

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

INSTRUCTIONS—Complete items 1 through 6 if this is an initial application or an application for renewal of a license. Information contained in previous applications filed with the Commission with respect to items 8 through 15 may be incorporated by reference provided references are clear and specific. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail two copies to: U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Materials Branch, Division of Licensing. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. An AEC Byproduct Material License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30, and the Licensee is subject to Title 10, Code of Federal Regulations, Part 20, and the license fee provisions of Title 10, Code of Federal Regulations, Part 170. The license fee category should be stated in item 16 and the appropriate fee enclosed. (See Note in Instruction Sheet)

1 (a) NAME AND STREET ADDRESS OF APPLICANT (institution, firm, hospital, person, etc. include ZIP Code and telephone number):  
  
HAMILTON WATCH COMPANY, INC.  
941 Wheatland Avenue  
Lancaster, Pa. 17604

(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED (if different from 1(a) include ZIP Code):  
  
SAME

2 DEPARTMENT (EITHER USE BYPRODUCT MATERIAL)  
  
ASSEMBLY AREA

3 PREVIOUS LICENSE NUMBER(S) (If this is an application for renewal of a license please indicate and give number):  
  
# 37-03572-6  
License #37-03572-02E  
Refer to Supplement #3

4 INDIVIDUAL USER(S) (Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience in items 8 and 9.)  
  
Bernard Cattin, V.P. Director of Operations  
Park McKinney, Production Manager  
Olivier Barrelet, Research and Development Manager

5 RADIATION PROTECTION OFFICER (Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in items 8 and 9.)  
  
Olivier Barrelet  
Refer to Supplement #5

6 (a) BYPRODUCT MATERIAL (Element and maximum activity of each):  
  
Tritium  
(Hydrogen 3)

(b) CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM NUMBER OF MILLCURIES OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME (If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)  
  
Tritium as a gas in sealed borosilicate glass sources manufactured by American Atomics Corporation (M/N 60307), 60297 up to 6,290 Ci/<sup>3</sup>H at any one time (no single source to contain more than 100 mCi/<sup>3</sup>H).

7 DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. (If byproduct material is for human use, supplement A (Form AEC-313a) must be completed in lieu of this item. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)

Tritium filled tubes to be placed behind a liquid crystal display within a digital watch, permitting reading of time in low ambient light. For sale and distribution of Hamilton Watch to persons as authorized by Sec. 32.22, 10 CFR 32. HAMILTON LCD watches will be manufactured under California Radioactive Material.

8512050445 XA

80036  
89036

TRAINING AND EXPERIENCE EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

8 TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a Principles and practices of radiation protection	AMERICAN ATOMICS		<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
b Radioactivity measurement standardization and monitoring techniques and instruments	Training with Radiologic monitor equipment		<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No
c Mathematics and calculations basic to the use and measurement of radioactivity			<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No
d Biological effects of radiation			<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No

9 EXPERIENCE WITH RADIATION (Actual use of radioisotopes or equivalent experience)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
<sup>3</sup> H		AMERICAN ATOMICS CORP. SUNCRUX	COURSE ON THE JOB	Handling <sup>3</sup> H

10 RADIATION DETECTION INSTRUMENTS (Use supplemental sheets if necessary)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mR/hr)	WINDOW THICKNESS (mg/cm <sup>2</sup> )	USE (Monitoring, surveying, measuring)
Tritium air monitor (Overhoff & Assoc.) Betatec Mod. 210	1	Tritium	5 $\mu$ Ci/m <sup>3</sup> to 2000 $\mu$ Ci/meters		SURVEY

11 METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE  
REFER TO SUPPLEMENT # 11

12 FAN BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED (For fan badges, specify method of calibrating and processing, or name of supplier.)  
REFER TO SUPPLEMENT # 12

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS IN DUPLICATE

- 13 FACILITIES AND EQUIPMENT Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No **REFER TO SUPPLEMENT # 13**
- 14 RADIATION PROTECTION PROGRAM Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak test, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source. **REFER TO SUPPLEMENT # 14**
- 15 WASTE DISPOSAL If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved. **AMERICAN ATOMICS CORP. REF. #15**

CERTIFICATE (This item must be completed by applicant)

16 THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, 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.

License Fee Category \$ 510.00  
Fee Enclosed \$ 510.00

Date July 29, 1977

HAMILTON WATCH CO., INC.  
By Olivier D. Barrelet  
Olivier D. Barrelet  
Manager, Research & Development  
Title of certifying official

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 or to any matter within its jurisdiction.

# HAMILTON WATCH CO., INC.

LANCASTER PENNSYLVANIA 17604 U.S.A. (717)394-7161

## SUPPLEMENT TO ATOMIC ENERGY COMMISSION FORM 313

### SUPPLEMENT SECTION 3

This license is in reference to license 37-035-72-02E, 37-03572-6 for the use of Tritium.

### SUPPLEMENT SECTION 5

Olivier D. Barrelet had former training by American Atomics Corporation in Tritium and sealed Tritium Luminous Sources and has studied documents related to Tritium and had training with Radiologic Monitors with Overhoff and Associates.

### SUPPLEMENT SECTION 11

Betatec Model 210 is calibrated in accordance with instruction supplied by Overhoff and Associates.

### SUPPLEMENT SECTION 12

All employees or individuals working in or frequenting a portion of a controlled area will be informed as to the presence of sources of radiation. The persons involved in these areas will be instructed in safety problems associated therewith and in precautions or procedures to minimize exposure for their protection. Every individual working in or frequenting the controlled area will be required to supply a urine sample on a regular basis.

If an individual is known to or suspected to have received an exposure to tritium gas exceeding permissible values, he will be removed from the working area and an immediate bio-assay performed.

### SUPPLEMENT SECTION 13

The handling of tritium luminous sources will be performed with a Tritium Safe Hood. Each hood will exhaust a minimum of 200 CFM and is monitored by a Tritium Air Monitor. ←

### SUPPLEMENT SECTION 14

The Radiation Protection Program at Hamilton will be based on use of a tritium air monitor (BETATEC Mod. 120). Receiving stores and assembly areas are monitored and have safe hoods for assembly and inspection. All parts containing tritium sources will be stored in cabinets that are exhausted and monitored. ←

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Leak tests will be made in accordance with 32.110 (b) (8). Liquid scintillation counting will be done by American Atomic Corporation or by an approved testing laboratory.

SUPPLEMENT SECTION 15

Waste source material will be returned to American Atomic Corporation or other authorized disposal agent.

This request will reference our initial application dated January 26, 1977, for Research and Development License.

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## SUMMARY

1. The description of the product and its intended use.
2. Type and quantity of by-product materials.
3. Chemical and Physical Form.
4. Solubility in water and body fluids of the forms of the by-product material.
5. Maximum External Radiation.
6. Degree of Access.
7. Details of construction and design.
8. Total quantity of by-product material expected to be distributed in the product annually.
9. Expected life of the product.
10. Method of Labeling.
11. Procedures for prototype testing.
12. Results of prototype tests.
13. List of Part Numbers.
14. External Radiation Dosage and Dose Commitments.
  - 14.1. Individual User.
  - 14.2. Dose Commitment, Inhalation and Absorption of  $T_2O$ .
  - 14.3. Skin Dosage  $T_2$ .
15. Distribution, Handling and Storage.
  - 15.1. Dose Commitment, Inhalation and Absorption of  $T_2O$ .
  - 15.2. Skin Dosage  $T_2$ .
16. Retail Sales.
  - 16.1. Dose Commitment, Inhalation and Absorption of  $T_2O$ .
  - 16.2. Skin Dosage  $T_2$ .

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17. Effectiveness of Containment.
18. Disposal.
19. Dose Probabilities.
  - 19.1. Individual User.
  - 19.2. Dose Commitment, Inhalation  $T_2O$  and Absorption.
  - 19.3. Skin Dosage  $T_2$ .
20. Handling and Storage of Quantities of Watches.
  - 20.1. Dosage Commitment, Inhalation and Absorption  $T_2O$ .
  - 20.2. Skin Dosage  $T_2$ .
21. Quality Control procedures to be followed.
22. Receiving and Stores.
23. Module Repair.
24. List of Photographs.
25. List of Prints.