.g., names of Assistant-RSOs) to avoid a license amendment for minor RSP changes.

Pending approval by the NRC, the RSP will be implemented at the listed facilities after any NRC concerns are resolved and the document is updated. Commitment dates are presented in boldface. Once approved by the NRC, the RSP will not undergo content changes without the approval of the Radiation Safety Committee, which is described in the RSP.

Finally, the RSP contains procedures for byproduct material other than portable measuring gauges. We will be implementing this program at approximately 13 additional AEP facilities using a variety of other types of byproduct material (described in the RSP).

## 3. Addresses where licensed material may be used or possessed.

Plant or Facility Name	Mailing Address	City	State	Zip
1. Rockport Plant	Route 2	Rockport	IN	46735-9425
2. John E. Dolan Engineering Laboratory	4001 Bixby Road	Groveport	OH	43125
3. Gavin Plant	P.O. Box 271	Cheshire	OH	45621
4. Mountaineer Plant	Route 33	New Haven	WV	25265-0419
5. Clinch River Plant	Route 82	Cleveland	VA	24225-0157
6. Glen Lyn Plant	Route 460	Glen Lyn	VA	24093-9726
7. John E. Amos Plant	1530 Winfield Road	Winfield	WV	25213
8. Windsor Coal	Locust Grove Road. RT 88	West Liberty	WV	26074
9. Kanawha River Plant	U.S. Route 60	Glasgow	WV	25086-0110
10. Temporary job sites in the United States subject to NRC's regulatory authority				

The Gavin Plant, identified with a P.O. Box can be easily found in Cheshire, Ohio. Any of these locations, whose telephone numbers are identified in the RSP, have a main number which may be contacted for specific directions, if needed.

## 4. Contact Ryan M. Fard at (616) 465-5901 ext. 1542 regarding this application.

5. Please provide the "generic" authorization outlined on p. 9 and Appendix K of DG-0008, based upon the following required information:

(1) Radionuclide	(1) Max. Activity	(3) Manufacturer	(3) Drawing Numbers
Cs-137	10 mCi	Troxler Model 3400 series moisture density gauges, or CPN model MC-1DR-P moisture density gauge	Troxler (Dwg. No. A-102112), CPN (Dwg. No. CPN-131)
Am-241	50 mCi	Troxler Model 3400 series moisture density gauges, or CPN model MC-1DR-P moisture density gauge.  Troxler Model 3216, 3217 or 3218 moisture density gauges	Troxler (Dwg. No. A-102112), CPN (Dwg. No. CPN-131)
(4) The gauges have sealed sources, so decommissioning rules do not apply.			

6. Measuring moisture and density of construction materials and/or landfill. These devices are not lowered below the surface more than the 1 to 3 feet common for most surface measurements.
7. Douglas Noble will act as Radiation Safety Officer. See Radiation Safety Program (RSP), Attachments 1, 3 and 4 for training, qualifications and responsibilities. Note that "Assistant-RSOs" will act at each site, and must meet specific training requirements.
8. Section 5.11 and Attachment 3 of the RSP provides training information. All authorized users of portable moisture density gauges have proper training certificates from the manufacturer (Troxler). CPN, the other manufacturer specified in item 5, has indicated that the Troxler training course is acceptable for meeting the requirements of operating a CPN gauge.

Dan Carney of Windsor Coal has completed neither the RSO training nor the Gauge Training, but has committed to attend both courses **by October 1, 1997**. There are currently no moisture density gauges at Windsor Coal, and will not be until training is complete.

9.
  - 1) Each proposed permanent facility currently exists.
  - 2) The facilities are either an office laboratory, a power generation facility (coal), a landfill site near a power generation facility, or a coal mining and/or preparation plant.
  - 3) The storage locations are in all cases locked rooms or cabinets to which access is limited to the Assistant-RSO, authorized users, or ancillary personnel who require infrequent access. Restricted areas do not include residential quarters.
  - 4) Security measures include locking the storage area and limiting key access. Facility access is generally limited to company employees. Public access is therefore restricted.
  - 5) Transport vehicles generally include company vehicles (e.g., Suburban, truck or equivalent). The gauges are positioned in the rear of the vehicle, blocked and braced, to prevent movement during transport. The gauges are typically only transported on company property.

- 6) Gauges are controlled by surveillance by the Assistant-RSO and authorized users. Temporary job sites will be limited to facilities which meet the requirements of the Radiation Safety Program. The procedures in the RSP apply at temporary and permanent facilities alike.
  - 7) It is not normally planned to store gauges anywhere but the permanent storage facility. Temporary job sites within the AEP system are not always local. The RSP outlines transportation procedures.
10. The Radiation Safety Program is attached. This program replaces the existing written programs at the listed facilities. It will also eventually replace the program at other licensed AEP facilities using fixed gauges, alloy analyzers, and gas chromatograph devices. For this reason it is more comprehensive than just portable moisture density gauges.
- 10.1) See attachment 5 of the RSP for the prospective evaluation.
  - 10.2) Survey meters are currently maintained at 5 of the 9 permanent facilities, and the remaining sites will be provided a meter by July 1, 1997.

Contrary to the guidance in DG-0008, AEP **does not** commit to maintaining check sources at the nine listed locations throughout the AEP system for the following reasons. This "prospective evaluation" will thus establish our position on the maintenance of check sources:

- 1) There is an ALARA concern associated with the high contact dose rates of a check source capable of deflecting a meter to approximately 5 mrem per hour.
- 2) The potential for loss of small check sources would be an added concern (e.g. Report No. 944, NUREG-1272).
- 3) Accidents involving portable moisture density gauges generally involve the source being damaged or crushed by a vehicle. This type of accident does not involve "hunting" for an ejected source, but rather isolating the area until the situation can be safely mitigated. Emergency procedures, per our program, emphasize isolation of an area rather than quantification with a meter.
- 4) The annual calibration cycle of portable instruments evident at the D.C. Cook nuclear plant testifies to the reliability of survey instruments such as the ones used in our program. An infrequently used instrument would be expected to perform even after long periods of non-use.
- 5) Assessment of a potential accident situation at a job site.  
  
Emergency procedures in our program would require the RSO to isolate the area. If the RSO determines that a survey is warranted, then it would be limited to the logical location of the source, which would be near the damaged device. If it were determined that the meter didn't respond, then the RSO would recommend against searching for it until trained personnel with the proper equipment (shielding, etc.) could be transported to the scene.
- 6) Assessment of a potential accident situation on a public highway.  
  
The sealed source in moisture density gauges has three containment devices during transport: the instrument housing, the Type A package, and the vehicle itself, in which the device is required to be blocked and braced. If an accident occurred that were bad enough to eject the source rod from all three containment devices, then traffic delays (as described in paragraph 10.2 of DG-0008) should not be a critical concern. Furthermore, none of the listed facilities send the devices onto public highways for regular transport except for long distance shipment by private carrier (e.g. U.P.S.). The location of storage and use is always on company property.
- 7) Our safety record shows that there has never been a reportable incident requiring a survey at an AEP non-nuclear facility.

- 8) Emergency procedures in combination with overnight delivery service, and the close proximity of the ten proposed sites to each other, would allow prompt delivery of a new meter if the Assistant-RSO determines that the performance of his or her meter is suspect.

For these reasons, AEP does not anticipate the need for check sources, and will not require them at non-nuclear facilities. Instruments, however, will be maintained.

10.3) Leak testing is outlined in the RSP. Leak test frequencies for portable moisture density gauges will be performed at intervals not to exceed 1 year  $\pm 25\%$ . The  $\pm 25\%$  is required because situations have arisen where the commercial supplier of analysis services was unable to return the results by the due date. In one instance, a death in the family completely shut down one analysis service, forcing the Assistant-RSO to be late with the test. The devices were promptly re-smear and the D.C. Cook plant provided results.

The Assistant-RSO may choose any qualified vendor (Option 1) to perform leak test analysis, such as TN or Troxler. If Option 3 is chosen, then Attachment 7 provides a procedure for performing the test. Any Radiation Protection individual at the D.C. Cook Nuclear Plant qualified to run the Tennelec alpha/beta counter may perform the leak test analysis.

10.4) Attachment 6 of the RSP documents the inventory procedure.

10.5) Section 5.13 of the RSP meets the maintenance requirement.

10.6) Section 5.12 of the RSP meets the transportation requirements.

10.7) Section 5.6, 5.14 and Attachment 2 of the RSP meet the emergency response and operating procedure requirements.

10.8) Section 4.3.2 meets the annual review (audit) requirement. In addition to annual RSP audits, site compliance evaluations will be performed once per three years, or as specified by the RSO. The annual audit (at the RSO level) will entail reviewing the RSP and ensuring that all of the listed steps meet the requirements of the pertinent regulations. At the Assistant-RSO level, the audit will entail ensuring that the program implementation does not deviate from the requirements of the RSP.

10.9) Financial Assurance and Record keeping for Decommissioning does not apply to the portable moisture density gauges at AEP because the sources are sealed.

11. Disposal will be by transfer of the radioactive material to a person who is specifically licensed to receive and possess it.





**AMERICAN  
ELECTRIC  
POWER**

# RADIATION SAFETY PROGRAM

Revision 0  
Effective March 1, 1997

## TABLE OF CONTENTS

TABLE OF CONTENTS.....	i
1.0 TITLE .....	1
2.0 PURPOSE .....	1
3.0 REFERENCES.....	1
4.0 INITIAL CONDITIONS.....	2
4.1 DEFINITIONS .....	2
4.2 RESPONSIBILITIES.....	3
4.3 LIMITATIONS AND ACTIONS .....	3
5.0 DETAILED PROCEDURE .....	3
5.1 ALARA.....	3
5.2 NRC INSPECTIONS AND AEP EVALUATIONS.....	3
5.3 POSTINGS.....	4
5.4 INVENTORY AND INSPECTION OF DEVICES.....	4
5.5 RECORDS .....	4
5.6 EMERGENCY RESPONSE .....	5
5.7 SURVEY INSTRUMENTS .....	5
5.8 LEAK TESTS .....	5
5.9 DOSIMETRY .....	5
5.10 LOCKOUT PROCEDURE FOR FIXED GAUGE USERS .....	6
5.11 TRAINING.....	6
5.12 TRANSPORTATION OF PORTABLE MOISTURE DENSITY GAUGES .....	6
5.13 MAINTENANCE, INSTALLATION, AND HANDLING .....	7
5.14 USE OF PORTABLE MOISTURE DENSITY GAUGES .....	8
5.15 TEMPORARY LOCATIONS .....	8

## **ATTACHMENTS**

- 1. RESPONSIBILITIES**
- 2. EMERGENCY RESPONSE**
- 3. TRAINING**
- 4. AUTHORITY STRUCTURE**
- 5. PROSPECTIVE EVALUATION**
- 6. INVENTORY AND INSPECTION**
- 7. LEAK TEST PROCEDURE AND DATA FORM**
- 8. SAMPLE LOCKOUT PROCEDURE**
- 9. USE LOG FOR PORTABLE MOISTURE DENSITY GAUGES**
- 10. REPORTING OF DEFECTS AND NON-COMPLIANCE PER 10 CFR 21**
- 11. RADIATION SAFETY COMMITTEE MEETING MINUTES**
- 12. SITE-SPECIFIC EMERGENCY AND OPERATING PROCEDURES**

1.0 TITLE

Radiation Safety Program

2.0 PURPOSE

This procedure meets the requirements of:

- 10 CFR 20.1101(a),
- the NRC 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

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"
- 3.6 10 CFR 33, "Specific Domestic Licenses of Broad Scope for Byproduct Material" Proposed Rule for 1997.
- 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 Draft Regulatory Guide DG-0005, "Applications for Licenses of Broad Scope" October, 1994.
- 3.11 Draft Regulatory Guide DG-0008, "Applications for the Use of Sealed Sources in Portable Gauging Devices" May, 1995.



- 3.12 Regulatory Guide 8.29, "Instruction Concerning Risks From Occupational Radiation Exposure," July, 1981.
- 3.13 Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure," December, 1987.
- 3.14 "Troxler Nuclear Gauge Safety Training Program." Troxler Electronic Laboratories. May, 1996.

#### 4.0 INITIAL CONDITIONS

##### 4.1 Definitions

- 4.1.1 ALARA: Acronym for "as low as reasonably achievable". Means making every reasonable effort to maintain exposures to radiation as far below the 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.
- 4.1.2 General License: A document issued by the NRC that is owned and managed by the manufacturer of the device (e.g., Texas Nuclear, "TN"). This document spells out the terms and conditions of possession of the byproduct material.
- 4.1.3 Specific License: A document issued by the NRC that is owned and managed by the AEP facility. This document spells out the terms and conditions of ownership of the byproduct material.
- 4.1.4 RSO: Acronym for "Radiation Safety Officer". Means the individual responsible for oversight and direction of the radiation safety program, who meets the minimum requirements in Attachment 1.
- 4.1.5 Assistant-RSO: A qualified individual responsible for implementing this procedure, who meets the minimum requirements in Attachment 1.
- 4.1.6 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.
- 4.1.7 Voluntary Monitoring: Personnel monitoring documented as being provided to an individual even though it is not required by law.
- 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 the D.C. Cook Plant.
- 4.1.10 Should, shall:
  - Should: Denotes a recommendation (ANSI N18.7-1976)
  - Shall: Denotes a requirement (ANSI N18.7-1976)

#### 4.2 Responsibilities

- 4.2.1 The RSO is responsible for the items listed on Attachment 1.
- 4.2.2 The Assistant-RSO(s) is responsible for the items listed on Attachment 1.
- 4.2.3 The Radiation Safety Committee is responsible for the items listed on Attachment 1.
- 4.2.4 Authorized users are responsible for the 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 assistant-RSO.
- 4.3.2 An annual revision of this procedure is required. The revision shall include:
  - A review by the Radiation Safety Committee in the fourth quarter of each year, and,
  - A review by each Assistant-RSO, who shall (1) Review the RSP noting any recommended changes, (2) Ensure that the program implementation is consistent with this procedure, (3) Ensure that site-specific emergency and operating procedures are correct, and (4) Submit any comments or requests for change to the RSO by the fourth quarter of each year.
- 4.3.3 Not all parts of this procedure apply at all sites.
- 4.3.4 Attachment 4 shows the authority structure. If a personnel change occurs, then the RSC will act to fill the vacant position and ensure that the new individual meets the applicable training requirements.

### 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 flyash hoppers when the source shutter is open.

## 5.2 NRC Inspections and AEP Evaluations

- 5.2.1 Upon inspection by the NRC or Agreement State authority, the licensee should present this program and copies of leak test, training, dosimetry and inspection records, as requested by the inspection official.
- 5.2.2 Upon completion of the NRC inspection:
  - request a copy of the inspection results
  - forward a copy of the inspection results to the RSO
- 5.2.3 AEP evaluations, which involve an evaluation by a designee of the RSO to verify and document compliance, should be performed at intervals not to exceed 3 years or as specified by the RSO.

## 5.3 Postings

Postings shall be in accordance with 10 CFR 19.11, 10 CFR 21.6, 20.1902(e) and any 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. The inventory results shall be recorded on a Attachment 6, or equivalent.
- 5.4.2 The shutter (on/off) mechanism shall be tested on fixed level gauges on a semi-annual basis. The inspection results shall be recorded on a Attachment 6, or equivalent.

## 5.5 Records

- 5.5.1 Inventory and inspection records (Attachment 6, or equivalent) shall be maintained for at least three years.
- 5.5.2 Leak test records shall be maintained for at least three years.
- 5.5.3 Radiation Safety Committee meeting minutes shall be maintained for five years from the meeting date.
- 5.5.4 Use "N/A" on any forms to denote "not applicable" where data need not be entered.
- 5.5.5 Dosimetry records shall be maintained for the life of the company.
- 5.5.6 Training records for annual re-qualification (requal) should be maintained for at least three years.
- 5.5.7 RSP review records (i.e., requests for change, marked up copies) shall be maintained for at least three years.

5.6 Emergency Response

- 5.6.1 In the event of an emergency, contact the 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, with up-to-date telephone numbers and contacts.

5.7 Survey Instruments

- 5.7.1 A survey instrument may be used to isolate the location of the source in the event of an emergency. One survey meter per site shall be maintained.
- 5.7.2 Survey meters shall be calibrated on an annual basis,  $\pm 25\%$ .

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 RSO immediately.
- 5.8.3 Positive leak tests (leak tests which exceed 0.005  $\mu\text{Ci}$  or 11,000 dpm) shall be reported to the RSO immediately.
- 5.8.4 For devices transported on public highways, a copy of the most recent leak test for portable moisture density gauges shall accompany the transportation paperwork (Section 5.12).
- 5.8.5 The D.C. Cook 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 (thermoluminescent dosimeters, film badges) shall be worn if:
  - the results of the prospective evaluation (Attachment 5) shows that 10% of the annual whole body dose equivalent limit is expected to be exceeded, OR,
  - licensing commitments deem the practice necessary
  - voluntary monitoring is desired
- 5.9.2 If any of the above criteria are met, then the dosimetry shall be worn at all times around the device.



- 5.9.3 Per the requirements of 10 CFR 20.2206, AEP non-nuclear facilities are NOT required to file Form 5 reports with the NRC.
- 5.9.4 Dosimetry shall be stored in a location separate from the device (e.g. in a storage cabinet away from the device).
- 5.9.5 Routine (e.g. monthly, quarterly, etc.) exposure records shall be made available to the monitored individual for review.
- 5.9.6 Annual exposure reports (NRC Form 5) shall be made available to the individual as a permanent record.
- 5.9.7 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 LEVEL GAUGES**

- 5.10.1 Individuals authorized to perform maintenance on flyash hoppers shall be trained on the lockout procedure.
- 5.10.2 Attachment 8 provides a sample lockout procedure.
- 5.10.3 The Assistant-RSO 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 Worker training shall be in accordance with 10 CFR 19.12. Annual frequencies are permitted a  $\pm 25\%$  grace period.
- 5.11.2 The recommended training prerequisites for the RSO and Assistant-RSO are presented on Attachment 3.
- 5.11.3 **If** the prescribed training requal frequency is not met, **then** inform the RSO.
- 5.11.4 Authorized users of portable moisture density gauges shall attend a one-day operator's training and safety course and maintain a certificate which demonstrates the course was successfully completed.

5.12 Transportation of Portable Moisture Density Gauges and other devices.

**NOTE:**  
**ANY PORTABLE GAUGE TRANSPORTED ON PUBLIC HIGHWAYS**  
**IS SUBJECT TO STEPS 5.12.1 - 5.12.3**

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 Reference 3.14, or equivalent, shall accompany the device. The package shall include:

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), this is "RQ, Radioactive material, special form, n.o.s."
- The applicable ID number from 49 CFR 172.101. For Troxler 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 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 shall be shipped per the manufacturer's instructions.

5.13 Maintenance, Installation, and Handling

5.13.1 Fixed gauges may be uncrated, mounted and wired by the Assistant-RSO or designee, but unlocking or unbolting the shutter may only be performed by the manufacturer.

5.13.2 Portable gauges may be maintained by the Assistant-RSO per the instructions in Reference 3.14, or equivalent. 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 A use log shall be maintained by the Assistant-RSO. Attachment 9, or equivalent, should be used for this purpose.
- 5.14.3 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.
- 5.14.4 Keys for the source rod and cabinet shall be maintained by the Assistant-RSO. Keys for the room should be maintained by the Assistant-RSO and individuals authorized to enter the room.

5.15 Temporary Locations

- 5.15.1 The sender of a device to a temporary location shall include the proper shipping paperwork (section 5.12.2).
- 5.15.2 The receiver of a device at a temporary location shall send written conformation of receipt to the sender.
- 5.15.3 The Assistant-RSO shall ensure that the individual at the temporary site is:
  - qualified to use the device, as evidenced by a training certificate from the manufacturer,
  - 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

### **RSO Responsibilities**

1. Assist the Radiation Safety Committee in the performance of its duties.
2. Report to management once each year on the byproduct material program.
3. Provide management oversight to Assistant-RSOs.
4. Designate site evaluation frequencies and ensure their performance.
5. Review and approve documentation resulting from site evaluations.
6. Serve as a liaison to the NRC or Agreement State authority.
7. Develop and maintain a generic Radiation Safety Program for the license at AEP non-nuclear facilities.
8. Recommend corrective or preventative actions following the report of past-due or positive leak-tests by assistant-RSOs.
9. Keep a copy of 10 CFR Chapter 1 and the regulations in section 3.0 of this procedure.

### **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 and notify the RSO if unexpected or unusual dose is received by an individual.
5. Understand the definition of "ALARA" listed in part 4.1.
6. Establish and conduct the training program.
7. Examine and determine the competency of personnel.
8. Ensure that licensed materials are used only by those individuals who have satisfactorily completed appropriate training programs or who are authorized by the license.
9. Ensure that licensed material is properly secured against unauthorized removal at all times.
10. Establish and maintain the leak test program and perform or supervise leak testing of sealed sources.
11. Develop and Maintain up-to-date site-specific operating and emergency procedures.
12. 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 and/or Agreement State regulations and license conditions.
13. Conduct inventories and maintain utilization logs.
14. Review and ensure maintenance of those records kept by others.
15. Establish and maintain proper transportation labels, placards, forms and records.
16. Establish and maintain annual internal review programs.
17. Conduct radiation safety inspections of licensed activities periodically to ensure compliance with the regulations and license conditions.
18. 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.
19. Investigate the cause of incidents and determine necessary preventive action.
20. Act in an advisory capacity to the licensee's management and personnel.
21. Maintain a procedure for evaluating and reporting equipment defects and noncompliance pursuant to 10 CFR Part 21.
22. Report any problems associated with the performance of site-specific RSO responsibilities to the RSO.
23. Maintain portable moisture density gauge training certificates and a current "Certificate of Competent Authority".

**Radiation Safety Committee Responsibilities**

**NOTE:**

**ONLY ONE ASSISTANT-RSO FROM ANY SITE IS REQUIRED FOR EACH MEETING  
WHO MAY ATTEND VIA SPEAKERPHONE**

1. Meet four times per year at intervals not to exceed four months.
2. Prepare meeting minutes and distribute to pertinent Assistant-RSOs prior to the next meeting. (Use Attachment 11, or equivalent).
3. At least one-half the committee membership shall be in attendance during meetings.
4. To oversee the use of licensed material, the committee should:
  - 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 approval or disapproval of, the application of any Assistant-RSO or individual who seeks approval as an authorized user.
  - d) Review, on the basis of radiation safety, and approval or disapproval of, each proposed use of byproduct material, including periodic re-evaluations and approved uses.
  - e) Review and approve radiation safety program changes on the basis of safety.
  - 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 involving byproduct material with respect to cause and subsequent actions taken.
  - h) Establish investigational levels for occupational doses that, when exceeded, require investigations and considerations of action by the RSO.
  - i) Review annually, with the assistance of the RSO, the radiation safety program.
  - j) Maintain the authority structure presented on Attachment 4.
  - k) Communicate relevant industry events to the Assistant-RSOs.

**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 requal) 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 an on-site requal at least every two years.

**Emergency Response**

In the event of an accident, fire or unusual occurrence or malfunction which may lead to radiation exposure or release of radioactive material, 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. Assistant RSO:	_____	(W) _____	(H) _____
2. Alternate 1:	_____	(W) _____	(H) _____
3. Alternate 2:	_____	(W) _____	(H) _____
4. Alternate 3:	_____	(W) _____	(H) _____
5. RSO:	<u>Douglas Noble</u>	(W) (616) 465-5901 X2527	(H) (616) 429-5234
6. Alternate 1:	<u>Ryan Fard</u>	(W) (616) 465-5901 X1542	(H) (616) 429-9282
7. Alternate 2:	<u>David Helms</u>	(W) (616) 465-5901 X3148	(H) (616) 468-3272

4. The RSO will determine if a survey is required, and if notification of Federal or State officials 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. In nuclear gauges, this protection is provided by the source housing.
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
      - To abandon the effort and restrict the area if the corrective action fails



### **Training**

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," July, 1981.
2. Regulatory Guide 8.13, "Instruction concerning prenatal radiation exposure," December, 1987.

### **RSO Prerequisites**

1. An academic degree in physical or biological science or engineering, specific training in radiation health sciences,
2. At least 5 years experience with a broad spectrum of radioactive material related to the types, quantities and uses of the licensee's program,
3. Operator's certification for portable gauges

### **Assistant-RSO Prerequisites**

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 operating and emergency procedures. The following is a sample of topics that should be covered by the course.

1. The handling and use of license 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 during transport to prevent accidental loss, tampering, or unauthorized removal.
7. Picking up, receiving and opening packages containing licensed materials.
8. Decontamination of the environment, equipment, and personnel.
9. Maintenance of records.
10. Inspection and maintenance of sealed sources, source holders, source handling tools, storage container, and transport containers.
11. Identify defects and non-compliance in reporting to NRC or Agreement State.
12. Notifying the proper persons in the event of an accident.
13. 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.
14. 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)
15. Radiation safety practices including prevention of contamination, and methods of contamination
16. Requirements of pertinent Federal Regulations

#### Authorized User Prerequisites

1. Operator's certification for portable gauges, where portable gauges are used
2. Annual requal training (see below).

#### Annual Requal Training Requirements for Other Individuals

Per 10 CFR 19.12, instruction is to be provided to any ancillary personnel who may assist in operations (secretarial, janitorial, maintenance, operations personnel) or other workers that may work around or near any of the sealed gauging devices. This instruction, to be given both initially and at least annually  $\pm 25\%$  is recommended to include the following topics (commensurate with scope and extent of licensed activities):

1. For users of portable moisture density gauges, an operator's course and certification is required (initial training only, not annually).
2. Information concerning the location, storage, transfer, and use of byproduct material devices.
3. The ALARA principle and its site-specific application.
4. Worker responsibility to report to the licensee any conditions which may lead to or cause a violation of NRC regulations, license conditions, or unnecessary exposure to or release of radioactive materials.
5. The appropriate response in the event of an accident, fire or unusual occurrence or malfunction which may lead to radiation exposure or release of radioactive material.
6. NRC regulations are available for inspection in the Assistant-RSO's office.
7. Employees will be notified of any violation resulting from an NRC inspection.
8. Location of Postings.
9. Any defects or non-compliance associated with any nuclear devices should be reported to your immediate supervisor or the Radiation Safety Officer. These defects or instances of non-compliance will be reported to the NRC.
10. Emergency procedures and their implementation.
11. **If** there are any questions, **then** contact the Assistant-RSO.
12. Lockout procedures for flyash hoppers, if applicable.

It is the responsibility of the Assistant-RSO to determine the scope of personnel which require requal training, and the pertinent topics based on the devices in use.

**Authority Structure: Subject to Change Pending Review by the Radiation Safety Committee**

RSO: Douglas Noble (D.C. Cook Nuclear Plant, 1 Cook Place, Bridgman, MI 49106)  
 Tel: (W) 616-465-5901 X2527 (H) 616-429-5234  
 Meets requirements for RSO on Attachment 3  
 Scheduled to attend Operator's course on **February 27, 1997**  
 15 years nuclear industry experience

Assistant-RSO (Licensing and Compliance): Ryan Fard (D.C. Cook Nuclear Plant, 1 Cook Place, Bridgman, MI 49106)  
 Tel: (W) 616-465-5901 X2527 (H) 616-429-9282  
 Meets requirements of Assistant-RSO on attachment 3  
 B.S. (Biology), M.S. (Health Physics)  
 3 years nuclear industry experience  
 Scheduled to attend Operator's course on **February 27, 1997**

Assistant-RSO (Licensing, evaluations): David Helms (D.C. Cook Nuclear Plant, 1 Cook Place, Bridgman, MI 49106)  
 Tel: (W) 616-465-5901 X2527 (H) 616-468-3272  
 Meets requirements of Assistant-RSO on attachment 3  
 26 years nuclear industry experience  
 Scheduled to attend Operator's course on **February 27, 1997**

Assistant-RSO (Site Specific): See Table

Meets requirements of Assistant-RSO on attachment 3.

Completion of a one day course (RSO Training) by Assistant-RSOs will occur before **October 1, 1997**. (Indicated by an asterix in the following table)

Assistant-RSO	Plant or Facility Name	Plant Telephone	Mailing Address	City	State	Zip
Paul Higginbotham	Rockport	812-649-9171	Route 2	Rockport	IN	46735-9425
Terry Tucker*	John E. Dolan Engineering Laboratory	614-836-4188	4001 Bixby Road	Groveport	OH	43125
Phil Milstead	Gavin	614-367-7331	P.O. Box 272	Cheshire	OH	45621
Allen Downie	Mountaineer	304-882-2151	Route 33	Newhaven	WV	25265-0419
Lance R. Cook*	Clinch River	540-882-1540	Route 82	Cleveland	VA	24225-0157
Joe Ryder*	Glen Lyn	540-726-3191	Route 460	Glen Lyn	VA	24093-9726
Tom Carroll	Amos	604-755-5301	1530 Winfield Road	Winfield	WV	25213
Dan Carney*	Windsor Coal	304-336-7203	Locust Grove Road. RT 88	West Liberty	WV	26074

### **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 the past several years. Typical results show annual exposure in the range of 50 millirem or less. Based on this information, monitoring is not required. However, dosimetry will continue to be worn as a voluntary practice for moisture density gauge users. Declared pregnant female workers and minors have a monitoring threshold of 50 mrem per year. Monitoring for individuals of these types is required, not voluntary.

According to the manufacturer (TN), fixed gauges emit less than 5 mR/hour of gamma radiation at one foot. The gauges are generally positioned out of reach and in unfrequented areas. Furthermore (for flyash 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. Based on this information, personnel monitoring is not required at facilities using fixed gauges.

Alloy analyzers and gas chromatograph devices do not have measurable dose rates when used safely, and monitoring for these devices is not required.

**Inventory and Inspection**

Recommended procedure for 6-month 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.

**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. The Assistant-RSO shall review the record before filing.
4. An answer of "unsat" requires contacting the RSO.

## Facility Name: \_\_\_\_\_

Signature of Assistant-RSO: \_\_\_\_\_

[illegible]



**Leak Test Procedure and Data Form**

**NOTE:**  
**ADHERE TO THE MANUFACTURER'S REQUIREMENTS FOR PERFORMING LEAK TESTS**

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

**NOTE:**  
**NUCLIDES LISTED ON THE FORM ARE TYPICAL. ADDITIONAL NUCLIDES WILL BE CONSIDERED ON A CASE BY CASE BASIS**

**Recommended Procedure:**

1. A leak test analysis is performed by smearing the device and submitting it for counting analysis.
2. Smears may be obtained from the RSO at the D.C. Cook Plant.
3. Fill out the information at the top of the form.
4. Fill out Columns 2 and 4 on the data form in advance, and prepare the smears by numbering them sequentially.
5. On the date the smears are used, fill out Column 3.
6. Moisten the smear with a mild soap and water solution (e.g., a drop of dish soap in a container of water, or equivalent).
7. 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.
8. When all smears have been completed, place them in a plastic bag in such a way to prevent cross-contamination.
9. Seal the bag and send it to the RSO via company mail or equivalent.
10. The RSO will assign a qualified individual to perform the counting analysis.
11. A copy of the form and results will be maintained by the RSO and the original will be sent to the Assistant-RSO.

**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: \_\_\_\_\_

COL. 1	COL. 2	COL. 3	COL. 4	COL. 5
Smear Number	Device Number	Smear Date	Nuclide(s) of Interest Circle 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

Attachment: Leak Test Results

Sample Lockout Procedure

**NOTE:**

**THE ASSISTANT-RSO SHALL BE NOTIFIED OF ANY WORK THAT IS PERFORMED  
WITHIN A FLYASH HOPPER WHICH USES FIXED LEVEL GAUGES**

This procedure was excerpted from the radiation safety program at the **John E. Amos Plant**.

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.

### Use Log for Portable Moisture Density Gauges

Device Number: \_\_\_\_\_

[illegible]

**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.
- 4.2.2 The RSO or designee is responsible for evaluating such potential 10 CFR 21 items for reportability.
- 4.2.3 The RSO or designee is 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 and/or byproduct material at their facility.
- 5.1.2 The above posting shall be permanent and to 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 the RSO within 24 hours at 8-280-2527 (audinet), or 616-465-5901, ext. 2527.
- 5.2.2 When notifying the 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 When notified that there is a possible 10 CFR 21 item, the RSO or designee shall evaluate the potential problem for a substantial safety hazard as soon as practicable, and in all cases within 60 days of discovery.
- 5.3.2 Upon completion of the evaluation, the RSO or designee will determine if the potential 10 CFR 21 item is a substantial safety hazard and if it is reportable under 10 CFR 21. If it is deemed reportable, then the RSO will contact the manufacturer of the nuclear device to inform them of the 10 CFR 21 item, and to determine who will make the notification to the NRC.
- 5.3.3 Upon receipt of the results of the evaluation, and it was determined that Cook Nuclear Plant personnel will initiate the notification to the NRC, then the RSO or designee shall notify the NRC by either facsimile or by telephone within two days following receipt of the information by the RSO. A written notification to the NRC is required within 30 days following receipt of the results of the 10 CFR 21 evaluation.
- 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.
  - Identification of the facility, the activity, or the nuclear device supplied for such facility which 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 applicable, that 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 RSO at the Cook Nuclear Plant.

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*

**Radiation Safety Committee Meeting Minutes**

Date: \_\_\_\_\_

<b>Persons Present:</b> <b>Print Name</b>	<b>Signature</b>
1.	
2.	
3.	
4.	
5.	
6.	
7.	

Meeting Minutes:

**Site-Specific Emergency and Operating Procedures**

**Attach Here**

**Commitment Update:**

As of March 12, 1997, the following commitments have been completed:

1. Douglas Noble, Ryan Fard and Dave Helms have attended the operator's training course at Troxler Electronics in Elgin, IL.
2. Joe Ryder has attended the one day RSO Training Course at Troxler Electronics in North Carolina.
3. Four survey meters are being prepared for delivery to the four facilities which require them. The meters are VIC-400 G.M. survey meters which will be calibrated annually. The meters were taken from the instrument stock at the Cook Nuclear Plant.

COPY

## MATERIALS LICENSE

Amendment No. 04

Under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 39, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

## Licensee

1. American Electric Power Service Corporation
2. One Riverside Plaza  
P.O. Box 16631  
Columbus, OH 43216-6631

In accordance with application dated November 26, 1991  
3. License number 34-24830-01 is renewed in its entirety to read as follows:

4. Expiration date January 31, 1997

5. Docket or Reference No. 030-29644

6. Byproduct, source, and/or special nuclear material

- A. Cesium-137  
B. Americium-241

7. Chemical and/or physical form

- A. Sealed source  
(Troxler Dwg. No. A-102112)  
B. Sealed source  
(Troxler Dwg. No. A-102451)

8. Maximum amount that licensee may possess at any one time under this license

- A. 50 sources not to exceed 10 millicuries each  
B. 50 sources not to exceed 50 millicuries each

9. Authorized Use

- A. and B. To be used in Troxler Model 3400 Series moisture/density gauges.  
B. To be used in Troxler Model 3216, 3217 or 3218 moisture/density gauges.

## CONDITIONS

10. Licensed material may be used at:

John E. Amos Plant  
1530 Winfield Road  
St. Albans, WV

Clinch River Plant  
U.S. Route 616  
Cleveland, VA

Kanawha River Plant  
U.S. Route 60  
Glasgow, WV

Mountaineer Plant  
U.S. Route 33  
New Haven, WV



MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License number

34-24830-01

Docket or Reference number

030-29644

Amendment No. 04

Corrected Copy

## 10. (Continued)

Rockport Plant  
Box 24A Route  
Rockport, INGlen Lyn Plant  
U.S. Route 460  
Glen Lyn, VAAEP Civil Engineering Laboratory  
4001 Bixby Road  
Groveport, OH

and at temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.

11. A. Licensed material shall be used by, or under the supervision and in the physical presence of, individuals who have satisfactorily completed the manufacturer's training program for gauge users and have been designated by the licensee's Radiation Protection Officer. The licensee shall maintain records of the individuals who have been designated as authorized users.
- B. The Radiation Protection Officer for the activities authorized by this license is Dane R. Williams.
12. A. (1) The source(s) specified in Item(s) 7.A. and 7.B. shall be tested for leakage and/or contamination at intervals not to exceed 6 months. Any source received from another person which is not accompanied by a certificate indicating that a test was performed within 6 months before the transfer shall not be put into use until tested.
- (2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material.
- B. Any source in storage and not being used need not be tested. When the source is removed from storage for use or transfer to another person, it shall be tested before use or transfer.
- C. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the source shall be removed from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region III, 799 Roosevelt Road, Glen Ellyn, Illinois 60137, ATTN: Chief, Nuclear Materials Safety Branch. The report shall specify the source involved, the test results, and corrective action taken. Records of leak test results shall be kept in units of microcuries and shall be maintained for inspection by the Commission. Records may be disposed of following Commission inspection.

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License number

34-24830-01

Docket or Reference number

030-29644

Amendment No. 04

Corrected Copy

## 12. (Continued)

- D. The licensee is authorized to collect leak test samples for analysis by Troxler or tests for leakage and/or contamination shall be performed by persons specifically licensed by the Commission or an Agreement State to perform such services.
13. Sealed sources containing licensed material shall not be opened or removed from their respective source holders by the licensee.
14. When performing tests at temporary job sites, the authorized user shall not leave the moisture/density gauge unattended. Upon completion of tests the device shall be locked in the licensee's vehicle or a secure building to prevent unauthorized use, loss or theft.
15. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 2 years from the date of each inventory.
16. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
17. The licensee shall maintain records of information important to safe and effective decommissioning at the location listed in Item 2 of this license per the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.
18. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.
- A. Application dated November 26, 1986 and November 26, 1991 (with attachments).
- B. Letter dated November 26, 1991.

For the U.S. Nuclear Regulatory Commission

Date: \_\_\_\_\_

MAY 15 1992

By \_\_\_\_\_

Materials Licensing Section, Region III



# MODEL MC-1DR

## DIRECT READOUT MOISTURE/DENSITY GAUGE

Portable gauge for fast/accurate  
measurement of density and  
moisture content of construction  
materials for compaction control.  
Meets ASTM D2922 and D3017 for  
soils and D2950 for asphalt.



MC-1DR ... FOR USE ON SOIL OR ASPHALT CONCRETE

CPN

# CPN® MC-1DR PORTAPROBE®

Large Character LCD  
Easy To Use  
Direct Readout

*The new MC-1DR PORTAPROBE® is the most accurate, rugged, and easy to use density/moisture testing instrument available.*

## FEATURES

- Automatic depth sensing
- Lightweight and portable
- Accurate and reproduceable
- Dual-depth backscatter positions
- Field service and component exchange with a screwdriver
  - Direct readout of total density, total moisture, dry density and % water after one minute test
  - Easy to learn operation only three keys — start, step and standard
  - Clipboard calculator for Proctor/Marshall entry & compaction calculation
  - Automatic statistical check of standard count assures proper operation
  - No battery charging — alkaline cells last more than 1 year

## APPLICATIONS

### EARTH CONSTRUCTION

For compaction control of highways, airports, railway embankments, trench backfills and other earthworks such as dams and foundations. This precision instrument complies with ASTM STANDARD TEST METHODS D2922 & D3017. *Density and Moisture Content of Soil and Soil Aggregates in Place by Nuclear Methods*

### ASPHALT PAVING

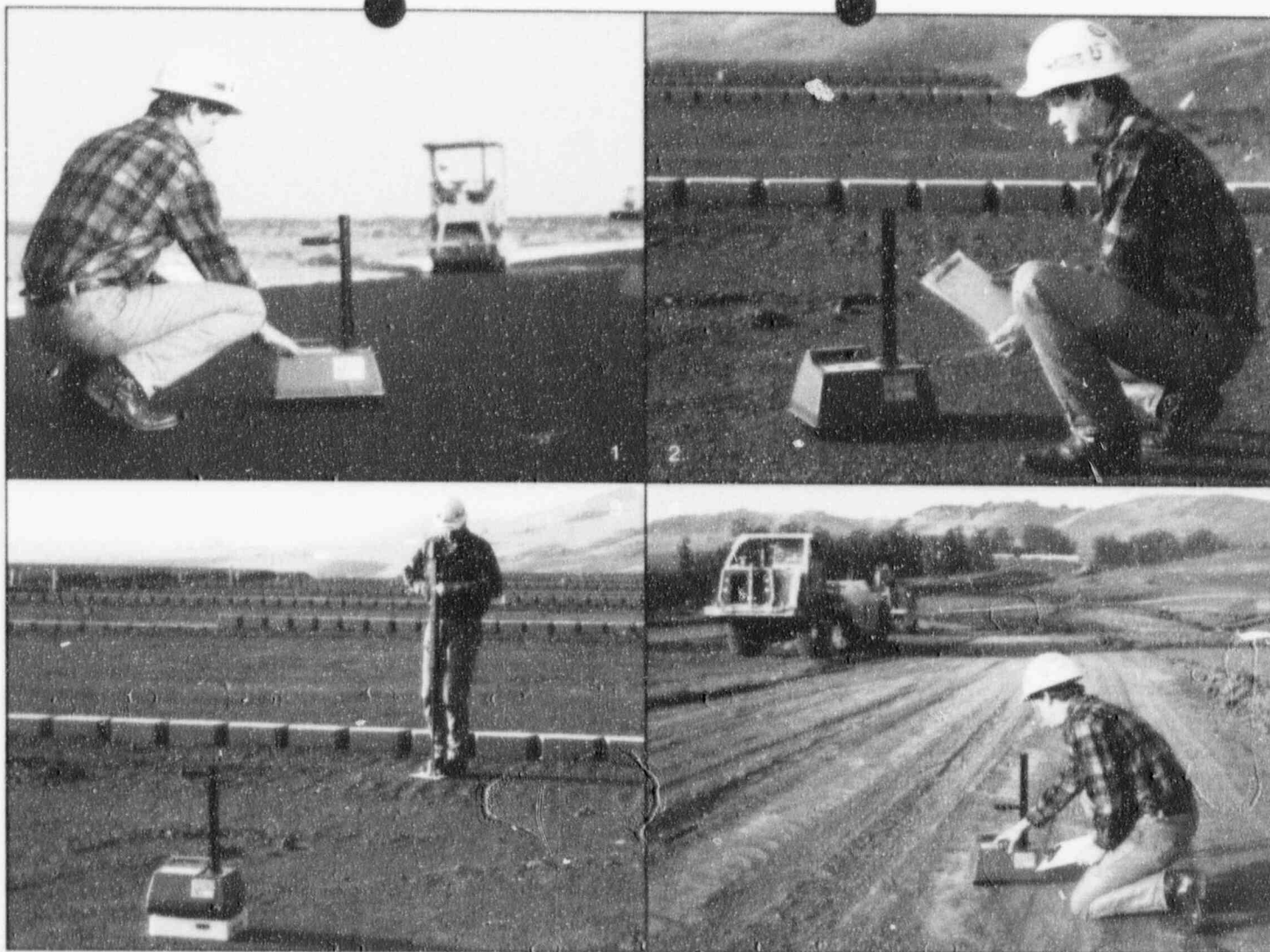
For rapid, accurate density and percent air void tests on asphalt pavements, such as highways, airports and parking lots. The MC-1DR PORTAPROBE® complies with ASTM STANDARD TEST METHOD D2950. *Density of Bituminous Concrete in Place by Nuclear Method*

## SIMPLICITY OF OPERATION

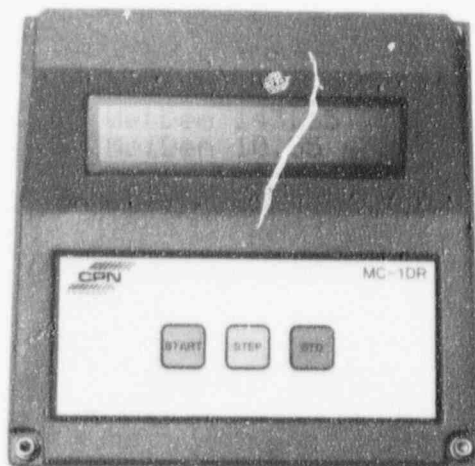
This state-of-the-art instrument offers a simple to operate but superior alternative to other methods of in-place density and moisture testing. The MC-1DR operator needs minimal instruction. The standard count each day includes a statistical check to insure proper gauge performance. Displayed test results are recorded on a field inspection report.

© Copyright 1989, 1991, 1992  
CPN, Martinez, CA  
All rights reserved.





Field Applications: (1) asphalt pavement testing on road; (2) foundation testing at industrial site; (3) utilization of slide hammer to prepare test hole; (4) transmission testing of earth embankments



MC-1DR Keyboard Display

MC-1DR PORTAPROBE® operation is nearly foolproof. The operator begins the test by pressing START. In one minute, the 32 character display provides a direct readout of the following data in English or metric units.

- Wet Density
- Dry Density
- Moisture Content
- Percent Moisture

**To measure density of pavements**, the PORTAPROBE® is simply positioned on a surface that is relatively smooth and free of voids. Accurate measurements of density can then be made to depths of 2.05 or 2.80" (52.1 or 71.1 mm), using the dual backscatter positions. Depth of measurement = 95% gamma return.

**To measure compaction of soils**, a test hole is prepared in the soil with a drill pin or slide hammer. The source rod is extended into the hole and density measurements are taken in 1 or 2 inch (25 or 50 mm) increments to a depth of 8 or 12 inches (200 or 300 mm).

**Moisture measurements** are made from the surface. The depth of measurement is from 4 to 8 inches (100 to 200 mm). The moisture test is taken simultaneously with density.

#### BATTERY PACK

The welded battery pack of six D size cells

normally lasts for over a year of operation (100 readings per day, 5 days per week, and 50 weeks per year). The percent remaining battery capacity is displayed at the start of each test. When depleted, the battery pack is replaced. For field emergencies the gauge may be operated from a 9V transistor radio battery for 1000 readings.

#### RUGGED & RELIABLE

Designed for field use. Minimum connections. All electronic circuits are sealed in dustproof and water resistant compartments.

All units tested for vibration and Environmental Stress Screening. Only four electronic assemblies... thus easy field replacement.

#### PRECISION

Instrument precision, for a one minute test at 125 pcf (2.0 g/cc) wet density and 10 pcf (0.16 g/cc) moisture:

Backscatter test:  $\pm 1.00$  pcf (0.016 g/cc)

Transmission test:  $\pm 0.25$  pcf (0.004 g/cc)  
8.0" (200mm) depth

Moisture test:  $\pm 0.25$  pcf (0.004 g/cc)

# SPECIFICATIONS

## ORDERING INFORMATION

**No. 115082 MC-1DR-82 PORTAPROBE® DENSITY/MOISTURE SURFACE GAUGE**, 8" depth of measurement in 2" increments, for the on-site measurement of density and moisture content of construction materials including soils, soil aggregates, concrete and asphalt pavements. Direct reading of wet density, moisture, dry density, and percent moisture upon completion of a one minute test. Complete with molded, plastic shipping and storage case, lock and two keys, reference standard, guideplate/scrapper, drill pin, lubricant, sign kit, wipe test kit and certificate, and battery pack of six welded D size alkaline cells. Operating instructions.

**No. 115081 MC-1DR-81 PORTAPROBE®**, same as No. 115082 MC-1DR-82 except with 8" depth of measurement in 1" increments.

**No. 115122 MC-1DR-122 PORTAPROBE®**, same as No. 115082 MC-1DR-82 except with 12" depth of measurement in 2" increments.

**No. 115121 MC-1DR-121 PORTAPROBE®**, same as No. 115082 MC-1DR-82 except with 12" depth of measurement in 1" increments.

*Also available in metric units. Please specify when ordering.*

**No. 101050 Campbell Hammer**, impact type.

**No. 702632 Printer**, IMP-24, battery or 110v. AC.

**No. 704158 Printer**, IMP-24, battery or 220v. AC (Europe).

**No. 702678 Printer**, IMP 24, battery or 220v. AC (UK).

## PERFORMANCE

FUNCTION: ..... In-place density/moisture measurements for compaction control of construction materials

RANGE: Density ..... 70 to 170 pcf (1.120 to 2.73 gcc)  
Moisture ..... 0 to 40 pcf (0 to 0.64 gcc)

PRECISION: BS .....  $\pm 1.00$  pcf (0.016 gcc) (at 125 pcf)  
(One Minute Transmission)  $\pm 0.25$  pcf (0.004 gcc) (at 125 pcf)  
Test) Moisture .....  $\pm 0.25$  pcf (0.004 gcc) (at 10 pcf)

CHEMICAL ERROR: BS .....  $\pm 1.00$  pcf (0.016 gcc)  
Transmission .....  $\pm 0.75$  pcf (0.012 gcc)

ROUGHNESS ERROR: BS ..... -4.00 pcf (0.064 gcc)  
(0.05") Transmission ..... -0.50 pcf (0.008 gcc)

COUNTING TIME ..... 1 minute

OPERATING TEMP. .... 32 to 167°F (0 to 75°C)

POWER ..... Battery pack of 6 D size alkaline cells

BATTERY LIFE ..... Over 1 year of operation (More than 25,000 1 minute tests).

DISPLAY ..... 32 character liquid crystal display (2 lines by 16 characters.) Easily readable in direct sunlight from a standing position.

UNITS ..... Internal selection: pcf, gcc, or cpm.

CALIBRATION ..... Factory calibration

## Radiological:

GAMMA SOURCE: ..... 10 mCi (370 MBq) Cesium-137

NEUTRON SOURCE: ..... 50 mCi ( $1.85 \times 10^9$  MBq) Americium-241/Be

ENCAPSULATION: ..... Double-sealed Capsule, CPN-131

DOSE RATE AT HANDLE: ..... Less than 0.5 mrem/hr. (5 $\mu$ Sv/hr)

SHIPPING: ..... Radioactive Material, Special Form, N.O.S., UN2974, R.Q. Transport Index 0.4 Yellow II Label USA DOT 7A, Type A Package

SPECIAL FORM APPROVAL: ..... USA/0397/S, USA/0398/S

An NRC or agreement state license is required for domestic use. Contact CPN Co. for assistance in obtaining the operator training required for a license.

## SERVICE

The modular design of the MC-1DR allows repairs by simple component exchange. Replacement parts can be shipped within one working day.

## TRAINING

CPN offers comprehensive training on the use of CPN instruments, either at your facility or ours. Training topics include safety, equipment operation, applications and field maintenance.

## DIMENSIONS/SHIPPING WEIGHTS

MODEL NUMBER	WIDTH	DEPTH	HEIGHT	WEIGHT
INSTRUMENT	14.1" (358 mm)	9.4" (240 mm)	22.8" (579 mm)	30 lbs. (13.6 kg.)
MC-1DR-82, -81	14.1" (358 mm)	9.4" (240 mm)	26.8" (681 mm)	31 lbs. (14.1 kg.)
MC-1DR-122, -121				
INSTRUMENT & CARRYING CASE				
MC-1DR-82, -81	26" (660 mm)	15" (381 mm)	16.5" (419 mm)	88 lbs. (39.9 kg.)
MC-1DR-122, -121	30" (762 mm)	16" (406 mm)	16.5" (419 mm)	92 lbs. (41.7 kg.)

# CPN

a division of Brainard Kilman

2830 Howe Road  
Martinez, California 94553  
Telephone (510) 228-9770  
FAX (510) 228-3183



## BRAINARD · KILMAN



MAY 28 1997

Douglas Noble  
Radiation Safety Officer  
American Electric Power  
One Cook Place  
Bridgman, MI 49106

Dear Mr. Noble:

Enclosed is your NRC Material License Number 21-26795-01 in accordance with your request.

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region III office at (630) 829-9887 so that we can provide appropriate corrections and answers.

Please be advised that your license expires at the end of the day, in the month, and year stated in the license. Unless your license has been terminated, you must conduct your program involving byproduct materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers; Inspections," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Not possess and use materials authorized in Items 6, 7, and 8, on the license until:
  - a. You have constructed the facilities and obtained the equipment described in the license application and supporting documentation; and
  - b. You have notified the U. S. Nuclear Regulatory Commission, Region III, ATTN: Chief, Nuclear Materials Licensing Branch, in writing, that activities authorized by the license will be initiated.
3. Notify NRC, in writing, within 30 days:
  - a. When the Radiation Safety Officer permanently discontinues performance of duties under the license or has a name change; or

362467

- b. When the mailing address listed on the license changes. (No fee is required if the location of byproduct material remains the same.)
- 4. In accordance with 10 CFR 30.36(b) and/or license condition, notify NRC, promptly, in writing, and request termination of the license:
  - a. When you decide to terminate all activities involving materials authorized under the license; or
  - b. If you decide not to complete the facility, acquire equipment, or possess and use authorized material.
- 5. Request and obtain a license amendment before you:
  - a. Change Radiation Safety Officers;
  - b. Order byproduct material in excess of the amount, or radionuclide, or form different than authorized on the license;
  - c. Add or change the areas of use or address or addresses of use identified in the license application or on the license; or
  - d. Change ownership of your organization.
- 6. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date of your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of byproduct material after your license expires is a violation of NRC regulations. A license will not normally be renewed, except on a case-by-case basis, in instances where licensed material has never been possessed or used.

In addition, please note that NRC Form 313 requires the applicant, by his/her signature, to verify that the applicant understands that all statements contained in the application are true and correct to the best of the applicant's knowledge. The signatory for the application should be the licensee or certifying official rather than a consultant.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in enforcement action against you. This could include issuance of a notice of violation, or imposition of a civil penalty, or an order suspending, modifying or revoking your license as specified in the General Statement of Policy and Procedure for NRC Enforcement Actions. Since serious consequences

D. Noble

-3-

to employees and the public can result from failure to comply with NRC requirements, prompt and vigorous enforcement action will be taken when dealing with licensees who do not achieve the necessary meticulous attention to detail and the high standard of compliance which NRC expects of its licensees.

Sincerely,

Original Signed By  
Deborah A. Piskura  
Nuclear Materials Licensing Branch

License No.: 21-26795-01  
Docket No.: 030-34426

Enclosure: License No. 21-26795-01

DOCUMENT NAME: M:\03034426.CL7

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	DNMS/RIII								
NAME	DPISKURA:jaw								
DATE	05/01/97								

OFFICIAL RECORD COPY

American Electric Power  
Cook Nuclear Plant  
One Cook Place  
Bridgman, MI 49106  
616 465 5901

Ryan M. Fard



April 30, 1997

Materials Licensing Section  
U.S. Nuclear Regulatory Commission, Region III  
801 Warrenville Road  
Lisle, IL 60532-4351

Dear Ms. Piscura:

Enclosed is the application for amendment 5 to license number 34-24830-01. This application includes the NRC Form 313, an attachment to NRC Form 313 with answers to items 5-11, and a copy of our Radiation Safety Program. The items discussed during our telephone conversation have been updated.

For questions regarding this application, please contact me at (616) 465-5901 ext. 1542.

Sincerely,

*Ryan M. Fard*

Ryan M. Fard

Attachments

RECEIVED  
MAY 02 1997  
REGION III

MAY 02 1997

Introduction:

These continuation pages provide answers to questions 3 and 5-11 of NRC Form 313. Many of the answers refer to the Radiation Safety Program (RSP), which is included in this submittal package. The RSP is intended to meet the requirements of the references listed within the RSP, which includes the proposed 1997 draft of 10 CFR 31, "General Domestic Licenses for Byproduct Material" and DG-0008, "Applications for the Use of Sealed Sources in Portable Measuring Gauges". The RSP is intended to be a document separate from the license. Items in the RSP should not be specified within the license (e.g., names of Assistant-RSOs) to avoid a license amendment for minor RSP changes.

Pending approval by the NRC, the RSP will be implemented at the listed facilities after any NRC concerns are resolved and the document is updated. Commitment dates are presented in boldface. Once approved by the NRC, the RSP will not undergo content changes without the formal review process specified in the RSP.

Finally, the RSP contains procedures for byproduct material other than portable measuring gauges. We will be implementing this program at approximately 13 additional AEP facilities using a variety of other types of byproduct material (described in the RSP).

## 3. Addresses where licensed material may be used or possessed.

Plant or Facility Name	Mailing Address	City	State	Zip
1. Rockport Plant	Route 2	Rockport	IN	46735-9425
2. John E. Dolan Engineering Laboratory	4001 Bixby Road	Groveport	OH	43125
3. Gavin Plant	P.O. Box 271 (Rte. 7)	Cheshire	OH	45621
4. Mountaineer Plant	Route 33	New Haven	WV	25265-0419
5. Clinch River Plant	Route 82	Cleveland	VA	24225-0157
6. Glen Lyn Plant	Route 460	Glen Lyn	VA	24093-9726
7. John E. Amos Plant	1530 Winfield Road	Winfield	WV	25213
8. Windsor Coal	Locust Grove Road. RT 88	West Liberty	WV	26074
9. Kanawha River Plant	U.S. Route 60	Glasgow	WV	25086-0110
10. Temporary job sites in the United States subject to NRC's regulatory authority				

The Gavin Plant, identified with a P.O. Box can be easily found in Cheshire, Ohio. Any of these locations, whose telephone numbers are identified in the RSP, have a main number which may be contacted for specific directions, if needed.

## 4. Contact Ryan M. Fard at (616) 465-5901 ext. 1542 regarding this application.

5. Please provide the "generic" authorization outlined on p. 9 and Appendix K of DG-0008, based upon the following required information:

(1) Radionuclide	(1) Max. Activity	(3) Manufacturer	(3) Drawing Numbers
Cs-137	10 mCi	Troxler Model 3400 series moisture density gauges, or CPN model MC-1DR-P moisture density gauge	Troxler (Dwg. No. A-102112), CPN (Dwg. No. CPN-131)
Am-241	50 mCi	Troxler Model 3400 series moisture density gauges, or CPN model MC-1DR-P moisture density gauge.  Troxler Model 3216, 3217 or 3218 moisture density gauges	Troxler (Dwg. No. A-102112), CPN (Dwg. No. CPN-131)
<p>(4)</p> $R = \frac{50 \text{ sources} \times \frac{50 \text{ mCi}}{\text{source}}}{1\text{E} - 05 \text{ mCi (limit Am - 241)}} + \frac{50 \text{ sources} \times \frac{10 \text{ mCi}}{\text{source}}}{1\text{E} - 02 \text{ mCi (limit Cs - 137)}} = 2.5\text{E} + 08$ <p>Per 10 CFR 30.35d, if R divided by <math>10^{10}</math> is greater than 1 (for sealed sources), then financial assurance for decommissioning is required. In this case, R divided by <math>10^{10}</math> is equal to <math>2.5\text{E}-02</math>, so financial assurance for decommissioning is not required. AEP commits to not exceeding fifty devices (100 sources of two types) on this license.</p>			

6. Measuring moisture and density of construction materials and/or landfill. These devices are not lowered below the surface more than the 1 to 3 feet common for most surface measurements.
7. Douglas Noble will act as Radiation Safety Officer. See Radiation Safety Program (RSP), Attachments 1, 3 and 4 for training, qualifications and responsibilities. Note that "Assistant-RSOs" will act at each site, and must meet specific training requirements.
8. Section 5.11 and Attachment 3 of the RSP provides training information. All authorized users of portable moisture density gauges have proper training certificates from the manufacturer (Troxler). CPN, the other manufacturer specified in item 5, has indicated that the Troxler training course is acceptable for meeting the requirements of operating a CPN gauge.  
  
Dan Carney of Windsor Coal has completed neither the RSO training nor the Gauge Training, but has committed to attend the operator's course **by October 1, 1997**. There are currently no moisture density gauges at Windsor Coal, and will not be until training is complete.
9.
  - 1) Each proposed permanent facility currently exists.
  - 2) The facilities are either an office laboratory, a power generation facility (coal), a landfill site near a power generation facility, or a coal mining and/or preparation plant.



- 3) The storage locations are in all cases locked rooms or cabinets to which access is limited to the Assistant-RSO, authorized users, or ancillary personnel who require infrequent access. Restricted areas do not include residential quarters.
  - 4) Security measures include locking the storage area and limiting key access. Facility access is generally limited to company employees. Public access is therefore restricted.
  - 5) Transport vehicles generally include company vehicles (e.g., Suburban, truck or equivalent). The gauges are positioned in the rear of the vehicle, blocked and braced, to prevent movement during transport. The gauges are typically only transported on company property.
  - 6) Gauges are controlled by surveillance by the Assistant-RSO and authorized users. Temporary job sites will be limited to facilities which meet the requirements of the Radiation Safety Program. The procedures in the RSP apply at temporary and permanent facilities alike.
  - 7) It is not normally planned to store gauges anywhere but the permanent storage facility. Temporary job sites within the AEP system are not always local. The RSP outlines transportation procedures.
10. The Radiation Safety Program is attached. This program replaces the existing written programs at the listed facilities. It will also eventually replace the program at other licensed AEP facilities using fixed gauges, alloy analyzers, and gas chromatograph devices. For this reason it is more comprehensive than just portable moisture density gauges.
- 10.1) See attachment 5 of the RSP for the prospective evaluation.
  - 10.2) Survey meters are currently maintained at 5 of the 9 permanent facilities, and the remaining sites will be provided a meter by July 1, 1997.

Contrary to the guidance in DG-0008, AEP **does not** commit to maintaining check sources at the nine listed locations throughout the AEP system for the following reasons. This "prospective evaluation" will thus establish our position on the maintenance of check sources:

- 1) There is an ALARA concern associated with the high contact dose rates of a check source capable of deflecting a meter to approximately 5 mrem per hour.
- 2) The potential for loss of small check sources would be an added concern (e.g. Report No. 944, NUREG-1272).
- 3) Accidents involving portable moisture density gauges generally involve the source being damaged or crushed by a vehicle. This type of accident does not involve "hunting down" an ejected source, but rather isolating the area until the situation can be safely mitigated. Emergency procedures, per our program, emphasize isolation of an area rather than quantification with a meter.
- 4) The annual calibration cycle of portable instruments evident at the D.C. Cook nuclear plant testifies to the reliability of survey instruments such as the ones used in our program. An infrequently used instrument would be expected to perform even after long periods of non-use.
- 5) Assessment of a potential accident situation at a job site.

Emergency procedures in our program would require the RSO to isolate the area. If the RSO determines that a survey is warranted, then it would be limited to the logical location of the source, which would be near the damaged device. If it were determined that the meter didn't respond, then the RSO would recommend against searching for it until trained personnel with the proper equipment (shielding, etc.) could be transported to the scene.

- 6) Assessment of a potential accident situation on a public highway.  
  
The sealed source in moisture density gauges has three containment devices during transport: the instrument housing, the Type A package, and the vehicle itself, in which the device is required to be blocked and braced. If an accident occurred that were bad enough to eject the source rod from all three containment devices, then traffic delays (as described in paragraph 10.2 of DG-0008) should not be a critical concern. Furthermore, none of the listed facilities send the devices onto public highways for regular transport except for long distance shipment by private carrier (e.g. U.P.S.). The location of storage and use is always on company property.
- 7) Our safety record shows that there has never been a reportable incident requiring a survey at an AEP non-nuclear facility.
- 8) Emergency procedures in combination with overnight delivery service, and the close proximity of the ten proposed sites to each other, would allow prompt delivery of a new meter if the Assistant-RSO determines that the performance of his or her meter is suspect.

For these reasons, AEP does not anticipate the need for check sources, and will not require them at non-nuclear facilities. Instruments, however, will be maintained.

10.3) Leak testing is outlined in the RSP. Leak test frequencies for portable moisture density gauges will be performed at intervals not to exceed 6 months for Troxler devices and 1 year for CPN gauges.

The Assistant-RSO may choose any qualified vendor (Option 1) to perform leak test analysis, such as TN or Troxler. If Option 3 is chosen, then Attachment 7 provides a procedure for performing the test. The laboratory counting equipment at the D.C. Cook Nuclear Plant consists of a low background alpha and beta counter ("Tennelec"). Any Health Physicist may run the counter, or any RP Technician who has successfully completed the OJT/OJQ ("On the Job Training, On the Job Qualification") for sample analysis. Radiation Protection procedures govern the calibration of this counting equipment. These procedures are subject to the plant Quality Assurance program, and undergo periodic review as mandated by this program. A sample leak test result is attached to this letter. Note the results provided by the counter are reported in DPM. Any result less than 11,000 dpm (.005  $\mu$ Ci) is considered to be negative.

- 10.4) Attachment 6 of the RSP documents the inventory procedure.
- 10.5) Section 5.13 of the RSP meets the maintenance requirement.
- 10.6) Section 5.12 of the RSP meets the transportation requirements.
- 10.7) Section 5.6, 5.14 and Attachment 2 of the RSP meet the emergency response and operating procedure requirements.
- 10.8) Section 4.3.2 meets the annual review (audit) requirement. In addition to annual RSP audits, site compliance evaluations will be performed once per three years, or as specified by the RSO. The annual audit (at the RSO level) will entail reviewing the RSP and ensuring that all of the listed steps meet the requirements of the pertinent regulations. At the Assistant-RSO level, the audit will entail ensuring that the program implementation does not deviate from the requirements of the RSP.
- 10.9) Financial Assurance and Record keeping for Decommissioning is not required since the calculation in item 5.4 was negative.

11. Disposal will be by transfer of the radioactive material to a person who is specifically licensed to receive and possess it.

## TABLE OF CONTENTS

TABLE OF CONTENTS .....	i
1.0 TITLE .....	1
2.0 PURPOSE .....	1
3.0 REFERENCES .....	1
4.0 INITIAL CONDITIONS .....	2
4.1 DEFINITIONS .....	2
4.2 RESPONSIBILITIES .....	2
4.3 LIMITATIONS AND ACTIONS .....	3
5.0 DETAILED PROCEDURE .....	3
5.1 ALARA .....	3
5.2 NRC INSPECTIONS AND AEP EVALUATIONS .....	3
5.3 POSTINGS .....	4
5.4 INVENTORY AND INSPECTION OF DEVICES .....	4
5.5 RECORDS .....	4
5.6 EMERGENCY RESPONSE .....	5
5.7 SURVEY INSTRUMENTS .....	5
5.8 LEAK TESTS .....	5
5.9 DOSIMETRY .....	5
5.10 LOCKOUT PROCEDURE FOR FIXED GAUGE USERS .....	6
5.11 TRAINING .....	6
5.12 TRANSPORTATION OF PORTABLE MOISTURE DENSITY GAUGES .....	6
5.13 MAINTENANCE, INSTALLATION, AND HANDLING .....	7
5.14 USE OF PORTABLE MOISTURE DENSITY GAUGES .....	8
5.15 TEMPORARY LOCATIONS .....	8

## ATTACHMENTS

1. RESPONSIBILITIES
2. EMERGENCY RESPONSE
3. TRAINING
4. AUTHORITY STRUCTURE
5. PROSPECTIVE EVALUATION
6. INVENTORY AND INSPECTION
7. LEAK TEST PROCEDURE AND DATA FORM
8. SAMPLE LOCKOUT PROCEDURE
9. USE LOG FOR PORTABLE MOISTURE DENSITY GAUGES
10. REPORTING OF DEFECTS AND NON-COMPLIANCE PER 10 CFR 21
11. SITE-SPECIFIC EMERGENCY AND OPERATING PROCEDURES

## 1.0 TITLE

Radiation Safety Program

## 2.0 PURPOSE

This procedure meets the requirements of:

- 10 CFR 20.1101(a),
- the NRC 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

## 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 Draft Regulatory Guide DG-0005, "Applications for Licenses of Broad Scope" October, 1994.
- 3.11 Draft Regulatory Guide DG-0008, "Applications for the Use of Sealed Sources in Portable Gauging Devices" May, 1995.
- 3.12 Regulatory Guide 8.29, "Instruction Concerning Risks From Occupational Radiation Exposure." July, 1981.
- 3.13 Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure," December, 1987.
- 3.14 "Troxler Nuclear Gauge Safety Training Program." Troxler Electronic Laboratories. May, 1996.

## 4.0 INITIAL CONDITIONS

### 4.1 Definitions

- 4.1.1 ALARA: Acronym for "as low as reasonably achievable". Means making every reasonable effort to maintain exposures to radiation as far below the 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.
- 4.1.2 General License: A document issued by the NRC that is owned and managed by the manufacturer of the device (e.g., Texas Nuclear, "TN"). This document spells out the terms and conditions of possession of the byproduct material.
- 4.1.3 Specific License: A document issued by the NRC that is owned and managed by the AEP facility. This document spells out the terms and conditions of ownership of the byproduct material.
- 4.1.4 RSO: Acronym for "Radiation Safety Officer". Means the individual responsible for oversight and direction of the radiation safety program, who meets the minimum requirements in Attachment 1.
- 4.1.5 Assistant-RSO: A qualified individual responsible for implementing this procedure, who meets the minimum requirements in Attachment 1.
- 4.1.6 Voluntary Monitoring: Personnel monitoring documented as being provided to an individual even though it is not required by law.
- 4.1.7 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.
- 4.1.8 Non-nuclear facility: Any AEP facility other than the D.C. Cook Plant.
- 4.1.9 Should, shall:  
Should: Denotes a recommendation (ANSI N18.7-1976)  
Shall: Denotes a requirement (ANSI N18.7-1976)

### 4.2 Responsibilities

- 4.2.1 The RSO is responsible for the items listed on Attachment 1.
- 4.2.2 The Assistant-RSO(s) is responsible for the items listed on Attachment 1.
- 4.2.3 Authorized users are responsible for the 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 assistant-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 in the fourth quarter of each year, and,
  - A review by each Assistant-RSO, who shall (1) Review the RSP noting any recommended changes, (2) Ensure that the program implementation is consistent with this procedure, (3) Ensure that site-specific emergency and operating procedures are correct, and (4) Submit any comments or requests for change to the RSO by the fourth quarter of each year.
- 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 will act to fill the vacant position and ensure that the new individual meets the applicable training requirements.

#### 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 flyash hoppers when the source shutter is open.

## 5.2 NRC Inspections and AEP Evaluations

- 5.2.1 Upon inspection by the NRC or Agreement State authority, the licensee should present this program, any supplemental procedures, and copies of leak test, training, dosimetry and inspection records, as requested by the inspection official.
- 5.2.2 Upon completion of the NRC inspection:
  - request a copy of the inspection results
  - forward a copy of the inspection results to the RSO
- 5.2.3 AEP evaluations, which involve an evaluation by a designee of the RSO to verify and document compliance, should be performed at intervals not to exceed 3 years or as specified by the RSO for non-routine or supplemental inspections.

## 5.3 Postings

Postings shall be in accordance with 10 CFR 19.11, 10 CFR 21.6, 20.1902(e) and any 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. The inventory results shall be recorded on a Attachment 6, or equivalent.
- 5.4.2 The shutter (on/off) mechanism shall be tested on fixed level gauges on a semi-annual basis. The inspection results shall be recorded on a Attachment 6, or equivalent.

## 5.5 Records

- 5.5.1 Inventory and inspection records (Attachment 6, or equivalent) shall be maintained for at least three years.
- 5.5.2 Leak test records shall be maintained for at least three years.
- 5.5.3 Use "N/A" on any forms to denote "not applicable" where data need not be entered.
- 5.5.4 Dosimetry records shall be maintained for the life of the company.
- 5.5.5 Training records for initial and annual re-qualification (requal) should be maintained for at least three years.
- 5.5.6 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 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, with up-to-date telephone numbers and contacts.

5.7 Survey Instruments

- 5.7.1 A survey instrument may be used to isolate the location of the source in the event of an emergency. One survey meter per site shall be maintained.
- 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 RSO.
- 5.8.3 Positive leak tests (leak tests which exceed 0.005  $\mu\text{Ci}$  or 11,000 dpm) shall be reported to the RSO.
- 5.8.4 For devices transported on public highways, a copy of the most recent leak test for portable moisture density gauges shall accompany the transportation paperwork (Section 5.12).
- 5.8.5 The D.C. Cook 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 (thermoluminescent dosimeters, film badges) shall be worn if:
  - the results of the prospective evaluation (Attachment 5) shows that 10% of the annual whole body dose equivalent limit is expected to be exceeded, or,
  - licensing commitments deem the practice necessary, or,
  - voluntary monitoring is desired
- 5.9.2 If any of the above criteria are met, then the dosimetry shall be worn at all times around the device.
- 5.9.3 Per the requirements of 10 CFR 20.2206, AEP non-nuclear facilities are NOT required to file Form 5 reports with the NRC.

- 5.9.4 Dosimetry shall be stored in a location separate from the device (e.g. in a storage cabinet away from the device).
- 5.9.5 Routine (e.g. monthly, quarterly, etc.) exposure records shall be made available to the monitored individual for review.
- 5.9.6 Annual exposure reports (NRC Form 5) shall be made available to the individual as a permanent record.
- 5.9.7 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 LEVEL GAUGES**

- 5.10.1 Individuals authorized to perform maintenance on flyash hoppers shall be trained on the lockout procedure.
- 5.10.2 Attachment 8 provides a sample lockout procedure.
- 5.10.3 The Assistant-RSO 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 Worker training shall be in accordance with 10 CFR 19.12.
- 5.11.2 The recommended training prerequisites for the RSO and Assistant-RSO are presented on Attachment 3.
- 5.11.3 If the prescribed training requal frequency is not met, then inform the RSO.
- 5.11.4 Authorized users of portable moisture density gauges shall attend a one-day operator's training and safety course and maintain a certificate which demonstrates the course was successfully completed.

5.12 Transportation of Portable Moisture Density Gauges and other devices.

**NOTE:**  
**ANY PORTABLE GAUGE TRANSPORTED ON PUBLIC HIGHWAYS**  
**IS SUBJECT TO STEPS 5.12.1 - 5.12.3**

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 Reference 3.14, or equivalent, shall accompany the device. The package shall include:

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., shall be shipped per the manufacturer's instructions.

5.13 Maintenance, Installation, and Handling

5.13.1 Fixed gauges may be uncrated, mounted and wired by the Assistant-RSO or designee, but unlocking or unbolting the shutter may only be performed by the manufacturer.

5.13.2 Portable gauges may be maintained by the Assistant-RSO per the instructions in Reference 3.14, or equivalent. 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 A use log shall be maintained by the Assistant-RSO. Attachment 9, or equivalent, should be used for this purpose.
- 5.14.3 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.
- 5.14.4 Keys for the source rod and cabinet shall be maintained by the Assistant-RSO. Keys for the room should be maintained by the Assistant-RSO and individuals authorized to enter the room.

5.15 Temporary Locations

- 5.15.1 The sender of a device to a temporary location shall include the proper shipping paperwork (section 5.12.2).
- 5.15.2 The receiver of a device at a temporary location shall send written confirmation of receipt to the sender.
- 5.15.3 The Assistant-RSO shall ensure that the individual at the temporary site is:
  - qualified to use the device, as evidenced by a training certificate from the manufacturer,
  - 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



### **RSO Responsibilities**

1. Provide management oversight to 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 licenses at AEP non-nuclear facilities.
6. Recommend corrective or preventative actions following the report of past-due or positive leak-tests by assistant-RSOs.
7. Stop any unsafe operations.
8. Review changes to pertinent licensing documents, and any impact on the RSP.

### **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 and notify the RSO if unexpected or unusual dose is received by an individual.
5. Understand the definition of "ALARA" listed in part 4.1.
6. Establish and conduct the training program.
7. Examine and determine the competency of personnel.
8. Ensure that licensed materials are used only by those individuals who have satisfactorily completed appropriate training programs or who are authorized by the license.
9. Ensure that licensed material is properly secured against unauthorized removal at all times.
10. Establish and maintain the leak test program and perform or supervise leak testing of sealed sources.
11. Develop and Maintain up-to-date site-specific operating and emergency procedures.
12. 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 and/or Agreement State regulations and license conditions.
13. Conduct inventories and maintain utilization logs.
14. Review and ensure maintenance of those records kept by others.
15. Establish and maintain proper transportation labels, placards, forms and records.
16. Establish and maintain annual internal review programs.
17. Conduct radiation safety inspections of licensed activities periodically to ensure compliance with the regulations and license conditions.
18. 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.
19. Investigate the cause of incidents and determine necessary preventive action.
20. Act in an advisory capacity to the licensee's management and personnel.
21. Maintain a procedure for evaluating and reporting equipment defects and noncompliance pursuant to 10 CFR Part 21.
22. Report any problems associated with the performance of site-specific RSO responsibilities to the RSO.
23. Maintain portable moisture density gauge training certificates and a current "Certificate of Competent Authority".
24. 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 requal) 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 an on-site requal at least every two years.

**Emergency Response**

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. Assistant RSO: \_\_\_\_\_ (W) \_\_\_\_\_ (H)
  - a. Alternate 1: \_\_\_\_\_ (W) \_\_\_\_\_ (H)
  - b. Alternate 2: \_\_\_\_\_ (W) \_\_\_\_\_ (H)
  - c. Alternate 3: \_\_\_\_\_ (W) \_\_\_\_\_ (H)
2. RSO: Douglas Noble (W) (616) 465-5901 X2527 (H) (616) 429-5234
  - a. Alternate 1: Ryan Fard (W) (616) 465-5901 X1542 (H) (616) 429-9282
  - b. Alternate 2: David Helms (W) (616) 465-5901 X3148 (H) (616) 468-3272

4. The RSO will determine if a survey is required, and if notification of Federal or State officials 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. In nuclear gauges, this protection is provided by the source housing.
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

### **Training**

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," July, 1981.
2. Regulatory Guide 8.13, "Instruction concerning prenatal radiation exposure," December, 1987.

### **RSO Prerequisites**

1. Operator's certification for portable gauges
2. At least 8 hours of RSO training. **(Also recommended for Assistant-RSOs)**

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 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. Decontamination of the environment, equipment, and personnel.
9. Maintenance of records.
10. Inspection and maintenance of sealed sources, source holders, source handling tools, storage container, and transport containers.
11. Identify defects and non-compliance in reporting to NRC or Agreement State.
12. Notifying the proper persons in the event of an accident.
13. 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.
14. 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)
15. Radiation safety practices including prevention of contamination, and methods of contamination
16. Requirements of pertinent Federal Regulations.

### **Authorized User Prerequisites**

1. Operator's certification for portable gauges, where portable gauges are used
2. Annual requal training (see below).

### **Annual Requal Training Requirements for Other Individuals**

### Annual Regual Training Requirements for Other Individuals

Per 10 CFR 19.12, instruction is to be provided to any ancillary personnel who may assist in operations (secretarial, janitorial, maintenance, operations personnel) or other workers that may work around or near any of the sealed gauging devices. This instruction, to be given both initially and at least annually is recommended to include the following topics (commensurate with scope and extent of licensed activities):

1. For users of portable moisture density gauges, an operator's course and certification is required (initial training only, not annually).
2. Information concerning the location, storage, transfer, and use of byproduct material devices.
3. The ALARA principle and its site-specific application.
4. Worker responsibility to report to the licensee any conditions which may lead to or cause a violation of NRC regulations, license conditions, or unnecessary exposure to or release of radioactive materials.
5. The appropriate response in the event of an accident, fire or unusual occurrence or malfunction which may lead to radiation exposure or release of radioactive material.
6. NRC regulations are available for inspection in the Assistant-RSO's office.
7. Employees will be notified of any violation resulting from an NRC inspection.
8. Location of Postings.
9. Any defects or non-compliance associated with any nuclear devices should be reported to your immediate supervisor or the Radiation Safety Officer. These defects or instances of non-compliance will be reported to the NRC.
10. Emergency procedures and their implementation.
11. If there are any questions, then contact the Assistant-RSO.
12. Lockout procedures for flyash hoppers, if applicable.

It is the responsibility of the Assistant-RSO to determine the scope of personnel which require requal training, and the pertinent topics based on the devices in use.

**Authority Structure: Subject to Change Pending Review by the Radiation Safety Committee**

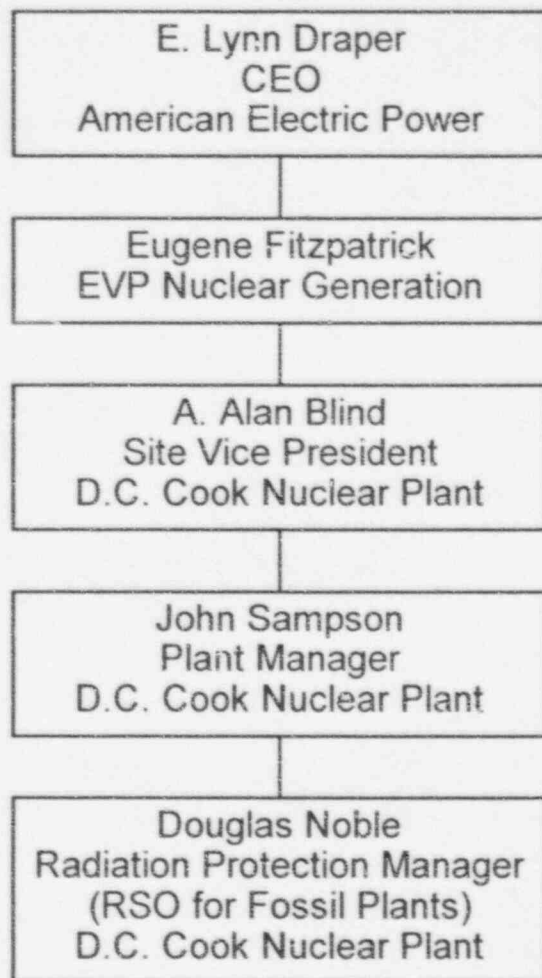
RSO: Douglas Noble (D.C. Cook Nuclear Plant, 1 Cook Place, Bridgman, MI 49106)  
 Tel: (W) 616-465-5901 X2527 (H) 616-429-5234  
 Meets requirements for RSO on Attachment 3  
 Completed Operator's course on **February 27, 1997**  
 15 years nuclear industry experience

Assistant-RSO (Licensing and Compliance): Ryan Fard (D.C. Cook Nuclear Plant, 1 Cook Place, Bridgman, MI 49106)  
 Tel: (W) 616-465-5901 X1542 (H) 616-429-9282  
 Meets requirements of Assistant-RSO on attachment 3  
 B.S. (Biology), M.S. (Health Physics)  
 3 years nuclear industry experience  
 Completed Operator's course on **February 27, 1997**

Assistant-RSO (Licensing, evaluations): David Helms (D.C. Cook Nuclear Plant, 1 Cook Place, Bridgman, MI 49106)  
 Tel: (W) 616-465-5901 X3148 (H) 616-468-3272  
 Meets requirements of Assistant-RSO on attachment 3  
 26 years nuclear industry experience  
 Completed Operator's course on **February 27, 1997**

Assistant-RSO (Site Specific): See Table  
 Meets requirements of Assistant-RSO on attachment 3.

Assistant-RSO	Plant or Facility Name	Plant Telephone	Mailing Address	City	State	Zip
Paul Higginbotham	Rockport	812-649-9171	Route 2	Rockport	IN	46735-9425
Terry Tucker	John E. Dolan Engineering Laboratory	614-836-4188	4001 Bixby Road	Groveport	OH	43125
Phil Milstead	Gavin	614-367-7331	P.O. Box 272	Cheshire	OH	45621
Allen Downie	Mountaineer	304-882-2151	Route 33	Newhaven	WV	25265-0419
Lance R. Cook	Clinch River	540-889-1540	Route 82	Cleveland	VA	24225-0157
Joe Ryder	Glen Lyn	540-726-3191	Route 460	Glen Lyn	VA	24093-9726
Tom Carroll	Amos	604-755-5301	1530 Winfield Road	Winfield	WV	25213
Dan Carney	Windsor Coal	304-336-7203	Locust Grove Road. RT 88	West Liberty	WV	26074





**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 the past several years. Typical results show annual exposure in the range of 50 millirem or less, however, the vast majority of badge reads result in "N/D", which designates a value less than the lower limit of detection. Specifically, results from AEP plants in 1995 and 1996 are as follows. The results were taken by telephone survey. Each plant provided results for the workers who use or work around the devices, and were present during 1995 and 1996.

Plant	Worker No.	1996 dose	1995 dose
Gavin	1	N/D	10
Gavin	2	N/D	N/D
Gavin	3	N/D	N/D
Gavin	4	N/D	N/D
Gavin	5	N/D	N/D
Clinch River	7	N/D	N/D
Clinch River	8	N/D	N/D
Amos	9	20	50
Amos	10	N/D	N/D
Amos	11	N/D	N/D
Civil Lab	12	N/D	N/D
Civil Lab	13	N/D	N/D
Civil Lab	14	N/D	N/D
Civil Lab	15	N/D	N/D
Civil Lab	16	N/D	N/D
Civil Lab	17	N/D	N/D
Glen Lyn	18	N/D	N/D
Glen Lyn	19	N/D	N/D
Glen Lyn	20	N/D	N/D

Based on this information, monitoring is not required because the maximum yearly dose (50 mrem) is far less than the 500 mrem limit for monitoring. Declared pregnant female workers and minors have a monitoring threshold of 50 mrem per year. Monitoring for individuals of these types is required.

According to the manufacturer (TN), fixed gauges emit less than 5 mR/hour of gamma radiation at one foot. The gauges are generally positioned out of reach and in unfrequented areas. Furthermore (for flyash 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. Based on this information, personnel monitoring is not required at facilities using fixed gauges.

Alloy analyzers and gas chromatograph devices do not have measurable dose rates when used safely, and monitoring for these devices is not required.

**Inventory and Inspection**

Recommended procedure for 6-month 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.

**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.
4. The Assistant-RSO shall review the record before filing.

### Data Form for 6-Month Inventory and Inspection

Facility Name: \_\_\_\_\_

Signature of Assistant-RSO: \_\_\_\_\_

[illegible]

**Leak Test Procedure and Data Form**

**NOTE:**  
**ADHERE TO THE MANUFACTURER'S REQUIREMENTS FOR PERFORMING LEAK TESTS**

**NOTE:**  
**THE INFORMATION REQUIRED IN THIS PROCEDURE MUST BE RECORDED. THE ATTACHED FORM, OR EQUIVALENT, MAY BE USED. COPY THE FORM AND USE AS NEEDED**

**NOTE:**  
**NUCLIDES LISTED ON THE FORM ARE TYPICAL. ADDITIONAL NUCLIDES WILL BE CONSIDERED ON A CASE BY CASE BASIS**

**Recommended Procedure:**

1. A leak test analysis is performed by smearing the device and submitting the smear for counting analysis.
2. Smears may be obtained from the RSO at the D.C. Cook Plant.
3. Fill out the information at the top of the form.
4. Fill out Columns 2 and 4 on the data form in advance, and prepare the smears by numbering them sequentially.
5. On the date the smears are used, fill out Column 3.
6. Moisten the smear with a mild soap and water solution.
7. 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.
8. When all smears have been completed, place them in a plastic bag in such a way to prevent cross-contamination.
9. Seal the bag and send it to the RSO via company mail or equivalent.
10. The RSO will assign a qualified individual to perform the counting analysis.
11. A copy of the form and results will be maintained by the RSO and the original will be sent to the Assistant-RSO at the specified site.

**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: \_\_\_\_\_

COL. 1	COL. 2	COL. 3	COL. 4	COL. 5
Smear Number	Device Number	Smear Date	Nuclide(s) of Interest Circle 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

Attachment: Leak Test Results

### Sample Lockout Procedure

**NOTE:**

**THE ASSISTANT-RSO SHALL BE NOTIFIED OF ANY WORK THAT IS PERFORMED  
WITHIN A FLYASH 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.

## Device Number: \_\_\_\_\_

[illegible]



**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.
- 4.2.2 The RSO or designee is responsible for evaluating such potential 10 CFR 21 items for reportability.
- 4.2.3 The RSO or designee is 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 and/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 at 8-280-2527 (audinet), or 616-465-5901, ext. 2527.
- 5.2.2 When notifying the 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 or designee 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 will contact the manufacturer of the nuclear device to inform them of the problem, and determine who will make the notification to the NRC.
- 5.3.3 If it is determined that Cook Nuclear Plant personnel will initiate the notification to the NRC, then the RSO or designee 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.
  - Identification of the facility, the activity, or the nuclear device supplied for such facility which 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 applicable, that 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 RSO at the Cook Nuclear Plant.

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*

Site-Specific Emergency and Operating Procedures

Attach Here

# TROXLER ELECTRONIC LABORATORIES, INC.

HEREBY CERTIFIES THAT

DOUG NOBLE

of

AEP

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

CERTIFICATE #: 076188

*John Thornton*  
JOHN THORNTON

INSTRUCTOR

2/27/97

DATE

WILLIAM F. TROXLER

PRESIDENT

# TROXLER ELECTRONIC LABORATORIES, INC.

HEREBY CERTIFIES THAT

DAVE HELMS

OF

AEP

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

## Gauge Operation

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

CERTIFICATE #: 076189

*John Thornton*  
JOHN THORNTON

INSTRUCTOR

2/27/97

DATE

WILLIAM F. TROXLER

PRESIDENT



# TROXLER ELECTRONIC LABORATORIES, INC.

HEREBY CERTIFIES THAT

RYAN FARD

of

AEP

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

CERTIFICATE #: 076190

*John Thornton*  
JOHN THORNTON

INSTRUCTOR

2/27/97

DATE

WILLIAM F. TROXLER

PRESIDENT

## Leak Test Analysis Data Form: Copy and Use as Needed

Facility Name: Southern Ohio Coal Co. Mine #31 Prep PlantSmears Performed by (Assistant-RSO): Jerry Keiter Date: 3/10/97Leak Test Analysis Performed by: RYAN FARD, Ryan Fard Date: 3/18/97Leak Test Analysis Approved by: [Signature] Date: 3/18/97Counter S/N: TN-2 Cal Due Date: 2/28/98 Count Date: 3/18/97

COL. 1	COL. 2	COL. 3	COL. 4	COL. 5
Smear Number	Device Number	Smear Date	Nuclide(s) of Interest Circle One or Both	Smear Results
1	B3153	3/10/97	Cesium-137 Americium-241	Positive Negative
2	B3154	3/10/97	Cesium-137 Americium-241	Positive Negative
3	B3155	3/10/97	Cesium-137 Americium-241	Positive Negative
4	B3156	3/10/97	Cesium-137 Americium-241	Positive Negative
5	B112	3/10/97	Cesium-137 Americium-241	Positive Negative
6	B3143	3/10/97	Cesium-137 Americium-241	Positive Negative
7	B3141	3/10/97	Cesium-137 Americium-241	Positive Negative
8	B3140	3/10/97	Cesium-137 Americium-241	Positive Negative
9	B3142	3/10/97	Cesium-137 Americium-241	Positive Negative
10	B83	3/10/97	Cesium-137 Americium-241	Positive Negative
11	B82	3/10/97	Cesium-137 Americium-241	Positive Negative
12	80055	3/10/97	Cesium-137 Americium-241	Positive Negative
13			Cesium-137 Americium-241	Positive Negative
14			Cesium-137 Americium-241	Positive Negative
15			Cesium-137 Americium-241	Positive Negative
16			Cesium-137 Americium-241	Positive Negative
17			Cesium-137 Americium-241	Positive Negative
18			Cesium-137 Americium-241	Positive Negative
19			Cesium-137 Americium-241	Positive Negative
20			Cesium-137 Americium-241	Positive Negative
21			Cesium-137 Americium-241	Positive Negative
22			Cesium-137 Americium-241	Positive Negative
23			Cesium-137 Americium-241	Positive Negative
24			Cesium-137 Americium-241	Positive Negative
25			Cesium-137 Americium-241	Positive Negative
26			Cesium-137 Americium-241	Positive Negative
27			Cesium-137 Americium-241	Positive Negative
28			Cesium-137 Americium-241	Positive Negative
29			Cesium-137 Americium-241	Positive Negative
30			Cesium-137 Americium-241	Positive Negative
31			Cesium-137 Americium-241	Positive Negative
32			Cesium-137 Americium-241	Positive Negative

## Attachment: Leak Test Results

Comments: Sample 8 showed 2 DPM above the MOA. The empty carrier was recounted and it was found to be clean. The sample was recounted and the same result occurred. The results are still considered to be negative because it is far less than the 11,000 DPM required for a positive result.

**D.C. COOK NUCLEAR PLANT Alpha Smear Analysis**

Date: 3/18/97

Counting Unit id: 2

Alpha activity action level (DPM): 10.00

Data file name: C:\LBXL\UNIT2\ALP2F000.XLD

Batch Ended: 03/18/97 09:49

Counted on: TN-2

Batch ID: coalplant2

Alpha efficiency log file: am241ao

Alpha Efficiency: 21.33%

Alpha Background (CPM): 0

Alpha Correction Factor: 1.000

12

Carrier	Alpha Activity		Count time (min)	Alpha CPM	Analysis Date - Time
	DPM	MDA			
36	<MDA	7.9	2.00	0.0	3/18/97 9:49

**D.C. Cook Nuclear Plant Beta Smear Analysis**

Date: 3/18/97

Beta activity action level (DPM): 1000.00

Counting Unit id: 2

Data file name: C:\LBXL\UNIT2\BET2F000.XLD

Batch Ended: 3/18/97 9:55

Counted on: TN-2

Batch ID: coalplant4

Beta efficiency log file: cs137ab

Beta Efficiency: 36.04%

Beta Background (CPM): 2

Beta Correction Factor: 1.000

Carrier	Beta Activity		Count time (min)	Beta CPM	Analysis Date - Time
	DPM	MDA			
75	<MDA	26	0.25	2.0	3/18/97 9:55

*Repeat carrier 75*

*No sample*

*carrier clean*

*gmt*

## CONVERSATION RECORD

TIME

DATE

1:45 pm 4/29/97

☐ VISIT☒ CONFERENCE☒ TELEPHONE☒ INCOMING  
OUTGOING

NAME OF PERSON(S) CONTACTED OR IN CONTACT

ORGANIZATION (OFFICE, DEPT. ETC.)

TELEPHONE NO.

Ryan Fard

AEP

616.465.5901

## SUBJECT

Application for new license  
CN 302467

## SUMMARY

I spoke with Ryan about the application and asked for additional information on the following:

1. Give a description of the Gavin Plant location.
2. Note that the leak test frequency for Troxler gauges is 6 months. Also, please delete all reference to the  $\pm 25\%$  notation in calibration, refresher training and L/T.
3. Confirm that you will not exceed the possession limits of Section 30.35(d).
4. Provide a statement that the RSO is authorized to halt any unsafe activity.
5. Provide an organizational chart showing the reporting path of the RSO to senior management.

Upon receipt of this information, I will complete my review and issue the license.

## ACTION REQUIRED

Respond within 30 days.

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

D.A. Piskura

4/2/96



## ACTION TAKEN

/

SIGNATURE

TITLE

DATE



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION III  
801 WARRENVILLE ROAD  
LISLE, ILLINOIS 60532-4351

March 28, 1997

Douglas Noble  
Radiation Safety Officer  
American Electric Power  
One Cook Place  
Bridgman, MI 49106

SUBJECT: ACKNOWLEDGEMENT OF CORRESPONDENCE  
(Letter & Application Dated 03/12/97)

Dear Licensee:

In response to your request, we have completed the initial processing, which is an administrative review of your application for a(n):

☒ New License                      ☐ Amendment                      ☐ Renewal  
☒ Termination                      ☐ Auth User (Amendment not required)  
☐ Other \_\_\_\_\_

No administrative deficiencies were identified during this initial review. However, it should be noted that a technical review may identify omissions in the submitted information.

It appears that your request is routine (see 1-3 below, as applicable).

1. New and amendment actions are normally processed within 90 days, unless we find major deficiencies, or policy issues requiring central program office assistance.
2. Renewal actions are normally processed within 180 days, however, under timely filing (before expiration), you may continue to operate under your existing license.
3. Termination actions are normally processed within 90 days, unless confirmatory surveys following decontamination/decommissioning activities are involved.

A copy of your correspondence has been forwarded to our Licensing Fee and Debt Collection Branch (301/415-6097) for approval of the fee category and amount, if required.

If you have a compelling safety or business-related reason for requesting expedited review, please contact the Materials Licensing Branch at (630) 829-9887. We will try to complete your request as soon as practicable. Any correspondence about this request should reference the control number.

Nuclear Materials Support Branch

License #'s

Control #'s

34-24830-01 (Termination)  
21-26795-01 (New License)

302458  
302467