NRC FORM 374
(7-94)

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Amendment No. 14

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.

397777

Licensee	
1. E.I. DuPont de Nemours & Co. Inc.	In accordance with application dated October 24, 1994 3. License Number 34-02962-02 is renewed in its entirety to read as follows:
2. P. O. Box 89 Circleville, OH 43113	4. Expiration Date March 31, 2007
	5. Docket or Reference No. 030-13909

6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum Amount that Licensee May Possess at Any One Time Under This License
A. Krypton-85	A. Sealed sources (American Atomic Corp. Model kr85c, kr85e, kr85j and kr85m; or NEN Model NER586; or Amersham Corp. Model kac.d2)	A. No single source to exceed 1000 millicuries
B. Krypton-85	B. Sealed sources (LFE Model S-70A)	B. No single source to exceed 1200 millicuries
C. Strontium-90	C. Sealed sources (3M Co. Model 3FIV)	C. No single source to exceed 50 millicuries
D. Cesium-137	D. Sealed sources (In-Val-Co Model A-00237 or 3M Co. Model 4F6S)	D. No single source to exceed 350 millicuries
E. Cesium-137	E. Sealed sources (Kay-Ray Model 7700 series)	E. No single source to exceed 200 millicuries
F. Cesium-137	F. Sealed sources (Ohmart Model No. A-2102)	F. No single source to exceed 50 millicuries
G. Cesium-137 280071	G. Sealed sources (3M Co. Model 4F6S)	G. No single source to exceed 300 millicuries

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
34-02962-02

Docket or Reference Number
030-13909

Amendment No. 14

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
H. Cesium-137	H. Sealed sources (In-Val-Co Model A-00237 or 3M Co. Model 4F6S)	H. No single source to exceed 350 millicuries
I. Promethium-147	I. Sealed sources (Amersham Corp. Model No. PHB.D1)	I. No single source to exceed 540 millicuries
J. Promethium-147	J. Sealed source (Amersham Corp. Model No. PHC.C2)	J. 1 source not to exceed 2.5 curies

9. Authorized Use:

A. To be used in Measurex Model 2201 source holder for thickness measurement.

B. To be used in LFE Model SCL-77A source holder for thickness measurement.

C. To be used in Measurex Model 2201 source holder for thickness measurement.

D. To be used in In-Val-Co Model B-20-06 source holder for level measurement.

E. To be used in Kay-Ray Models 7062 Series and 7063 Series, or 7064 Series source holders for level measurement.

F. To be used in Ohmart Model SHRH-A source holder for level measurement.

G. To be used in In-Val-Co Model SH-581 source holder for level measurement.

H. To be used in In-Val-Co Model B-20-06 source holder for level measurement.

I. To be used in Measurex Model 2201 and/or Model 4201 source holder for thickness measurement.

J. To be used in Measurex Model 4202 Series source holder for thickness measurement.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
34-02962-02

Docket or Reference Number
030-13909

Amendment No. 14

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at Route 23 South, DuPont Road, Circleville, Ohio, 1175 DuPont Road, Circleville, Ohio.

11. Licensed material shall be used by, or under the supervision of, James D. Richards.

12. The Radiation Safety Officer for this license is James D. Richards.

13. A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed 6 months or at such other intervals as specified by the certificate of registration referred to in 10 CFR 32.210.

B. Notwithstanding Paragraph A of this Condition, sealed sources designed to emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.

C. In the absence of a certificate from a transferor indicating that a leak test has been made within 6 months prior to the transfer, a sealed source received from another person shall not be put into use until tested.

D. The leak test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(b)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. The report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region III, ATTN: Chief, Nuclear Materials Safety Branch, 801 Warrenville Road, Lisle, Illinois 60532-4351. The report shall specify the source involved, the test results, and corrective action taken.

E. The licensee is authorized to collect leak test samples for analysis by persons specifically licensed by the Commission or an Agreement State to perform such services. Alternatively, tests for leakage and/or contamination may be performed by persons specifically licensed by the Commission or an Agreement State to perform such services.

14. Sealed sources containing licensed material shall not be opened or removed from their respective source holders by the licensee.

15. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
34-02962-02

Docket or Reference Number
030-13909

Amendment No. 14

16. Installation, initial radiation survey, relocation, removal from service, maintenance, and repair of Measurex devices containing sealed sources shall be performed by Donald Schroeder, Mike Henderson, Mark Kiger, Neal Gibson, Tommy Coey, Mark DePugh, Jerry Sherwood, Brian Hoops, James Jones, Ray Gene McJunkin, or James Richards in accordance with procedures contained in letter dated October 4, 1989, or by persons specifically licensed by the Commission or an Agreement State to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.

17. Prior to initial use and after installation, relocation, dismantling, alignment, or any other activity involving the source or removal of the shielding, the licensee shall assure that a radiological survey is performed to determine radiation levels in accessible areas around, above and below the gauge with the shutter open. This survey shall be performed only by persons authorized to perform such services by the Commission or an Agreement State.

18. The licensee shall operate each gauge within the manufacturer's specified temperature and/or environmental limits such that the shielding and shutter mechanism of the source holder are not compromised.

19. The licensee shall assure that the shutter mechanism is locked in the closed position during periods when a portion of an individual's body may be subject to the direct radiation beam. The licensee shall review and modify as appropriate its "lock-out" procedures whenever a new gauge is obtained to incorporate the device manufacturer's recommendations.

20. Each gauge shall be tested for the proper operation of the on-off mechanism and indicator, if any, at no longer than 6-month intervals or at such longer intervals as specified by the manufacturer and approved by NRC.

21. Installation, initial radiation survey, relocation, removal from service, maintenance, and repair of Kay Ray devices containing sealed sources shall be performed by James Richards in accordance with procedures outlined in letter dated October 4, 1989, or by persons specifically licensed by the Commission or an Agreement State to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.

22. 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.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
34-02962-02

Docket or Reference Number
030-13909

Amendment No. 14

23. Except as otherwise specified by this license, installation, initial radiation survey, relocation, removal from service, maintenance, and repair of devices containing sealed sources shall be performed by persons specifically licensed by the Commission or an Agreement State to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.

24. 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 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. Applications dated April 15, 1989 (excluding Item 10.6 and paragraph Number 3 of Item 10.4), July 21, 1992 and October 24, 1994;

B. Letters dated October 4, 1989 (excluding paragraph Number 3 of Item 10.4); April 30, 1990 (excluding paragraph Number 3 of Item 10.4 and paragraph Numbers 1 and 2 of Item 10.6), June 15, 1990, October 24, 1994, November 10, 1994, August 29, 1995, March 18, 1996, May 7, 1996 (excluding Item 7J, Item 15 and references to service work performed by the licensee), November 7, 1996 (excluding attachment); and

C. Facsimiles dated January 15, 1997 and March 18, 1997.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date MAR 24 1997

By Colleen C. Casey
Nuclear Materials Licensing Branch, Region III

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

PROGRAM CODE: 03120
STATUS CODE: 2
FEE CATEGORY: 3P
EXP. DATE: 19941130
FEE COMMENTS:
DECOM FIN ASSUR REQD: N

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: E. I. DU PONT DE NEMOURS & CO., INC
RECEIVED DATE: 941031
DOCKET NO: 3013909
CONTROL NO.: 397777
LICENSE NO.: 34-02962-02
ACTION TYPE: RENEWAL

2. FEE ATTACHED
AMOUNT: 680.00
CHECK NO.: 50878397.36

3. COMMENTS

SIGNED Deborah Hersey
DATE 11-4-94

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

1. FEE CATEGORY AND AMOUNT: 3P #680.00

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

3. OTHER

SIGNED DC
DATE 11/8/94

94 NOV -7 PM 3:39

NOV 15 1994

October 24, 1994

E. I. DuPont
Route 23 South, DuPont Rd.
Circleville, Ohio 43113

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

Dear Sirs:

I am filing an application for renewal of our Materials License # 34-02962-02.

I wish to amend the license as indicated below:

Item 11 Delete T.L. Radcliff

Item 12 J.D. Richards will return as Radiation Protection Officer, replacing T.L. Radcliff. T.L. Radcliff should be deleted from the license.

Item 15 Delete Stephen Beckley and Teresa Radcliff

Item 19 Delete Teresa Radcliff

Other than these amendments our current license, expiration date 11/30/94, accurately represents our site Radiation Program.

If you have any questions or if more information is needed, please call J.D. Richards (Jim) at 614-474-4145.

Respectfully,
James D. Richards, RPO
James D. Richards, RPO

Log NOV 5 III
Remitter
Check No. 508-183936
Amount $600.00
Fee Category 3P
Type of Fee Renewal
Date Check Rec'd 11-7-94
Date Completed 11-8-94
By JC

RECEIVED
OCT 31 1994
OCT 31 1994
REGION III
397777

NRC FORM 374
(10-89)

U.S. NUCLEAR REGULATORY COMMISSION

Amendment No. 12

MATERIALS LICENSE

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, 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.

Licensee	
1. E.I. DuPont de Nemours & Co. Inc. 2. P. O. Box 89 Circleville, OH 43113	In accordance with letter dated September 30, 1992 3. License number 34-02962-02 is amended in its entirety to read as follows: 4. Expiration date November 30, 1994 5. Docket or Reference No. 030-13909

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Krypton-85	A. Sealed sources (American Atomic Corp. Model kr85c, kr85e, kr85j and kr85m; or NEN Model NER586; or Amersham Corp. Model kac.d2)	A. No single source to exceed 1000 millicuries
B. Krypton-85	B. Sealed sources (LFE Model S-70A)	B. No single source to exceed 1200 millicuries
C. Strontium-90	C. Sealed sources (3M Co. Model 3FIV)	C. No single source to exceed 50 millicuries
D. Cesium-137	D. Sealed sources (In-Val-Co Model A-00237 or 3M Co. Model 4F6S)	D. No single source to exceed 350 millicuries
E. Cesium-137	E. Sealed sources (Kay-Ray Model 7700 series)	E. No single source to exceed 200 millicuries
F. Cesium-137	F. Sealed sources (Ohmart Model No. A-2102)	F. No single source to exceed 50 millicuries
G. Cesium-137	G. Sealed sources (3M Co. Model 4F6S)	G. No single source to exceed 300 millicuries
H. Cesium-137	H. Sealed sources (In-Val-Co Model A-00237 or 3M Co. Model 4F6S)	H. No single source to exceed 350 millicuries

COPY

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MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 34-02962-02

Docket or Reference number 030-13909

Amendment No. 12

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
I. Promethium-147	I. Sealed sources (Amersham Corp. Model No. PHB.D1)	I. No single source to exceed 540 millicuries

9. Authorized Use:

A. To be used in Measurex Model 2201 source holder for thickness measurement.

B. To be used in LFE Model SCL-77A source holder for thickness measurement.

C. To be used in Measurex Model 2201 source holder for thickness measurement.

D. To be used in In-Val-Co Model B-20-06 source holder for level measurement.

E. To be used in Kay-Ray Models 7062 Series and 7063 Series, or 7064 Series source holders for level measurement.

F. To be used in Ohmart Model SHRH-A source holder for level measurement.

G. To be used in In-Val-Co Model SH-581 source holder for level measurement.

H. To be used in In-Val-Co Model B-20-06 source holder for level measurement.

I. To be used in Measurex Model 2201 and/or Model 4201 source holder for thickness measurement.

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at Route 23 South, DuPont Road, Circleville, Ohio, 1175 DuPont Road, Circleville, Ohio.

11. Licensed material shall be used by, or under the supervision of, J. D. Richards or T. L. Radcliff.

12. The Radiation Protection Officer for the activities authorized by this license is Teresa L. Radcliff.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 34-02962-02

Docket or Reference number 030-13909

Amendment No. 12

13. A. (1) Each sealed source containing licensed material, other than Hydrogen-3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months; except those sealed sources as specified by the manufacturer and specifically authorized by the Commission or an Agreement State may be leak tested at intervals not to exceed three years. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.

(2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak test when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material.

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

C. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the source shall be removed from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region III, 799 Roosevelt Road, Glen Ellyn, Illinois 60137, ATTN: Chief, Nuclear Materials Safety Branch. The report shall specify the source involved, the test results, and corrective action taken. Records of leak test results shall be kept in units of microcuries and shall be maintained for inspection by the Commission. Records may be disposed of following Commission inspection.

* * *

D. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commission or an Agreement State to perform such services.

14. Sealed sources containing licensed material shall not be opened or removed from their respective source holders by the licensee.

15. Installation, initial radiation survey, relocation, removal from service, maintenance, and repair of Measurex devices containing sealed sources shall be performed by Jerry Sherwood, Stephen Beckley, Brian Hoops, James Jones, George Justice, Ray Gene McJunkin, Teresa Radcliff, or James Richards in accordance with procedures contained in letter dated October 4, 1989, or by persons specifically licensed by the Commission or an Agreement State to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number: 34-02962-02

Docket or Reference number: 030-13909

Amendment No. 12

16. The licensee shall conduct a physical inventory every six (6) months to account for all sealed sources received and possessed under the license. The records of the inventories shall be maintained for two (2) years from the date of the inventory for inspection by the Commission, and shall include the quantities and kinds of byproduct material, manufacturer's name and model numbers, location of sealed sources and the date of the inventory.

17. The licensee shall operate each gauge within the manufacturer's specified environmental limits such that the shielding and shutter mechanism of the source holder is not compromised.

18. The licensee shall assure that the shutter mechanism is locked in the closed position during periods when a portion of an individual's body may be subject to the direct radiation beam. The licensee shall also modify their "lock-out" procedures whenever a new gauge is obtained for use other than purposes for which they are currently authorized to incorporate the device manufacturer's recommendations.

19. Installation, initial radiation survey, relocation, removal from service, maintenance, and repair of Kay Ray devices containing sealed sources shall be performed by Teresa Radcliff or James Richards in accordance with procedures outlined in letter dated October 4, 1989, or by persons specifically licensed by the Commission or an Agreement State to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.

20. 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.

21. The licensee shall maintain records of information important to safe and effective decommissioning at Route 23 South, DuPont Road, Circleville, Ohio, per the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 34-02962-02

Docket or Reference number 030-13909

Amendment No. 12

22. 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 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. Applications dated April 15, 1989 (excluding Item 10.6 and paragraph Number 3 of Item 10.4) and July 21, 1992; and

B. Letters dated October 4, 1989 (excluding paragraph Number 3 of Item 10.4); April 30, 1990 (excluding paragraph Number 3 of Item 10.4 and paragraph Numbers 1 and 2 of Item 10.6); and June 15, 1990.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date November 9, 1992

By Peter J. Lee
Materials Licensing Section, Region III

COPY

MAR 2 4 1997

James D. Richards
Radiation Safety Officer
E.I. DuPont de Nemours & Co. Inc.
P. O. Box 89
Circleville, OH 43113

Dear Mr. Richards:

Enclosed is Amendment No. 14 renewing your NRC Material License No. 34-02962-02 in accordance with your request.

A. 1. Your facsimile dated March 18, 1997, requested that certain named individuals be authorized to collect leak test samples. We have accommodated your request by "tying-down" this facsimile in Condition No. 24. Condition No. 13.E. also indicates that licensee representatives may collect leak test samples.

2. Please direct any questions or comments concerning this renewal to Colleen C. Casey at (630) 829-9841 or (800) 522-3025.

B. 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.

397777

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;

   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
Colleen C. Casey
Nuclear Materials Licensing Branch

License No. 34-02962-02
Docket No. 030-13909

Enclosure: Amendment No. 14

DOCUMENT NAME: M:\03013909.CL7
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/RIII CCKC	C							
NAME	CCCasey:brt								
DATE	03/21/97								

OFFICIAL RECORD COPY

01/27/90 01:39 :01/14 NO:325

DUPONT

FAX NO. 630 15-1078

Date & Time: 3/18/97

CIRCLEVILLE PLANT
P.O. Box 89
Circleville, OH 43113

FACSIMILE TRANSMISSION COVER SHEET

ADDRESSEE(S):

Name	*Company or Department*	*Location*
Colleen Casey	NRC	Lisle, Ill

COPY:

SENDER:

Name	*Business Sector*	*Location*
Jim Richards	DuPont	Circleville Ohio

*** 13 PAGE(S) TO FOLLOW THIS COVER SHEET ***

SPECIAL INSTRUCTIONS/INFORMATION TO RECIPIENT:

Colleen, Give me a call if I can help Jim

CIRCLEVILLE FAX NUMBER FOR THIS TRANSMISSION IS 614-474-0245.
SHOULD PROBLEMS OCCUR WHILE SENDING, CONTACT MAILROOM AT 614-474-0328.

*** CONFIDENTIALITY NOTE ***

(FAX)kb

Charting a Course for Excellence

March 18,1997
E.I. Dupont
Route 23 South, Dupont Rd.
Circleville, Ohio 43113

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

REF. Control #s 597777
301365

Colleen,

This correspondence is in response to your fax transmittal on 02/12/97 and our subsequent phone conversation.

In regards to item A.1 of your fax, I am including the revised certificates I received from Measurex. I forwarded your fax directly to Measurex to eliminate any chance for a misunderstanding. If these are not sufficient please let me know.

Item A.2.a., Please delete George Justice from our list of authorized Measurex service techs.

Item A.2.b., Please delete Willard Bennett Jr. and Donald Sparks from our request. They were scheduled for the training, but unable to attend.

Item A.2.c., Please add Donald Schroeder and Mike Henderson as authorized Measurex service techs. to be allowed to perform installation, relocation, removal from service, initial radiation survey, semiannual leak tests and required safety checks on Measurex source holders specifically listed on our license.

Item A.2.d., Records of all training for gauge users, orientation and annual refresher training will be maintained in the Radiation Safety Office for inspection.

Item A.3, Our request to perform authorized tasks on Measurex equipment on applies to those units specifically identified on our license.

Item A.4, Only persons specifically licensed as a service licensee by either the NRC or an Agreement state will:

a. calibrate our survey instruments
b. analyze the leak tests for sealed sources in our gauging devices

(cont)

Item A.5, All individuals performing service work on our gauges are required to wear extremity monitoring badges, processed quarterly, in addition to full body badges.

In addition to these I would like to upgrade Sect. 15 of our license to authorize Jerry Sherwood, Brian Hoops, James Jones, Ray Gene McJunkin, Mark Kiger, Mike Henderson, Donald Schroeder, Neal Gibson, Tommy Coey, Mark DePugh, James Richards to perform semi-annual leak tests on Measurex source holders specifically identified on our license.

I believe the Measurex training consisting of biological effects, procedures specific to the Measurex sensors and the use of radiation survey meters qualifies these people to perform the leak tests.

If I can be of any further help please give me a call.

Thank,

James D. Richards

James D. Richards

measurex

RS203a
2/97

Measurex Certificate of Radiation Safety Training
(Non-Measurex Employees)

To whom it may concern:

I confirm that Brain L. Hoops has participated in 32 hours of Measurex training on the use and function of Measurex sensors on November 7, 8, 9 and 10, 1995. This training included a session specifically on radiation safety consisting of lectures on the following topics:

- Characteristics of x-ray and sealed radioactive sources used in Measurex sensors.
- Radiation protection quantities and units.
- Biological effects of radiation exposure and methods of minimizing exposure.
- Regulatory limits for radiation exposure, U.S. averages and typical dose rates from Measurex sensors.
- Procedures specific to Measurex sensors, such as: shutter and flag solenoid replacement, tests of interlocks, warning lights, use of radiation survey meters, on-off mechanisms, head separation and gap cleaning, etc.

Please note:

- Certain types of maintenance and repair and the testing of radiation safety functions of Measurex sensors require that the person conducting such work be authorized by a specific license issued by the applicable regulatory agency.
- This certificate is a statement of training for Measurex sensors only and does not in any way eliminate the need for appropriate license application and approval.
- Nothing in this document is intended to imply that Measurex will guarantee that this training alone will be considered adequate for any particular operations for which a radioactive materials license is required.
- Measurex does not recommend license approval for operations which involve radioactive source installation or removal training.
- Measurex recommends that persons to be named on a specific license for work on Measurex sensors follow Measurex written procedures and be familiar with the contents of the Measurex Radiation Safety Manual (p/n 440700XX).

Lisa Burns
Lisa Burns
Health Physicist

3/3/97
Date

measurex

RS203a
2/97

Measurex Certificate of Radiation Safety Training
(Non-Measurex Employees)

To whom it may concern:

I confirm that Mark Kiger has participated in 32 hours of Measurex training on the use and function of Measurex sensors on November 7, 8, 9 and 10, 1995. This training included a session specifically on radiation safety consisting of lectures on the following topics:

- Characteristics of x-ray and sealed radioactive sources used in Measurex sensors.
- Radiation protection quantities and units.
- Biological effects of radiation exposure and methods of minimizing exposure.
- Regulatory limits for radiation exposure, U.S. averages and typical dose rates from Measurex sensors.
- Procedures specific to Measurex sensors, such as: shutter and flag solenoid replacement, tests of interlocks, warning lights, use of radiation survey meters, on-off mechanisms, head separation and gap cleaning, etc.

Please note:

- Certain types of maintenance and repair and the testing of radiation safety functions of Measurex sensors require that the person conducting such work be authorized by a specific license issued by the applicable regulatory agency.
- This certificate is a statement of training for Measurex sensors only and does not in any way eliminate the need for appropriate license application and approval.
- Nothing in this document is intended to imply that Measurex will guarantee that this training alone will be considered adequate for any particular operations for which a radioactive materials license is required.
- Measurex does not recommend license approval for operations which involve radioactive source installation or removal training.
- Measurex recommends that persons to be named on a specific license for work on Measurex sensors follow Measurex written procedures and be familiar with the contents of the Measurex Radiation Safety Manual (p/n 440700XX).

Lisa Burns

Lisa Burns
Health Physicist

3/3/97
Date

measurex

RS203e
2/97

Measurex Certificate of Radiation Safety Training
(Non-Measurex Employees)

To whom it may concern:

I confirm that Mike T. Henderson has participated in 32 hours of Measurex training on the use and function of Measurex sensors on November 7, 8, 9 and 10, 1995. This training included a session specifically on radiation safety consisting of lectures on the following topics:

- Characteristics of x-ray and sealed radioactive sources used in Measurex sensors.
- Radiation protection quantities and units.
- Biological effects of radiation exposure and methods of minimizing exposure.
- Regulatory limits for radiation exposure, U.S. averages and typical dose rates from Measurex sensors.
- Procedures specific to Measurex sensors, such as: shutter and flag solenoid replacement, tests of interlocks, warning lights, use of radiation survey meters, on-off mechanisms, head separation and gap cleaning, etc.

Please note:

- Certain types of maintenance and repair and the testing of radiation safety functions of Measurex sensors require that the person conducting such work be authorized by a specific license issued by the applicable regulatory agency.
- This certificate is a statement of training for Measurex sensors only and does not in any way eliminate the need for appropriate license application and approval.
- Nothing in this document is intended to imply that Measurex will guarantee that this training alone will be considered adequate for any particular operations for which a radioactive materials license is required.
- Measurex does not recommend license approval for operations which involve radioactive source installation or removal training.
- Measurex recommends that persons to be named on a specific license for work on Measurex sensors follow Measurex written procedures and be familiar with the contents of the Measurex Radiation Safety Manual (p/n 440700XX).

Lisa Burns
Lisa Burns
Health Physicist

3/3/97
Date

measurex

RS203a
2/97

Measurex Certificate of Radiation Safety Training
(Non-Measurex Employees)

To whom it may concern:

I confirm that Donald E. Schroeder has participated in 32 hours of Measurex training on the use and function of Measurex sensors on November 7, 8, 9 and 10, 1995. This training included a session specifically on radiation safety consisting of lectures on the following topics:

- Characteristics of x-ray and sealed radioactive sources used in Measurex sensors.
- Radiation protection quantities and units.
- Biological effects of radiation exposure and methods of minimizing exposure.
- Regulatory limits for radiation exposure, U.S. averages and typical dose rates from Measurex sensors.
- Procedures specific to Measurex sensors, such as: shutter and flag solenoid replacement, tests of interlocks, warning lights, use of radiation survey meters, on-off mechanisms, head separation and gap cleaning, etc.

Please note:

- Certain types of maintenance and repair and the testing of radiation safety functions of Measurex sensors require that the person conducting such work be authorized by a specific license issued by the applicable regulatory agency.
- This certificate is a statement of training for Measurex sensors only and does not in any way eliminate the need for appropriate license application and approval.
- Nothing in this document is intended to imply that Measurex will guarantee that this training alone will be considered adequate for any particular operations for which a radioactive materials license is required.
- Measurex does not recommend license approval for operations which involve radioactive source installation or removal training.
- Measurex recommends that persons to be named on a specific license for work on Measurex sensors follow Measurex written procedures and be familiar with the contents of the Measurex Radiation Safety Manual (p/n 440700XX).

Lisa Burns
Lisa Burns
Health Physicist

3/3/97
Date

measurex

RS203a
2/97

Measurex Certificate of Radiation Safety Training
(Non-Measurex Employees)

To whom it may concern:

I confirm that Jerry L. Sherwood has participated in 32 hours of Measurex training on the use and function of Measurex sensors on November 7, 8, 9 and 10, 1995. This training included a session specifically on radiation safety consisting of lectures on the following topics:

- Characteristics of x-ray and sealed radioactive sources used in Measurex sensors.
- Radiation protection quantities and units.
- Biological effects of radiation exposure and methods of minimizing exposure.
- Regulatory limits for radiation exposure, U.S. averages and typical dose rates from Measurex sensors.
- Procedures specific to Measurex sensors, such as: shutter and flag solenoid replacement, tests of interlocks, warning lights, use of radiation survey meters, on-off mechanisms, head separation and gap cleaning, etc.

Please note:

- Certain types of maintenance and repair and the testing of radiation safety functions of Measurex sensors require that the person conducting such work be authorized by a specific license issued by the applicable regulatory agency.
- This certificate is a statement of training for Measurex sensors only and does not in any way eliminate the need for appropriate license application and approval.
- Nothing in this document is intended to imply that Measurex will guarantee that this training alone will be considered adequate for any particular operations for which a radioactive materials license is required.
- Measurex does not recommend license approval for operations which involve radioactive source installation or removal training.
- Measurex recommends that persons to be named on a specific license for work on Measurex sensors follow Measurex written procedures and be familiar with the contents of the Measurex Radiation Safety Manual (p/n 440700XX).

Lisa Burns
Health Physicist

2/3/97
Date

measurex

RS203a
2/97

Measurex Certificate of Radiation Safety Training
(Non-Measurex Employees)

To whom it may concern:

I confirm that James D.Jones has participated in 32 hours of Measurex training on the use and function of Measurex sensors on November 7, 8, 9 and 10, 1995. This training included a session specifically on radiation safety consisting of lectures on the following topics:

- Characteristics of x-ray and sealed radioactive sources used in Measurex sensors.
- Radiation protection quantities and units.
- Biological effects of radiation exposure and methods of minimizing exposure.
- Regulatory limits for radiation exposure, U.S. averages and typical dose rates from Measurex sensors.
- Procedures specific to Measurex sensors, such as: shutter and flag solenoid replacement, tests of interlocks, warning lights, use of radiation survey meters, on-off mechanisms, head separation and gap cleaning, etc.

Please note:

- Certain types of maintenance and repair and the testing of radiation safety functions of Measurex sensors require that the person conducting such work be authorized by a specific license issued by the applicable regulatory agency.
- This certificate is a statement of training for Measurex sensors only and does not in any way eliminate the need for appropriate license application and approval.
- Nothing in this document is intended to imply that Measurex will guarantee that this training alone will be considered adequate for any particular operations for which a radioactive materials license is required.
- Measurex does not recommend license approval for operations which involve radioactive source installation or removal training.
- Measurex recommends that persons to be named on a specific license for work on Measurex sensors follow Measurex written procedures and be familiar with the contents of the Measurex Radiation Safety Manual (p/n 440700XX).

Lisa Burns
Lisa Burns
Health Physicist

3/3/97
Date

measurex

RS203a
2/97

Measurex Certificate of Radiation Safety Training
(Non-Measurex Employees)

To whom it may concern:

I confirm that Ray Gene McJunkin has participated in 32 hours of Measurex training on the use and function of Measurex sensors on November 7, 8, 9 and 10, 1995. This training included a session specifically on radiation safety consisting of lectures on the following topics:

- Characteristics of x-ray and sealed radioactive sources used in Measurex sensors.
- Radiation protection quantities and units.
- Biological effects of radiation exposure and methods of minimizing exposure.
- Regulatory limits for radiation exposure, U.S. averages and typical dose rates from Measurex sensors.
- Procedures specific to Measurex sensors, such as: shutter and flag solenoid replacement, tests of interlocks, warning lights, use of radiation survey meters, on-off mechanisms, head separation and gap cleaning, etc.

Please note:

- Certain types of maintenance and repair and the testing of radiation safety functions of Measurex sensors require that the person conducting such work be authorized by a specific license issued by the applicable regulatory agency.
- This certificate is a statement of training for Measurex sensors only and does not in any way eliminate the need for appropriate license application and approval.
- Nothing in this document is intended to imply that Measurex will guarantee that this training alone will be considered adequate for any particular operations for which a radioactive materials license is required.
- Measurex does not recommend license approval for operations which involve radioactive source installation or removal training.
- Measurex recommends that persons to be named on a specific license for work on Measurex sensors follow Measurex written procedures and be familiar with the contents of the Measurex Radiation Safety Manual (p/n 440700XX).

Lisa Burns
Lisa Burns
Health Physicist

3/3/97
Date

measurex

RS203a
2/97

Measurex Certificate of Radiation Safety Training
(Non-Measurex Employees)

To whom it may concern:

I confirm that Neal Gibson has participated in 32 hours of Measurex training on the use and function of Measurex sensors on November 7, 8, 9 and 10, 1995. This training included a session specifically on radiation safety consisting of lectures on the following topics:

- Characteristics of x-ray and sealed radioactive sources used in Measurex sensors.
- Radiation protection quantities and units.
- Biological effects of radiation exposure and methods of minimizing exposure.
- Regulatory limits for radiation exposure, U.S. averages and typical dose rates from Measurex sensors.
- Procedures specific to Measurex sensors, such as: shutter and flag solenoid replacement, tests of interlocks, warning lights, use of radiation survey meters, on-off mechanisms, head separation and gap cleaning, etc.

Please note:

- Certain types of maintenance and repair and the testing of radiation safety functions of Measurex sensors require that the person conducting such work be authorized by a specific license issued by the applicable regulatory agency.
- This certificate is a statement of training for Measurex sensors only and does not in any way eliminate the need for appropriate license application and approval.
- Nothing in this document is intended to imply that Measurex will guarantee that this training alone will be considered adequate for any particular operations for which a radioactive materials license is required.
- Measurex does not recommend license approval for operations which involve radioactive source installation or removal training.
- Measurex recommends that persons to be named on a specific license for work on Measurex sensors follow Measurex written procedures and be familiar with the contents of the Measurex Radiation Safety Manual (p/n 440700XX).

Lisa Burns
Lisa Burns
Health Physicist

3/3/97
Date

measurex

RS203a
2/97

Measurex Certificate of Radiation Safety Training
(Non-Measurex Employees)

To whom it may concern:

I confirm that Tommy Coey has participated in 32 hours of Measurex training on the use and function of Measurex sensors on November 7, 8, 9 and 10, 1995. This training included a session specifically on radiation safety consisting of lectures on the following topics:

- Characteristics of x-ray and sealed radioactive sources used in Measurex sensors.
- Radiation protection quantities and units.
- Biological effects of radiation exposure and methods of minimizing exposure.
- Regulatory limits for radiation exposure, U.S. averages and typical dose rates from Measurex sensors.
- Procedures specific to Measurex sensors, such as: shutter and flag solenoid replacement, tests of interlocks, warning lights, use of radiation survey meters, on-off mechanisms, head separation and gap cleaning, etc.

Please note:

- Certain types of maintenance and repair and the testing of radiation safety functions of Measurex sensors require that the person conducting such work be authorized by a specific license issued by the applicable regulatory agency.
- This certificate is a statement of training for Measurex sensors only and does not in any way eliminate the need for appropriate license application and approval.
- Nothing in this document is intended to imply that Measurex will guarantee that this training alone will be considered adequate for any particular operations for which a radioactive materials license is required.
- Measurex does not recommend license approval for operations which involve radioactive source installation or removal training.
- Measurex recommends that persons to be named on a specific license for work on Measurex sensors follow Measurex written procedures and be familiar with the contents of the Measurex Radiation Safety Manual (p/n 440700XX).

Lisa Burns
Lisa Burns
Health Physicist

3/3/97
Date

measurex

RS203a
2/97

Measurex Certificate of Radiation Safety Training
(Non-Measurex Employees)

To whom it may concern:

I confirm that Mark A DePugh has participated in 32 hours of Measurex training on the use and function of Measurex sensors on November 7, 8, 9 and 10, 1995. This training included a session specifically on radiation safety consisting of lectures on the following topics:

- Characteristics of x-ray and sealed radioactive sources used in Measurex sensors.
- Radiation protection quantities and units.
- Biological effects of radiation exposure and methods of minimizing exposure.
- Regulatory limits for radiation exposure, U.S. averages and typical dose rates from Measurex sensors.
- Procedures specific to Measurex sensors, such as: shutter and flag solenoid replacement, tests of interlocks, warning lights, use of radiation survey meters, on-off mechanisms, head separation and gap cleaning, etc.

Please note:

- Certain types of maintenance and repair and the testing of radiation safety functions of Measurex sensors require that the person conducting such work be authorized by a specific license issued by the applicable regulatory agency.
- This certificate is a statement of training for Measurex sensors only and does not in any way eliminate the need for appropriate license application and approval.
- Nothing in this document is intended to imply that Measurex will guarantee that this training alone will be considered adequate for any particular operations for which a radioactive materials license is required.
- Measurex does not recommend license approval for operations which involve radioactive source installation or removal training.
- Measurex recommends that persons to be named on a specific license for work on Measurex sensors follow Measurex written procedures and be familiar with the contents of the Measurex Radiation Safety Manual (p/n 440700XX).

Lisa Burns
Lisa Burns
Health Physicist

3/3/97
Date

measurex

RS203a
2/97

Measurex Certificate of Radiation Safety Training
(Non-Measurex Employees)

To whom it may concern:

I confirm that James D. Richards has participated in 32 hours of Measurex training on the use and function of Measurex sensors on November 7, 8, 9 and 10, 1995. This training included a session specifically on radiation safety consisting of lectures on the following topics:

- Characteristics of x-ray and sealed radioactive sources used in Measurex sensors.
- Radiation protection quantities and units.
- Biological effects of radiation exposure and methods of minimizing exposure.
- Regulatory limits for radiation exposure, U.S. averages and typical dose rates from Measurex sensors.
- Procedures specific to Measurex sensors, such as: shutter and flag solenoid replacement, tests of interlocks, warning lights, use of radiation survey meters, on-off mechanisms, head separation and gap cleaning, etc.

Please note:

- Certain types of maintenance and repair and the testing of radiation safety functions of Measurex sensors require that the person conducting such work be authorized by a specific license issued by the applicable regulatory agency.
- This certificate is a statement of training for Measurex sensors only and does not in any way eliminate the need for appropriate license application and approval.
- Nothing in this document is intended to imply that Measurex will guarantee that this training alone will be considered adequate for any particular operations for which a radioactive materials license is required.
- Measurex does not recommend license approval for operations which involve radioactive source installation or removal training.
- Measurex recommends that persons to be named on a specific license for work on Measurex sensors follow Measurex written procedures and be familiar with the contents of the Measurex Radiation Safety Manual (p/n 440700XX).

Lisa Burns
Lisa Burns
Health Physicist

3/3/97
Date

J. Richards,
PLEASE CALL ME TO DISCUSS THIS.
- COLLEEN

TELEPHONE CONVERSATION RECORD
BETWEEN

Colleen C. Casey, NMLB Reviewer and Jim Richards of E. I. Dupont on February 12, 1997, at_____. (phone # 614-474-0145). Ms. Casey represents the United States Nuclear Regulatory Commission, Region III, Nuclear Materials Licensing Branch, 801 Warrenville Road, Lisle, Illinois 60532-4351.

Control No.: 397777 License No.: 34-02962-02

We have reviewed your correspondence dated October 24, 1994, November 10, 1994, August 29, 1995, March 18, 1996, May 7, 1996 and November 7, 1996, and find that we will need additional information as follows in order to complete your renewal:

A. For purposes of completing our review for your renewed license, we have focused on the three letters submitted in 1996 and request clarification and additional commitments, etc. as follows:

1. We need a letter from Measurex documenting <u>each individual's</u> successful training on the **new Model 4202 gauges** (do not call it the "prototype") that included installation, surveys, relocation, removal from service, maintenance/repair (that does not involve removing the source from the sourceholder or direct handling of sources), leak tests and safety checks.

   This letter should state basically the same things that your previously submitted Measurex certificates stated in attachments to 3/18/96 letter <u>except:</u> the training on the Model 4202 (not "prototype") gauges must be explicitly stated; <u>and</u> the wording about the NRC having "pre-approved" the training must be stricken as it is untrue and misleading.

   Duration of the course must be confirmed and stipulated to in the certificates. It should have been at least a 40 hour course because NRC's regulatory guidance recommends a course of at least that length. Your 3/18/96 letter states that the course lasted 32 hours but your earlier correspondence (1994/1995) states that the course would last only 24 hours, which we cannot accept at this time. If the course lasted 32 hours, please also justify why the recommended duration of 40 hours training was not followed.

2. Your letters dated May 7 and November 7, 1996 request changing the personnel authorized to perform service work on your gauges.

   a. George Justice is not mentioned in your letters but he has been authorized previously. We deleted his authorization with amendment no. 13 because we were not instructed to retain him. Please advise us as to whether we should reinstate his authorization.

      If we should reinstate his authorization, we will need a Measurex training certificate for him also, unless you do not want him authorized to work on the Model 4202 gauges.

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL
To JIM RICHARDS
Dept./Agency DUPONT DE NEMOURS
Fax # 614-474-0245
From COLLEEN CASEY
Phone # 630-829-9841
Fax # 630-515-1078/259
# of pages ▶ 2
NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

b. Willard Bennett, Jr. and Donald Sparks are proposed as new authorized gauge service personnel. However, no training certificates were provided for them. Please provide training certificates for each of them that correspond with the gauges you want them to service.

c. Training certificates were provided for Donald Schroeder and Mike Henderson but (1) the training certificates need to be corrected as described above and (2) neither person is mentioned in your letters to be added as authorized gauge service personnel. Please clarify your intentions regarding these individuals and advise us accordingly.

d. Please confirm that records of all training for gauge users, orientation and annual refresher, will be maintained for inspection.

3. Please confirm that you are withdrawing your request to be authorized for <u>all</u> Measurex sensors and gauging devices, other than those specifically authorized on your license.

4. Please confirm that only persons specifically licensed by either the NRC or an Agreement state will:
   a. calibrate your survey instruments; and
   b. analyze the leak tests for your sealed sources in the gauging devices. ("as a service licensee")

5. Please confirm that individuals performing service work on the gauges will wear extremity monitoring badges that will be processed at least quarterly, <u>in addition to</u> whole body badges.

6. <u>No response item-</u> we recommend that at your next renewal you resubmit your licensed program application <u>in entirety</u>. This is because your license is becoming somewhat convoluted and a number of old documents are in the "tie-down" condition, the last condition on your license.

   It was our understanding that you would resubmit your application in entirety as a result of our telecon on October 2, 1996, which would have prevented the convolution problem, enhanced your radiation safety program and made your license much easier to understand. However, your response dated November 7, 1996 consisted largely of a revised version of your actual license document. Apparently a misunderstanding occurred.

   Due to the amount of time your renewal has been pending, we have decided to simply "tie-down" these additional documents and recommend renewal in entirety next time.

<u>15 DAYS RESPONSE- SEND TO MS. CASEY'S ATTENTION AT THE NRC OFFICE ADDRESS GIVEN ABOVE AND REFERENCE CONTROL NO. 397777.</u>

If you have any questions or require clarification on any of the information stated above, you may contact Colleen C. Casey at (630) 829-9841 .

Reviewer's signature: Colleen C Casey Date: Feb. 12, 1997

Nov. 7, 1996

E.I. Dupont
Route 23 South, Dupont Rd.
Circleville, Ohio 43113

Materials Licensing Section
U.S. Nuclear Regulatory Commission, Region III
801 Warrenville Rd.
Lisle, Ill. 60532-4351
Attn: Colleen Casey
Control # 397777

Colleen,

I have reviewed our existing license and tried to eliminate any unnecessary language. I propose our renewed license read like the attached. (I have high-lighted the sections where we are requesting changes)

I believe I have previously supplied material to support all of the changes except item #20, the request to calibrate our survey meters annually. Please consider this change in both our RSO update amendment and our license renewal request per our phone conversation on Nov. 7, 1996.

If you have any suggestions, questions or I can be of any help please call me at 614-474-0145 or Fax at 614-474-0245.

Thanks,

James D. Richards

James D. Richard's, RSO

Pm: 11-8-96

Amendment No. 12

MATERIALS LICENSE

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, 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.

Licensee	
1. E.I. DuPont de Nemours & Co. Inc. 2. P. O. Box 89 Circleville, OH 43113	In accordance with letter dated September 30, 1992 3. License number 34-02962-02 is amended in its entirety to read as follows: 4. Expiration date November 30, 1994 5. Docket or Reference No 030-13909

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Krypton-85	A. Sealed sources (American Atomic Corp. Model kr85c, kr85e, kr85j and kr85m; or NEN Model NER586; or Amersham Corp. Model kac.d2)	A. No single source to exceed 1000 millicuries
B. Krypton-85	B. Sealed sources (LFE Model S-70A)	B. No single source to exceed 1200 millicuries
C. Strontium-90	C. Sealed sources (3M Co. Model 3FIV)	C. No single source to exceed 50 millicuries
D. Cesium-137	D. Sealed sources (In-Val-Co Model A-00237 or 3M Co. Model 4F6S)	D. No single source to exceed 350 millicuries
E. Cesium-137	E. Sealed sources (Kay-Ray Model 7700 series)	E. No single source to exceed 200 millicuries
F. Cesium-137	F. Sealed sources (Ohmart Model No. A-2102)	F. No single source to exceed 50 millicuries
G. Cesium-137	G. Sealed sources (3M Co. Model 4F6S)	G. No single source to exceed 300 millicuries
H. Cesium-137	H. Sealed sources (In-Val-Co Model A-00237 or 3M Co. Model 4F6S)	H. No single source to exceed 350 millicuries

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
I. Promethium-147	I. Sealed sources (Amersham Corp. Model No. PHB.D1)	I. No single source to exceed 540 millicuries
J. Promethium-147	J. Sealed sources manufactured and distributed in accordance with ANSI ratings and our license issued by the U.S. Nuclear Regulatory Commission	J. 1 Source not to exceed 2.5 ci.

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9. Authorized Use:

A. To be used in Measurex Model 2201 source holder for thickness measurement.

B. To be used in LFE Model SCL-77A source holder for thickness measurement.

C. To be used in Measurex Model 2201 source holder for thickness measurement.

D. To be used in In-Val-Co Model B-20-06 source holder for level measurement.

E. To be used in Kay-Ray Models 7062 Series and 7063 Series, or 7064 Series source holders for level measurement.

F. To be used in Ohmart Model SHRH-A source holder for level measurement.

G. To be used in In-Val-Co Model SH-581 source holder for level measurement.

H. To be used in In-Val-Co Model B-20-06 source holder for level measurement.

I. To be used in Measurex Model 2201 and/or Model 4201 source holder for thickness measurement.

J. To be used in Measurex prototype source holder for Research and Development under 10CFR30.

(JDR.001):bms

10. Licensed material shall be used only at the licensee's facilities located at Route 23 South, DuPont Road, Circleville, Ohio, 1175 DuPont Road, Circleville, Ohio.

11. Licensed material shall be used by, or under the supervision of James D. Richards.

12. The Radiation Protection Officer for the activities authorized by this license is James D. Richards.

13. A. (1) Each sealed source containing licensed material, other than Hydrogen-3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months; except those sealed sources as specified by the manufacturer and specifically authorized by the Commission or an Agreement State may be leak tested at intervals not to exceed three years. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.

(2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak test when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material.

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

C. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the source shall be removed from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region III, 799 Roosevelt Road, Glen Ellyn, Illinois 60137, ATTN: Chief, Nuclear Materials Safety Branch. The report shall specify the source involved, the test results, and corrective action taken. Records of leak test results shall be kept in units of microcuries and shall be maintained for inspection by the Commission. Records may be disposed of following Commission inspection.

D. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commissioner an Agreement State to perform such services.

14. Sealed sources containing licensed material shall not be opened or removed from their respective source holders by the licensee.

15. Installation, radiation surveys, relocation, removal from service, maintenance, leak test, safety checks, and repair of Measurex devices containing sealed sources shall be performed by Jerry Sherwood, Willard Bennett, Jr., Donald Sparks, Mark Kiger, Neal Gibson, Tommy Coey, James Jones, Brian Hoops, Ray Gene McJunkin, Mark DePugh or James Richards in accordance with our current license, or by persons specifically licensed by the Commission or an agreement state to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commissioner or an agreement state to perform such services.

(JDR.001):bms

16. The licensee shall conduct a physical inventory every six (6) months to account for all sealed sources received and possessed under the license. The records of the inventories shall be maintained for two (2) years from the date of the inventory for inspection by the Commission, and shall include the quantities and kinds of byproduct material, manufacturer's name and model numbers, location of sealed sources and the date of the inventory.

17. The license shall operate each gauge within the manufacturer's specified environmental limits such that the shielding and shutter mechanism of the source holder is not compromised.

18. The licensee shall assure that the shutter mechanism is locked in the closed position during periods when a portion of an individual's body may be subject to the direct radiation beam. The licensee shall also modify their "lock-out" procedures whenever a new gauge is obtained for use other than purposes for which they are currently authorized to incorporate the device manufacturer's recommendations.

19. Installation, initial radiation survey, relocation, removal from service, maintenance, and repair of Kay Ray devices containing sealed sources shall be performed by James Richards, or by persons specifically licensed by the Commission or an Agreement State to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.

20. All radiation survey meters will be calibrated annually. The calibration shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.

21. 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.

22. The licensee shall maintain records of information important to safe and effective decommissioning at Route 23 South, DuPont Road, Circleville, Ohio, per the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.

23. 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 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.

CONVERSATION RECORD

TIME 3:00pm | DATE 10/2/96

TYPE
☐ VISIT ☐ CONFERENCE ☒ TELEPHONE
☐ INCOMING ☒ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO.
Jim Richards	E.I. DuPont DeNemours Inc.	614-474-0145

SUBJECT
C/N 397777 (RENEWAL) and 301365 (AMDMT); L-IN 34-02962-02

ROUTING	
NAME/SYMBOL	INT

SUMMARY
Jim clarified the three issues that licensee needs addressed in time-urgent manner, via amendment:
① the new Promethium 147 sealed source/device (Measurex proto-type) (registered source) (unregistered device)
② Personnel training evaluation for service work on gauges
③ officially correct license to reflect Jim as RSO.
I will try to resolve/review these issues as quickly as possible. Regarding renewal: license currently ties down 5 documents, including 3 with exclusions. Since renewal letter 10/24/94, 3 additional submissions to renewal have been made @ amendment correspondence. I proposed that Jim resubmit renewal in entirety to base renewed license on as few documents as possible that are current and concise. Jim agreed to do this and he may re-use previously submitted portions of documents as necessary.

ACTION REQUIRED
30 days response for renewal resubmission - please call me if more time needed.
No response for amendment, per se, except as included in renewal resubmission.

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
Colleen C. Casey		10/2/96

ACTION TAKEN

SIGNATURE	TITLE	DATE

DuPont Circleville Plant
P.O. Box 89
Circleville, OH 43113

Copy

(c-06638310
05-33 96

64

DUPONT

DuPont Circleville Plant

May 7, 1996

A

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

YGCF 41033

Ref. License #34-02962-02 Amendment

030-13909

$990.70

Attn: Colleen Casey

I am requesting an amendment to our present license as follows:

7407-417466-001240

Item 6J Promethium-147

Item 7J Sealed sources manufactured and distributed in accordance with ANSI ratings and our license issued by the U.S. Nuclear Regulatory Commission.

Item 8J 1 source not to exceed 2.5 ci.

Item 9J To be used in Measurex prototype source holder for Research and Development under 10CFR30.

Item 15 Installation, radiation surveys, relocation, removal from service, maintenance, leak test, safety checks, and repair of Measurex devices containing sealed sources shall be performed by Jerry Sherwood, Willard Bennett, Jr., Donald Sparks, Mark Kiger, Neal Gibson, Tommy Coey, James Jones, Brian Hoops, Ray Gene McJunkin, Mark DePugh or James Richards in accordance with our current license, or by persons specifically licensed by the Commission or an agreement state to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an agreement state to perform such services.

The people listed above attended a Radiation Safety Training Class presented by Measurex. It was conducted by Lisa Burns (RSO), a Health Physicist, and Ken Gibb, Measurex Technical Representative.

not attached

I have enclosed the course curriculum and completion certificates for the attendees.

The above mentioned training also qualifies the attendees to perform specifically designated tasks on the Measurex prototype sensor containing a Model PHC.C2 PM-147 source as indicated below:

RECEIVED
MAY 28 1996
REGION III

301365

Perform source holder installation, removal, and repairs that don't involve disassembly of the source holder, as well as radiation safety testing (including testing for source leakage and for proper function of the on-off mechanism and safety features), and measurement of radiation exposure rates adjacent to the prototype sensor. (Please see letter dated March 4, 1996 for more details.)

Operations involving sensor head separation or source holder removal from the sensor head must be done following the step-by-step procedures given in the Measurex Radiation Safety Manual (P/N 4407004- copies distributed at training session.

I have also included pertinent information on the prototype sealed source construction, source holder construction and radiation profiles.

If you have any questions please call me at 614-474-0145.

Respectfully,

James D. Richards, RPO

Enclosures
(JDR-018.ALL)

DuPont Circleville
P.O. Box 89
Circleville, OH 43113

DuPont Circleville

March 18, 1996

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

Attn: Colleen Casey

This letter is to provide additional information relating to the application for renewal of our license #34-02962-02 Control 397777.

Item 6J Promethium-147

Item 7J Sealed sources manufactured and distributed in accordance with ANSI ratings and our license issued by the U.S. Nuclear Regulatory Commission.

Item 8J 1 source not to exceed 2.5 ci.

Item 9J To be used in Measurex prototype source holder for Research and Development under 10CFR30.

Item 15 Installation, radiation surveys, relocation, removal from service, maintenance, leak test, safety checks, and repair of Measurex devices containing sealed sources shall be performed by Jerry Sherwood, Willard Bennett, Jr., Donald Sparks, Mark Kiger, Neal Gibson, Tommy Coey, James Jones, Brian Hoops, Ray Gene McJunkin, Mark DePugh or James Richards in accordance with our current license, or by persons specifically licensed by the Commission or an agreement state to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an agreement state to perform such services.

The people listed above attended a Radiation Safety Training Class presented by Measurex. It was conducted by Lisa Burns (RSO), a Health Physicist, and Ken Gibb, Measurex Technical Representative.

I have enclosed the course curriculum and completion certificates for the attendees.

The above mentioned training also qualifies the attendees to perform specifically designated tasks on the Measurex prototype sensor containing a Model PHC.C2 PM-147 source as indicated below:

Perform source holder installation, removal, and repairs that don't involve disassembly of the source holder, as well as radiation safety testing (including testing for source leakage and for proper function of the on-off mechanism and safety features), and measurement of radiation exposure rates adjacent to the prototype sensor. (Please see letter dated March 4, 1996 for more details.)

Operations involving sensor head separation or source holder removal from the sensor head must be done following the step-by-step procedures given in the Measurex Radiation Safety Manual (P/N 4407004- copies distributed at training session.

I have also included pertinent information on the prototype sealed source construction, source holder construction and radiation profiles.

If you have any questions please call me at 614-474-0145.

Respectfully,

James D. Richards, RPO

Enclosures
(JDR-017.ALL)

Attachment A

Description of Measurex prototype source holders / sensors: Assuming their measurement capabilities and overall performance are confirmed to be as expected, these Measurex prototype source holders/sensors are planned for future Commission or Agreement State Sealed Source and Device registration for commercial distribution to both General and Specific Licensees. Thus the overall use, design, and safety features of these prototypes are similar to other Measurex thickness sensors which have been approved for possession and use by General and Specific Licensees. Details are provided below.

Name and address of sensor manufacturer/distributor:

Measurex Corporation
One Results Way
Cupertino, CA 95014

Manufacturer's license to distribute the sensors to specifically licensed persons:

California License No. 1663

Manufacturer's license to receive and possess certain radioactive sources and to provide installation and maintenance service for Measurex thickness gauges:

California License No. 1663

Purpose for which sensors are designed: Measure thickness, density, or weight per unit area of a product that is produced as a thin continuous sheet such as paper, plastic, or fabric.

Brief description: The gauging portion of this process control system consists of two sensor heads; one which contains the source in the source holder and one which contains the ion chamber. These sensor heads are mounted directly opposite one another. The product to be measured passes between the two sensor heads through a gap. As the sheet product moves through the gauge, the sensor heads scan back and forth in a motion perpendicular to the direction of the sheet movement.

Radiation source indicators: Light bulbs or LED's used to indicate the status of the sources are mounted on the scanner on which the sensor heads are mounted. For scanners which are more than 15 feet in length, indicators are located on both ends of the scanner. The indicators are clearly labeled and have the following significance:

green	when lighted indicates that the shutter or source is in the closed or retracted position
red	when lighted indicates that the shutter or source is in the open or inserted position.

Labels: All sensors containing radioactive sources are labeled to satisfy regulatory requirements. The source holder and both sides of the head containing the source are labeled with the following:

The standard radiation symbol
Words: "Caution Radioactive Material"
Activity of sealed source
Material of sealed source
Date of assay of sealed source
Serial number of sealed source
Model number of sealed source

Both the source holder and sensor head labels are made of metallic material designed to withstand hostile mill environments. All labels have a yellow background with magenta lettering.

Source holder: The source holder is a shielded assembly primarily constructed of stainless or regular steel and/or a tungsten alloy. In some cases, aluminum is used in covers for electronic components. The source holder provides the source mounting and collimation and contains the "On-Off" mechanism. With the shutter open or source inserted, the radiation beam emitted by the source holder is limited by an aperture. The aperture is not adjustable by the user.

The shutter or source positioner is air actuated and controlled by an electrical solenoid. The shutter (or source) is normally in the closed (retracted) position and both air pressure and power are required for it to move to the open (inserted) position. Once in the open (inserted) position, a continual supply of air and power are required for the shutter (source) to remain open (inserted). A loss of either air pressure or power to the sensor results in a return to the beam off condition. As noted below, failure of a red warning indicator also results in loss of power to the "On-Off" mechanism and a return to the beam off condition.

Environmental effects: This device has been designed to withstand the environmental conditions normally present in a typical customer facility.

Vibration: Vibration is minimal in the typical industrial environments where such sensors are used. In unusual situations where the amount of vibration is high, fragility of the electronics may require vibration isolation mounting of the entire scanner frame.

Temperature: Critical components of the source holders used in these prototype sensors are constructed of metals with melting points over 1000° C (1800° F).

Corrosive environment: The source housing (sensor head) is designed to be air-tight to prevent corrosive environments from reaching sensitive electronics.

Radiation levels: Measurex surveys each sensor before shipment and will provide the recipient with copies of the radiation profiles. Measurex will insure that the radiation

levels adjacent to the sensor do not exceed those permitted for its sensors that have been previously registered for distribution to General or Specific Licensees.

Radiation interlocks and safety features Measurex sensors are designed to include many features which make them safe to operate. Interlocks provided include:

Head displacement/head separation interlocks: Hardware or software interlocks interrupt power to the source or shutter so that they return to the shielded position if either source or receiver head is dislodged from its normal position on the scanner while scanning. The purpose of these interlocks is to prevent an open beam condition if either head is accidentally displaced from the scanner.

Source holder lock: The source holder is locked in place inside the sensor head to prevent casual removal of the source holder.

Computer crash shutter closure: This interlock causes the source or shutter to return to the shielded position after a brief time delay in the event of computer failure or shut down.

Fail-safe indicators: The red lights which indicate the beam on condition are in series with the "On-Off" mechanism such that an indicator failure will result in the shutter (source) returning to the off (retracted) position. The green "beam-off" indicators are driven by a microswitch and require the shutter (source) to be in the closed (retracted) position before power is supplied to the lamps.

Initial radiation safety testing: All radiation safety features are tested and demonstrated to be functional before a sensor is shipped by Measurex.

End user responsibilities for radiation safety: Persons or firms in possession of a Measurex sensor containing a radioactive source have a number of responsibilities. These include:

Radioactive materials licensing: Firms must obtain a radioactive materials license before these prototype sensors can be shipped from Measurex. The information contained in this document may be useful in obtaining such a license. The Measurex Radiation Safety Office may also be able to assist with specific questions.

Personnel dosimetry: Sensor recipients must review the terms of their firm's radioactive materials license and the applicable regulations to determine dosimeter requirements.

Periodic radiation safety testing: Requirements for periodic radiation safety testing will depend on the conditions of the firm's radioactive material license and/or the regulations. Unless required more frequently, Measurex recommends that radiation safety interlocks, warning lights, labels, and the "On-Off" mechanism be checked and documented at no more than six-month intervals in all cases. Such tests should be performed by a person appropriately trained and licensed to do so. Measurex will provide such service under contract.

Service and repair: Firms in possession of Measurex sensors are advised to consult the firm's radioactive material license and/or the regulations to determine which service and repair operations are authorized.

Measurex does not recommend that any person be permitted to repair a Measurex source holder except current Measurex employees who are trained and authorized by Measurex's radioactive materials licenses and who have been given specific permission for the planned repair by the Measurex Radiation Safety Office.

Shipment, transfer, storage, or disposal of radioactive material: Requirements will depend on the conditions of the firm's radioactive material license and/or on the regulations.

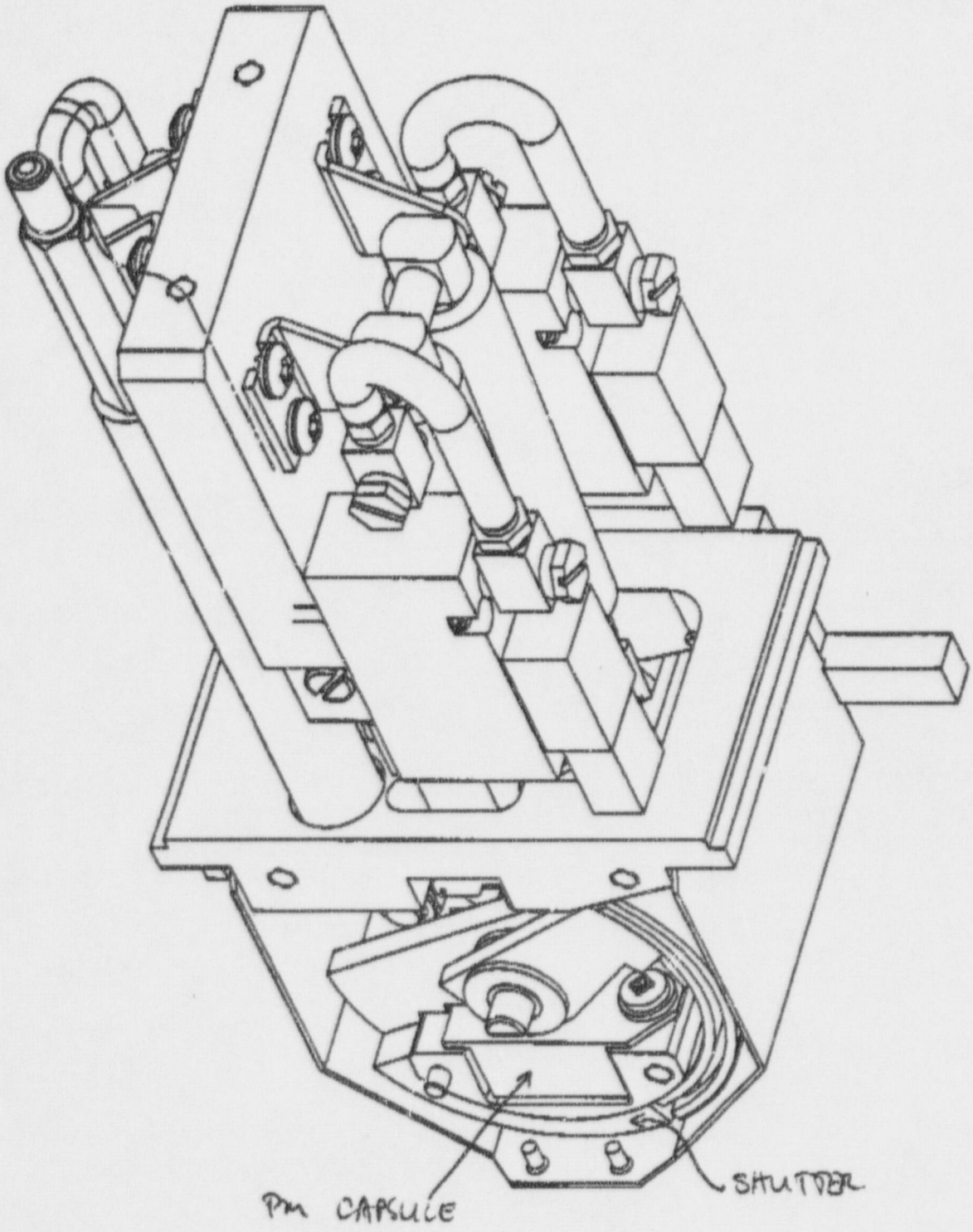
It is Measurex policy to accept the return of radioactive sources that were used in Measurex sensors (some charges may apply). Sources from Measurex sensors may be returned either for disposal or for temporary storage. When contracted to do so, Measurex employees are also available to assist in packaging and shipment of Measurex radioactive sources.

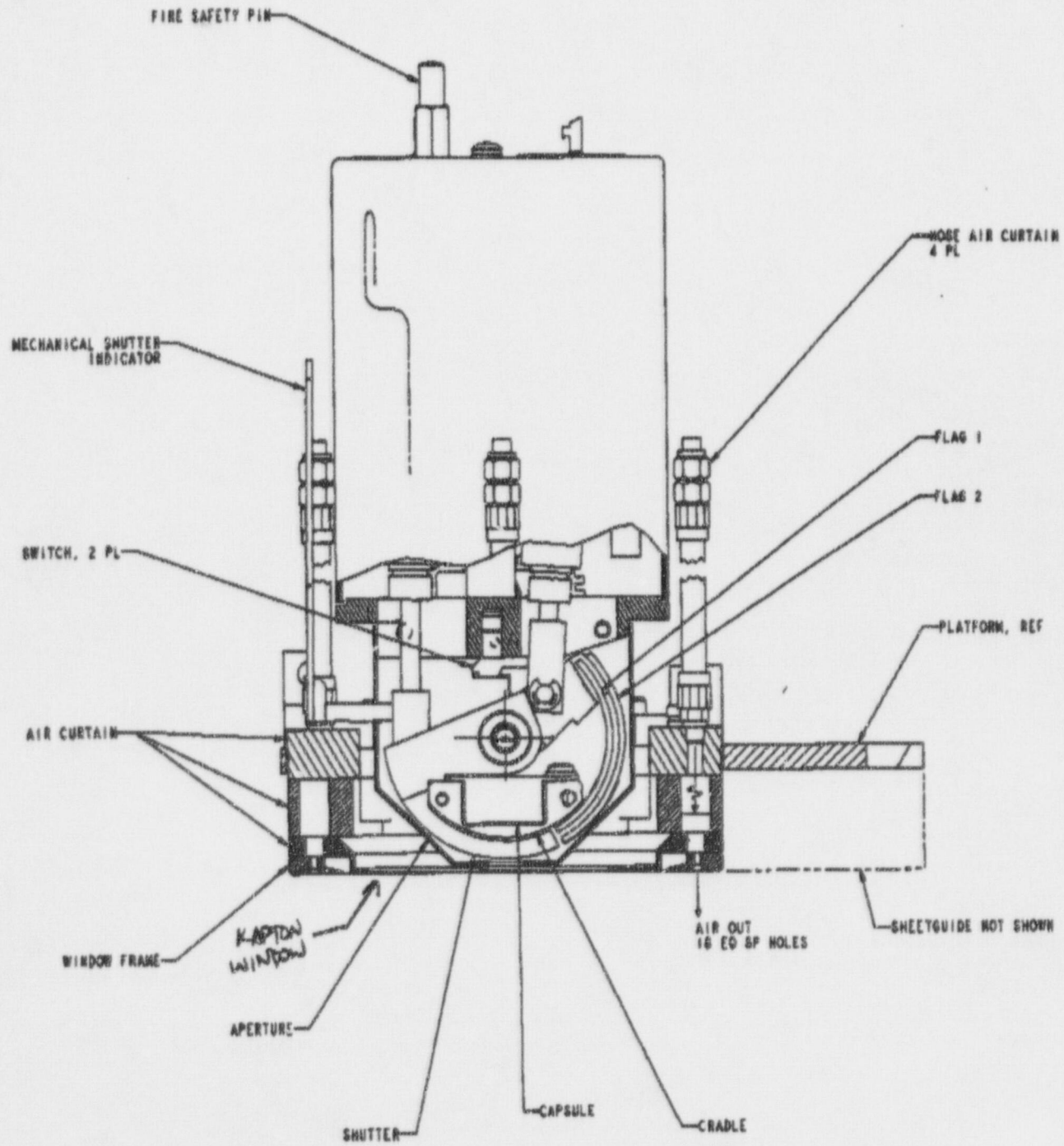
Reports, notifications, and record keeping: Requirements will depend on the conditions of the firm's radioactive material license and/or the regulations, however, Measurex recommends that at least the following documents be kept available for use by employees and for inspection by regulatory authorities:

- This document with a description of the prototype sensor.
- Safety and Emergency Instructions for Nuclear and X-ray Sensors: RS51
- Copies of the radiation profiles provided by Measurex and copies of any additional radiation surveys that may have been made on-site.
- A copy of the radioactive materials license for possession and use of the sensor.
- A copy of the applicable radiation safety regulations for the location of use.
- Copies of the results of periodic radiation safety tests on Measurex sensors.
- Documentation of any radioactive source exchanges, transfer, or disposal that may have taken place.
- Records documenting fulfillment of any other license or regulatory requirements that apply (e.g. dosimetry records).

6 July 1995
Elsa Nimmo

Post-it™ Fax Note 7671	Date	# of pages ▶ 3
To JIM RICHARDS	From S. AXELROD	
Co./Dept. DUPONT	Co. MILLIPORE	
Phone #	Phone # 408 3666-5329	
Fax # 614 474-0245	Fax #	




FIRE SAFETY PIN
NOSE AIR CURTAIN 4 PL
MECHANICAL SHUTTER INDICATOR
FLAG 1
FLAG 2
SWITCH, 2 PL
PLATFORM, REF
AIR CURTAIN
KAPTON WINDOW
WINDOW FRAME
AIR OUT 16 EQ SP HOLES
SHEETGUIDE NOT SHOWN
APERTURE
SHUTTER
CAPSULE
CRADLE

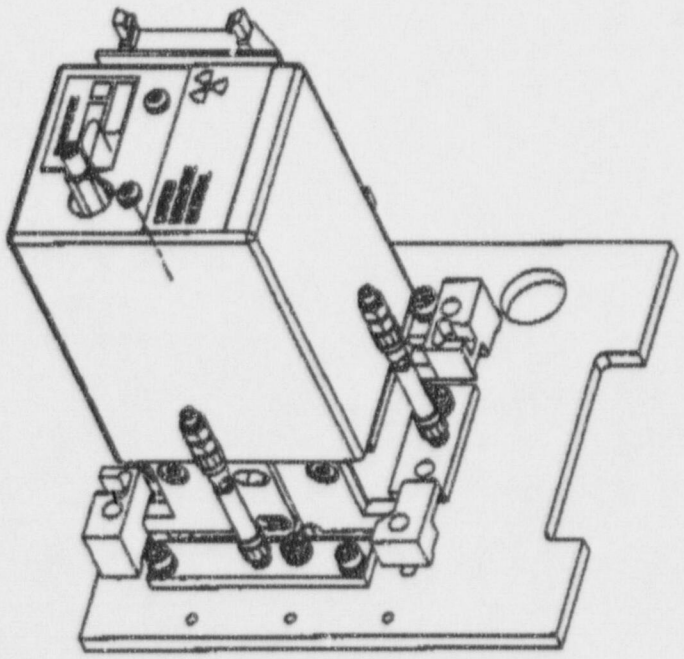
REV	DESCRIPTION	DRG	CHK	APVD	DATE

HOSE AIR CURTAIN
4 PL

FLAG 1

FLAG 2

PLATFORM, REF



SCALE 1.000

SHEETGUIDE NOT SHOWN

FOR MEASUREX USE ONLY:
ENGR SKETCH NO.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
AND TOLERANCES ARE:
DECIMALS ANGLES
.XX ± .02 ± 1°
.XXX ± .005

XXX | XXX

FIRST APPLICATION

DES'D/DRN	X. XXX	DATE XX/XX/XX	APP'D X. XXX
CHECKED	X. XXX	DATE	QA N/A
ENGINEER	X. XXX	DATE	N/A
MFG MGR	N/A	DATE	N/A

MATERIAL XXX

FINISH XXX

measurex CORPORATION

Sx-12 B/W

SIZE D | DRAWING NO. XXX | X

SCALE X/X | DO NOT SCALE DRAWING | SHEET 1 OF 1

PRO/ENGINEER DRAWING
DO NOT REVISE MANUALLY

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

NO: IL-136-S-348-S DATE: February 21, 1996

SOURCE TYPE: Low Energy Beta Source

MODEL: PHC.C2

DISTRIBUTOR:

Amersham Corporation
2636 South Clearbrook Drive
Arlington Heights, IL 60005-4692

MANUFACTURER:

Amersham Buchler GmbH & Co. KG
Gieselweg 1
D-3300 Braunschweig
Germany

ISOTOPE:	MAXIMUM ACTIVITY:
Promethium-147 (Pm-147)	2.5 Ci (92.5 GBq)

LEAK TEST FREQUENCY: 6 months

PRINCIPAL USE: (E) Beta Gauging

CUSTOM SOURCE: ___ YES _X_ NO

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

SOURCE TYPE: Low Energy Beta Source

DESCRIPTION:

The manufacturer reports that the radionuclide is in the form of a ceramic insert, consisting of promethium-147 incorporated as an oxide into an aluminosilicate glass. The mixture of these ingredients is designed to give the ceramic its high melting point of 900°C and structural integrity. The enamel (melting point 900°C) containing promethium-147 is melted into a space 45 mm long (semi-circular ends), 9.5 mm wide and 1 mm deep in a steel insert 54.1 mm long x 16.5 mm wide x 5 mm deep. The enamel is protected by a 5 μm titanium foil. The ceramic technology is very similar to the ceramic technology used in current americium-241 and strontium-90 ceramic sources already licensed by the Nuclear Regulatory Commission (NRC). The VZ-1844 sources are sealed by gluing all components with a heat resistant glue (Gupalon 20).

LABELING:

The source is permanently engraved with the following information:

1. Isotope Pm-147
2. Unique Serial Number
3. Manufacturer Symbol, Flying A
4. Trefoil
5. Model Number

All other pertinent information such as activity, date of measurement, leakage, and contamination tests and ANSI rating will be included on a test report accompanying each source.

DIAGRAMS:

See Attachment 1.

SOURCE TYPE: Low Energy Beta Source

CONDITIONS OF NORMAL USE:

Sources will predominantly be used in the industrial environment in conjunction with a detector system to measure the thickness and density of very thin and light substrates such as in "Saran Wrap" and other types of plastic sheets. These sources will not be used under conditions that exceed the ANSI rating of C33222.

The sealed source will be mounted in a holder such that the shielded device containing the shutter mechanism will act as an automatic fail-safe mechanism when a source is not in use.

The radioactive component of this source is an enamel with melting point of 900°C and it is highly unlikely that there would be any significant dispersal of radioactive material if the source (or device) was involved in an accident or fire.

The recommended working life for this source is five years.

PROTOTYPE TESTING:

Testing was carried out by the manufacturer using four active sources containing up to 11 mCi promethium-147. According to the manufacturer the source achieved an ANSI N542 classification of 77C33222.

EXTERNAL RADIATION LEVELS:

Promethium-147 is a low energy beta emitter, with maximum energy at 225 KeV. There are no accompanying gamma rays except for low energy bremsstrahlung generated by the steel insert.

SOURCE TYPE: Low Energy Beta Source

The following dose rates at varying distances were reported by the manufacturer from a 2.5 Ci source.

DOSE RATES FOR THE PHC.C2 DWG. NO. VZ-1844

Active, window side

5 cm	4100 R/hr, 40 Sv/hr (calculated)
30 cm	1.4 R/hr, 14 mSv/hr (measured)
100 cm	<10 mR/hr, <0.1 mSv/hr (measured)

Inactive, rear side

5 cm	60 mR/hr, 0.6 mSv/hr (measured)
30 cm	<10 mR/hr, <0.1 mSv/hr (measured)
100 cm	<10 mR/hr, <0.1 mSv/hr (measured)

QUALITY ASSURANCE AND CONTROL:

These sources are manufactured according to the Quality Assurance Program described in Amersham-Buchler's Quality Assurance Manual, issued in October 1994, with revisions issued May 1995. A copy of the manual including revisions is on file with the Illinois Department of Nuclear Safety.

The following in-process tests are conducted during manufacture of the sources:

Before Source Assembly

Pressure test on source window
Measurement of emission and total activity from radioactive component

After Source Assembly

Measurement of emission and total activity
Low pressure test on window and glued lid
Visual inspection of window and glued lid

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

SOURCE TYPE: Low Energy Beta Source

The Final Quality Controls are:

Wipe test after assembly
Another wipe test one week later
Visual inspection before the source is packaged

LIMITATIONS AND OTHER CONSIDERATIONS OF USE:

- The source shall be distributed only to persons specifically licensed by the NRC or an Agreement State.
- The source shall be leak tested at six-month intervals using techniques capable of detecting 0.005 microcurie of removable contamination.
- The sources shall not be subjected to environmental or other conditions of use which exceed the ANSI N542 classification of 77C33222.
- Handling, storage, use, transfer, and disposal: To be determined by the licensing authority. These services should be provided only by persons specifically licensed by the Department, the U.S. Nuclear Regulatory Commission, an Agreement State, or a Licensing State to perform these services.
- When installed, the Model PHC.C2 sources should be protected from exposure to environmental factors such as highly corrosive chemicals, temperature extremes, impact, vibration, puncture, fire, or explosion as appropriate to the intended use.
- This registration sheet and the information contained within the references shall not be changed or transferred without the written consent of the Illinois Department of Nuclear Safety.

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

NO: IL-136-S-348-S DATE: February 21, 1996

SOURCE TYPE: Low Energy Beta Source

SAFETY ANALYSIS SUMMARY:

Based on our review of the information and test data sited below, the claimed ANSI classification of the source, and that this source is similar in construction to a previously approved design, we continue to conclude that the source design Model PHC.C2 would be expected to maintain its containment integrity for normal conditions of use and accidental conditions which might occur during the use specified in this certificate.

REFERENCES:

The following supporting documents for the Amersham Source Model PHC.C2 are hereby incorporated by reference and are made a part of this registry document.

- Amersham Corporation letter of application, with attachments, dated October 26, 1995.
- Amersham Corporation letters, with attachments, dated January 31, 1996.
- Amersham Corporation letter dated February 20, 1996.

ISSUING AGENCY: Illinois Department of Nuclear Safety

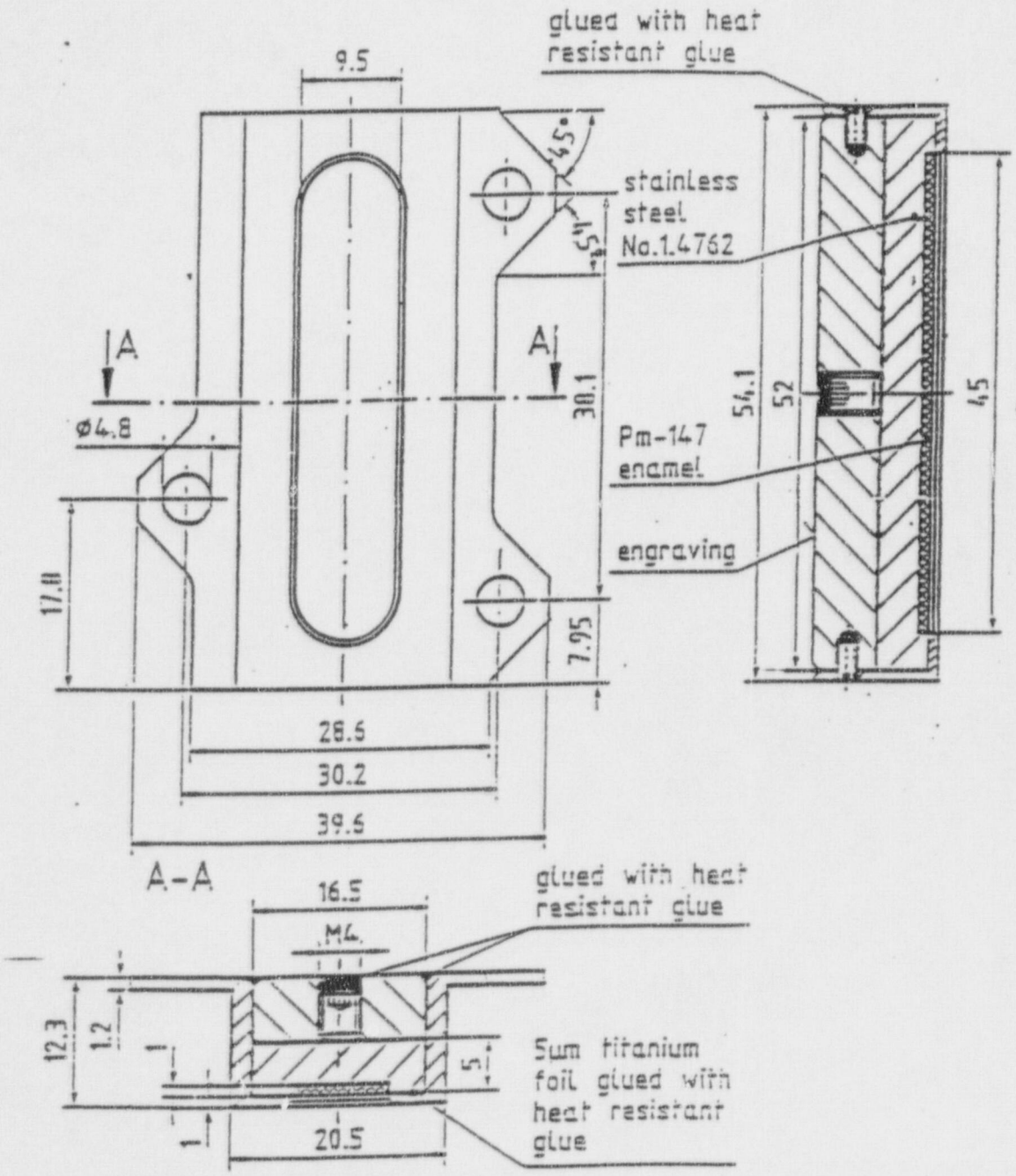
DATE: 2/21/96 REVIEWED BY: Charles G. Vinson

DATE: 2/21/96 CONCURRENCE: Joseph G. Klinger

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

NO: IL-136-S-348-S DATE: February 21, 1996 ATTACHMENT 1

Sealed Source PHC.C2, DWG. VZ-1844



Nimmo,Elsa (NCS1)

From:	Nimmo,Elsa (NCS1)
To:	Shields, D. DuPont
Cc:	Axelrod_Steve.Mac; Axelrod_Steve.Mac@MCECC2; Brady,Brendan (NCS1)
Subject:	Msg for Jim Richards on Measurex Pm-147 Prototype Sensor
Date:	Thursday, February 29, 1996 9:02AM
Priority:	High

To: Jim Richards,
Radiation Safety Officer
DuPont, Circleville

By this message, I verify that the radiation safety training provided by Measurex to DuPont employees (per the 1/95 outline "Manufacturer's Suggested Radiation Safety Training ") is applicable to the Measurex prototype sensor containing a Model PHC.C2 Pm-147 source, as described below.

With regulatory authority approval, that training qualifies any of the participants to perform source holder installation, removal, and repairs that don't involve disassembly of the source holder, as well as radiation safety testing (including testing for source leakage and for proper function of the on-off mechanism and safety features), and measurement of radiation exposure rates adjacent to the prototype sensor.

As included in the training, operations that involve sensor head separation or source holder removal from the sensor head must be done following the step-by-step procedures given in the Measurex Radiation Safety Manual (Measurex p/n 44070004 -- copies distributed at training session, add'l copies available). As with any Measurex sensor, it is essential for workers involved with head separation or source holder removal from a head to first assure that the device shutter is fully closed and then to disconnect power to the shutter actuator before proceeding

If there is a future need to have DuPont Personnel partially disassemble the prototype source holder containing the PHC.C2 Pm-147 source (e.g. to replace shutter or flag solenoids), I recommend that the employees obtain additional training.

Best regards,
Elsa Nimmo
Radiation Safety Officer
Measurex Corporation

MANUFACTURER'S SUGGESTED RADIATION SAFETY TRAINING OUTLINE

MEASUREX PROCESS CONTROL DEVICES CONTAINING RADIATION SOURCES

The following topics will be presented by a member of the Radiation Safety Staff of Measurex Corporation, Cupertino, CA. Each staff member is named on California Radioactive Material License Number 1663 and has been deemed qualified by reasons of training and experience by the State of California Department of Health Services (16 hours total).

A. RADIATION AND RADIOACTIVE DECAY

1. NATURE AND ORIGIN OF BETA PARTICLES
2. NATURE AND ORIGIN OF GAMMA RAYS
3. INTERACTION OF RADIATION WITH MATTER
   a. ABSORPTION, ATTENUATION AND LOSS OF ENERGY
   b. SHIELDING MATERIALS
   c. BREMSSTRALUNG RADIATION
   d. BIOLOGICAL INTERACTIONS

B. UNITS AND QUANTITIES

1. UNITS OF ACTIVITY (CURIES/BEQUERELS)
2. UNITS OF EXPOSURE (ROENTGEN)
3. UNITS OF DOSE AND DOSE EQUIVALENT (RADS/REMS, GRAYS/SIEVERTS)
   a. QUALITY FACTORS (BETA AND GAMMA)

C. BIOLOGICAL EFFECTS

1. LONG TERM EFFECTS
   a. GENETIC
   b. SOMATIC
2. SHORT TERM EFFECTS
   a. LOCALIZED EXPOSURES
   b. LD 50/30
3. EXTERNAL EXPOSURE HAZARDS, DOSE RATES FROM SOURCES USED IN GAUGES
   a. KR-85
   b. SR-90
   c. PM-147

D. METHODS TO REDUCE EXPOSURE

1. TIME
2. DISTANCE
3. SHIELDING
4. VERIFICATION OF SHUTTER CLOSURE
5. PROPER STORAGE AND HANDLING OF SOURCE HOLDERS

E. DESIGN, CONFIGURATION AND SAFETY FEATURES OF MEASUREX GAUGES

1. RADIOACTIVE SEALED SOURCES
   a. KR-85
   b. SR-90
   c. PM-147
   d. AM-241
2. SOURCE HOLDERS (BASIS WEIGHT ASSEMBLIES)
   a. SOURCE III
   b. SOURCE VI, VI-F
   c. SOURCE IX
3. GAUGE HEAD AND SCANNER FEATURES
   a. MODEL 2201
   b. MODEL 1201
   c. OTHER MODELS USED BY CUSTOMER
   d. MODEL 4201

F. RADIATION MEASUREMENT AND SURVEYS

1. INSTRUMENTATION
   a. GM DETECTORS
   b. IONIZATION CHAMBERS
2. SURVEY TECHNIQUES
   a. DEMONSTRATION
   b. STUDENT PRACTICE AND DEMONSTRATION
3. INTERPRETATION OF MEASUREMENTS
   a. PENETRATING RADIATION
   b. NON-PENETRATING RADIATION
   c. ALLOWABLE DOSE RATES FOR MEASUREX GAUGES
   d. CONTROLLED AREA DOSE RATES
   e. UNCONTROLLED AREA DOSE RATES
4. PERSONNEL MONITORING DEVICES
   a. FILM DOSIMETERS
   b. TL DOSIMETERS
   c. PROPER WEARING AND USE

G. LEAK TESTING OF SEALED RADIOACTIVE SOURCES

1. PROCEDURES
   a. DEMONSTRATION
   b. STUDENT PRACTICE AND DEMONSTRATION
2. REGULATORY REQUIREMENTS
   a. APPROVED LEAK TEST KITS
   b. ANALYSIS OF LEAK TEST SAMPLES
   c. FREQUENCY OF LEAK TESTS
   d. REPORTING REQUIREMENTS FOR LEAKING SOURCES
3. PRECAUTIONARY PROCEDURES FOR SUSPECTED LEAKING SOURCES

H. REGULATIONS ON THE USE OF RADIOACTIVE SOURCES

1. NUCLEAR REGULATORY COMMISSION, TITLE 10 CODE OF FEDERAL REGULATIONS (CPR)
   a. SPECIFIC LICENSE
      1. PART 19, NOTICES, INSPECTIONS AND INSTRUCTIONS TO WORKERS
      2. PART 20, STANDARDS FOR PROTECTION AGAINST RADIATION
   b. GENERAL LICENSES AND GENERAL LICENSED DEVICES PART 31
2. TRANSPORTATION REGULATIONS
   a. DEPT. OF TRANSPORTATION, TITLE 49 (CFR)
      1. PACKAGE MARKING
      2. PACKAGING LABELING
      3. DETERMINATION OF TRANSPORT INDEX
      4. SHIPPING PAPERS/HAZARDOUS GOODS DECLARATIONS
   b. TITLE 10, PART 71
      1. TYPE A CONTAINER LIMITS
      2. TESTING REQUIREMENTS FOR TYPE A CONTAINERS
   c. INTERNATIONAL AIRLINE TRANSPORTATION AGENCY
      (FOR RSO TRAINING AN ADDITONAL 4 HOURS OF TRAINING WILL BE HELD ON TOPICS ABOVE (UNDER "H")

I. MISCELLANEOUS

1. MEASUREX RADIATION SAFETY MANUAL
2. MEASUREX RADIATION SAFETY OFFICE SUPPORT
3. QUESTION AND ANSWER SESSION
4. EXAMINATION

THE FOLLOWING PORTION OF THE TRAINING ARE PERFORMED BY A MEASUREX FIELD TECHNICAL REPRESENTATIVE OR A FIELD MANAGER WITH SERVICE/INSTALLATION EXPERIENCE. (16 HOURS TOTAL)

J. LECTURE ON SAFETY FEATURES X-RAY AND NUCLEAR DEVICES

1. INTERLOCKS
2. SOFTWARE FEATURES
3. RADIATION INDICATORS
4. RAD FAULT BOARDS
5. RADIATION SAFETY TEST

K. HANDS ON LAB SESSION I

1. DETERMINATION OF SHUTTER STATUS
2. HEAD SEPARATION
3. KAPTON WINDOW REPLACEMENT
4. INDICATOR BULB REPLACEMENT
5. PERFORMANCE OF SEMI-ANNUAL RADIATION SAFETY TEST, NUCLEAR AND X-RAY SENSORS
6. LEAK/WIPE TESTING OF RADIATION SOURCES

L. HANDS-ON LAB SESSION II

1. COMMON RADIATION SAFETY PROBLEMS
2. INSTALLATION OF NEW REPLACEMENT SOURCES
3. REPLACEMENT OF THERMAL SAFETY NUTS
4. REPLACEMENT OF FLAG SOLENOID
5. REPLACEMENT OF SHUTTER SOLENOID (SOURCE III AND IV ONLY)
6. HEAD AND SOURCE REMOVAL
7. HEAD ALIGNMENT

M. STUDENT HANDS-ON PRACTICAL EXAM

ESTIMATED TIME FOR MEASUREX RADIATION SAFETY TRAINING: 32 HOURS (4 DAYS)

Radiation Safety Training for E.I.DuPont, Circleville,OH

Dates of Training: Nov. 7 and 8, 1995
Instructor: Lisa Burns Health Physicist Measurex Corporation and

Nov. 9 and 10: Ken Gibb, Technical Representataive, Measurex Corporation

Duratin of Training: 32 Hours See Training Outline for Content

Attendees:

	Name	SSN [redacted] Number:
✓•	BRIAN L. HOOPS	275-64-2700
✓•	MICK S. KIAOE	297-58-3534
✓•	Mike T Henderson	294-52-1966
✓•	DONALD E. SCHROEDER	281-38-5663
✓•	JAMES D. JONES	297-58-4315
✓•	Jerry L Sherwood	295-36-1411
✓•	RAY GENE McJUNKIN	286-64-3222
✓•	NEAL GIBSON	277-38-9603
✓•	Tommy Coey	302-48-9979
•	MARK H. DEPUGH	290-53-1573
✓•	JAMES D. RICHARDS	370-40-5348

✓ = Certificate issued

•• attended K.Gibbs session

measurex
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CERTIFICATE OF TRAINING

This is to certify that Mark DePugh has sucessfully completed 32 hours of radiation safety training on Measurex Process Control Devices Containing Radiation Sources. The training was held on November 7, 8, 9 and 10 , 1995 in Circleville,OH. The training was given by Lisa Burns, Health Physicist and Ken Gibb, Technical Representative, both of Measurex Corporation.

The training consisted of topics given in the document entitled "Manufacturer's Suggested Radiation Safety Training Outline, Measurex Process Control Devices Containing Radiation Sources" dated 1/95. This training was pre-approved by the Nuclear Regulatory Commission, Region III .

This training qualifies each participant to apply for authorization to perform installation, removal, maintenance, service of the radioactive source holder, (including shutter and flag solenoid exchange), radiation safety testing (including leak testing and testing of on/off mechanism, indicators and associated safety features), and radiation exposure rate surveys on Measurex Process Control Equipment, Sensor Models 2201 and 4201. These activities may be performed only after authorization is obtained from the appropriate regulatory authorities.

Lisa Burns

Lisa Burns
Health Physicist
Measurex Corporation

11/14/95
Date

MEASUREX CORPORATION
ONE RESULTS WAY
CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

measurex
CORPORATION

CERTIFICATE OF TRAINING

This is to certify that Jim Richards has sucessfully completed 32 hours of radiation safety training on Measurex Process Control Devices Containing Radiation Sources. The training was held on November 7, 8, 9 and 10 , 1995 in Circleville,OH. The training was given by Lisa Burns, Health Physicist and Ken Gibb, Technical Representative, both of Measurex Corporation.

The training consisted of topics given in the document entitled "Manufacturer's Suggested Radiation Safety Training Outline, Measurex Process Control Devices Containing Radiation Sources" dated 1/95. This training was pre-approved by the Nuclear Regulatory Commission, Region III .

This training qualifies each participant to apply for authorization to perform installation, removal, maintenance, service of the radioactive source holder, (including shutter and flag solenoid exchange), radiation safety testing (including leak testing and testing of on/off mechanism, indicators and associated safety features), and radiation exposure rate surveys on Measurex Process Control Equipment, Sensor Models 2201 and 4201. These activities may be performed only after authorization is obtained from the appropriate regulatory authorities.

Lisa Burns

Lisa Burns
Health Physicist
Measurex Corporation

11/14/95
Date

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ONE RESULTS WAY
CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

measurex
CORPORATION

CERTIFICATE OF TRAINING

This is to certify that Tommy Coey has sucessfully completed 32 hours of radiation safety training on Measurex Process Control Devices Containing Radiation Sources. The training was held on November 7, 8, 9 and 10 , 1995 in Circleville,OH. The training was given by Lisa Burns, Health Physicist and Ken Gibb, Technical Representative, both of Measurex Corporation.

The training consisted of topics given in the document entitled "Manufacturer's Suggested Radiation Safety Training Outline, Measurex Process Control Devices Containing Radiation Sources" dated 1/95. This training was pre-approved by the Nuclear Regulatory Commission, Region III .

This training qualifies each participant to apply for authorization to perform installation, removal, maintenance, service of the radioactive source holder, (including shutter and flag solenoid exchange), radiation safety testing (including leak testing and testing of on/off mechanism, indicators and associated safety features), and radiation exposure rate surveys on Measurex Process Control Equipment, Sensor Models 2201 and 4201. These activities may be performed only after authorization is obtained from the appropriate regulatory authorities.

Lisa Burns

Lisa Burns
Health Physicist
Measurex Corporation

11/14/95
Date

MEASUREX CORPORATION
ONE RESULTS WAY
CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

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CORPORATION

CERTIFICATE OF TRAINING

This is to certify that Neal Gibson has sucessfully completed 32 hours of radiation safety training on Measurex Process Control Devices Containing Radiation Sources. The training was held on November 7, 8, 9 and 10 , 1995 in Circleville,OH. The training was given by Lisa Burns, Health Physicist and Ken Gibb, Technical Representative, both of Measurex Corporation.

The training consisted of topics given in the document entitled "Manufacturer's Suggested Radiation Safety Training Outline, Measurex Process Control Devices Containing Radiation Sources" dated 1/95. This training was pre-approved by the Nuclear Regulatory Commission, Region III .

This training qualifies each participant to apply for authorization to perform installation, removal, maintenance, service of the radioactive source holder, (including shutter and flag solenoid exchange), radiation safety testing (including leak testing and testing of on/off mechanism, indicators and associated safety features), and radiation exposure rate surveys on Measurex Process Control Equipment, Sensor Models 2201 and 4201. These activities may be performed only after authorization is obtained from the appropriate regulatory authorities.

Lisa Burns

Lisa Burns
Health Physicist
Measurex Corporation

11/14/95
Date

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CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

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CERTIFICATE OF TRAINING

This is to certify that Ray Gene McJunkin has sucessfully completed 32 hours of radiation safety training on Measurex Process Control Devices Containing Radiation Sources. The training was held on November 7, 8, 9 and 10 , 1995 in Circleville,OH. The training was given by Lisa Burns, Health Physicist and Ken Gibb, Technical Representative, both of Measurex Corporation.

The training consisted of topics given in the document entitled "Manufacturer's Suggested Radiation Safety Training Outline, Measurex Process Control Devices Containing Radiation Sources" dated 1/95. This training was pre-approved by the Nuclear Regulatory Commission, Region III .

This training qualifies each participant to apply for authorization to perform installation, removal, maintenance, service of the radioactive source holder, (including shutter and flag solenoid exchange), radiation safety testing (including leak testing and testing of on/off mechanism, indicators and associated safety features), and radiation exposure rate surveys on Measurex Process Control Equipment, Sensor Models 2201 and 4201. These activities may be performed only after authorization is obtained from the appropriate regulatory authorities.

Lisa Burns

Lisa Burns
Health Physicist
Measurex Corporation

11/14/95
Date

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ONE RESULTS WAY
CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

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CERTIFICATE OF TRAINING

This is to certify that Jerry Sherwood has sucessfully completed 32 hours of radiation safety training on Measurex Process Control Devices Containing Radiation Sources. The training was held on November 7, 8, 9 and 10 , 1995 in Circleville,OH. The training was given by Lisa Burns, Health Physicist and Ken Gibb, Technical Representative, both of Measurex Corporation.

The training consisted of topics given in the document entitled "Manufacturer's Suggested Radiation Safety Training Outline, Measurex Process Control Devices Containing Radiation Sources" dated 1/95. This training was pre-approved by the Nuclear Regulatory Commission, Region III .

This training qualifies each participant to apply for authorization to perform installation, removal, maintenance, service of the radioactive source holder, (including shutter and flag solenoid exchange), radiation safety testing (including leak testing and testing of on/off mechanism, indicators and associated safety features), and radiation exposure rate surveys on Measurex Process Control Equipment, Sensor Models 2201 and 4201. These activities may be performed only after authorization is obtained from the appropriate regulatory authorities.

Lisa Burns

Lisa Burns
Health Physicist
Measurex Corporation

11/14/95
Date

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ONE RESULTS WAY
CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

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CERTIFICATE OF TRAINING

This is to certify that James Jones has sucessfully completed 32 hours of radiation safety training on Measurex Process Control Devices Containing Radiation Sources. The training was held on November 7. 8, 9 and 10 , 1995 in Circleville,OH. The training was given by Lisa Burns, Health Physicist and Ken Gibb, Technical Representative, both of Measurex Corporation.

The training consisted of topics given in the document entitled "Manufacturer's Suggested Radiation Safety Training Outline, Measurex Process Control Devices Containing Radiation Sources" dated 1/95. This training was pre-approved by the Nuclear Regulatory Commission, Region III .

This training qualifies each participant to apply for authorization to perform installation, removal, maintenance, service of the radioactive source holder, (including shutter and flag solenoid exchange), radiation safety testing (including leak testing and testing of on/off mechanism, indicators and associated safety features), and radiation exposure rate surveys on Measurex Process Control Equipment, Sensor Models 2201 and 4201. These activities may be performed only after authorization is obtained from the appropriate regulatory authorities.

Lisa Burns

Lisa Burns
Health Physicist
Measurex Corporation

11/14/95
Date

MEASUREX CORPORATION
ONE RESULTS WAY
CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

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CERTIFICATE OF TRAINING

This is to certify that Donald Schroeder has sucessfully completed 32 hours of radiation safety training on Measurex Process Control Devices Containing Radiation Sources. The training was held on November 7, 8, 9 and 10 , 1995 in Circleville,OH. The training was given by Lisa Burns, Health Physicist and Ken Gibb, Technical Representative, both of Measurex Corporation.

The training consisted of topics given in the document entitled "Manufacturer's Suggested Radiation Safety Training Outline, Measurex Process Control Devices Containing Radiation Sources" dated 1/95. This training was pre-approved by the Nuclear Regulatory Commission, Region III .

This training qualifies each participant to apply for authorization to perform installation, removal, maintenance, service of the radioactive source holder, (including shutter and flag solenoid exchange), radiation safety testing (including leak testing and testing of on/off mechanism, indicators and associated safety features), and radiation exposure rate surveys on Measurex Process Control Equipment, Sensor Models 2201 and 4201. These activities may be performed only after authorization is obtained from the appropriate regulatory authorities.

Lisa Burns

Lisa Burns
Health Physicist
Measurex Corporation

11/14/95
Date

MEASUREX CORPORATION
ONE RESULTS WAY
CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

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CERTIFICATE OF TRAINING

This is to certify that Mike Henderson has sucessfully completed 32 hours of radiation safety training on Measurex Process Control Devices Containing Radiation Sources. The training was held on November 7, 8, 9 and 10 , 1995 in Circleville,OH. The training was given by Lisa Burns, Health Physicist and Ken Gibb, Technical Representative, both of Measurex Corporation.

The training consisted of topics given in the document entitled "Manufacturer's Suggested Radiation Safety Training Outline, Measurex Process Control Devices Containing Radiation Sources" dated 1/95. This training was pre-approved by the Nuclear Regulatory Commission, Region III .

This training qualifies each participant to apply for authorization to perform installation, removal, maintenance, service of the radioactive source holder, (including shutter and flag solenoid exchange), radiation safety testing (including leak testing and testing of on/off mechanism, indicators and associated safety features), and radiation exposure rate surveys on Measurex Process Control Equipment, Sensor Models 2201 and 4201. These activities may be performed only after authorization is obtained from the appropriate regulatory authorities.

Lisa Burns

Lisa Burns
Health Physicist
Measurex Corporation

11/14/95
Date

MEASUREX CORPORATION
ONE RESULTS WAY
CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

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CERTIFICATE OF TRAINING

This is to certify that Brian Hoops has sucessfully completed 32 hours of radiation safety training on Measurex Process Control Devices Containing Radiation Sources. The training was held on November 7, 8, 9 and 10 , 1995 in Circleville,OH. The training was given by Lisa Burns, Health Physicist and Ken Gibb, Technical Representative, both of Measurex Corporation.

The training consisted of topics given in the document entitled "Manufacturer's Suggested Radiation Safety Training Outline, Measurex Process Control Devices Containing Radiation Sources" dated 1/95. This training was pre-approved by the Nuclear Regulatory Commission, Region III .

This training qualifies each participant to apply for authorization to perform installation, removal, maintenance, service of the radioactive source holder, (including shutter and flag solenoid exchange), radiation safety testing (including leak testing and testing of on/off mechanism, indicators and associated safety features), and radiation exposure rate surveys on Measurex Process Control Equipment, Sensor Models 2201 and 4201. These activities may be performed only after authorization is obtained from the appropriate regulatory authorities.

Lisa Burns

Lisa Burns
Health Physicist
Measurex Corporation

11/14/95
Date

MEASUREX CORPORATION
ONE RESULTS WAY
CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

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CORPORATION

CERTIFICATE OF TRAINING

This is to certify that Mark Kiger has sucessfully completed 32 hours of radiation safety training on Measurex Process Control Devices Containing Radiation Sources. The training was held on November 7, 8, 9 and 10 , 1995 in Circleville,OH. The training was given by Lisa Burns, Health Physicist and Ken Gibb, Technical Representative, both of Measurex Corporation.

The training consisted of topics given in the document entitled "Manufacturer's Suggested Radiation Safety Training Outline, Measurex Process Control Devices Containing Radiation Sources" dated 1/95. This training was pre-approved by the Nuclear Regulatory Commission, Region III .

This training qualifies each participant to apply for authorization to perform installation, removal, maintenance, service of the radioactive source holder, (including shutter and flag solenoid exchange), radiation safety testing (including leak testing and testing of on/off mechanism, indicators and associated safety features), and radiation exposure rate surveys on Measurex Process Control Equipment, Sensor Models 2201 and 4201. These activities may be performed only after authorization is obtained from the appropriate regulatory authorities.

Lisa Burns

Lisa Burns
Health Physicist
Measurex Corporation

11/14/95
Date

MEASUREX CORPORATION
ONE RESULTS WAY
CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

E. I. Dupont
U.S. Route 23 South Dupont Rd.
Circleville, Ohio

August 29, 1995

MATERIALS LICENSING SECTION
U.S. Nuclear Regulatory Commission, Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

Attn: Colleen Casey

Colleen,

This letter is provide additional information relating to our application for the renewal of license No. 34-02962-02, Control No. 97777.

I request Item 15 be changed to read as follows:

15. Installation, radiation surveys, relocation, removal from service, maintenance, leak tests, safety checks, and repair of Measurex devices containing sealed sources shall be performed by, Jerry Sherwood, Willard Bennett Jr., Donald Sparks, Mark Kiger, Robert Hill, Neal Gibson, Tommy Coey, James Jones, Brian Hoops, Ray Gene McJunkin, Mark Depugh, or James Richards in accordance with our current license, or by persons specifically licensed by the Commission or an Agreement State to perform such services. Installation, replacement, and disposal of sealed sources shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services.

The individuals listed above will attend a Radiation Safety Training Class, scheduled the first week in November, presented by Measurex. It will be conducted by Lisa Burns (RSO), a Health Physicist, and Ken Gibb, Measurex Technical Representative. The course outline and content are attached.

If you have any questions please contact me at 614-474-0145.

Regards,

J. D. Richards

J. D. Richards, RSO

MEASUREX FIELD TECHNICAL TRAINING

E. I. DUPONT DE NEMOURS & CO.
Circleville, Ohio

RADIATION SAFETY TRAINING
as scheduled (4 days)

COURSE SCHEDULE:

DAY: 1

8:00 AM	INTRODUCTIONS COURSE OBJECTIVES COURSE OUTLINE AND MANUALS
8:30 - 11:30 AM	**LISA BURNS** MEASUREX CORPORATION RADIATION SAFETY OFFICER CLASSROOM LECTURE RADIATION PRINCIPLES AND MEASUREX SOURCES
11:30 AM	LUNCH BREAK
12:00 - 4:00 PM	LISA BURNS CLASSROOM LECTURE

DAY: 2

8:00 - 11:30 AM	LISA BURNS HANDS-ON DEMONSTRATIONS RADIATION SURVEY LEAK TESTING FIREPIN REMOVAL / REPLACEMENT
11:30 AM	LUNCH BREAK
12:00 - 4:00 PM	LISA BURNS CLASSROOM LECTURE, QUESTIONS AND ANSWER SESSION AND TEST

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MEASUREX FIELD TECHNICAL TRAINING

DAY: 3

8:00 - 11:30 AM	KEN GIBB HANDS-ON LABS INTERLOCKS AND INDICATORS HEADS AND SOURCE REMOVAL
11:30 AM	LUNCH
12:00 - 4:00 PM	HANDS -ON LABS (cont.) WINDOW REPLACEMENT INDICATOR BULB REPLACEMENT

DAY: 4

8:00 - 11:30 AM	KEN GIBB CLASSROOM LECTURE COMMON RADIATION PROBLEMS CORRECTIVE ACTIONS
11:30 AM	LUNCH
12:00 - 4:00 PM	HANDS -ON PRACTICAL EXAM

Radiation Safety Training Outline

The following topics will be presented by a member of the Radiation Safety Staff of Measurex Corporation, Cupertino, CA. Each staff member is named on CA. Radioactive Material License Number 1663 and has been deemed qualified by reasons of training and experience by the State of CA. Dept. of Health Services.

A. RADIATION AND RADIOACTIVE DECAY

1. NATURE AND ORIGIN OF BETA PARTICLES
2. NATURE AND ORIGIN OF GAMA RAYS
3. INTERACTION OF RADIATION WITH MATTER
   a. ABSORPTION, ATTENUATION AND LOSS OF ENERGY
   b. SHIELDING MATERIALS
   c. BREMSSTRALUNG RADIATION
   d. BIOLOGICAL INTERACTIONS

B. UNITS AND QUANTITIES

1. UNITS OF ACTIVITY (CURIES)
2. UNITS OF EXPOSURE (ROENTGEN)
3. UNITS OF DOSE AND DOSE EQUIVALENT (RADS/REMS)
   a. QUALITY FACTORS (BETA AND GAMMA)

C. BIOLOGICAL EFFECTS

1. LONG TERM EFFECTS
   a. GENETIC
   b. SOMATIC

2. SHORT TERM EFFECTS
   a. LOCALIZED EXPOSURES
   b. LD 50/30

3. EXTERNAL EXPOSURE HAZARDS, DOSE RATES FROM SOURCES USED IN MEASUREX GAUGES
   a. KR-85
   b. SR-90
   c. PM-147

Radiation Safety Training Outline

D. METHODS TO REDUCE EXPOSURE

1. TIME
2. DISTANCE
3. SHIELDING
4. VERIFICATION OF SHUTTER CLOSURE
5. PROPER STORAGE AND HANDLING OF SOURCE HOLDERS

E. DESIGN, CONFIGURATION AND SAFETY FEATURES OF MEASUREX GAUGES

1. RADIOACTIVE SEALED SOURCES
   a. KR-85
   b. SR-90
   c. PM-147

2. SOURCE HOLDERS (BASIS WEIGHT ASSEMBLIES)
   a. SOURCE III
   b. SOURCE VI
   c. SOURCE IX

3. GAUGE HEAD AND SCANNER FEATURES
   a. MODEL 2201
   b. MODEL 1201
   c. MODEL 4201
   d. OTHER MODELS USED BY DUPONT

F. RADIATION MEASUREMENT AND SURVEYS

1. INSTRUMENTATION
   a. GM DETECTORS
   b. IONIZATION CHAMBERS

2. SURVEY TECHNIQUES
   a. DEMONSTRATION
   b. STUDENT PRACTICE AND DEMONSTRATION

3. INTERPRETATION OF MEASUREMENTS
   a. PENETRATING RADIATION
   b. NON-PENETRATING RADIATION
   c. ALLOWABLE DOSE RATES FOR MEASUREX GAUGES
   d. CONTROLLED AREA DOSE RATES
   e. UNCONTROLLED AREA DOSE RATES

Radiation Safety Training Outline

4. PERSONNEL MONITORING DEVICES
   a. FILM DOSIMETERS
   b. TL DOSIMETERS
   c. PROPER WEARING AND USE

G. LEAK TESTING OF SEALED RADIOACTIVE SOURCES

1. PROCEDURES
   a. DEMONSTRATION
   b. STUDENT PRACTICE AND DEMONSTRATION

2. REGULATORY REQUIREMENTS
   a. APPROVED LEAK TEST KITS
   b. ANALYSIS OF LEAK TEST SAMPLES
   c. FREQUENCY OF LEAK TESTS
   d. REPORTING REQUIREMENTS FOR LEAKING SOURCES

3. PRECAUTIONARY PROCEDURES FOR SUSPECTED LEAKING SOURCES

H. REGULATIONS ON THE USE OF RADIOACTIVE SOURCES

1. NUCLEAR REGULATORY COMMISSION, TITLE 10 CODE OF FEDERAL REGULATIONS (CFR)
   a. SPECIFIC LICENSE
      1. PART 19, NOTICES, INSPECTIONS AND INSTRUCTIONS TO WORKERS
      2. PART 20, STANDARDS FOR PROTECTION AGAINST RADIATION

2. TRANSPORTATION REGULATIONS
   a. DEPT. OF TRANSPORTATION, TITLE 49 (CFR)
      1. PACKAGE MARKING
      2. PACKAGE LABELING
      3. DETERMINATION OF TRANSPORT INDEX
      4. SHIPPING PAPERS/HAZARDOUS GOODS DECLARATION

   b. TITLE 10, PART 71
      1. TYPE A CONTAINER LIMITS
      2. TESTING REQUIREMENTS FOR TYPE A CONTAINERS

   c. INTERNATIONAL AIRLINE TRANSPORTATION AGENCY

Radiation Safety Training Outline

I. MISCELLANEOUS

1. MEASUREX RADIATION SAFETY MANUAL
2. MEASUREX RADIATION SAFETY OFFICE SUPPORT
3. QUESTION AND ANSWER SESSION
4. EXAMINATION

Radiation Safety Training Outline

The following portion of the training are performed by a Measurex Field Technical Representative or a Field Manager with service/installation experience.

J. LECTURE ON SAFETY FEATURES X-RAY AND NUCLEAR DEVICES

1. INTERLOCKS
2. SOFTWARE FEATURES
3. RADIATION INDICATORS
4. RAD FAULT BOARDS
5. RADIATION SAFETY TEST

K. HANDS ON LAB SESSION I

1. DETERMINATION OF SHUTTER STATUS
2. HEAD SEPARATION
3. KAPTON WINDOW REPLACEMENT
4. INDICATOR BULB REPLACEMENT
5. PERFORMANCE OF SEMI-ANNUAL RADIATION SAFETY TEST NUCLEAR AND X-RAY SENSORS
6. LEAK/WIPE TESTING OF RADIATION SOURCES

L. HANDS-ON LAB SESSION II

1. COMMON RADIATION SAFETY PROBLEMS
2. INSTALLATION OF NEW REPLACEMENT SOURCES
3. REPLACEMENT OF THERMAL SAFETY NUTS
4. REPLACEMENT OF FLAG SOLENOID
5. REPLACEMENT OF SHUTTER SOLENOID (SOURCE III AND IV ONLY)
6. HEAD AND SOURCE REMOVAL
7. HEAD ALIGNMENT

M. STUDENT HANDS-ON PRACTICAL EXAM

TOTAL ESTIMATED TIME FOR MEASUREX RADIATION SAFETY TRAINING: 32 HOURS

November 10, 1994

E.I. Dupont
Route 23 South, Dupont Rd.
Circleville, Ohio 43113

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

Sirs:

We have recently increased the number of Measurex film thickness measuring devices that use radioactive sources. Because of this, and personnel attrition, we have the need to train more mechanics to install, relocate, remove from service, maintain, repair, and conduct initial radiation surveys of Measurex devices containing sealed sources.

In reviewing the outline of the course Measurex proposes, I found that it has been altered since I last submitted it to the NRC so I am resubmitting it for your evaluation.

Is this training sufficient to allow our mechanics to perform the above mentioned tasks?

Please address your response and any questions to:

J.D. Richards (614-474-4145)
E.I. DuPont
Rt. 23 So. DuPont Rd.
Circleville, Ohio 43113

Regards,

J.D. Richards (RSO)

J.D. Richards (RSO)

measurex
CORPORATION

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

To Jim Richards	From L. Burns
Co. DuPont	Co. Measurex
Dept.	Phone # 4087253158
Fax # 6144740245	Fax #

November 2, 1994

Jim Richards
E.I. DuPont
Rt. 23, S. DuPont Road
Circleville, OH 43113

Dear Jim,

The Measurex course outline which was recently submitted to you contains the following changes from the previous course outline:

1) The class duration has been changed from 32 hours to 24 hours. This was based on our experience during the last class; the course content can be covered adequately in 24 hours.

2) The Model 4201 sensor has been added to the outline.

Please call me if you have any additional questions.

Regards,

Lisa Burns

Lisa Burns
Health Physicist

cc: Jerry Mayfield,

Measurex

MEASUREX CORPORATION
ONE RESULTS WAY
CUPERTINO, CALIFORNIA 95014-5991
(408) 255-1500

MANUFACTURER'S SUGGESTED RADIATION SAFETY TRAINING OUTLINE

MEASUREX PROCESS CONTROL DEVICES CONTAINING RADIATION SOURCES

The following topics will be presented by a member of the Radiation Safety Staff of Measurex Corporation, Cupertino, CA. Each staff member is named on California Radioactive Material License Number 1663 and has been deemed qualified by reasons of training and experience by the State of California Department of Health Services (12 hours total).

A. RADIATION AND RADIOACTIVE DECAY

1. NATURE AND ORIGIN OF BETA PARTICLES
2. NATURE AND ORIGIN OF GAMMA RAYS
3. INTERACTION OF RADIATION WITH MATTER
   a. ABSORPTION, ATTENUATION AND LOSS OF ENERGY
   b. SHIELDING MATERIALS
   c. BREMSSTRALUNG RADIATION
   d. BIOLOGICAL INTERACTIONS

B. UNITS AND QUANTITIES

1. UNITS OF ACTIVITY (CURRIES)
2. UNITS OF EXPOSURE (ROENTGEN)
3. UNITS OF DOSE AND DOSE EQUIVALENT (RADS/REMS)
   a. QUALITY FACTORS (BETA AND GAMMA)

C. BIOLOGICAL EFFECTS

1. LONG TERM EFFECTS
   a. GENETIC
   b. SOMATI
2. SHORT TERM EFFECTS
   a. LOCALIZED EXPOSURES
   b. LD 50/30
3. EXTERNAL EXPOSURE HAZARDS, DOSE RATES FROM SOURCES USED IN GAUGES
   a. KR-85
   b. SR-90
   c. PM-147

D. METHODS TO REDUCE EXPOSURE

1. TIME
2. DISTANCE
3. SHIELDING
4. VERIFICATION OF SHUTTER CLOSURE
5. PROPER STORAGE AND HANDLING OF SOURCE HOLDERS

E. DESIGN, CONFIGURATION AND SAFETY FEATURES OF MEASUREX GAUGES

1. RADIOACTIVE SEALED SOURCES
   a. KR-85
   b. SR-90
   c. PM-147
   d. AM-241
2. SOURCE HOLDERS (BASIS WEIGHT ASSEMBLIES)
   a. SOURCE III
   b. SOURCE VI, VI-F
   c. SOURCE IX
3. GAUGE HEAD AND SCANNER FEATURES
   a. MODEL 2201
   b. MODEL 1201
   c. OTHER MODELS USED BY DUPONT
   d. MODEL 4201

F. RADIATION MEASUREMENT AND SURVEYS

1. INSTRUMENTATION
   a. GM DETECTORS
   b. IONIZATION CHAMBERS
2. SURVEY TECHNIQUES
   a. DEMONSTRATION
   b. STUDENT PRACTICE AND DEMONSTRATION
3. INTERPRETATION OF MEASUREMENTS
   a. PENETRATING RADIATION
   b. NON-PENETRATING RADIATION
   c. ALLOWABLE DOSE RATES FOR MEASUREX GAUGES
   d. CONTROLLED AREA DOSE RATES
   e. UNCONTROLLED AREA DOSE RATES
4. PERSONNEL MONITORING DEVICES
   a. FILM DOSIMETERS
   b. TL DOSIMETERS
   c. PROPER WEARING AND USE

RADIATION SAFETY TRAINING OUTLINE

G. LEAK TESTING OF SEALED RADIOACTIVE SOURCES

1. PROCEDURES
   a. DEMONSTRATION
   b. STUDENT PRACTICE AND DEMONSTRATION
2. REGULATORY REQUIREMENTS
   a. APPROVED LEAK TEST KITS
   b. ANALYSIS OF LEAK TEST SAMPLES
   c. FREQUENCY OF LEAK TESTS
   d. REPORTING REQUIREMENTS FOR LEAKING SOURCES
3. PRECAUTIONARY PROCEDURES FOR SUSPECTED LEAKING SOURCES

H. REGULATIONS ON THE USE OF RADIOACTIVE SOURCES

1. NUCLEAR REGULATORY COMMISSION, TITLE 10 CODE OF FEDERAL REGULATIONS (CPR)
   a. SPECIFIC LICENSE
      1. PART 19, NOTICES, INSPECTIONS AND INSTRUCTIONS TO WORKERS
      2. PART 20, STANDARDS FOR PROTECTION AGAINST RADIATION
   b. GENERAL LICENSES AND GENERAL LICENSED DEVICES PART 31
2. TRANSPORTATION REGULATIONS
   a. DEPT. OF TRANSPORTATION, TITLE 49 (CFR)
      1. PACKAGE MARKING
      2. PACKAGING LABELING
      3. DETERMINATION OF TRANSPORT INDEX
      4. SHIPPING PAPERS/HAZARDOUS GOODS DECLARATIONS
   b. TITLE 10, PART 71
      1. TYPE A CONTAINER LIMITS
      2. TESTING REQUIREMENTS FOR TYPE A CONTAINERS
   c. INTERNATIONAL AIRLINE TRANSPORTATION AGENCY

I. MISCELLANEOUS

1. MEASUREX RADIATION SAFETY MANUAL
2. MEASUREX RADIATION SAFETY OFFICE SUPPORT
3. QUESTION AND ANSWER SESSION
4. EXAMINATION

RADIATION SAFETY TRAINING OUTLINE

THE FOLLOWING PORTION OF THE TRAINING ARE PERFORMED BY A MEASUREX FIELD TECHNICAL REPRESENTATIVE OR A FIELD MANAGER WITH SERVICE/INSTALLATION EXPERIENCE. (12 HOURS TOTAL)

J. LECTURE ON SAFETY FEATURES X-RAY AND NUCLEAR DEVICES

1. INTERLOCKS
2. SOFTWARE FEATURES
3. RADIATION INDICATORS
4. RAD FAULT BOARDS
5. RADIATION SAFETY TEST

K. HANDS ON LAB SESSION I

1. DETERMINATION OF SHUTTER STATUS
2. HEAD SEPARATION
3. KAPTON WINDOW REPLACEMENT
4. INDICATOR BULB REPLACEMENT
5. PERFORMANCE OF SEMI-ANNUAL RADIATION SAFETY TEST, NUCLEAR AND X-RAY SENSORS
6. LEAK/WIPE TESTING OF RADIATION SOURCES

L. HANDS-ON LAB SESSION II

1. COMMON RADIATION SAFETY PROBLEMS
2. INSTALLATION OF NEW REPLACEMENT SOURCES
3. REPLACEMENT OF THERMAL SAFETY NUTS
4. REPLACEMENT OF FLAG SOLENOID
5. REPLACEMENT OF SHUTTER SOLENOID (SOURCE III AND IV ONLY)
6. HEAD AND SOURCE REMOVAL
7. HEAD ALIGNMENT

M. STUDENT HANDS-ON PRACTICAL EXAM

TOTAL ESTIMATED TIME FOR MEASUREX RADIATION SAFETY TRAINING: 24 HOURS (3 DAYS)

NOV 0 8 1994

E. I. Du Pont De Nemours & Co., Inc.
ATTN: James D. Richards
Radiation Safety Officer
U.S. Route 23, South Dupont R
Circleville, OH 43113

SUBJECT: LICENSE RENEWAL APPLICATION

Dear Mr. Richards:

This is to acknowledge receipt of your application for renewal of the material(s) license identified above. Your application is deemed timely filed, and accordingly, the license will not expire until final action has been taken by this office.

Any correspondence regarding the renewal application should reference the control number specified and your license number.

Sincerely,

Original Signed By
Marianne Meenan, Chief
Nuclear Materials Support Section

License No. 34-02962-02
Control No. 030-13909

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