

U. S. NUCLEAR REGULATORY COMMISSION
MATERIALS LICENSE

Page 1 of 1 Pages
Amendment No. 02

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter 1, Parts 30, 31, 32, 33, 34, 35, 36, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s); and to import such byproduct and source material. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee		
1. Troy School District 4400 Livernois 2. Troy, Michigan 48064	3. License number 21-16045-Q1	
	4. Expiration date June 30, 1985	
	5. Docket or Reference No.	
6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Cerium 137	A. Sealed source (Racco-50-ORNL)	A. 420 curies
9. Authorized use		
A. To be used in a Radiation Machinery Corporation Gammater Model 50E irradiator (as manufactured by Isomedix, Inc., Parsippany, New Jersey) for educational demonstrations and laboratory experiments.		

CONDITIONS

10. Licensed material shall be used only at the Athens High School, 4333 John R., Troy, Michigan.
11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 19, "Notices, Instructions and Reports to Workers; Inspections" and Part 26, "Standards for Protection Against Radiation."
12. Licensed material shall be used by, or under the supervision of, John D. Acton, Barbara Bertelson, William G. Bull, Jr., James L. Fenner, Mark E. Stern or Boris M. Johannessen.

8007 170/68

MATERIALS LICENSE

Supplementary Sheet

License Number 21-16046-01

Docket or
Reference No. _____

CONDITIONS

Amendment No. 02

13. Sealed sources containing licensed material shall not be opened or removed from Gammator 508 irradiator by the licensee.
14. A. Each sealed source containing licensed material shall be tested for leakage and/or contamination at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within 60 days prior to the transfer, a sealed source received from another person shall not be put into use until tested.

B. The test shall be capable of detecting the presence of 0.05 microcurie of contamination on the test sample. The test samples shall be taken from appropriate accessible surfaces of the device in which the sealed source is permanently or semipermanently mounted or stored. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.

C. If the test reveals the presence of 0.05 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the test with Section III, U. S. Nuclear Regulatory Commission, Office of Inspection and Enforcement, 749 Roosevelt Road, Glen Ellyn, Illinois 60137, describing the equipment involved, the test results, and the corrective action taken.

D. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically authorized by the Commission or an Agreement State to perform such services.
15. The procedures contained in Radiation Machinery Corporation instruction manual for the "Gammator 508" device shall be followed and a copy of this manual shall be made available to each person using or having responsibility for the use of the byproduct material.
16. Except as specifically provided otherwise by this license, the licensee shall possess and use licensed material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application dated July 17, 1973. The Nuclear Regulatory Commission's regulations shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.

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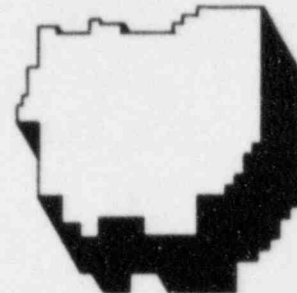
Date _____

For the U. S. Nuclear Regulatory Commission
Original Signed by
MICHAEL A. LANASTRA
by _____
Material Licensing Branch

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

CONTROL NO. 7 9210

TROY SCHOOL DISTRICT



4400 LIVERNOIS • TROY, MICHIGAN • 48098 • (313) 689-0600

Attachment for Gammator License Renewal # 21-16045-01

Item #6 Individuals who will use or supervise the use of Gammator

<u>Name</u>	<u>Title</u>
John Don Acton	Biology teacher
Barbara Berthelson	Biology teacher
William G. Hull, Jr.	Biology teacher
James L. Fenner	Physics teacher
Mark E. Stern	Chemistry teacher
Doris W. Johannessen	Chemistry teacher Science department chairperson

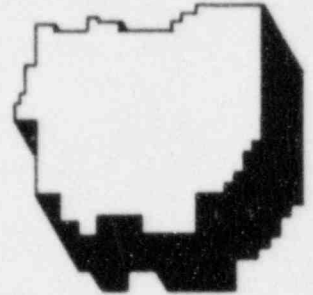
In the future, this list of users may be augmented by other science teachers who have successfully completed a radiation protection seminar as determined by the radiation protection officer.

Dr. Don R. Shader
Superintendent of Schools
Lawrence R. Hamilton
*Assistant Superintendent,
Instruction*
Dr. Carl T. Pacacha
*Executive Director,
Secondary Instruction*
Ronald C. Morse
*Executive Director,
Personnel Services*
Gordon C. Andringa
*Executive Director,
Auxiliary Services*
Marajeanne Zodtner
*Executive Director,
Business Services*

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Attachment for Gammator License Renewal # 21-16045-01

Item #7 Radiation Protection Officer

DORIS W. JOHANNESSEN - M.S. Purdue University

- a) Has completed a two day workshop on Radiation Safety conducted by Robert Sabo, Consulting Health Physicist, Wayne State University, 1974.
- b) Has attended a one week AEC workshop on Nuclear Power at University of Michigan, 1973.
- c) Has been the Radiation Protection Office for the Troy School District since Gammator arrived, 1974.

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Attachment for Gammator License Renewal # 21-16045-01

Item #11 a & b Calibration of Instruments

The gammator is tested for radiation leaks every six months using Isomedix Inc. Model L 3 Leak Test Kit. The test sample is then sent to Isomedix, Inc. for analysis.

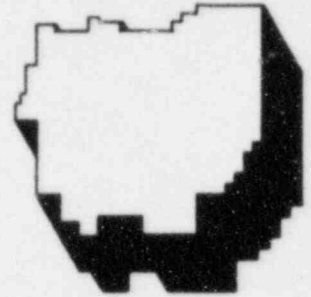
The applicant has checked the Ludlum Geiger counters every six months using a 9.0 microcuries sample of T1204 to make sure they are functioning.

In the future, one of the Ludlum Geiger counters will be sent each year to Ludlum Measurements Inc. (1219 East Broadway; Sweetwater, Texas 79556) for calibration.

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Application for License Renewal #21-16045-01

Item #15 Radiation Protection Program

Leak Test

The Radiation Protection Officer will perform leak tests at six-month intervals using Isomedix, Inc., Model L 3 Leak Test Kit. The test sample will then be sent back to Isomedix for analysis in accordance with the instructions provided in the Leak Test Kit.

Security Statement

The Gammator is housed in Room 2207 of Athens High School. There are two access doors which are kept locked when the room is not in use. Keys for these doors are in the possession of authorized personnel only. The area is posted with signs bearing the radiation caution symbol.

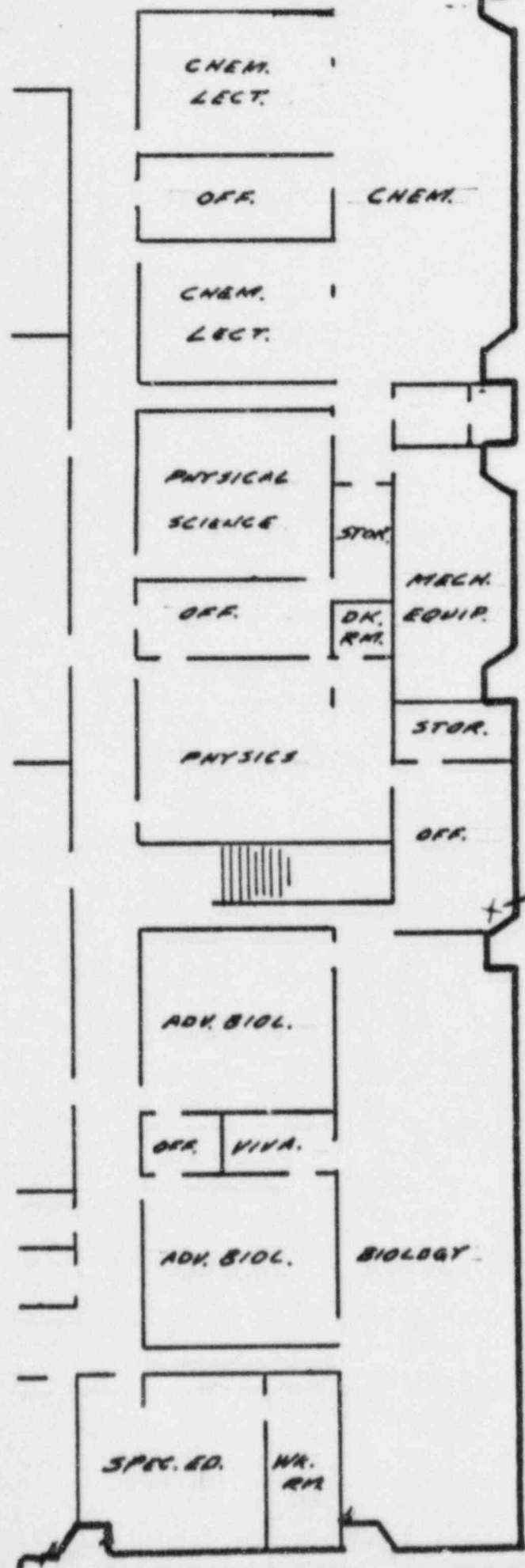
Attached (attachment sheets E and F) are two diagrams of the area in question showing the location of the Gammator, access doors, floor plan of the immediately surrounding building area and other pertinent details.

Day-to-Day General Safety Procedures

1. only authorized personnel are allowed to use the Gammator.
2. A daily log is kept of those individuals using the Gammator.
3. The manufacturer's instructions on the use of the Gammator are followed.
4. The Gammator is kept locked when not in use. Keys are kept by Radiation Protection Officer or on assigned user listed in item #6.
5. Any additional person using the Gammator is given a training session in the areas listed in #16 a-d.

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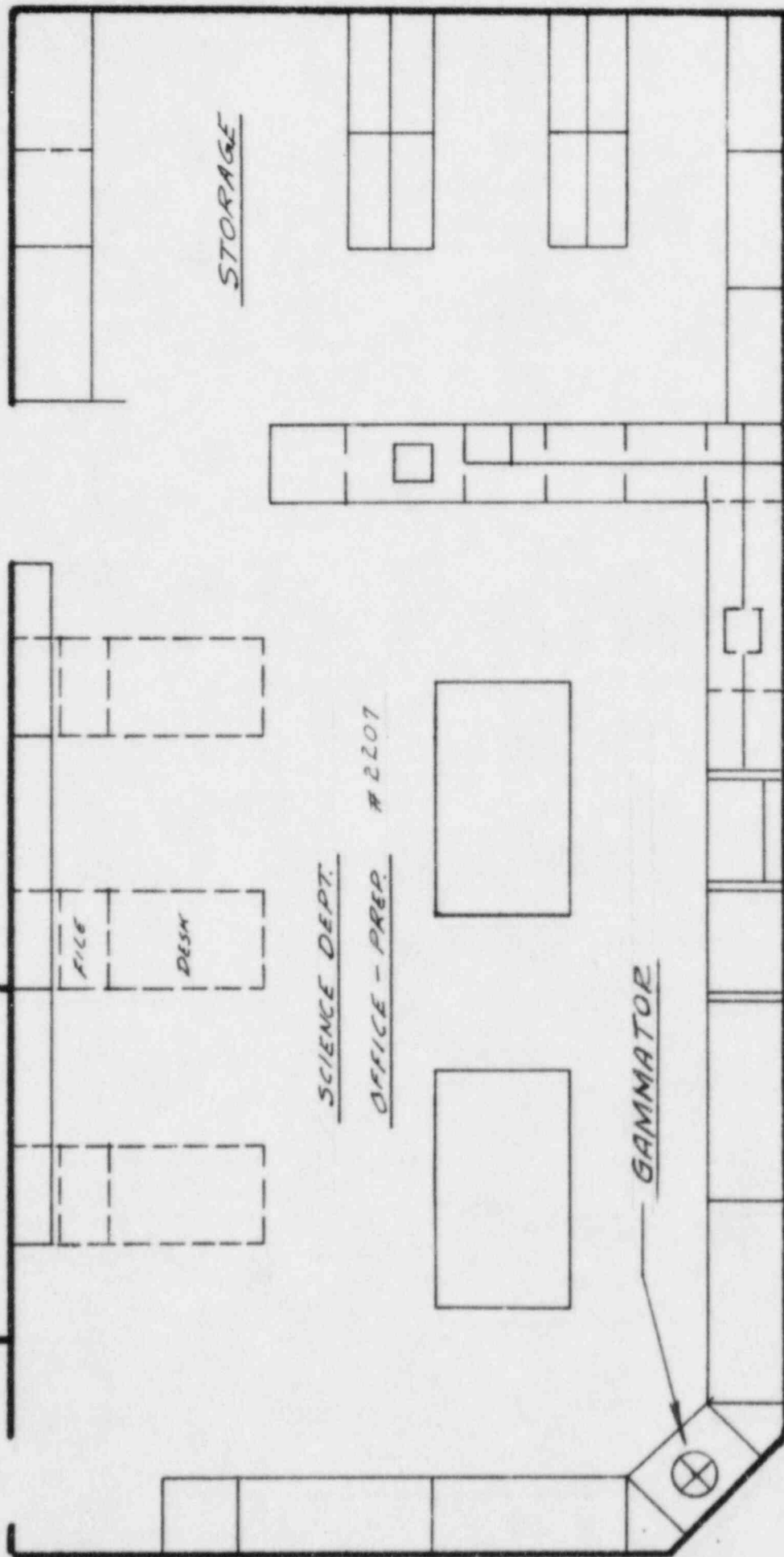
LOCATION OF GAMMATOR

SCIENCE DEPT.

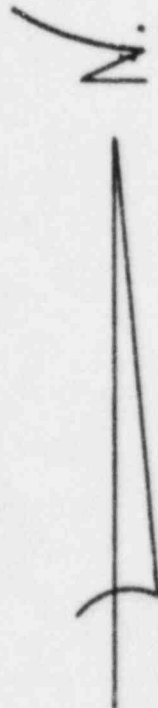
ATHENS H.S.

BIOLOGY LAB.

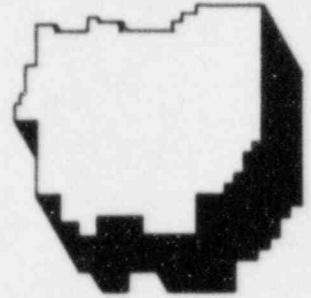
PHYSICS RM



ATHENS H.S. TROY, MICH.



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Application for License Renewal #21-16045-01

Item #16 Formal Training in Radiation Safety

All authorized personnel except Barbara Berthelson have attended a two day workshop on Radiation Safety conducted by R. Sabo, consulting Health Physicist, Wayne State University, 1974. Items a-d were covered.

In addition:

Mark E. Stern has had a one year Radiology Course at Wayne State. Mark E. Stern has had two years of Biochemistry at Wayne State medical school. He was a Research Technician there and had experience with isotopes.

Doris W. Johannessen has had a one week AEC workshop on Nuclear Power at the University of Michigan, 1973.

Barbara Berthelson was given the material presented in the Radiation Safety Workshop by the Radiation Protection Officer.

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Item #17 Experience

See item #16

The teachers listed in items #6 and #7 have been working with the
Gammatior for the last five (5) years.

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Business Services*

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