

## MATERIALS LICENSE

Amendment No. 29

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

301599

## Licensee

1. Dayton X-Ray Company/dba U.S.  
Inspection Services2. 705 Albany Street  
Dayton, OH 45408In accordance with letter dated  
July 1, 19963. License Number 34-06943-01 is amended in  
its entirety to read as follows:

4. Expiration Date March 31, 2001

5. Docket or  
Reference No. 030-057316. Byproduct, Source, and/or  
Special Nuclear Material7. Chemical and/or Physical  
Form8. Maximum Amount that Licensee  
May Possess at Any One Time  
Under This License

A. Iridium-192

A. Sealed radiography  
source as contained  
in a source assembly  
registered pursuant  
to 10 CFR 32.210 or  
an equivalent  
Agreement State  
Regulation (See  
Condition No. 12)A. As needed (See  
Condition No. 14)

B. Cobalt-60

B. Sealed radiography  
source as contained  
in a source assembly  
registered pursuant  
to 10 CFR 32.210 or  
an equivalent  
Agreement State  
Regulation (See  
Condition No. 12)B. As needed (See  
Condition No. 14)

C. Cesium-137

C. Sealed Source  
(AMSHM/Tech-Ops  
Mo. 77302)C. One source not  
to exceed 165  
millicuries

D. Cesium-137

D. Sealed Source(s)  
(AMSHM/Tech-Ops  
Mo. VD-HP)D. Not to exceed 225  
millicuries per  
source, 2 curies  
total

270054

9609270317 960826  
PDR ADOCK 03005731  
C PDR

COPY 24

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License Number  
34-06943-01

Docket or Reference Number  
030-05731

Amendment No. 29

- |   |   |  |
|---|---|--|
| <p>6. Byproduct, source, and/or special nuclear material</p> <p>E. Cesium-137</p> <p>F. Cesium-137</p> <p>G. Gadolinium-153</p> <p>H. Uranium depleted in uranium-238</p> | <p>7. Chemical and/or physical form</p> <p>E. Sealed Source(s)<br/>(AMSHM/Tech-Ops<br/>Mo. VD-HP)</p> <p>F. Sealed Source<br/>(Atomchem Type<br/>2000 Model CS2-10)</p> <p>G. Sealed Source(s)<br/>(AMSHM/Tech-Ops<br/>Mo. GDC-CY1)</p> <p>H. Solid Metal</p> | <p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>E. Not to exceed 125 millicuries per source, 2 curies total</p> <p>F. 1 source of 100 millicuries</p> <p>G. Not to exceed 1 curie, per source, 4 curies total</p> <p>H. Not to exceed 999 kilograms total</p> |
|---|---|--|

9. Authorized Use:

- A. and B. For use in a compatible gamma radiography exposure device registered pursuant to 10 CFR 32.210 or an equivalent Agreement State Regulation for performing industrial radiography and if applicable, in a compatible source changer (shipping container) registered pursuant to 10 CFR 32.210 or an equivalent Agreement State Regulation for source storage and exchange.
- C. For use in an Amersham Model 773 for calibration of the licensee's own radiation survey instruments, and survey instruments of Non-NRC licensees.
- D. To be used in Amersham/Gamma Industries Master Mind Model 2 for controlling the movement of Automatic X-ray Crawlers within pipelines during industrial radiographic operations. Source exchange shall be performed by the device manufacturer or other persons specifically authorized to perform such services.
- E. To be used in Amersham/Gamma Industries Model Tattletail 1 for controlling the movement of Automatic X-ray Crawlers within pipelines during industrial radiographic operations. Source exchange shall be performed by the device manufacturer or other persons specifically authorized to perform such services.

COPY

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- F. For use in EON Corporation Model 64-764 calibrator for calibration of the licensee's own survey instruments and survey instruments of Non-NRC Licensees.
- G. For use in Lixi Scope Model LSM82 X for non-medical fluoroscopy.
- H. For shielding in Radiographic exposure devices, source changers and collimators.

CONDITIONS

- 10. A. Licensed material may be used at 705 Albany Street, Dayton, Ohio and at temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.
- B. Licensed material may be stored at 2751 Werner Church Road NE, North Canton, Ohio.
- C. Licensed material listed in subitems C and F may only be used at the licensee's facility at 705 Albany Street, Dayton, Ohio.
- 11. A. Licensed material shall be used by, or under the supervision and in the physical presence of, individuals who have been trained in accordance with application dated March 28, 1985 and have been designated by the licensee's Radiation Protection Officer. The licensee shall maintain records of the individuals who have been designated as authorized users.
- B. The Radiation Protection Officer for the activities authorized by this license is Chris Small.
- 12. A. All newly manufactured radiographic exposure devices and associated equipment acquired after January 10, 1992 shall comply with the requirements of 10 CFR 34.20. The licensee shall maintain records to verify compliance with this Section of the NRC's Regulations.
- B. Notwithstanding the requirements of 34.20(a), and pursuant to 34.51, radiographic equipment authorized for use in radiographic operations under this license need not comply with torque criteria of Section 8.9.2(c) of American National Standard N432-1980.

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13. A. Pursuant to Section 34.25, 10 CFR 34, the licensee is authorized to perform tests for leakage or contamination of the sealed sources authorized by this license in accordance with procedures contained in application dated March 28, 1985.
- B. Notwithstanding the periodic leak test required by Section 34.25(b) of 10 CFR Part 34, such requirement does not apply to radiography sources that are stored and not being used. The sources excepted for this test shall be tested for leakage before use or transfer to another person.
- C. Sealed sources authorized for use other than radiography shall be tested as radiography sources in accordance with Section 34.25 of 10 CFR Part 34.
14. The licensee is authorized to receive, possess, and use sealed sources of iridium-192 or cobalt-60 where the radioactivity exceeds the maximum amount of radioactivity specified in this license provided:
  - A. Such possession does not exceed the quantity per source specified in Item 8 by more than 20% for iridium-192 or 10% for cobalt-60;
  - B. Records of the licensee show that no more than the maximum amount of radioactivity per source specified in this license was ordered from the supplier or transferor of the byproduct material; and
  - C. The levels of radiation for radiographic exposure devices and storage containers do not exceed those specified in Section 34.21 of 10 CFR Part 34.
15. Sealed sources containing licensed material shall not be opened.
16. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material to quantities below the minimum limit specified in 10 CFR 30.35(d) for establishing decommissioning financial assurance.
17. The licensee shall maintain records of information important to safe and effective decommissioning at 705 Albany Street, Dayton, Ohio per the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.
18. The licensee shall use collimators when making radiographic exposures.
19. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

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20. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

- A. Application dated March 28, 1995 (with attachments); and
- B. Letters dated August 9, 1985 (with attachments), September 17, 1985 (with attachments), September 24, 1990, July 1, 1996, July 26, 1996 (with attached letter dated July 25, 1996, and other attachments) and August 12, 1996.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date

8/26/96

By

James Mulloney  
Nuclear Materials Licensing Branch, Region III

COPY

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM  
AND  
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)  
INFORMATION FROM LTS

PROGRAM CODE: 03320  
STATUS CODE: 0  
FEE CATEGORY: 30  
EXP. DATE: 20010331  
FEE COMMENTS:  
DECOM FIN ASSUR READT N

R4

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED

APPLICANT/LICENSEE: DAYTON X-RAY CO., INC.  
RECEIVED DATE: 960716  
DOCKET NO: 3005731  
CONTROL NO.: 301599  
LICENSE NO.: 34-06943-01  
ACTION TYPE: AMENDMENT

2. FEE ATTACHED

AMOUNT: 450.  
CHECK NO.: 5035

3. COMMENTS

SIGNED  
DATE

*James Bell*  
7-16-96

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

1. FEE CATEGORY AND AMOUNT: 30 \$720

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

3. OTHER

SIGNED  
DATE

SC 8/9/96

1996 JUL 22 PM 1:52

AUG 26 1996

Log	Jul 13 III
Remitter	
Check No.	3055 / 1031
Amount	450 / 720
Fee Category	30
Type of Fee	Amo
Date Check Rec'd	7/22/96
Date Completed	8/9/96
By:	SC

## APPLICATION FOR MATERIAL LICENSE

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 9 HOURS. SUBMITTAL OF THE APPLICATION IS NECESSARY TO DETERMINE THAT THE APPLICANT IS QUALIFIED AND THAT ADEQUATE PROCEDURES EXIST TO PROTECT THE PUBLIC HEALTH AND SAFETY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0120), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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

## APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

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

## ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

## IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND,  
MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA,  
RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

LICENSING ASSISTANT SECTION  
NUCLEAR MATERIALS SAFETY BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO  
RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,  
SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION II  
101 MARIETTA STREET, NW, SUITE 2900  
ATLANTA, GA 30323-0199

## IF YOU ARE LOCATED IN:

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

MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION III  
801 WARRENVILLE RD.  
LISLE, IL 60532-4351

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

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TX 76011-8064

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

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

- ☐ A. NEW LICENSE  
☒ B. AMENDMENT TO LICENSE NUMBER 34-06943-1  
☐ C. RENEWAL OF LICENSE NUMBER \_\_\_\_\_

## 2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip code)

DAYTON X-RAY<sup>®</sup> INC.  
DBA U S INSPECTION SERVICES  
705 ALBANY STREET  
DAYTON, OH 45408

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

SEE ATTACHMENT #1

## 4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

CHRIS SMALL

TELEPHONE NUMBER  
(513) 228-9729

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

## 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 SEE ATTACHMENT #2

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

N/A

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

N/A

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

N/A

## 9. FACILITIES AND EQUIPMENT

N/A

## 10. RADIATION SAFETY PROGRAM

N/A

## 11. WASTE MANAGEMENT

N/A

## 12. LICENSE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY AMENDMENT AMOUNT ENCLOSED \$ 450.00

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

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

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

## CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

DANA J. FULTS Sec/TIC

## SIGNATURE

Dana Fults

## DATE

7-11-96

## FOR NRC USE ONLY

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

RECEIVED

JUL 16 1996

REGION III

301599

PM: 7-12-96

# US INSPECTION

## SERVICES

Formerly Dayton X-Ray  
Since 1938

July 1, 1996

Materials Licensing Section  
U. S. Nuclear Regulatory Commission, Region III  
801 Warrenville Road  
Lisle, IL 60532-4351

Reason: Amendment to License Number 34-06943-1

Reference: Dayton X-Ray, Inc./DBA U S Inspection Services

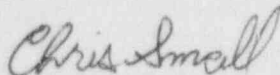
Please find herewith attached the following information (submitted in triplicate) for the above referenced amendment request:

- 1) Application for Material License (Amendment to License Number 34-06943-1)
- 2) Part 3, Attachment #1, this part of the amendment is being submitted to add 2751 Werner Church Road NE, North Canton, OH as a **storage** facility, **only**, for sources and devices that are utilized under the conditions of the above referenced license. The Dayton address 705 Albany Street, Dayton, OH, remains the only permanent location where radiography and associated operations are conducted.
- 3) Part 5, Attachment #2, this part of the amendment is being submitted to update Dayton X-Ray, Inc.'s approved Radioactive Material list to include sealed radiography sources contained in source assemblies, radiographic exposure devices for performing industrial radiography, and source changers for source storage and exchange registered pursuant to 10CFR 32.210 or an equivalent Agreement State Regulation. Additionally, we have included the addition of some special application equipment and our request of Depleted Uranium for 999 Kilograms.

Part 3 (i.e., North Canton added as a storage location) and Part 5 (i.e., update for radioactive material) are the only areas being submitted for amendment consideration. All other areas of the above referenced Materials License remain under the existing license conditions.

We trust the foregoing to be acceptable and please direct any questions or inquiries to my attention.

Respectfully submitted,  
Dayton X-Ray, Inc./DBA U S Inspection Services



Chris Small  
Radiation Safety Officer  
cc: Ed Graham/Gerry Aschinger/Managing Partners  
encl: Attachment #1 and #2

JUL 16 1996



APPLICATION FOR MATERIAL LICENSE

ATTACHMENT #1

ADDRESSES WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED:

- 1/ DAYTON X-RAY<sup>Co</sup> INC.  
DBA U S INSPECTION SERVICES  
705 ALBANY STREET  
DAYTON, OH 45408

NOTE: RADIOGRAPHY AND ASSOCIATED OPERATIONS ARE CONDUCTED  
AT THE DAYTON LOCATION.

- 2/ DAYTON X-RAY<sup>Co</sup> INC.  
DBA D & S TESTING  
*A Division of U S Inspection Services, Inc.*  
2751 WERNER CHURCH RD., NE  
NORTH CANTON, OH 44721-2160

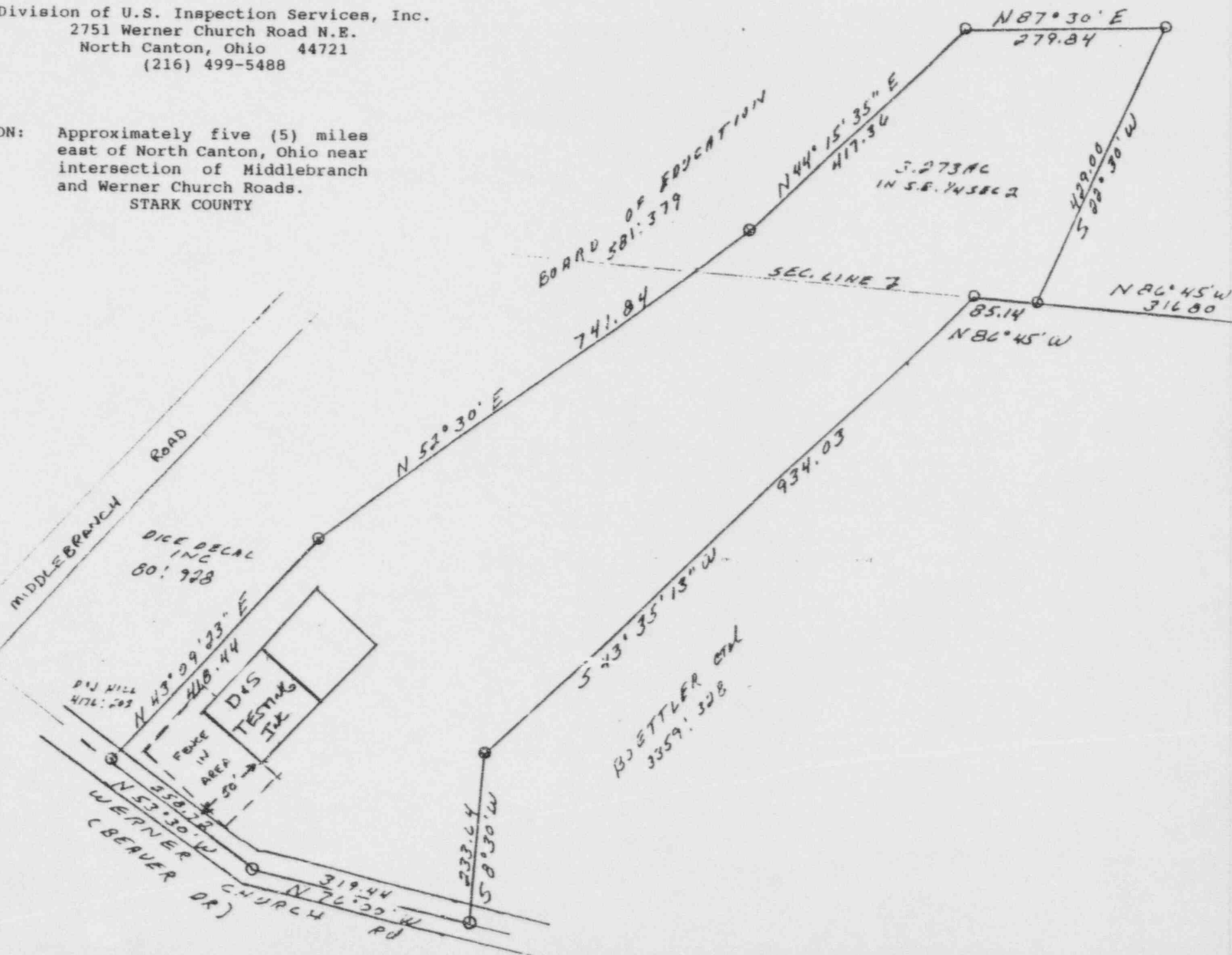
NOTE: ONLY STORAGE OF SOURCES AND DEVICES ARE CONDUCTED  
AT THE NORTH CANTON LOCATION.

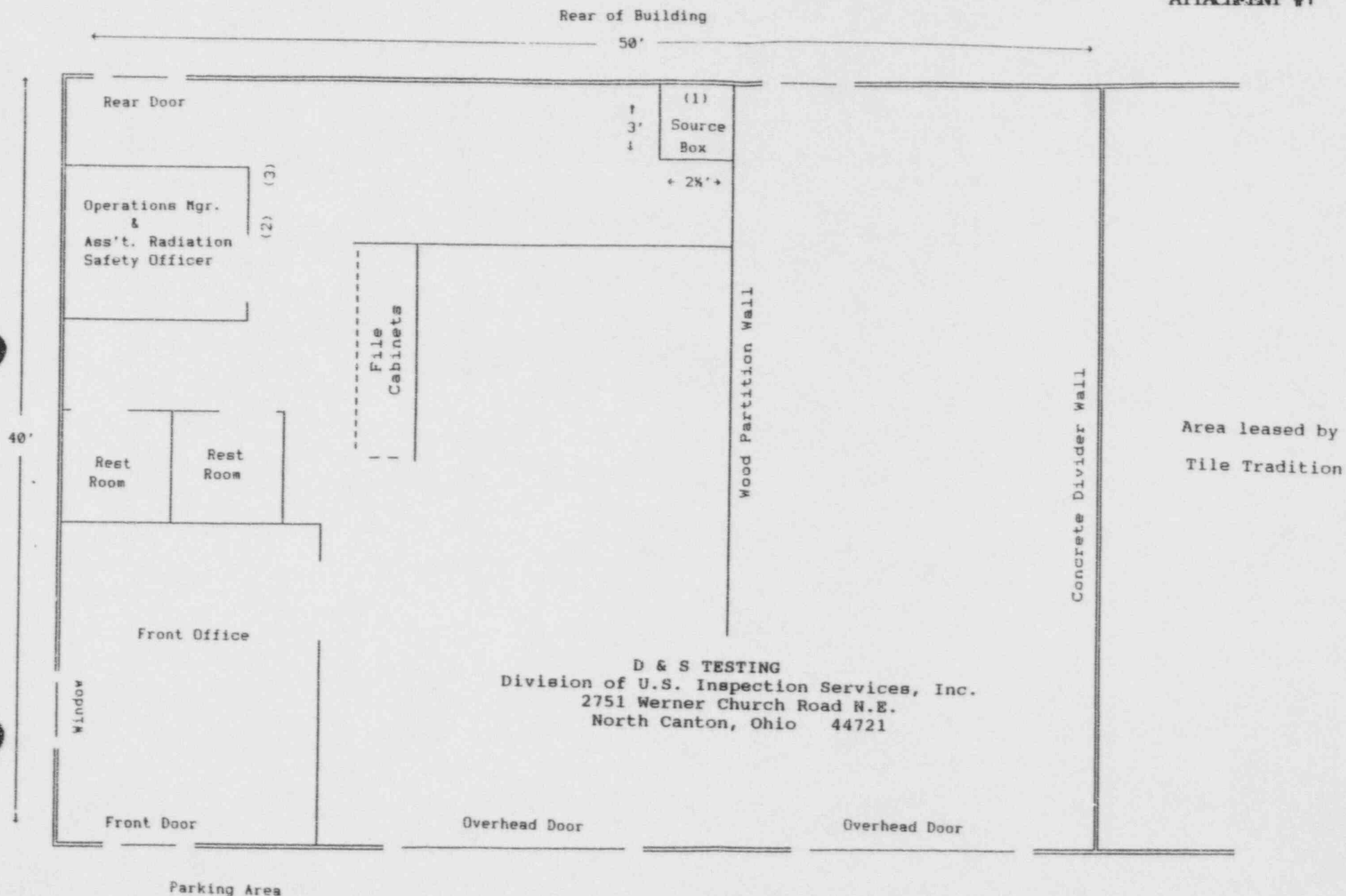
- 3/ TEMPORARY JOB SITES IN STATES SUBJECT TO NRC'S  
REGULATORY AUTHORITY

# D & S TESTING

Division of U.S. Inspection Services, Inc.  
2751 Werner Church Road N.E.  
North Canton, Ohio 44721  
(216) 499-5488

LOCATION: Approximately five (5) miles  
east of North Canton, Ohio near  
intersection of Middlebranch  
and Werner Church Roads.  
STARK COUNTY





- (1) Posted "Caution Radiactive Material"
- (2) NRC Form 3
- (3) Emergency Phone Numbers

## DESCRIPTION:

Building is a single story concrete and wood construction (100' x 40' base with 11'8" high ceiling) with wood rafter roof and concrete block divider walls

D & S Testing leases a 50' x 40' area at the south end of the building.

**ITEM #5 - RADIOACTIVE MATERIAL  
ATTACHMENT #2**

**SEALED SOURCES**

<b>RADIOACTIVE MATERIAL ELEMENT &amp; MASS NO.</b>	<b>CHEMICAL OR PHYSICAL FORM</b>	<b>MAXIMUM ACTIVITY</b>
A. Cobalt 60	Sealed Radiography Source Contained in a Source Assembly Registered Pursuant to 10 CFR 32.210 or an Equivalent Agreement State Regulation	No Single Source to Exceed 100 Curies and 1000 curies total.
B. Iridium 192	Sealed Radiography Source Contained in a Source Assembly Registered Pursuant to 10 CFR 32.210 or an Equivalent Agreement State Regulation	No Single Source to Exceed 150 Curies and 7500 Curies and 7500 Curies total.
C. Cesium 137	Amersham/Technical Operations Model 77302 Sealed Source	225 Millicuries
D. Cesium 137	Amersham/Technical Operations Model VD-HP Sealed Source	Not to exceed 225 Millicuries per Source and 2 Curies Total
E. Cesium 137	Amersham/Technical Operations Model VD-HP Sealed Source	Not to exceed 225 Millicuries per source and 2 Curies Total
F. Depleted Uranium	Metal	999 Kilograms
G. Gadolinium 153	Amersham Model GDC-CY1 Sealed Source	No Single source to exceed 1000 Millicuries and 4000 Millicuries Total



**ITEM #5 - RADIOACTIVE MATERIAL  
ATTACHMENT #2**

**RADIOGRAPHIC EXPOSURE DEVICES  
SOURCE CHANGERS**

**DEVICE MODEL NUMBER/SOURCE CHANGER NUMBER**

- A. For use in a compatible radiographic exposure device registered pursuant to 10 CFR 32.210 or an equivalent Agreement State Regulation for performing industrial radiography and in a compatible source changer registered pursuant to 10 CFR 32.210 or an equivalent Agreement State Regulation for source storage and exchange.
- B. For use in a compatible radiographic exposure device registered pursuant to 10 CFR 32.210 or an equivalent Agreement State Regulation for performing industrial radiography and in a compatible source changer registered pursuant to 10 CFR 32.210 or an equivalent Agreement State Regulation for source storage and exchange.
- C. For use in Amersham/Technical Operations Model 773 Calibrator for the calibration of radiation detection equipment.
- D. For use in Amersham/Gamma Industries Models Master Mind 1 and 2.
- E. For use in Amersham/Gamma Industries Model Tattle Tale.
- F. Shielding material.
- G. For use in Amersham/Sentinel Scope (LXI) LS82 Series.

## LICENSE FEE REQUIREMENTS

COPY  
LICENSE FEE AND DEBT COLLECTION BRANCH  
DIVISION OF ACCOUNTING AND FINANCE  
OFFICE OF THE CONTROLLER  
U.S. NUCLEAR REGULATORY COMMISSION  
WASHINGTON, DC 20555-0001DAYTON X-RAY COMPANY, INC.  
ATTN: CHRIS SMALL  
RADIATION SAFETY OFFICER  
705 ALBANY STREET  
DAYTON, OHIO 45408

## TYPE OF ACTION

- ☐
- NEW LICENSE
- 
- ☐
- RENEWAL OF LICENSE
- 
- ☒
- AMENDMENT TO LICENSE

## REQUESTED DATE

7-11-96

## LICENSE NUMBER

34-06943-01

## CONTROL NUMBER

301599

## I. APPLICATION FEE DUE

Your request for a licensing action is subject to the fee(s) in the category(ies) noted below in accordance with Section 170.31 of the enclosed Federal Register notice. Payment of fee is required prior to the issuance of the license, renewal, or amendment.

FEE CATEGORY	APPLICATION	RENEWAL	AMENDMENT
30	\$	\$	\$ 720.00
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$

FEE(S) DUE	\$	720.00
PAYMENT RECEIVED	\$	450.00
AMOUNT DUE	\$	270.00

☐ Your request was received without the prescribed application fee.☒ We received your Check No. 3055 in the amount of \$ 450.00. Payment of the additional fee noted above is required.☐ Your request will increase the scope of your license program. Therefore, your request is subject to the application fee(s) noted above. Refer to Section 170.31 and Footnote 1(d)(2).☐ Your license expired prior to the receipt of your application for renewal. Therefore, your request is subject to the application fee(s) noted above. Refer to Section 170.31 and Footnote 1(a).

MAKE PAYMENT OF THE FEE(S) TO THE U.S. NUCLEAR REGULATORY COMMISSION AND MAIL THE PAYMENT TO THE ADDRESS LISTED AT THE TOP OF THIS FORM. IF WE DO NOT RECEIVE A REPLY FROM YOU WITHIN 30 CALENDAR DAYS FROM THE DATE LISTED BELOW, WE SHALL ASSUME THAT YOU DO NOT WISH TO PURSUE YOUR APPLICATION AND WILL VOID THIS ACTION.

SIGNATURE - LICENSE FEE ANALYST  
Shirley Crutchfield  
SHIRLEY CRUTCHFIELDLFDCB  
7/25/96

LFDCB

## II. FEE NOT REQUIRED

☐ Enclosed is Check No. \_\_\_\_\_ which accompanied your request. The fee is not required because:☐ We received your Check No. \_\_\_\_\_ in payment of the fee.☐ The Licensing staff has informed us that your request is to be considered as a continuation of your request dated \_\_\_\_\_, Control No. \_\_\_\_\_.☐ Your request was combined, prior to review, with your \_\_\_\_\_ request, Control No. \_\_\_\_\_.

## III. CHECK RETURNED

☐ Enclosed is Check No. \_\_\_\_\_ which was returned to us by the bank for:

- ☐
- INSUFFICIENT FUNDS
- 
- ☐
- ACCOUNT CLOSED
- 
- ☐
- OTHER

MAIL THE REPLACEMENT CHECK TO THE ADDRESS LISTED AT THE TOP OF THIS FORM AND REFERENCE THE ABOVE CONTROL NUMBER.

## IV. LICENSE ISSUED WITHOUT THE REQUIRED FEE

☐ License No. \_\_\_\_\_, Amendment No. \_\_\_\_\_, issued on \_\_\_\_\_ was issued without the required fee being collected. The fee required is noted in Section I of this form.☐ The scope of your licensed program was increased. Therefore, your request is subject to the application fee(s) noted in Section I of this form. Refer to Section 170.31 and Footnote 1(d)(2).☐ Because of the urgency of your request, the license was issued without remittance of the prescribed fee noted in Section I of this form.Distribution: OC/DAF/RF  
Pending Fee File OC/DAF/SF(LF-3.2.7)  
LEARR R/F (2) Region 3

DATE

July 25, 1996

AUG 28 1996

Chris Small  
Radiation Safety Officer  
Dayton X-Ray Company/dba U.S.  
Inspection Services  
705 Albany Street  
Dayton, OH 45408

Dear Mr. Small:

Enclosed is Amendment No. 29 to your NRC Material License No. 34-06943-01 in accordance with your request.

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region III office at (630) 829-9887 so that we can provide appropriate corrections and answers.

Please be advised that your license expires at the end of the day, in the month, and year stated in the license. Unless your license has been terminated, you must conduct your program involving byproduct materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers; Inspections," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Notify NRC, in writing, within 30 days:
  - a. When the Radiation Safety Officer permanently discontinues performance of duties under the license or has a name change; or
  - b. When the licensee's mailing address changes (no fee is required if the location of byproduct material remains the same).
3. In accordance with 10 CFR 30.36(b) and/or license condition, notify NRC, promptly, in writing, and request termination of the license when you decide to terminate all activities involving materials authorized under the license.
4. Request and obtain a license amendment before you:
  - a. Change Radiation Safety Officers;

301599

- b. Order byproduct material in excess of the amount, or radionuclide, or form different than authorized on the license;
  - c. Add or change the areas of use or address or addresses of use identified in the license application or on the license; or
  - d. Change ownership of your organization.
5. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date of your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of byproduct material after your license expires is a violation of NRC regulations. A license will not normally be renewed, except on a case-by-case basis, in instances where licensed material has never been possessed or used.

In addition, please note that NRC Form 313 requires the applicant, by his/her signature, to verify that the applicant understands that all statements contained in the application are true and correct to the best of the applicant's knowledge. The signatory for the application should be the licensee or certifying official rather than a consultant.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in enforcement action against you. This could include issuance of a notice of violation, or imposition of a civil penalty, or an order suspending, modifying or revoking your license as specified in the General Policy and Procedures for NRC Enforcement Actions. Since serious consequences to employees and the public can result from failure to comply with NRC requirements, prompt and vigorous enforcement action will be taken when dealing with licensees who do not achieve the necessary meticulous attention to detail and the high standard of compliance which NRC expects of its licensees.

Sincerely,  
Original Signed By  
James R. Mullauer, M.H.S.  
Health Physicist  
Nuclear Materials Licensing Branch

License No.: 34-06943-01

Docket No.: 030-05731

Enclosure: Amendment No. 29

DOCUMENT NAME: M:\03005731.CL6

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	DNMS/RIH							
NAME	JRMULLAUER:jaw							
DATE	08/26/96							

OFFICIAL RECORD COPY



**US INSPECTION**  
**SERVICES**  
*Formerly Dayton X-Ray*  
Since 1938

August 12, 1996

Materials Licensing Section  
U.S. Nuclear Regulatory Commission Region III  
801 Warrensville Road  
Lisle, IL 60532-4351

Attn: Mr. James Mullauer

Subject: Addendum to the amendment to License Number 34-06943-1.

Dear James:

This letter is being submitted to you regarding clarification of our specific use of equipment and its safe operation.

I would like to request that in some instances, US Inspection Services would like to have the ability to calibrate survey meters for businesses that utilize meters to survey x-ray rooms, cabinet units, etc. US Inspection Services will not be calibrating survey meters for businesses licensed under the Nuclear Regulatory Commission. Based on the previously mentioned circumstances, US Inspection Services requests that the Nuclear Regulatory Commission lift the restriction from our license stating that US Inspection Services will only calibrate survey meters for our company.

Regarding the request for an Amersham Model 773 calibrator, we commit to using this device in accordance with Manufacturers Operations and the Emergency Procedures manual.

As for the request for Amersham/Gamma Industries' Mastermind Model 2 and Tattle Tale Model 1, we commit to using this device in accordance with Manufacturer's Operations and the Emergency Procedures manual. In addition, after speaking with the manufacturer the use of extremity badges was discussed. During our discussion he assured me that the extremity exposure badges were not necessary because the output at the surface of these exposure devices was no more than 200 MR/HR. The only cause of overexposure to extremities would be from improper use of this exposure device. We currently do not have a need for these devices and predict our use will be infrequent.

**RECEIVED**

**AUG 14 1996**

**REGION III**

*Pm: 8-13-96*

Materials Licensing Section  
U.S. Nuclear Regulatory Commission  
Page 2

At this time, US Inspection Services would like to request the use of the Mastermind Model 1 be deleted.

I would also like to clarify who the manufacturer of the LXI Scope, Model LSM82X used for non-medical Fluoroscopy. The manufacturer is Lixi, Inc. located at 1438 Brook Drive in Downers Grove, Illinois 60515. Again, US Inspection Services commits to using this device in accordance with Manufacturers Operations and the Emergency Procedures manual provided.

James, I hope the information provided will answer the questions you have. Please feel free to call me if you require additional information or if I can be of further assistance.

Respectfully submitted,



Chris N. Smail  
General Manager

CNS/tl

attachments (2)

## GAMMA INDUSTRIES TATTLE TALE MODEL 1

THIS EXPOSURE DEVICE WAS DESIGNED PRIMARILY AS A LOCATING DEVICE FOR THE X-RAY CRAWLER, SHOULD IT BECOME TROUBLED. IT WOULD LEND ITSELF TO OTHER APPLICATIONS WHERE BEAM RADIATION IS DESIRED. REGARDLESS OF THE APPLICATION, THE THOUGHT UPPERMOST IN MIND DURING ITS DESIGN, WAS SAFETY. UNFORTUNATELY, COMPLETE SAFETY CANNOT BE ACHIEVED THROUGH DESIGN ALONE; OPERATION IS JUST AS IMPORTANT. THEREFORE, WE ASK THAT YOU READ THESE OPERATING INSTRUCTIONS CAREFULLY AND FOLLOW THEM. REMEMBER, WHEN YOU OPERATE THIS UNIT, YOUR BODY IS ONLY A SHORT DISTANCE FROM THE EXPOSED 100 MILLICURIE CESIUM 137 SOURCE AND YOUR HAND IS ONLY INCHES AWAY. THIS IS A HAZARDOUS SITUATION AND DEMANDS GREAT CARE. UNLESS THE OPERATOR ACTS ACCORDINGLY, THE RESULT WILL ALMOST CERTAINLY BE AN OVEREXPOSURE.

GAMMA INDUSTRIES

## GAMMA INDUSTRIES TATTLE TALE MODEL 1

### OPERATING PROCEDURES

By referring to the cross-sectional drawing, you can see that the body of the unit is composed of four (4) basic parts:

- (1) A TUNGSTEN SHIELD - 2.4" DIAMETER X 3.262" LONG
- (2) A BRASS LOCK HOLDER - 2.4" DIAMETER X 1.5" LONG
- (3) A LOCK PLUNGER
- (4) SOURCE HOLDER

It is apparent that the only moving parts in the device are the source rod (or holder) and the lock plunger.

The device is safe for handling and storage only when the source holder is pushed into the device as far as it will go and the lock plunger will depress to the flush position. To unlock the device, (turn key and lift or pull out the lock plunger) grasp knurled end of source holder and pull out gently until source holder stops, and depress lock plunger to the locked position.

It is apparent then, that the unit will lock in either the safe or exposed position. It is very necessary that when the crawler device exits the pipe the first operation that is performed is to unlock the Tattle Tale, push in the source holder, and lock the device in the safe position.



PAGE 2

IT WILL BE NOTED THAT THE EXPOSURE PORT IS LOCATED AT 45° FROM THE LOCK PLUNGER SO THAT IT MAY BE UNLOCKED AND LOCKED WITHOUT EXPOSING THE FINGERS OR BODY TO THE BEAM OF RADIATION.

WHEN TRANSPORTING THE DEVICE FROM STORAGE TO WORK SITE WHEN IT IS NOT SECURELY ATTACHED TO THE CRAWLER UNIT, IT SHOULD BE CARRIED IN A CONTAINER LARGE ENOUGH SO THAT IT WOULD NOT FIT INTO THE OPERATOR'S POCKET. THIS PRECAUTION SHOULD BE OBSERVED SIMPLY TO PREVENT THE OPERATOR FROM BEING EXPOSED TO UNNECESSARY RADIATION.

#### MAINTENANCE AND INSPECTION

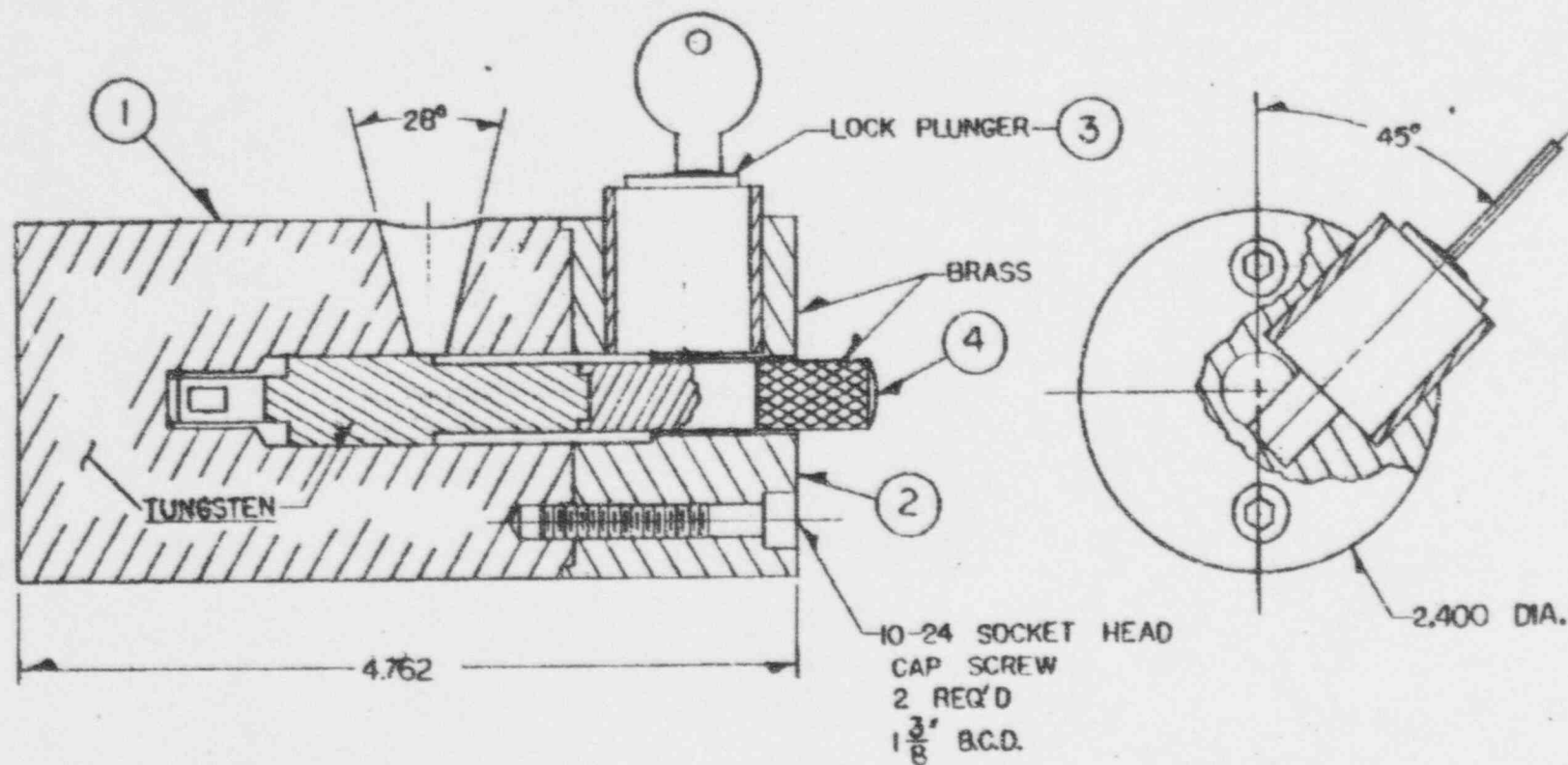
PERIODIC INSPECTION OF EXPOSURE DEVICES SHOULD BE PERFORMED AT INTERVALS NOT TO EXCEED NINETY (90) DAYS OR WHENEVER OPERATION OF THE DEVICE APPEARS TO BE IMPAIRED THROUGH ABUSE OR WEAR. HOWEVER, IT SHOULD BE EMPHASIZED THAT THIS APPLIES ONLY TO THE DEVICE. DO NOTHING TO THE SOURCE. IF THE SOURCE HOLDER APPEARS WORN OR BENT OR FAULTY IN ANY WAY, CONTACT GAMMA INDUSTRIES.

THE LOCK PLUNGER SHOULD BE INSPECTED AND CHECKED FOR EASE OF OPERATION. FOREIGN MATTER MAY AT TIMES FOUL THE PLUNGER AND MAKE IT INOPERABLE. THE LOCK PLUNGER MAY NOT RETRACT TO ITS FULLEST EXTENT WHICH IS 7/16". THIS WOULD PREVENT FREE TRAVEL OF THE SOURCE HOLDER IN AND OUT OF THE LOCK BOX.

THE LOCK PLUNGER MAY BE REMOVED BY REMOVING THE TWO (2) 8-32 SET SCREWS IN THE LOCK BOX. WASH THE LOCK PLUNGER IN SOLVENT TO

PAGE 3

REMOVE DIRT OR OTHER FOREIGN MATTER. LOCK MAY ALSO BE CLEANED  
AND LUBRICATED BY SPRAYING A LIGHT LUBRICANT (SUCH AS WD-40)  
INTO THE LOCK.



SECTION VIEW  
(LOCK PLUNGER REVOLVED)

END VIEW

1	TUNGSTEN SHIELD
2	LOCK HOLDER
3	LOCK PLUNGER
4	SOURCE HOLDER

GAMMA INDUSTRIES, B. R., L.A.

SCALE: FULL

APPROVED BY:

DRAWN BY WDL

DATE: 2-26-74

REVISED

TATTLE TALE MODEL NO. 1

DRAWING NUMBER

359

# Radiographic accessories

## X-ray crawler locating device

### **Ameritest™ Tattle Tale Model 1 exposure device code GEN 021**

This exposure device with a capacity of 100 mCi (3.7 GBq) Cesium-137 is designed primarily as a locating device for the x-ray crawler, should it become troubled. Device can also be used in other applications where a high energy gamma beam is needed. A locking safety mechanism (with key) prevents unauthorized use. The source is manually raised to the on position by unlocking safety mechanism, and raising source up to "on" position. Locking safety mechanism can be used to hold source in "on" position. Gamma radiation beam is horizontal (90° from locking mechanism). Beam angle is 28°.

#### **Features**

- **Lightweight**

Complete unit weighs only 11 lbs. (5 kg)

- **Self contained**

Manual operation by one top mounted source rod--no electrical control connections or guide tubes.

- **Safe**

Side mounted lock (with key) prevents unauthorized use. Source locked in shielded position when not in use.

- **Tungsten shield**

Effective tungsten shield provides maximum protection for weight utilized.

- **Directed side beam**

Beam points sideways when source is raised up from "shielded" position to "on" position. Lock can be used to secure source in "on" position.

- **Compact size**

Device can pass through a 5" (127 mm) x 2.6" (66 mm) opening.



Ameritest™ Tattle Tale Model 1, Part Number GEN 021

#### **Specifications**

**Model No./Part Number** Tattle Tale/GEN 021

**Nuclide:** Cesium-137 (0.662 MeV gamma)

**Nominal capacity:** 100 mCi (3.7 GBq) Cs-137

**Shielding material:** Tungsten body

**Device weight:** 11 lbs. (5 kg)

**Dimensions:** Height 4.8 inches (122 mm)

Width 2.4 inches (61 mm)

## GAMMA INDUSTRIES MASTER MINDER

## MODEL 2

OPERATING PROCEDURES

By referring to the cross-sectional drawing, you can see that the body of the unit is composed of four

(4) basic parts:

- (1) the uranium shield - item 1
- (2) the outer can or body - item 4
- (3) the lock box - item 9
- (4) the source holder - item 12

It is apparent that the source holder and lock plunger are the only moving parts, so that there should be a minimum of maintenance required. If handled properly and with care, the device will give good service for an indefinite period.

Let us assume that all preparations have been made of the weld joints, film in place, etc. Place the Master Minder at the predetermined spot on the pipe making sure that it is resting solidly and will not fall off. Unlock the device by turning the key clockwise and allowing the lock plunger to spring up. Grasp the source holder and pull out gently to the farthest extent and then move away from the unit so that no unnecessary radiation will be exposed to the body. You will note that the device will lock in the open or exposed position.



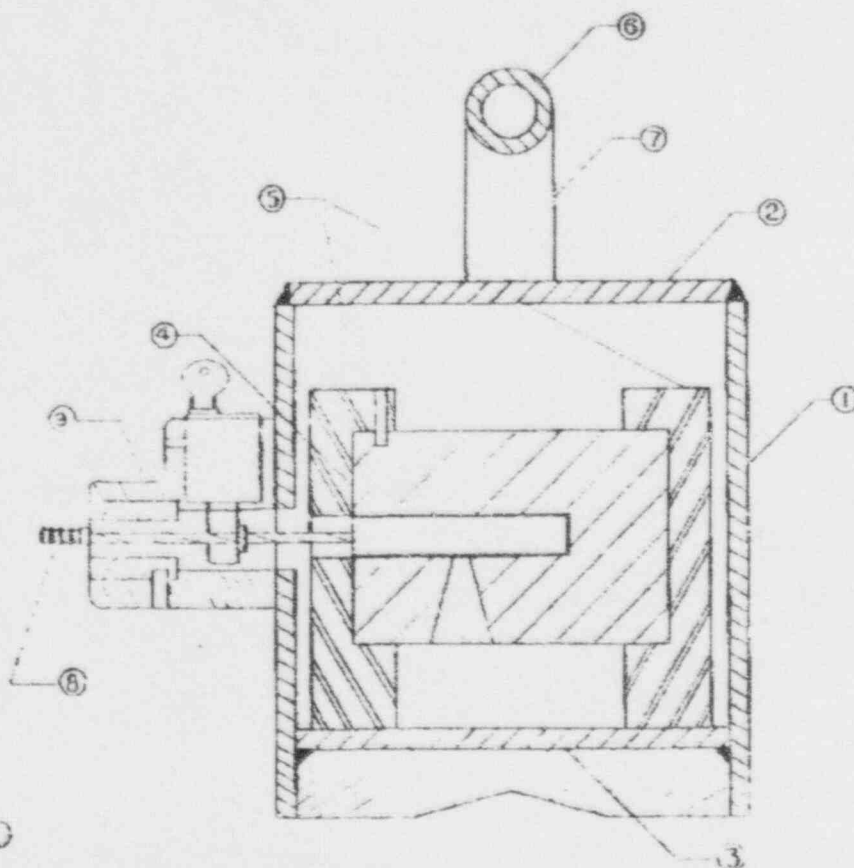
After the crawler has either stopped or started or at least has gone into the next function, simply push the source back into the safe position and lock the device by pushing down on the lock plunger. The Master Minder is now ready for the next control function.

#### MAINTENANCE AND INSPECTION

The unit should require very little maintenance during its lifetime.

Inspect the lock plunger for ease of operation. Foreign matter may at times foul the plunger and make it inoperatable. The lock plunger may not retract to its fullest extent which is 1/2". This would prevent free travel of the source in and out of the lock box.

The lock plunger may be removed by removing the two 8-32 set screws in the lock box. Wash the lock in solvent to remove dirt or other foreign matter. The lock may also be cleaned and lubricated by spraying a lubricant (such as WD-40) into the lock and working the lock plunger in and out.



ITEM NO	DESCRIPTION	PART NO
1	HOUSING	811-1001-265
2	TOP PLATE	811-1001-262
3	BOTTOM PLATE	811-1001-261
4	SOURCE SHIELD	801-1001-257
5	SHIELD SUPPORT BRACKET	811-1001-260
6	HANDLE GRIP	801-1001-259
7	HANDLE SUPPORT	801-1001-258
8	SOURCE HOLDER ASSY	801-1001-109
9	LOCKBOX ASSY	811-1001-108
10	SCR.-CAP-HEX SOC. SS 1/4-20x1/2	101-7015-001
11	RIVETS POP	111-7001-001
12	NAME PLATE	911-1001-266
13	SCR RND HD SLT SS 8/32x1/4	101-7010-001
14	"DANGER" DECAL	801-1001-214
15	PRIMER	450-7001-006
16	SUPPLEMENT NAMEPLATE	615 1002010

Δ DELETED "BOLL .375 D, 2.515 DP  
FOR MASTER MINDER II

Δ MASTER MINDER II SOURCE SHIELD  
PART NUMBER IS 801-1001-457 PER IIR

Δ MM II SOURCE HOLDER ASSY IS  
PART NUMBER IS 801-1001-171

Δ CHANGED DRAWING NUMBER 4-K-B1  
PREVIOUSLY 811-1001-110-HEAD ASSEMBLY

GAMMA INDUSTRIES B.R. LA		
SCALE: NONE	APPROVED BY:	DESIGNED BY: KJR
DATE: 3-24-76		REVISED BY: 4-K-B1
COMPLETE ASSEMBLY		
MASTER MINDER 2		811-1001-020

# Radiographic accessories

## X-ray crawler control device

### Amertest™ Master Minder Model 2 exposure device code GEN 020

This lightweight, manual operated gamma device is designed primarily as a control device for an x-ray crawler. It also can be used in applications where a high energy gamma beam is needed. The cylindrical lead lined device incorporates a convenient carrying handle, lock to prevent unauthorized use, and an aluminum covered bottom directed beam port. Once unlocked, a side mounted source rod is pulled out moving the 225 mCi (8.3 GBq) Cesium-137 gamma source from the shielded to operating position.

#### Features

- **Lightweight**

Complete unit weighs only 24 lbs. (10.9 kg). Easily carried to and from field site by one man.

- **Self contained**

Manual operation by only one rod. No external power supply is required.

- **Safe**

A lock is incorporated into device to prevent use by unauthorized personnel. Source remains locked in shielded position until unit is unlocked.

- **Easily shipped**

Device is a certified Type A container and can be shipped loaded under U.S.D.O.T. transport regulations.

- **Directed beam**

Beam points downward. Beam angle is 26°. Only directed where needed.

- **Small size**

Device can pass through a 9 3/4" (248 mm) x 7 3/4" (197 mm) opening.

#### Specifications

**Model No.** Part Number Master Minder GEN 020

**Nuclide:** Cesium-137 (0.662 MeV gamma ray energy)

**Activity:** 225 mCi (8.3 GBq)

**Shielding:** Depleted uranium, 14 lbs. (6.4 kg)

**Device weight:** 24 lbs. total (10.9 kg)

**Dimensions:** Height 9.5 inches (241 mm)

Width 7.5 inches (191 mm)



Amertest™ Master Minder Model 2, Part Number GEN 020

## CONVERSATION RECORD

TIME

DATE

9 a.m.

8/7/96

☐ VISIT☐ CONFERENCE☒ TELEPHONE☐ INCOMING☒ OUTGOING

NAME OF PERSON(S) CONTACTED OR IN CONTACT

ORGANIZATION (OFFICE, DEPT. ETC.)

TELEPHONE NO.

Chris Small, RSO

Dayton X-ray

513-228-9729

## SUBJECT

letter dated 7/26/96

## SUMMARY

I spoke to Chris to obtain the following additional information to complete his amendment request.

- ✓ 1. Commit to use the manufacturers operating and emergency procedures for the new equipment being requested.
- ✓ 2. Drop request for the master minder 1. There is no registry sheet.
- ✓ 3. Address lower extremity exposure and the need or no need for extremity monitoring.
- 4. Clarify that you intend to use the crawlers, not put them in storage incident to disposal.
- ✓ 5. Request Lixi LSM82X.
- 6. Clarify that you calibrate other peoples instruments (non-NRC licensees) as a service, not for profit.

This action is certified by \_\_\_\_\_

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

James R. Mullauer

ACTION TAKEN

SIGNATURE

TITLE

DATE

•J. Bruce Carri 08/07 09:02

DU Collimators -Reply

Items in Current Envelope  
MESSAGE

(Tab next item)

From: J. Bruce Carrico (JBC)  
To: NCD2.TTR:HMS3:CH1:CH2(JRM1)  
Date: Wednesday, August 7, 1996 9:59 am  
Subject: DU Collimators -Reply

Jim, we could find no readily apparent reason why the DU in collimators would not have to be licensed. Therefore, either the DU collimators could be possessed pursuant to the general license in 40.22, if the total quantity is less than 15 lbs, or the license should be amended to include the DU contained in collimators.

Ctrl-F4 Move to Folder;

1 Next (Read); 2 Delete; 3 Save; 4 Info; 5 Previous; 6 Forward; 7 Reply;



## CONVERSATION RECORD

TIME

DATE

2 p.m.

7/18/96

☐ VISIT☐ CONFERENCE☒ TELEPHONE☐ INCOMING☒ OUTGOING

NAME OF PERSON(S) CONTACTED OR IN CONTACT

ORGANIZATION (OFFICE, DEPT. ETC.)

TELEPHONE NO.

Ed Graham, manager  
Dayton X-ray  
513-228-9729

## SUBJECT

Amendment request dated 7/1/96

## SUMMARY

I spoke to Ed to obtain the following additional information:

1. ✓ Describe why the name on the letter head and application dated 7/11/96 is Dayton X-ray/DBA U S Inspection.
2. ✓ Need a letter from the owner of building which oks the storage of radioactive material.
3. ✓ Discuss security of the building, storage area and address key access.
4. ✓ Justify your request for any source and device under 32.210.
5. ✓ Provide the registry Nos. or registry sheets for the Master Mind 1 and the LXI source.
6. ✓ Describe what the pipeliners will be used for, i.e. controlling devices for x-ray crawlers, etc.

This action is certified by \_\_\_\_\_

## ACTION REQUIRED

Response due in 20 days.

NAME OF PERSON DOCUMENTING CONVERSATION

James R. Mullauer

SIGNATURE

DATE

## ACTION TAKEN

SIGNATURE

TITLE

DATE



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION III  
801 WARRENVILLE ROAD  
LISLE, ILLINOIS 60532-4351

July 16, 1996

Chris Small  
Radiation Safety Officer  
Dayton X-Ray Co., Inc.  
DBA US Inspection Services  
705 Albany Street  
Dayton, OH 45408

SUBJECT: ACKNOWLEDGEMENT OF CORRESPONDENCE  
( ☐ Letter ☒ Application ☐ Dated July 11, 1996 )

Dear Licensee:

In response to your request, we have completed the initial processing, which is an administrative review of your application for a(n):

☐ New License      ☒ Amendment      ☐ Renewal  
☐ Termination      ☐ Auth User (Amendment not required)      ☐ QMP Revision  
☐ Other \_\_\_\_\_

No administrative deficiencies were identified during this initial review. However, it should be noted that a technical review may identify omissions in the submitted information, technical issues that require additional information, or policy/technical issues that require coordination with headquarters or other NRC regional offices.

It appears that your request is routine (see 1-3 below, as applicable) and complete.

1. New and amendment actions are normally processed within 90 days, unless we find major deficiencies, or policy issues requiring central program office assistance.
2. Renewal actions are normally processed within 180 days, however, under timely filing (before expiration), you may continue to operate under your existing license.
3. Termination actions are normally processed within 90 days, unless confirmatory surveys following decontamination/decommissioning activities are involved.

A copy of your correspondence has been forwarded to our Licensing Fee and Debt Collection Branch (301/415-6097) for approval of the fee category and amount.

If you have a compelling safety or business-related reason for requesting expedited review, please contact the Materials Licensing Branch at (708) 829-9887. We will try to complete your request as soon as practicable. Any correspondence about this request should reference the control number.

Nuclear Materials Support Branch

Mail Control No. 301599  
License No. 34-06943-01

**US INSPECTION**  
**SERVICES**  
*Formerly Dayton X-Ray*  
Since 1938

July 26, 1996

Materials Licensing Section  
U.S. Nuclear Regulatory Commission Region III  
801 Warrensville Road  
Lisle, IL 60532-4351

Attn: Mr. James Mullauer

Subject: Explanation of changes regarding amendment to License Number 34-06943-1.

Dear James:

This letter is being submitted to you as explanation for changes made to our license. The primary reason for changing the name of our company from Dayton X-Ray to U S Inspection Services Inc. is to better encompass our complete line of nondestructive testing services. Many potential customers assumed by our prior name of Dayton X-Ray that our area of expertise was x-ray only. We are a full service inspection facility and in order to grow and be competitive in this industry the change of name was one of many areas we felt we must address.

The reason for the more generic list of exposure devices and radioactive sources in accordance with 10 CFR32.210 is to give us more latitude for the purchasing of said items. This will economically enhance our company by enabling us to purchase said items wisely. As I had previously mentioned over the telephone SPEC is going to manufacture sources that will fit our Amersham 660B Iridium sealed sources. We feel that this generic listing will also clean up our N.R.C. license.

We still have our Eon Corporation Model 64-764 calibrator for calibration of sources with a Cesium 137 sealed source Atochem Type 2000, model CS2-10.

The following is a list of equipment for storage only until it may be disposed of:

o A Radionics Model P60-30-2 Cobalt exposure device with a Gamma Industries Model R-15-A Sealed Source.

**RECEIVED**

**AUG 1 - 1996**

**AUG 01 1996**

**REGION III**

Corporate Headquarters

705 Albany Street • Dayton, OH 45408 • 513/228-9729 • Fax 513/228-4615

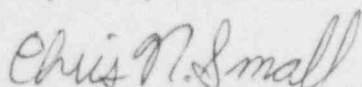
*JM: 8-2-96*

Materials Licensing Section  
U.S. Nuclear Regulatory Commission  
Page 2

- o A Gamma Industries Model Gammatron 50A Cobalt Exposure device with a Gamma Industries Model A-7-A Sealed Source.
- o A Gamma Industries Model Century S Iridium 192 Exposure device with an Amersham Model 848 Sealed Source.
- o Mastermind 1 and 2 and Tattletale are exposure devices and used in conjunction with an x-ray pipeline crawler device. Their function is primarily to stop the advancement of this device in mainline construction type projects.

I hope this will answer any questions you may have concerning our license amendment. If I can be of further assistance or you have additional questions, please do not hesitate to call me.

Respectfully submitted,



Chris N. Small  
General Manager

CNS/tl

attachments (5)

1. Correspondence/Canton, OH storage Landlord
2. Methods of securing Canton, OH facility
3. Device registry sheet for Mastermind 1 and 2
4. Device registry sheet for Tattletale
5. Device registry sheet for (LX1)LS82 series

John Klingaman  
2751 Werner Church Road, NE  
Canton, OH 44721

July 25, 1996

Materials Licensing Section  
U. S. Nuclear Regulatory Commission, Region III  
801 Warrenville Road  
Lisle, IL 60532-4351

Reason: Amendment to License Number 34-06943-1

Reference: Dayton X-Ray, Inc./DBA U S Inspection Services

I John Klingaman, John Klingaman, Lessor of property at 2751 Werner Church Road, NE, Canton, OH, 44721 to Dayton X-Ray, Inc., DBA D & S Testing, A Division of U. S. Inspection Services, Inc., the Lessee; have been informed and have full knowledge of Dayton X-Ray, Inc.'s, DBA D & S Testing, A Division of U S Inspection Services, Inc., storage of Radioactive Materials at the above referenced location.

We trust the foregoing to answer your inquiry.

Sincerely,

John Klingaman  
John Klingaman  
Lessor



# D & S TESTING

*A Division of U.S. Inspection Services, Inc.*

2751 Werner Church Road N.E.  
NORTH CANTON, OHIO 44721-2160  
(330) 499-5488

July 25, 1996

Materials Licensing Section  
U. S. Nuclear Regulatory Commission, Region III  
801 Warrenville Road  
Lisle, IL 60532-4351

Reason: Amendment to License Number 34-06943-1

Reference: Dayton X-Ray, Inc./DBA U S Inspection Services

Pursuant to your inquiry regarding security at the 2751 Werner Church Road, NE, location, please note the following:

- 1) All exterior doors are secured with bolt type locks.
  - a) Keys are issued to employees only.
  - b) Key control is maintained by management.
  - c) Locks are re-keyed annually or at intervals when security is in question.
- 2) All Radioactive Materials are stored in steel box secured with company coded lock.
  - a) Keys are issued to company Certified Radiation workers only.
  - b) Key control is maintained by management.

We trust the foregoing to satisfy your inquiry.

Respectfully submitted,  
D & S Testing, A Division of U S Inspection Services, Inc.



Carl R. Dichler  
President  
cc: C. Small, RSO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICENO.: NR-628-D-814-SDATE: 11/1/96PAGE 1 OF 5DEVICE TYPE: Control Device for X-Ray CrawlersMODELS: Masterminder 2MANUFACTURER/DISTRIBUTOR:Amersham Corporation  
(formerly Gamma Industries)  
40 North Avenue  
Burlington, MA 01803SEALED SOURCE MODEL DESIGNATION:Amersham Model X.8  
or VD (HP)ISOTOPE:Cesium-137  
Depleted UraniumMAXIMUM ACTIVITY:225 millicuries  
Shielding, 14 poundsLEAK TEST FREQUENCY: 6 monthsPRINCIPAL USE: (A) Industrial RadiographyCUSTOM DEVICE: \_\_\_\_\_ YES X NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE

NO.: NR-628-D-814-S

DATE:

PAGE 2 OF 5

DEVICE TYPE: Control Device for X-Ray Crawlers

DESCRIPTION:

The Model Masterminder 2 was originally manufactured by Gamma Industries as Master Minder Model 2 and is currently distributed by Amersham Corporation. It is designed to provide a fixed beam of radiation used primarily to control x-ray crawlers. A 0.5 inch deep "V" shape indentation facilitates placing the device on curved surfaces. The device may also be used in applications where a fixed radiation beam is desired.

The device measures 6 inches in diameter by 10 inches long (including handle). It consists of an outer aluminum housing, a depleted uranium shield, 2.875 inches in diameter by 3.7 inches long, a locking assembly and a source assembly. The source assembly consists of a brass source holder silver soldered to a 2 inch tungsten rod which, in turn, is silver soldered to a 3.25 inch stainless steel cable. A brass handling knob is silver soldered to the end of the stainless steel cable. A source stop, silver soldered to the stainless steel cable one inch from the tungsten rod, prevents the source assembly from being removed from the device.

A 28° conical beam port is bored into the depleted uranium shield and is located at the bottom of the shield in order to reduce the chance of exposure to the user. The shield is supported by means of 0.5 inch thick aluminum brackets. Polyurethane foam is used to fill the void between the depleted uranium shield and the outer housing.

The locking assembly consists of a lock box and a corbin lock plunger. The lock plunger, when engaged, secures the source in the fully shielded position. A lock insert located in the lock box prevents the source stop, and likewise the source, from leaving the device.

LABELING:

The manufacturer's label is attached to the device and states the isotope, activity, serial number, model number and date of manufacture of the source, the serial number and model number of the device and the radiation caution symbol. The device may also contain two additional labels which warn "Danger, Radioactive Materials" and state to notify Civil authorities if found.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE

NO.: NR-628-D-814-S

DATE:

PAGE 3 OF 5

DEVICE TYPE: Control Device for X-Ray CrawlersDIAGRAM:

None

CONDITIONS OF NORMAL USE:

The device is subject to environmental conditions typically associated with industrial radiography. These environs are typically extremely harsh to the device.

PROTOTYPE TESTING:

The Model Masterminder 2 was originally manufactured by Gamma Industries prior to 1987. The device has been in use for more than 10 years. Amersham Corporation claims that there are no known instances of incidents or reports of failure associated with this device. Amersham Corporation also claims that the device meets the requirements for Type A packages.

EXTERNAL RADIATION LEVELS:

Amersham reports the maximum external radiation levels, for Model Masterminder 2 1 when loaded with maximum activity are the following:

Source Shielded:

<u>Location</u>	<u>Exposure Rates (mR/hr)</u>	
	<u>Surface</u>	<u>50 mm from surface</u>
Top	17	1.0
Right	13	1.4
Front	11	1.3
Left	13	1.6
Rear	6	0.8
Bottom	62	1.6

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE

NO.: NR-628-D-814-S

DATE: FEB 2 1997

PAGE 4 OF 5

DEVICE TYPE: Control Device for X-Ray Crawlers

EXTERNAL RADIATION LEVELS: (Cont'd)

Source Exposed:

Distance from  
Device Exterior

Exposure Rate (mR/hr)

5 cm	6,570
30 cm	570
100 cm	60

QUALITY ASSURANCE AND CONTROL:

Amersham Corporation has supplied a quality assurance and control program which has been deemed acceptable for licensing purposes by the NRC. A copy of this program is on file with the Source Containment and Devices Branch of NRC.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- The device shall be distributed to persons specifically licensed by the NRC or an Agreement State.
- Handling, Storage, Use, Transfer, and Disposal: To be determined by the licensing authority.
- The device shall be leak tested at intervals not to exceed 6 months using techniques capable of detecting 0.005 microcurie of removable contamination.
- This registration sheet and the information contained within the references shall not be changed without the written consent of the NRC.

SAFETY ANALYSIS SUMMARY:

This device has been in use for over 10 years. It was originally registered for Gamma Industries in 1981 by the Louisiana Nuclear Energy Division and was deemed acceptable for distribution to specific licensees.



REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE

NO.: NR-628-D-814-S

DATE:

1992

PAGE 5 OF 5DEVICE TYPE: Control Device for X-Ray CrawlersSAFETY ANALYSIS SUMMARY: (Cont'd)

This certificate was created for administrative purposes. Based on the above and the information referenced below, we conclude that Amersham Corporation's Model Tattletale 1 is acceptable for specific licensing purposes.

REFERENCES:

Amersham Corporation has submitted the following supporting documents which are hereby incorporated by reference and are made a part of this registration document:

Amersham Corporation's letters dated August 5, 1991, and December 10, 1991, with enclosures thereto.

ISSUING AGENCY:

U.S. Nuclear Regulatory Commission

Date: \_\_\_\_\_

Reviewer: Thomas W. Rich

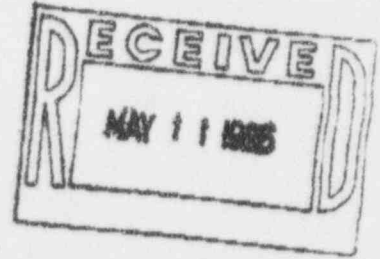
Date: \_\_\_\_\_

Concurrence: [Signature]



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

MAY 05 1995



Ms. Cathleen Roughan  
Amersham Corp  
40 North Ave.  
Burlington, MA 01803

Dear Ms. Roughan:

Based on the information and test data submitted in your application dated April 25, 1995, and subsequent letters, with enclosures thereto, we continue to conclude that the Model Tattletale 1 X-Ray Crawler is acceptable for licensing purposes in accordance with the conditions of the enclosed registration certificate (NR-628-D-817-S).

Please read over the registration certificate in its entirety and notify us immediately of any errors or omissions.

You are obligated to notify us promptly in writing should you decide to no longer offer service support for the product.

Please be aware that, as a holder of an NRC registration, you may be subject to the NRC's licensing and inspection fees in accordance with 10 CFR Part 170, and annual fees in accordance with 10 CFR Part 171. If you have any questions concerning the fee requirements, please contact the License Fee and Debt Collection Branch at (301) 415-7544.

If you have any questions, please contact me at (301) 415-7273 or Mr. Thomas Rich at (301) 415-7893.

Sincerely,

A handwritten signature in dark ink, appearing to read "Steven L. Baggett".

Steven L. Baggett, Section Chief  
Sealed Source Safety Section  
Source Containment and  
Devices Branch  
Division of Industrial and  
Medical Nuclear Safety  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: As stated

cc w/encl: SKimberley, LFDCB

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its Entirety)

No: NR-628-D-817-S

DATE: May 5, 1995

PAGE 1 OF 5

MODEL: Tattletale 1

MANUFACTURER/DISTRIBUTOR:

Amersham Corporation  
(formerly Gamma Industries)  
40 North Avenue  
Burlington, MA 01803

SEALED SOURCE MODEL DESIGNATION:

Amersham Model X.8  
or VD (HP)

ISOTOPE:

Cesium-137

MAXIMUM ACTIVITY:

125 millicuries (4.6 GBq)

LEAK TEST FREQUENCY: 6 months

PRINCIPAL USE: (A) Industrial Radiography

CUSTOM DEVICE: \_\_\_\_\_ YES \_\_\_\_\_ X \_\_\_\_\_ NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its Entirety)

No: NR-628-D-817-S

DATE: May 5, 1995

PAGE 2 OF 5

DESCRIPTION:

The Model Tattletale 1 was originally manufactured by Gamma Industries as Tattle Tale Model No. 1 and was currently distributed by Amersham Corporation. It is designed to locate x-ray crawlers which have become disabled inside pipes by scanning the exterior of the pipe with a survey meter. A 0.5 inch (1.3 cm) deep "V" shape indentation facilitates placing the device on curved surfaces. The device may also be used in applications where a fixed radiation beam is desired.

The device measures 2.4 inches (6.1 cm) in diameter by 4.7 inches (11.9 cm) long. It consists of a tungsten shield, 2.4 inches in diameter by 3.25 inches (8.25 cm) long; a brass lock holder, 2.4 inches in diameter by 1.5 inches (3.8 cm) long; a lock plunger with key lock; and a source assembly. The source assembly design was varied through time. While the dimensions remained the same, the materials of construction varied between devices. One assembly consists of a 0.5 inch (1.3 cm) diameter by 0.5 inch (1.3 cm) long stainless steel source holder secured to a 1.75 (4.4 cm) inch long tungsten rod which, in turn, is secured to a 1.75 (4.4 cm) inch long brass rod. The brass rod serves as a handle to position the source for use. In another application, it would be constructed completely of stainless steel with a tungsten insert for shielding. In all versions of the source rod the source may be secured in the source rod by either silver soldering or a roll pin. Amersham currently uses the roll pin application. A conical beam port, 0° - 28° as specified by user, is bored into the tungsten shield and is located 45° from the lock plunger in order to reduce the chance of exposure to the extremities or body of the user.

The lock plunger is used to either lock or unlock the source assembly. Two notches on the source assembly permit the source to be locked in the shielded or exposed positions. Rotation of the source assembly is prevented, while in the safe position, by means of a keyway located on the source assembly. The keyway also serves as a guide when moving the source to the exposed position.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its Entirety)

No: NR-628-D-817-S

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PAGE 3 OF 5

LABELING:

A label is attached to the side of the device and states the isotope, activity, serial number and model number of the source, serial number and model number of the device and the radiation caution symbol.

DIAGRAM:

See attachment 1.

CONDITIONS OF NORMAL USE:

The device is subject to environmental conditions typically associated with industrial radiography. These environs are typically extremely harsh to the device.

PROTOTYPE TESTING:

The Model Tattletale 1 was originally manufactured by Gamma Industries prior to 1987. The device has been in use for more than 15 years. Amersham Corporation claims that there are no known instances of incidents or reports of failure associated with this device.

EXTERNAL RADIATION LEVELS:

Amersham Corporation reports the maximum external radiation levels, for Model Tattletale 1 when loaded with maximum activity are the following:

Source Shielded:

<u>Location</u>	<u>Exposure Rates</u> <u>6 inches FROM surface</u>	
Top	3 mR/hr	(0.03 mSv/hr)
Side Surfaces	23 mR/hr	(0.23 mSv/hr)
Beam Port	23 mR/hr	(0.23 mSv/hr)
Bottom	16 mR/hr	(0.16 mSv/hr)

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its Entirety)

NO: NR-628-D-817-S

DATE: May 5, 1995

PAGE 4 OF 5

EXTERNAL RADIATION LEVELS (Cont.):

## Source Exposed:

Distance from  
Device ExteriorExposure Rate

5 cm  
30 cm  
100 cm

6,344 mR/hr (63.4 mSv/hr)  
365 mR/hr ( 3.7 mSv/hr)  
37 mR/hr ( 0.37 mSv/hr)

QUALITY ASSURANCE AND CONTROL:

Amersham Corporation has supplied a quality assurance and control program which has been deemed acceptable for licensing purposes by the NRC. A copy of this program is on file with the Source Containment and Devices Branch of NRC.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- The device shall be distributed to persons specifically licensed by the NRC or an Agreement State.
- Handling, Storage, Use, Transfer, and Disposal: To be determined by the licensing authority.
- The device shall be leak tested at intervals not to exceed 6 months using techniques capable of detecting 0.005 microcurie (185 Bq) of removable contamination.
- This registration sheet and the information contained within the references shall not be changed without the written consent of the NRC.



REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its Entirety)

No: NR-628-D-817-S

DATE: May 5, 1995

PAGE 5 OF 5

SAFETY ANALYSIS SUMMARY:

This device has been in use for over 15 years. It was originally registered for Gamma Industries in 1975 by the Louisiana Division of Radiation Control and was deemed acceptable for distribution to specific licensees.

This certificate was created for administrative purposes. Based on the above and the information referenced below, we continue to conclude that Amersham Corporation's Model Tattletale 1 is acceptable for specific licensing purposes.


REFERENCES:

Amersham Corporation has submitted the following supporting document which is hereby incorporated by reference and is made a part of this registration document:

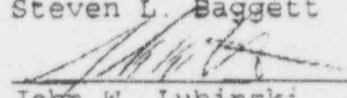
- Amersham Corporation's letters dated August 5, 1991, and December 10, 1991, April 14, 1995 and April 25, 1995, with enclosures thereto.

ISSUING AGENCY:

U.S. Nuclear Regulatory Commission

Date: May 5, 1995Reviewer: 

Steven L. Baggett

Date: May 5, 1995Reviewer: 

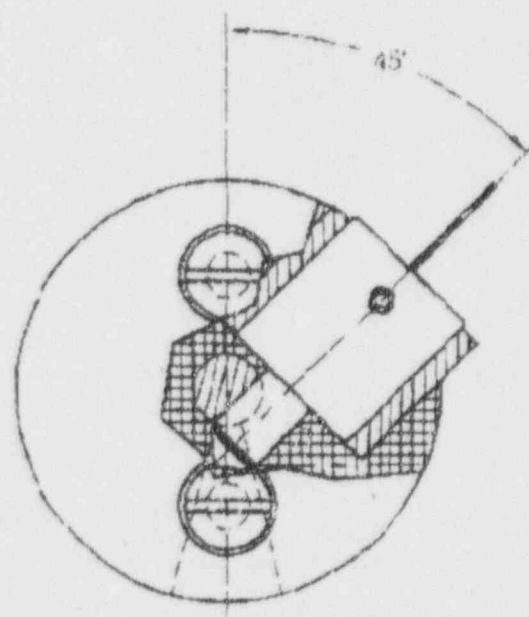
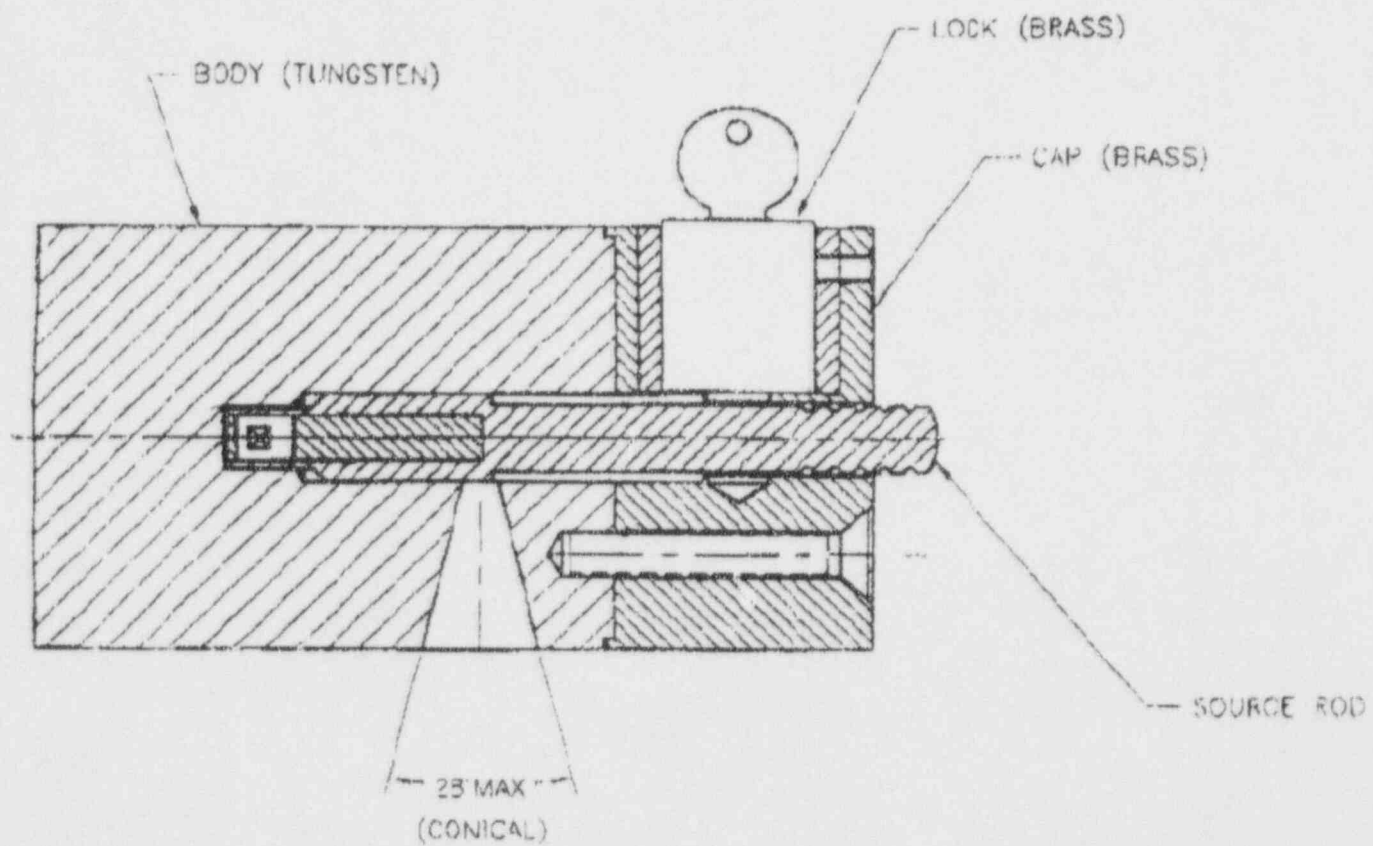
John W. Lubinski

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its Entirety)

NO: NR-628-D-817-S

DATE: May 5, 1995

ATTACHMENT 1



Tattletale X8 125 mCi  
MIA77302 15 2gms  
Capsule for 773  
4 165 mCi MIAReference GB/024/S-85  
Certificate Issue 2

# Certificate of Approval of Design for Special Form Radioactive Material

Title	
High Energy Gamma Source - Capsule X.8	
Drawing Nos and Specification References	
Assembly:	3A 52011 Issue C
Details:	3A 61900 Issue C
	3A 62009 Issue C
	3A 62010 Issue B
RSD/CTR/127 Dated 23 July 1981; QARS/DD/024/0795, Issue 1 Dated 21 July 95	
Q.A. Programme Ref: Amersham International's "Transport Safety Arrangements"	
Radioactive Material	Maximum Activity
Caesium 137, or	37 GBq
Radium 226, or	740 MBq
Barium 133	740 KBq

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.

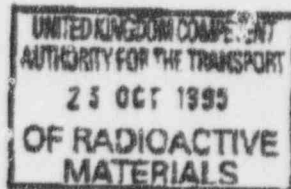
This Certificate of Approval applies only to the design as set out in the above named drawings and specifications submitted by Amersham International plc

- In the event of any alteration in the composition of the package, the package design or in any of the facts stated 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 alteration.

This Certificate Cancels all Previous Issues and is valid until 31 October 1998

COMPETENT AUTHORITY  
IDENTIFICATION MARK:

GB/024/S-85



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

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

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF SEALED SOURCE  
(AMENDED IN ENTIRETY)

NO: IL-422-D-101-S  
(Supersedes NR-422-D-101-S)

DATE: August 24, 1993

PAGE: 1 of 7

SOURCE TYPE: Portable Fluoroscope

MODEL: LS-80X, LS-82X, LSM-80X, or LSM-82X  
K - 1, 2, 3, etc.  
Models may be either hand held or bench mount units.  
LS - Units are for Industrial Applications  
LSM - Units are for Medical Applications

MANUFACTURER/DISTRIBUTOR:

Lixi, Inc.  
1438 Brook Drive  
Downers Grove, Illinois 60515

MANUFACTURER:

Nordion International, Inc., Model C-324  
Amersham Corporation, Model IMC.PZ  
Amersham Corporation, Model AMC.17 (For Am-241 only)  
Amersham Model GDC.CY1 (Capsule X2093 for Gd-153 only)

ISOTOPE:

Iodine-125  
Americium-241  
Gadolinium-153

MAXIMUM ACTIVITY:

500 millicuries  
375 millicuries  
1.0 Curies

LEAK TEST FREQUENCY:

6 months

PRINCIPAL USE:

(A) Industrial Radiography  
(B) Medical Radiography

CUSTOM SOURCE:

\_\_\_\_ YES      X NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF SEALED SOURCE  
(AMENDED IN ENTIRETY)

NO: IL-422-D-101-S

DATE: August 24, 1993

PAGE: 2 of 7

(Supersedes NR-422-D-101-S)

SOURCE TYPE: Portable FluoroscopeDESCRIPTION:

The Lixiscope is a hand held or bench top mountable, fully portable fluoroscope for real time x-ray imaging. It is based on a modular approach where the three major components are physically independent but held together by a housing and, therefore, components are easily replaceable. The three major components are the x-ray source in the stainless steel housing, the converter phosphor or scintillator, and the microchannel visible light image intensifier. The latter two components are contained within the scope body which may be constructed of stainless steel or aluminum. The sealed source is contained inside a collimated source housing. The collimation of the source varies depending on the distance between the source and the image intensifier and the diameter of the image intensifier. The source housing is constructed in such a fashion as to permit its attachment to the Lixiscope body only if it has been designed for the particular combination of distance bar length and detector diameter (Attachment 1). During operation, the sealed source may be unshielded by depressing the trigger mechanism. A red rod appears from the source housing, indicating the source is unshielded. When the trigger is released, the source is automatically returned to the shielded position. The Lixiscope is supplied in four different models. The LS-80X series has a stainless steel scope body and source housing. The LS-82X series has an aluminum scope body and a stainless steel housing. The LSM-80X series has a stainless steel scope body and source housing. An electronic audible time alarm that sounds every 10 seconds when the source is in the unshielded position has been added. The LSM-82X series has an aluminum scope body in the stainless steel source housing. The electronic audible time has also been added to this unit. The FDA has approved the use of the LSM series Lixiscope (1-125 only) by medical licensees.

There are two types of manually controlled source holder heads for use on the Lixi Imaging Scopes. The first is the Key Activated type which is used primarily on bench mounted Lixi systems. On this type of unit, a key is inserted into the control box on top of the pedestal below the source holder head. When the key is turned, it rotates a cam which raises the source to the active "ON" position. The key control units use the same source holder heads as do the hydraulic controlled units.

The key cannot be removed from the unit while the isotope is in the "ON" position. The unit must be turned "OFF" to remove the key. The users should always visually check the unit for the red "ON" indicator and the key position in order to determine whether the unit is "OFF" before placing their hands in the area of the radiation beam. With the exception of inserting and turning a key instead of pulling a trigger, the user should follow the manufacturer's Safe Operating Instructions for "Hydraulic Controlled Scopes."



REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF SEALED SOURCE  
(AMENDED IN ENTIRETY)

NO: IL-422-D-101-S  
(Supersedes MR-422-D-101-S)

DATE: August 24, 1993

PAGE: 3 of 7

SOURCE TYPE: Portable Fluoroscope

DESCRIPTION: (continued)

The T-Series of Lixi Source Holders are manually controlled isotope exposure devices for distribution with Iodine-125, Americium-241 and Gadolinium-153. This new design is designated by the Model No. TX<sub>1</sub>X<sub>2</sub> where T represents a type of head (manual), X<sub>1</sub> is an alphabetic letter that represents the isotope (such as I-Iodine-125, A-Americium-241, and G-Gadolinium-153), and X<sub>2</sub> is a number which represents a different mounting in collimation designs. These heads are designed to turn "ON" when you press down and rotate a handle ninety degrees. This handle is located on top of the holder. When the unit is in the "ON" position, the blade of the handle and the arrow indicator engraved on it will point at the Lixi Imaging Assembly. There is also a label on the source holder head with the "ON" and "OFF" positions marked on it. After moving the isotope to the "ON" position, the user can turn "ON" the detector by pressing the rocker switch on the viewing side of the handle assembly. When the rocker switch is in the "ON" position, an alarm will beep every ten seconds to alert the user that the electronics are on even though the isotope source may be turned off.

When the unit is in the "ON" position, the padlock hole will be blocked. The unit can only be padlocked when the control handle has been returned to the "OFF" position.

The users should always visually check the handle position to determine whether the unit is "OFF" before placing their hands in the area of the radiation beam. With the exception of rotating the control handle, the T-Series Lixi Source Holder heads should be used in accordance with the manufacturer's Safe Operating Instructions.

The Lixiscope is powered by dry cell batteries in the handle. A lock is provided to prevent the source from being inadvertently put in the unshielded position, and the scope is stored in the locked transportation case.

The Gadolinium-153 (Gd-153) source is provided in TGA-series source housing and will only interchange with source heads on Lixi Imaging Scopes that have been designed to use Gd-153 by Lixi (see Attachment 1). Lixi Imaging Scopes designed to use Gd-153 source holders are identified by a "G" suffix after the model number of the scope (such as LS-82-2096). Gd-153 T-Series source holders follow the same model numbering system as do the I-125 and Am-241 holders (such as TG42).



REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF SEALED SOURCE  
(AMENDED IN ENTIRETY)

NO: IL-422-D-101-S  
(Supersedes NR-422-D-101-5)

DATE: August 24, 1993

PAGE: 4 of 7

SOURCE TYPE: Portable Fluoroscope

DESCRIPTION: (continued)

On hydraulically controlled units the manufacturer indicates that remote or secondary control mechanisms for Lixiscopes can be added without any increase in radiation exposure danger. Lixi, Inc. has evaluated four basic methods of remotely controlling a Lixi source holder head on a Lixiscope. These include hydraulic actuated pistons, air actuated solenoids, electromechanical solenoids, and manual cable controls.

LABELING:

The Lixiscope is labeled to meet the requirements of 32 Ill. Adm. Code 330.280(d)(1)(C) (10 CFR 32.51) or 32 Ill. Adm. Code 340.2030 (10 CFR 20.203). It is also labeled to warn the user to keep his hands out of the beam. As for the newer models, the labels will be similar to that now used on Lixiscopes with the proper radionuclide included.

DIAGRAMS:

See Attachments 2 and 3.

CONDITIONS OF NORMAL USE:

The Lixiscope is intended for use as a portable fluoroscope. The device has both industrial and medical users and is designed to withstand the rigors of normal handling associated with those environments.

The Lixiscope is functional from -20°C to +65°C. However, the normal temperature operating range is 0°C to 40°C because this is the range the average human user would normally tolerate.

PROTOTYPE TESTING:

According to the device manufacturer, the Lixiscope has been subjected to and passed a series of tests based on the draft ANSI Standard N432. The type of tests done included shielding efficiency test, horizontal shock test, vertical shock test, accidental drop test and endurance test. All tests were as specified by ANSI except for the accidental drop test. Lixi, Inc., drop tested from 5.5 meters instead of 9 meters. We consider the Lixi, Inc., drop test to be adequate since the exposure rate as specified in Section 8.4.1 of ANSI N432 cannot be exceeded regardless of the condition of the device shielding. The new source holder designs have also been tested to the same tests prescribed above and maintained containment integrity.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF SEALED SOURCE  
(AMENDED IN ENTIRETY)

NO: IL-422-D-101-S

DATE: August 24, 1993

PAGE: 5 of 7

(Supersedes NR-422-D-101-S)

SOURCE TYPE: Portable FluoroscopeEXTERNAL RADIATION LEVELS:

See attachments 4, 5, and 6 for a listing of dose rates at various distances from the source housing.

QUALITY ASSURANCE AND CONTROL:

The Nuclear Regulatory Commission (NRC) has reviewed Lixi, Inc.'s quality assurance and control program and has found it acceptable. A copy of the program is also on file with the Illinois Department of Nuclear Safety.

LIMITATIONS AND OTHER CONSIDERATIONS OF USE:

- Distribution - The Lixiscope shall be distributed only to persons specifically licensed under 32 Ill. Adm. Code 330 (10 CFR 30) or 32 Ill. Adm. Code 335 (10 CFR 35) or equivalent provisions of the U.S. NRC, an Agreement State, or a Licensing State.
- Training Requirements - The Lixiscope should be used by or under the direct supervision of persons who, as a minimum, have successfully completed the Lixi, Inc., training program or an equivalent NRC, Agreement State, or Licensing State accepted training program.
- Leak Testing - The Lixiscope shall be leak tested at intervals not to exceed 6 months using techniques capable of detecting the presence of 0.005 microcurie of removable contamination.
- Sealed Source Installation Removal or Maintenance of Source Housing Assembly - These operations shall be performed only by Lixi, Inc. or other persons specifically licensed to do so.
- Inventory Control Program - The licensee shall develop an inventory control program to maintain the accountability of the licensee's Lixiscopes and document by record, the receipt, transfer, use, and disposal of all Lixiscopes of the license. The physical inventory shall be made at six-month intervals and records should be retained for inspection by Illinois Department of Nuclear Safety.
- Source Housing Assembly, Installation, and Removal - Since the sealed source is secured in the assembly and is fully shielded, the licensee may perform installation and removal of the integral assembly in accordance with instructions in the Lixi, Inc. instruction manual.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF SEALED SOURCE  
(AMENDED IN ENTIRETY)

NO: IL-422-D-101-S

DATE: August 24, 1993

PAGE: 6 of 7

(Supersedes NR-422-D-101-S)

SOURCE TYPE: Portable Fluoroscope

LIMITATIONS AND OTHER CONSIDERATIONS OF USE: (continued)

- Disposal - Unserviceable or unwanted source housing assemblies containing radioactive sources shall be returned to Lixi, Inc., the sealed source manufacturer, or other persons specifically licensed to receive the unit.
- Licenses for Industrial Uses of the Lixiscope - Should specifically prohibit its use on humans or animals. Only licensed physicians or veterinarians will be permitted to use a Lixiscope for these purposes.
- Am-241 and Gd-153 - For industrial use distribution only.
- Useful Life - The useful life of the Gd-153 source is approximately two (2) years. The useful life of the Am-241 source is approximately seven (7) years. The useful life of the I-125 source is approximately 8 months.
- This registration sheet and the information contained therein shall not be changed without the written consent of the Illinois Department of Nuclear Safety.

SAFETY ANALYSIS SUMMARY:

Based on our review of the information and test data contained in the references stated below, we conclude that the Lixi, Inc. Lixiscope is acceptable for licensing purposes in accordance with the terms and conditions of this certificate of registration.

When used by trained personnel in accordance with the manufacturer's instructions, it is unlikely that any person will be exposed to dose or dose commitments in excess of those specified in 32 Ill. Adm. Code 340 (10 CFR 20). Furthermore, the sealed source cannot be removed from its shielded housing without special tools and based on prototype test results the device is expected to withstand accident conditions likely to occur during transportation, storage, or use.

If the device should fall into the hands of untrained personnel either through theft or loss, it is unlikely to result in personal dose or dose commitment levels in excess of the limits specified in 32 Ill. Adm. Code 340 (10 CFR 20). Factors which limit potential exposure are: the device and carrying case are provided with locks which prevent unshielding of the source; the device and carrying case are clearly labeled as to their radioactive content; and the sealed source cannot be placed in its unshielded position without a key to unlock the device and special tools to remove the pin securing the source.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF SEALED SOURCE  
(AMENDED IN ENTIRETY)NO: IL-422-D-101-S DATE: August 24, 1993  
(Supersedes NR-422-D-101-S)

PAGE: 7 of 7

SOURCE TYPE: Portable Fluoroscope

## REFERENCES:

The following documents for the Lixiscope models are hereby incorporated by reference and are made a part of this registry document:

- Lixi, Inc. letters dated September 19, 1980, October 30, 1980, February 2, 1981, February 9, 1981, March 3, 1981, January 28, 1983, March 25, 1983, November 16, 1984, November 20, 1984, December 14, 1984, June 6, 1985, June 23, 1993, July 23, 1993 and August 4, 1993 with enclosures thereto.
- Supersedes NRC Registry Document No. NR-422-D-101-S dated July 25, 1985.

ISSUING AGENCY: Illinois Department of Nuclear Safety

DATE: 8-24-93 REVIEWED BY: *[Signature]*DATE: 8/26/93 CONCURRENCE: *[Signature: Joseph G. Klingner]*

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF SEALED SOURCE  
(AMENDED IN ENTIRETY)

NO: IL-422-D-101-S      DATE: August 24, 1993  
(Supersedes NR-422-D-101-S)

ATTACHMENT 1

SOURCE TYPE:      Portable Fluoroscope

All Lixi Source Holders are designed with a unique mounting system that allows only correct holder types to be mounted on a scope. Thus, only holders for LS-82-209 units will mount on LS-82-209 units. For example, there is a control pin on the scope housing that mates with a hole in the source holder so that one cannot interchange a holder from an LS-82-209 with an LS-82-205 or an LS-82-100 unit. Also, a Gadolinium-153 T-Series holder will not interchange with T-Series holders for either Iodine-125 or Americium-241. T-Series holders for each of these isotopes will only mount on Lixi Imaging Scopes designed for their specific energy outputs.

INTERCHANGEABILITY CHART

FOR IODINE-125 SOURCES ONLY

<u>Hydraulic Models</u>		<u>T-Series Models</u>
31	=	TI31
32	=	TI32
42	=	TI42
62	=	TI62
82	=	TI82

The following isotopes and their T-Series source holders are not interchangeable with any hydraulic model source holders.

FOR AMERICIUM-241 SOURCES

T-Series Models<sup>1</sup>

TA31 = Used on Scopes with 3" source to screen distance.

T-Series Models<sup>2</sup>

TG42 = Used on Scopes with 4" source to screen distance.

TG62 = Used on Scopes with 6" source to screen distance.

TG132 = Used on Scopes with 13" source to screen distance.

<sup>1</sup> Americium-241 is only provided in a TA31 holder and will only mount on Lixi Imaging Scopes with 3-inch openings that have been designed for Am-241 use.

<sup>2</sup> Gadolinium-153 is currently provided in T-Series holders that are collimated for several different distances. Holders for distances other than listed above are available on special order from the factory.



REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF SEALED SOURCE  
(AMENDED IN ENTIRETY)

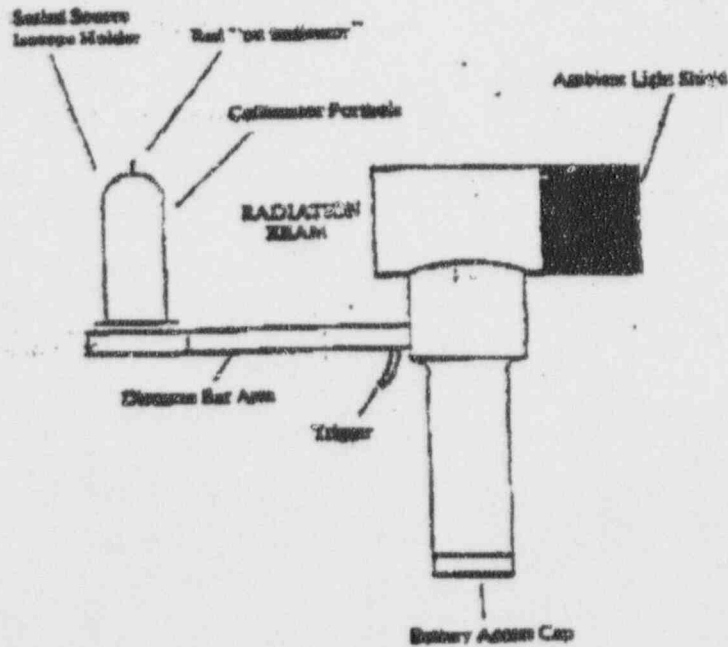
NO: IL-422-D-101-S  
(Supersedes NR-422-D-101-S)

DATE: August 24, 1993

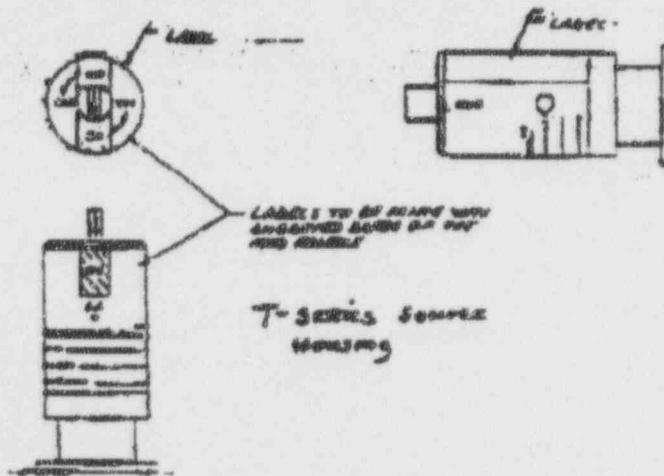
ATTACHMENT 2

SOURCE TYPE: Portable Fluoroscope

BASIC LIXISCOPE



T-SERIES SOURCE HOUSING





REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF SEALED SOURCE  
(AMENDED IN ENTIRETY)

NO: IL-422-D-101-S

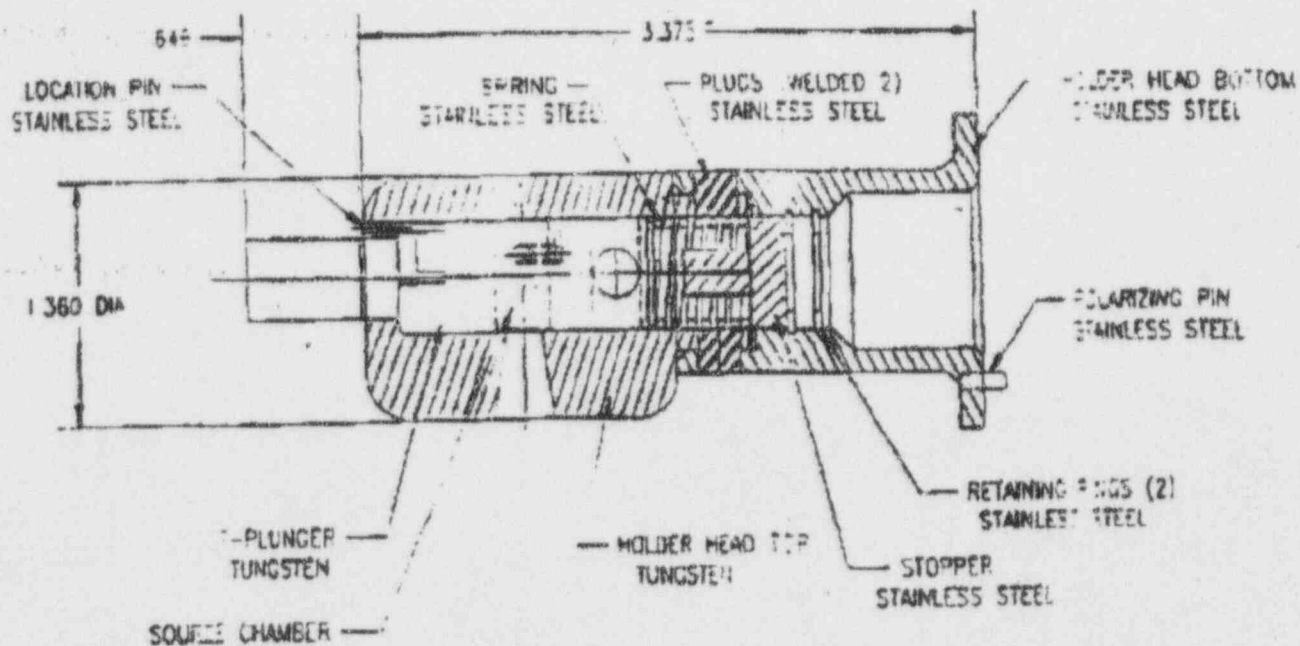
DATE: August 24, 1993

ATTACHMENT 3

(Supersedes NR-422-D-101-S)

SOURCE TYPE: Portable Fluoroscope

Gd-153 SOURCE HOLDER



All units in inches