ABANDONED
[redacted] SHEET

TO: License Fee Management Branch

FROM: Region I

SUBJECT: [redacted] APPLICATION
ABANDONED

Control Number: 120805

Applicant: Berthold Systems, Inc.

Date Abandoned: 4/9/96

Reason for Abandonment: Licensee failed to provide additional information in support of their application dated 11/14/95 as requested by SCDB, INMS, NMSS. NMSS considers the request as having been abandoned by the licensee (37-21226-01/37-21226-02G). After review.

M. A. Perkins 4/9/96
Signature Date

Attachment:
Official Record Copy of
[redacted] Action
Abandoned

FOR LFMB USE ONLY
ABANDONMENT
Final Review of [redacted] Completed:

Refund Authorized and processed

√ No Refund Due

Fee Exempt or Fee Not Required

Comments:

Log completed 9/2/98

Processed by: SC

OFFICIAL RECORD COPY

ML 10

9809030357 960409
PDR ADOCK 03020043
C PDR

March 2[redacted] 1995

Mr. Charles Ferrin
Vice President/Radiation Safety Officer
Engineering Services
Apgee Corporation
Hopewell Business and Industrial Park
103 Corporation Drive
Aliquippa, PA 15001

Dear Mr. Ferrin:

This letter concerns my letter dated February 23, 1995, and phone conversation with Ms. Mary Dedola on January 27, 1995, requesting additional information in support of your application dated November 14, 1994, to add a new model to registration certificate NR-0112-D-112-B. To date, we have received no response to these requests. If we do not receive the requested information within thirty (30) days from the date of this letter, we will consider your request as having been abandoned by you. This action is without prejudice to the resubmission of a complete application.

We look forward to receiving the requested information as soon as possible. If you have any questions, please call me at (301) 415-5847.

Sincerely,

Original Signed by

Douglas A. Broaddus, Mechanical Engineer
Sealed Source Safety Section
Source Containment and
Devices Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Distribution:
SSSS Staff SCDB r/f SSD-94-80 NE01
SSD File # NR-0112-D-112-B

DOCUMENT NAME: C:\WPDOCS\BERTHOLD\NR112112.VOD
To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	SCDB	C							
NAME	DABroaddus								
DATE	03/27/95								

OFFICIAL RECORD COPY

120805/120806

BERTHOLD SYSTEMS, INC.
Process Control Instruments
Hopewell Business & Industrial Park
101 Corporation Drive
Aliquippa, Pennsylvania 15001-4863
Telephone: (412) 378-1900
Telefax: (412) 378-1926

MS 16
K-6

37-21226-01

December 1, 1994

Ms. Cheri Arredondo
US Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Dear Ms. Arredondo:

Enclosed is a copy of the application sent to the NRC in Washington for review. I have included the attachments that you requested, labeling, documents accompanying the device, and a copy of the Amersham Source registration.

If there are any further questions, please call.

Sincerely,

Mary Dedola

Mary Dedola
Compliance Engineer
Berthold Systems, Inc.

OFFICIAL RECORD COPY ML 10 120805 / 120806

DEC - 2 1994

Apgee Corporation

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AMENDMENT APPLICATION

3.1 SUMMARY DATA

3.1.1 DATE

November 7, 1994

3.1.2 APPLICANT

Distributor:

APGEE Corporation
103 Corporation Drive
Aliquippa, PA 15001-4863

3.1.3 DEVICE TYPE

Basis Weight Measuring Device
(Amendment of Registration #NR-112-D-112-B)
(Addition of Am-241 Rod source and Shielding)

3.1.4 MODEL

LB BW (series)

3.1.5 OTHER COMPANIES INVOLVED

Manufacturer:

EG&G Berthold
Laboratorium Prof. Dr. Berthold GmbH & Co. KG

Mailing: P.O. Box 100163
D-75312 Bad Wildbad

Shipping: Calmbacher Strass 22
D-75323
Bad Wildbad

3.1.6 RADIOACTIVE SOURCE MODEL DESIGNATION

Amersham International Plc Model AMC.L1, Americium-241 rod source.

3.1.7 RADIONUCLIDES AND MAXIMUM ACTIVITY

Source	Isotope	Maximum Activity
Rod	Am-241	202.5 mCi

3.1.8 LEAK TEST FREQUENCY

Proposed leak test frequency is 6 months.

3.1.9 PRINCIPLE USE CODES

Gamma Gauge

This device is proposed for use under a Specific and General License.

3.1.10 CUSTOM DEVICE

This device is not a custom device.

3.1.11 CUSTOM USER

Non-Applicable

3.2 SUMMARY DESCRIPTION

3.2.1 WRITTEN DESCRIPTION

The Basis Weight Gauge is used in production control of weight per area of paper, textiles, fiber mats, and similar products. This unit operates on attenuation measurement principles.

In attenuation, a collimated beam of beta or low energy gamma radiation emerges from the shielding container, passes through the measured product where it is reduced in intensity and then strikes the scintillation detector. The output from the detector goes to a calibrated evaluation unit which provides screen and hard-copy readout of the measured values.

3.2.2 DRAWING

Please see ATTACHMENT #1 for the isometric projection drawing for this unit.

3.3 DETAILS OF CONSTRUCTION AND USE

The external dimensions of the shielding container for the radiation source are about 70 x 40 x 30 mm. It is constructed of stainless steel of about 1.5 mm thick. Within the container and near the source, lead and brass shielding is used to reduce maximum external radiation levels, please see drawing #21305.001 (ATTACHMENT #2) for external radiation levels.

In the primary beam exiting through the shutter opening, at a distance of 1 m the radiation level is 1.6 mrem/h and at a distance of 0.3 m is 18 mrem/h.

The source consists of Americium-241 oxide incorporated into glass spheres by melting at high temperatures with a non-radioactive silica frit. The resulting ceramic beads are inert and nonporous. The ceramic beads are sealed in stainless steel (316L) tube, each end of the tube is closed with a stainless steel cylinder which is TIG welded to the tube. The overall physical dimensions are 30.05 mm x 3.18 mm. The active length is 20 mm on center.

The source is held securely in place by the lip around the radiation window. The window dimensions are 25 mm x 3 mm where the source dimensions are larger as stated above.

The shutter plate is locked in the "closed" position with a threaded screw and safety seal. Once the screw in removed the shutter plate can be slid into the open position, allowing the radiation window to be opened. The compressed spring ball (See Attachment #3) ensures that the shutter plate cannot slide completely from the shielding.

The source and shield are installed in the closed position. Once in place the shutter in manually opened and stays in this position at all times until the system is moved. The only opening in the instrument is the sample holder opening which is 60 mm x 100 mm. This is too small an opening to allow anyone to place their hand in the primary beam path.

3.3.1 CONDITIONS OF USE

This is intended to be a laboratory device and might encounter a variety of industrial environments; however because of characteristics inherent to scintillation detector systems, particularly with respect to temperature and vibration, environmental stresses on radiological protection features of the device should be well within the protective capabilities of those features. The operating instructions that accompany the device state -20 to +50 ° C as the normal permissible ambient temperature for the device's detector.

3.3.2 DETAILS OF CONSTRUCTION

Please see attached drawings for complete details of construction.

Drawings:

21305.000-000
21305.000-001
21305.000-002
21305.000-003
21305.000-004
21305.000-005
B-001
B-002
B-003
B-004
B-005
B-006
B-007
B-008
B-009
B-010
B-011
B-012
B-013
B-014
B-015
B-016
B-017
B-018
B-019

The source housing is secured to the device by four threaded screws.

3.3.3 LABELING

The source housing are labeled as shown in Attachment # 4. These plates are made of aluminum or stainless steel and are riveted in place.

Devices will bear a label which contains the trefoil symbol, with the word "Radioactive". The device will be labeled according to 10 CFR 20.1904. A "Caution Radioactive Material" label will be placed on the external surface of that part of the device housing that contains the source holder. (ATTACHMENT #5 FIGURE A)

Devices intended for distribution to persons generally license will be labeled as required by 10 CFR Part 32. The labels will be mounted on the external surface of that part of the device housing that contains the source. Please see Attachment # 5 FIGURES B & C. These labels are made of mylar and are secured in place by an adhesive.

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3.3.4 TESTING OF PROTOTYPES

No life cycle testing of the shutter mechanism has been performed. These devices have been used in Europe for the past 10 years (about 25 devices of the same shielding container or similar types, working with the sam shutter mechanism. No problems have been reported.

Also, European experience has shown that the design of the equipment has been unaffected by normal use in industrial environments.

3.3.5 QUALITY CONTROL

The Quality Control program is already on file with the NRC.

3.3.6 RADIATION PROFILES

Please see Attachment # 1 for the radiation profiles of this device.

3.3.7 INSTALLATION

This is a laboratory Table top device. No special installation is required.

3.3.8 RADIOLOGICAL SAFETY INSTRUCTIONS

Please see Attachment #6 Radiation Protection segment to be added to the operation manual.

3.3.9 DOCUMENTATION ACCOMPANYING THE DEVICE

A wipe test is performed before shipment and a copy is kept on file at APGEE Corporation.

Upon installation of generally licensed devices a leak test is performed an evaluated. Results are sent to the customer for their files and a copy is kept on file at Berthold Systems, Inc.

Please see Attachment #7 for a copy of the "Special Form Certificate"

Attachment #8 is a copy of the site survey used upon installation of the device.

Please see Attachment #9 for a copy of the General License Package sent with each Generally Licensed device.

3.310 SERVICING

Berthold Systems, Inc. or qualified holder of a specific license will supply all servicing, repairs, leak testing, source replacement, training, surveying, calibration, and installation for these devices.

3.3.11 LEAK TESTING

APGEE proposes that this device be leak tested every 6 months.

3.3.12 SAFETY ANALYSIS

Attachment #10 Certificate or Radioactive Source Integrity.

Attachment #11 NRC Registration for the Am-241 Rod Source

The Berthold Model LB-BW (series) Basis Weight gauge containing 202.5 mCi Am-241 provides adequate safety characteristics to ensure that individuals do not receive radiation exposures in excess of applicable regulatory limits.

The source is contained in a rugged housing which provides protection to the source and except in the primary beam, reduces radiation levels to less than 2 mrem/h at 30 cm from the housing.

Because this shield is installed in a housing without access it is not possible to position an extremity in the beam path.

During use the gauge will be installed in a laboratory where it will measure the weight per unit area of the sample. Due to low energy gamma ray of the Am-241 and the significant shielding, it is unlikely that the exposure to any individual will be within 10% of the limits set in 10 CFR Part 20.

ATTACHMENT # 12 - Operation Manual
ATTACHMENT # 13 - Drop Test for Type A Package
ATTACHMENT # 14 - Explanation of Securing System

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All Devices distributed in the USA and Canada will come into APGEE in Aliquippa to ensure the conditions of this registration are fulfilled.

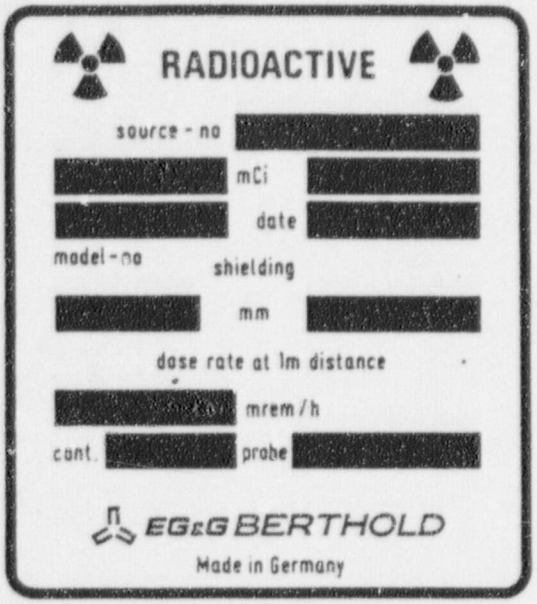
Sincerely,

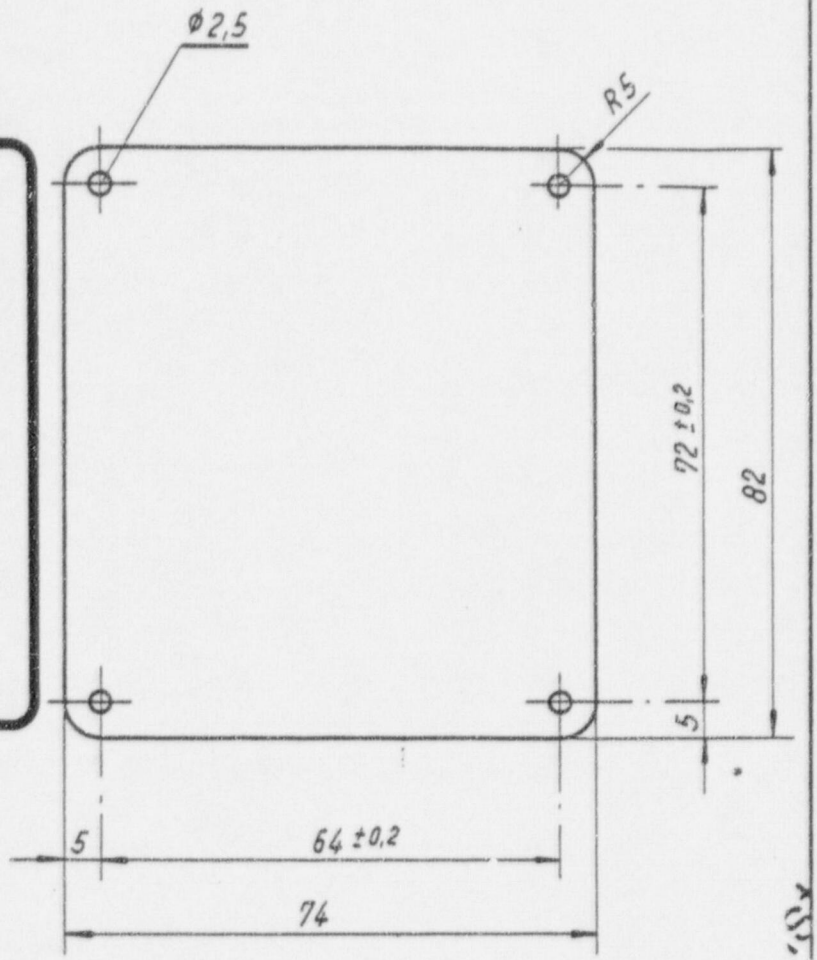
Charles Ferrin
Radiation Safety Officer/Vice President
APGEE Corporation

NOT SUBJECT TO THE CHANGE SERVICE

Unterliegt nicht dem

Änderungsdienst





*) Grund vertieft geätzt, schwarz mit 200° C eingebrannt
Schrift, Rand u. Felder erhaben blank.

Stück	Benennung (3)	Teil	Zeichn.-Nr / DIN-Nr.	Werkstoff	Modell-Rohteil-Abmessung	Ident-Nr.	Gewicht/kg
	Bl		59 382	1.4301n	0,5 dick	03411	

Dia: SK 1349.000-022/2Bl.2

Zulässige Abweichungen f. Maße a. Toleranzangabe n. DIN 7168

über	0,5	3	6	30	120	315
bis	3	6	30	120	315	1000
mittel	±0,1	±0,1	±0,2	±0,3	±0,5	±0,8

	Datum	Name
Bearb.	16.7.87	Pn.
Gepr.	17.7.87	
Norm.	28.2.91	EDV 1

Oberflächenzeichen

Oberflächenbehandlung —

Sonderbehandlung *)

Benennung: Strahler - Typenschild, USA

gilt. Zeichn.-Nr.: SK 1349.000-022

Zeichn.-Nr.: 3-393

Ident.-Nr.: 15597

Paßmaß | Abmaße

verwendet bei

Maßstab 1:1

Format 4

Blatt-Nr. 1

2 Bl

(Ers. d.)

Zust.	Änderungs-Nr.		
03	94 05 008	17.5.94	Pn.
02	92 06 014	23.6.92	Pn.
01	89 02 002	1.2.89	Pn.

berthold

D 7547 Wildbad/Schwarzw

weder vervielfältigt noch Dritten zugänglich gemacht werden, und sie darf durch den Empfänger oder Dritte auch nicht in anderer Weise mißbräuchlich verwertet werden. Zuwiderhandlungen verpflichten zu Schadenersatz und können strafrechtliche Folgen haben.

[All rights reserved...]

*) Background deep-etched, burned in black at 200°
Letters, border and boxes raised and bright.

	Sheet		59 382	1.4301n	0.5 mm thick	03411	
	Description		DIN No.	Material	Model rough-part dimension	Ident. No.	
Diag.: SK 1349.000-022/2 Sheet 2							

Old drawing No.: SK1349.000-022
Classif. No. 3-393
Ident. No. 15597
Size: 4
Scale: 1:1
Sheet No. 1 of 2 sheets
Special finish: *)
Title: **Source nameplate, USA**
Allowable deviations from size,
or specified tolerance per DIN 7168:
above - up to
fine ± 0.05 ...
medium [as shown]
coarse
Rev. 01 change: 8902002 ...

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FIGURE A

"Abandonment or disposal prohibited unless transferred to persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State."
"Operation prohibited if there is indication of failure of or damage to shielding, source containment or on-off mechanism."
"Installation, dismantling, relocation, maintenance, repair and testing involving the radioactive material, its shielding or containment shall be performed by persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State."
"The device shall be tested for radioactive leakage and proper functioning of on-off mechanism and indicator, if any, at installation, at source replacement, and thereafter at no longer than 6 months."
"Loss, theft, or transfer of this device and failure of or damage to the shielding, the source containment or the on-off mechanism must be reported to the U.S. Nuclear Regulatory Commission or an Agreement State."
The receipt, possession, use, and transfer of this
device Model
This device is registered under APGEE Corporation with the U.S. Nuclear Regulatory Commission.

BERTHOLD SYSTEMS INC. • ALIQUIPPA, PA • (412) 378-1900

FIGURE B

"Abandonment or disposal prohibited unless transferred to persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State."
"Operation prohibited if there is indication of failure of or damage to shielding, source containment or on-off mechanism."
"Installation, dismantling, relocation, maintenance, repair and testing involving the radioactive material, its shielding or containment shall be performed by persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State."
"The device shall be tested for radioactive leakage and proper functioning of on-off mechanism and indicator, if any, at installation, at source replacement, and thereafter at no longer than 3 year intervals."
"Loss, theft, or transfer of this device and failure of or damage to the shielding, the source containment or the on-off mechanism must be reported to the U.S. Nuclear Regulatory Commission or an Agreement State."
The receipt, possession, use, and transfer of this
device Model
is subject to a general license or the equivalent and the regulations of the U.S. NRC or of the State with which the NRC has entered into an agreement for the exercise of regulatory authority.
"This label shall be maintained on the device in a legible condition. Removal of this label is prohibited."
This device is registered under APGEE Corporation with the U.S. Nuclear Regulatory Commission.

BERTHOLD SYSTEMS INC. • ALIQUIPPA, PA • (412) 378-1900

FIGURE C

ATTACHMENT #5

RADIATION PROTECTION

I. NRC Licensing

A) There are two types of licenses under which an individual or company may possess and use a Berthold device which contains a radioactive source:

1) Specific License
2) General License

B) When a customer receives the source under a Specific License he is required to follow the statements contained in the license as they pertain to leak testing, installation, etc.

C) When a customer receives the source under a General License, he must comply with the following instructions:

1) Do not install, remove or service this device at any time,

2) All labels must be maintained in a legible condition and must not be removed,

3) Leak tests must be performed at the required time intervals (every 6 months),

4) Records for leak testing, surveying, and testing of the on-off mechanism (when applicable) must be kept, and

5) Do not abandon the device containing radioactive materials.

II. Radiation Principles

A. Basic Principles of Radiation Protection

The aim of radiation protection is to avoid all unnecessary radiation exposure as far as possible within the limits of current technology to do so (ALARA).

Also, to avoid damage to the human body with near certainty, an annual dose for the persons classified in the different categories has been fixed internationally by the IAECB and in the United States by the NRC. In the United States the following limits apply to occupationally exposed individuals:

1) An annual limit, which is the more limiting of -

   a) The total effective dose equivalent being equal to 5 rems or,

   b) The sum of the deep-dose equivalent and the committed dose equivalent to any individual organ or tissue other than the lens of the eye being equal to 50 rems.

2) The annual limits to the lens of the eye, to the skin and to the extremities are:

   a) An eye dose equivalent of 15 rems and

   b) A shallow dose equivalent of 50 rems to the skin or other extremity.

For a member of the public the dose limits are as follows:

   a) The total effective dose equivalent to individual members of the public from licensed operation does not exceed 0.1 rem in a year.

   b) The dose in any unrestricted area does not exceed 0.002 rem in any one hour.

The formula for calculation of the radiation dose shows what kind of radiation projections can be carried out. The radiation dose (D) depends on the activity (A) of the source, its specific gamma radiation constant (k), the distance (a) from the source, the radiation time (T), and the weakening factor (s) of the available shielding.

$$D = \frac{A \times k \times T}{a^2 \times s}$$

The activity of a source and the corresponding specific gamma radiation constant are determined by the measuring task. However, when designing a measuring system, one should try to keep the required source activity as low as possible by selecting suitable detectors and evaluation instruments.

From the above formula, the following radiation protection measures, which illustrate some important basic principles of radiation protection, can be derived:

1. Increasing the Distance (a) to the radiation source, i.e. the distance between the source and the body. Since the dose rate (just as light) follows the

inverse square law, doubling the distance means reducing the radiation intensity to a quarter. This is the most efficient as well as the easiest method of radiation protection.

Consequence:

It is important, therefore to keep the largest distance possible when operating in the proximity of radioactive substances, especially for those persons who are not directly involved with the operation. Even weak sources generate a substantial dose rate if unshielded and the distance between the body and the source is small. Test sources with very low activities must not be touched by hand, but only with pliers or tweezers.

2. Shortening the Duration of Exposure. The time (T) has a linear effect, i.e. doubling the period of exposure gives twice the radiation dose.

   Consequence:

   Operations close to the source should be well planned, so that the time of exposure in the immediate vicinity of the source is kept as short as possible.

3. Use of Shielding with a high weakening factor (s) such as lead or tungsten reduces the intensity of a radiation field around a source in an exponential function. Apart from a few exceptions, radioactive substances used in industry already are installed in a suitable shielding when delivered. In the case of the DENSEROB System EWS, the source is surrounded by brass, stainless steel, and aluminum. Stainless steel has a high weakening factor for the low energy gamma rays associated with Americium 241 and Curium 244.

   Consequence:

   The shielding is effective only when it is used. If the source is removed from the device (something a customer would never be allowed to do) there would be considerably higher levels of radiation around the source.

Compliance with the above three principles (time, distance, and shielding) will ensure that operation

personnel will not be exposed to any unnecessary radiation. In practically all cases, the exposure should be below the detection limit of a film dosemeter.

B. Radiation Protection Areas

1. Unrestricted Areas

Areas with radiation levels at or below 2 mrem/hr at 30 cm from the shielding surface are unrestricted and the user is not required to control access. The SCHENCK Denserob System will always fall into this category as the radiation levels around the device are always well below 2 mrem/hr.

It is suggested that these areas be posted with the standard radiation symbol and the sign "CAUTION RADIATION AREA". This is not a requirement.

2. Posting of Areas

Radiation Area - any area with radiation levels at or above 5 mrem/hr at 30 cm from the source shield surface must be posted with the standard radiation symbol and the sign "CAUTION, RADIATION AREA"

High Radiation Area - Any area with radiation levels at or above 100 mrem/hr at 30 cm from the source shield surface must be posted with the standard radiation symbol and the sign "CAUTION, HIGH RADIATION AREA".

Very High Radiation Area - Any area with radiation levels at or above 500 rad/hr at 1 meter from the source shield surface must be posted with the standard radiation symbol and a sign "CAUTION, HIGH RADIATION AREA".

Note: The device in question will not have radiation levels above 2 mrem/hr at 30 cm when used properly and should not require special posting.

C. General Rules of Behavior

Every individual working with or working around radioactive sources must follow the principles of ALARA.

ALARA is an acronym for "as low as is reasonably achievable". The definition is as follows: every reasonable effort to maintain exposures to radiation as far below the dose limits stated in CFR Part 20 (see above) as is practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to benefits to public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

Stated simply:

The ALARA program absolutely requires that Radiation Protection Regulations and principles must be observed, and each action performed around a sealed source must be done in such a way as to always minimize an individual's exposure while using available technologies.

D. Leak Test

This device requires that a leak test be performed at intervals not to exceed 6 months.

Also, if a container in which radioactive substances have been installed or the encapsulation of these substances is damaged or corroded, which could adversely affect the sealing of the container or the cover, the sealing must be leak tested.

General License:

When a customer receives a Berthold source under a general license, the six month leak test can only be performed by a Berthold Systems engineer or a company which possesses a specific license to perform leak tests on Berthold devices. The customer may not perform the leak test himself.

E. Waste Disposal

Radioactive waste must be disposed of properly, i.e. it has to be deposited at the collection site for nuclear waste specified by each country.

This obligation must be observed strictly. It is illegal to dilute or reduce the concentration of radioactive substances, so that the radiation falls below the permissible limits, and therefore the regulations are no

longer applicable.

If the sealed radioactive substances are no longer contained, the supervisory authority must be notified immediately and steps taken to ensure that the contamination cannot be dispersed. Proper handling and disposal of possibly leaking sources or contaminated parts of the equipment must be coordinated with the supervisory authority.

Note: Radioactive substances which are no longer used are not necessarily radioactive waste. These substances must be properly disposed of as well, e.g. by depositing them at the governmental collection site or by returning them to the manufacturer. In the latter case the manufacturer will fill out a certificate acknowledging receipt, which will also serve as proof to the supervisory authority that the substances have been disposed or properly.

F. Packing and Transportation

Transportation of radioactive substances on public transport is only permitted if approval has been granted by the supervisory authority. The transportation approval stipulates that delivery can only be effected if the following points have been considered:

1. Packing Type A
2. Marking of package
3. Marking of the shipping documents
4. Observe maximum permissible activity

The transportation of radioactive material can take place only according to the national or international regulations for transportation of dangerous commodities.

G. Safety measures

When designing the installation of radiometric measuring systems, the possibility that a fire breaks out must be considered. Flammable substances must not be stored in the proximity of radioactive substances. They should be covered and protected properly, so that a possible spreading of the fire to the radioactive sources will be prevented. It is mandatory to coordinate all preventive measures against fire

with the local authorities, primarily with the fire department, which must be informed about the type, scope and place of application of the radioactive substances used, in order to be prepared in the event of fire.

When designing alarm plans, possible special features of the radiometric measuring system have to be mentioned; the radiation safety officer to be notified in the event of an emergency has to be included in those plans as well, and also the address and phone number of the supervisory authority.

H. Malfunctions and Accidents

The Radiation Protection Regulations define malfunction as an event which for safety reasons prohibits continuation of the operation of the facility.

Malfunctioning means, that a device necessary to guarantee safe operation of the facility, e.g. the seal of the active radiation beam of the shielding, no longer functions properly.

An accident is an event which could expose persons to a radiation dose which exceeds the permissible limits, or could cause contamination by radioactive substances.

In terms of safety, malfunctioning and accidents are very serious events and appropriate steps must be taken immediately, to prevent danger for persons as well as for facilities, or to reduce them as much as possible.

It is therefore important that the personnel is aware of preventive measures and is prepared for possible malfunctions of the facilities or accidents, so that dangerous consequences can be avoided as far as possible by a proper reaction of the personnel.

In any case, the radiation safety officer, who checks the situation at site and takes all necessary steps to prevent unnecessary radiation exposure of the personnel, has to be notified immediately. The radiation safety officer will inform the official authority concerned, and, if necessary, get further information form the manufacturer.

The necessary steps should be taken in the following order:

1. Locate the source
2. Measure the dose rate

3. Guard and mark the control area

4. Secure the source and shielding

5. Check the function and efficiency of the shielding

6. Record the event and assess possible radiation exposure of the personnel concerned.

In case the source capsule is damaged, the following points have to be considered:

1. Avoid contamination

2. Handle source with tools (e.g. tweezers) and put both in a plastic bag (never done by customer),

3. Stay behind an auxiliary shielding (e.g. concrete, steel, or lead plate),

4. Check if vicinity is free of contamination

5. Secure the radioactive waste properly (deposit at governmental collection site or return to manufacturer)

If the source is leaking and the dose rate might possibly be exceeded, the supervisory authority must be notified immediately.

In case of an accident or malfunctioning or any other event which affects the safety, the supervisory authority has to be informed an also, if necessary the authority in charge of public safety.

These considerations should be an integral part of the mandatory regular instructions.

I. <u>Protection against Theft</u>

Radioactive substances or facilities containing radioactive substances must be secured against unauthorized use. Fixed installations are, by their nature, protected against unauthorized use.

Portable measuring systems, on the other hand, have to be protected by keeping them under constant supervision, or, if they are not in operation, by keeping them in a licked room or container which can be guarded against unauthorized access. This is especially true for low activity test sources which are used, for example, to check the function of dose rate

measuring instruments.

In the event that radiative substances are lost, the radiation safety supervisor and the supervisory authority must be notified immediately. In case of theft, the police must be informed as well.

J. DENSEROB Specific instructions

1) The DENSEROB unit contains a 202.2 mCi Am-241 rod source. The low energy gamma rays of the Am-241 radioisotope are easy to attenuate. This means that the device has little measurable radiation on the surface of the instrument container. This unit can be installed on a bench or tabletop without special precautions.

2) The device must be leak tested every 6 months.

3) The instrument container must not be opened by the customer but only by a trained Berthold engineer or specifically licensed individual because of possible exposure to the Americium rod source.

Reference GB/348/S- 85

Certificate Issue 1

Certificate of Approval
of Design for Special Form Radioactive Material

Title
Low Energy Photon Line Source - Assembly Code X1213
Drawing Nos and Specification Reference
Assembly 3A 62044 Issue A Details 3A 62043 Issue A MPW/GB348/X1213, Dated 18 October 1988, & letter Messenger/Webster dated 10.12.91
I P Q A M Q.A. Programme Reference

Radioactive Material	Maximum Activity
Americium 241	7.5 GBq

THIS IS TO CERTIFY that the Secretary of State for Transport being, for the purposes of the Regulations of the International Atomic Energy Agency, the Competent Authority of Great Britain in respect of inland surface transport and of the United Kingdom of Great Britain and Northern Ireland in respect of sea and air transport and the Department of the Environment for Northern Ireland being the Competent Authority of Northern Ireland in respect of inland surface transport, have approved the above-mentioned Special Form Design. Radioactive material manufactured to the above-mentioned design qualifies as special form radioactive material and as such will meet the requirements of the regulations overleaf.

This Certificate of Approval applies only to the design as set out in the above named drawings and specifications submitted by Amersham International plc

In the event of any alteration to the above mentioned drawings and specifications or in any of the facts state in the application for approval, this certificate will cease to have effect unless the Competent Authority is notified of the alteration and the Competent Authority confirms the certificate notwithstanding the alterati

This Certificate Cancels all Previous Issues and is valid until 31 October 1994

Competent Authority
Identification Mark:

GB/348/S- 85

UNITED KINGDOM COMPETENT AUTHORITY FOR THE TRANSPORT
20DEC1991
OF RADIOACTIVE MATERIALS

D. J. Blackman

Transport Radiological Adviser
Department of Transport
2 Marsham Street
London SW1P 3EB

On behalf of the Secretary of State for Transport and the Department of the Environment for Northern Ireland

REGULATIONS AND CODES OF PRACTICE GOVERNING THE TRANSPORT OF RADIOACTIVE MATERIALS

INTERNATIONAL
International Atomic Energy Agency (IAEA) Safety Series No 6 Regulations for the Safe Transport of Radioactive Materials 1985 (1990 As Amended).
International Maritime Organisation (IMO). International Maritime Dangerous Goods Code -- Class 7 Radioactive Substances.
International Civil Aviation Organisation (ICAO). Technical Instructions for the Safe Transport of Dangerous Goods by Air.

ROAD
GREAT BRITAIN ONLY. The Radioactive Substances (Carriage by Road)(Great Britain) Regulations 1974 SI No 1735: The Radioactive Substances (Carriage by Road)(Great Britain)(Amendment) Regulations 1985 SI No 1729: The Ionising Radiations Regulations 1985 SI No 1333: and Approved Code of Practice.
NORTHERN IRELAND ONLY. The Radioactive Substances (Carriage by Road) Regulations (Northern Ireland) 1983 SR 1983 No 344: The Radioactive Substances (Carriage by Road)(Amendment) Regulations (Northern Ireland) 1986 SR 1986 No 61.
EUROPE ONLY. European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), Class 7.(ed 1990).

RAIL
GREAT BRITAIN ONLY. British Rail publication BR 22426 (1990 Edition) -- List of Dangerous Goods (L.D.G) and Conditions of Acceptance by Rail on Freight Train and Parcel Services-- Class 7 Radioactive Substances.
EUROPE ONLY. Convention concerning the International carriage by rail (COTIF), Appendix B, Uniform Rules concerning the International Carriage of Goods by Rail (CIM), Annex 1, Regulations concerning the International carriage of dangerous goods by rail (RID), Class 7.(ed 1990).

SEA
British registered ships and other ships destined for a British port whilst in territorial waters only. The Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1990 SI No 2605: Merchant Shipping Notice No M 1432, 'The Carriage of Dangerous Goods and Marine Pollutants in Ships, the "Blue Book" and the IMDG Code'.

PORT
UK ONLY.

AIR
UK ONLY. The Air Navigation Order 1989 SI No 2004: The Air Navigation (Dangerous Goods) Regulations 1985 SI No 1939: The Air Navigation (Dangerous Goods) (Amendment) Regulations 1986 SI No 2129. The Air Navigation (Dangerous Goods)(Third Amendment) Regulations 199[illegible] SI No 2531.International Civil Aviation Organisation (ICAO). Technical Instructions fo[illegible] the Safe Transport of Dangerous Goods by Air.

NOTES

1. Attention is drawn to the labelling and marking requirements of IAEA Section V, one provision of which is that the outside of each package shall be clearly and durably marked with the Competent Authority's Package Design Identification Mark.

2. Any questions relating to this Certificate should be addressed to:--

The Transport Radiological Adviser,
Department of Transport,
2 Marsham Street, London SW1P 3EB.
Telephone 071-276-5050.
Telex 22221 Answer back DOE MAR G.

3. This Certificate does not relieve the consignor from compliance with any requirements of this Government or any other Government of any country through or into which the package may be transported.

BERTHOLD SYSTEMS, INC.
Process Control Instruments
Hopewell Business & Industrial Park
101 Corporation Drive
Aliquippa, Pennsylvania 15001-4863
Telephone: (412) 378-1900
Telefax: (412) 378-1926
Telex: 988393 (BRTHLD SYST UD)

BSI FILE #: _____

CUSTOMER: _____ DATE: _____

ADDRESS: _____

EQUIPMENT TYPE: _____ SHIPPER: _____

ISOTOPE: _____ ACTIVITY: _____ mCi

SERIAL NUMBER: _____ LICENSE: G S

BAR: TI:

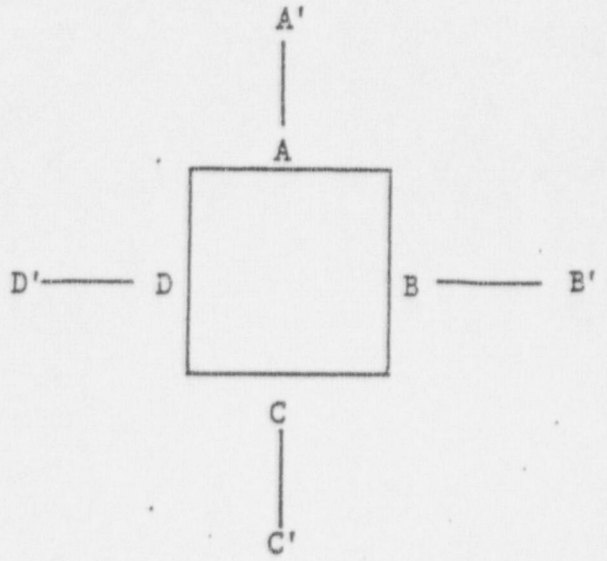
LABELS AFFIXED:
METAL ID TAG
REQUIRED INFOMATION:
CAUTION RADIATION

METER TYPE AND SERIAL #:
LAST CALIBRATED:

LOCATION POINTS:	MEASUREMENTS mR/Hr
A	
B	
C	
D	
E	
F	
A'	
B'	
C'	
D'	
E'	
F'	

TOP = E & E'

BOTTOM = F & F'



SURVEYED BY: _____ DATE: _____

berthold systems

berthold systems®

BERTHOLD SYSTEMS, INC.
Process Control Instruments
Hopewell Business and Industrial Park
Pittsburgh, Pennsylvania 15001-4863
Telephone: (412) 378-1900
Telefax: (412) 378-1926
Telex: 988393 (BRTHLD SYST UD)

NOTICE TO A GENERAL LICENSE

This device (radioactive source and shield) has been registered with the U.S. Nuclear Regulator Commission.

The receipt of this device automatically identifies you as "General Licensee."

As a "General Licensee" you are subject to the regulations of the U.S. NRC (10CFR31.5) or of a State with which the NRC has entered into an agreement for the exercise of regulatory authority.

Berthold Systems, Inc. will provide a copy of the regulations that pertain to the activity of a "General License" namely 10CFR31.5 and will go over these regulations with you as part of our installation/commissioning lecture.

Instructions to user: (Licensee requirements)

1) Do not install, remove or service this device at any time.

2) You are to assure that all labels and instructions affixed to this device are not removed and that the labels are maintained in a legible condition.

3) You are to assure that the tests (leak test/shutter test) indicated on the labels are performed at the required time.

4) You are to assure that any service to the source and shield (including removing and relocation) are performed only by the Manufacturer (Berthold) or other Specific licensees.

5) You are to maintain records of tests and servicing. You are also required to maintain records of receipt.*

6) Do not abandon the device containing radioactive material.

7) Removal and disposal of sources will be accomplished through Berthold Systems, Inc. or other Specific licensee.

8) Refer to 10CFR31.5 (c) (8) and (9) regarding transfer.

9) In case of accident, such as fire, immediately obtain professional radiation safety assistance from Berthold Systems, Inc. or other specific licensee. In case of theft, or loss of radioactive material, you must notify the Nuclear Regulatory Commission or your State Licensing authority if you are in an Agreement State. For assistance from Berthold Systems, Inc., telephone 412/378-1900. Refer to Sections 31.5(c) (5) and 31.5(c) (10) for the specific requirements pertaining to accidents and theft or loss.

NOTICE TO A GENERAL LICENSE - cont'd.

10) Any questions regarding safety and compliance, call Berthold Systems, Inc. 412/378-1900.

*Records of Receipt are information supplied to you by Berthold, such as:

1) Source certificate
2) Radiation survey upon installation
3) Serial and model number of source housing, etc.

PART 31

GENERAL DOMESTIC LICENSES FOR BYPRODUCT MATERIAL

[57 FR 55062] Authority: Secs. 81, 161, 183, 68 Stat. 935, 948, 954, as amended (42 U.S.C. 2111, 2201, 2233); secs. 201, as amended, 202, 88 Stat. 1242, as amended, 1244 (42 U.S.C. 5841, 5842). Section 31.6 also issued under sec. 274, 73 Stat. 688 (42 U.S.C. 2021).

[36 FR 8425]

§ 31.1 Purpose and scope.

This part establishes general licenses for the possession and use of byproduct material contained in certain items and a general license for ownership of byproduct material. Part 30 of this chapter also contains provisions applicable to the subject matter of this part.

[58 FR 40757]

§ 31.2 Terms and conditions.

(a) The general licenses provided in this part are subject to the provisions of §§ 30.14(d), 30.34(a) to (e), 30.41, 30.50 to 30.63 and Parts 19, 20, and 21 of this chapter[1] unless indicated otherwise in the language of the general license.

[30 FR 8186]

§ 31.3 Certain devices and equipment.

A general license is hereby issued to transfer, receive, acquire, own, possess and use byproduct material incorporated in the following devices or equipment which have been manufactured, tested and labeled by the manufacturer in accordance with the specifications contained in a specific license issued to him by the Commission.

[30 FR 8185]

(a) *Static elimination device.* Devices designed for use as static eliminators which contain, as a sealed source or sources, byproduct material consisting of a total of not more than 500 microcuries of polonium 210 per device.

(b)–(c) [Reserved]

(d) *Ion generating tube.* Devices designed for ionization of air which contain, as a sealed source or sources, byproduct material consisting of a total of not more than 500 microcuries of polonium 210 per device or of a total of not more than 50 millicuries of hydrogen 3 (tritium) per device.

[49 FR 21699]

§ 31.4 Information collection requirements: OMB approval.

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). OMB has approved the information collection requirements contained in this part under control number 3150-0016.

(b) The approved information collection requirements contained in this part appear in §§ 31.5, 31.8, and 31.11.

(c) This part contains information collection requirements in addition to those approved under the control number specified in paragraph (a) of this section. These information collection requirements and the control numbers under which they are approved are as follows:

(1) In § 31.11, Form NRC-483 is approved under control number 3150-0038.

[39 FR 43531]

§ 31.5 Certain measuring, gauging or controlling devices.[2]

(a) A general license is hereby issued to commercial and industrial firms and research, educational and medical institutions, individuals in the conduct of their business, and Federal, State or local government agencies to acquire, receive, possess, use or transfer, in accordance with the provisions of paragraphs (b), (c) and (d) of this section, byproduct material contained in devices designed and manufactured for the purpose of detecting, measuring, gauging or controlling thickness, density, level, interface location, radiation, leakage, or qualitative or quantitative chemical composition, or for producing light or an ionized atmosphere.

[39 FR 43531]

[43 FR 6915]

(b) The general license in paragraph (a) of this section applies only to byproduct material contained in devices which have been manufactured or initially transferred and labeled in accordance with the specifications contained in a specific license issued pursuant to § 32.51 of this chapter or in accordance with the specifications contained in a specific license issued by an Agreement State which authorizes distribution of the devices to persons generally licensed by the Agreement State.

[39 FR 43531]

(c) Any person who acquires, receives, possesses, uses or transfers byproduct material in a device pursuant to the general license in paragraph (a) of this section:

(1) Shall assure that all labels affixed to the device at the time of receipt and bearing a statement that removal of the label is prohibited are maintained thereon and shall comply with all instructions and precautions provided by such labels;

(2) Shall assure that the device is tested for leakage of radioactive material and proper operation of the on-off mechanism and indicator, if any, at no longer than six-month intervals or at such other intervals as are specified in the label; however:

(i) Devices containing only krypton need not be tested for leakage of radioactive material, and

(ii) Devices containing only tritium or not more than 100 microcuries of other beta and/or gamma emitting material or

10 microcuries of alpha emitting material and devices held in storage in the original shipping container prior to initial installation need not be tested for any purpose;

(3) Shall assure that the tests required by paragraph (c)(2) of this section and other testing, installation, servicing, and removal from installation involving the radioactive materials, its shielding or containment, are performed:

(i) in accordance with the instructions provided by the labels; or

(ii) by a person holding a specific license pursuant to Parts 30 and 32 of

[1] Attention is directed particularly to the provisions of the regulations in Part 20 of this chapter which relate to the labeling of containers.

[2] Persons possessing byproduct material in devices under the general license in § 31.5 before Jan. 15, 1975, may continue to possess, use or transfer that material in accordance with the requirements of § 31.5 in effect on Jan. 14, 1975.

(d) This general license does not authorize the export of luminous safety devices containing tritium or promethium-147. [43 FR 6915]

(c) This general license does not authorize the ownership, receipt, acquisition, possession or use of promethium-147 contained in instrument dials.

§ 31.8 Americium-241 in the form of calibration or reference sources. [43 FR 6915]

(a) A general license is hereby issued to those persons listed below to own, receive, acquire, possess, use and transfer, in accordance with the provisions of paragraphs (b) and (c) of this section, americium-241 in the form of calibration or reference sources: [30 FR 8185]

(1) Any person in a non-Agreement State who holds a specific license issued pursuant to this chapter which authorizes him to receive, possess, use and transfer byproduct material, source material, or special nuclear material; and

(2) Any Government agency, as defined in § 30.4(g) of this chapter, which holds a specific license issued pursuant to this chapter which authorizes it to receive, possess, use and transfer byproduct material, source material, or special nuclear material.

(b) The general license in paragraph (a) of this section applies only to calibration or reference sources which have been manufactured or initially transferred in accordance with the specifications contained in a specific license issued pursuant to § 32.57 of this chapter or in accordance with the specifications contained in a specific license issued to the manufacturer by an Agreement State which authorizes manufacture of the sources for distribution to persons generally licensed by the Agreement State. [43 FR 6915; 30 FR 8185]

(c) The general license in paragraph (a) of this section is subject to the provisions of §§ 30.14(d), 30.34 (a) to (c), and 30.50 to 30.63 of this chapter, and to the provisions of Parts 19, 20, and 21 of this chapter. In addition, persons who own, receive, acquire, possess, use and transfer one or more calibration or reference sources pursuant to this general license: [56 FR 40767; 30 FR 8185]

(1) Shall not possess at any one time, at any one location of storage or use, more than 5 microcuries of americium-241 in such sources;

(2) Shall not receive, possess, use or transfer such source unless the source, or the storage container, bears a label which includes the following statement or a substantially similar statement which contains the information called for in the following statement: ** [30 FR 8185]

The receipt, possession, use and transfer of this source, Model _____, Serial No. _____, are subject to a general license and the regulations of the United States Nuclear Regulatory Commission or of a State with which the Commission has entered into an agreement for the exercise of regulatory authority. Do not remove this label. [43 FR 6915]

CAUTION – RADIOACTIVE MATERIAL – THIS SOURCE CONTAINS AMERICIUM-241. DO NOT TOUCH RADIOACTIVE PORTION OF THIS SOURCE.

_____
(Name of manufacturer or initial transferor)

(3) Shall not transfer, abandon, or dispose of such source except by transfer to a person authorized by a license pursuant to this chapter or from an Agreement State to receive the source.

(4) Shall store such source, except when the source is being used, in a closed container adequately designed and constructed to contain americium-241 which might otherwise escape during storage.

(5) Shall not use such source for any purpose other than the calibration of radiation detectors or the standardization of other sources.

(d) This general license does not authorize the manufacture or import of calibration or reference sources containing americium-241. [30 FR 8185]

(e) This general license does not authorize the export of calibration or reference sources containing americium-241.

§ 31.9 General license to own byproduct material.

A general license is hereby issued to own byproduct material without regard to quantity. Notwithstanding any other provision of this chapter, a general licensee under this paragraph is not authorized to manufacture, produce, transfer, receive, possess, use, import or export byproduct material, except as authorized in a specific license.

§ 31.10 General license for strontium-90 in ice detection devices. [43 FR 6915]

(a) A general license is hereby issued to own, receive, acquire, possess, use, and transfer strontium-90 contained in ice detection devices, provided each device contains not more than fifty microcuries of strontium-90 and each device has been manufactured or initially transferred in accordance with the specifications contained in a license issued pursuant to § 32.61 of this chapter or in accordance with the specifications contained in a specific license issued to the manufacturer by an Agreement State which authorizes manufacture of the ice detection devices for distribution to persons generally licensed by the Agreement State. [43 FR 6915]

(b) Persons who own, receive, acquire, possess, use, or transfer strontium-90 contained in ice detection devices pursuant to the general license in paragraph (a) of this section:

(1) Shall, upon occurrence of visually observable damage, such as a bend or crack or discoloration from overheating, to the device, discontinue use of the device until it has been inspected, tested for leakage and repaired by a person holding a specific license pursuant to Parts 30 and 32 of this chapter or from an Agreement State to manufacture or service such devices; or shall dispose of the device pursuant to the provisions of § 20.301 or, for licensees implementing the provisions of §§ 20.1001-20.2401, § 20.2001 of this chapter; [56 FR 23360]

(2) Shall assure that all labels affixed to the device at the time of receipt, and which bear a statement which prohibits removal of the labels, are maintained thereon; [30 FR 8804]

(3) Are exempt from the requirements of Parts 19, 20, and 21 of this chapter except that such persons shall comply with the provisions of §§ 20.301, 20.402, and 20.403 or, for licensees implementing the provisions of §§ 20.1001-20.2401, §§ 20.2001, 20.2201, and 20.2202 of this chapter. [56 FR 23360]

(c) This general license does not authorize the manufacture, assembly, disassembly, repair, or import of strontium-90 in ice detection devices. [30 FR 8804]

§ 31.11 General license for use of byproduct material for certain in vitro clinical or laboratory testing. [44 FR 60124]

(a) A general license is hereby issued to any physician, veterinarian in the practice of veterinary medicine, clinical laboratory or hospital to receive, acquire, possess, transfer, or use, for any of the following stated tests, in accordance with the provisions of paragraphs (b), (c), (d), (e), and (f) of this section, the following byproduct materials in prepackaged units:

**Sources generally licensed under this section prior to January 19, 1975, may bear labels authorized by the regulations in effect on January 1, 1975.

33 FR 16553

(e) The registrant possessing or using byproduct materials under the general license of paragraph (a) of this section shall report in writing to the Director of Nuclear Material Safety and Safeguards any changes in the information furnished by him in the "Registration Certificate—In Vitro Testing With Byproduct Material Under General License," Form NRC-483. The report shall be furnished within 30 days after the effective date of such change.

56 FR 23360

(f) Any person using byproduct material pursuant to the general license of paragraph (a) of this section is exempt from the requirements of Parts 19, 20, and 21 of this chapter with respect to byproduct materials covered by that general license, except that such persons using the Mock Iodine-125 described in paragraph (a) (7) of this section shall comply with the provisions of §§ 20.301, 20.402, and 20.403 or, for licensees implementing the provisions of §§ 20.1001-20.2401, §§ 20.2001, 20.2201, and 20.2202 of this chapter.

57 FR 19240

§ 31.12 Maintenance of records.

Each record required by this part must be legible throughout the retention period specified by each Commission regulation. The record may be the original or a reproduced copy or a microform provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of producing a clear copy throughout the required retention period. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records such as letters, drawings, specifications, must include all pertinent information such as letters, stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and loss of records.

57 FR 55062

§ 31.13 Violations.

(a) The Commission may obtain an injunction or other court order to prevent a violation of the provisions of—

(1) The Atomic Energy Act of 1954, as amended;

(2) Title II of the Energy Reorganization Act of 1974, as amended; or

(3) A regulation or order issued pursuant to those Acts.

(b) The Commission may obtain a court order for the payment of a civil penalty imposed under section 234 of the Atomic Energy Act:

(1) For violations of—

(i) Sections 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 of the Atomic Energy Act of 1954, as amended;

(ii) Section 206 of the Energy Reorganization Act;

(iii) Any rule, regulation, or order issued pursuant to the sections specified in paragraph (b)(1)(i) of this section;

(iv) Any term, condition, or limitation of any license issued under the sections specified in paragraph (b)(1)(i) of this section.

(2) For any violation for which a license may be revoked under section 186 of the Atomic Energy Act of 1954, as amended.

§ 31.14 Criminal penalties.

(a) Section 223 of the Atomic Energy Act of 1954, as amended, provides for criminal sanctions for willful violation of, attempted violation of, or conspiracy to violate, any regulation issued under sections 161b, 161i, or 161o of the Act. For purposes of section 223, all the regulations in part 31 are issued under one or more of sections 161b, 161i, or 161o, except for the sections listed in paragraph (b) of this section.

(b) The regulations in part 31 that are not issued under sections 161b, 161i, or 161o for the purposes of section 223 are as follows: §§ 31.1, 31.2, 31.3, 31.4, 31.9, 31.13, and 31.14.

§ 31.100 [Deleted 36 FR 16898.]

NRC Locations

Headquarters:

Greater Washington, D.C., Area
(301) 492-7000

The NRC is in the process of consolidating its headquarters staff in Rockville, Maryland. The consolidation is expected to be completed in July 1994.

Operations Center:

Bethesda, Maryland
(301) 951-0550

The NRC maintains an Operations Center that provides a focal point for NRC communications with its licensees, State agencies, and other Federal agencies concerning operating events in the commercial nuclear sector. The Operations Center is staffed 24 hours a day by NRC operations officers.

Regional Offices:

The NRC has four regional offices located throughout the United States (see Figure 2):

Region I
King of Prussia, Pennsylvania
(610) 337-5000

Region II
Atlanta, Georgia
(404) 331-4503

Region III
Lisle, Illinois
(708) 829-9500

Region IV
Arlington, Texas
(817) 860-8100

Region IV Field Office:
Walnut Creek, California
(510) 975-0200

Resident Sites:

At least two NRC resident inspectors who report to the appropriate regional office are located at each nuclear power reactor site. Refer to Figure 16 for a map of the U.S. commercial nuclear power reactor sites.

Technical Training Center:

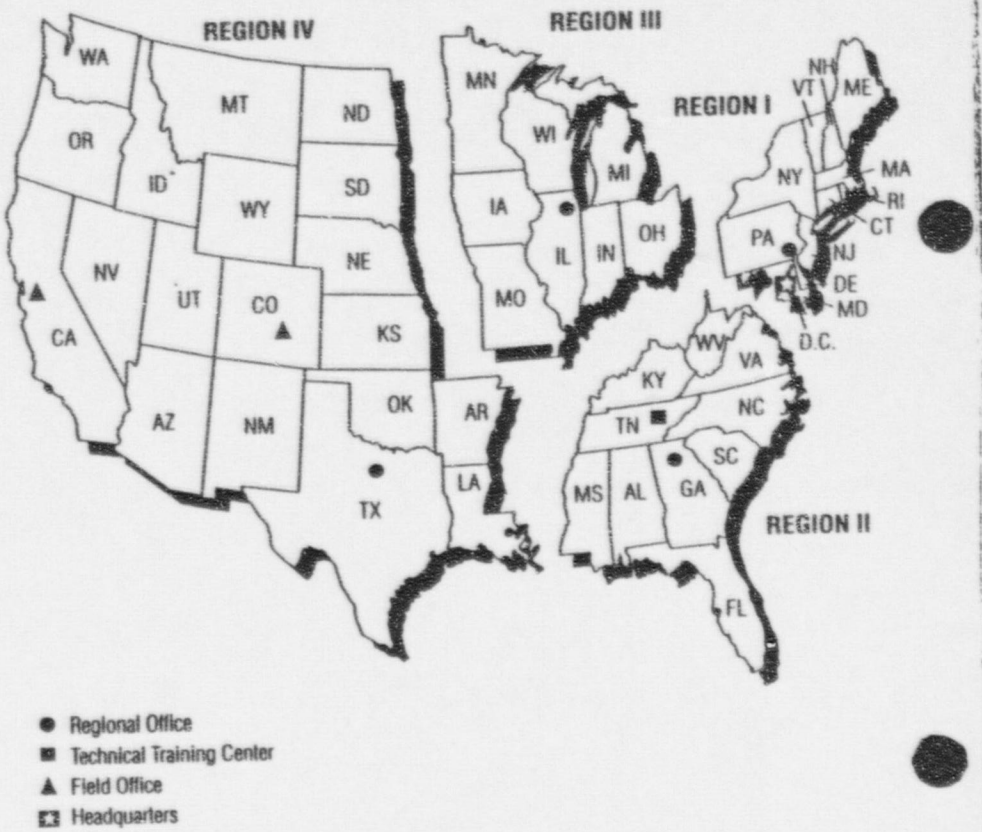
Chattanooga, Tennessee
(615) 855-6500

Uranium Recovery Field Office:*

Golden, Colorado
(303) 231-5800

*The NRC is in the process of closing its Uranium Recovery Field Office in Golden, Colorado. It is scheduled to be closed in August 1994.

Figure 2. **NRC Regions**



Note: Alaska and Hawaii are included in Region IV. The NRC is in the process of closing its Uranium Recovery Field Office in Golden, Colorado. It is scheduled to be closed in August 1994.

Source: Nuclear Regulatory Commission

MATERIAL LICENSE PROGRAM CODES

JULY 1991

PROGRAM CODE	TITLE
01100	ACADEMIC TYPE A BROAD
01110	ACADEMIC TYPE B BROAD
01120	ACADEMIC TYPE C BROAD
01200	ACADEMIC OTHER (SECONDARY CODE)
02110	MEDICAL INSTITUTION BROAD
02120	MEDICAL INSTITUTION LIMITED
02121	MEDICAL INSTITUTION CUSTOM
02200	MEDICAL PRIVATE PRACTICE - LIMITED
02201	MEDICAL PRIVATE PRACTICE - CUSTOM
02209	GRANDFATHERED IN-VIVO GENERAL MEDICAL USE
02210	EYE APPLICATORS STRONTIUM-90
02220	MOBILE NUCLEAR MEDICINE SERVICE
02300	TELETHERAPY
02400	VETERINARY NON-HUMAN
02410	IN-VITRO TESTING LABORATORIES
02500	NUCLEAR PHARMACIES
02511	MEDICAL PRODUCT DISTRIBUTION - 32.72 - PREPARED RADIOPHARMACEUTICAL
02512	MEDICAL PRODUCT DISTRIBUTION - 32.73 - GENERATORS AND KITS
02513	MEDICAL PRODUCT DISTRIBUTION - 32.74 - SOURCES AND DEVICES
03110	WELL LOGGING BYPRODUCT AND/OR SNM TRACER AND SEALED SOURCES
03111	WELL LOGGING BYPRODUCT AND/OR SNM SEALED SOURCES ONLY
03112	WELL LOGGING BYPRODUCT ONLY-TRACERS ONLY
03113	FIELD FLOODING STUDIES
03120	MEASURING SYSTEMS FIXED GAUGES
03121	MEASURING SYSTEMS PORTABLE GAUGES
03122	MEASURING SYSTEMS ANALYTICAL INSTRUMENTS
03123	MEASURING SYSTEMS GAS CHROMATOGRAPHS
03124	MEASURING SYSTEMS OTHER
03211	MANUFACTURING AND DISTRIBUTION TYPE A BROAD
03212	MANUFACTURING AND DISTRIBUTION TYPE B BROAD
03213	MANUFACTURING AND DISTRIBUTION TYPE C BROAD
03214	MANUFACTURING AND DISTRIBUTION OTHER
03218	NUCLEAR LAUNDRY
03219	DECONTAMINATION SERVICES
03220	LEAK TEST SERVICE ONLY
03221	INSTRUMENT CALIBRATION SERVICE ONLY - SOURCE LESS THAN 100 CURIES
03222	INSTRUMENT CALIBRATION SERVICE ONLY - SOURCE GREATER THAN 100 CURIE
03223	LEAK TEST & INSTR CALIBRATION SERVICE - SOURCE LESS THAN 100 CURIES
03224	LEAK TEST & INSTR CALIBRATION SERVICE - SOURCE GREATER THAN 100 CUR
03225	OTHER SERVICES
03231	WASTE DISPOSAL (BURIAL)
03232	WASTE DISPOSAL SERVICE PREPACKAGED ONLY
03233	WASTE DISPOSAL SERVICE INCINERATION
03234	WASTE DISPOSAL SERVICE PROCESSING AND/OR REPACKAGING
03235	INCINERATION - NONCOMMERCIAL (SECONDARY CODE)
03240	GENERAL LICENSE DISTRIBUTION - 32.51
03241	GENERAL LICENSE DISTRIBUTION - 32.53
03242	GENERAL LICENSE DISTRIBUTION - 32.57
03243	GENERAL LICENSE DISTRIBUTION - 32.61

Amersham International plc
White Lion Road Amersham
Buckinghamshire England HP7 9LL

Telephone Little Chalfont (02404) 4444
cables Activity Amersham telex
telex 83141 ACTIVA G

Certificate of radioactive source integrity QCS 690 Issue 2

Title	: Low Energy Photon Line Source
Assembly code	: X1213
Assembly drawing	: 3A 62044
Nuclide	: Americium-241 (Am-241)
Radiotoxicity group	: A
Maximum activity	: 7.5 GBq (202.5 mCi)

CLASSIFICATION	: BS/ISO/ANSI 77 C64344	
RECOMMENDED WORKING LIFE	: 10 Years	(see overleaf)

Test sources : 5 off inactive source, serial number 1, 2, 3, 4 and 5 each containing 10 glass beads. Assembled as in drawing number 3A 62044 issue A.

Tests carried out in accordance with Recommendation of:

BS.5288: 1976 ISO.2919: 1980 (E) ANSI N542: 1977 ~~IAEA Safety Series No 6~~ XXX

Leak test method	TEMPERATURE	PRESSURE	IMPACT	VIBRATION	PUNCTURE	Units
	6	4	3	4	4	
Vacuum Bubble (QCP 112)	Pass Pass	Pass Pass	Pass Pass	Pass Pass	Pass Pass	
Helium Pressure (QCP 113)	0.5×10^{-8} 0.5×10^{-8}	1.6×10^{-8} 1.0×10^{-8}	1.2×10^{-8} 0.5×10^{-8}	0.3×10^{-8} 0.3×10^{-8}	1.6×10^{-8} 1.0×10^{-8}	mbar 1 s^{-1}

NB This capsule has been tested to the IAEA Safety Series No 6 Special Form Material requirements. See QCS 691.

ATTACHMENT #10

[signature]
QA Manager.

[signature]
Production Manager - Industrial Products.

ISSUED 7 November 1991

Q.C.
AUTHENTICATED

EXPIRES 31 October 1994

Amersham

AI/C/18(rev. 2/87) PC

09 FEB '94 12:16 USD

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO: IL-136-S-343-S DATE: June 29, 1993 PAGE: 1 of 4.

SOURCE TYPE: Gamma Source

MODEL: AMC.L1

DISTRIBUTOR: Amersham Corporation
2636 South Clearbrook Drive
Arlington Heights, IL 60005

MANUFACTURER: Amersham International Plc
White Lion Road, Amersham
Buckinghamshire, England HP79LL

ISOTOPE: MAXIMUM ACTIVITY:

Americium-241 202.5 mCi, 7.5 GBq

LEAK TEST FREQUENCY: 6 months

PRINCIPAL USE: (D) Gamma Gauges

CUSTOM SOURCE: ____ YES __X__ NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO: IL-136-S-343-S DATE: June 29, 1993 PAGE: 2 of 4

SOURCE TYPE: Gamma Source

DESCRIPTION:

The source consists of Americium-241 oxide incorporated into glass spheres by melting at high temperatures with a non-radioactive silica frit. The resulting ceramic beads are inert and nonporous. The ceramic beads are sealed in stainless steel (316L) tube, each end of the tube is closed with a stainless steel cylinder which is TIG welded to the tube. The overall physical dimensions are 30.05 mm x 3.18 mm. The active length is 20 mm on center.

LABELING:

Each source is engraved with a unique serial number, A.I. (for Amersham International), Am-241, Radioactive and a trefoil.

DIAGRAMS:

See Attachment A.

CONDITIONS OF NORMAL USE:

The sources will be used in gamma gauges to measure or control density, thickness, levels or chemical composition. The source will withstand severe conditions such as fire since it achieved an ANSI rating which indicates that it can withstand temperatures of 800 degrees Centigrade for one hour followed by thermal transition to 20 degrees Centigrade.

PROTOTYPE TESTING:

The source has been tested in accordance with ANSI N542-1977 requirements and has achieved a rating of ANSI 77C64344. This source design has satisfied the requirements for Special Form Certification.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

SOURCE TYPE: Gamma Source

EXTERNAL RADIATION LEVELS:

The manufacturer made measurements on two 100 mCi sources 30 cm from either end of the source and 30 cm from the side of the source. An Eberline RO-2W instrument with a closed shutter was used to make measurements. From these values the following radiation levels were calculated, using the inverse square law, to approximate a source of maximum activity 202.5 mCi, 7.5 GBq:

EXPOSURE RATES

DISTANCE	From the end of the source	From the side of the source
5 cm	1312 μSv/hr 131.2 mR/hr	6561 μSv/hr 656.1 mR/hr
30 cm	36.5 μSv/hr 3.65 mR/hr	192 μSv/hr 19.2 mR/hr
100 cm	3.3 μSv/hr 0.33 mR/hr	17.3 μSv/hr 1.73 mR/hr

QUALITY ASSURANCE AND CONTROL:

Model AMC.L1 sources are manufactured according to the Amersham International Radiation Sources Quality Assurance Program as described in their Quality Assurance Manual, Issue 6, October 1992. The quality assurance program under which the manufacture of sources is carried out is in compliance with Lloyds Register of Quality Assurance.

Each source is tested for visual appearance, leakage (Bubble Test and Immersion Test) and contamination. Gamma emission measurements are made at 60 keV and scans are performed at higher spectral energies.

LIMITATIONS AND OTHER CONSIDERATIONS OF USE:

1. The sealed sources shall be distributed only to specific Licensees of the Nuclear Regulatory Commission (NRC) or Agreement States.

2. At the time of distribution a "Sealed Radioactive Source Test Report" and "Safety Instructions for Unpacking and Use of Low Energy Gamma and Beta Sources" will accompany each shipment.

3. Handling, Use, Storage, Transfer and Disposal: Shall be determined by the licensing authority.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO: IL-136-S-343-S DATE: June 29, 1993

SOURCE TYPE: Gamma Source

LIMITATIONS AND OTHER CONSIDERATIONS OF USE:

4. This registration sheet and the information contained with the references shall not be changed without the written consent of the Illinois Department of Nuclear Safety.

5. The sources shall be leak tested at six (6) month intervals using techniques capable of detecting 0.005 microcuries of removable contamination.

6. The recommended working life for this source is 10 years.

SAFETY ANALYSIS SUMMARY:

Based on our review of the information and test data submitted by Amersham Corporation for source design Model AMC.L1 Series, we conclude that the source design should maintain its integrity for normal conditions of use and accidental conditions which might occur.

REFERENCES:

The following documents for the Amersham Corporation Model AMC.L1 Series are hereby incorporated by reference and are made a part of this registry document:

1. Amersham Corporation application dated May 11, 1993.

2. Amersham Corporation letter dated June 3, 1993.

3. Amersham Corporation letter dated June 16, 1993.

ISSUING AGENCY: Illinois Department of Nuclear Safety

DATE: 6-30-93 REVIEWED BY: Mary E. Burkhart

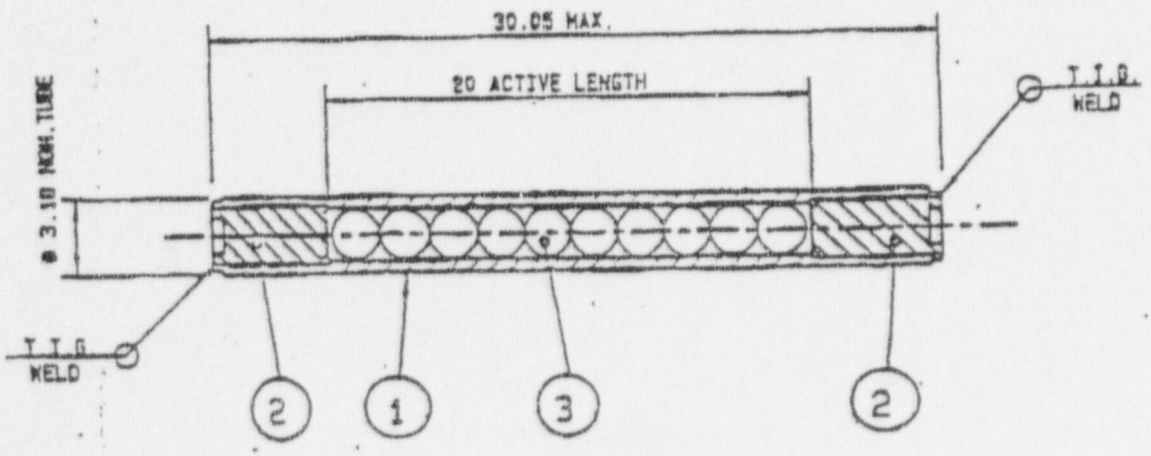
DATE: 6/30/93 CONCURRENCE: Joseph G. Klinger

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO: IL-136-S-343-S DATE: June 29, 1993 ATTACHMENT A

SOURCE TYPE: Gamma Source

Item No	Drawing No		Description
1	3A52043	ITEM.1.	BODY
2	3A52043	ITEM.2.	LID
3			ACTIVE MATERIAL Ø 1.0 [illegible] BEAD



TELEPHONE CONVERSATION LOG	DATE: 12/1/94

PERSON CALLED:	ORGANIZATION:	TELEPHONE NUMBER:
Mary Dedola	Berthold	1800-274-9851
LICENSE NUMBER: 37-21226-01+026		

PERSON CALLING:

Sheri A. Arredondo
USNRC Region I
475 Allendale Road
King of Prussia, PA 19406

(215) 337-5342
FAX Numbers
(215) 337-5269 or
(215) 337-5234

SUMMARY:

(1) Who is manufacturer of source & model #?
Amersham Source model AMC.LI

(2) Need labels + package inserts.

(3) Application for registry is at Headquarters submitted at same time as this application. Informed licensee that we will hold this license until SS+ device review is completed.

ACTION:

MS 15

SIGNATURE: Sheri Arredondo

DATE: 12/1/94

BERTHOLD SYSTEMS, INC.
Process Control Instruments
Hopewell Business & Industrial Park
101 Corporation Drive
Aliquippa, Pennsylvania 15001-4863
Telephone: (412) 378-1900
Telefax: (412) 378-1926

030-20043 / 030-21228

November 14, 1994

Ms. Elizabeth Ullrich
U.S. Nuclear Regulatory Commission
Region I
Nuclear Material Section B
631 Park Avenue
King of Prussia, PA 19406

Dear Ms. Ullrich:

Enclosed is our application for amendment to License Number 37-21226-01 and 37-21226-02G.

Item #5 -	Element & Mass Number	Chemical & Physical Form	Maximum Activity
	Am-241	Sealed Rod Source Model # LB BW	202.5 mCi

Item #6 - This source and shielding will be used in our Basis Weight Applications. These are an addition to the LB BW series devices previously approved by the NRC.

Please see Attachment #1 and #2 for Dose Rates of the source and shielding installed in the device and standing alone.

Item #7-Item #11 of this application are already on file with the US Nuclear Regulatory Commission. The information previously submitted is not changed in this application.

If there are any questions, please contact Mary Dedola at 1-800-274-9851.

Sincerely,

Charles Ferrin
Radiation Safety Officer/
Vice President
Berthold Systems, Inc.

CK #1751 ATTACHED

License File Information
CH APPL DTD 11/19/94

120805

NOV 16 1994

OFFICIAL RECORD COPY ML 10

berthold systems

APPENDIX A

NRC FORM 313
(1-84)
10 CFR 30, 32, 33, 34, 35 and 40

APPLICATION FOR MATERIAL LICENSE

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

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.

FEDERAL AGENCIES 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 JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIAL SECTION B
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
MATERIAL RADIATION PROTECTION 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
MATERIAL RADIATION PROTECTION SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

030-20043

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

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

- [ ] A. NEW LICENSE
- [X] B. AMENDMENT TO LICENSE NUMBER 37-21226-01
- [ ] C. RENEWAL OF LICENSE NUMBER _____

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

Berthold Systems, Inc.
101 corporation Drive
Aliquippa, PA 15001-4863

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

Berthold Systems, Inc.
101 Corporation Drive
Aliquippa, PA 15001-4863

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Mary Dedola

TELEPHONE NUMBER
1-800-274-9851

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
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.

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

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

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM

11. WASTE MANAGEMENT.

12. LICENSEE FEES *(See 10 CFR 170 and Section 170.31)*
FEE CATEGORY 3N
AMOUNT ENCLOSED $680.00

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
Charles Ferrin	Charles Ferrin	Vice Pres./RSO	11-14-94

14. VOLUNTARY ECONOMIC DATA

a. ANNUAL RECEIPTS

- [ ] <$250K
- [ ] $250K–$500K
- [ ] $500K–$750K
- [ ] $750K–1M
- [ ] $1M–3.5M
- [ ] $3.5M–7M
- [ ] $7M–10M
- [ ] >$10M

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

c. NUMBER OF BEDS

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)*

- [ ] YES
- [ ] NO

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS	APPROVED BY
Amd	1 Nov 14	(3N) 3P	REMITTER: APPLEE CORP.	
AMOUNT RECEIVED	CHECK NUMBER			DATE
($1040) $680	1751		Also see 120806	11/29/94

PRIVACY ACT STATEMENT ON THE REVERSE

NOV 16 1994

PRIVACY ACT STATEMENT

Pursuant to 5 U.S.C. 552a(e)(3), enacted into law by section 3 of the Privacy Act of 1974 (Public Law 93-579), the following statement is furnished to individuals who supply information to the Nuclear Regulatory Commission on NRC Form 313. This information is maintained in a system of records designated as NRC-3 and described at 40 Federal Register 45334 (October 1, 1975).

1. **AUTHORITY:** Sections 81 and 161(b) of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2111 and 2201(b)).

2. **PRINCIPAL PURPOSE(S):** The information is evaluated by the NRC staff pursuant to the criteria set forth in 10 CFR Parts 30, 32, 33, 34, 35 and 40 to determine whether the application meets the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations, for the issuance of a radioactive material license or amendment thereof.

3. **ROUTINE USES:** The information may be (a) provided to State health departments for their information and use; and (b) provided to Federal, State, and local health officials and other persons in the event of incident or exposure, for their information, investigation, and protection of the public health and safety. The information may also be disclosed to appropriate Federal, State, and local agencies in the event that the information indicates a violation or potential violation of law and in the course of an administrative or judicial proceeding. In addition, this information may be transferred to an appropriate Federal, State, or local agency to the extent relevant and necessary for an NRC decision or to an appropriate Federal agency to the extent relevant and necessary for that agency's decision about you.

4. **WHETHER DISCLOSURE IS MANDATORY OR VOLUNTARY AND EFFECT ON INDIVIDUAL OF NOT PROVIDING INFORMATION:** Disclosure of the requested information is voluntary. If the requested information is not furnished, however, the application for radioactive material license, or amendment thereof, will not be processed. A request that information be held from public inspection must be in accordance with the provisions of 10 CFR 2.790. Withholding from public inspection shall not affect the right, if any, of persons properly and directly concerned need to inspect the document.

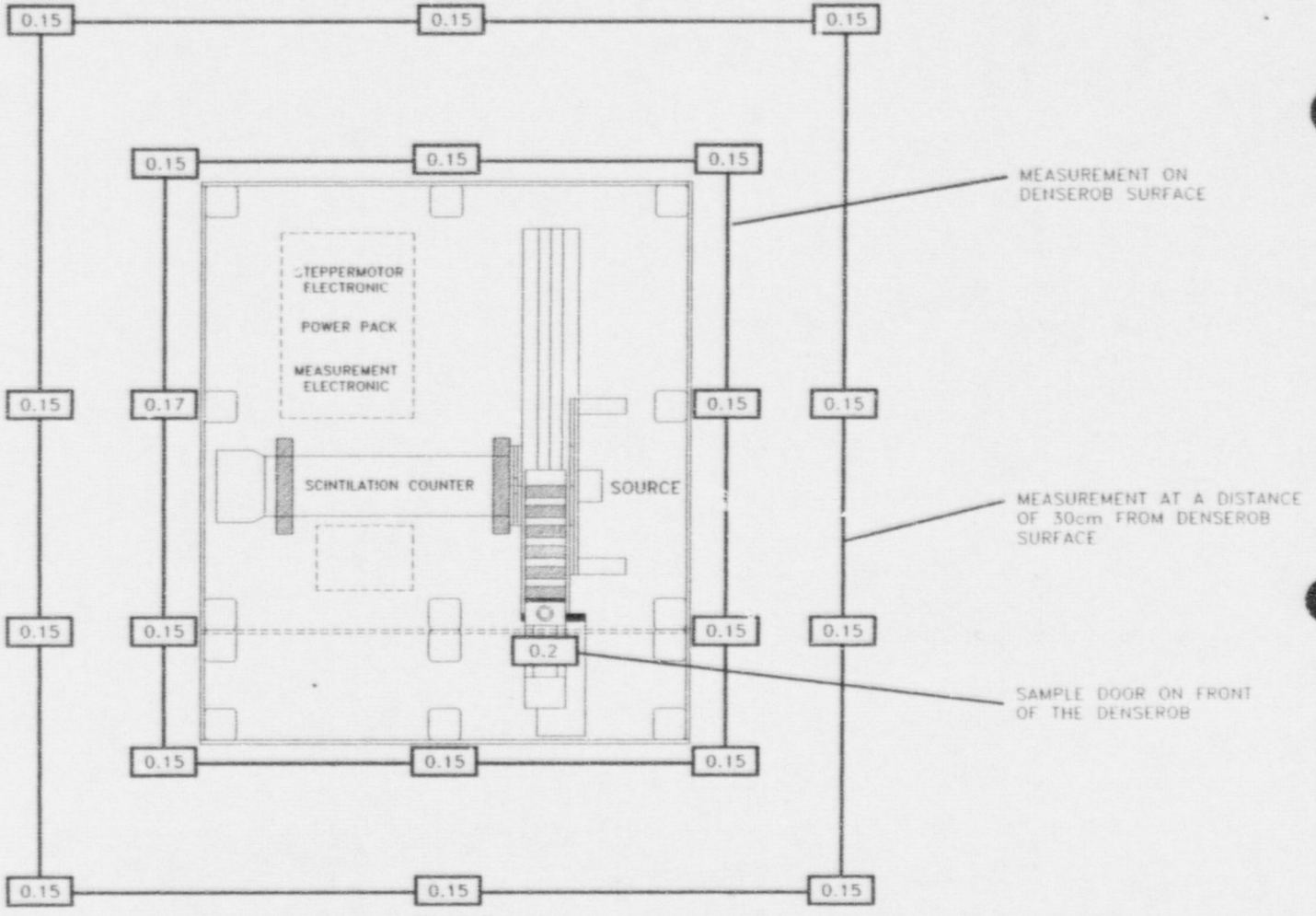
5. **SYSTEM MANAGER(S) AND ADDRESS:** U.S. Nuclear Regulatory Commission
Director, Division of Fuel Cycle and Material Safety
Office of Nuclear Material Safety and Safeguards
Washington, D.C. 20555

ATTACHMENT #1

DENSEROB RADIATION DOSE RATES

NULLEFFEKT = 0.15 µSv/h
BACKGROUND

ALL VALUES MEASURED IN
µSv/h WITH LB1200



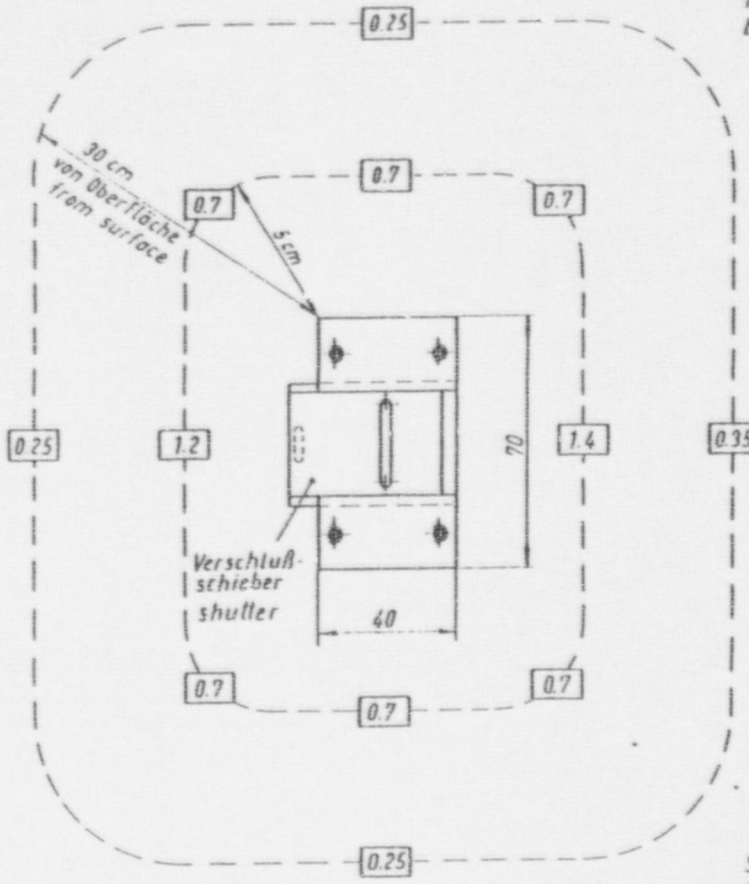
EWS
D-50765 KÖLN 71
CHORBUSCHSTR. 1
TEL.: 0221-5904862
FAX: 0221-5906164

DENSEROB

KUNDE	C. SCHENCK AG., DARMSTADT		
BEARBEITER: B. McQUEENIE		DATUM 9/94	BLATT
ZEICHNUNGS-NR: B-023			

ATTACHMENT #2

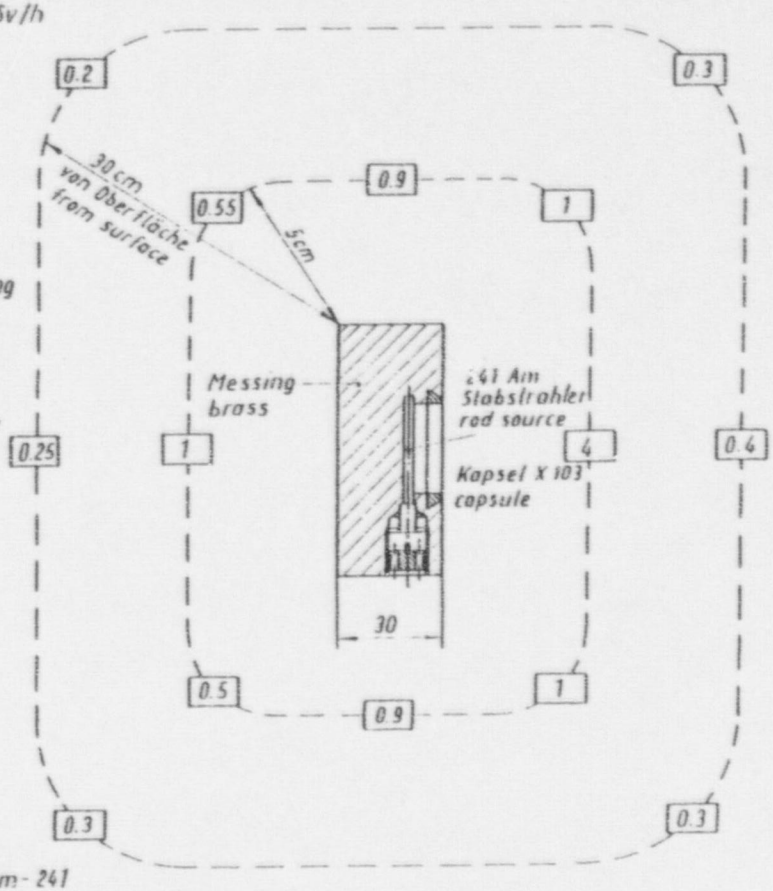
in 100 cm überall ≤ 0.2 µSv/h
everywhere
Nulleffekt ≈ 0.15 µSv/h
background



Abschirmung für
Dichteprofilmessung
von Spanplatten.

shielding for
measurement of
the density profile
of chipboard.

0.35



Strahler 3700 MBq Am-241
source

Alle Angaben in µSv/h gemessen mit LB 133 mit Zählrohr LB 6006.
All values measured in µSv/h with LB 133 including counter tube LB 6006

					Datum	Name	berthold
				Bearb.	31.3.88	Wa.	D 7547 Wildbad/Schwarzw.
				Gepr.			
Zust.	Änderungs-Nr.	Datum	Name	Benennung	Dosisleistung Radiation dose rates		

Zeichn.-Nr. (ref.) 21305.001
Klass.-Nr. — U-Art — Zust.
Ersatz für — Ersatz-Nr.
Format 3
Blatt-Nr.

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

PROGRAM CODE: 03214
STATUS CODE: 2
FEE CATEGORY: 3N 3P
EXP. DATE: 19931031
FEE COMMENTS: SERV & DIST 7/90
DECOM FIN ASSUR REQD: N

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: BERTHOLD SYSTEMS, INC.
RECEIVED DATE: 941116
DOCKET NO: 3020043
CONTROL NO.: 120805
LICENSE NO.: 37-21226-01
ACTION TYPE: AMENDMENT

2. FEE ATTACHED
AMOUNT: $1040.00
CHECK NO.: 1751

3. COMMENTS
Reference 120806

SIGNED Brown R. J.
DATE 11-17-94

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED /✓/)

1. FEE CATEGORY AND AMOUNT: 3N 3P $680

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT ✓
RENEWAL
LICENSE

3. OTHER

SIGNED
DATE 11/29/94

ENCLOSURE 2 PAGE 38