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REGION 1

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13 April 2005



USNRC – Region 1
Attention: LAT
475 Allendale Road
King of Prussia, PA 19406

03034366
X

Subject: Materials License 20-20675-02 Renewal, Program Code 03225

Dear Sir or Madam:

EGS Gauging wishes to renew the subject materials license and have included the necessary application and attachments. Please note that I had sent a check in the amount of \$3300.00 as required by category 3N as prescribed by 10CFR170.31 to the USNRC in Washington D.C.

Additionally, I feel that the below listed documents should be removed from condition 14 of the license file as they are no longer relevant:

- A. Application dated October 24, 1994
- B. Letter dated March 17, 1995
- C. Letter dated April 7, 1995
- E. Letter dated August 18, 1997
- F. Letter dated October 14, 1997
- G. Letter dated October 28, 1997
- H. Letter dated November 4, 1997

Thank you in advance for your help with this application.

Sincerely,

EGS Gauging, INC.

A handwritten signature in black ink, appearing to read "Douglas M. Beek", written over a horizontal line.

Douglas M. Beek
Director Quality Assurance

Enclosures:

137040

EGS Gauging, Inc.

900 Middlesex Turnpike, Building 6, Billerica, Massachusetts 01821-3947, USA
Telephone: +1 978-663-2300 Facsimile: +1 978-663-0089

NMCC/RONI MATERIALS-002

NRC FORM 313
(4-2004)
10 CFR 30, 32, 33,
34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0120

EXPIRES: 10/31/2005

Estimated burden per response to comply with this mandatory collection request: 7 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

APPLICATION FOR MATERIAL LICENSE

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

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, MISSISSIPPI, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

IF YOU ARE LOCATED IN:

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

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-4005

03034366
X

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.

<p>1. THIS IS AN APPLICATION FOR (Check appropriate item)</p> <p><input type="checkbox"/> A. NEW LICENSE</p> <p><input type="checkbox"/> B. AMENDMENT TO LICENSE NUMBER _____</p> <p><input checked="" type="checkbox"/> C. RENEWAL OF LICENSE NUMBER <u>20-20675-02</u></p>	<p>2. NAME AND MAILING ADDRESS OF APPLICANT (Include ZIP code)</p> <p>EGS Gauging Inc The Middlesex Technology Center 900 Middlesex Turnpike Billerica, MA 01821-3947</p>
<p>3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED</p> <p>At various customer sites in the NRC jurisdiction.</p>	<p>4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION</p> <p>Douglas M Beek</p> <hr/> <p>TELEPHONE NUMBER</p> <p>(978) 262-5223</p>

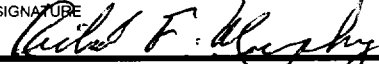
SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

<p>5. RADIOACTIVE MATERIAL</p> <p>a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.</p>	<p>6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.</p>				
<p>7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.</p>	<p>8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.</p>				
<p>9. FACILITIES AND EQUIPMENT.</p>	<p>10. RADIATION SAFETY PROGRAM.</p>				
<p>11. WASTE MANAGEMENT.</p>	<p>12. LICENSE FEES (See 10 CFR 170 and Section 170.31)</p> <table border="1"> <tr> <td>FEE CATEGORY</td> <td>3N</td> <td>AMOUNT ENCLOSED</td> <td>\$ 3,300.00</td> </tr> </table>	FEE CATEGORY	3N	AMOUNT ENCLOSED	\$ 3,300.00
FEE CATEGORY	3N	AMOUNT ENCLOSED	\$ 3,300.00		

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

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

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

<p>CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE</p> <p>Richard F Murphy - Senior Vice President/General Manager</p>	<p>SIGNATURE</p> 	<p>DATE</p> <p>02/24/2005</p>
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FOR NRC USE ONLY

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

137040

EGS GAUGING INC

APPLICATION FOR MATERIALS LICENSE

NRC FORM 313 CONTINUATION

ITEM 5 - RADIOACTIVE MATERIAL

Element and Mass Number	Chemical and/or Physical Form	Maximum Amount
A. Cobalt 60	A. Not Applicable	A. Not Applicable
B. Krypton 85	B. Not Applicable	B. Not Applicable
C. Strontium 90	C. Not Applicable	C. Not Applicable
D. Cesium 137	D. Not Applicable	D. Not Applicable
E. Promethium 147	E. Not Applicable	E. Not Applicable
F. Polonium 210	F. Not Applicable	F. Not Applicable
G. Americium 241	G. Not Applicable	G. Not Applicable

ITEM 6 - PURPOSES FOR WHICH LICENSED MATERIAL WILL BE USED

For use and/or possession incident to:

- (1) Installation into or removal from gauging devices.
- (2) Installation, relocation, repair and servicing EGS Gauging devices and other gauging devices of the same basic design as EGS Gauging devices manufactured by the following companies: Eurotherm Gauging, LFE, ABB Process Automation, Accuray, Advanz, Aeonic Systems, Barber Colman, Detacontrol, FAG, Fife, Indev, Mahlo, Measurex, NDC Systems, Ohmart and Yokogawa as other manufacturers of a similar design.
- (3) Instruction and training of individuals in the use of gauging devices.
- (4) Removal and shipping from customer facilities, transfer and disposal of sealed sources and devices manufactured by EGS Gauging and other devices manufactured by the companies listed in (2) above received from customers for disposal.

ITEM 7 - INDIVIDUAL RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE

Individual: Douglas M Beek

Education: Bachelor Business Administration - Cum Laude

Work Experience:

1. Company - Accuray Corp.
Company Product - Nuclear Thickness Gauge
Position - Customer Engineer
2. EGS Gauging / Eurotherm Gauging Systems / Aeonix KGS
Company Product - Nuclear Thickness Gauge
Position - Director Quality Assurance
Radiation Safety Officer

Radiation Training:

1. Accuray Corp.
Formal Course Training - Radiation Safety
Course Duration - 40 hours
Course Content:
 - a. Principles and practices of radiation protection
 - b. Radioactive measurements, standardization, monitoring techniques, instruments
 - c. Mathematics and calculations basic to the use and measurement of radioactivity including time and distance factors
 - d. Biological effects of radiation
2. Eurotherm Gauging Systems / Aeonix KGS
Formal Course Training - Radiation Safety
Course Duration - 40 hours
Course Content:
 - a. Principles and practices of radiation protection
 - b. Radioactive measurements, standardization, monitoring techniques, instruments
 - c. Mathematics and calculations basic to the use and measurement of radioactivity including time and distance factors
 - d. Biological effects of radiation
3. Certificate of Training from Radiation Safety Associates - Hebron, CT
Formal Course Training - Radiation Safety Officer
Course Duration - 40 hours

Course Content:

- a. Principles and practices of radiation protection
 - b. Radioactive measurements, standardization, monitoring techniques, instruments
 - c. Mathematics and calculations basic to the use and measurement of radioactivity
 - d. Biological effects of radiation
 - e. Review applicable regulations
 - f. Setting up a radiation protection program at licensed facility
4. Certificate of Training from Radiation Safety & Control Services, Inc. - Portsmouth, NH

Formal Course Training - Radiation Safety Officer

Course Duration - 40 hours

Course Content - 1. Principles and practices of radiation protection

- a. Radioactive measurements, standardization, monitoring techniques, instruments
- b. Mathematics and calculations basic to the use and measurement of radioactivity
- c. Biological effects of radiation
- d. Review applicable regulations
- e. Setting up a radiation protection program at licensed facility

ITEM 8 - TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

See EGS Policy Statement - RP201203 Radiation Worker Classification and Radiation Protection Course Description

ITEM 9 - FACILITIES AND EQUIPMENT

Licensed material will be used at EGS customer facilities throughout the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material

ITEM 10 - RADIATION SAFETY PROGRAM

See EGS Radiation Protection Manual.

ITEM 11 - WASTE MANAGEMENT

See EGS Radiation Protection Manual section 2.8.

Radiation Protection Manual

RP1000

Issued By: Radiation Safety Office

Writer/Editor: Douglas M. Beek

Change 4, 6 January 2005

Approved By: Douglas M. Beek

PURPOSE

This document have been established to:

- (1) Provide for the protection of EGS employees, both radiation and non-radiation workers, as well as persons in the general public from the radiation hazards associated with the possession and use of radioactive sealed sources.
- (2) To provide for EGS compliance with the Code of Massachusetts Regulations Title 105, Part 120 (105CMR120), relative regulations of the United States Nuclear Regulatory Commission, agreement states, and countries serviced by EGS Incorporated

SCOPE

This document applies to the receipt, possession, use, distribution and shipment of radioactive materials by those in the employ of EGS Inc.

RELATED DOCUMENTS

105CMR120	Code of Massachusetts Regulations Title 105, Part 120 (MADPHRCP)
10CFR	Code of Federal Regulations Title 10 Energy (USNRC)
49CFR	Code of Federal Regulations Title 49 Transportation (DOT)
IATADGR	International Air Transportation Association Dangerous Goods Regulations

1. RESPONSIBILITIES

1.1. COMPANY PRESIDENT

The Company President has delegated the development and the running of the Radiation Protection Program to the Radiation Safety Officer.

1.2. RADIATION SAFETY OFFICER

The safe use and handling of the sealed sources along with the establishment and maintenance of an effective radiation protection program are the responsibilities of the Radiation Safety Officer (RSO). The RSO is considered the principal user of the sealed sources and no other persons are allowed to handle the sealed sources without permission of and training by the RSO.

The RSO is also responsible for the maintenance of all records related to the radiation protection program.

1.3. EGS EMPLOYEES

Employees are responsible for following the policies and procedures within the radiation protection program and ensure that they keep their exposure as low as reasonably achievable (ALARA).

2. REQUIRED PROCEDURES FOR RADIATION PROTECTION

The following sections outline the procedures and radiation protection program necessary to ensure the safe use and handling of the radioactive sealed sources.

2.1. COMPLIANCE WITH REGULATIONS

The possession and use of radioactive sealed sources must comply with the applicable regulations of the U.S. Nuclear Regulatory Commission, the Massachusetts Department of Public Health Radiation Protection Control, the U.S. Department of Transportation, Agreement States, and International Air Transportation Association. See the related documents section of this manual for the relative regulations.

2.2. CONTROL OF RADIATION EXPOSURE

All persons who handle radioactive sealed sources will do so in a manner that will keep radiation exposure as low as reasonably achievable (ALARA).

2.2.1. Occupational Exposure Limits for Adults

All occupational exposures will be controlled such that no person shall receive a radiation dose in excess of the following limits:

- (a) An annual Deep Dose Equivalent of 5.0 REMs (5,000 Millirems)
- (b) An annual exposure to the lens of the eye of 15 REMs (15,000 Millirems)
- (c) An annual Shallow Dose Equivalent to the skin or any extremity of 50 REMS (50,000 millirems)

2.2.2. Occupational Exposure Limits for Minors

The annual occupational dose limits for minors are ten percent of the annual dose limits for adults.

2.2.3. Dose Equivalent Limit to Embryo/Fetus

EGS is required to ensure that dose equivalent to the embryo/fetus during the entire pregnancy due to occupational exposure of a declared pregnant woman does not exceed 0.5 REMs (500 Millirems). In order to activate this provision of the regulations, a EGS employee must advise her supervisor in writing of her pregnancy.

2.2.4. Dose Limits for Individual Members of the Public

EGS is required to conduct operations so that the total effective dose equivalent to individual members of the general public does not exceed 0.1 REM (100 millirems) in a year exclusive of dose contributions from background radiation and from any medical administration that the individual has received.

The dose in any unrestricted area from external sources must not exceed 0.002 REMs (2.0 millirems) in any one hour.

2.3. REGISTRATION OF RADIATION WORKERS

Each person who handles the radioactive sealed source must receive permission and formal training from the RSO or designate. Training will consist of a radiation protection instruction lecture in radioactive materials handling techniques. Concepts of time, distance, and shielding for reducing exposures will be demonstrated.

Ancillary personnel will be given lectures on radiation protection and radioactive source handling techniques. Yearly refresher lectures will be offered to personnel to review the radiation protection program and to introduce any new changes.

2.4. MONITORING OF RADIATION WORKERS

Each radiation worker is provided with a film badge dosimeter to measure both whole body and extremity exposures. The RSO will investigate any exposure in excess of 10% of the values listed in section 2.2.1 above.

An area monitor badge is placed in the lab where the sealed sources are used.

When not in use, personnel monitoring badges will be stored in a location where they will receive minimal radiation exposure above background.

The RSO is responsible for maintaining exposure histories and film badge reports for all radiation workers.

2.5. RECEIPT OF RADIOACTIVE SEALED SOURCES

All radioactive sealed sources received at EGS will undergo the following check-in procedure within three hours of receipt:

Dose rate measurements will be made at the package surface and at one meter. The limits are 200 mR/hr at the package surface and 10 mR/hr at one meter.

Wipe test will be performed to determine if there is removable contamination on the external surfaces of the package. Results of this test must be within the limits specified in 10 CFR71.87.

A log will be kept of all packages received into the facility.

Radioactive sources will only be accepted during normal working hours. No sources will be accepted after hours, weekends, or holidays where the company is closed.

Any packages that do not comply with the above check-in criteria will be stored until arrangements can be made to return the package to the manufacturer.

2.6. RADIATION SURVEYS

Appropriate radiation detection equipment will be available to perform radiation surveys and dose assessments in the areas where the sealed sources are used and stored.

Contamination surveys will be made in the areas where the sealed sources are stored and used. These surveys will be done monthly to ensure that the sources are not leaking and contaminating the area.

Radioactive sealed sources will be wipe tested upon arrival and on a six-month basis.

Any sealed source in storage and not being used need not be tested. When the source is removed from storage for use or transfer it shall be tested before use or transfer.

2.7. RADIATION CAUTION SIGNS AND LABELS

2.7.1. Laboratory Posting

Each laboratory or room where sealed sources are used or stored will be posted with caution signs in compliance with 10 CFR 20.1902. Each sign will contain a section in which emergency notification information will be posted.

2.7.2. Storage Containers

Shielded storage containers will be labeled with caution radioactive labels. These labels will include information on the type of radioisotope, amount and date when activity was measured.

2.7.3. Experimental Set-up

The sealed source experimental set-up will be labeled when it is left unattended. These labels will include the same information as in section 2.7.2 above.

2.8. DISPOSAL OF RADIOACTIVE SEALED SOURCES

If it becomes necessary to dispose of a sealed source or any radioactive contaminated material, a licensed waste disposal company will be contracted. Sealed sources may also be returned to the manufacturer for disposal.

2.9. TRANSPORTATION OF RADIOACTIVE SEALED SOURCES

All packaging and transportation of radioactive sealed sources will be done in accordance with State, NRC, DOT, and IATA rules and regulations.

2.10. GENERAL RADIATION PROTECTION REQUIREMENTS AND PRECAUTIONS

There shall be no smoking, eating, drinking or storage of food or beverages in any area where sealed sources are stored or used.

Under no circumstances will sealed sources be handled directly with hands. Handling tongs or suitable remote handling devices will be used during transfers between shielded storage container and the device.

Dose rate profiles will be established with the sealed source in the experimental set-up to ensure personnel exposures are kept within permissible limits and as low as reasonably achievable.

If radioactive contamination is found during a routine survey, the sealed source will be returned to its shielded storage container and the RSO will be notified immediately.

2.11. EMERGENCY PROCEDURES

The RSO will be notified immediately of any suspected over exposures to external radiation or any evidence of radioactive contamination.

In the event of a suspected over exposure to external radiation or radioactive contamination, immediately notify the RSO. A detailed radiation survey of the area will be performed to determine the extent of the exposure or contamination. If an internal exposure is suspected, appropriate bioassays will be conducted on the person(s) involved. The Health Physics consultant will be contacted if additional help or information is needed.

The home phone number of the RSO will be posted as the contact for any emergencies that may occur after hours.

A radiation dose assessment will be performed and documented on any person involved in an emergency.

APPENDIX 1 - RADIATION PROTECTION INFORMATION SHEET

Absorbed Dose - The energy imparted by ionizing radiation per unit mass of irradiated material. The units of absorbed dose is the rad and the gray (Gy).

Activity - The rate of disintegration (transformation) or decay of radioactive material. The units of activity are the curie (Ci) and the becquerel (Bq).

Acute exposure - The absorption of a relatively large amount of radiation (or intake of radioactive material) over a short period of time.

Agreement state - Any state with which the United States Nuclear Regulatory Commission has entered into an effective agreement under Subsection 274b. of the Atomic Energy Act of 1954, as amended (73 Stat. 689).

ALARA - Acronym for "as low as is 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 or registered activities undertaken, taking into account the 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 sources of radiation in the public interest.

Alpha Particle - A positively charged particle ejected spontaneously from the nuclei of some radioactive elements. It is identical to a helium nucleus that has a mass number of 4 and an electrostatic charge of +2.

Authorized User - An individual who is authorized by license or registration condition to use a source of radiation.

Background Radiation - Radiation from cosmic sources; naturally occurring radioactive materials, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee or registrant. "Background radiation" does not include sources of radiation regulated by the agency.

Beta Particle - A negatively charged particle that is emitted by certain radioactive atoms. A beta particle is identical to the electron.

Bremsstrahlung - Secondary electromagnetic radiation (x-rays) produced by deceleration of charged particles through matter.

Chronic Exposure - The absorption of radiation (or intake of radioactive materials over a long period of time, i.e., over a lifetime).

Collective Dose - The sum of the individual doses received in a given period of time by a specified population from exposure to a specified source of radiation

Committed Effective Dose Equivalent - CEDE is the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.

Controlled Area - An area, outside of a restricted area but inside the site boundary, access to which can be limited by the licensee or registrant for any reason.

Curie - The special unit of radioactivity. One curie is equal to 3.7×10^{10} disintegrations per second = 3.7×10^{10} becquerels = 2.22×10^{12} disintegrations per minute.

Declared Pregnant Woman - A woman who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception.

Deep-Dose Equivalent - DDE applies to external whole-body exposure, is the dose equivalent at a tissue depth of one cm.

Detector - A material or device that is sensitive to radiation and can produce a response signal suitable for measurement or analysis.

Dose - (or radiation dose) is a generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, effective dose equivalent, or total effective dose equivalent, as defined in other items of the rule.

Dose Equivalent - The product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The units of dose equivalent are the rem and sievert (Sv).

Effective Dose Equivalent - The sum of the products of the dose equivalent to the organ or tissue and the weighting factors applicable to each of the body organs or tissues that are irradiated.

Embryo/fetus - The developing human organism from conception until the time of birth.

Exposure - Being exposed to ionizing radiation or to radioactive material

Exposure Rate - The exposure per unit of time, such as R/min and mR/h.

External Dose - That portion of the dose equivalent received from radiation sources outside the body.

Extremity - Hand, elbow, arm, arm below the elbow, foot, knee, or leg below the knee.

Eye Dose Equivalent - Applies to the external exposure of the lens of the eye and is taken as the dose equivalent at a tissue depth of 0.3 centimeter.

Gray - (Gy) is the SI unit of absorbed dose. One gray is equal to an absorbed dose of one joule/kilogram (100 rads).

Half-life (T-1/2) - The time in which half the atoms of a particular radioactive substance disintegrate to another nuclear form. Measured half-lives vary from millionths of a second to billions of years. Also called physical half-life.

Individual Monitoring - (1) The assessment of dose equivalent by the use of devices designed to be worn by an individual; (2) The assessment of committed effective dose equivalent by bioassay or by determination of the time-weight air concentrations to which an individual has been exposed, i.e., DAC-hours; or (3) the assessment of dose equivalent by the use of survey data.

Internal Dose - That portion of the dose equivalent received from radioactive material taken into the body.

Licensing State - Any state designated as such by the Conference of Radiation Control Program Directors, Inc. Unless the context clearly indicates otherwise, use of the term Agreement State in this Chapter shall be deemed to include licensing state with respect to naturally occurring and accelerator produced radioactive material.

Limits - Or "dose limits" means the permissible upper bounds of radiation doses.

Lost or missing licensed radioactive material - Licensed radioactive material whose location is unknown. It includes material that has been shipped but has not reached its destination and whose location cannot be readily traced in the transportation system.

Member of the public - Any individual except when that individual is receiving an occupational dose.

Natural Radioactivity - Radioactivity of naturally occurring nuclides.

NRC - United States Nuclear Regulatory Commission or its duly authorized representatives.

Occupational Dose - The dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or registrant or other person. Occupational dose does not include dose received from background radiation, as a patient from medical practices, from exposure to individuals administered radioactive material and released in accordance with Rule .0358 of this Chapter, from voluntary participation in medical research programs, or as a member of the general public.

Personnel Monitoring Equipment - Devices, such as film badges, pocket dosimeters, and thermoluminescent dosimeters, designed to be worn or carried by an individual for the purpose of estimating the dose received by the individual.

Quality Factor - The modifying factor that is used to derive dose equivalent from absorbed dose. Quality factors are provided in the definition of rem in this Rule.

RAD - Radiation Absorbed Dose is the special unit of absorbed dose. One rad is equal to an absorbed dose of 100 ergs/gram or 0.01 joule/kilogram (0.01 gray).

Radiation - (ionizing radiation), except as otherwise defined means alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions.

Radiation Area - An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (0.05 mSv) in one hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

Radiation Machine - Any device capable of producing radiation except devices which produce radiation only from radioactive material.

Radiation Safety Officer (RSO) - One who has the knowledge and responsibility to apply appropriate radiation protection rules.

Radioactive Material - Any material, solid, liquid, or gas, which emits radiation spontaneously.

Radioactivity - The disintegration of unstable atomic nuclei by emission of radiation.

Roentgen Equivalent to Man (REM) - The special unit of any of the quantities expressed as dose equivalent. The dose equivalent in REMs is equal to the absorbed dose in RADs multiplied by the quality factor (1 REM = 0.01 Sievert).

Restricted Area - An area, access to which is controlled by the licensee or registrant for purposes of protection individuals against undue risks from exposure to radiation and radioactive materials. Restricted area does not include areas used as residential quarters, but separate rooms in a residential building may be set apart as a restricted area.

Roentgen (R) - The special unit of exposure. One roentgen equals 2.58×10^{-4} coulombs/kilogram of air.

Sealed Source - Radioactive material that is permanently bonded, fixed or encapsulated so as to prevent release and dispersal of the radioactive material under the most severe conditions which are likely to be encountered in normal use and handling.

Shallow Dose Equivalent (SDE) - Applies to the external exposure of the skin or an extremity, is taken as the dose equivalent at a tissue depth of 0.007 centimeter averaged over an area of one square centimeter.

SI unit - A unit of measure from the International System of Units as established by the General conference of Weights and Measures.

Sievert - The SI unit of any of the quantities expressed as dose equivalent. The dose equivalent in sieverts is equal to the absorbed dose in grays multiplied by the quality factor (1 Sv = 100 rems).

Source of radiation - Any radioactive material, or any device or equipment emitting or capable of producing radiation.

Special form radioactive material - Radioactive material which satisfies the following conditions: (1) It is either a single solid piece or is contained in a sealed capsule that can be opened only by destroying the capsule; (2) The piece or capsule has at least one dimension not less than five millimeters (0.197 inch); and (3) It satisfies the test requirements specified by the U.S. Nuclear Regulatory Commission, subpart F of 10 CFR Part 71. A special form encapsulation designed in accordance with the U.S. Nuclear Regulatory Commission requirements, Subpart f of 10 CFR Part 71, in effect on June 30, 1984, and constructed prior to July 1, 1985, may continue to be used. A special form encapsulation either designed or constructed after June 30, 1985, must meet requirements of this definition applicable at the time of design or construction.

Survey Meter - Any portable radiation detection instrument especially adapted for inspecting an area to establish the existence and amount of radioactive material present.

Total Effective Dose Equivalent (TEDE) - The sum of the deep-dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

Unrestricted Area - An area, access to which is neither limited nor controlled by the licensee or registrant.

Weighting Factor - For an organ or tissue is the proportion of the risk of stochastic effects resulting from irradiation of that organ or tissue to the total risk of stochastic effects when the whole body is irradiated uniformly.

Whole Body - For purposes of external exposure, head, trunk (including male gonads), arms above the elbow, or legs above the knee.

POLICY STATEMENT

RADIATION WORKER CLASSIFICATIONS

Issued by: Douglas M Beek – Radiation Safety Officer

EGS Gauging has declared three classifications of radiation workers. The three classifications deal with the different levels of training required to perform certain tasks relative to nuclear sensors provided by EGS or other gauging devices of the same basic design as EGS devices. Not all employees will have the need to perform work in a specified radiation area so the three classifications allow for a grouping of employees who follow specific requirements for a given job function. The classification structure follows a pattern of decreasing the amount of training and associated potential exposure to radiation as the classification number increases. Anyone not conforming to the requirements of any of the classifications below is considered a member of the general employee population or general public and other rules apply.

This policy is provided to ensure that everyone keeps exposure as low as reasonably achievable (ALARA).

RELATED DOCUMENTS

RP1000 Radiation Protection Manual

Radiation Worker Classification Listing

Code of Federal Regulations, Title 10 (10CFR) Energy

USNRC¹ Regulatory Guide 8.13, Instruction Concerning Prenatal Radiation Exposure

USNRC¹ Regulatory Guide 8.29, Instruction Concerning Risks from Occupational Radiation Exposure

105CMR120.00² To control the radiation hazards of radioactive material and of machines which emit ionizing radiation

Nuclear Regulatory Commission Materials License 20-20675-02

Massachusetts Materials License 20-6751

Massachusetts Materials License 20-6752

CLASSIFICATION REQUIREMENTS

Class I - Radiation trained workers authorized to remove source capsules and will observe with the following rules:

1. The worker will wear dosimeters when working with or around nuclear sensors.
2. The worker will receive initial classroom training with annual refresher at the expense of the company.
3. The worker will receive lecture and hands-on training for the following procedures:
 - HAZMAT handling related to the beta gauge
 - Source capsule removal and mounting

¹ USNRC - United States Nuclear Regulatory Commission.

² Code of Massachusetts Regulations Issued by the Commonwealth of Massachusetts, Department of Public Health.

- source holder removal and mounting
- shutter solenoid replacement
- window replacement
- collimator replacement
- limit switch replacement
- Use of survey meter for radiation measurements
- Conduct surveys and wipe tests
- Use of scaler for assessing swipes
- Packaging sources for shipment
- Preparing paperwork and labels for source shipments
- Receiving source packages
- Source database maintenance

These are the only personnel authorized to mount or remove a source capsule while following appropriate safety precautions.

Class II - Radiation trained workers authorized to remove source holders and will observe the following rules:

1. The worker will wear dosimeters when working with or around nuclear sensors.
2. The worker will receive initial classroom training with annual refresher at the expense of the company.
3. The worker will receive hands-on training for the following procedures:
 - HAZMAT handling related to the beta gauge
 - Source holder removal and mounting
 - shutter solenoid replacement
 - window replacement
 - collimator replacement



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Web Site: www.egsgauging.com

Policy Statement: RP201203
Change 6
6 January 2005
Page 1 of 2

- limit switch replacement
- use of meter for radiation measurements
- Conduct surveys and wipe tests
- Packaging sources for shipment
- Preparing paperwork and labels for source shipments
- Receiving source packages

These personnel are authorized access to the source mount interior under appropriate controlled conditions. However, they cannot access the source capsule under any conditions.

Class III - All other Radiation trained workers will observe the following rules:

1. The worker will wear a dosimeter when working with or around nuclear sensors.
2. The worker will receive initial classroom training with annual refresher at the expense of the company.
3. The worker will receive hands-on training for the following procedures:
 - HAZMAT handling related to the beta gauge
 - Conduct service and/or assembly requiring dismounting or mounting of source housing or detector housing from its mount on the scanning frame.
 - Use of meter for radiation measurements
 - Conduct surveys and wipe tests

Unless otherwise directed by the RSO or a Class 1 worker, these personnel will only, using appropriate safety precautions, handle the source housing as a whole unit. Additionally, they may actuate the shutter mechanism according to specific instructions.

Only personnel qualified under one of the specific classes listed above shall perform tasks authorized for that classification. EGS Radiation Safety Officer (RSO) will maintain a listing of those persons meeting the requirements for each class of radiation worker. The RSO will periodically review the list and update it as appropriate.

All other EGS personnel who work with or around the process measurement systems are considered non-radiation workers. These persons shall receive training in the operational safety measures of the system and wear a dosimeter while in the building. Provided the safety measure are followed, the residual radiation from the source will not present a health hazard.

WARNING!

No one except a Class 1 or Class 2 worker shall have access to the inside of the source mount. Class three may do so but only under the direction of the RSO or a Class 1 worker.

RADIATION PROTECTION TRAINING

COURSE DESCRIPTION

The EGS nuclear sensor requires periodic maintenance and checks to ensure it operates as designed. Some EGS customers prefer to perform these checks and services themselves and therefore are required to receive the levels of training commensurate with the tasks. On the other hand, some customers require on information training in order to keep the associated radiation hazard proper perspective. Depending upon your role, relative to the nuclear sensor, you may receive some or all of the elements of training listed below. Also, everyone who has the potential of coming into close proximity of the beta sensor must, at a minimum, receive informational training so they understand the impact of radiation exposure on the body.

INTRODUCTION

Explains the purpose of Radiation Safety training to develop an understanding of the risks involved with the radiation levels that exists in and around our sensors. (1 hours)

RADIATION CONCEPTS

Begins with a discussion of the atom, stable and unstable. Explains non-ionizing and ionizing radiation as well as the isotopes generally used in sensors and those used in our devices. (2 hours)

UNITS & DEFINITIONS

Explains the units used in measuring radioactivity, discusses measurements of Absorbed Dose, Dose Rate, Roentgen, and Curie. (2 hours)

BIOLOGICAL EFFECTS OF RADIATION

Discusses the health risks associated with the radiation hazard and its effects on living organs. (2 hours)

MAXIMUM PERMISSIBLE EXPOSURE

Provides exposure limits for both radiation and non-radiation workers as well as prenatal radiation exposure. (1 hours)

RADIATION EXPOSURE CONTROLS

Explains how to use time, distance and shielding as radiation exposure controls. Provides insight into the protection measures incorporated into the EGS device. Also discusses the use of personnel safety procedures when working in and around the beta sensor. (2 hours)

MONITORING PROCEDURES

This topic covers the various measuring instruments available on the market as well as site and personnel monitoring requirements. (2 hours)

EMERGENCIES OR INCIDENTS

Explains the NRC regulations as they relate to Theft or Loss of Licensed Material and Notification of Incidents. Covers actions to take in cases of accidents or damage to licensed devices. (1 hours)

COMPLIANCE WITH REGULATIONS

Covers Code of Federal Regulations and how they regulate the operation of EGS and use of Generally Licensed Devices. (1 hours)

SERVICING THE BETA SENSOR

Provides instruction through lecture and hands on training to enable the student to perform and document source inspections and other maintenance on the EGS sensors. Survey includes inspection of shutter indicators, physical inspection of the sensor housings, wipe test, radiation survey and completion of associated documentation. (2 hour)

This is to acknowledge the receipt of your letter/application dated
LTR 4/13/05 / NRC 313 2/24/2005, and to inform you that the initial processing which
includes an administrative review has been performed.

Revised 20-20675-02
There were no administrative omissions. Your application was assigned to a
technical reviewer. Please note that the technical review may identify additional
omissions or require additional information.

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

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

Your action has been assigned **Mail Control Number** 137040.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

: (FOR LFMS USE)
 : INFORMATION FROM LTS
 : -----
 :
 BETWEEN: :
 :
 License Fee Management Branch, ARM : Program Code: 03225
 and : Status Code: 2
 Regional Licensing Sections : Fee Category: 3N
 : Exp. Date: 20050531
 : Fee Comments: _____
 : Decom Fin Assur Reqd: N
 : ::

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED
 Applicant/Licensee: EGS GAUGING, INC.
 Received Date: 20050516
 Docket No: 3034366
 Control No.: 137040
 License No.: 20-20675-02
 Action Type: Renewal

2. FEE ATTACHED
 Amount: _____
 Check No.: _____

3. COMMENTS
NO CHECK ENCLOSED.
 Signed M. A. Perkins
 Date 5/16/2005

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

1. Fee Category and Amount: _____
 2. Correct Fee Paid. Application may be processed for:
 Amendment _____
 Renewal _____
 License _____
 3. OTHER _____

Signed _____
 Date _____