

file copy



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

MATERIAL LICENSE

TN TECHNOLOGIES, INC.  
2555 N. IH-35  
Round Rock, TX 78680-0800

License No. 42-01485-06E  
Docket No. 030-32548

Pursuant to the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended (Public Law 93-438); 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material;" Section 32.18, 10 CFR Part 32, "Specific Domestic Licenses to Manufacture or Transfer Certain Items Containing Byproduct Material;" application dated October 16, 1991; and letter dated March 17, 1992; a license is hereby issued to TN Technologies, Inc. to distribute Cesium-137 as sealed sources to persons exempt from licensing pursuant to Section 30.18, 10 CFR Part 30, or equivalent provisions of the regulations of any Agreement State.

This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and other applicable rules, regulations, and orders of the U.S. Nuclear Regulatory Commission now or hereafter in effect, and to the following conditions:

1. This license does not authorize possession or use of licensed material.
2. The licensee is authorized to distribute only from its facilities located at 2555 N. IH-35, Round Rock, Texas 78664.
3. The licensee shall submit periodic material transfer reports as specified in Section 32.20, 10 CFR Part 32.

This license shall expire on March 31, 1997.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Original signed by:

DATE: APR 02 1992

BY:

*Michael A. Lamastra*  
Michael A. Lamastra  
Medical, Academic, and Commercial  
Use Safety Branch  
Division of Industrial and  
Medical Nuclear Safety, NMSS  
Washington, D.C. 20555

3/31/92  
CIB

4/1/92

060052

9301130248 920402  
PDR ADOCK 03032548  
C PDR

ML00  
copy to Reg IV

March 17, 1992

Ms. Torre Taylor  
Commercial Section  
Medical, Academic, and Commercial  
Use Safety Branch  
Division of Industrial and  
Medical Nuclear Safety, NMSS  
U.S. NUCLEAR REGULATORY COMMISSION  
Washington, DC 20555

Re: Mail Control No. 021315

Dear Ms. Taylor:

Thank you for your letter of March 11, 1992. I shall respond to your requests in the order presented.

1. Since we indicated in our application dated October 16, 1991 that we would receive the sources in question as exempt quantities and redistribute them to persons exempt from licensing, it is really not clear to me why you need copies of our possession license. However, in order to expedite the issuance of this license I am enclosing the requested copies.
2. I am aware that exempt quantities of radioactive material can be disposed of in ordinary trash, provided the radiation labels are removed or obliterated. Our request that customers return the sources to us for disposal was simply an extended safety feature. We did not charge customers for this disposal. A copy of the revised certification is enclosed, for your information.
3. We appreciate the return of the drawings.

I would certainly appreciate any assistance you could provide in expediting the issuance of this license, since it has now been five months from the date of our original submission. If you have further questions, please don't hesitate to call me at (512) 388-9287.

Sincerely,

TN TECHNOLOGIES, INC.

*Doris C. Bryan*

Doris C. Bryan  
Manager  
Licensing & Regulatory Affairs

DCB:pz

- Enc. (1) TN Technologies, Inc. License #LO3524  
(2) Revised Radioactive Material Certification

TN Technologies, Inc.

A Baker Hughes Company

P.O. Box 800 Round Rock, Texas 78680-0800  
(512) 388-9100 Fax (512) 388-9200 Telex 77-6413

*trayla*  
*rec'd 3/23/92*



# RADIOACTIVE MATERIAL CERTIFICATION

Model Number \_\_\_\_\_

Isotope \_\_\_\_\_

Total Activity \_\_\_\_\_

Date of Assay \_\_\_\_\_

Signature \_\_\_\_\_

The above referenced source contains a license exempt quantity of radioactive material. The radioactive material is securely bonded in the plastic substrate and is designed to withstand normal handling and use. Even though this source contain a very small amount of radioactive material, it should be handled with caution. It should be kept secured from unauthorized access, removal, or dislocation. It should be handled by the edges to avoid contact with the active center. If use of the source is discontinued, you may return it to TN Technologies, Inc. for disposal. However, regulations allow the source to be disposed in ordinary trash provided the radiation labels are removed or obliterated.

*TN Technologies, Inc.*

A Baker Hughes Company

P.O. Box 600 Round Rock, Texas 78680-0800  
(512) 388-9100 Fax (512) 388-9200 Telex 77-6413

Texas Department of Health  
BUREAU OF RADIATION CONTROL

017901

## RADIOACTIVE MATERIAL LICENSE

Pursuant to the Texas Radiation Control Act and Texas Health Department regulations on radiation, 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 radioactive material listed below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations and orders of the Texas Department of Health now or hereafter in effect and to any conditions specified below.

## LICENSEE

1. Name Texas Nuclear Products  
TN Technologies, Inc.
2. Address Attn: James B. Whitworth, Ph.D.  
P. O. Box 800  
Round Rock, Texas 78680-0800

This license is issued pursuant to and in accordance with a letter

Dated: February 11, 1992  
Signed by: Doris C. Bryan

3. License Number	Amendment Number
L03524	27

PREVIOUS AMENDMENTS ARE VOID

4. Expiration Date

December 31, 1993

## RADIOACTIVE MATERIAL AUTHORIZED

5. Radioisotope	6. Form of Material	7. Maximum Activity*	8. Authorized Use
A. Any radioactive material with atomic number less than 84.	A. Any	A. 5 Ci of any single radio-nuclide. Total: 500 Ci	A. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
B. H-3	B. Any	B. 500 Ci	B. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
C. Co-60	C. Any	C. 200 Ci as sealed sources and 20 Ci in other forms.	C. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
D. Cs-137	D. Sealed sources.	D. 10,000 Ci	D. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
E. Ra-226	E. Any	E. 10 Ci as sealed sources and 1 Ci in any form.	E. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.

\* Ci-Curies mCi-microCuries  $\mu$ Ci-MicroCuries





017902

## RADIOACTIVE MATERIAL LICENSE

LICENSE NUMBER

L03524

AMENDMENT NUMBER

27

5. Radioisotope	6. Form of Material	7. Maximum Activity	8. Authorized Use
F. Ac-227	F. Any	F. 100 mCi	F. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
G. U-233	G. Any	G. 50 gms.	G. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
H. U-235	H. Any	H. 50 gms.	H. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
I. Natural or depleted uranium.	I. Any	I. 600 pounds.	I. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
J. Plutonium	J. Any	J. 80 gms. as sealed sources and 20 gms. in any form.	J. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
K. Am-241	K. Any	K. 500 Ci as sealed sources and 2 Ci in any form.	K. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.



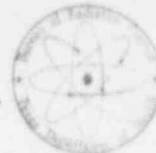
## RADIOACTIVE MATERIAL LICENSE

LICENSE NUMBER	AMENDMENT NUMBER
L03524	27

5. Radioisotope	6. Form of Material	7. Maximum Activity	8. Authorized Use
L. Cm-244	L. Sealed sources.	L. 1 Ci	L. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
M. Cf-252	M. Sealed sources.	M. 500 micrograms.	M. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
N. I-125	N. Sealed source (TN Model 696928).	N. No single source to exceed 100 mCi	N. Research and development, distribution to authorized recipients, tracer studies, demonstrations and field applications as authorized by specific conditions of this license.
O. Am-241	O. Sealed source (TN Model 696929 [A/S Model AMC.A2])).	O. No single source to exceed 100 mCi	O. Research and development, distribution to authorized recipients, demonstrations and field applications as authorized by specific conditions of this license.
P. Am-241	P. Sealed source (TN Model 696930 [A/S Model AMC.26])).	P. No single source to exceed 200 mCi	P. Research and development, distribution to authorized recipients, demonstrations and field applications as authorized by specific conditions of this license.
Q. Am-241	Q. Sealed source (TN Model 696935 [A/S Model AMN.V340])).	Q. No single source to exceed 200 mCi	Q. Research and development, distribution to authorized recipients, demonstrations and field applications as authorized by specific conditions of this license.



Texas Department of Health  
BUREAU OF RADIATION CONTROL



017904

## RADIOACTIVE MATERIAL LICENSE

LICENSE NUMBER

L03524

AMENDMENT NUMBER

27

9. Radioactive material shall be stored and used only at:

Site Number	Location
000	Round Rock - 2555 IH-35
001 TERMINATED	Austin - 9101 Research Boulevard

10. The authorized place of use is at temporary sites throughout Texas.

11. The licensee shall comply with the provisions of Parts 11, 12, 13, 21, 22 and 41 of the Texas Regulations for Control of Radiation (TRCR).

12. Radioactive material shall only be used by, or under the supervision of, individuals designated by the Radiological Health and Safety Committee.

13. The individual designated to perform the functions of Radiation Safety Officer (RSO) for activities covered by this license is James B. Whitworth, Ph.D.

14. Sealed sources containing radioactive material shall not be opened.

15. Sealed sources of radioactive material, nickel-63 foil, and/or plated alpha emitting sources shall be tested for leakage and/or contamination in accordance with the provisions of TRCR 11.7.

16. The periodic leak test required by Condition 15 and TRCR 11.7 does not apply to sealed sources that are stored and not being used. These sealed sources shall be leak tested within six months prior to being used or transferred.

17. Radiation survey instruments shall be calibrated in accordance with procedures submitted October 28, 1983.

18. The licensee is authorized to perform the service of survey instrument calibration in accordance with procedures dated October 28, 1983.

19. The licensee is authorized to perform tests for leakage and/or contamination at customer sites throughout Texas and to distribute their leak/wipe test kit Model QT/1K and QT/2S to customers for the licensee's subsequent analysis. Such tests shall be capable of detecting 0.005  $\mu\text{Ci}$  of contamination on the test sample and the results of such tests shall be provided to the customer in terms of  $\mu\text{Ci}$ .

20. Individuals involved in operations which utilize, at any one time, more than 100 mCi of hydrogen-3 (tritium) in a noncontained form, other than metallic foil, shall have bioassays performed within one week following a single operation and at weekly intervals for continuing operations.

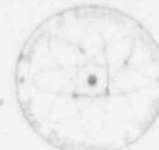
21. The licensee shall not use radioactive material in or on human beings.



## RADIOACTIVE MATERIAL LICENSE

LICENSE NUMBER	AMENDMENT NUMBER
L03524	27

22. Except for plutonium contained in a medical device designed for individual human application, no plutonium, regardless of form or quantity, shall be delivered to a carrier for shipment by air transport or transported in an aircraft by the licensee unless it is contained in a package that has been specifically approved by the United States Nuclear Regulatory Commission (NRC) for aerial shipment of plutonium.
23. The licensee shall not transfer radioactive material to other persons until it is verified that the recipient is authorized to possess the type and amount of material to be transferred.
24. The licensee shall test each device distributed under this license for leakage or contamination of radioactive material and proper operation of the "on-off" mechanism and indicator, if any, at the time of installation of the device.
25. The licensee is authorized to use devices containing radioactive material throughout Texas for the purpose of demonstration, field evaluation and/or on-site measurement at temporary sites.
26. A. The licensee is authorized to use radioactive material for tracer studies, instrument calibration, density determinations and similar or related studies at customer sites throughout Texas provided the Agency is notified in writing prior to such use of the following:
- 1) Date and location of use,
  - 2) Type of operation,
  - 3) Amount and kind of radioactive material to be used, and
  - 4) Person in charge of the operation and number of persons using the radioactive material.
- B. The licensee shall insure that any radioactive material released to unrestricted areas is in concentrations less than that specified in TRCR Appendix 21-A, Table II.
27. The licensee is authorized to make temporary experimental installations of gauging devices containing no more than 10 Ci of radioactive material at potential customer sites throughout Texas. Such experiments shall be made for periods no longer than 13 weeks without specific notification. Such installations shall be in a manner such that no individual is likely to receive an exposure in excess of 0.125 rem in any 13 week period.
28. The licensee is authorized to install, relocate, maintain, repair, service, and leak test gauges and devices manufactured under a specific license issued by the NRC or an Agreement State.
29. The licensee is authorized to distribute americium-241 reference sources of not more than 0.5  $\mu$ Ci and radium-226 (Ra-226) reference sources of not more than 1  $\mu$ Ci to persons generally licensed pursuant to TRCR 41.22(g). Such sources shall be manufactured in accordance with procedures contained in the letter dated May 23, 1978.



## RADIOACTIVE MATERIAL LICENSE

LICENSE NUMBER

L03524

AMENDMENT NUMBER

27

30. The licensee is authorized to distribute devices pursuant to the terms and conditions of this license in accordance with the following table:

Device Model	Source Model	Isotope(s)	Maximum Activity (mCi )
5010 and	570-579103	Am-241(Be)	1300
5010A	570-579103	Pu-238(Be)	1300
5020	696935 (A/S-AMN.V340)	Am-241(Be)	200
5030	696894	Cs-137	100
5031S	57157C	Cs-137	4000
5031L	57157C	Cs-137/Co-60	8000/2000
5034/5036/5038	57157C	Cs-137	500
5094/5096/5098	57157C/3M-4P6F	Cs-137	4000
5165	57157C	Cs-137	2 of 20
5166	57157C/3M-4P6T	Cs-137	100
5174/5175/5176	57157C, A/S-850233, 3M-4P6M or 4P6E	Cs-137	5000
	57157C or 3M-4F3D	Co-60	1000
5178A	57157C	Cs-137	50
5179A	57157C	Cs-137/Co-60	1000/10
5180A	57157C	Cs-137/Co-60	5000/100
5181A	57157C	Cs-137	50
5182A	57157C	Cs-137/Co-60	1000/10
5183A	57157C	Cs-137/Co-60	5000/100
5184	57157C/3M-4P6T	Cs-137	10000/20000
	57157C	Co-60	5000
5185	57157C	Cs-137	100
5186	57157C, A/S-850233	Cs-137	5000
	3M-4P6M, 4P6E		
	57157C/ 3M-4F3D	Co-60	1000
	57157C	Co-60	500
5188	A/S-850233	Cs-137	1000
	3M-4P6E or 4P6E		
	A/S-850213	Co-60	10
5189	57157C	Cs-137	25
5190	57157C	Cs-137	250
5191	57157C	Cs-137	2000
5192	57157C	Cs-137	250
5193	57157C	Cs-137	2000
5194/5195/5196	696-696833	Cs-137	500/inch
5197	57157C	Cs-137	200
5198	57157C	Cs-137	200
5199	57157C	Cs-137	200
5200/5201	696894	Cs-137	200
5202	57157C	Cs-137	500
5203	57157C	Cs-137	2000
5205	696894	Cs-137	200





## RADIOACTIVE MATERIAL LICENSE

LICENSE NUMBER

L03524

AMENDMENT NUMBER

27

30. (Cont'd.)

Device Model	Source Model	Isotope(s)	Maximum Activity (mCi)
5206	57157C	Cs-137	1000
5207	57157C	Cs-137	2000
5208	57157C	Cs-137/Co-60	8000/500
5210	57157C	Cs-137/Co-60	10000/3000
5211	696894	Cs-137	200
5217	696833	Cs-137	500/in
5218	57157C	Cs-137/Co-60	32000/4000
5219	696894	Cs-137	200
5321/885326	696-696381	Sr-90	2 $\mu$ Ci
9234	696929	Am-241	100
9235	696930	Am-241	200
9257	696-696280/696-696782	Co-57/Fe-55	5/50
9261	696-696280	Co-57	5
9263	696-696782	Fe-55	50
9254/9256/9264	696-696782/696-696280	Am-241	10
	696782/57371B/57242B	Cd-109	5/5/10
	696-696280	Co-57	5
	696-696782	Fe-55	50
	696-696280	Gd-153	5
	A/S-TRX	H-3/Zr	4.5 Ci
	A/S-PHX	Pm-147/Al	2.0 Ci
	A/S-PPC/570-57242B	Pu-238	30/50
	696-696782/570-57242B	Cm-244	30/50
	A/S Model AMM.4	Am-241	0.5 $\mu$ Ci
9266	696-696873	Cd-109	5
	696-696863	Fe-55	45
	696-696803	Am-241	0.5 $\mu$ Ci
9267	696-696782/696-696803	Fe-55/Am-241	50/0.5 $\mu$ Ci
9277	696782/696782	Fe-55/Cd-109	45/5
9290	696942/696782	Fe-55/Cd-109	100/10
	57242B	Cm-244	100
	696280	Am-241	10
NALA	HMC-C-1049	Pu-238(Be)	3 grams
	AMK 312	Am-241	50 nanoCi
9800	57242B	Pu-238	3 of 100
	696782	Cd-109	3 of 15
	696782	Fe-55	2 of 45
	696280	Am-241	2 of 10
	696928	I-125	3 of 100
	57242B	Cm-244	1 of 200

31. The licensee is authorized to conduct a radiation safety course for users of radioactive material in fixed gauges in accordance with provisions of the TRCR. The individuals authorized to perform the above training shall be designated by Radiological Health and Safety Committee.





Texas Department of Health  
BUREAU OF RADIATION CONTROL



017908

## RADIOACTIVE MATERIAL LICENSE

LICENSE NUMBER

L03524

AMENDMENT NUMBER

27

32. Except as specifically provided otherwise by this license, the licensee shall possess and use the radioactive material authorized by this license in accordance with statements, representations, and procedures contained in the following:


application dated October 28, 1983,  
letters dated May 23, 1978, October 28, 1983, December 9, 1983,  
September 24, 1985, March 5, 1986, May 19, 1986,  
June 12, 1986, July 3, 1986, August 28, 1986,  
February 17, 1987, June 24, 1987, June 25, 1987,  
July 29, 1987, March 1, 1988, November 22, 1988,  
March 15, 1989, March 22, 1989, September 18, 1989,  
November 6, 1989, December 12, 1989, January 23, 1990,  
March 21, 1990, June 12, 1990, June 24, 1990,  
August 21, 1990, December 3, 1990, February 14, 1991,  
March 29, 1991, April 2, 1991, April 18, 1991,  
May 21, 1991, October 2, 1991, October 4, 1991 and  
February 11, 1992.

The TRCR shall prevail over statements contained in the above documents unless such statements are more restrictive than the regulations.

CSJ:mr

FOR THE TEXAS DEPARTMENT OF HEALTH

Date February 27, 1992

  
Administrator, Licensing Branch

MAR 11 1992

TN Technologies, Inc.  
Doris C. Bryan, Manager  
Licensing and Regulatory Affairs  
P.O. Box 800  
Round Rock, TX 78680-0800

Dear Ms. Bryan,

This refers to your October 16, 1991, application requesting authorization to distribute cesium-137 sealed sources to persons exempt from licensing as authorized by 10 CFR 30.18. We need the following information in order to complete our review of your request.

1. Paragraph 32.18(a) of 10 CFR Part 32 specifies that an applicant must satisfy the requirements for a specific license authorizing possession of licensed material. Please submit a copy of your possession license.
2. You stated in Item 11 of your application and the Radioactive Material Certification that recipients should return sources to TN Technologies for disposal. Please note that recipients of these sources are exempt from all regulatory requirements and are not required to return sources for disposal. Therefore, it is not appropriate to include such statements in your product brochure. While it is acceptable to provide your customers with the option of returning the sources to you for disposal, you should also inform them that sources may be disposed in ordinary trash provided that radiation labels are removed or obliterated. Please submit a copy of a revised Radioactive Material Certification which shows these changes.
3. The drawings you submitted with your application contain a statement, "This work is protected by copyright and by other laws. Copying of any aspect of this work is strictly prohibited." Since these drawings are not necessary for this license, we are returning the drawings to you. For future reference, please note that proprietary information should not be submitted unless absolutely necessary since license applications are available for review by the general public in the NRC Public Document Rooms. If submittal of such information is necessary, you must follow the procedures specified in 10 CFR 2.790 (Enclosure 1). Failure to follow this procedure may result in disclosure of the proprietary information to the public.

Ms. Doris C. Bryan

- 2 -

MAR 11 1992

Our review of your request will continue upon receipt of the above information. Please reply within 30 days in duplicate and reference Mail Control No. 021315. If you have any questions, please contact me at 301-504-2611.

Sincerely,

Original signed by:

Torre Taylor  
Commercial Section  
Medical, Academic, and Commercial  
Use Safety Branch  
Division of Industrial and  
Medical Nuclear Safety, NMSS

Enclosures:

1. 10 CFR Part 2
2. TN Drawing No. B696939
3. TN Drawing No. B696431

Distribution

TTaylor	IMNS Central Files	NRC File Center	IMAB r/f
NMSS r/f	RECunningham	JGreeves	JEGlenn
MLamastra	PSantiago		

OFC: IMAB	IMAB
NAME: TTaylor	PSantiago
DATE: 03/10/92	03/ /92
OFFICIAL RECORD COPY	see prev conc
	TN TECHNOLOGIES

Ms. Doris C. Bryan

- 2 -

Our review of your request will continue upon receipt of the above information. Please reply within 30 days in duplicate and reference Mail Control No. 021315. If you have any questions, please contact me at 301-504-2611.

Sincerely,

Torre Taylor  
Commercial Section  
Medical, Academic, and Commercial  
Use Safety Branch  
Division of Industrial and  
Medical Nuclear Safety, NMSS

Enclosures:

1. 10 CFR Part 2
2. TN Drawing No. B696939
3. TN Drawing No. B696431

Distribution

TTaylor  
NMSS r/f  
MLamastra

IMNS Central Files  
RECunningham  
PSantiago

NRC File Center  
JGreeves

IMAB r/f  
JEGlenn

OFC: IMAB

IMAB *OKS*

NAME: TTaylor

PSantiago

DATE: 03/65/92  
*11*

03/6/92

OFFICIAL RECORD COPY

TN TECHNOLOGIES



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555  
THE NUCLEUS INC  
761 Emory Valley Road  
Oak Ridge, TN 37830

License No. 41-14168-01E  
Docket No. 030-08045  
Amendment No. 04

In accordance with application dated December 11, 1986, License Number 41-14168-01E is amended in its entirety to read as follows:

Pursuant to the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1954, as amended, (Public Law 93-438); 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material"; Section 32.18, 10 CFR Part 32 "Specific Domestic Licenses to Manufacture or Transfer Certain Items Containing Byproduct Material"; and applications dated February 24, 1982 and December 11, 1986; and letter dated March 17, 1987, a license is hereby issued to The Nucleus, 761 Emory Valley Road, Oak Ridge, Tennessee, to distribute licensed material to persons exempt from licensing pursuant to Section 30.18, 10 CFR Part 30.

This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and other applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to the following conditions:

1. This license does not authorize import, possession or use of licensed material.
2. Distribution may be made from the licensee's facility located at 761 Emory Valley Road, Oak Ridge, Tennessee.
3. The licensee shall file periodic reports as specified in Section 32.19, 10 CFR Part 32.

This license shall expire on March 31, 1992.

FOR THE U. S. NUCLEAR REGULATORY COMMISSION

APR 9 2 1987  
DATE \_\_\_\_\_

BY John W. N. Hickey  
Material Licensing Branch  
Division of Fuel Cycle and  
Material Safety  
Washington, D. C. 20555

B709040024 B70403  
NMSS LIC30  
41-14168-01E PDR

MAJ  
111



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

RECEIVED JUN 20 1986

AMERSHAM CORPORATION  
2636 SOUTH CLEARBROOK DRIVE  
ARLINGTON HEIGHTS, IL 60005

License No. 12-12836-08E  
Docket No. 030-29306

Pursuant to the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended, (Public Law 93-438); 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," Section 32.14, 10 CFR Part 32, "Specific Domestic Licenses to Manufacture or Transfer Certain Items Containing Byproduct Material;" application dated June 11, 1986; a license is hereby issued to Amersham Corporation, 2636 South Clearbrook Drive, Arlington Heights, IL to distribute sealed sources containing Cesium 137 to persons exempt from licensing pursuant to Section 30.15, 10 CFR Part 30, or equivalent provisions of the regulations of any Agreement State.

This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and other applicable rules, regulations, and orders of the U. S. Nuclear Regulatory Commission now or hereafter in effect and to the following conditions:

The licensee shall file periodic reports as specified in Section 32.16, 10 CFR 32.

This license does not authorize possession or use of licensed material.

Distribution may be made from facility located at 40 North Avenue, Burlington, MA.

This license shall expire June 30, 1991.

FOR THE U. S. NUCLEAR REGULATORY COMMISSION

DATE JUN 20 1986

BY

*Steven R. Boyle*  
Material Licensing Branch  
Division of Fuel Cycle and  
Material Safety  
Washington, D. C. 20555

B702120366 B70206  
NMSB LIC30  
20-00277-06E PDR



Amersham Corporation  
2636 South Clearbrook Drive  
Arlington Heights, Illinois 60005-4692  
(312) 593 6300

18 August 1986

**Amersham**

U.S. Nuclear Regulatory Commission, Region III  
Materials Licensing Section  
799 Roosevelt Road  
Glen Ellyn, IL 60137

Ref. License No. 12-12836-02E

30-8047

Gentlemen:

Please accept the enclosed form NRC-313 and supporting documents as Amersham Corporation's application to renew License Number 12-12836-02E, authorizing the distribution of by-product material to persons exempt from licensing pursuant to 10CFR30.18, or the equivalent regulations of an agreement state.

Enclosed you will find some prototype labels from exempt quantity products which are distributed under this license. Also included is a copy of the exempt quantity brochure. These items are provided pursuant to 10CFR32.18.

A check for \$230.00 is enclosed to cover the renewal fee as prescribed in 10CFR170. Should there be any questions concerning this application please do not hesitate to call me.

Sincerely,

*Mark A. Doruff*  
Mark A. Doruff  
Health Physicist

MAD/cpd  
0466E

License Fee Information  
on Application

1d 0214 92.

RECEIVED

AUG 25 1986

AUG 25 1986

REGION III

8612080326 860818  
NMSS LIC30  
12-12836-02E PDR

019871

Application for  
Renewal of By-Product Material License  
12-12836-02E As Amended  
August 18, 1986

Exempt Quantity Label Samples

**125I Tracer**

ACTH Radioimmunoassay Kit  
Upon receipt, contains 1.5MBq (40 µCi) in  
phosphate buffer, preservative, a red coloring agent and a  
protein stabilizer in 10ml solution.  
Manufactured by Amersham Pharmacia Biotech Inc.

**Amersham**  
Arlington Heights, IL 60005  
Oak Ridge, TN 37831

**2320**

For In Vitro Diagnostic Use  
Not for use in Clinical  
Diagnosis or Therapy  
Store at 2-8°C  
Lot 0186  
Exp. 03SEP86

**(1-14C) PARACETAMOLIC ACID**  
ethanol solution

Store at -20C    2 210Bq/meal    CFA 711  
59 6aCi/meal    BATCH 18  
1ml    1 85MBq, 50uCi

**Amersham Pharmacia Biotech Inc.**  
Arlington Heights, IL 60005  
Oak Ridge, TN 37831

**L. LEUKOTRIENE B<sub>4</sub> (14) ASSAY REAGENTS  
SYSTEM** TRA 840

(14) Leukotriene B<sub>4</sub> Tracer  
~8 µCi, 10-5aBq in 250µl methanol  
water, acetic acid (50:40:0-01) pH 5-6  
For research use only  
Store at -15°C

**Amersham Pharmacia Biotech Inc.**  
Arlington Heights, IL 60005  
Oak Ridge, TN 37831

**Lot 101**



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

AMERSHAM CORPORATION  
2636 S. Clearbrook Drive  
ARLINGTON HEIGHTS, IL 60005

License No. 12-12836-02E  
Docket No. 030-08047  
Amendment No. 04  
RECEIVED

In accordance with application dated August 18, 1986, License Number 12-12836-02E is amended in its entirety to read as follows: '86 OCT -3 10:56

Pursuant to the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended, (Public Law 93-438); 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," Section 32.18, 10 CFR Part 32, "Specific Domestic Licenses to Manufacture or Transfer Certain Items Containing Byproduct Material;" applications dated August 14, 1981 and August 18, 1986; a license is hereby issued to Amersham Corporation, 2636 S. Clearbrook Drive, Arlington Heights, Illinois to distribute byproduct material in quantities not to exceed those set forth in Section 30.71 Schedule B, 10 CFR Part 30, to persons exempt from licensing pursuant to Section 30.18, 10 CFR Part 30, or equivalent provisions of the regulations of any Agreement State.

This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and other applicable rules, regulations, and orders of the U. S. Nuclear Regulatory Commission now or hereafter in effect.

This license does not authorize possession or use of license material.

Distribution shall be made from the licensee's facility at 2636 S. Clearbrook Drive, Arlington Heights, Illinois.

The licensee shall file periodic reports as specified in Section 32.20, 10 CFR 32.

This license shall expire October 31, 1991.

FOR THE U. S. NUCLEAR REGULATORY COMMISSION

DATE OCT 02 1986

Original Signed By  
John W. E. Hickey  
BY

Material Licensing Branch  
Division of Fuel Cycle and  
Material Safety  
Washington, D. C. 20555

8612030303 861002  
NMSS LIC30  
12-12836-02E PDR

2  
ML00

Send Copy To Region III

J. Code  
01485

030-32548

October 16, 1991

Mr. Michael A. Lamastra  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Lamastra:

Enclosed please find our application for a licence to receive, repackage and redistribute exempt quantities of previously approved Cs-137 sources. Also enclosed is our application fee in the amount of \$500 for License Category 3P.

As we discussed during previous conversations, the two sources covered by this application are for meter calibration and a leak test standard to be supplied as a customer option along with a GM tube survey meter. We will not relable the sources, nor will we modify the sources in any way prior to redistribution. Therefore, it is my interpretation that these activities are covered by Fee Category 3P rather than Category 3I, as was ruled on our previous license. If you do not agree with this classification, or if you find any wording in the application which does not clearly support my interpretation, please call me at (512) 388-9287.

I certainly appreciate your assistance and comments, and enjoyed meeting with you in Washington during July.

Sincerely,

TN TECHNOLOGIES, INC.

*Doris C. Bryan*

Doris C. Bryan  
Manager  
Licensing & Regulatory Affairs

DCB:pz

Enc.

License Fee Information  
on Application

TN Technologies, Inc.

A Baker Hughes Company

P.O. Box 800 Round Rock, Texas 78680-0800  
(512) 388-9100 Fax (512) 388-9200 Telex: 77-6413

OCT 22 1991

021315

# APPLICATION FOR MATERIAL LICENSE

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

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

U.S. NUCLEAR REGULATORY COMMISSION  
DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY, NMSS  
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS IF YOU ARE LOCATED IN:

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION I  
NUCLEAR MATERIALS SAFETY SECTION B  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION II  
NUCLEAR MATERIALS SAFETY SECTION  
101 MARIETTA STREET, SUITE 2900  
ATLANTA, GA 30323

## IF YOU ARE LOCATED IN:

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION III  
MATERIALS LICENSING SECTION  
709 ROOSEVELT ROAD  
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV  
MATERIAL RADIATION PROTECTION SECTION  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V  
NUCLEAR MATERIALS SAFETY SECTION  
1400 MARIA LANE, SUITE 210  
WALNUT CREEK, CA 94596

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

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

- ☒ A. NEW LICENSE  
☐ B. AMENDMENT TO LICENSE NUMBER 030-32548  
☐ C. RENEWAL OF LICENSE NUMBER \_\_\_\_\_

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

TN Technologies, Inc.,  
P. O. Box 800  
Round Rock, TX 78680-0800

## 3. ADDRESSES WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED:

2555 N. IH-35  
Round Rock, TX 78664

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

Doris C. Bryan

## TELEPHONE NUMBER:

(512) 388-9287

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

## 5. RADIOACTIVE MATERIAL:

a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.

## 6. PURPOSES FOR WHICH LICENSED MATERIAL WILL BE USED:

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

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

## 9. FACILITIES AND EQUIPMENT:

## 10. RADIATION SAFETY PROGRAM:

## 11. WASTE MANAGEMENT:

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

FEE CATEGORY 3P AMOUNT ENCLOSED \$ 500.00

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

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

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

## SIGNATURE—CERTIFYING OFFICER:

## TYPED/PRINTED NAME:

## TITLE:

## DATE:

*Doris C. Bryan*

Doris C. Bryan

Manager, Licensing &  
Regulatory Affairs

10/16/91

## FOR NRC USE ONLY

## TYPE OF FEE:

## FEE LOG:

## FEE CATEGORY:

## COMMENTS:

APP

Jan 1 HQ

3P 31

## AMOUNT RECEIVED:

## CHECK NUMBER:

500 + 2100

2713/13749

## APPROVED BY:

OCT 22 1991

## DATE:

1/13/92

Application for Material License  
Page Two

Item 5.	1. Cs-137	Solid Sealed Source TN Model 696939	No single source to exceed 5 uCi
	2. Cs-137	Solid Sealed Source TN Model 696431	No single source to exceed 0.005 uCi

Item 6. This radioactive material will be received from the manufacturer and redistributed to persons exempt from licensing as authorized by 10 CFR 30.18.

Source No. 1, shown on Drawing B696939, will be procured from The Nucleus, their Model Cs-137-S-5, which has already been evaluated and approved for distribution. The source will be redistributed as a calibration check source for survey meters.

Source No. 2, shown on Drawing B696431, will be procured from Amersham Corporation, their Model 696431, which has already been evaluated and approved for distribution. The source will be redistributed as a leak test standard to be used in conjunction with Procedure HR-RS-102.

The fact that TN Technologies, Inc. has established their own drawings for these two sources should not be interpreted to mean we will replace or in any way modify the sources. Our operating practice is to develop our own drawings for all radioactive sources, to establish internal part numbers and to set minimum acceptable standards which must be met by any vendor.

The two sources addressed in this application will be received from the manufacturer as exempt quantities, then repackaged and redistributed as exempt quantities in accordance with applicable regulations and quantity limitations. Each source will bear the manufacturer's original label.

Item 7. James B. Whitworth, Ph.D. (See attached resume)

Item 8. Not applicable.

Item 9. Sources to be redistributed will be secured in a lockable cabinet.

Item 10. The distribution of these exempt quantity sources is described in attached Procedure HP-EQ1R-10-90, Exempt Quantity Distribution.

Item 11. Recipients will be advised to return sources to TN Technologies for disposal, when their use is no longer needed.

021315



JAMES B. WHITWORTH  
DIRECTOR, ENVIRONMENTAL & TECHNICAL SERVICES  
TN TECHNOLOGIES, INC.  
ROUND ROCK, TEXAS

EDUCATION: BSME, MSME, PhD (Nuclear Engineering), The University of Texas at Austin

EXPERIENCE:

Oct. 91      TN Technologies, Inc.  
To  
Present      Director, Environmental & Technical Services  
Responsible for radiation and occupational safety; health physics services; chemically and radiologically hazardous materials; regulatory compliance; record keeping; and waste disposal. In addition, this operating group with its diverse areas of expertise provides services to major customers world-wide.

Nov. 83      International Marketing Manager  
To      Responsible for world-wide marketing of Texas Nuclear products.  
Sept. 91      Supervised International Sales Managers and worked with affiliates and representatives in marketing strategies and on-site presentations.

Feb. 77      Texas Sales Manager  
to      Opened company's only direct sales office in October, 1977.  
Oct. 83      Duties included direct sales to house accounts, plus supervision of manufacturers' representative firms. Equipment sold included gamma level and density gauges, portable and on-line X-ray fluorescence analyzers, neutron activation equipment, down-hole well logging detectors, sonic flow meters, and moisture analyzers. Customers included P & S firms, refineries, petrochemical plants, pulp and paper mills, oil well logging and service companies.

Feb. 72      Simpson Machine & Manufacturing, Center Point, Texas  
to  
Feb. 77      V.P., General Manager, 25% Owner  
Responsible for engineering, estimating, production control, personnel, inventory control, and day-to-day operation of 25 man shop. Products ranged from job shop to production runs of simple to complex weld fabrications and machined parts.

Jan. 72      Texas Nuclear Corporation, Austin, Texas  
to  
Feb. 73      Senior Research Scientist  
Duties included conception of research projects, selling proposals to management and government, managing projects, progress reports. Full responsibility for budget, schedules, results.

Sept. 69      Texas Nuclear Corporation, Austin, Texas  
 to  
 Jan. 72      Research Scientist  
              Development of industrial products to meet special requirements,  
              research into practical aspects of using nuclear radiation for  
              industrial production and quality control. Responsibility for  
              cost and time elements of projects.

June 65      The University of Texas at Austin  
 to  
 June 70      Graduate Student, Engineering  
              Various teaching and program development positions in addition to  
              MS and PhD theses in Nuclear Engineering. Research into  
              practical applications of nuclear reactor, radioisotopes,  
              high-resolution detectors, computer data analysis for metallurgy  
              and law enforcement. Management duties included successful  
              completion of AEC research programs, including budgets.

June 68      The University of Texas at Austin  
 to  
 June 69      Radiation Safety Office, UT System  
              Full time supervision of safety aspects of all UT system research  
              projects involving use of nuclear radiation. Responsible for  
              reviewing project plans and purchases, use, disposal of  
              radioactive wastes.

June 64      The University of Texas at Austin  
 to  
 June 65      Design Engineer, UT Physics Department  
              Detailed design of equipment for nuclear physics research  
              scientists. Undergraduate Mechanical Engineering student.

1960          Texas Engineering Associates, Inc., Austin, Texas  
 to  
 1964          Power Distribution Systems Analyst  
              Primary duties included field inspection of electrical power  
              distribution systems, supervision of system analysis reports and  
              recommendations. Full time undergraduate mechanical engineer.

## EXEMPT QUANTITY DISTRIBUTION

Exempt Quantities

Nuclear Regulatory Commission (NRC) regulations allow for the distribution or redistribution of very small quantities of certain isotopes to persons exempt from licensing. These sources are classified as "exempt quantities" of byproduct material. For Cs-137, the exempt quantity limit is 10 microcuries and we propose to distribute two sources which fall into this category.

Cs-137	0.005 uCi	Leak Test Standard
Cs-137	5.0 uCi	Calibration Check Source

We hold License Number \_\_\_\_\_ issued pursuant to 10 CFR 32.18 authorizing the redistribution and transfer of these exempt quantity sources.

Redistribution is subject to the conditions of the license and appropriate regulatory requirements which can be summarized as follows:

1. No more than ten exempt quantities as identified above for each isotope shall be sold or transferred in any single transaction.
2. Each quantity shall be separately and individually packaged and no more than ten such packages shall be contained in any outer package.
3. The external surface dose rate of the outer package shall never exceed 0.5 mrem per hour.
4. The immediate container of each quantity shall bear a durable, legible label which identifies the isotope, quantity of radioactive material, and contains the words "Radioactive Material." In our particular case, the source itself carries these identifying labels.

5. A label must be affixed to the intermediate container, or placed in an accompanying brochure, such that information specified in 10 CFR 32.19(d) is sent with the source. We will comply with this requirement by the use of Example A, which will accompany each package containing an exempt quantity source.

EXAMPLE A:

**RADIOACTIVE MATERIAL**

This instrument contains radioactive material which is exempt from NRC or Agreement State licensing requirements.

NOT FOR HUMAN USE -- INTRODUCTION INTO FOODS, BEVERAGES, COSMETICS, DRUGS OR MEDICINALS, OR INTO PRODUCTS MANUFACTURED FOR COMMERCIAL DISTRIBUTION IS PROHIBITED -- EXEMPT QUANTITIES SHOULD NOT BE COMBINED.

6. Set forth appropriate additional radiation safety precautions and instructions relating to the handling, use, storage and disposal of the radioactive material. This information will be included on the Radioactive Material Certification. (See Example B.)

The radioactive material is securely bonded in the plastic substrate. Under ordinary conditions of use and handling, the material will not flake or disperse. One should exercise care in not placing the fingers directly over the deposited radioactive material.

In the event that the source's use is discontinued, it may be wrapped in aluminum foil and returned to TN Technologies, Inc. for disposal.

A Radioactive Material Certification Sheet shall accompany each source. This Certification Sheet is to be completed from the information furnished as to the activity of the sources contained and the assay date at the time the sources are delivered to Health Physics. This sheet is then placed in the container with the source.

**TN****RADIOACTIVE MATERIAL CERTIFICATION**

Model Number \_\_\_\_\_  
Isotope \_\_\_\_\_  
Total Activity \_\_\_\_\_  
Date of Assay \_\_\_\_\_  
Signature \_\_\_\_\_

The above referenced source contains a license exempt quantity of radioactive material. The radioactive material is securely bonded in the plastic substrate and is designed to withstand normal handling and use. Even though this source contains a very small amount of radioactive material, it should be handled with caution. It should be kept secured from unauthorized access, removal, or dislocation. It should be handled by the edges to avoid contact with the active center. If use of the source is discontinued, it should be wrapped in aluminum foil and returned to TN Technologies, Inc. for disposal.

*TN Technologies, Inc.*

A Baker Hughes Company

P.O. Box 800 Round Rock, Texas 78680-0800  
(512) 388-9100 Fax (512) 388-9200 Telex 77-6413



### Recordkeeping

Records must be kept on all sources redistributed. Records will be maintained in a Laboratory Log Book and show quantities transferred, plus sufficient information to identify the receiver. Records will be maintained and an appropriate report filed by Health Physics. All transfer records must be kept on file for a period of one year after each summary report is submitted.

### Reporting

We are required to submit periodic reports on the total quantities of each isotope transferred under the provisions of 10 CFR 32.18. A summary report identifying each type of source and stating the total quantity of each source transferred must be filed with:

Director of Nuclear Material  
Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

with a copy to the appropriate NRC regional office and a copy retained in our file. The summary report must be filed within thirty (30) days following:

- a. five years after filing the preceding report; or
- b. filing an application for renewal of the license; or
- c. notifying the Commission of a decision to permanently discontinue activities authorized under the license.

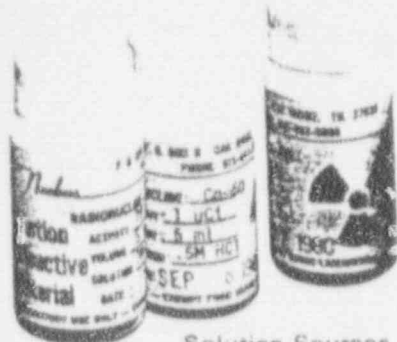
The report must cover the period between filing the preceding report and the present occurrence. If no transfers of byproduct material have been made during the reporting period, the report must so indicate.



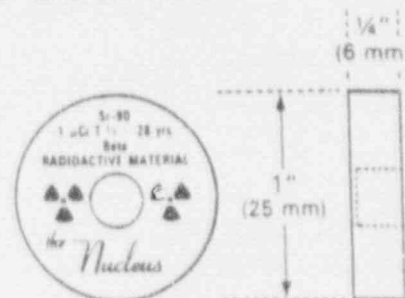
LEAK TEST STANDARD LOG  
.0045 uCi Cesium-137  
MODEL 696431

三

## License Exempt Solid and Solution Sources



- Safe, inexpensive, uncalibrated solid and solution sources. Over 20 radionuclides stocked for prompt shipment. Short half-life solution sources (P-32, I-131, Po-210, Ca-45) calibrated to stated activity on specific date requested.
- Solid sealed sources are fabricated in 1 inch diameter acrylic plastic discs. Each is identified by radionuclide, activity, half-life, principal type radiation and radiation symbol.



Actual Size

### Solution Sources

Model No.	Nuclide	Activity
Ba-133-L	Barium Chloride (Ba-133)	1 µCi
Cd-109-L	Cadmium Chloride (Cd-109)	1 µCi
C-14-L	Sodium Carbonate (C-14)	10 µCi
Ca-137-L	Cesium Chloride (Ca-137)	5 µCi
Co-57-L	Cobaltous Chloride (Co-57)	1 µCi
Co-60-L	Cobaltous Chloride (Co-60)	1 µCi
Eu-155-L	Europium Chloride (Eu-155)	1 µCi
Fe-55-L	Ferric Chloride (Fe-55)	10 µCi
Pb-210-L	Lead Nitrate (Pb-210)	0.1 µCi
Mn-54-L	Manganese Chloride (Mn-54)	1 µCi
Pm-147-L	Promethium Chloride (Pm-147)	10 µCi
Na-22-L	Sodium Chloride (Na-22)	1 µCi
Sr-90-L	Strontium Chloride (Sr-90)	0.1 µCi
Tl-204-L	Thallous Sulfate (Tl-204)	10 µCi
U-238	Uranic Nitrate (Solid)	5 grams
Zn-65-L	Zinc Chloride (Zn-65)	10 µCi

### Solid Sources

Model No.	Nuclide	Activity
Ba-133-S	Barium - 133	1 µCi
Cd-109-S	Cadmium - 109	1 µCi
Ca-137-S-1	Cesium - 137	1 µCi
Ca-137-S-5	Cesium - 137	5 µCi
Co-57-S	Cobalt - 57	1 µCi
Co-60-S	Cobalt - 60	1 µCi
Mn-54-S	Manganese - 54	1 µCi
Na-22-S	Sodium - 22	1 µCi
Po-210-S	Polonium - 210	0.1 µCi
Sr-90-S	Strontium - 90	0.1 µCi
Tl-204-S-1	Thallium - 204	1 µCi
Tl-204-S-10	Thallium - 204	10 µCi
Zn-65-S	Zinc - 65	1 µCi

## Special Purpose Sources

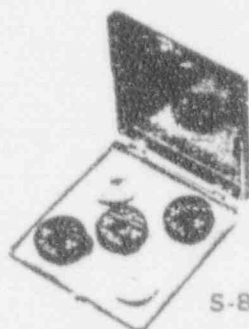


S-9  
Split Source Set  
For Dead Time Experiments

S-11  
Cloud Chamber  
Needle Sources  
1 alpha, 1 beta

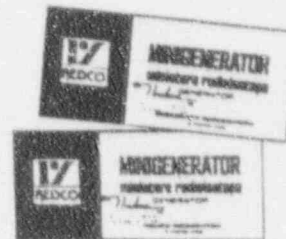
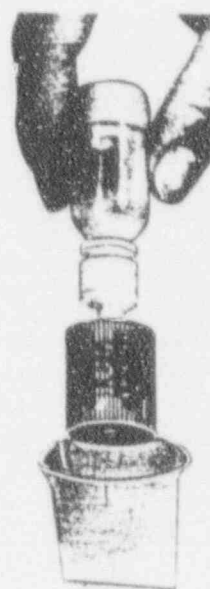


S-13  
Gamma Source Set  
for Scintillation  
Spectrometry



S-8  
Student Source Set-  
1 alpha, 2 beta, 2 gamma

## Minigenerators

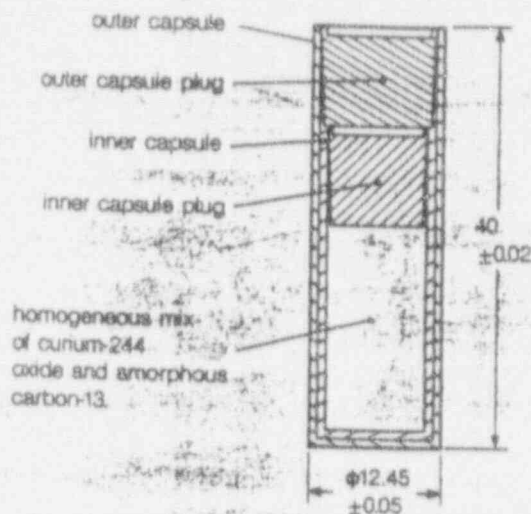


Radioisotope generators provide instant short half-life nuclides for student experiments. A long lived parent is permanently fixed in the minigenerator.

By passing a solution through the parent, a short half-life daughter is released. Three different minigenerators are available:

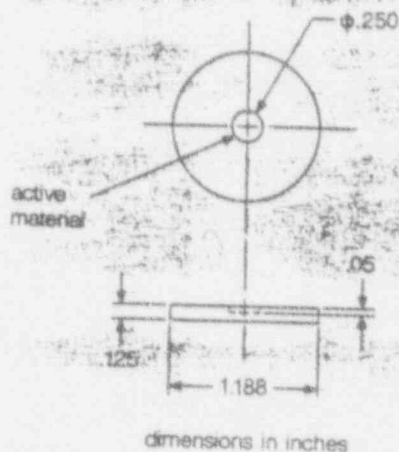
Cs-137/Ba-137m	$T_{1/2} = 2.6 \text{ min}$
Sn-113/In-113m	$T_{1/2} = 100 \text{ min}$
Sr-90/Y-90	$T_{1/2} = 64 \text{ hours}$

188085



ANSI/ISO classification  
77C65444

MPC model no.  
CLN.PG1



dimensions in inches

## High energy gamma reference sources

### Curium-244/Carbon-13 prompt gamma source, code 188085

Sources contain a special mixture of Curium-244 (5.9GBq, 160mCi) and enriched Carbon-13 (200mg) as a compacted powder, doubly encapsulated in a 316L stainless steel capsule. Each capsule measures 12.45mm in diameter by 40mm long. The active diameter is 10.16mm for each source.

The emission spectra are measured for each source which includes the output of the 6.13MeV prompt gammas as well as the neutrons being generated. Typical outputs to be expected are  $4 \times 10^5$  γ/sec and approximately  $1.2 \times 10^5$  n/sec.

The high energy gamma-ray at 6.13MeV is used for energy calibration of detector crystals. The neutrons can be used for special research applications.

**Quality Control:** Wipe test A

**Availability:** on request

## Wipe test standards

Each source contains 170Bq, 4.5nCi  $\pm 10\%$  of either Cesium-137 or Iodine-129 (simulating Iodine-125) which is equivalent to the 185Bq, 5nCi wipe test limit as set forth in ANSI N542-1977, appendix A2.1.1. The activity is dried as a spot and sealed into a 5mm diameter well in the middle of a 30mm diameter plastic disc.

Each source is labeled with the activity, nuclide, radioactive trefoil, model number, and date of manufacture.

Nuclide	Nominal Activity Bq	nCi	Active Diameter	Overall Diameter	Code
Cesium-137	170	4.5	5mm	30mm	696431
Iodine-129	170	4.5	5mm	30mm	196430

**Availability:** 2 weeks

**Quality Control:** Wipe test A

**Licensing:** sources are license exempt

## Specifications:

Only typical sources are listed.  
Inquiries invited for sources to other specifications.

Recommended working life

## Quality control:

Leakage and Contamination tests, see page 74  
A Test Report is supplied with each source or batch of sources.

**Safety performance testing,** see page 77

DEC 1 1992

TN Technologies, Inc.  
Attn: Doris C. Bryan, Manager  
Licensing & Regulatory Affairs  
P.O. Box 800  
Round Rock, Texas 78680-0800

Dear Ms. Bryan:

This refers to your letter dated September 14, 1992, to Sandra Kimberley of this office disputing our September 10, 1992, letter requesting an additional fee for the issuance of Materials License 42-01485-06E.

The licensing staff has confirmed that License 42-01485-06E was correctly issued in accordance with 10 CFR 32.18. A distribution license is required for all commercial distribution of exempt quantities. Since License 42-01485-06E authorizes distribution, not redistribution, of Cesium 137 to persons exempt from licensing pursuant to Section 30.18, 10 CFR Part 30, fee category 3I, 10 CFR 170.31, is the appropriate category. Accordingly, the \$2100 additional fee stated in our September 10, 1992, letter is due and payable.

Payment shall be made within 15 days from the date of this letter and mailed to the following address:

U.S. Nuclear Regulatory Commission  
ATTN: Sandra Kimberley  
License Fee & Debt Collection Branch  
Division of Accounting and Finance  
Office of the Controller  
Washington, D.C. 20555

If you have any further questions concerning this letter, please contact Sandra Kimberley at (301) 492-8743.

Sincerely,

*[Signature]*  
Douglas Weiss, Chief  
Materials License Fee Section  
License Fee & Debt Collection Branch  
Division of Accounting and Finance  
Office of the Controller

Enclosures:

1. September 10, 1992, letter
2. September 14, 1992, letter

DISTRIBUTION:

Pending Fee File  
OC/DAF R/F  
LFDCB R/F (2)  
SKimberley

OFFICE: OC/LFDCB  
NAME: SKimberley  
DATE: 11/30/92

NMS  
MLamastra  
11/30/92

OC/LFDCB  
DWeiss  
12/1/92

OC/LFDCB  
DDandois  
12/1/92

IA01 B:\BRYAN.LTR



September 14, 1992

RECEIVED  
U.S. NUCLEAR REGULATORY COMMISSION

'92 SEP 21 A8:00

U.S. NUCLEAR REGULATORY  
COMMISSION

Ms. Sandra Kimberley  
License Fee & Debt Collection Branch  
Division of Accounting & Finance  
Office of the Controller  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Ms. Kimberley:

This is in response to your letter of September 10, 1992 indicating that TN Technologies, Inc. owes an additional \$2100 application fee for Materials License #42-01485-06E. I have been through debates over exempt quantity licenses with personnel at the NRC for the past two years, and do not agree with your assignment of either the category for this license or the necessity for an additional fee.

To review some history, in October, 1990 I submitted an application to the NRC for a license to distribute exempt quantities of radioactive material. Said license was issued December 12, 1990. In my opinion, the license was issued pertinent to my application and should have been assigned to fee category 3-P. However, the NRC ruled that it should have been category 3-I, and I paid the additional application fee requested. Shortly thereafter, your ridiculous annual fees were published and as I recall, the fee for this simple little license was somewhere in the neighborhood of \$5,500. Since the activities authorized by this license did not warrant such an exorbitant annual fee, we terminated the license. The NRC acknowledgment of that termination was dated August 22, 1991.

In July, 1991 I personally visited with Michael LaMastra of the NRC Licensing Branch in Washington, DC. During that meeting I expressed my dismay to Michael and asked what we should do in order to clarify our request for authorization to redistribute exempt quantities of radioactive material, i.e.; we receive the sources from a vendor and redistribute them along with a survey meter. Mr. LaMastra advised me to revise my procedures and the wording in the submission, to make it clear that our intent was redistribution versus the regulatory definition of distribution. He stated that this license would then fall under category 3-P and not 3-I.

RECEIVED  
U.S. NUCLEAR REGULATORY  
COMMISSION  
SEP 16 A9:00

TN Technologies, Inc.

A Sharp Hughes Company

P.O. Box 800 Round Rock, Texas 78680-0800  
(512) 388-9100 Fax: (512) 388-9200 Telex: 77-6413



Ms. Sandra Kimberley  
September 14, 1992  
Page Two

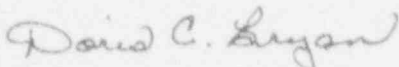
I did as Mr. LaMastra suggested, and by letter and application dated October 16, 1991, we reapplied for a license which was issued April 2, 1992. Category 3-I states:

"Licenses issued pursuant to Subpart A of Part 32 of this chapter to distribute items containing byproduct material or quantities of byproduct material that do not require device evaluation to persons exempt from the licensing requirements of Part 30 of this chapter, EXCEPT FOR SPECIFIC LICENSES AUTHORIZING REDISTRIBUTION OF ITEMS THAT HAVE BEEN AUTHORIZED FOR DISTRIBUTION TO PERSONS EXEMPT FROM THE LICENSING REQUIREMENTS OF PART 30 OF THIS CHAPTER."

I contend that this license comes under the "except" phrase. We redistribute items that have been authorized for distribution to persons exempt from the licensing requirements of Part 30. Therefore, the license falls under category 3-P and the proper fees have been paid.

Sincerely,

TN TECHNOLOGIES, INC.



Doris C. Bryan  
Manager  
Licensing & Regulatory Affairs

DCB:pz

c: J. B. Whitworth, Director  
Environmental & Technical Services

SEP 10 1992

TN Technologies, Inc.  
Attn: Doris C. Bryan, Manager  
Licensing & Regulatory Affairs  
P.O. Box 800  
Round Rock, Texas 78680-0800

Gentlemen:

This refers to Materials License 42-01485-06E which was issued April 2, 1992. The license was issued in accordance with your application dated October 16, 1991.

Through an oversight, the license was issued without the required fee being collected. At the time your application was filed, it appeared that your request would be subject to fee Category 3P of \$170.31 of the enclosed 10 CFR 170, which was in effect at that time and an application fee of \$500 was paid. However, since the license was issued to authorize distribution of byproduct material to persons exempt from licensing pursuant to 30.18, 10 CFR Part 30, an application fee of \$2,600 is required as specified in fee Category 3I of \$170.31. Accordingly, an additional fee of \$2,100 is required. Payment should be made to the U.S. Nuclear Regulatory Commission and mailed to the following address:

U.S. Nuclear Regulatory Commission  
Attn: Sandra Kimberley  
License Fee and Debt Collection Branch, OC/DAF  
Mail Stop MNBB 4503  
Washington, DC 20555

We apologize for the delay in notifying you of the additional fee due and for any inconvenience this matter may cause you.

Sincerely,

*151*  
Sandra Kimberley  
License Fee and Debt Collection Branch  
Division of Accounting and Finance  
Office of the Controller

Enclosures:

July 10, 1991, Federal Register notice

DISTRIBUTION:

Pending Fee File  
OC/DAF R/F  
LFDCB R/F (2)

OFFICE:	LFDCB <i>SK</i>	LFDCB <i>MM</i>
NAME:	SKimberley	MMessier
DATE:	9/9/92	9/9/92

JIM\B:TNT.LTR

1st due  
2/24/92

2nd due  
4/14/91

(FOR LFMS USE)  
INFORMATION FROM LTS

BETWEEN

License Fee Management Branch, ARM  
and  
Regional Licensing Sections

Program Code: 3253  
Status Code: 3  
Fee Category: \_\_\_\_\_  
Exp. Date: 0  
Fee Comments: \_\_\_\_\_  
Decom Fin Assur Req'd: \_\_\_\_\_

LICENSE FEE TRANSMITTAL

A. REGION HQ

1. APPLICATION ATTACHED  
Applicant/Licensee: TN TECHNOLOGIES, INC.  
Received Date: 911022  
Docket No: 3032548  
Control No: 021215  
License No: \_\_\_\_\_  
Action Type: New License

2. FEE ATTACHED \$500.00  
Amount  
Check No: 602713

3. COMMENTS

Signed M. Moriarty  
Date 10-22-91

5. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered ☒)

1. Fee Category and Amount: 3R 3F \$500 + \$2100

2. Correct Fee Paid. Application may be processed for:  
Amendment \_\_\_\_\_  
Renewal \_\_\_\_\_  
License ☒

3. OTHER \_\_\_\_\_

Signed AK  
Date 1/13/92

R1201021

## LICENSING TRACKING SYSTEM

DATE: 10/22/91  
PAGE: 1

## LTS WORKSHEET

DOCKET NO : 03032548      LICENSE NO : 42-01485-46      STATUS: 3  
MAIL CONTROL: 021315      RECEIPT DATE: 911022      ACTION TYPE: 1  
DUE DATE: 920120  
FED. GOVT : N      INST. CODE : 01485      LICENSE REGION: 0  
ISSUE DATE:      ORIGINAL DATE:      EXPIRATION DATE: 3/31/92  
NAME : TN TECHNOLOGIES, INC.      DECOM FIN ASSUR REQD: N  
SUBM: -  
DEPT/BUREAU:      CONT PLAN REQD: -      APPRV: NA  
BUILDING :  
STREET : P. O. BOX 800  
CITY : ROUND ROCK      STATE: TX      ZIP: 786800800  
CONTACT PERSON: DORIS C. BRYAN      PHONE: 512-588-9257  
PRIMARY PGM CODE : 3253      SECONDARY PGM CODES: \_\_\_\_\_  
INSPECTION REGION: 4      PRIORITY CODE: -      INSPECTION CATEGORY: \_\_\_\_\_  
RADIATION SAFETY OFFICER: \_\_\_\_\_  
STATES WHERE USE IS AUTHORIZED: -  
0 - ALL LISTED STATES  
1 - SAME AS STATE IN ADDRESS  
2 - ALL STATES  
3 - NON-AGREEMENT STATES  
AUTHORIZED STATES: \_\_\_\_\_ (USE ONLY IF ABOVE IS ZERO)  
REPORTING IDENTIFICATION SYMBOL: \_\_\_\_\_  
APPROVAL FOR: REDISTRIBUTION:      STORAGE ONLY:  
TEMPORARY JOB SITES:      INCINERATION:  
BURIAL:  
EXEMPTIONS: (1) \_\_\_\_\_ (2) \_\_\_\_\_

4/2/92  
return to  
CBoyle.



## POSSESSION LIMIT INFORMATION

PAGE 2

MATERIAL TYPE	_____	FORM CODE: _____	AGGREGATE CODE: _____
MODEL NUMBER	_____		
DESCRIPTION	_____		
TOTAL QUANTITY	_____	UNIT: _____	
OTHER	_____	# SOURCES: _____	
MATERIAL TYPE	_____	FORM CODE: _____	AGGREGATE CODE: _____
MODEL NUMBER	_____		
DESCRIPTION	_____		
TOTAL QUANTITY	_____	UNIT: _____	
OTHER	_____	# SOURCES: _____	
MATERIAL TYPE	_____	FORM CODE: _____	AGGREGATE CODE: _____
MODEL NUMBER	_____		
DESCRIPTION	_____		
TOTAL QUANTITY	_____	UNIT: _____	
OTHER	_____	# SOURCES: _____	
MATERIAL TYPE	_____	FORM CODE: _____	AGGREGATE CODE: _____
MODEL NUMBER	_____		
DESCRIPTION	_____		
TOTAL QUANTITY	_____	UNIT: _____	
OTHER	_____	# SOURCES: _____	
MATERIAL TYPE	_____	FORM CODE: _____	AGGREGATE CODE: _____
MODEL NUMBER	_____		
DESCRIPTION	_____		
TOTAL QUANTITY	_____	UNIT: _____	
OTHER	_____	# SOURCES: _____	
MATERIAL TYPE	_____	FORM CODE: _____	AGGREGATE CODE: _____
MODEL NUMBER	_____		
DESCRIPTION	_____		
TOTAL QUANTITY	_____	UNIT: _____	
OTHER	_____	# SOURCES: _____	