NRC 10RM 313 11.841 10 CFR 30, 32, 33, 34, 35 kmc 40 APPLICATION FO	U.S NUCLEAR REQULATORY COMMISSION APPROVED BY OMB 3150.0120 Expire 5.31-87
INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED	P DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION SEND TWO COPIES BELOW.
FEDERAL AGENCIES FILE APPLICATIONS WITH	IF YOU ARE LOCATED IN
U.S. NUCLEAR REGULATORY COMMISSION DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS WASHINGTON DO DOSE	ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:
ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS, IF YOU ARE LOCATED IN	U.S. NUCLEAR REGULATORY COMMISSION, REGION III MATERIALS LICENSING SECTION 799 ROOSEVELT ROAD
CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO	ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH,
U.S. NUCLEAR REGULATOR <sup>\$</sup> COMMISSION, REGION I NUCLEAR MATERIAL SECTION 8 631 PARK AVENUE KINC OF PRUSSIA PA 19406	U.S. NUCLEAR REGULATORY COMMISSION, REGION IV MATERIAL RADIATION PROTECTION SECTION
ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO	ARLINGTON, TX 76011 ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON,
U.S. NUCLEAR REGULATORY COMMISSION, REGION II MATERIAL RADIATION PROTECTION SECTION 101 MARIETTA STREET, SUITE 2900 ATLANTA, GA. 30323	TO U.S. NUCLEAR REGULATORY COMMISSION, REGION V MATERIAL RADIATION PROTECTION SECTION 1450 MARIA LANE, SUITE 210 WALFUT CREEK, CA 94596
PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEA IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.	I IR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL
THIS IS AN APPLICATION FOR (Check appropriate (Nem)     A. NEW LICENSE     B. AURNOMENT TO LICENSE NUMBER C. RENEWAL OF LICENSE NUMBER	2 NAME AND MAILING ADDRESS OF APPLICANT (Include Zip Code) Fiber Materials, Inc. Biddeford Industrial Park Biddeford, ME 04005
A NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION	TELEPHONE NUMBER
U. Douglas browningg	(207) 282-5911 X280
SUBMIT TEMS 5 THROUGH TI ON 8% ( 11 PAPER, THE TYPE AND SUOPE OF INFORMAT	TION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.
<ul> <li>Bernent and mass number. 5. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.</li> </ul>	6. PURPOSEISI FOR WHICH LICENSED MATERIAL WILL BE USED
1 INDIVIDUALISI RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXFERIENCE.	8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.
BB01280296 870921	10. RADIATION SAFETY PROGRAM
REGILICOO MASTEMANAL 18-28017-01 PDR	12 LICENSEE FEES (See 10 CFR 120 and Section 120 31)
3 CERTIFICATION (Multiple consideration and and and and and and and and and an	FEE CATEGORY 3E ENCLOSED \$ 230.00
BINDING UPON THE APPLICANT. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PAR IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF WARNING IBUS C SECTION 1001 ACT OF JUNE 25, 1948 62 STAT 749 M KKES IT A TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WI	OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION ARE OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS ITS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION THIN ITS JURISDICTION
IGNATURE CERTIFYING OFFICER TYPEO/PRINTED NAME	TITLE DATE
M. H. Subilia, Jr.	• President 3 April 87
ANNUAL RECEIPTS D. NUMBER OF EMPLOYEES (Total for S250K S1M-2 5M entire facility excluding outside contractors)     S250K - 500K S3 5M-7M	Y ECONOMIC DATA IN WOULD YOU BE WILLING TO FURNISH COST INFORMATION (Quilar and/or IMMT 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 contidental commercial or financial proprietary -information Aurnished to the approximic confidence)
STOCK -750K STM-10M C NUMBER OF BEDS	
3/30K-1M 2310M	NO.
APP P AN IT BEE CATEGORY COMMENTS	82'SFD) 107104 D. Kimberly
230 800 16248 41137	6/3/87 0

 Radioactive Material: Cobalt-60, 100 milliCuries
 Source Model Designation: Amersham Capsule type X.44, ANSI-C63434, source code CKC.27.

Gamma Gauge Identification: ARGUS-200 Custom Gamma Gauge.

## Purpose for use of licensed material:

The ARGUS-200 Gamma Gauge is a computer controlled system for measuring the mass, volume, and density of carbon-carbon composite billets of various size using the technique of gamma-ray transmission.

The ARGUS-200 system is composed of three major subsystems, mechanical, electrical, and computer.

The mechanical subsystem is composed of three major systems: the source housing and beam collimator, the sample chamber and mechanical transport system, and the detector housing and collimator.

The electrical subsystem is composed of several major systems, including: the Nal detector, power supplies, charge digitizer, the mechanical transport control system, and the weight scale.

The computer subsystem is the control center for the ARGUS-200. The computer originates and monitors all system functions. The computer is an IBM PC with 256K of RAM and two floppy disk drives.

 Individuals responsible for the Radiation Safety Program: Mr. Donald J. Estabrook - Safety Manager/Radiation Safety Officer Mr. David L. Newton - Alternate Radiation Safety Officer/NDT Level III.

Training and Experience:

Mr. Donald J. Estabrook, Radiation Safety Officer. Mr. Estabrook received his radiation safety training from IRT Corporation in San Diego, California. The 20 hour course was conducted during the week of December 7, 1986, and was taught by Mr. Paul R. Maschka, Radiation Safety Officer for IRT Corporation, NRC License SNM-1405. The outline of the course is included in Appendix I. Mr. Estabrook completed the course and successfully passed the exam. His resume, training and work experience is included in Appendix II.

Mr. David L. Newton, Alternate Radiation Safety Officer. Mr. Newton received his radiation safety training while attending the U.S.A.F. Non-Destructive Testing course at

Chanute AFB, IL, during the period 6/67 to 9/67. His resume, training and work experience is included in Appendix II.

The installation, initial radiation survey, gauge relocation, and removal from service will be done by the manufacturer, IRT Corporation. Leak testing will be done by either Mr. Estabrook or Mr. Newton using a leak test kit supplied by Amersham-Tech-OPS.

8. All personnel who will operate the gauge will attend the training and instruction given by the manufacturer, IRT Corporation, at the time of installation. Equivalent training will be given to future employees by David L. Newton, the Alternate Radiation Safety Officer. The outline of the equivalency training is included in Appendix III.

9. Facilities and Equipment

- 9.1 Attached is a sketch of the location of the gauge within the facility.,
- 9.2 The environmental conditions of the area in which the gauge is to be located is continuously controlled to maintain an ambient temperature of 75°F ±10°F and a relative humidity of 50% RH ±10% RH. The area is maintained free from corrosive atmosphere and vibration.
- 9.5 Maintenance and tests for proper operation of the gauge shall be conducted on a semi-annual basis and includes:
  - a. the semi-annual source leak test
  - b. check for proper operation of the shutter
  - c. check for proper operation of the sample loading door
  - d. check for proper operation of the X-Y table
  - e. check that the labels are legible and visible.
- 9.6 Emergency procedures There are a number of safety features built into the ARGUS-200 gamma gauge that effectively protect personnel from exposure to the radiation from the source.

- a. The source is a special form source that is bolted into a lead filled steel holder.
- b. The holder is mounted in the source housing and surrounded by at least six inches of lead.
- c. The source housing is made of steel plates bolted to the steel support structure.
- d. The beam shutter is a lead filled steel cylinder, 5" diameter by 2.5" thick, this cylinder rides on oil impregnated bronze bushings.
- e. The source never moves and the beam shutter does not touch the source.
- f. The beam shutter is fastened to the sample loading door with a push rod and bell crank in such a way that the shutter is turned 90 degrees whenever the door is opened.

In order to bypass any of these safety features someone would have to use tools to disassemble the unit.

This device is constructed of rugged materials and has no intricate or fragile components except the detector which is protected by the lead collimator. Under normal usage there is no feasible mechanism for dislodging the source or the shielding such that the source would be completely exposed. The source is protected and has only one direct access opening, the 1/4-inch diameter collimator, and this occurs only when the collimator is in the operate position. There is no credible mechanism for materials to penetrate this opening. There is only one way to get at the source and that is to remove the steel skin, the steel plate and the lead bricks behind the source.

The most serious emergency conditions would be a leaking source. If the semi-annual leak test shows a leaking source, the sample chamber door will be closed and sealed shut, the source manufacturer and the gauge

manufacturer will be immediately contacted for advice and assistance. The U.S. NRC Region I will also be notified.

The area in which the equipment will be located is a securable restricted access area. The persons to be notified in case of emergency are:

Donald J. Estabrook	David L. Newton
207 737-8242	207 282-5911

The individual that will notify the NRC of any emergency situation will be Donald J. Estabrook.

- 10. Radiation Safety Program
  - 10.1 Service Operations The installation of the ARGUS-200 and the ARGUS-200 operators desk will be performed by IRT Corporation (equipment manufacturer), California License No. 2468-80. IRT Corporation will perform the initial radiation survey and leak testing. Maintenance and device relocation/removal will be performed by IRT Corporation (equipment manufacturer) on an as-needed basis.
  - 10.2 Personnel Monitoring Equipment All employees involved in the operation of the ARGUS-200 will be required to wear personnel monitoring equipment, i.e., film badges. The film badges will be replaced monthly. The exposed badges will be sent to

R. S. Landauer Jr. and Co. 2 Science Road Glenwood, IL 60425-1586

for developing, analysis, and a report returned to Fiber Materials, Inc., to be maintained on file indefinitely.

Visitors to the ARGUS-200 operation will be required to wear a self-reading pocket dosimeter prior to entry into and during the term of the visit at the ARGUS-200 operation area. The dosimeter will be read, issued, and logged in by the ARGUS operator prior to entry into the restricted area. Upon completion of the visit to the ARGUS-200 operation area, the operator will collect, read, and log the reading of each dosimeter.

10.3 Radiation Detection Instruments - Radiation surveys will be conducted on a quarterly basis to evaluate the extent of radiation hazards that may be present. Fiber Materials, Inc., will have available, for use, a calibrated, operable survey meter that can measure at least one (1) through 200 milliroentgens per hour.

The instrument will

- be calibrated so that readings are ±20% of the actual values over the range of the instrument,
- have a calibration chart or graph that shows the results of the calibration, the date of the last calibration, and the due date for the next calibration affixed to the survey meter, and
- be calibrated at least semi-annually and after servicing.

Calibration of the survey meter will be performed by:

Quality Assurance Labs, Inc. 80 Pleasant Avenue South Portland, ME 04102 NRC License No. 18-19078-01

All calibration records will be kept on file for a minimum of two (2) years after each calibration.

10.4 Leak Testing - Fiber Materials, Inc., will perform leak testing from the sealed source at six-month intervals. The commercial leak test kit will be supplied by

Amersham-Tech-OPS RPD 40 North Avenue Burlington, MA 01803 KIT No. TECH-OPS 518 NRC License No. 20-1283601

The individual responsible for taking the samples will be

Donald J. Estabrook Safety Manager/Radiation Safety Officer

10.5 Lock-out procedures - During normal operations the radiation dose on the outside of the device is less than 0.5 mr/hr (measured 0.2 mr/hr) with or without a sample in the chamber.

The inspection chamber is too small for a person to enter and the 1/4-inch diameter beam could not expose a major portion of an employee's body. The only portion of a person's body that could be exposed to high doses of radiation would be the hands and ther only if the push rod were disconnected from the door with the door in the closed position.

## LOCK-OUT PROCEDURES

DO NOT disconnect the push rod from the door with the door in the closed position, because the shutter is OPEN and the radiation beam is entering the sample chamber.

PRIOR to opening the detector cabinet, open the sample chamber door and secure it in the open position; this rotates the shutter and turns the radiation beam "off."

The lock-out procedure will be provided to all operating personnel of the ARGUS-200 gauge, and the procedures will be posted so that personnel can see them.

The individual responsible for ensuring that the lock-out procedures are followed will be

Donald J. Estabrook Safety Manager/Radiation Safety Officer

- 10.6 Performance of Services Maintenance and service of the device will be performed by the manufacturer until such time that our personnel feel confident that they can do the operation safely. Maintenance and servicing of the device will only be done following the written procedures provided by the manufacturer.
- 10.7 Waste Management There will be no waste associated with this device other than the radioactive source. When the source has decayed to levels too low to be useful, it will be returned to either the device manufacturer, the source manufacturer, or some other properly licensed entity.

APPENDIX I OUTLINE OF IRT CORPORATION RADIOLOGICAL SAFETY GUIDE