

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 86-01

Docket No. 030-22096  
030-22097

License No. 06-20804-01  
06-20804-02G

Priority III  
Priority III

Category E  
Category E

Licensee: Brandhurst Incorporated  
87 Sand Pit Road  
Danbury, Connecticut 06810

Facility Name: Brandhurst Incorporated

Inspection At: Danbury, Connecticut

Inspection Conducted: March 11 and 14, 1986

Inspectors:

Jenny M. Johansen  
Jenny M. Johansen, M.S.  
Health Physicist

4/16/86  
date

Judith A. Joustra  
Judith A. Joustra, B.S.  
Health Physicist

4/16/86  
date

Approved by:

John E. Glenn  
John E. Glenn, Ph.D., Chief  
Nuclear Materials Safety Section B

5/2/86  
date

Inspection Summary: Inspection Conducted on March 11 and March 14, 1986,  
Combined Report No. 030-22096/86-01 and 030-22097/86-01.

Areas Inspected: Routine unannounced inspection of licenses for possession and distribution of tritium light signs to specific and general licensees, including organization, incidents training, radiation protection procedures, materials, facilities, and instruments, receipt and transfer of materials and transportation. The inspection involved 10 hours on site by two NRC inspectors.

Results: No violation of the Commission's, rules, regulations or license conditions were identified.

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## DETAILS

### 1. Persons Contacted

\*Ronald Harper, Vice President  
Ronald Pellegrino, Sales  
Gary Scott, Shipping & Receiving  
Secretarial Staff.

\*Present at Exit Interview

### 2. Organization

Brandhurst, Incorporated is authorized by the NRC under License No. 06-20804-01 for receipt, possession, storage, and preparation and packaging for shipment of tritium light sources; for distribution of light sources to specific licensees of the NRC and Agreement States, and demonstration of light sources at temporary job sites in NRC licensed States. Additionally, Brandhurst, Incorporated is authorized by the NRC under License No. 06-20804-02G to distribute Series B-100 tritium light sources pursuant to Section 32.51, 10 CFR 32 to persons generally licensed pursuant to Section 31.5, 10 CFR 31.

The tritium light sources are manufactured and assembled into sign modules by Brandhurst Company, Ltd., Buckinghamshire, England.

### 3. Incident

The inspectors advised the licensee representatives that the State of Colorado had informed the NRC of a leaking exit sign. The sign had been loaned to the University of Colorado (U of C) by Marquardt/Herbert Lighting (a Brandhurst representative) for demonstration. Upon examination the U of C discovered that one of the tritium tubes had cracked. Wipe tests taken of the face of the sign module gave 2,000,000 dpm upon analysis.

Licensee representatives stated they were aware of the problem and the sign had been returned to them for disposal. Upon receipt, the sign module was checked with a Berthold gas-flow counter and no contamination was detected. The licensee forwarded the sign to Brandhurst Company, Ltd., England for disposal.

The inspectors informed the licensee that the U of C was also concerned that the literature for their product did not contain statements that tritium gas was radioactive; that the words for U.S.N.R.C. were not spelled out as were the other agency names mentioned; and that the activity in the sign of 23.7 curies was excessive.

The licensee representatives stated that the literature for their product complied with the NRC's requirements in 10 CFR 32.51. Additionally, the sign module containing the tritium tubes and the mounting cover were labelled with yellow and magenta signs which stated the requirements for general license distribution, caution radioactive material, the total activity in the sign module was less than 25 curies; the licensee's NRC distribution license number; and that the removal of the labels was prohibited.

The inspectors reviewed the licensee's literature and sign labelling and found they complied with the NRC's regulations in 10 CFR 32.51. (See Attachment No. 1)

Licensee representative stated that all general licensee information required by Section 31.5 of 10 CFR 31, Sections 30.34 and 30.51 through 30.66 of 10 CFR 30 and Sections 20.402, 20.403 and Appendix D of 10 CFR 20 were supplied to each general licensee (See Attachment No. 2)

The inspectors inquired as to how the 23.7 curie tritium sign was shipped to its Colorado representative.

A licensee representative stated that the sign had been shipped in a Type 7A DOT shipping container and that this container had been properly tested and certification was available for review by the inspectors.

A licensee representative stated that the signs had been tested to withstand normal handling and transportation. He believed that the only way that the tritium light source could have been cracked is by banging the sign repeatedly on a table top. Sales representatives had done this in the past to demonstrate the sturdiness of the sign. The licensee representatives had recently held several training sessions with sales representatives to explain that the sign was to be demonstrated through normal handling like any light or electronic device.

No violations were identified.

#### 4. Training

The inspectors inquired of the individual responsible for shipping and receiving as to the training he had received from the authorized user. The individual stated he had been trained in the shipping and receiving procedures, the use of the gas flow counter (Berthold), and the hazards involved with the handling of the tritium signs.

The individual demonstrated the use of the survey meter for the inspectors.

No violations were identified.

#### 5. Radiation Protection Procedures

The licensee has established operating and emergency procedures in care of sign breakage.

The inspectors observed that licensed materials were secured or under constant surveillance.

No violations were identified.

6. Materials, Facilities and Instruments

The inspectors observed that the licensee's facilities were as described in his application. The tritium signs were stored in a well ventilated room separate from the shipping receiving area. All areas were properly posted.

The licensee has a Berthold gas flow counter with the rate meter designated in units of Seivert-1. The licensee has determined the efficiency of the instrument and converted the readings to mR/hr and dpm. The rate meter is marked to show 1000 dpm. A reading in excess of 10 Sv-1 on the 1X scale is an action limit and indicates that the sign module may have cracks in the tubes. These signs are removed from the shipment and returned to Branhurst, Company, Ltd., England.

No violations were observed.

7. Receipt & Transfer of Materials

A licensee representative stated that the highest activity per sign received since September, 1985 was 18.7 curies per sign and each package received consisted of 10 signs.

The inspectors estimated the licensee had on hand approximately 6,000 curies of activity in the signs in storage.

A licensee representative stated that all damaged signs returned for disposal were surveyed upon receipt, all new signs were checked for damage when received and that all signs were surveyed and checked for proper labels prior to shipping. No contaminated signs had been identified.

The inspectors informed a licensee representative that the Region I office had not received the quarterly transfer reports for the 3rd and 4th quarters of 1985.

The licensee representatives stated that reports were sent to NRC headquarters in Washington, D.C., and thought they were forwarded to Region I. The inspectors were given copies of the transfer records on March 14, 1986.

No violations were identified.

8. Transportation

Licensee representatives stated that signs are 100 percent surveyed for contamination and labels verified prior to shipment.

The inspectors noted that the labels on 10 signs observed had the licensee's former license number.

A licensee representative stated that signs with the current license number were on order and the new labels would be used as soon as possible.

The licensee stated that all signs which exceeded 20 curies shipped prior to July 1985 were shipped with proper shipping papers and in DOT 7A packages with DOT white labels. Since July 1985 the standard sign activity has been decreased to less than 20 curies and these signs have been shipped in accordance with 49 CFR 173.421, as strong, tight packages of limited quantity, less than 20 curie per sign, less than 200 curies per package.

The inspectors observed that packaging ships contained certification required by 10 CFR 71.5 and 49 CFR 173.421-1.

No violations were identified.

9. Exit Interview

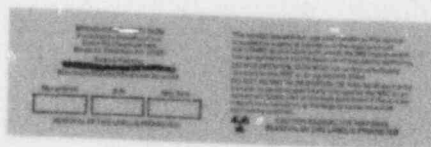
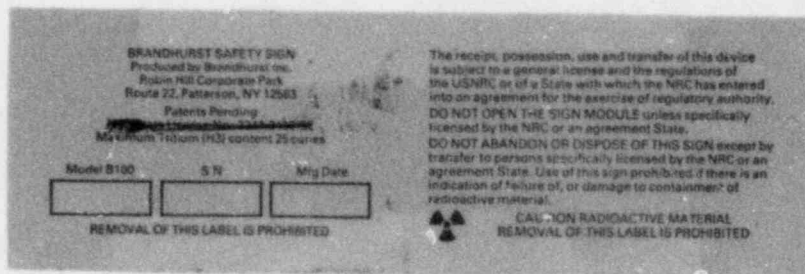
The inspectors reviewed the findings of the inspection with the individual noted in Section 1 of this report.

Attachment No. 01  
Combined Report Nos. 030-22096/86-01 and 030-22097/86-01

Please note that the above labels on the Tritium light signs observed by the inspection had the 87 Sand Pit Road, Danbury, Connecticut address along with previous NRC License No. 31-20726-02G. The above are examples of labeling used.



Attachment No. 01  
Combined Report Nos. 030-22096/86-01 and 030-22097/86-01



Please note that the above labels on the Tritium light signs observed by the inspection had the 87 Sand Pit Road, Danbury, Connecticut address along with previous NRC License No. 31-20726-02G. The above are examples of labeling used.

**BRANDHURST INCORPORATED**

87 Sand Pit Road, Danbury, CT 06810  
Telephone (203) 798-1311 Telex 4994895 BRAND

Gentlemen:

In accordance with the regulations of the USNRC, this will advise you that the enclosed devices have been shipped under General License number 06-20804-02G.

The above license permits Brandhurst to distribute products containing tritium gas light sources, whereby the customer or end user is not required to apply for a specific license to receive and use a product containing byproduct material.

A copy of the pertinent sections of USNRC, Title 10, Code of Federal Regulations covered the products shipped to you are shown below.

Please note that in some States, registration of receipt by the end user may be required. We attach a list of those States requiring registration at this time, with addresses of the office having jurisdiction and blank registration form.

**APPENDIX D—UNITED STATES NUCLEAR REGULATORY COMMISSION REGIONAL OFFICES**

	Address	Telephone (24 hrs)
Region I: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.	USNRC, 631 Park Ave., King of Prussia, PA 19406.	(215) 337-5000, (FTS) 488-1000
Region II: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee, Virginia, Virgin Islands, and West Virginia.	USNRC, 101 Marietta Street, Suite 2100, Atlanta, GA 30303.	(404) 221-4503, (FTS) 242-4503
Region III: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin.	USNRC, 788 Roosevelt Road, Glen Ellyn, IL 60137.	(312) 932-2500, (FTS) 364-2500
Region IV: Arkansas, Colorado, Idaho, Kansas, Louisiana, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming.	USNRC, 611 Ryan Plaza Drive, Suite 1000, Arlington, TX 76011.	(817) 860-8100, (FTS) 728-8100
Region IV Field Office	USNRC, Region IV 611 Ryan Plaza Drive, Suite 1000 Arlington, TX 76012	817 485-8100
Region V: Alaska, Arizona, California, Hawaii, Nevada, Oregon, Washington, and U.S. territories and possessions in the Pacific.	USNRC, 1450 Main Lane, Suite 210, Walnut Creek, CA 94596.	(415) 943-3700, (FTS) 463-3700

**INSTRUCTIONS TO CUSTOMER OR INSTALLER**

Some States require a record of sign installations. If signs are installed in the States listed below, please complete the lower part of this form and mail it to the address shown. (Serial No. information is shown on the Packing Slip).

**LIST OF AGREEMENT STATES****ALABAMA 205-269-7634**

Mr. Aubrey Godwin, Chief  
Div. of Radiological Health  
Environmental Health Admin.  
State Office Building  
Montgomery, AL 36130

**NEW YORK**

Radiological Health Unit  
N.Y. Dept. of Labor  
2 World Trade Center  
New York, NY 10047

**KENTUCKY 502-544-3700**

Mr. Donald Hughes, Manager  
Radiation Control Branch  
Bureau of Health Services  
Dept. of Human Resources  
275 East Main St.  
Frankfort, KY 40621

**Registration of Brandhurst Signs**

distributed under U.S.N.R.C. License No. 06-20804-02G by Brandhurst Inc.,  
87 Sand Pit Road, Danbury, CT 06810.

Serial No.(s) \_\_\_\_\_ Date Installed \_\_\_\_\_  
Installed at: Company Name \_\_\_\_\_  
Address \_\_\_\_\_  
City, State \_\_\_\_\_





Attachment No. 02

Combined Report No. 030-22096/86-01 and 030-22097/86-01