JAN 29 1988

Docket No. 50-186

University of Missouri
ATTN: Dr. Robert M. Brugger
Director, Research
Reactor Facility
Research Park
Columbia, MO 65201

Gentlemen:

Enclosed is an order to modify Georgia Institute of Technology Operation License No. R-97. The enclosure is sent for information only; no response is solicited.

Sincerely,

"Original signed by W.D. Shafer"

W. D. Shafer, Chief
Emergency Preparedness and
Radiological Protection Branch

Enclosure: As stated

cc w/enclosure:
DCD/DCB (RIDS)
Licensing Fee Management Branch

RIII	RIII	RIII
Miller/asp	Greger	Shafer
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Bill ___

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

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JAN 29 1988

Judy,
Copy to Hind/Sharpe/Grosser.
Thanks
Steve

Docket No. 50-160
License No. R-97
EA 88-32

Georgia Institute of Technology
900 Atlantic Drive, N.W.
Atlanta, Georgia 30332

Gentlemen:

Subject: ORDER MODIFYING LICENSE, EFFFECTIVE IMMEDIATELY

Enclosed herewith is an Order modifying your license (effective immediately). The Order requires you to immediately suspend certain activities under the subject NRC license until the requirements of the Order are satisfied.

You are required to respond to the enclosed Order, and in preparing your response, you should follow the instructions specified in the Order.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed Order will be placed in the NRC's Public Document Room.

A response to this letter or the accompanying Order is not subject to the clearance procedures of the Office of Management and Budget, as required by the Paperwork Reduction Act of 1980, PL 96-511.

Sincerely,

James M. Taylor, Deputy Executive
Director for Regional Operation

Enclosure:
Order Modifying License
(Effective Immediately)

cc: Dr. T. E. Stelson, Vice President
Research

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JAN 2 5 1988

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
GEORGIA INSTITUTE OF TECHNOLOGY	)	Docket No. 50-160
900 Atlantic Drive, N.W.	)	License No. R-97
Atlanta, GA 30332	)	EA 88-32

ORDER MODIFYING LICENSE, EFFECTIVE IMMEDIATELY

I

The Georgia Institute of Technology (Georgia Tech) is the holder of Operating License No. R-97 issued by the Nuclear Regulatory Commission (NRC or Commission) on December 29, 1964, and subsequently amended. The license, as amended, authorizes Georgia Tech to operate its modified research reactor located on its campus in Atlanta, Georgia, at power levels up to 5 megawatts (thermal) for research and development activities in accordance with the conditions specified therein.

II

The Georgia Tech Research Reactor (GTRR) is utilized to conduct irradiation experiments including the irradiation of topaz and other gem-quality minerals. During the week of August 17, 1987, the improper opening of an irradiated topaz container resulted in contamination of the reactor building. An inspection of the licensee's operational and health physics activities, including actions pertaining to this contamination event, was conducted on December 16, 1987, and January 4-5, 1988 during which it was learned of the August contamination event. The inspection revealed that the experiment conditions and manipulation of the

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experiment materials resulted in unexpected elevated radiation levels from the experiment container and also the unmonitored release of Cadmium-115 (Cd-115) in the reactor building. The exposure dose rate at one foot from the experiment material was approximately 3 rem per hour (R/hr) on August 18, 1987 and qualitative measurements of radioactive contamination indicated levels on masolin wipes of approximately 20 mR/hr on August 19, 1987. The NRC staff also determined during the inspection that the licensee had not provided adequate exposure assessments for personnel involved in the August 1987 incident, nor had the licensee conducted adequate verification surveys to demonstrate that the contamination had not been spread by personnel to areas outside of the reactor building. Inspection findings indicated that the licensee had not conducted its activities in full compliance with NRC requirements. A written Notice of Violation has not been issued at this time; additional inspection activities are being conducted. Nonetheless, the following safety concerns, which could result in unnecessary personnel radiation exposures and the potential spread of contamination away from the reactor building as a result of experiment manipulations, have already been identified:

A. On May 4, 1987, an enforcement conference was held with the licensee in which the licensee outlined steps to be implemented to improve the management controls over operations and health physics at the GTRR to assure safe operation. These actions included steps to assure appropriate interaction between health physics and operations components of the organization. A recent inspection has shown these actions have not been fully successful and indicate that management control problems continue.

B. The licensee's health physics and operating procedures were inadequate in that they failed to address the precautions and equipment to prevent unnecessary exposure and contamination during handling and manipulation of materials irradiated during experiments at the GTRR.

C. The licensee failed to follow operating procedures as required by Technical Specifications as follows:

1. The August 1987 experiment involved irradiation of topaz gemstones for a total of 41.8 megawatt hours compared to 30 megawatt-hours authorized on the Request for Minor Experiment Approval regarding topaz irradiations dated April 3, 1987.

2. Procedure 3102, Quality Assurance for Experiments, October 28, 1982, requires that the approval form for Category 4 experiments, such as the topaz irradiation, address quantitative controls of reactivity, activation, shielding, cooling and materials. Request for Minor Experiment Approval, dated April 3, 1987, regarding the topaz irradiation lists the estimated isotopic activities to be "nil." However, following an initial irradiation in April 1987, activation of the experiment materials, including the container, resulted in radiation levels of approximately 3 R/hr at a distance of one foot from the container. These elevated exposure levels were not evaluated or included in experiment plans for the August 1987 topaz irradiation.

D. Assessments of internal and external personnel exposures for personnel involved in the August 1987 incident and decontamination event were not adequate in that they did not determine and document intakes of radioactive material, extremity dose or skin dose.

E. Surveys conducted were inadequate as follows:

1. Continuous air samples collected from within the reactor building during the August 1987 incident were not adequate to determine intakes in that they were not representative of concentrations of radioactive material in the work area.

2. Subsequent to the August 1987 incident, surveys were inadequate to define the extent and amount of radioactive contamination in the reactor building, on personnel, and in personal property offsite which could have been potentially contaminated.

F. At the time of the inspection the licensee had failed to complete a thorough review of the August 1987 contamination event regarding its cause or causes, nor had any corrective measures been implemented as of January 5, 1988 to prevent recurrence during future experiments.

G. Licensee management has indicated that there are other events similar to the August 1987 event that also have not yet been fully evaluated by the licensee. These safety concerns were the subject of discussions

between Region II and the licensee on January 7, 1988. Upon the conclusion of these discussions, Region II verbally requested, and the licensee agreed that irradiation experiments would be suspended until further notice.

III

After consideration of the apparent violations and safety hazards posed by the licensee's conduct of experiment activities, as exhibited during the August 1987 event, and the subsequent lack of aggressive review and corrective actions by the licensee, I have determined that certain actions by the licensee are required, and an Order modifying the Georgia Institute of Technology license is necessary, to protect the health and safety of the public and licensee's employees. Therefore, pursuant to 10 CFR 2.204, I find that the public health, safety, and interest require that that this Order be effective immediately.

IV

Accordingly, pursuant to Sections 104, 161b, 161c, 161i, 161o, 182 and 186 of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq., and 10 CFR 2.204, IT IS HEREBY ORDERED, EFFECTIVE IMMEDIATELY, THAT:

A. The licensee shall cease utilization of the reactor facility for irradiation experiments until the following conditions are met and the NRC approves, in writing, the resumption of irradiation experiments.

1. Management controls over facility operation, including irradiation experiments, are assessed to identify weaknesses.

2. A formal review is conducted, including record reviews and in-depth personnel interviews, to determine (a) if other occurrences similar to the August 1987 incident have occurred, and (b) the principal root causes of the August 1987 incident and any other similar incidents.

3. An assessment of internal exposure, external whole body, extremity, and skin doses to personnel involved in the August 1987 incident (any other identified incidents) and/or decontamination activities is conducted.

4. The GTRR health physics and operating procedures are reviewed to identify inadequacies which contributed to the August 1987 contamination event (and any other identified events).

5. Corrective actions are identified and a schedule established for implementing the corrective actions, including necessary changes in management controls, operations, and procedures.

6. A training program addressing all changes to management controls, operations, and procedures is developed and implemented.

7. The licensee's reviews and assessments of the above matters are documented and a summary of these reviews and assessments, including corrective actions and appropriate schedules, are submitted in writing to the NRC for review and approval.

B. Results of the licensee's survey of the house of the individual involved in the August 1987 contamination event shall be provided in writing to the NRC within 10 days of the issuance of this order.

The Regional Administrator, Region II, may in writing relax or rescind any of the above conditions upon written request and demonstration of good cause by the licensee.

V

The licensee or any person other than the licensee adversely affected by this Order may request a hearing on this Order within twenty days of its issuance. Any request for hearing shall be sent to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Copies shall also be sent to the Assistant General Counsel for Enforcement at the same address and the Regional Administrator, NRC Region II, 101 Marietta St., NW, Suite 2900, Atlanta, GA 30323. If a person other than the licensee requests a hearing, that person shall set forth with particularity the manner in which the petitioner's interest is adversely affected by this Order and shall address the criteria set forth in 10 CFR 2.714(d). A REQUEST FOR HEARING SHALL NOT STAY THE IMMEDIATE EFFECTIVENESS OF THIS ORDER.

If a hearing is requested by the licensee or any person who has an interest adversely affected by the Order, the Commission will issue an Order designating the time and place of any such hearing. If the Licensee fails to request a hearing within 20 days of the date of this Order, the provisions of this Order shall be final without further proceedings. If a hearing is held, the issue to be considered at such hearing shall be whether this Order should be sustained.

FOR THE NUCLEAR REGULATORY COMMISSION

James M. Taylor, Deputy Executive Director
for Regional Operations

Dated at Bethesda, Maryland
this 20 day of January 1988

Georgia Institute of Technology

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