NRC FORM 313
(7-86)
10 CFR 30, 32, 33, 34, 35 and 40

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED BY OMB
3150-0120
Expires: 5-31-87

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 20555

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 D
631 PARK AVENUE
KING OF PRUSSIA, PA 19406

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
799 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
611 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)*

- [X] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [X] C. RENEWAL OF LICENSE NUMBER 24-21044-01
  Expired: 6/30/87

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

GIRARDEAU CONTRACTORS, INC.
P.O. Box 880
Cape Girardeau MO 63702-0880

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

Material will be used at temporary job (construction) sites in Southeast Missouri and Southern Illinois. Normally, we work in Missouri from Perry county south to Arkansas and in the Illinois counties of Union and Alexander.

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Thomas W. Morris, P.E.

TELEPHONE NUMBER: 314/ 334-5261

SUBMIT ITEMS 5 THROUGH 11 ON 8½ x 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL. Page 1
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. Page 1.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE. Pages 1-4.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS. Pages 5-11.

9. FACILITIES AND EQUIPMENT. Pages 12-13.

10. RADIATION SAFETY PROGRAM. Pages 14-18.

11. WASTE MANAGEMENT. Page 19.

12. LICENSEE FEES *(See 10 CFR 170 and Section 170.31)*
FEE CATEGORY 170.31-3P. AMOUNT ENCLOSED $230.00

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

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 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
Thomas W. Morris	Thomas W. Morris, P.E.	Civil Engineer/ Radiation Safety Officer	7/31/87

14. VOLUNTARY ECONOMIC DATA

a. ANNUAL RECEIPTS

	<$250K	X	$1M–3.5M
	$250K–500K		$3.5M–7M
	$500K–750K		$7M–10M
	$750K–1M		>$10M

b. NUMBER OF EMPLOYEES *(Total for entire facility excluding outside contractors)*: 20

c. NUMBER OF BEDS: Not Applicable

d. WOULD YOU BE WILLING TO FURNISH COST INFORMATION *(Dollar and/or staff hours)* ON THE ECONOMIC IMPACT OF CURRENT NRC REGULATIONS OR ANY FUTURE PROPOSED NRC REGULATIONS THAT MAY AFFECT YOU? *(NRC regulations permit it to protect confidential commercial or financial–proprietary–information furnished to the agency in confidence)*
[X] YES [ ] NO

RECEIVED
AUG 05 1987
REGION III

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS	APPROVED BY
app	[illegible]	3P	CONTROL NO. 83958	CP

AMOUNT RECEIVED	CHECK NUMBER		DATE
01/03/19	$230	8801050477 870831 REG3 LIC30 24-21044-02 PDR	8/13/87

5. RADIOACTIVE MATERIAL

A. Element and mass number	B. Chemical and/or physical form	Manufacturer and model number (if sealed source)	C. Maximum number of millicuries and/or sealed sources and maximum activity per source which will be possessed at any one time
1. Radionuclei:	1. Form:	1. Manufacturer & model no.:	1. Maximum Amount:
a. Cesium 137	a. Sealed source Campbell-Pacific Model CPN-131	a. CPN Corporation MC-2 Moisture/ Density Gauge	a. No single source to exceed 10 mci.
b. Americium 241-BE	b. Sealed source Campbell-Pacific Model CPN-131	b. CPN Corporation MC-2 Moisture/ Density Gauge	b. No single source to exceed 50 mci.

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

1.a. & b. To be used in Campbell Pacific Nuclear Model MC-2 surface moisture/density gauge for measurement of construction materials.

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

NAME	TITLE
Thomas W. Morris	Civil Engineer/Radiation Safety Officer

Training and Experience:

See resume describing training and experience in working with radioactive materials, page no. 2.

7. RESUME OF INDIVIDUAL RESPONSIBLE FOR RADIATION SAFETY PROGRAM

THOMAS W. MORRIS
Civil Engineer/Radiation Safety Officer

FORMAL TRAINING IN RADIATION SAFETY:

A training class was attended on February 10th, 1987 which discussed:

a. Principles and practices of radiation protection.

b. Radioactivity measurement standardization, monitoring techniques and instruments.

c. Mathematics and calculations basic to the use and measurement of radioactivity.

d. Biological effects of radiation.

Campbell Pacific Nuclear Corporation conducted the one-day session. See memo, page no. 4 and Certificate of Completion, page no. 3. For a more complete course outline see the back page of the Certificate.

EXPERIENCE:

Our company has one nuclear devise which is used to measure moisture and density of soil, asphalt and crushed stone. The equipment involved is CPN Model MC-2 moisture/density gauge with radioactive material as listed under Item Ten a.

Since the training class, Mr. Morris has become more familiar with the information concerning this gauge. In addition, Mr. Morris was employed for fifteen months with a consulting company (Whitworth-Foust, Sikston, MO; 314/471-4660) which has a similiar gauge. Although he did not operate this gauge, Mr. Morris did converse with the operator and learned some second-hand information.

Mr. Morris has a B.S. degree in civil engineering and is registered as a professional engineer is Illinois and Colorado. He has fifteen years experience mainly involving highway construction and engineering consulting. During this time he has worked on several projects where similar gauges were used. He is familiar with the manual test methods which these gauges perform automatically.

№ 8313

Certificate Of Completion

This is to certify that Thomas W. Morris *has completed the basic training course on Radiation Safety and Use of Nuclear Soil Gauges, held this* 10th *day of* February *19* 87, *held at* SHERATON ST. LOUIS HOTEL *City of* ST. LOUIS *State of* MISSOURI *by CPN Corporation.*

Colin M.H.A. Fletcher

INSTRUCTOR

CPN

CORPORATION

2830 Howe Road
Martinez, California USA 94553

Willie Cline

RADIATION SAFETY OFFICER

CONTENTS OF COURSE

PRINCIPLES AND PRACTICES OF RADIATION PROTECTION

Theory, terminology, and practical explanations of Radioactive Materials, License requirements, Storage, Transportation, and Emergency Procedures to be used with portable nuclear devices typical of "soil, agricultural, roof, and other construction gauges" using small (not more than 300 millicurie) sources in sealed capsules.

RADIOACTIVITY MEASUREMENT STANDARDIZATION AND MONITORING TECHNIQUES AND INSTRUMENTS

Demonstration of radiation levels typical with use of small, portable devices using conventional survey meter. Concentration on Inverse Squares Law factors, effects of shielding, time, and distance in use of materials.

MATHEMATICS AND CALCULATIONS BASIC TO THE USE AND MEASUREMENT OF RADIOACTIVITY

Determination of typical radiation levels in mrems within working distance of a typical portable "construction device", calculation of probable weekly radiation dose under a heavy work condition, and relation of that dose to the NRC maximum annual allowances for occupational use of radioactivity.

Establishment of relationship of this occupational dose to that obtained from normal life exposures of external radiation at sea level and high elevations, jet plane travel, normal health XRAYs, etc.

BIOLOGICAL EFFECTS OF RADIATION

General discussion of effects of low level radiation on the body with emphasis on the relationship of routine lifestyle exposure (environmental, routine medical, smoking, etc) to the added exposure from normal use of portable devices using small millicurie sources.

Girardeau Contractors, Inc.
P. O. Box 880
CAPE GIRARDEAU, MO. 63701

MEMO

TO: Nuclear Gauge File
FROM: Tom Morris, Radiation Safety Officer
DATE: February 11, 1987
SUBJECT: CPN Training Class

Yesterday, an authorized nuclear gauge training class was held at the Sheraton St. Louis Hotel at Convention Plaza (downtown St. Louis).

This class satisfies the requirements of the Nuclear Regulatory Commission and Agreement states for portable low millicurie devices used for construction, agriculture and roof testing. A certificate of completion will be awarded to the following individuals who successfully completed the class:

Bill Ogle, Superintendent
Bill Pruitt, Superintendent
Tom Morris, Engineer

Respectfully,

GIRARDEAU CONTRACTORS, INC.

Thomas Morris

Thomas W. Morris, P. E.
Radiation Safety Officer

TWM/cl

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

Training Program for Persons Working with or around Radioactive Materials:

All persons working with radioactive materials will have completed an authorized training class concerning possible hazards, safety precautions, emergency procedures and regulations. They will be informed of license conditions by the RSO and have access to the application and license. Persons working near radioactive materials but who are not operators will be informed by the RSO of possible hazards, safety precautions and regulations pertinent to their situation. Non-operators will also have access to the application and license.

Individual and Organization to Perform the Training Function:

Colin M.H.A. Fletcher
Central Region Sales Manager
Campbell Pacific Nuclear (CPN) Corporation
6185-D Shamrock Court
Dublin, Ohio 43017

Training Program Description:

CPN periodically holds a public Nuclear Gauge Operator Training Class which satisfies the requirements of the Nuclear Regulatory Commission and Agreement States for portable low millicurie devices used for construction, agriculture and roof testing. This one-day class has been attended by all current operators.

Mr. Morris, R.S.O. and Mr. Pruitt will instruct new operators on safety and emergency procedures specific to their duties to insure that they receive training in addition to the above class.

Individuals Who Will Use or Directly Supervise the Use of Licensed Material:

NAME	TITLE
Thomas W. Morris	Civil Engineer/Radiation Safety Officer
William T. Ogle	Superintendent
William C. Pruitt	Superintendent

Training and Experience:

See resumes describing training and experience in working with radioactive materials, page nos. 2, 6 and 9.

8. RESUME OF INDIVIDUAL WORKING IN OR FREQUENTING RESTRICTED AREAS.

WILLIAM C. PRUITT
Superintendent

FORMAL TRAINING IN RADIATION SAFETY:

Mr. Pruitt attended a training class on February 10th, 1987. Campbell Pacific Nuclear Corporation conducted the one-day session. See memo, page no. 4 and Certificate of Completion, page no. 7. For a complete course outline see the back page of the Certificate.

He also was given formal training on April 19th, 1982 by Mr. Richard Hesskamp of Ascor, Inc. which covered the same topics. A Certificate is also included from that training session.

EXPERIENCE:

Our company has one nuclear devise which is used to measure moisture and density of soil, asphalt and crushed stone. The equipment involved is CPN Model MC-2 moisture/density gauge with radioactive material as listed under Item Ten a.

Mr. Pruitt has been an authorized user of the gauge to be licensed here for five years and has used it more than anyone else in our company. He has operated it at temporary job locations in Missouri and at the Blytheville Air Base in Arkansas.

He has thirty years of experience in construction work ranging from residental and industrial buildings to, more recently, highway construction. His experience includes lazer operation for sewer work.

№ 8315

Certificate Of Completion

This is to certify that Bill Pruitt *has completed the basic training course on Radiation Safety and Use of Nuclear Soil Gauges, held this* 10th *day of* February *19* 87*, held at* SHERATON ST. LOUIS HOTEL *City of* ST. LOUIS *State of* MISSOURI *by CPN Corporation.*

Colin M.H.A. Fletcher
INSTRUCTOR

CPN
CORPORATION
2830 Howe Road
Martinez, California USA 94553

Willie Cline
RADIATION SAFETY OFFICER

CONTENTS OF COURSE

PRINCIPLES AND PRACTICES OF RADIATION PROTECTION

Theory, terminology, and practical explanations of Radioactive Materials, License requirements, Storage, Transportation, and Emergency Procedures to be used with portable nuclear devices typical of "soil, agricultural, roof, and other construction gauges" using small (not more than 300 millicurie) sources in sealed capsules.

RADIOACTIVITY MEASUREMENT STANDARDIZATION AND MONITORING TECHNIQUES AND INSTRUMENTS

Demonstration of radiation levels typical with use of small, portable devices using conventional survey meter. Concentration on Inverse Squares Law factors, effects of shielding, time, and distance in use of materials.

MATHEMATICS AND CALCULATIONS BASIC TO THE USE AND MEASUREMENT OF RADIOACTIVITY

Determination of typical radiation levels in mrems within working distance of a typical portable "construction device", calculation of probable weekly radiation dose under a heavy work condition, and relation of that dose to the NRC maximum annual allowances for occupational use of radioactivity.

Establishment of relationship of this occupational dose to that obtained from normal life exposures of external radiation at sea level and high elevations, jet plane travel, normal health XRAYs, etc.

BIOLOGICAL EFFECTS OF RADIATION

General discussion of effects of low level radiation on the body with emphasis on the relationship of routine lifestyle exposure (environmental, routine medical, smoking, etc) to the added exposure from normal use of portable devices using small millicurie sources.

Certificate Of Completion

This is to certify that Bill Pruitt has completed the basic training course on Radiation Safety and Use of Nuclear Soil Gauges held this 19th day of April 1982, held at 114 Silversprings Rd. City of Cape Girardeau State of Missouri by Campbell Pacific Nuclear Corporation.

Richard K Kerkamp
INSTRUCTOR

Richard K Kerkamp
RADIATION SAFETY OFFICER

8. RESUME OF INDIVIDUAL WORKING IN OR FREQUENTING RESTRICTED AREAS.

WILLIAM T. OGLE
Superintendent

FORMAL TRAINING IN RADIATION SAFETY:

Mr. Ogle attended a training class on February 10th, 1987. Campbell Pacific Nuclear Corporation conducted the one-day session. See memo, page no. 4 and Certificate of Completion, page no. 10. For a complete course outline see the back page of the Certificate.

He also was given formal training on April 19th, 1982 by Mr. Richard Hesskamp of Ascor, Inc. which covered the same topics. A Certificate is also included from that training session.

EXPERIENCE:

Our company has one nuclear devise which is used to measure moisture and density of soil, asphalt and crushed stone. The equipment involved is CPN Model MC-2 moisture/density gauge with radioactive material as listed under Item Ten a.

Mr. Ogle has not been an authorized user of this or any gauge yet.

He has forty years of experience in construction work. His experience includes supervision of highway and pipeline construction.

№ 8314

Certificate Of Completion

This is to certify that Bill Ogle *has completed the basic training course on Radiation Safety and Use of Nuclear Soil Gauges, held this* 10th *day of* February *19* 87*, held at* SHERATON ST. LOUIS HOTEL *City of* ST. LOUIS *State of* MISSOURI *by CPN Corporation.*

Colin M.H.A Fletcher

INSTRUCTOR

CPN

CORPORATION

2830 Howe Road
Martinez, California USA 94553

Willie Cline

RADIATION SAFETY OFFICER

CONTENTS OF COURSE

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General discussion of effects of low level radiation on the body with emphasis on the relationship of routine lifestyle exposure (environmental, routine medical, smoking, etc) to the added exposure from normal use of portable devices using small millicurie sources.

Certificate Of Completion

This is to certify that Bill Ogle has completed the basic training course on Radiation Safety and Use of Nuclear Soil Gauges held this 19th day of April 1982, held at 114 Silversprings Rd City of Cape Girardeau State of Missouri by Campbell Pacific Nuclear Corporation.

Richard K Hershberger
INSTRUCTOR

Richard K Hershberger
RADIATION SAFETY OFFICER

9. FACILITIES AND EQUIPMENT.

The nuclear gauge will be used at temporary job sites as discussed under Item 10.B. (Radiation Safety Program - Operating Procedures). For permanent storage and security areas refer to description below and sketch:

Permanent Storage Location for Nuclear Guage:

Location No. 1: Maintenance Shed
Delta Asphalt Plant
700 Woods Lane
Sikeston, MO 63801 Phone: 314/471-6410

1. Key access to the building is limited to:

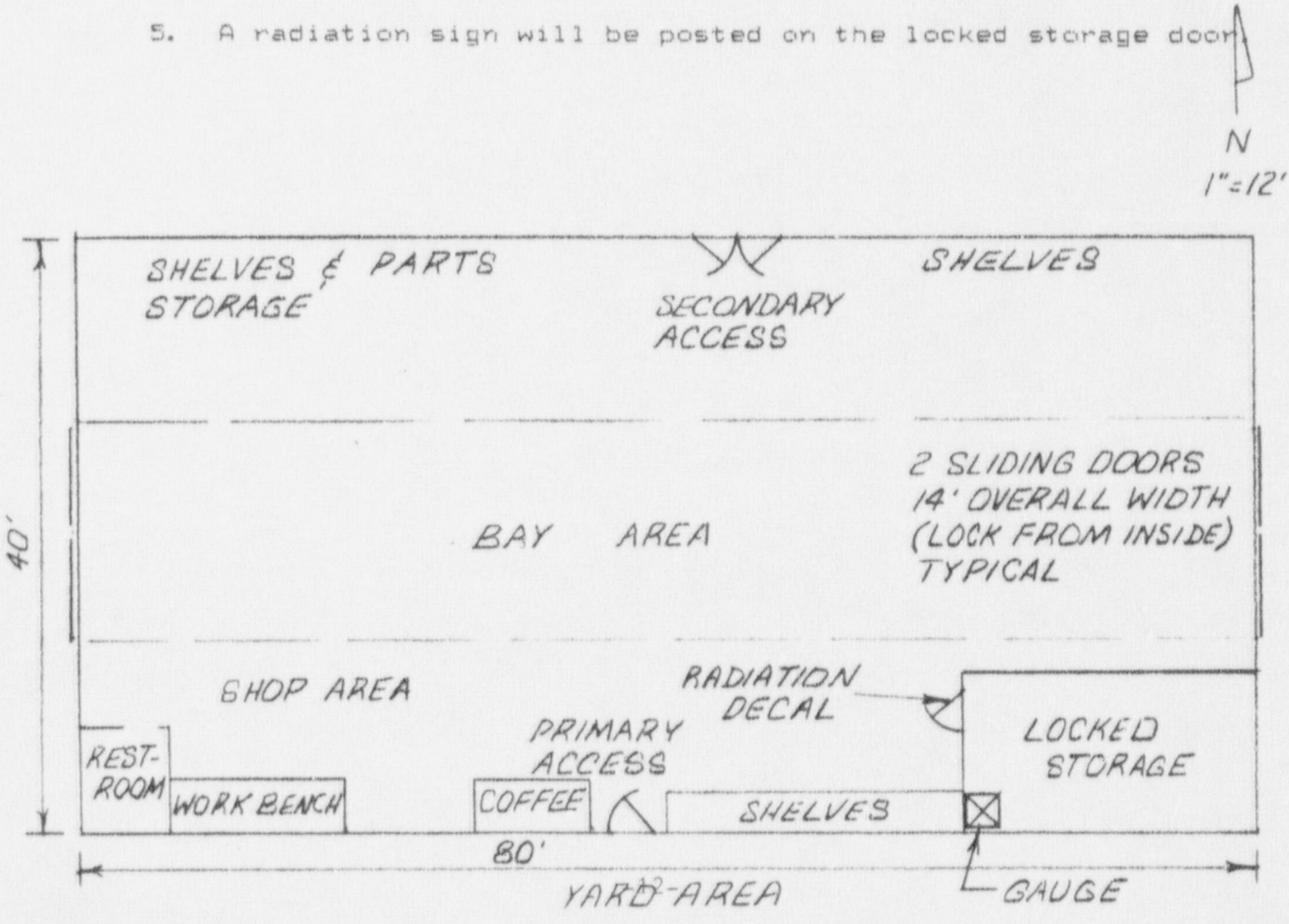
William C. Pruitt, Superintendent (Authorized User)
David Wallace, Electrican
Frankie Chance, Road Foreman

2. The building is constructed of galvanized metal and has no special shielding.

3. No employees work within 10 feet of the gauge.

4. An electrical outlet is available for charging the gauge.

5. A radiation sign will be posted on the locked storage door.



9. FACILITIES AND EQUIPMENT.

Permanent Storage Location for Nuclear Guage:

Location No. 2: Girardeau Contractors Maintenance Shed
Delta Asphalt Yard
1200 Marquette Drive
Cape Girardeau, MO 63701 Phone: 314/334-5261

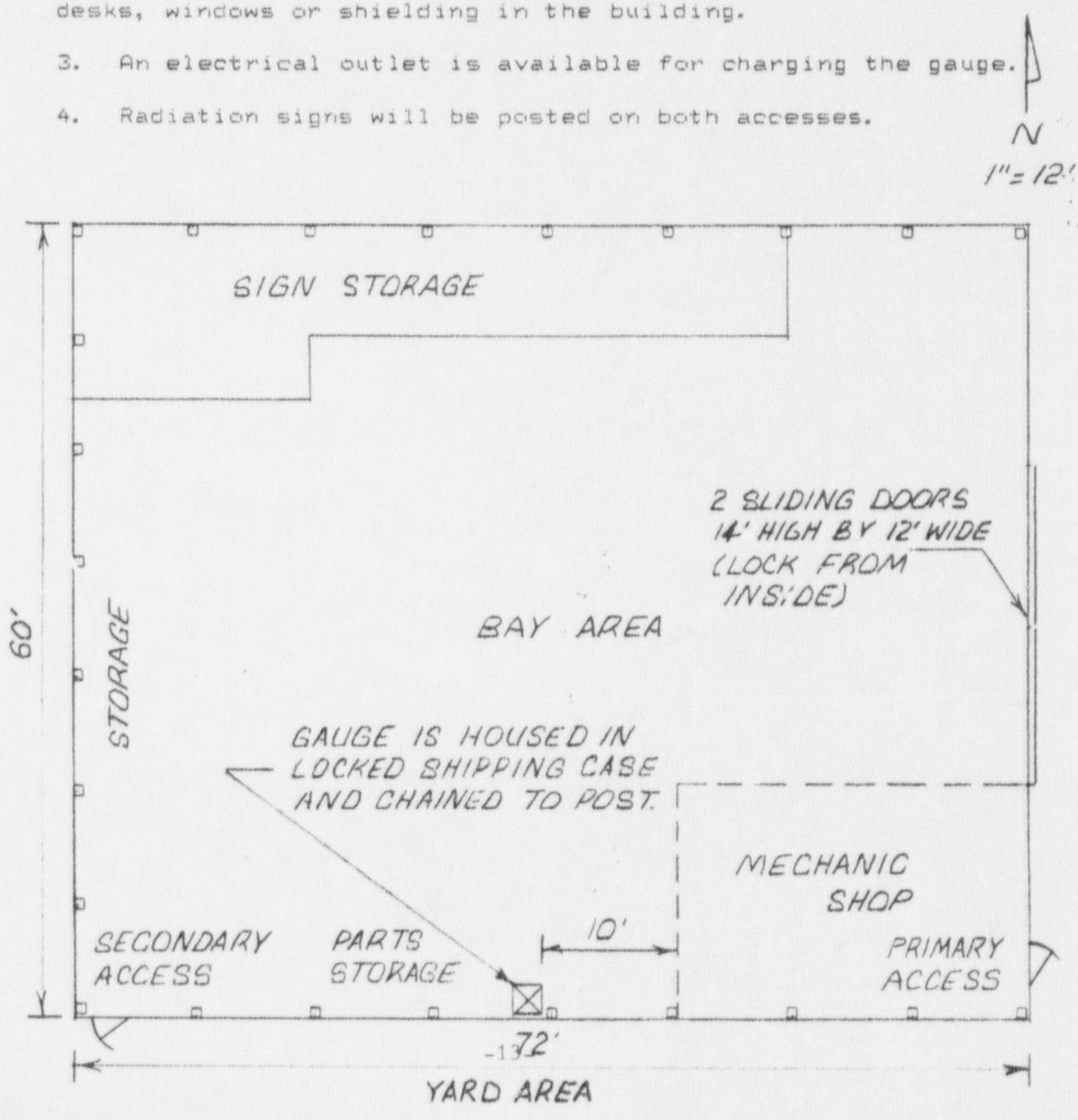
1. Key access to the building is limited to:

William T. Ogle, Superintendent (Authorized User)
Steve Roberts, Mechanic
A. L. Murph, Maintenance Supervisor

2. No employees work within 10 feet of the gauge. There are no desks, windows or shielding in the building.

3. An electrical outlet is available for charging the gauge.

4. Radiation signs will be posted on both accesses.



10. RADIATION SAFETY PROGRAM

A. Radiation Safety Officer - Duties and Responsibilities:

1. To ensure that all terms and conditions of the license are being complied with and that the information contained in the license is current and accurate.

2. To ensure that the equipment has been leak tested at the required intervals and that the leak test is performed in the manner prescribed by CPN Corporation.

3. To ensure that the gauge is only used by individuals authorized by the RSO and that they use the gauge in accordance with all relevant regulations. This will include wearing a suitable radiation film badge.

4. To maintain the records as required by the license and regulations. These records shall include personnel exposure records, leak test records and training certificates for all users.

5. To ensure that the equipment is properly secured against unauthorized removal at all times.

6. To serve as a point of contact and give assistance in case of emergency (such as equipment damaged in the field or theft) and to notify the proper authorities in case of emergency.

7. To ensure that all users understand and have read the radiation safety operation and emergency procedures.

8. To arrange appropriate training for new users as required.

9. To post all required signs and notices in prominent locations.

NOTE: The Radiation Safety Officer reports to the Senior Vice-President who is the supervisor, directly or indirecty, of all individuals who will be using this equipment.

B. Operating Procedures:

1. Limitations and conditions to be met in handling liquid or uncontained radioactive materials are not applicable.

2. Contamination control procedures including restrictions against smoking and consumption of food and beverages or the storage of same around radioactive materials are not applicable due to the sealed sources involved. Leak tests will be conducted annually to check for contamination. Exposure will be minimized by the following:

a. The operator will exercise suitable control over the gauge at all times.

10. RADIATION SAFETY PROGRAM

B. Operating Procedures

2. Exposure control (cont.)

b. Under no circumstances will the gauge be left unattended or under the supervision of an unauthorized person.

c. When not being used for field measurements, the gauge shall have its source mechanism locked and will be locked in its transportation case. The gauge will also be returned to the vehicle.

d. When testing is completed, the gauge will be returned to its permanent place of storage as soon as practical. Gauges will be securely locked in storage areas when not in use. Keys will be restricted to authorized users only.

e. When using the gauge, operators will wear the personnel monitoring device that has been assigned to them. When the operator is not using the gauge, the monitoring device will be kept in a radiation free area and protected from heat and sunlight.

f. At all times operators will observe the principle of "A.L.A.R.A." as required by the N.R.C. By following the ALARA principle, operators will receive a radiation dose that is :

As Low As Reasonably Acheivable

3. Stationary gauge procedures are not applicable.

4. The service company is the manufacturer:

Campbell Pacific Nuclear Corporation
2830 Howe Road
Martinez, California 94553

CPN will perform leak tests and repairs, train new operators, and advise us in emergency situations.

C. Maintenance and Leak Test Procedures:

1. Periodic maintenance will include cleaning of the gauge. The operator has received proper instruction on how to do this, will wear his film badge and observe ALARA while cleaning.

2. No maintenance will be performed in which the radioactive source needs to be removed from the gauge. For this type of maintenance and for all repairs, the gauge will be returned to the manufacturer.

10. RADIATION SAFETY PROGRAM

C. Maintenance and Leak Test Procedures (cont.)

3. The leak test will be performed annually using an approved leak test kit (CPN No. TD11B) and in accordance with the manufacturer's instructions on page nos. 20 and 21. The operator will wear his film badge while leak testing.

4. The shipping case will be checked periodically to ensure that all required labels are present.

5. A utilization log will be maintained for the gauge which could be used by four branch offices in the states of Arkansas, Missouri, Illinois and Louisiana. Currently, a license is possessed for Arkansas and other licenses will be applied for as the need arises.

6. Since only one gauge is involved, the RSO will know at all times the approximate location of the gauge (i.e. -- which branch office is currently using the gauge.) The utilization log should be sufficient to monitor the use and location of the equipment without the need of a quarterly inventory.

D. Emergency Procedures:

In the event of emergency or accident situations involving the gauge, the following will be performed:

1. RESTRICT ACCESS: Persons in the immediate area will be asked to leave. Barricades will be erected around the gauge at a distance of fifteen feet. Access to this restricted area will be limited to those people with training and experience in these situations.

If a vehicle or equipment is involved, it will be stopped and access restricted until the extent of contamination (if any) is determined.

2. MAINTAIN SURVEILLANCE: The restricted area will be kept under constant, direct observation.

A visual inspection of the gauge will be made from a safe distance to determine if the source housing and/or shielding has been damaged. Note important warning below.

3. NOTIFICATION: The company Radiation Safety Officer, Thomas W. Morris, will be notified at the earliest possible time (after the previous items have been done.) If the gauge is lost or stolen, the RSO will be immediately notified. Call the RSO at 314/334-5861. He will contact the appropriate authorities below. (If the RSO is unavailable, the gauge operator will contact the authorities.):

N.R.C. Region III 312/790-5500

Missouri State Police 314/785-5757

10. RADIATION SAFETY PROGRAM

D. Emergency Procedures:

3. NOTIFICATION (cont.)

Campbell Pacific Nuclear

(Corporate Headquarters)	415/228-9770
(Central Region Office)	614/766-1276

For any transportation accident involving radioactive material, both the U.S. Nuclear Regulatory Commission and the State Police must be notified.

4. RECOVERY OPERATIONS: Decontamination and recovery operations will only be attempted by properly trained individuals under the direct supervision of the RSO or manufacturer and using proper tools.

IMPORTANT: DO NOT HANDLE UNATTACHED OR UNSHIELDED SOURCES OF RADIOACTIVE MATERIAL!

E. Transportation Procedures:

1. All possible means shall be provided to ensure that the equipment is fully secured in the transporting vehicle and the equipment is away from the passenger compartment. When transporting in an enclosed vehicle (car or van), the vehicle will be locked. When transporting in an open-bed vehicle, the gauge will be securely fastened and locked to the truck bed. While the vehicle is unattended, the gauge and its shipping case will be hidden from view.

2. The gauge will be transported in the CPN transportation case. The U. S. Department of Transportation requires the gauge be transported in a properly labeled carrying case.

3. At all times while the gauge is being transported, the operator will carry the required shipping papers including a copy of the emergency plan:

a. Authorization Letter from RSO
b. Copy of License
c. Copy of Leak Test
d. Copy of Emergency Plan

4. Appropriate regulations of the U. S. Department of Transportation should be followed when radioactive material is transported between locations.

5. The dashboard of any vehicle carrying radioactive material should be posted with a notice containing the words "Caution (or Danger) Radioactive Material" and describing the exact location within the vehicle of the radioactive material, the isotope and quantity being carried, and name(s) and phone number(s) to contact in the event of an emergency.

10. RADIATION SAFETY PROGRAM
E. Transportation Procedures (cont.)

6. The radiation labels or placards described in the previous paragraph will be removed from the vehicle when not actually transporting the gauge to avoid confusion should an accident occur to the vehicle.

F. Procedures for Receipt of Packages Containing Radiactive Material:

1. The following procedures will be followed for all incoming packages containing radioactive material:

a. Visually inspect package for any sign of damage. If damage is noted, contact the service company.

b. Conduct a leak test on damaged package if recommended by the service company.

2. Only equipment which conforms to the maximum amounts of the license be ordered. No liquid form of radioactive material is involved.

3. Procedures for receipt of radioactive material after normal working hours are not necessary. Receipt will only occur when the unit is received from the factory after repair or upon purchase of new equipment none of which is planned to be purchased in the foreseeable future.

4. The material will be shipped in a locked shipping case which is expressly manufactured for such use by a carrier who is licensed and equipped. Delivery will be to corporate headquarters where the RSO will oversee transport to one of the storage areas or to an authorized operator.

G. Radiation Survey Program and Personnel Monitoring:

1. Our understanding is that detection instruments and a survey program are not necessary for the sealed low-level sources involved in this application. The source listed under Item 5.i.b., Americium 241-BE emits neutron radiation for moisture determination. Neutron dose rate evaluations are proposed by personnel monitoring equipment, as opposed to survey meters.

2. Whole body and extremity monitors will be:

Type	Supplier	Exchange Frequency
Film Badge	Siemens Health Physics Services 2000 Nuclear Drive Des Plaines, IL 60018	Monthly

3. Pocket dosimeters and bioassays are not proposed.

11. WASTE MANAGEMENT

Sealed sources will be returned to manufacturer for disposal or will be transferred to another licensed user.

INDIVIDUAL GAUGE LEAK TEST INSTRUCTIONS

PORTAPROBE MODEL A (Single, combined source)

1. Remove the chassis and heat shield. DO NOT REMOVE THE RED COVER OVER THE SOURCE MECHANISM.
2. Swab around the edges of the RED COVER, the grommet, and, (from the outside), around the four mounting screws on the bottom of the gauge under the source mechanism.

PORTAPROBE MODEL B, BR, & BRC (Single, combined source)

1. Do NOT remove the chassis. Do NOT extend source. Leave in SAFE position!
2. Up end the gauge, stand behind it, swab around the brass cleanout ring on the bottom with the shutter CLOSED.

PORTAPROBE MODEL MC SERIES (Two sources with same swab)

1. First, remove the four screws and lift the electronic assembly out of the case. Swab the RED SPOT beside the moisture detector to test the Americium 241/Be source.
2. Then, repeat the Model BR test procedure. This will test the Cesium 137 source in the rod.

HYDROTECTOR MODEL MC-M (Single, internal source)

1. Remove the flat plate on the end of the gauge. Swab around the Radioactive Source Label visible inside the opening.

DEPTH GAUGES, MODEL 500 SERIES, ANY FORM

1. Lay gauge on its back. Swab around the inside of the access hole on the bottom of the case. It is not necessary to extend the probe itself, although this is permissible.

   (Be sure to note the type of gauge on the reverse of this form. Model 501 has a combination CS/AM source, Model 502 has Cesium only, and Model 503 has Americium only.)

OTHER DEVICES (Other Soil Gauges, Industrial Devices, etc.)

1. This Leak Test Kit can be used for any authorized swab test. Refer to the manufacturer's leak test instructions and use this kit accordingly. Properly identify the device and the radioactive material and quantity on the reverse of this form.
2. If instructions are not available, contact the manufacturer, CPN Factory, or your local Public Health Officer for assistance in effecting a proper test.

CPN campbell pacific nuclear

130 So. Buchanan Circle • Pacheco, CA 94553

RADIATION SAFETY OFFICER

_____

_____

_____

_____

GENERAL:

1. Refer to the instructions on the reverse of this form and/or in your device manual for the specific locations and procedures for leak testing your nuclear device.

2. Remove the swab from the plastic container, wet it with detergent solution, and swab the appropriate area per the instructions for the device.

3. Return the swab to the plastic container.

(It is not necessary to dismantle the source mechanism or to expose the source on any CPN product in order to take a leak test. Read the instructions!)

COMPLETE BOTH SIDES OF THIS FORM:

4. Fill in the required device identification data below.

Fill in the name and address of the Radiation Safety Officer (RSO) on the reverse of this form for future automatic return mail reminder service of the next leak test requirement.

Read your license and check off which leak test period box applies for your next leak test requirement. One month before the next leak test is due, we will mail the "Tearoff" portion of this kit as a reminder to obtain another LEAK TEST KIT to avoid violation of your license terms. It is necessary that CPN has accurate name, address, and license period information in order to be able to provide this service.

GULF NUCLEAR, INC.
202 MEDICAL CTR BLVD
WEBSTER, TX 77598

SEND TO LABORATORY:

5. PLACE THE SWAB AND THIS FOLDER IN A WINDOW ENVELOPE SO THIS ADDRESS SHOWS IN WINDOW.

Results will be forwarded by mail to the RSO address you place on the reverse of this form. If test is unsatisfactory, RSO will be notified by wire or telephone.

LEAK TEST DATA:

DATE YOU TOOK THE TEST _____

DEVICE NAME _____ MODEL # _____ SERIAL _____

SOURCE TYPE AND SIZE: Radium 226 _____mCi Cesium 137 _____mCi Americium 241 _____mCi

Other Material (Identify) _____ Millicuries

REQUIRED TEST PERIOD STATED IN YOUR LICENSE: 6 Mo. _____ 1 Yr. _____ 3 Yr. _____

REMINDER TO R.S.O.:
(Leak Test is Due)

This is mailed back to you by CPN one month prior to your next Leak Test requirement.

PLEASE SEND US _____ KITS @ $15.00 EACH. BILL US ON PO _____ OR,
PAYMENT IS ENCLOSED _____. SIGNED _____ DATE _____

TD/TDIIAE1TSM/7/6-79

CONTROL NO. 83958