

APPLICATION FOR MATERIAL LICENSE

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

APPLICATIONS FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20566

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:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIALS SAFETY SECTION B
631 PARK AVENUE
KING OF PRUSSIA, PA 19606

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
NUCLEAR MATERIALS SAFETY SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

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

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

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

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

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
NUCLEAR MATERIALS SAFETY SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

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

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

- ☐ A. NEW LICENSE
☐ B. AMENDMENT TO LICENSE NUMBER _____
☒ C. RENEWAL OF LICENSE NUMBER 23-01544-12

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

USAE Waterways Experiment Station
P. O. Box 631
Vicksburg, MS 39180-0631

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

USAE Waterways Experiment Station, Vicksburg, MS and at temporary Job sites within the United States.

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

John A. Lindigrin

TELEPHONE NUMBER

(601) 634-2401

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. See Encl 1.

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

See Encl 2.

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

See Encl 3 & 4.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

See Encl 5.

9. FACILITIES AND EQUIPMENT

See Encls 6, 7, 8, & 9.

10. RADIATION SAFETY PROGRAM

See Encls 10, 11, & 12.

11. WASTE MANAGEMENT

See Encl 13.

12. LICENSEE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY N/A AMOUNT ENCLOSED \$ N/A

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

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

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

SIGNATURE—CERTIFYING OFFICER

TYPED-PRINTED NAME

TITLE

DATE

DAYNE G. LEE

Colonel, Corps of Engineers
Commander and Director

23 DEC '87

8802180385 880208
REG2 LIC30
23-01544-12 PDR

FOR NRC USE ONLY

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

FEE EXEMPT

ENCL 1

5. RADIOACTIVE MATERIAL.

No.	Element and/or Mass Number	Chemical and/or Physical Form	Maximum Number of Sealed Sources and Maximum Activity per Source which will be Possessed at any one time.
1.	Cesium 137	Sealed Source	10 Millicuries
2.	Americium 241-Beryllium	Sealed Source	50 Millicuries

6. PURPOSE FOR WHICH LICENSE MATERIAL WILL BE USED.

The Soil Core Analyzer will be used to determine the practicability of scanning soil and rock cores for engineering properties with a neutron and gamma beam. This is to determine the moisture and density variations in the soil.

The Soil Core Analyzer will be used at Waterways Experiment Station at 3909 Halls Ferry Road, Vicksburg, Mississippi, and at Field Sites throughout the United States.

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

John A. Lindigrin is a Safety and Occupational Health Specialist in the Safety and Occupational Health Office at JES. He has served as the Radiation Protection Officer since November 1982 (encl 4 to encl 1). He has attended the following courses pertaining to radiation:

- a. Radiological Monitoring Course (8-hour course) conducted by the Mississippi Emergency Management Agency (MEMA).
- b. Self-support Radiological Monitoring Course (6-hour course) conducted by the MEMA.
- c. Ionizing Radiation Course (40-hour course) conducted by the National Institute for Occupational Safety and Health at Cincinnati, Ohio.
- d. Radiological Monitor Instructor's Course (32-hour course) conducted by MEMA.

The license material shall be used by, or under the supervision of James H. May or John A. Lindigrin. Mr. May is currently on the license.

ENCL 3¹ to ENCL 1¹

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL

WESDV

SUBJECT

Appointment of Radiation Protection Officer

TO SEE DISTRIBUTION

FROM Deputy Commander
and Director

DATE

8 DEC '82

CMT 1

1. The following individual is appointed:

John A. Lindigrin, Safety Office

Appointed as: Radiation Protection Officer

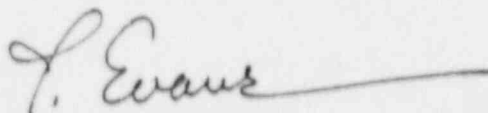
Period: Indefinite

Purpose: To serve as the Waterways Experiment Station Radiation Protection Officer

Effective date: 2 November 1982

2. The appointment of James M. Daniel is rescinded.

FOR THE COMMANDER AND DIRECTOR:



JOHN O. EVANS, III
LTC, CE

Deputy Commander and Director

DISTRIBUTION:

B Plus

1 Each indiv indic

1 Each 201 file

ENCL 4 to ENCL 1

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

All users will receive training. Training will include the safe-handling of radioactive material, wearing of film badges, posting of radioactive signs, control of access to areas where radioactive material is used, and the security of radioactive material.

9. FACILITIES AND EQUIPMENT.

The Soil Core Analyzer is a custom device manufactured by Campbell Pacific Nuclear Corporation. A doubly encapsulated source containing no more than 10 millicuries of Cesium 137 and no more than 50 millicuries of Americium 241 is permanently installed within the device. A preliminary sketch of the device is attached (encl 7 to encl 1) and the specifications are attached (encl 8 to encl 1).

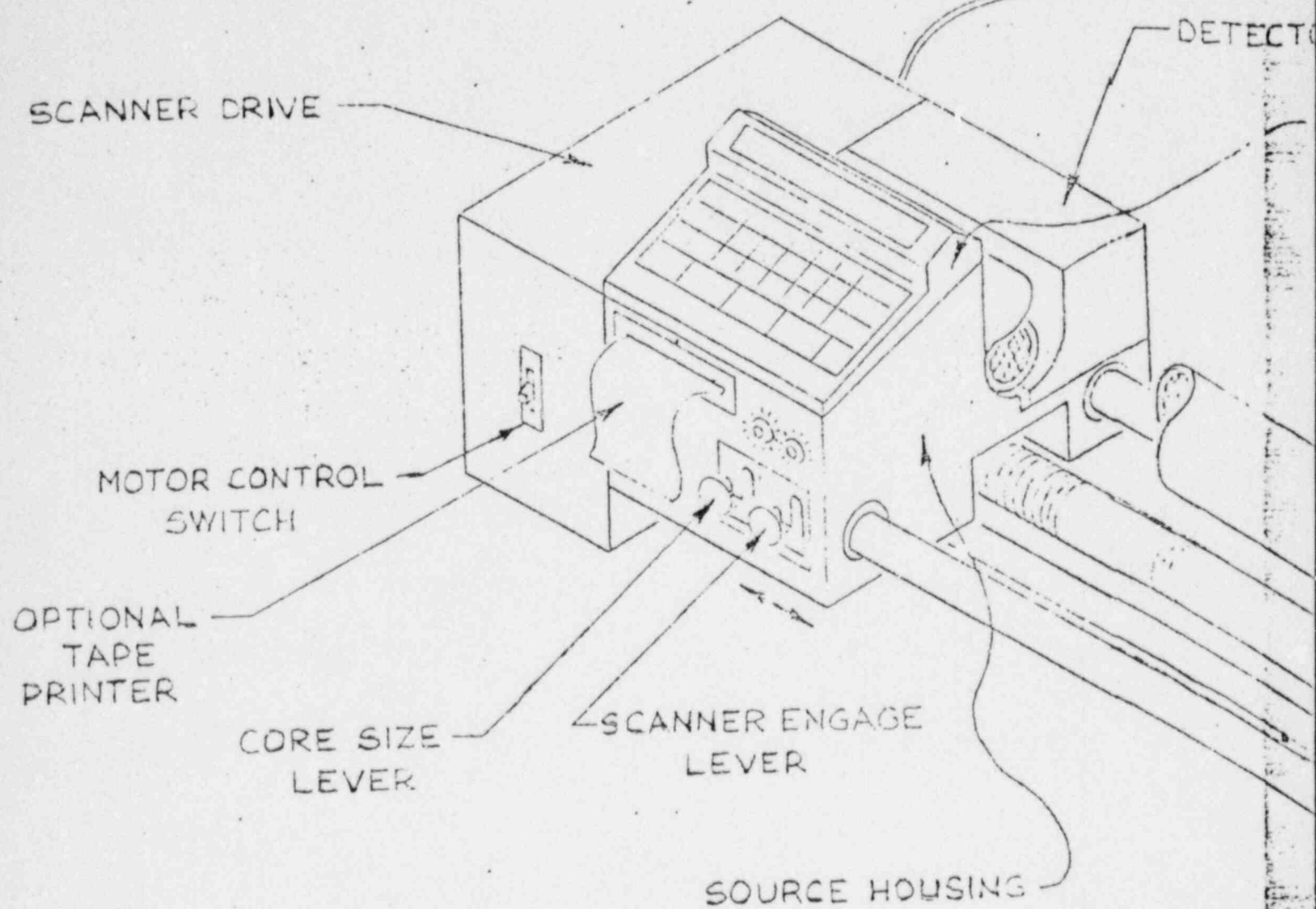
The device has the same shielding as the standard Campbell Pacific Nuclear Corporation moisture density gauges. It has a mechanical shutter with "open" and "closed" positions. The maximum radiation levels at any surface of the device is no more than 50 mrem/hr with the shutter open and no more than 10 mrem/hr with the shutter closed.

When not being used, the device will be stored in the Radiation Storage Facility. This area is locked and shielded against unauthorized entrance.

When taken to field locations, the device will be stored in a locked van or other locked storage areas.

Radiation detection instruments are listed on attached sheet (encl 9 to encl 1).

ENCL 6' to ENCL 1'

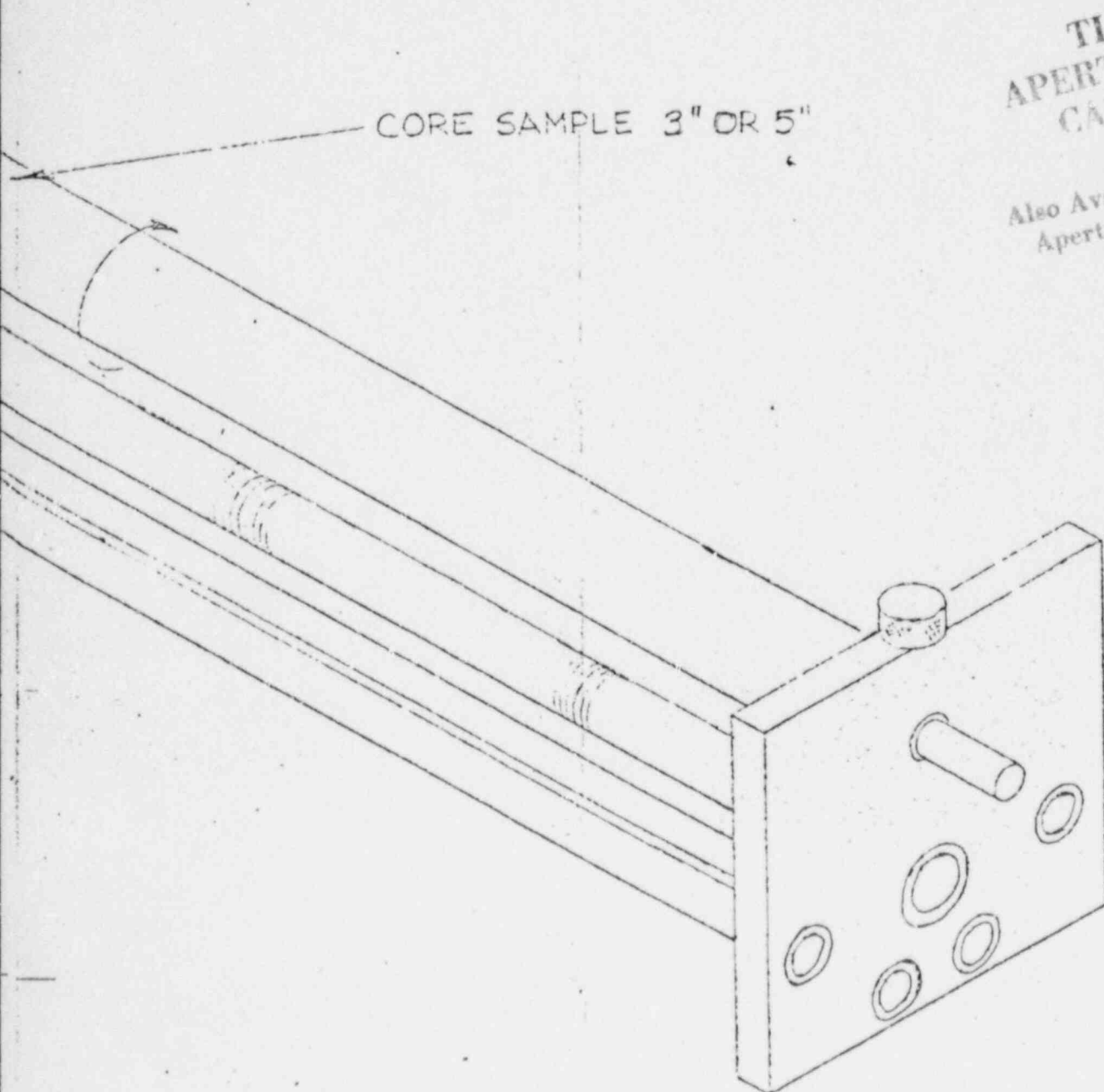


—SOIL CORE ANALYZER—

2v PLUG

OR SYSTEM

MC-2 ELECTRONICS



TI
APERTURE
CARD

Also Available On
Aperture Card

8802180385-01

SPECIFICATIONS

1. The Soil Core Analyzer (SCA) shall be capable of determining moisture and density of a 3" or 5" diameter steel shelby sample tube 4' long filled with soil sample.
2. The SCA shall be capable of displaying, with liquid crystal display or optional printer, simultaneously both density 70-170 pcf (1.12-2.73 gcc) and moisture 0-40 pcf (0-.64 gcc). The SCA shall be capable of converting all data to read BULK DENSITY MOISTURE, DRY DENSITY and % MOISTURE. Distance in inches shall be provided on Printer Output.
3. The SCA shall have separately programmable bias for each size core in both moisture and density. The SCA shall have an internal calibration program permitting user to calibrate his own SCA with his own cores making him independent of the factory.
4. The SCA shall have one GM Tube and one BF3 Tube for density and moisture detection. All electronics shall be interchangeable with standard hardware manufactured by CPN Corp.
5. The SCA sample shall Rotate 1 Full Turn for every 1/4" of linear travel on the scanning head. The scanning head shall travel at a speed of 1" = 1/4, 1/2, 1 & 2 min. intervals.
6. The SCA shall be field portable with access to standard 12 volt automotive battery. Weight shall not be greater than 50 pounds excluding transport case, calibration standards and accessories.
7. The source shall be doubly encapsulated and not to exceed 10mc Cs137 and 50mc Am 241/Be. The source shall be a Model CPN-131 or equal. The SCA shall be provided to the Department of the Army under an experimental equipment license.

(1)

RADIATION DETECTION INSTRUMENTS

TYPE OF INSTRUMENT	MANUFACTURER'S NAME	MODEL NO.	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE	WINDOW THICKNESS
Geiger Counter	Eberline Instrument Corp.	E-500 B	2	Beta and Gamma	0-2000 Milliroentgens/HR	30 mg/cm ²
Radiacmeter	Northeastern Engineering, Inc.	IM-173/ PDR-27L	1	Beta and Gamma	0-500 Milliroetgens/HR	30 mg/cm ²
Portable Scintillation Alpha Counter	Eberline Instrument Corp.	PAC-LSAG	1	Alpha	Counts/minute	0.5 mg/cm ²
Liquid Scintillation Counter	Beckman Instruments, Inc.	LS-100C	1	Alpha, Beta, and Gamma		
Geiger Counter	Eberline Instrument Corp.	ESP-1	1	Beta and Gamma	0-200 Milliroentgens/HR	30 mg/cm ²

- (2) The E-500B, IM-173/PDR 27L, PAC-ISAG, and ESP-1 meters are calibrated every three months by:
U. S. Army TMDE Support Center
Redstone Arsenal
ATTN: AMXTM-CW-RS
Redstone Arsenal, AL 35898-5400

Encl 9 to Encl 11

10. RADIATION PROTECTION PROGRAM.

All requirements of Title 10, Code of Federal Regulations, and the Station Radiological Safety Regulation (encl 11 to encl 1) will be accomplished. Leak tests will be performed whenever the source leaves and arrives at the Station and at least every six months. Leak tests will be performed by the Station Radiation Protection Officer. Leak tests smears will be counted by the U.S. Army Environmental Hygiene Agency. If the leak test reveals the presence of 0.005 microcuries or more of removable contamination, the installation will immediately withdraw the gauge from service and place it in an approved shipping container for return to the manufacturer for decontamination and repairs.

Any servicing, maintenance, or repair of the gauge will be conducted by the manufacturer.

Information concerning the method of operation and safe radiation practices for the device will be provided by the manufacturer. All personnel operating the gauge will receive training on safe-handling before using the device. Radiation protection precautions given by the manufacturer will be followed.

The operating procedure for the gauge will consist of the following:

- a. When not in storage, the gauge will be in the possession of the user or someone under his supervision.
- b. Only authorized personnel wearing gamma and neutron film badges will be allowed near the gauge.
- c. All persons involved in the use of the gauge will be thoroughly instructed in its safe operation and in radiation protection requirements.
- d. When tests have been completed, the gauge will be stored in a locked storage area with the shutter in the closed position.

ENCL 10' to ENCL 1'

DEPARTMENT OF THE ARMY
Waterways Experiment Station, Corps of Engineers
PO Box 631

WESDV

Vicksburg, Mississippi 39180

Station Regulation
No. 385-1-6

29 June 1982

Safety
RADIOLOGICAL SAFETY

1. Purpose. This regulation establishes policy, responsibilities, and procedures for procuring, storing, shipping, using, and disposing of radioactive materials and devices which produce ionizing radiation.

2. Applicability. This regulation is applicable to all elements of the Waterways Experiment Station (WES) which use or handle sources of ionizing radiation or radiation producing equipment.

3. References.

- a. ER 385-1-80
- b. Title 10, Code of Federal Regulations, Chapter 1
- c. AR 385-11

4. Definitions.

a. Radioactive material. Any material or combination of materials which spontaneously emit ionizing radiation, including natural elements such as radium and accelerator produced radionuclides.

b. Ionizing radiation producing devices. Electronic devices which are capable of generating ionizing radiation such as x-ray machines or other tubes which produce x-rays.

c. Byproduct materials. Any radioactive material (except special nuclear materials) yielded in or made radioactive by exposure to radiation incident to the process of producing or utilizing special nuclear materials.

d. Curie. A common measure of radioactivity which equals 3.7×10^{10} disintegrations per second (dps). Common submultiples of the curie are:

(1) millicurie (mCi) = 3.7×10^7 dps = 0.001 Curie (Ci)

(2) microcurie (μ Ci) = 3.7×10^4 dps = 0.000001 Curie (Ci)

*This regulation supersedes SR 385-1-6, 24 Oct 73.

29 Jun 82

- e. Ionizing radiation. Any electromagnetic or particulate radiation capable of producing ions, directly or indirectly, in its passage through matter.
- f. Licensed material. Source, special nuclear, or byproduct material received, stored, possessed, used, or transferred under a general or specific license issued by the US Nuclear Regulatory Commission (NRC).
- g. Radiation sources. Materials or devices which generate or are capable of generating ionizing radiation, including naturally occurring radioactive materials, byproduct materials, source material, special nuclear material, fission products, materials containing induced or deposited radioactivity, radiographic and fluoroscopic equipment, particle generators and accelerators, and other electronic equipment which utilize electron tubes to produce x-rays.
- h. Sealed source. Any radioactive material that is inclosed in and is to be used on a container intended to prevent leakage or escape of the radioactive material or any of its daughter products.
- i. Source material. Uranium or thorium, or any combination thereof, in any physical or chemical form, or ores which contain by weight one-twentieth of one percent (0.05 percent) or more of uranium, thorium or any combination thereof.
- j. Roentgen. That amount of x or gamma radiation required to produce by ionization one electrostatic unit of charge in 0.001293 gram of air.
- k. Rem. An absorbed dose of any ionizing radiation that will produce the same biological effect in man as the absorbed dose from exposure to one roentgen of x or gamma radiation. For x and gamma radiation exposure, the rad, rem, and roentgen are equivalent units of measurement of the radiation effect on man.
- l. Radiation protection survey. Evaluation of the radiation hazards incident to the production, use, or existence of radioactive materials or other source of radiation in and around an installation or equipment.
- m. Restricted area. An area to which access is controlled for the purpose of protection of individuals from exposure to radiation and radioactive materials.
- n. Radiation area. Any area accessible to personnel in which there exists radiation at such levels that a major portion of the body could receive in any one hour a dose in excess of 5 millirems or in any five consecutive days a dose in excess of 100 millirems.
- o. Radiation Protection Officer (RPO). An individual designated by the Commander and Director to provide consultation and advice on the degree of hazards associated with ionizing radiation and the effectiveness of measures to control these hazards.
- p. User. An individual who will use or directly supervise the use of radioactive material.

29 Jun 82

5. Radiological Safety Committee. A Radiological Safety Committee will be maintained as an advisory body to the Commander and Director. The Committee will be composed of the WES RPO (who serves as chairman) and representatives from the Laboratories and Separate Staff Elements. Its membership will be appointed by the Commander and Director on recommendation from the RPO. The Committee will meet on a need basis (at least yearly, but more frequently if necessary). The Committee is responsible for establishing the local rules and procedures for procurement, storage, and safe use of radiation sources, and is responsible for providing assistance to the RPO. The Committee shall:

- a. Review proposals to use or procure radioactive items, such as SOP's and applications for NRC licenses and OCE authorizations.
- b. Study reports of incidents and adverse findings.
- c. Make recommendations to the Commander and Director concerning improvements required in radiation protection measures.

6. Radiation Protection Officer.

a. The RPO is the individual directly responsible for radiation protection at WES. It is the RPO's duty to insure that all procedures are accomplished in compliance with NRC licenses and NRC, Department of the Army, Corps of Engineer, and WES regulations.

b. The RPO will be appointed by the Commander and Director and must be technically qualified by education, training, and/or professional experience. Qualifications must be approved by the OCE Safety Office.

c. The RPO shall:

(1) Maintain an inventory control and location file of all licensed and unlicensed radioactive material owned or being used by WES. The RPO shall conduct a physical inventory of all radioactive sources on hand at least every six months and record the results of the inventory. Inventory records will contain the names of specific items of equipment or radioisotope, serial number if applicable, location of the items, radiation levels, radioactivity, NRC license numbers or DA or OCE authorization numbers, receipts and transfers, date of inventory, and name of the person conducting the inventory.

(2) Perform leak tests on all radioactive sealed sources at six-month intervals, when the sources arrive at and leave the Station, and whenever there are changes in the use or procedures. Leak test smears will be sent to the US Army Environmental Hygiene Agency for analysis. All leak test results will be recorded on ENG Form 3309-R. If a leak test reveals the presence of 0.005 microcurie or more of removable contamination, the RPO will insure that the sealed source is immediately withdrawn from use. It shall then be decontaminated, returned to the manufacturer for repair, or disposed of in accordance with paragraph 15 of this regulation.

29 Jun 82

(3) Perform radiation surveys of operations at least every six months or each time there is a significant change in the use, procedure, or location of the equipment or material. The RPO shall evaluate and document hazards related to specific operations involving storage, use, transportation, disposal, or loss of control of radioactive material to ensure adequate control and safeguards are used. The evaluation shall include physical measurements or calculations of radiation levels present, a prediction of potential hazards resulting from changes in materials or operations, and proposed corrective actions.

(4) Provide operating personnel with guidance on creating working conditions and operating procedures that comply with applicable regulations and directives.

(5) Assure that all users are instructed in safe working practices, emergency procedures, harmful effects of radiation overexposures, and other topics required by 10 CFR 19 and 29 CFR 1910. Assure that all users of radioactive materials meet the requirements of paragraph 8 of this regulation.

(6) Maintain radiation film badge service for WES users.

(7) Prepare and submit applications for NRC licenses and OCE authorizations for the possession and use of licensed and unlicensed radioactive material.

7. Responsibility of supervisory personnel. Supervisory personnel who supervise those who use radioactive material or ionizing radiation producing devices are responsible for assuring that operations are conducted in accordance with NRC, Department of the Army, Corps of Engineer, and WES regulations and requirements.

8. Users.

a. User selection. The Safety Office (RPO) will maintain a current list of approved users. WES offices desiring to have personnel approved as users must submit a request to the Safety Office (RPO) giving the following information:

(1) Name, address, and date of birth of applicant.

(2) Education background and specific training concerning ionizing radiation.

(3) Prior exposures to ionizing radiation (type of radiation, amount, and location where exposure occurred).

(4) Radioactive material or device which will be used.

b. User qualifications. Personnel utilizing radioactive materials shall receive training capable of assuring they are aware of the hazards of radiation and the safeguards required when using radioactive material. Users of radioactive materials shall receive as a minimum the following instructions.

29 Jun 82

- (1) Statements, representations, and procedures contained in the application and the conditions stated in the license for the material concerned.
- (2) Requirements of this regulation.
- (3) Provisions of Title 10, Code of Federal Regulations, Parts 19 and 20.
- (4) Fundamentals of radiation safety to include inherent hazards.
- (5) Methods of controlling radiation dose by time, distance, and shielding.
- (6) Operation, calibration, and limitations of radiation survey instruments.
- (7) Use of required monitoring equipment (film badges, pocket dosimeters).

c. User responsibilities.

(1) Users of radioactive material and gauges and equipment containing radioactive sealed sources will become thoroughly familiarized with conditions of the NRC license authorizing its use, operating procedures which are contained in the NRC license application, the contents of this regulation, 10 CFR Parts 19 and 20, and safe operating instructions in the manufacturer's instruction manual. Users will assure that all personnel under their supervision who use radioactive material or devices are thoroughly familiarized with the safe operating procedures. Users will review the procedures for themselves and those under their supervision at least annually. On 1 January of each year, users will submit the following statement to the RPO signed by each individual who uses or supervises the use of radioactive devices: "I have read and fully understand the provisions and requirements of the NRC license conditions, operating procedures which are contained in the NRC license application, the contents of SR 385-1-6, 10 CFR Parts 19 and 20, and the instructions in the manufacturer's instruction manual. All operations will be conducted in accordance with the procedures and requirements."

(2) Supervisory personnel responsible for the use of x-ray machines will develop a standing operating procedure (SOP) for its use and keep the SOP posted in the working area. All users will become thoroughly familiarized with the SOP, SR 385-1-6, and the contents of the operator's instruction manual. Users of x-ray machines will review the procedures for themselves and those under their supervision at least annually. On 1 January of each year, personnel responsible for the use of x-ray machines will submit the following statement to the RPO signed by each individual who uses or supervises the use of x-ray machines: "I have read and fully understand the contents of the SOP, SR 385-1-6, and the contents of the operator's instruction manual. All operations will be conducted in accordance with the procedures and requirements."

(3) Prior to each test or series of tests involving the use of open radioactive sources in tracer tests, roentgenation tests, etc., users will submit the following statement to the RPO signed by each individual who will use or

29 Jun 82

supervise the use of radioactive material; "I have read and fully understand the provisions and requirements of the NRC license conditions, operating procedures which are contained in the NRC license application, the contents of SR 385-1-6, and 10 CFR Parts 19 and 20. All operations will be conducted in accordance with the procedures and requirements."

9. Maximum allowable exposures.

a. Personnel exposure to ionizing radiation shall be kept to an absolute minimum consistent with essential operations and training. The standards set forth in Title 10, Code of Federal Regulations, Part 20, and paragraph 6, AR 385-14 shall be strictly enforced. Shown below are maximum allowable whole body exposures for radiation workers:

<u>EXPOSURE PERIOD</u>	<u>ALLOWABLE DOSE (REM)</u>
Accumulated lifetime dose	5 times number of years beyond age 18
Calendar quarter	1½ rems
Week	100 millirems

b. Unauthorized personnel will not be permitted access to radiation areas. Women known to be pregnant and individuals under 18 years of age shall not be permitted into radiation areas.

10. Personnel dosimetry.

a. All personnel exposed to ionizing radiation shall wear one or more film badges consistent with the type of radiation exposure and part of body exposed. Film badges that are intended to estimate whole body exposure will be worn in plain view on the front of the body below the shoulders and above the hips. The Safety Office will issue film badges by number to requesting personnel prior to their entry into a radiation area. Film badge assignees will be notified by the Safety Office when films are to be collected for processing.

b. Personnel who will be using a radioactive source or who will be exposed to ionizing radiation while on TDY shall contact the Safety Office before departing so that arrangements can be made for the exchange of film badges.

c. The Safety Office will record the results of film badge processing on DD Form 1141, Record of Occupational Exposure to Ionizing Radiation, as a permanent record of employees' exposure to ionizing radiation. The RPO will monitor exposure records for the purpose of determining if exposures are being kept to absolute minimums and the maximum permissible exposure is not exceeded. The RPO will review the exposure records at least quarterly. The DD Form 1141's, when completed or when an employee transfers or retires, will be forwarded to the Personnel Office for entry into the appropriate official personnel folder.

29 Jun 82

d. The Safety Office will furnish individuals with a record of their exposure annually if requested by the individual.

11. Procurement of radioactive material.

a. Requests for the procurement, possession, and use of radioactive material will be submitted to the Safety Office (RPO) at least 90 days prior to the date the source is needed. As a minimum, the request shall describe:

- (1) The supplier or holder of the material.
- (2) The type and activity of the material.
- (3) The name and qualifications of the users.
- (4) Description of the facilities to be used.
- (5) The instruments, health protection, and monitoring provisions.

b. Requests for the procurement, possession, and use of radiation producing equipment such as x-rays must be submitted to the Safety Office (RPO) at least 45 days prior to the need for the equipment. The request shall provide, as a minimum, the following information:

- (1) Type of equipment and the manufacturer's model number of the desired equipment.
- (2) The purpose for which the equipment is to be utilized.
- (3) Detailed drawings and pertinent specifications for determining the protective shielding provided by the facility.
- (4) Voltage output of the machine.
- (5) Workload of the equipment in milliamperes-minute per week.

c. Radioactive material or radiation producing equipment will not be procured prior to obtaining an NRC license or OCE authorization for it.

12. Storage of radioactive material.

a. Radioactive material, when not in use, will be stored in the appropriate permanent radioactive material storage building. Gauges and probes will be stored with the sealed sources in the shielded position.

b. Keys to the WES radiation storage building will be maintained by the Safety Office (RPO).

c. Keys to storage areas within the Laboratories will be maintained by a designated employee. He/she will be responsible for keeping the area secured and controlling access. He/she will be responsible for periodic inventories of instruments and devices assigned to the area.

d. Locked and controlled access to storage areas shall be maintained at all times.

e. Radioactive material will be stored in a fire-resistive building or within a fire-resistive enclosure.

f. Shielding or access distance to radioactive material in storage shall limit exposure to one mr/hr.

g. CAUTION - RADIOACTIVE MATERIAL and CAUTION - RADIATION AREA signs will be posted on all storage area doors.

13. Transportation of radioactive material.

a. Receiving. Receiving Section, P&SO will promptly notify the Safety Office (RPO) when radioactive materials are received at WES. The RPO will make a radiation and contamination survey of the incoming shipment and add the material to the WES radiological inventory.

b. Shipments. Users and the Shipping Section, P&SO will notify the Safety Office (RPO) about all radioactive materials leaving the WES Installation to comply with accountability requirements.

(1) Mail shipments. The comparatively low upper limits of radioactive material per package as specified by postal regulations prohibit effectively the shipment of radioactive materials in the mail.

(2) Commercial carriers. The Safety Office (RPO) will perform a radiation and contamination survey on all radioactive material shipped from WES. The Transportation Officer and the RPO will inspect the shipment for compliance with applicable regulations.

(3) Motor vehicle. When transporting radioactive materials by motor vehicle, no passenger shall be allowed in the part of the vehicle containing the material (i.e. body of a truck, back seat of a sedan). When vehicles are unattended, measures shall be taken to assure material will not be removed by unauthorized persons.

14. Use of radioactive material. Users of radioactive material and devices will assure compliance with the following requirements:

a. Only authorized personnel will be allowed to use it. For material and gauges licensed by NRC, the user must be listed on the license as a user or must be supervised by a person listed on the license as a user.

29 Jun 82

b. Copies of the manufacturer's instruction manual, the appropriate NRC license, and other operating procedures which are stated in the NRC license application will be available at all times that the gauge is being used. Copies of the NRC license and operating procedures will be taken with the gauge on all field trips.

c. Before taking a gauge to a military installation, notify the Installation RPO to coordinate activities and storage requirements.

d. Radiation film badges will be worn by all personnel operating or transporting the gauge and other personnel in the immediate vicinity of use.

e. Restrict radiation areas to authorized personnel only.

f. The gauge will be in the possession of an authorized user or someone under his/her supervision at all times that it is being used. The user will make sure it is under constant surveillance to prevent unauthorized persons from getting near it.

g. Containers of radioactive material will be labeled to indicate the presence of RADIOACTIVE MATERIAL. Post the area where the material is being used with a sign to indicate a RADIATION AREA. Signs and labels may be obtained from the Safety Office (RPO).

h. Notify the RPO before taking a gauge off the Station and immediately after returning it from a field location so that leak tests and surveys can be performed.

i. Return the gauge to the radiation storage area immediately after returning from the field trip.

j. When a gauge is installed at a location for a period of time, the area will be kept locked or other precautions will be taken to prevent unauthorized entry, the room or area will be posted to indicate the presence of a RADIATION AREA, and only authorized personnel will be allowed in the RADIATION AREA.

k. Post Form NRC-3, NOTICE TO EMPLOYEES, in a location where it can be seen by all employees who work in a radiation area. Copies of Form NRC-3 may be obtained from the Safety Office (RPO).

15. Disposal of radioactive material. Radioactive materials will not be disposed of locally. Requests for disposal will be submitted to the Safety Office (RPO) for appropriate action.

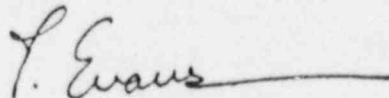
16. Notification of incidents and/or loss of radioactive material. In the event of fire, theft, loss, spillage, or vehicle accident involving radioactive materials, the Safety Office (RPO) will be notified by the most expeditious means available.

SR 385-1-6

29 Jun 82

17. Medical surveillance. Preplacement and termination medical and ophthalmological examinations will be given to all individuals who are likely to receive an accumulated dose of radiation in excess of 10 percent of the applicable quarterly radiation dose.

FOR THE COMMANDER AND DIRECTOR:



JOHN O. EVANS, III

LTC, CE

Deputy Commander and Director

DISTRIBUTION:

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Radiological Safety Committee

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL

SUBJECT

WESDV

Change in Membership of Radiological Safety Committee

TO SEE DISTRIBUTION

FROM Deputy Commander
and Director

DATE

CMT 1

1. The following change in membership is directed:

John A. Lindigrin, Safety Office

Appointed as: Chairman, Radiological Safety Committee

Purpose: To serve as committee chairman

Period: Indefinite

Effective date: 14 July 1983

2. The following individual is appointed:

Rex L. Chen, Environmental Laboratory

Appointed as: Member of Radiological Safety Committee

Purpose: To serve as committee member

Period: Indefinite

Effective date: 14 July 1983

3. The following appointments are rescinded:

James M. Daniel, Chairman

Reid S. Cummins, Jr., committee member

Francis P. Hanes, committee member

4. After giving effect to these changes, the committee is composed of the following members:

John A. Lindigrin, Chairman

Timothy L. Fagerburg

Ellis L. Krinitzsky

Albert N. Williamson, Jr.

Billy R. Sullivan

Ann B. Strong

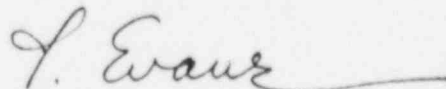
Glenn H. Booth

Frankie N. Wilkinson

Douglas Gunnison

Rex L. Chen

FOR THE COMMANDER AND DIRECTOR:



JOHN O. EVANS, III

LTC, CE

Deputy Commander and Director

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1- Each 201 file

ENCL 12' to ENCL 1'

11. WASTE DISPOSAL.

In the event of damage to the Soil Core Analyzer, it will be returned to the manufacturer for repairs. If the device becomes surplus to the needs of this installation, it will be transferred to another installation or agency licensed to receive such materials, returned to the manufacturer for removal of the source material, or shipped to an Army-approved burial site.

ENCL 13' to ENCL 1'