



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS

COLORADO RIVER AGENCY

Route 1, Box 9-C

Parker, Arizona 85344

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IN REPLY REFER TO:

Land Operations-Irrigation
(602)669-6121-215

United States Nuclear Regulatory Commission
Region V
Beth A. Reidlinger,
Health Physicist
Nuclear Materials Safety Section
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596

Dear Ms. Reidlinger:

Additional information requested by your office regarding Docket No. 030-17576, License No. 02-19418-01 and Mail Control No. 19007 for the byproduct material license renewal application are as follows:

Item No. 1: The Irrigation Management Service office is located in Poston, AZ, on the Northeast corner of the intersection of Poston Rd. and Mojave Rd. (Parker-Blythe Highway). Poston is located along the Colorado River. It is about 30 miles north of Blythe, CA and 15 miles south of Parker, AZ.

Item No. 8: On the job training in operation, care and safety is provided for each employee. New employees will use the moisture depth gauge under the direction of an employee who has been certified for gauge use until he has completed a training course provided by the device manufacturers training program or a qualified instructor. The instructor, Stan Conway, is an employee of the United States Department of the Interior, Bureau of Reclamation, Irrigation Management Services Branch, Yuma Projects office in Yuma, AZ. He has received 80 hours of instruction from Oklahoma State University for Radiation Safety Specialist Training. He is qualified to present the course for training and certification by the Arizona Radiation Regulatory Agency and the California Department of Health. Records of each employees' training and certifications are kept for a minimum of 2 years. Enclosed is an outline of the neutron moisture depth gauge training course held this year. The course was 5 hours including the exam with questions and answer time at the end of each topic and before the examination.

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Item No. 9: The gauges are stored in a cabinet with a limited access storeroom, both cabinet and storeroom will be locked when they are not being watched by an authorized user. The office is located by a fenced government maintenance compound which has limited access during duty hours and restricted access during off-duty hours. In the field, gauges will be locked in the transport vehicles when they aren't being physically watched by the authorized user.

Item No. 10.1: All authorized users are assigned radiation detection film badges which are changed monthly. Monthly dosimetry reports are kept on file. The firm we use is Radiation Detection Company, P.O. Box 1414, Sunnyvale, CA 94088. Our account no. is 8107.

Item No. 10.3: Leak tests will be performed at 6 month intervals. A commercial leak test is used. The kits are provided by the device manufacturer, Campbell Pacific Nuclear Corporation. Kit model is CPN#TD11B. The smears are sent to C.P.N. Corp., 202 Medical Center Blvd., Webster, TX 77598. Campbell Pacific's license no. is 1100.7 Amendment 47. The test samples will be taken by the individuals responsible for our radiation safety program. See Item No. 7.

Item No. 10.6: Gauge users have, within their possession, written materials from Campbell Pacific Nuclear Corporation. The operating instructions manual which gives step by step procedures for the use of the depth gauges. The training manual covers the following topics: principles of nuclear physics for soil measurement, health safety regulations, radiation precautions, application of radiostopes to soil gauge design, field use of nuclear gauges, calibration, leak testing procedures and operator maintenance. Emergency procedures include visual inspection criteria to see if the probe is superficially or severely damaged. Steps to take in either situation are outlined as well as the listing of individuals to be notified. Gauge users have been instructed to wear their film badges when they are using the gauge, to store the gauges properly when not in use, and to secure the gauges from unauthorized users when they cannot provide constant surveillance. Transportation of the gauges to field locations will be in accordance with Department of Transportation regulations. The gauges will be kept in their factory shipped containers within a box blocked and braced and 3 feet from the driver. The procedures in the above topics will be provided in written form to the gauge users as well as verbal instructions.

Sincerely,

Patrick A. Hayes
Superintendent

Enclosure

19007

Neutron Moisture Depth Gauge Training Course

I. Principles of Nuclear physics for soil moisture measurement

A. Description of a typical Neutron moisture depth gauge

1. Source, material, size
2. Detector tube
3. Electronics
4. Display

B. Discussion of Neutron radiation as applicable to soil moisture measurement

1. Am 241: Be alpha emission
2. High energy neutron emission
3. Neutron thermalization
4. "Slow" neutron detection

II. Health Safety Regulations and Emergency Procedures applicable to neutron moisture depth gauges

A. Licensing Requirements

1. Nuclear Regulatory Commission (NRC) and Agreement States
2. Conditions for possession, use, storage, and transportation of neutron moisture depth gauges
3. Training of users
4. Leak testing of sources
5. Radiation exposure monitoring for users

B. Dose Calculation and Health Hazard

1. Terms and Values

- a. Radioactive material, radiation
- b. Curie, Millicurie; (Ci, mCi)
- c. Roentgen (R); roentgen equivalent man (rem); millirem (mrem)
- d. NRC maximum allowable exposure for radiation workers (whole body)
- e. Calculations of typical dose to users of the neutron moisture depth gauge during average heavy work week.

2. Radiation Health Hazard

- a. Protection (distance, length of time of exposure, shielding)
- b. Typical natural background radiation
- c. Typical routine radiation exposures
- d. Symptoms of acute radiation exposure
- e. Protecting the Public and the User

1. Radiation Safety Officer (RSO) responsibility
2. Users/operator responsibility
3. EMERGENCY PROCEDURES

III. Neutron moisture depth gauge calibration and operation for soil moisture measurement

- A. Standard Count and Performance Evaluation
- B. Procedure for Primary Calibration
- C. Procedure for secondary Calibration

- 1. With a standard
- 2. With a second gauge

IV. Quiz