NRC Form 313 I
(12-81)
10 CFR 30

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE
INDUSTRIAL

See attached instructions for details.

Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety, and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street, NW, Washington, D. C. or 7915 Eastern Avenue, Silver Spring, Maryland.

1. APPLICATION FOR: *(Check and/or complete as appropriate)*

	a. NEW LICENSE
X	b. AMENDMENT TO: LICENSE NUMBER 06-20804-02G
	c. RENEWAL OF: LICENSE NUMBER

2. APPLICANT'S NAME *(Institution, firm, person, etc.)*

Brandhurst Corporation

TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION
(203) 798-1131

3. NAME AND TITLE OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION

Ronald G. Harper

TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION
(203) 798-1131

4. APPLICANT'S MAILING ADDRESS *(Include Zip Code)*
(Address to which NRC correspondence, notices, bulletins, etc., should be sent.)

87 Sand Pit Road
Danbury, CT 06810

5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED *(Include Zip Code)*

87 Sand Pit Road
Danbury, CT 06810

(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)

6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL
(See Items 16 and 17 for required training and experience of each individual named below)

	FULL NAME	TITLE
a.	Ronald G. Harper	Vice President
b.		
c.		

7. RADIATION PROTECTION OFFICER — *Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15.*

8. LICENSED MATERIAL

LINE NO.	A ELEMENT AND MASS NUMBER	B CHEMICAL AND/OR PHYSICAL FORM	C NAME OF MANUFACTURER AND MODEL NUMBER *(If Sealed Source)*	D MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME
(1)	Hydrogren	GTLS	See Item 8E	See Item 8E
(2)	3 (Tritium)			
(3)				
(4)				

	E DESCRIBE USE OF LICENSED MATERIAL
(1)	See attached
(2)	8902150139 870424 REG1 LIC30 06-20804-02G PNU
(3)	
(4)	

Log Mar. 31
Remitter
Check No. 091
Amount $230
Fee Category 3J
Type Amendment
Date Check Rec'd. 3/31/87
Date Completed 3/31/87
By: S. Kimberly

10701

NRC FORM 313 I (12-81)

9. STORAGE OF SEALED SOURCES

LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(1)	Not Applicable		
(2)			
(3)			
(4)			

10. RADIATION DETECTION INSTRUMENTS

LINE NO.	TYPE OF INSTRUMENT A	MANUFACTURER'S NAME B	MODEL NUMBER C	NUMBER AVAILABLE D	RADIATION DETECTED (alpha, beta, gamma, neutron) E	SENSITIVITY RANGE (millirocntgens/hour or counts/minute) F
(1)	Not Applicable					
(2)						
(3)						
(4)						

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10

☐ a. CALIBRATED BY SERVICE COMPANY

NAME, ADDRESS, AND FREQUENCY

Not Applicable

☐ b. CALIBRATED BY APPLICANT

Attach a separate sheet describing method, frequency and standards used for calibrating instruments.

Not Applicable

12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A	SUPPLIER (Service Company) B	EXCHANGE FREQUENCY C
☐ (1) FILM BADGE ☐ (2) THERMOLUMINESCENCE DOSIMETER (TLD) ☐ (3) OTHER (Specify): _____	NOT APPLICABLE	☐ MONTHLY ☐ QUARTERLY ☐ OTHER (Specify):

13. FACILITIES AND EQUIPMENT (Check were appropriate and attach annotated sketch(es) and description(s).

☐ a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC.

☐ b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC.

☐ c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.

☐ d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC. See Specific License 06-20804

14. WASTE DISPOSAL

a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED

See Specific License 06-20804

b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED. IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE.

9. STORAGE OF SEALED SOURCES

LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(1)	Not Applicable		
(2)			
(3)			
(4)			

10. RADIATION DETECTION INSTRUMENTS

LINE NO.	TYPE OF INSTRUMENT A	MANUFACTURER'S NAME B	MODEL NUMBER C	NUMBER AVAILABLE D	RADIATION DETECTED (alpha, beta, gamma, neutron) E	SENSITIVITY RANGE (milliroentgens/hour or counts/minute) F
(1)	Not Applicable					
(2)						
(3)						
(4)						

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10

☐ a. CALIBRATED BY SERVICE COMPANY

NAME, ADDRESS, AND FREQUENCY

Not Applicable

☐ b. CALIBRATED BY APPLICANT

Attach a separate sheet describing method, frequency and standards used for calibrating instruments.

Not Applicable

12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A	SUPPLIER (Service Company) B	EXCHANGE FREQUENCY C
☐ (1) FILM BADGE ☐ (2) THERMOLUMINESCENCE DOSIMETER (TLD) ☐ (3) OTHER (Specify): _____	NOT APPLICABLE	☐ MONTHLY ☐ QUARTERLY ☐ OTHER (Specify): _____

13. FACILITIES AND EQUIPMENT (Check were appropriate and attach annotated sketch(es) and description(s).

☐ a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC.

☐ b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC.

☐ c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.

☐ d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC. See Specific License 06-20804

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See Specific License 06-20804

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INFORMATION REQUIRED FOR ITEMS 15, 16 AND 17

Describe in detail the information required for Items 15, 16 and 17. Begin each item on a separate page and key to the application as follows:

15. RADIATION PROTECTION PROGRAM. Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures *(if needed)*, day-to-day general safety instruction to be followed, etc. If the application is for sealed source's also submit leak testing procedures, or if leak testing will be performed using a leak test kit, specify manufacturer and model number of the leak test kit.

16. FORMAL TRAINING IN RADIATION SAFETY. Attach a resume for each individual named in Items 6 and 7. Describe individual's formal training in the following areas where applicable. Include the name of person or institution providing the training, duration of training, when training was received, etc.

    a. Principles and practices of radiation protection.

    b. Radioactivity measurement standardization and monitoring techniques and instruments.

    c. Mathematics and calculations basic to the use and measurement of radioactivity.

    d. Biological effects of radiation.

17. EXPERIENCE. Attach a resume for each individual named in Items 6 and 7. Describe individual's work experience with radiation, including where experience was obtained. Work experience or on-the-job training should be commensurate with the proposed use. Include list of radioisotopes and maximum activity of each used.

18. CERTIFICATE

(This item must be completed by applicant)

The applicant and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 30, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our 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.

a. LICENSE FEE REQUIRED *(See Section 170.31, 10 CFR 170)* Amendment Fee $230.00	b. CERTIFYING OFFICIAL *(Signature)* Ronald G. Harper
	c. NAME *(Type or print)* Ronald G. Harper
(1) LICENSE FEE CATEGORY: 3J	d. TITLE Vice President
(2) LICENSE FEE ENCLOSED: $ 230.00	e. DATE 3/19/87

BRANDHURST CORPORATION

87 Sand Pit Road, Danbury, CT 06810
Telephone: (203) 798-1131 • Fax (203) 798-1574

SUPPLEMENT TO APPLICATION FOR AMENDMENT TO LICENSE NO. 06-20804-02G

I. Re: Item 8E - Use of Licensed Material

Amend License Conditions to add the following luminous devices:

Type	Description	Min. Hydrogen 3 per unit	Max. Hydrogen 3 per unit
Safety Ten Exit Sign	Beta light exit sign, constructed in accordance with SRDI drawing No. 40113	--	21 curies
Betalux-E	Beta light exit sign, constructed in accordance with SRDI drawing No. 1633001-12	--	25 curies
Marker MP 182	Cylindrical Betalight sealed to reflector in hermetically sealed polycarbonate housing	0.25 curie	5.0 curies
Marker MP 166	Cylindircal Betalight embedded in transparent silicone rubber within moulded polycarbonate housing	0.20 curie	5.0 curies
Marker DB 145	Cylindrical Betalight mounted with flexible silicone adhesive and hermetically sealed in polycarbonate housing	0.10 curie	0.5 curie
Marker MP 152	Hemispherical Betalight mounted by flexible silicone adhesive within 3-part polycarbonate housing, which is then protected by a rubber moulding	0.10 curie	5.0 curies
Multi-purpose Sign Model No. 1752001	Betalight Safety Signs which can contain safety-related words; example, "STAIRS", "WAY OUT", "EXIT", plus others	--	30.0 curies

Type	Description	Min. Hydrogen 3 per unit	Max. Hydrogen 3 per unit
Marker MP 107	Disc-shaped Betalight mounted by flexible silicone adhesive within a 3-part polycarbonate, which is then protected by a rubber moulding	0.5 curie	5.0 curies
Betalight torch; limited use by U.S. Armed Forces, Law Enforcement Agencies, Emergency Services - Air, Sea, Land Rescue and Fire Departments	Disc-shaped Betalight mounted by flexible silicone adhesive within a 2-part polycarbonate housing, which is clipped into rubber housing fitted with cap, steel-reinforced holding ring and lanyard.	0.5 curie	5.0 curies
Box Sign 060	Box, 445 mm x 108 mm x 20.3 mm	--	12 curies
Box Sign 070	Box, 420 mm x 190 mm x 20.3 mm	--	20 curies
Box Sign 080	Box, 220 mm x 108 mm x 20.3 mm	--	10 curies
Box Sign 005	Size, 190.5 mm x 76.22 mm x 16 mm	--	5 curies
Box Sign 006	Size, 82.5 mm x 53.3 mm x 16 mm	--	6 curies
Box Sign 008	Size, 132.0 mm x 53.3 mm x 16 mm	--	4 curies
Box Sign 009	Size, 132.4 mm Top edge 95.3 mm Bottom edge 63.2 mm Height 16.0 mm Depth	--	3 curies
Box Sign 021	Size, 190.5 mm x 76.2 x 16 mm	--	9 curies
Box Sign 025	Size, 190.5 mm x 49.5 mm x 16 mm	--	5 curies
Peglight, Limited use by U.S. Armed Forces only	Green betalight source	--	0.5 curie
Peglight, Limited use by U.S. Armed Forces only	Blue betalight source	--	2.0 curies
Peglight, Limited use by U.S. Armed Forces only	Orange betalight source	--	1.4 curies
Route Marker - I Limited Use by U.S. Armed Forces only	Single betalight source of the following colors, or a combination of the following colors: Green, Orange, Blue, Yellow or White	--	4.5 curies

Type	Description	Min. Hydrogen 3 per unit	Max. Hydrogen 3 per unit
Route Marker-II "Marker contained in a metal fastener for permanent mounting."	Single betalight source of the following colors, or a combination of the following colors: Green, Orange, Blue, Yellow, or White	--	4.5 curies
Light, Aiming Post, Limited use by U.S. Armed Forces and U.S. Law Enforcement Agencies	Trilux, green, MOD Drawing OS2330GA	--	1.93 curies
Light, Aiming Post, Limited use by U.S. Armed Forces and U.S. Law Enforcement Agencies	Trilux, orange, MOD Drawing OS2331GA	--	2.40 curies
Light Marker, Limited use by U.S. Armed Forces and U. S. Law Enforcement Agencies	Trilux, green MOD Drawing OS2347GA	--	1.93 curies
Lamp unit, Limited use by U.S. Armed Forces and U.S.	Trilux, orange MOD Drawing OS5251A	--	2.40 curies
Personnel Marker; limited use by U.S. Armed Forces, Law Enforcement Agencies, Emergency Services - Air, Sea, Land Rescue, and Fire Departments	White, SRDL Drawing D1234001L	--	.25 curie
Map Reader; limited use by U.S. Armed Forces, Law Enforcement Agencies Emergency Services - Air Sea, Land Rescue, and Fire Departments	SRL Drawing C1231001 through 5, 7, 10,11, 13, 14	--	5.00 curies

Luminous devices listed above are manufactured by Saunders-Roe Developments Ltd. Millington Rd., Hayes, Middlesex, England UB 3 4NB, England and/or Saunders-Roe Developments Inc., PO Box 5536 (2580 Landmark Drive), Winston-Salem, North Carolina 27113.

II Re: Item 8D - Max Activity: Amend quantity from 25 curies per device to a maximum of 30 curies per device.

The amendments requested above under Items 8D & 8E incorporate elements of General License No. 034-534-2 issued by North Carolina to : Saunders-Roe Developments Inc., P.O. Box 5536, 2580 Landmark Drive, Winston-Salem, North Carolina 27113.

BRANDHURST CORPORATION

87 Sand Pit Road, Danbury, CT 06810
Telephone: (203) 798-1131• Fax (203) 798-1574

RE: ITEM 15

Emergency During Storage

Since the individual devices and sources shall remain sealed in their individual boxes and will be stored in the shipping cartons, it is unlikely that a device will be damaged while in inventory to the extent that a tritium release shall occur. However, should an accident cause the outer housing of the device to be punctured, the Brandhurst employee will immediately leave the storage area, secure it from entry by other persons, and advise the Radiation Safety Officer.

The local Fire Department has been advised in writing of the names and telephone numbers to be contacted whenever a fire in the Brandhurst facility is reported. Such contact will require the person contacted to initiate the Amergency Situation Procedure.

Emergency Situation Procedure

1. Upon learning of any Emergency Situation, any employee of Brandhurst will advise the Radiation Safety Officer. In his absence, the employee will contact the designated individual at the Emergency Response Firm. Commitment letter from the Emergency Response Firm to respond on request will be maintained on file at USNRC.

2. Radiation Safety Office will immediately contact the Emergency Response Firm and transfer to them the authority necessary to deal appropriately with the Emergency Situation.

   a. Conduct personnel monitoring program (bioassay).
   b. Arrange for disposal of damaged licensed material.
   c. Decontaminate premises as required (shall be done only by specifically licensed contractor.
   d. Calculate the magnitude of the emissions and file the necessary notifications with the USNRC as required by 10 CFR and the Environmental Protection Administration as required by Part 380 of the E.P.A. Regulations.
   e. Investigate the cause of the Amergency Situation and determine necessary preventive action.
   f. In cases where the Amergency Situation involves a damaged device at the premises of the customer, arrange for proper disposal of the device.

BRANDHURST CORPORATION

87 Sand Pit Road, Danbury, CT 06810
Telephone: (203) 798-1131 • Fax (203) 798-1574

CLEAN-UP PROCEDURES FOR DAMAGED OR INOPERATIVE TRITIUM EXIT AND SAFETY SIGNS

a. If the sign has sustained puncture damage, leave the area immediately. If there is a window, this should be opened before leaving. It is not necessary to leave the area upon discovering an inoperative sign.

b. Do not return to the area for at least three (3) hours, after which time literally all of the tritium gas in the tritium lights will have been dispersed to a safe level.

c. Use disposable plastic gloves to handle the damaged or inoperative sign and broken parts. Place the sign and parts in a sealable plastic bag. Contact Brandhurst, (address and telephone number) for information concerning disposal.

d. The surface where the breakage occurred should be washed down thoroughly with detergent and water. Hands must be washed thoroughly after this cleaning-up operation. The rags or paper towels used for cleaning up shall also be placed in the pastic bag.

DIVISION OF FACILITY SERVICES
N. C. DEPARTMENT OF HUMAN RESOURCES
RADIOACTIVE MATERIAL LICENSE

License No. 034-534-1

Supplementary Sheet

Amendment No. 12
Expiration date: June 30, 1989

Saunders-Roe Developments, Inc.
P.O. Box 5536
2580 Landmark Drive
Winston-Salem, N.C. 27103

In accordance with letter dated January 30, 1986, and signed by Brian Pullen, General Manager, License Number 034-534-1 is hereby amended as follows:

To change Item No. 1 to read:

From: Eric J. Paisley, Representative

To: Saunders-Roe Developments, Inc.

To change Condition No. 14 to read:

14. Radioactive material shall be used by, or under the supervision of, Brian Pullen, General Manager, or Lillie May Hutchins, Radiation Safety Officer, provided consultant services are available from Frederick L. Van Swearingen of Medical Physics Consultants.

MS 16
P5 ML18

"OFFICIAL RECORD COPY"

10703

APR 14 1987

February 5, 1986

Date of Issuance

For - Dayne H. Brown

Chief, Radiation Protection Section

Form No. DFS-5211
(Rev. 7/78)

919 769 2359

Supplementary Sheet Amendment No. 11
Expiration date: June 30, 1989

Eric James Paisley, Representative
Saunders-Roe Developments, Inc.
2580 Landmark Drive
Winston-Salem, N.C. 27103

In accordance with letter dated January 29, 1985, and signed by Eric J. Paisley, President, License Number 034-534-1 is hereby amended as follows:

Condition No. 14 is amended to read:

14. Radioactive material shall be used by, or under the supervision of, Eric James Paisley, President, or Lillie May Hutchins, Radiation Safety Officer, provided consultant services are available from Frederick L. Van Swearingen of Medical Physics Consultants.

Cecil B. Brown

February 1, 1985

For - Dayne H. Brown

Date of Issuance

Chief, Radiation Protection Section

Form No. DPS-5211
Rev. 7/78)

919 763 2359

DEPARTMENT OF HUMAN RESOURCES

RADIOACTIVE MATERIAL LICENSE

Pursuant to North Carolina Regulations for Protection Against Radiation and in reliance on statements and representations heretofore made by the licensee, license is hereby issued authorizing the licensee to receive, acquire, own, possess, transfer and import radioactive materials listed below; and use such radioactive material for the purpose(s) and at the place(s) designated below. This License is subject to all applicable rules and regulations of the North Carolina Department Human Resources now or hereafter in effect and to any conditions specified below.

Licensee

Name: Eric James Paisley - Representative, Saunders-Roe Developments, Ltd.

Address: 2580 Landmark Drive
Winston-Salem, NC 27103

AMENDMENT NO: 10, AMENDS IN ITS ENTIRETY

3. License Number: 034-534-1

4. Expiration Date: June 30, 1989

5. File No.: SPECIFIC.

Radioactive Material (element and mass number)	7. Chemical and/or Physical Form	8. Maximum Amount of Radioactivity and/or Quantity of Radioactive Material which Licensee may Possess at any one time.
A. Hydrogen 3	A. Gas (contained within sealed glass capsules)	A. No single capsule to exceed 20 Curies

Authorized Use

- Demonstrate and distribute Hydrogen 3 filled sealed glass capsules manufactured by Saunders-Roe Developments, Ltd., as self-powered light sources and Betalight devices listed in Condition Number 11 below, to specific licensees pursuant to Rule .2417 Regulatory Commission or any Agreement States.

CONDITIONS

- Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.

- The self-powered Hydrogen 3 sealed glass capsules listed below are authprized for demonstration and distribution pursuant to Item 9 of this license.

Type or Model No.	Configuration	Min. Activity per glass capsule	Max. Activity per glass capsule
A.	Annular, both cylindrical and square or rectangular.	0.05 Curie	5.0 Curies
C.	Cylindrical, single pip.	0.05 Curie	5.0 Curies

(License continued on Page 2)

919 769 2339

Conditions (continued from Page 1)

.1.

Type of Model No.	Configuration	Min. Activity per glass capsule	Max. Activity per glass capsule
D.	Radial, single pip.	0.05 Curie	5.0 Curies
F.	Axial, single pip.	0.05 Curie	5.0 Curies
M.H.	Cylindrical Laser cut end, no pip.	0.005 Curie	0.7 Curie
Q.	Special Shape, single pip.	0.5 Curie	5.0 Curies
R.H.	Square or rectangular Laser cut end. No pip.	0.003 Curie	0.7 Curie
R.	Rectangular, single pip.	0.05 Curie	5.0 Curie
S.	Sphere single pip.	0.05 Curie	5.0 Curie

ETA LIGHT DEVICES

arker ype No.	Description	Min. Hydrogen 3 Per unit Ci	Max. Hydrogen 3 Per unit Ci
P 182 No 1224	Cylindrical Betalight sealed to reflector in hermetically sealed polycarbonate housing	0.25	5.0
P 166 No 1225	Cylindrical Betalight embedded in transparent silicone rubber within moulded polycarbonate housing	0.20	5.0
3 145 No 1226	Cylindrical Betalight mounted with flexible silicone adhesive and hermetically-sealed in polycarbonate housing.	0.10	0.5
152 No 1227	Hemispherical Betalight mounted by flexible silicone adhesive within 3-part polycarbonate housing which is then protected by a rubber moulding.	0.10	5.0

(License continued on Page 3)

919 763 2159

N. C. DEPARTMENT OF HUMAN RESOURCES
RADIOACTIVE MATERIAL LICENSE

License No. 034-534-1

Supplementary Sheet

Condition No. 11 (continued from Page 2)

Marker Type No.	Description	Min. Hydrogen 3 Per unit Ci	Max. Hydrogen 3 Per unit Ci
MP 107 Pt No 1228	Disc shaped Betalight mounted by Flexible silicone adhesive within a 3 part polycarbonate which is then protected by a rubber moulding.	0.50	5.00
Torch Pt No 1226	Disc-shaped Betalight mounted by Flexible silicone adhesive within a 2-part polycarbonate housing, which is clipped into rubber housing fitted with cap, steel-reinforced holding ring and lanyard.	0.5	5.0
060 Pt No 1243	Box, 445 mm x 108 mm x 20.3 mm		12 Curies
070 Pt No 1170	Box, 420 mm x 190 mm x 20.3 mm		20 Curies
080 Pt Nos 1247 1248 1249	Box, 220 mm x 108 mm x 20.3 mm		10 Curies

2. Radioactive material may be used at temporary jobsites of the licensee anywhere in North Carolina. This condition does not prohibit use in the United States where the United States Nuclear Regulatory Commission maintains jurisdiction for regulating the use of radioactive material, nor in Agreement States, under reciprocity procedures which may be established by the Nuclear Regulatory Commission or the respective Agreement States.

3. The licensee shall comply with the provisions of 10 NCAC 3G .2500, "Standards for Protection Against Radiation, and 10 NCAC 3G .3100, "Notices, Instructions, Reports and Inspections". (The North Carolina Regulations for Protection Against Radiation are contained in 10 NCAC 3G.)

4. Radioactive material shall be used by, or under the supervision of, Eric James Paisley, Lillie May Hutchins, or William Benbow.

5. The licensee shall have adequate storage space available to store any radioactive material shipment which a customer may refuse or otherwise not delivered to a customer.

6. Except as specifically provided otherwise by this license, the licensee shall possess and use radioactive material described in Items 6, 7 and 8 of this license in accordance with statements, representations and procedures contained in application with attachments dated June 29, 1984 and signed by Eric Paisley, President.

Date of Issuance July 5, 1984

David B. Brown
for Dayne H. Brown
Chief, Radiation Protection Section

Form No. DFS-5211
(Rev. 7/78)

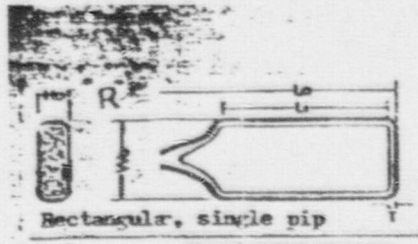
919 769 2159

From RAD. H-3. (Apr 63)
E.J. Paisley
Saunders-Roe Developments Ltd

STANDARD RATED OR SEED MATERIALS [illegible]

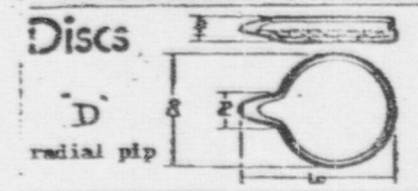
	DIAMETER (cylindrical tube) Do		HEIGHT OR WIDTH (see sketch) Wo or Ho		OVERALL LENGTH Lo		WALL THICKNESS		PIP LENGTH Po		BRIGHTNESS AL		TRITIUM CONTENT Ci	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
Tubess														
"C" cylindrical, single pip	7.25	3.25			102.0	10.0	1.5	0.75	5.0	3.0	1,200	50		
	±	±	-	-	±	±	±	±	±	±	±	±	5.0	0.05
	0.25	0.25			1.5	1.5	0.25	0.2	1.5	1.5	20%	20%		
"MH" [illegible]	3.0	0.5			40	6.5	0.3	0.15	-	-	500	50	0.7	.005
	± .15	± .05			± .05	± 0.3	± .2	± 0.05			± 25%	± 25%		
"RH" square or rectangular			Wo MAX 6.0 ± .2	Wo MIN 0.6 ± .05										
	-	-	Wo MAX 5.0 ± .2	Wo MAX 0.5 ± .05	do	do	do	do	do	do	do	do	do	do
			[illegible] cross-section ratio, Wo : Ho = 1											
"Q" Special Shape	22.5	22.0	Ho MIN 6.25	Ho MIN 23.0	20.0	11.0	2.5	1.0	7.0	4.0	1200	200	5.0	.5
	± .5	± .5	± .25	± .5	± 2.0	± 1.5	± .25	± .25	± 2.5	± 1.5	± 20%	± 20%		

? check.

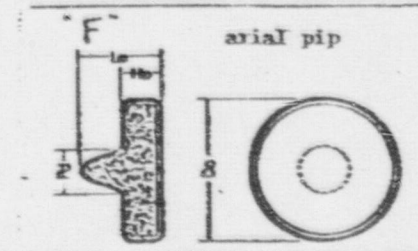


	-	-	Wo MAX 15.5 ± .5 Ho MAX 6.0 ± .5	Wo MIN 3.0 ± .25 Ho MIN 2.5 ± .25	27.0 ± 1.5	6.5 ± 1.0	1.5 ± .25	0.3 ± .10	3.0 ± 1.5	3.0 ± 1.5	1500 ± 20%	50 ± 20%	5.0	0.1

Discs

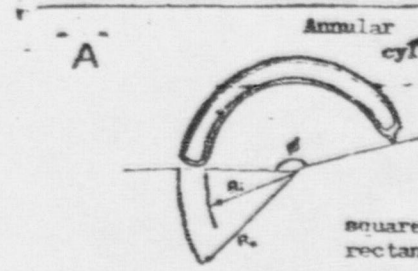


22.0 ± .5	5.0 ± .25	Ho MAX 7.5 ± .5	Ho MIN 2.0 ± .25	17.0 ± 1.5	9.0 ± 1.0	1.5 ± .25	.4 ± .1	5.0 ± 1.5	4.0 ± 1.0	1200 ± 20%	20 ± 20%	5.0	0.1



22.0 ± .5	6.0 ± .25	Ho MAX 6.0 ± .5	Ho MIN 2.5 ± .25	13.0 ± 2.0	6.5 ± 1.25	1.5 ± .25	0.5 ± .25	7.0 ± 2.5	4.0 ± 2.0	1200 ± 20%	20 ± 20%	5.0	0.1

21.0 ± .25	4.5 ± .1	Wo MAX 6.5 ± 0.5	Ho MIN 1.5 ± 0.5	28.5 ± 1.5	8.5 ± 1.0	1.25 ± .25	0.4 ± .1	6.0 ± 1.5	4.0 ± 1.0	1000 ± 20%	30 ± 20%	5.0	0.1



Ri MAX 100 ± 5	Ri MIN 4.5 ± .25	DIA MAX 7.25 ± .25	DIA MIN 1.4 ± .1	β MAX 300° ± 15°	β MIN 20° ± 1°	1.5 ± .25	.25 ± .1	3.0 ± 1.5	3.0 ± 1.5	1200 ± 20%	100 ± 20%	5.0	0.1
do	do	Wo MAX 15.5 ± .5 Ho MAX 6 ± .5	Wo MIN 3.0 ± .25 Ho MIN 2.5 ± .25	do	do	do	do	do	do	do	do	do	do

RADIATION PROTECTION SECTION
DIVISION OF FACILITY SERVICES
N. C. DEPARTMENT OF HUMAN RESOURCES
RADIOACTIVE MATERIAL LICENSE

License No. 034-534-2

Supplementary Sheet

Amendment No. 16
Expiration date: August 31, 1990

Saunders-Roe Development, Inc.
2580 Landmark Drive
Winston-Salem, N.C. 27103

In accordance with letter dated November 5, 1986 and signed by Brian Pullen, General Manager and Administratively, License Number 034-534-2 is hereby amended as follows:

To change Item 8A Maximum amount of Radioactivity the licensee may possess at any one time is amended to read:

8A. No single source or device to contain more than 30 curies and to the total possession limit not to exceed 56,000 curies for finished and unfinished products to include license no. 034-534-3.

Date of Issuance December 15, 1986

For Dayne H. Brown
Chief, Radiation Protection Section

Form No. DFS-5211
(Rev. 7/78)

RADIATION PROTECTION SECTION
DIVISION OF FACILITY SERVICES
N. C. DEPARTMENT OF HUMAN RESOURCES
RADIOACTIVE MATERIAL LICENSE

License No. 034-534-2

Supplementary Sheet

To change Condition No. 13 to read:

13. Radioactive material shall be used by, or under the supervision of, Brian Pullen, General Manager, and Lillie Mae Hutchins, Radiation Safety Officer; provided consultant services are available from Frederick L. Van Swearingen of Medical Physics Consultants.

Date of Issuance February 17, 1986

For - Dayne H. Brown
Chief, Radiation Protection Section

Form No. DFS-5211
(Rev. 7/78)

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RADIATION PROTECTION SECTION
DIVISION OF FACILITY SERVICES
N. C. DEPARTMENT OF HUMAN RESOURCES
RADIOACTIVE MATERIAL LICENSE

License No. 034-534-2

Supplementary Sheet

Amendment No. 15
Expiration date: August 31, 1990

Saunders-Roe Developments, Inc.
2580 Landmark Drive
Winston-Salem, N.C. 27103

In accordance with letters (with attachments) dated November 11, 27, 1985, and January 30, 1986, and signed by Brian Pullen, General Manager, License Number 034-534-2 is hereby amended as follows:

To add:

11.	Type	Description	Max. Hydrogen 3 per unit
	Multi-purpose Sign Model No. 1752001	Betalight Safety Signs which can contain safety-related words; example, "STAIRS," "WAY OUT," "EXIT," plus others	30 curies

To change the following devices in Condition No. 11 to read:

Type

Betalight torch; limited use by U.S. Armed Forces, Law Enforcement Agencies, Emergency Services - Air, Sea, Land Rescue, and Fire Departments

Map Reader; limited use by U.S. Armed Forces, Law Enforcement Agencies, Emergency Services - Air, Sea, Land Rescue, and Fire Departments

Personnel Marker; limited Use by U.S. Armed Forces, Law Enforcement Agencies, Emergency Services - Air, Sea, Land Rescue, and Fire Departments

RADIATION PROTECTION SECTION
DIVISION OF FACILITY SERVICES
N. C. DEPARTMENT OF HUMAN RESOURCES
RADIOACTIVE MATERIAL LICENSE

Page 1 of 7 Pages

Pursuant to North Carolina Regulations for Protection Against Radiation and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, own, possess, transfer and import radioactive materials listed below; and use such radioactive material for the purpose(s) and at the place(s) designated below. This License is subject to all applicable rules and regulations of the North Carolina Department of Human Resources now or hereafter in effect and to any conditions specified below.

Licensee

1. Name: Saunders-Roe Development, Inc.

2. Address: 2580 Landmark Drive
Winston-Salem, N.C. 27103

AMENDMENT NO. 14 AMENDS IN ITS ENTIRETY

3. License Number: 034-534-2

4. Expiration Date: August 31, 1990

5. File No.

6. Radioactive Material (element and mass number)	7. Chemical and/or Physical Form	8. Maximum Amount of Radioactivity and/or Quantity of Radioactive Material which Licensee may Possess at any one time.
6A. Hydrogen 3	7A. Gas (contained within sealed glass capsules)	8A. 56,000 curies Total (No single source or device to contain more than 25 curies)

9. Authorized Use

9. Authorized Use:

A. Pursuant to 10 NCAC 3G .2428, the licensee is authorized to demonstrate and distribute Saunders-Roe Development, Inc. Beta light devices listed in Condition No. 11 to persons generally licensed pursuant to 10 NCAC 3G .2409, or equivalent provisions of the Regulations of the Nuclear Regulatory Commission, or any Agreement state.

CONDITIONS

10. Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.

11. (See Page 2)

(License continued on Page 2)

(License continued from Page 1)

Conditions (continued):

11.	Type	Description	Min. Hydrogen 3 per unit	Max. Hydrogen 3 per unit
	Safety Ten Exit sign	Beta light exit sign, constructed in accordance with SRDI drawing No. 40113.	--	21 curies
	Betalux-E	Beta light exit sign, constructed in accordance with SRDI drawing No. 1633001-12.	—	25 curies
	Marker MP 182	Cylindrical Betalight sealed to reflector in hermetically sealed polycarbonate housing	0.25 curie	5.0 curies
	Marker MP 166	Cylindrical Betalight embedded in transparent silicone rubber within moulded polycarbonate housing	0.20 curie	5.0 curies
	Marker DB 145	Cylindrical Betalight mounted with flexible silicone adhesive and hermetically sealed in polycarbonate housing.	0.10 curie	0.5 curie
	Marker MP 152	Hemispherical Betalight mounted by flexible silicone adhesive within 3-part polycarbonate housing, which is then protected by a rubber moulding.	0.10 curie	5.0 curies

(License continued on Page 3)

(License continued from Page 2)

Conditions (continued):

11.	Type	Description	Min. Hydrogen 3 per unit	Max. Hydrogen 3 per unit
	Marker MP 107	Disc-shaped Betalight mounted by flexible silicone adhesive within a 3-part polycarbonate, which is then protected by a rubber moulding.	0.5 curie	5.0 curies
	Betalight Torch	Disc-shaped Betalight mounted by flexible silicone adhesive within a 2-part polycarbonate housing, which is clipped into rubber housing fitted with cap, steel-reinforced holding ring and lanyard.	0.5 curie	5.0 curies
	Box Sign 060	Box, 445 mm x 108 mm x 20.3 mm	—	12 curies
	Box Sign 070	Box, 420 mm x 190 mm x 20.3 mm	—	20 curies
	Box Sign 080	Box, 220 mm x 108 mm x 20.3 mm	—	10 curies
	Box Sign 005	Size, 190.5 mm x 76.2 mm x 16 mm	—	5 curies
	Box Sign 006	Size, 82.5 mm x 53.3 mm x 16 mm	—	6 curies
	Box Sign 008	Size, 132.0 mm x 53.3 mm x 16 mm	—	4 curies
	Box Sign 009	Size, 132.4 mm Top edge 95.3 mm Bottom edge 63.2 mm Height 16.0 mm Depth	—	3 curies
	Box Sign 021	Size, 190.5 mm x 76.2 mm x 16 mm	—	9 curies
	Box Sign 025	Size, 190.5 mm x 49.5 mm x 16 mm	—	5 curies

(License continued on Page 4)

(License continued from Page 3)

Conditions (continued):

11.

Type	Description	Min. Hydrogen 3 per unit	Max. Hydrogen 3 per unit
Peglight, Limited Use by U.S. Armed Forces only.	Green betalight source	—	0.5 curie
Peglight, Limited Use by U.S. Armed Forces only.	Blue betalight source	—	2.0 curies
Peglight, Limited Use by U.S. Armed Forces only.	Orange betalight source	—	1.4 curies
Route Marker - I Limited Use by U.S. Armed Forces only.	Single betalight source of the following colors, or a combination of the following colors: Green, Orange, Blue, Yellow, or White.	—	4.5 curies
Route Marker - II "Marker contained in a metal fastener for permanent mounting."	Single betalight source of the following colors, or a combination of the following colors: Green, Orange, Blue, Yellow, or White.	—	4.5 curies
Light, Aiming Post, Limited us by U.S. Armed Forces and U.S. Law Enforcement Agencies.	Trilux, green, MCD Drawing 0S2330GA.	—	1.93 curies

(License continued on Page 5)

(License continued from Page 4)

Conditions (continued):

11.

Type	Description	Min. Hydrogen 3 per unit	Max. Hydrogen 3 per unit
Light, Aiming Post, Limited use by U.S. Armed Forces and U.S. Law Enforcement Agencies.	Trilux, orange, MCD Drawing 0S2331GA.	—	2.40 curies
Light Marker, Limited Use by U.S. Armed Forces and U.S. Law Enforcement Agencies.	Trilux, green, MCD Drawing 0S2347GA	—	1.93 curies
Lamp unit, Limited use by U.S. Armed Forces and U.S. Law Enforcement Agencies.	Trilux, orange, MCD Drawing 0S5251A	—	2.40 curies
Personal Marker Assembly, Limited Use by U.S. Armed Forces and U.S. Law Enforcement Agencies.	White, SRDL Drawing D1234001L	—	.25 curie
Map Reader Assembly, Limited use by U.S. Armed Forces and U.S. Law Enforcement Agencies.	SRL Drawing C1231001 through 5, 7, 10, 11, 13, 14	—	5.00 curies

(License continued on Page 6)

(License ~~continued~~ from Page 5)

Conditions (continued):

12. Radioactive material may be stored at the address in Item 2, and at temporary job sites of the licensee anywhere in North Carolina. This Condition does not prohibit use in the United States where the United States Nuclear Regulatory Commission maintains jurisdiction for regulating the use of radioactive material, nor in Agreement States under reciprocity procedures which may be established by the Nuclear Regulatory Commission or the respective Agreement States.

13. Radioactive material shall be used by, or under the supervision of, Eric James Paisley, President, or Lillie May Hutchins, Radiation Safety Officer, provided consultant services are available from Frederick L. Van Swearingen of Medical Physics Consultants.

14. The licensee shall furnish to each general licensee to whom he transfers a Safety Ten™ or Betalux-E™ Exit Sign a copy of the SRDI installation procedures to instruct the general licensee on installation of these devices.

15. The licensee shall furnish to each General Licensee to whom he transfers a Model MP182, MP166, MP152, MP107, DB145, or Route Marker II generally licensed device, a copy of Annex B, "Installation Instructions for Self-Powered Illuminated Markers", to instruct the general licensee on installation of these devices.

16. The licensee shall report to the Radiation Protection Section, Division of Facility Services, Department of Human Resources, P.O. Box 12200, Raleigh, N.C. 27605 and to the appropriate agency of the U.S. Regulatory Commission or an Agreement State, all transfers of devices distributed under this license to persons generally licensed to facilities located in their jurisdiction under 10 NCAC 3G .2409. Such a report shall identify each general licensee by name and address, the type of device transferred, and the quantity and type of radioactive material contained in the device. The report shall be submitted within 30 days after the end of each calendar quarter in which any such device is transferred to a generally licensed person.

17. No generally licensed device shall be installed by the licensee in such a manner or in such a location that any person could receive more than 0.5 rem in a calendar year under ordinary circumstances of use.

18. The licensee shall furnish to each general licensee to whom it transfers a generally licensed device a copy of the applicable Sections of the North Carolina Regulations Fo Protection Against Radiation, and a copy of the Radiation Safety Manual for General Licensees Evaluating and Using Betalights.

(License continued on Page 7)

(License ~~continued~~ from Page 6)

Conditions (continued):

19. Each device distributed under this license shall be provided with a durable, clearly visible label(s) which contains the statements:

"Receipt, possession, use or transfer of this device, Model _____, Serial No. _____, is subject to a general license or equivalent and the regulations of the United States Nuclear Regulatory Commission or Agreement State.

CAUTION - RADIOACTIVE MATERIAL

Manufactured by: Saunders-Roe Developments, Inc., Winston-Salem, N.C. 27103. Removal of this label is prohibited."

20A. Each device shall also be provided with a label containing the radiation caution symbol in conventional colors, magenta or purple on yellow background, the words "CAUTION (or DANGER) - RADIOACTIVE MATERIAL", the identity and quantity of radioactive material and its date of measurement, and the name of the distributor of the device.

B. The identity and quantity of radioactive material and its date of measurement may be omitted on Marker Type MP182, MP166, MP145, MP152, MP107, and Betalight Torch, provided the container in which the device is shipped has a leaflet bearing the information prescribed.

21. Each label required by this condition shall contain the statement "Removal of this label is prohibited."

22. Except as specifically provided otherwise by this license, the licensee shall possess and use radioactive material described in Items 6, 7 and 8 of this license in accordance with statements, representations and procedures contained in

A. Application (with attachments) dated August 27, 1985 and signed by Eric J. Paisley, President.

B. Other documents, drawings, and tests submitted with original license application.

Cecil B. Brown

September 5, 1985

For - Dayne H. Brown

Date of Issuance _____

_____

Chief, Radiation Protection Section

Form No. DFS 4211

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7/89

BETWEEN: C. James Holloway, Chief
License Fee Management Branch
Office of Resource Management

John E. Glenn, Chief
Nuclear Materials Safety & Safeguards Section B
Division of Radiation Safety and Safeguards

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED

Applicant/Licensee: Brandhurst Corp.

Application Dated: 3-19-87

Control No.: 107013

License No.: 06-20804-02G

2. FEE ATTACHED

Amount: $230

Check No.: 091

3. COMMENTS

Signed SLJ

Date 3-26-87

B. LICENSE FEE MANAGEMENT BRANCH

1. Fee Category and Amount: 3J $230

2. Correct Fee Paid. Application may be processed for:

Amendment \

Renewal

License

Signed S. Kimberly

Date 3/31/87

REGION I FORM 213
(MARCH 1987)