



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

GEORGIA INSTITUTE OF TECHNOLOGY

DOCKET NO. 50-160

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 6  
License No. R-97

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to Facility Operating License No. R-97, filed by Georgia Institute of Technology (the licensee), dated December 18, 1984, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's Regulations as set forth in 10 CFR Chapter I:
  - B. The facility will operate in conformity with the amended license, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied; and
  - F. Publication of notice of this amendment is not required since it does not involve a significant hazards consideration nor amendment of a license of the type described in 10 CFR Section 2.106(a)(2).

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2. Accordingly, Facility Operating License No. R-97 is hereby amended by changing paragraphs 2.B(2) and 2.C(2) to read as follows and by changes to the technical specifications as indicated in the attachment to this license amendment.

2.B(2) Pursuant to the Act and 10 CFR Part 70, "Special Nuclear Material," to receive, possess, and use at any one time in connection with operation of the reactor up to 13.5 kilograms of contained uranium 235; and to receive and possess, but not to use, up to 700 grams of U-235 at an enrichment less than 20% contained in the core and control rods of the AGN 201 reactor, Facility Operating License No. R-111, Docket No. 50-176.

2.C(2) Technical Specifications

The technical specifications contained in Appendix A, as revised through Amendment No. 6, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the technical specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*Cecil O. Thomas*

Cecil O. Thomas, Chief  
Standardization & Special  
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Attachment:  
Appendix A Technical  
Specifications Changes

Date of Issuance: March 14, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 6

FACILITY LICENSE NO. R-97

DOCKET NO. 50-160

Revised Appendix A Technical Specifications are as follows:

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- 1.10 Reactor Secured - Reactor secured is defined as follows:
- a. The reactor is shutdown as defined in Definition 1.9
  - b. Subcriticality of the cold xenon free core by at least one dollar has been confirmed.
  - c. No operation is in progress which involves moving fuel elements within the reactor vessel, the insertion or removal of experiments from the core, or control rod maintenance.
- 1.11 True Value - The true value of a process variable is its actual value at any instant.
- 1.12 Measured Value - The measured value of a process variable is the value of the variable as it appears on the output of a measuring channel.
- 1.13 Measuring Channel - A measuring channel is the combination of sensor, lines, amplifiers, and output devices which are connected for the purpose of measuring the value of a process variable.
- 1.14 Reportable Occurrence - A reportable occurrence is any of the following:
- a. A safety system setting less conservative than the limiting setting established in the Technical Specifications.
  - b. Operation in violation of a limiting condition for operation established in the Technical Specifications.
  - c. A safety system component malfunction or other component or system malfunction which could, or threatens to, render the safety system or the engineered safeguard systems incapable of performing their intended safety functions.
  - d. Release of fission products from a failed fuel element.
  - e. An uncontrolled or unplanned release of radioactive material from the restricted area of the facility.
  - f. An uncontrolled or unplanned release of radioactive material which results in concentrations of radioactive materials within the restricted area in excess of the limits specified in Appendix B, Table 1 of 10 CFR 20.
  - g. An uncontrolled or unanticipated change in reactivity in excess of  $0.005 \Delta k/k$ .
  - h. An observed inadequacy in the implementation of administrative or procedural controls such that the inadequacy causes or threatens to cause the existence or development of an unsafe condition in connection with the operation of the plant.

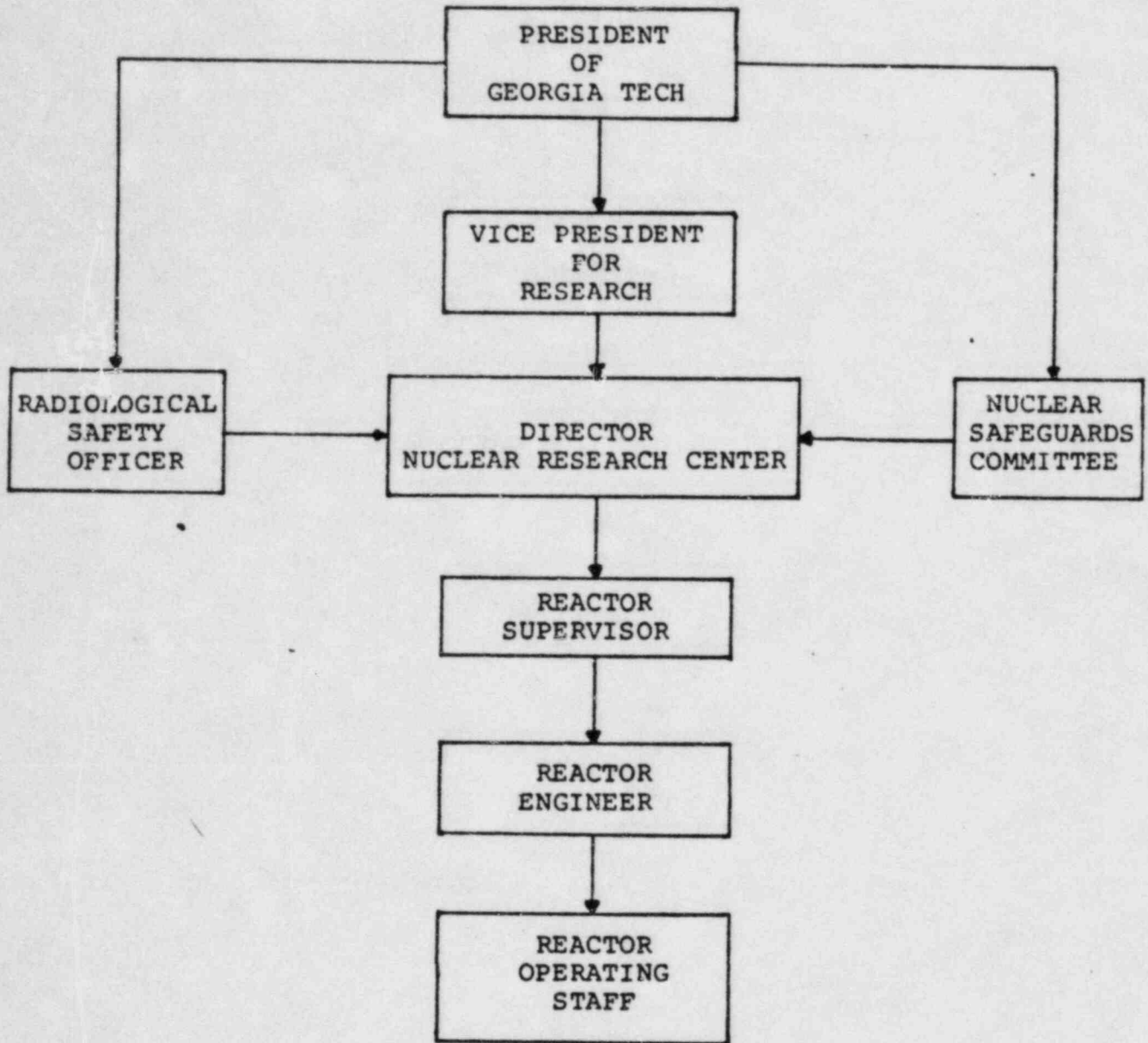


FIGURE 6.1 Georgia Tech Organization for Management and Operation of GTRR

- e. An operator or senior operator licensed pursuant to 10 CFR 55 shall be present at the controls unless the reactor is shutdown as defined in these specifications.

6.2

NUCLEAR SAFEGUARDS COMMITTEE

- a. A Nuclear Safeguards Committee shall be established by the President of the Institute and shall be responsible for maintaining health and safety standards associated with operation of the reactor and its associated facilities.
- b. The Nuclear Safeguards Committee shall be composed of five or more senior technical personnel who collectively provide experience in reactor engineering, reactor operations, chemistry and radiochemistry, instrumentation and control systems, radiological safety, and mechanical and electrical systems. The Reactor Supervisor and Radiological Safety Officer shall be ex officio members of the Committee. No more than a minority of the Committee members shall be from the GTRR staff.
- c. The Committee shall meet quarterly and as circumstances warrant. Written records of the proceedings, including any recommendations or occurrences, shall be distributed to all Committee members and the President, Georgia Tech.
- d. The quorum shall consist of not less than a majority of the full Committee and shall include the chairman or his designated alternate.
- e. The Nuclear Safeguards Committee shall:
  - (1) Review and approve proposed experiments and tests utilizing the reactor facility which are significantly different from tests and experiments previously performed at the GTRR.
  - (2) Review reportable occurrences.
  - (3) Review and approve proposed operating procedures and proposed changes to operating procedures which change the original intent of the operating procedure in a non-conservative manner.
  - (4) Review and approve proposed changes to the Technical Specifications and proposed amendments to facility license and review proposed changes to the facility made pursuant to 10 CFR 50.59(c).
  - (5) Audit reactor operations and reactor operational records for compliance with internal rules, procedures, and regulations and with licensed provisions including Technical Specifications.

- (6) Audit existing operating procedures for adequacy and to assure that they achieve their intended purpose in light of any changes since their implementation.
- (7) Audit plant equipment performance with particular attention to operating anomalies, reportable occurrences, and the steps taken to identify and correct their causes.

### 6.3 ADMINISTRATIVE CONTROLS OF EXPERIMENTS

#### a. Evaluation by Safety Review Group

- (1) No experiment shall be performed without review and approval by the Nuclear Safeguards Committee. Repetitive experiments with common safety considerations may be reviewed and approved as a class.
- (2) Criteria for review of an experiment or class of experiments shall include (a) applicable regulatory positions including those in 10 CFR Part 20 and the technical specifications and (b) in-house safety criteria and rules which have been established for facility operations, including those which govern requirements for encapsulation, venting, filtration, shielding, and similar experiment design considerations, as well as those which govern the quality assurance program required under 50.34.
- (3) Records shall be kept of the Nuclear Safeguards Committee's review and authorization for each experiment or class of experiments.

#### b. Operations Approval

- (1) Every experiment shall have the prior explicit written approval of the Licensed Senior Operator in charge of reactor operations.
- (2) Every person who is to carry out an experiment shall be certified by the Licensed Senior Operator in charge of reactor operations as to the sufficiency of his knowledge and training in procedures required for the safe conduct of the experiment.

#### c. Procedures for Active Conduct of Experiments

- (1) Detailed written procedures shall be provided for the use or operation of each experimental facility.



- (3) Actions to be taken to correct specific and foreseen potential malfunctions of systems or components, including responses to alarms, suspected primary system leaks and abnormal reactivity changes.
- (4) Emergency conditions involving potential or actual release of radioactivity.
- (5) Preventive or corrective maintenance operations which could have an effect on the safety of the reactor.
- (6) Radiation and radioactive contamination control.
- (7) Surveillance and testing requirements.
- (8) A site emergency plan delineating the action to be taken in the event of emergency conditions and accidents which result in or could lead to the release of radioactive materials in quantities that could endanger the health and safety of employees or the public. Periodic evacuation drills for facility personnel shall be conducted to assure that facility personnel are familiar with the emergency plan.
- (9) Physical security of the facility and associated special nuclear material.

#### 6.5 OPERATING RECORDS

- a. The following records and logs shall be prepared and retained at the facility for at least five years:
  - (1) Normal facility operation and maintenance.
  - (2) Reportable occurrences.
  - (3) Tests, checks, and measurements documenting compliance with surveillance requirements.
  - (4) Records of experiments performed.
- b. The following records and logs shall be prepared and retained at the facility for the life of the facility:
  - (1) Gaseous and liquid waste released to the environs.
  - (2) Offsite environmental monitoring surveys.
  - (3) Radiation exposures for all GTRR personnel.
  - (4) Fuel inventories and transfers.
  - (5) Facility radiation and contamination surveys.
  - (6) Updated, corrected, and as-built facility drawings.
  - (7) Minutes of Nuclear Safeguards Committee meetings.
  - (8) Records of radioactive shipments.

6.6 ACTION TO BE TAKEN IN THE EVENT OF A REPORTABLE OCCURRENCE

In the event of a reportable occurrence, as defined in these Technical Specifications, the following action shall be taken:

- a. All reportable occurrences shall be promptly reported to the Reactor Supervisor or his designated alternate.
- b. All reportable occurrences shall be reported to the Nuclear Regulatory Commission in accordance with Section 6.7 of these specifications.
- c. All reportable occurrences shall be reviewed by the Nuclear Safeguards Committee.

6.7 REPORTING REQUIREMENTS

The following information shall be submitted to the U.S.N.R.C. in addition to the reports required by Title 10, Code of Federal Regulations.

a. Annual Operating Reports

A report covering the previous year shall be submitted to the office of the Regional Administrator, Region II, with a copy to the Director, Office of Nuclear Reactor Regulation, by March 1 of each year. It shall include the following:

(1) Operations Summary

A summary of operating experience occurring during the reporting period including:

- (a) changes in facility design,
- (b) performance characteristics (e.g., equipment and fuel performance),
- (c) changes in operating procedures which relate to the safety of facility operations,
- (d) results of surveillance tests and inspections required by these technical specifications,
- (e) a brief summary of these changes, tests, and experiments which required authorization from the Commission pursuant to 10 CFR 50.59(a), and
- (f) changes in the plant operating staff serving in the following positions:

1. Director, Nuclear Research Center
2. Reactor Supervisor
3. Reactor Engineer
4. Radiological Safety Officer
5. Nuclear Safeguards Committee members

(2) Power Generation

A tabulation of the thermal output of the facility during the reporting period.

(3) Shutdowns

A listing of unscheduled shutdowns which have occurred during the reporting period, tabulated according to cause, and a brief discussion of the preventive actions taken to prevent recurrence.

(4) Maintenance

A discussion of corrective maintenance (excluding preventative maintenance) performed during the reporting period on safety related systems and components.

(5) Changes, Tests and Experiments

A brief description and a summary of the safety evaluation for those changes, tests, and experiments which were carried out without prior Commission approval, pursuant to the requirements of 10 CFR Part 50.59(b).

(6) Radioactive Effluent Releases

A statement of the quantities of radioactive effluents released from the plant, with data summarized following the general format of USNRC Regulatory Guide 1.21:

(a) Gaseous Effluents

1. Gross Radioactivity Releases

- a. Total gross radioactivity (in curies), primarily noble and activation gases.

program, indicate the likelihood of public intakes in excess of 1% of those that could result from continuous exposure to the concentration values listed in Appendix B, Table II, 10 CFR Part 20, estimates of the likely resultant exposure to individuals and to population groups and assumptions upon which estimates are based shall be provided.

(8) Occupational Personnel Radiation Exposure

A summary of radiation exposures greater than 500 mRem (50 mRem for persons under 18 years of age) received during the reporting period by facility personnel (faculty, students, or experiments).

b. Non-Routine Reports

(1) Reportable Occurrence Reports

Notification shall be made within 24 hours by telephone and telegraph to the Office of the Regional Administrator, Region II, with a copy to the Director, Office of Nuclear Reactor Regulations followed by a written report within 10 days to the Office of the Regional Administrator, Region II, with a copy to the Director, Office of Nuclear Reactor Regulations in the event of the reportable occurrences as defined in Section 1.0. The written report on these reportable occurrences, and to the extent possible, the preliminary telephone and telegraph notification shall:

- (a) describe, analyze, and evaluate safety implications,
- (b) outline the measures taken to assure that the cause of the condition is determined,
- (c) indicate the corrective action (including any changes made to the procedures and to the quality assurance program) taken to prevent repetition of the occurrence and of similar occurrences involving similar components or systems, and
- (d) evaluate the safety implications of the incident in light of the cumulative experience obtained from the record of previous failures and malfunctions of similar systems and components.

(2) Unusual Events

A written report shall be forwarded within 30 days to the Office of the Regional Administrator, Region II, with a copy to the Director, Office of Nuclear Reactor Regulations in the event of:

- (a) Discovery of any substantial errors in the transient or accident analyses or in the methods used for such analyses, as described in the Safety Analysis Report or in the bases for the Technical Specifications.
- (b) Discovery of any substantial variance from performance specifications contained in the Technical Specifications or in the Safety Analysis Report.
- (c) Discovery of any condition involving a possible single failure which, for a system designed against assumed single failures, could result in a loss of the capability of the system to perform its safety function.