

May 29, 2001

Mr. Gerald Wicks  
Acting Associate Director  
Nuclear Reactor Program  
Department of Nuclear Engineering  
North Carolina State University  
Campus Box 7909  
Raleigh, NC 27695-7909

SUBJECT: NORTH CAROLINA STATE UNIVERSITY - AMENDMENT RE: ADMINISTRATIVE  
CHANGES (TAC NO. MA9912)

Dear Mr. Wicks:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 14 to Facility Operating License No. R-120 for the North Carolina State University PULSTAR Research Reactor. The amendment consists of changes to the Technical Specifications (TSs) in response to your application of August 23, 2000, as supplemented on January 9 and March 2, 2001.

The amendment changes the name of the Radiation Protection Committee to the Radiation Safety Committee, changes administrative requirements for the Radiation Safety Committee, and makes other administrative changes to the TSs.

A copy of the safety evaluation supporting Amendment No. 14 is also enclosed.

Sincerely,

**/RA/**

Alexander Adams, Jr., Senior Project Manager  
Events Assessment, Generic Communications and  
Non-Power Reactors Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket No. 50-297

Enclosures:

1. Amendment No. 14
2. Safety Evaluation

cc w/enclosures:

Please see next page

North Carolina State University

Docket No. 50-297

cc:

Office of Intergovernmental Relations  
116 West Jones Street  
Raleigh, NC 27603

Dr. Paul J. Turinsky, Head  
Nuclear Engineering Department  
North Carolina State University  
P.O. Box 7909  
Raleigh, NC 27695-7909

Dayne H. Brown, Director  
Division of Radiation Protection  
Department of Environmental,  
Health and Natural Resources  
P.O. Box 27687  
Raleigh, NC 27611-7687

Dr. Nino A. Masnari  
Dean of Engineering  
North Carolina State University  
P.O. Box 7909  
Raleigh, NC 27695-7909

Test, Research, and Training  
Reactor Newsletter  
University of Florida  
202 Nuclear Sciences Center  
Gainesville, FL 32611

May 29, 2001

Mr. Gerald Wicks  
Acting Associate Director  
Nuclear Reactor Program  
Department of Nuclear Engineering  
North Carolina State University  
Campus Box 7909  
Raleigh, NC 27695-7909

SUBJECT: NORTH CAROLINA STATE UNIVERSITY - AMENDMENT RE: ADMINISTRATIVE  
CHANGES (TAC NO. MA9912)

Dear Mr. Wicks:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 14 to Facility Operating License No. R-120 for the North Carolina State University PULSTAR Research Reactor. The amendment consists of changes to the Technical Specifications (TSs) in response to your application of August 23, 2000, as supplemented on January 9 and March 2, 2001.

The amendment changes the name of the Radiation Protection Committee to the Radiation Safety Committee, changes administrative requirements for the Radiation Safety Committee, and makes other administrative changes to the TSs.

A copy of the safety evaluation supporting Amendment No. 14 is also enclosed.

Sincerely,

**/RA/**

Alexander Adams, Jr., Senior Project Manager  
Events Assessment, Generic Communications and  
Non-Power Reactors Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket No. 50-297

Enclosures:

1. Amendment No. 14
2. Safety Evaluation

cc w/enclosures:

Please see next page

**DISTRIBUTION:**

PUBLIC REXB r/f  
MMendonca AAdams  
EHylton SHolmes  
WEresian Plsaac

PDoyle  
LMarsh  
CBassett  
GHill (2) (T5-C3)

TDragoun  
OGC  
DMatthews

**ACCESSION NO.: ML010730361**

**TEMPLATE #: NRR-058**

\*Please see previous concurrence

OFFICE	REXB:LA	TechEditor	REXB:PM	OGC	REXB:BC
NAME	EHylton:rdr	*PKleene	AAdams		LMarsh
DATE	04/ 11 /2001	04/ 06 /2001	05/ 14 /2001	04/ 26 /2001	05/ 29 /2001

**C = COVER**

**E = COVER & ENCLOSURE  
OFFICIAL RECORD COPY**

**N = NO COPY**

NORTH CAROLINA STATE UNIVERSITY

DOCKET NO. 50-297

AMENDMENT TO FACILITY LICENSE

Amendment No. 14  
License No. R-120

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that
  - A. The application for an amendment to Facility License No. R-120 filed by North Carolina State University (the licensee) on August 23, 2000, as supplemented on January 9 and March 2, 2001, conforms to the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the regulations of the Commission as stated in Chapter I of Title 10 of the *Code of Federal Regulations* (10 CFR);
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance that (i) the activities authorized by this amendment can be conducted without endangering the health and safety of the public and (ii) such activities will be conducted in compliance with the regulations of the Commission;
  - 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. This amendment is issued in accordance with the regulations of the Commission as stated in 10 CFR Part 51, and all applicable requirements have been satisfied; and
  - F. Prior notice of this amendment was not required by 10 CFR 2.105 and publication of a notice for this amendment is not required by 10 CFR 2.106.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the enclosure to this license amendment, and paragraph 2.C.(2) of Facility License No. R-120 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 14, 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 the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Ledyard B. Marsh, Chief  
Events Assessment, Generic Communications and  
Non-Power Reactors Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Enclosure:  
Appendix A, Technical  
Specifications Changes

Date of Issuance: May 29, 2001

ENCLOSURE TO LICENSE AMENDMENT NO. 14

FACILITY LICENSE NO. R-120

DOCKET NO. 50-297

Replace the following pages of Appendix A, "Technical Specifications," with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

Remove

Insert

cover page

cover page

i

i

ii

ii

24

24

25

25

46

46

48

48

49

49

50

50

51

51

53

53

54

54

55

55

59

59

**UPDATED SAFETY ANALYSIS REPORT**

**APPENDIX A**

**TECHNICAL SPECIFICATIONS FOR THE  
NORTH CAROLINA STATE UNIVERSITY  
PULSTAR REACTOR**

**FACILITY LICENSE NO. R-120  
DOCKET NO. 50-297**

**ORIGINAL ISSUE DATE: August 25, 1972**

**AMENDMENT 14**

## TABLE OF CONTENTS

	<u>Page</u>
1.0 DEFINITIONS .....	1
2.0 SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTING .....	6
2.1 Safety Limits .....	6
2.1.1 Safety Limit for Forced Convection Flow .....	6
2.1.2 Safety Limit for Natural Convection Flow .....	9
2.2 Limiting Safety System Settings .....	10
2.2.1 LSSS for Forced Convection Flow .....	10
2.2.2 LSSS for Natural Convection Flow .....	11
3.0 LIMITING CONDITIONS FOR OPERATION .....	12
3.1 Reactor Core Configuration .....	12
3.2 Reactivity .....	13
3.3 Reactor Safety System .....	15
3.4 Reactor Instrumentation .....	18
3.5 Radiation Monitoring Equipment .....	19
3.6 Confinement and Main HVAC Systems .....	21
3.7 Limitations on Experiments .....	23
3.8 Operation with Fueled Experiments .....	26
3.9 Primary Coolant .....	28
4.0 SURVEILLANCE REQUIREMENTS .....	29
4.1 Fuel .....	30
4.2 Control Rods .....	31
4.3 Reactor Instrumentation and Safety Systems .....	33
4.4 Radiation Monitoring Equipment .....	35
4.5 Confinement and Main HVAC Systems .....	36
4.6 Primary and Secondary Coolant .....	38
5.0 DESIGN FEATURES .....	39
5.1 Reactor Fuel .....	39
5.2 Reactor Building .....	40
5.3 Fuel Storage .....	42
5.4 Reactivity Control .....	43
5.5 Primary Coolant .....	44
6.0 ADMINISTRATIVE CONTROLS .....	45
6.1 Organization .....	45
6.1.1 Organizational Structure .....	45
6.1.2 Minimum Staffing .....	46
6.1.3 Senior Reactor Operator Duties .....	47
6.1.4 Selection and Training .....	47
6.2 Review and Audit .....	49
6.2.1 Radiation Safety Committee and Reactor Safety and Audit Committee . . .	49
6.2.2 RSC and RSAC Composition and Qualifications .....	49
6.2.3 RSC/RSAC Oversight and Approval Function .....	50
6.2.4 RSAC Audit Function .....	51



TABLE OF CONTENTS (continued)

6.3	Operating Procedures .....	52	
6.4	Review of Experiments .....	53	
	6.4.1 New (untried) Experiments .....	53	
	6.4.2 Tried Experiments .....	53	
6.5	Action to be Taken in Case of Safety Limit Violation .....	54	
6.6	Action to be Taken for Reportable Events (other than a SL Violation) .....	55	
6.7	Reporting Requirements .....	56	
	6.7.1 Reportable Events .....	56	
	6.7.2 Permanent Changes in Facility Organization .....	56	
	6.7.3 Changes Associated with the Safety Analysis Report .....	56	
	6.7.4 Annual Operating Report .....	56	
6.8	Retention of Records .....	59	

- ii. Attempts will be made to identify and limit the quantities of elements having very large thermal neutron absorption cross sections, in order to quantify reactivity effects.
  - iii. Explosive material<sup>(1)</sup>, shall not be allowed in the reactor. Experiments reviewed by the Radiation Safety Committee in which the material is considered to be potentially explosive, either while contained, or if it leaks from the container, shall be designed to maintain seal integrity even if detonated, to prevent damage to the reactor core or to the control rods or instrumentation and to prevent any change in reactivity.
  - iv. Each experiment will be evaluated with respect to radiation-induced physical and/or chemical changes in the irradiated material, such as decomposition effects in polymers.
  - v. Experiments involving flammable<sup>(1)</sup> or highly toxic materials<sup>(1)</sup> require specific procedures for handling and shall be limited in quantity as approved by the Radiation Safety Committee. No cryogenic liquids<sup>(1)</sup> will be allowed within the biological shield of the PULSTAR Reactor.
- f. Credible failure of any experiment shall not result in releases or exposures in excess of the annual limits established in 10 CFR 20.

<sup>(1)</sup>Defined as follows (reference - "Handbook of Laboratory Safety" - Chemical Rubber Company, 4<sup>th</sup> Ed., 1995, unless otherwise noted):

- Toxic: A substance that has the ability to cause damage to living tissue when inhaled, ingested, injected, or absorbed through the skin ("Safety in Academic Chemistry Laboratories" - The American Chemical Society, 1994).
- Flammable: Having a flash point below 73 °F and a boiling point below 100 °F. The flash point is defined as the minimum temperature at which a liquid forms a vapor above its surface in sufficient concentration that it may be ignited as determined by appropriate test procedures and apparatus as specified.
- Explosive: Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion with substantially simultaneous release of gas and heat, the resultant pressure being capable of destructive effects. The term includes, but is not limited to, dynamite, black powder, pellet

powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, and igniters.

Cryogenic: A cryogenic liquid is considered to be a liquid with a normal boiling point below -238°F (reference - National Bureau of Standards Handbook 44).

### Bases

Specifications 3.7a, 3.7b, 3.7c, and 3.7d are intended to reduce the likelihood of damage to reactor components and/or radioactivity releases resulting from experiment failure; and, serve as a guide for the review and approval of new and untried experiments by the facility personnel, as well as the Radiation Safety Committee. |

Specification 3.7e insures that no physical or nuclear interferences compromise the safe operation of the reactor, specifically, an experiment having a large reactivity effect of either sign could produce an undesirable flux distribution that could affect the peaking factor used in the Safety Limit calculation and/or safety channels calibrations. Review of the experiments using these LCOs and the Administrative Controls of Section 6 will insure the insertion of experiments will not negate the considerations implicit in the Safety Limits and thereby become an Unreviewed Safety Question.

analysis or technical support, and at least two years of supervisory experience. A B.S. degree in Nuclear Engineering or Physics may substitute for one year of the reactor analysis and or technical support experience.

LEVEL 3 - Reactor Operations Manager: The Reactor Operations Manager, who shall be qualified as a Senior Reactor Operator, shall be responsible for assuring that operations are conducted in a safe manner and within the limits prescribed by the facility license, all applicable Nuclear Regulatory Commission regulations, and the provisions of the Radiation Safety Committee. The Reactor Operations Manager reports directly to the Associate Director of the Nuclear Reactor Program.

LEVEL 4 - Operating Staff: This level includes the positions of Chief Reactor Operator, Chief of Reactor Maintenance, and the remaining Senior and Reactor operators. Personnel at this level report to the Reactor Operations Manager (for PULSTAR Reactor related matters).

Reactor Health Physicist: The Reactor Health Physicist is responsible for assuring the safety of reactor operations from the standpoint of radiation protection. The Reactor Health Physicist reports directly to the Nuclear Engineering Department Head and shall function independent of the campus Radiation Safety Division as shown in Figure 6.1-1. He shall possess relevant practical experience in the application of health physics principles.

In all instances, responsibilities of one level may be assumed by designated alternates or by higher levels, conditional upon the appropriate qualifications.

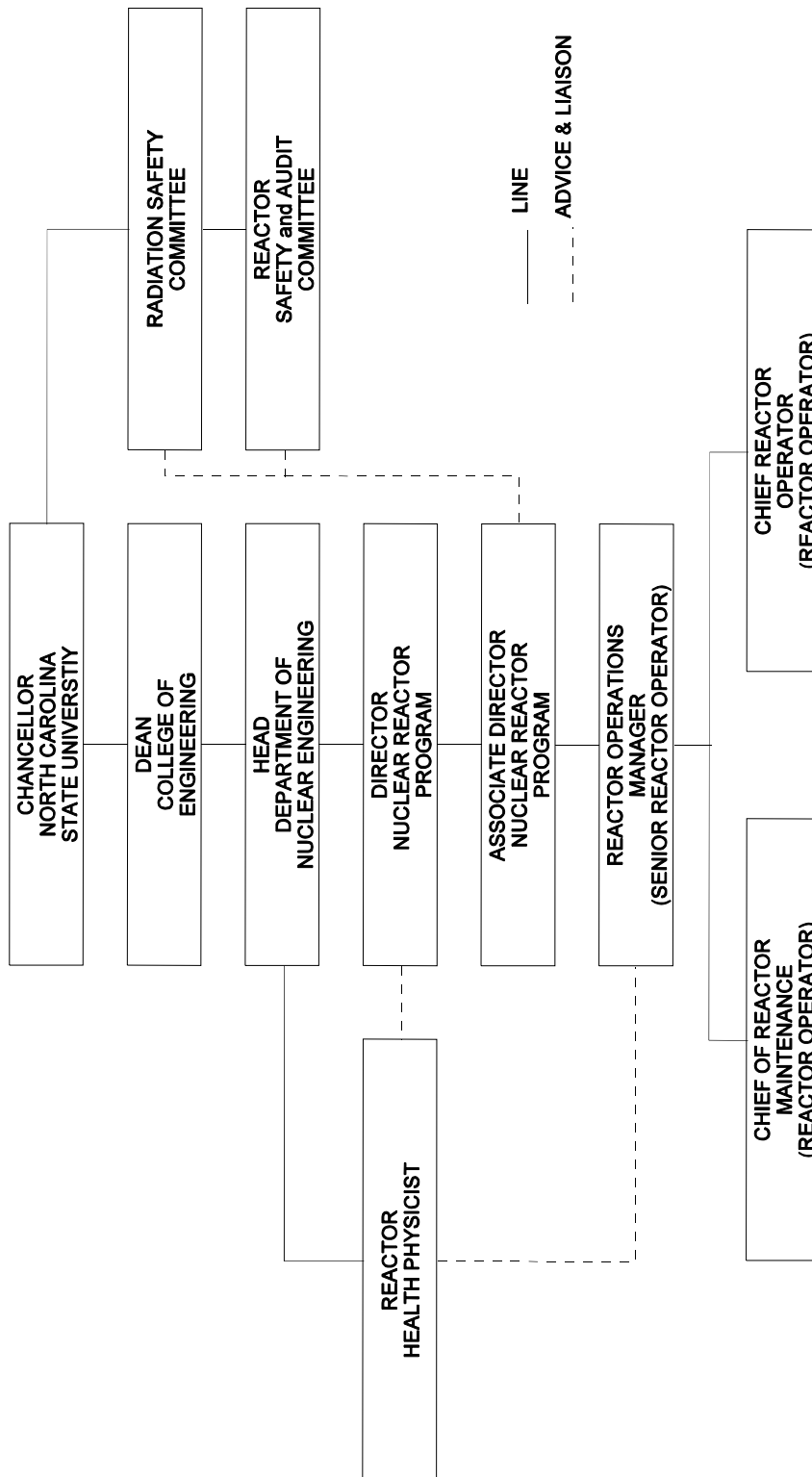
#### 6.1.2 Minimum Staffing

The minimum staffing when the reactor is not secured shall be:

- a. A certified reactor operator (either Senior Operator or Operator) in the Control Room.
- b. A Reactor Operator Assistant (ROA), capable of being at the reactor facility within five minutes upon request of the reactor operator on duty.
- c. A Senior Reactor Operator. This individual may be referred to as the "Designated Senior Reactor Operator (DSRO)" and shall be readily on call, meaning:
  - i. Has been specifically designated and the designation known to the reactor operator on duty.
  - ii. Keeps the reactor operator on duty informed of where he may be rapidly contacted and the phone number.

Figure 6.1-1

# NORTH CAROLINA STATE UNIVERSITY PULSTAR REACTOR ORGANIZATIONAL CHART



## 6.2 Review and Audit

### 6.2.1 Radiation Safety Committee and Reactor Safety and Audit Committee

The Radiation Safety Committee (RSC) has the primary responsibility to ensure that the use of radioactive materials and radiation producing devices, including the nuclear reactor, is conducted in the safest possible manner with the minimum effect on members of the University community and the general public. The RSC exercises oversight over the University Radiation Protection Program and performs final review of the actions of the Reactor Safety and Audit Committee (RSAC).

RSAC has the primary responsibility to assist the RSC in ensuring that the reactor is operated in compliance with the facility license and all applicable regulations. RSAC performs an annual audit of the operations and performance of the reactor program.

### 6.2.2 RSC and RSAC Composition and Qualifications

- a. RSC shall consist of at least five members from the general faculty who are actively engaged in teaching/research involving radioactive materials for terms of at least three years, no more than two permanent members from the line organization given in Figure 6.1-1, and at least one permanent member from the Radiation Safety Division of the Environmental Health and Safety Center. Non-faculty members who are knowledgeable in nuclear science or radiation safety fields may also serve as members for terms of at least three years. Requirements for membership and appointments to the committee are made by the University through the office of the Vice Chancellor for Finance and Business and the Provost.
- b. RSAC shall consist of at least five persons who have expertise in one or more of the component areas of nuclear reactor safety. These include Nuclear Engineering, Nuclear Physics, Health Physics, Electrical Engineering, Chemical Engineering, Material Engineering, Radiochemistry, and Nuclear Regulatory Affairs. At least three of the members are appointed from the general faculty. These faculty members shall be constituted as follows: Director of the Nuclear Reactor Program shall serve as a permanent member, one member from an appropriate discipline within the College of Engineering, and one member from the general faculty. Appointments are for three years. The remaining RSAC members are the Reactor Health Physicist and a member from the Radiation Safety Division of the Environmental Health and Safety Center who serve as permanent members. An additional member may represent an outside nuclear related agency. At the discretion of RSAC, specialist from other universities and outside establishments may be invited to assist in its appraisals. Appointments to the committee are made by the University through the office of the Vice Chancellor for Finance and Business and the Provost.

- c. A quorum shall consist of not less than a majority of the full RSC or RSAC and shall include the chairman or his designated alternate. Members from the line organization shown in Figure 6.1-1 shall not form a quorum.
- d. RSC and RSAC shall meet at least four times per year, with intervals between meetings not to exceed six months. Both committees may also meet upon call of the Chair.

### 6.2.3 RSC/RSAC Review and Approval Function

The following items shall be reviewed and approved by the RSC or by referral to the RSAC, as needed:

- a. Determinations that proposed changes in equipment, systems, test, experiments, or procedures which have safety significance do not involve an unreviewed safety question.
- b. All new procedures and major revisions thereto having safety significance, proposed changes in reactor facility equipment, or systems having safety significance.
- c. All new experiments or classes of experiments that could affect reactivity or result in the release of radioactivity.
- d. Proposed changes to the Technical Specifications or facility license.
- e. Violations of technical specifications or license. Violations of internal procedures or instructions having safety significance.
- f. Operating abnormalities having safety significance.
- g. Reportable Events (as per technical specification definition 1.22).
- h. Audit reports.

RSC summaries and meeting minutes shall be provided to the Chancellor, Provost, Vice Chancellor for Research, Vice Chancellor for Business and Finance, Faculty Senate, and University Archives.

A summary of RSAC meeting minutes, reports, and audit recommendations approved by RSAC shall be submitted to Dean of the College of Engineering, Head of the Nuclear Engineering Department, Director of the Nuclear Reactor Program, Associate Director of the Nuclear Reactor Program, the RSC, Director of Environmental Health and Safety, and the RSAC prior to the next scheduled RSAC meeting. Recommendations of the annual audit made by RSAC are forwarded to the RSC for concurrence before being implemented.

#### 6.2.4 RSAC Audit Function

The audit function shall consist of selective, but comprehensive, examination of operating records, logs, and other documents. Discussions with cognizant personnel and observation of operations shall also be used as appropriate. The RSAC, under the authority of the RSC, shall be responsible for this audit function. This audit shall include:

- a. Facility operations for conformance to the technical specifications and license, annually, but at intervals not to exceed fifteen months.
- b. The retraining and requalification program for the operating staff, biennially, but at intervals not to exceed thirty months.
- c. The results of action taken to correct those deficiencies that may occur in the reactor facility equipment, systems, structures, or methods of operations that affect reactor safety, annually, but at intervals not to exceed fifteen months.
- d. The Emergency Plan and Emergency Procedures, biennially, but at intervals not to exceed thirty months.
- e. Radiation Protection.

Deficiencies uncovered that affect reactor safety shall be immediately reported to the Head of the Nuclear Engineering Department, Director of the Nuclear Reactor Program and the Associate Director of the Nuclear Reactor Program, and the RSC.



## 6.4 Review of Experiments

### 6.4.1 New (untried) Experiments

All new experiments or class of experiments, referred to as "untried" experiments, shall be reviewed and approved by the Associate Director of the Nuclear Reactor Program, Reactor Health Physicist, and the Radiation Safety Committee (or RSAC as applicable), prior to initiation of the experiment. |

The review of new experiments shall be based on the limitations prescribed by Technical Specifications 3.7 and 3.8 and other Nuclear Regulatory Commission regulations, as applicable. If the Radiation Safety Committee, the Associate Director of the Nuclear Reactor Program, and the Reactor Health Physicist jointly agree that the experiment can be safely performed within the limitations of the technical specifications and other applicable Nuclear Regulatory Commission regulations, then an approved PULSTAR Project Number can be issued by the RSC for the experiment. |

### 6.4.2 Tried Experiments

All proposed experiments are reviewed by the Reactor Operations Manager and the Reactor Health Physicist (or their designated alternates). Either of these individuals may deem that the proposed experiment is not adequately covered by the documentation/analysis associated with an existing approved PULSTAR Project and therefore constitutes an untried experiment that will require the approval process detailed under Technical Specification 6.4.1. If the Reactor Operations Manager and the Reactor Health Physicist concur that the experiment is a tried experiment, then the request is approved and the experiment can be scheduled within the limitations of the reactor operating schedule.

Substantive changes to previously approved experiments shall be made only after review and approval by the Associate Director of the Nuclear Reactor Program, Reactor Health Physicist, and the Radiation Safety Committee (or RSAC as applicable). |

## 6.5 Action to be Taken in Case of Safety Limit Violation

In the event a Safety Limit is violated:

- a. The reactor shall be shut down and reactor operations shall not be resumed until authorized by the Nuclear Regulatory Commission.
- b. The Safety Limit violation shall be promptly reported to the Associate Director of the Nuclear Reactor Program, or his designated alternate.
- c. The Safety Limit violation shall be reported to the Nuclear Regulatory Commission in accordance with specification 6.7.1.
- d. A Safety Limit violation report shall be prepared that describes the following:
  - i. Circumstances leading to the violation including, when known, the cause and contributing factors.
  - ii. Effect of violation upon reactor facility components, systems, or structures and on the health and safety of facility personnel and the public.
  - iii. Corrective action to be taken to prevent recurrence.

The report shall be reviewed by the Radiation Safety Committee and any follow-up report shall be submitted to the Nuclear Regulatory Commission when authorization is sought to resume operation.

6.6 Action to be Taken for Reportable Events (other than SL Violation)

In case of a Reportable Event (other than violation of a Safety Limit), as defined by section 1.22 of these specifications, the following action shall be taken:

- a. Reactor conditions shall be returned to normal or the reactor shall be shutdown. If it is necessary to shutdown the reactor to correct the occurrence, operations shall not be resumed unless authorized by the Associate Director of the Nuclear Reactor Program, or his designated alternate.
- b. The occurrence shall be reported to the Associate Director of the Nuclear Reactor Program, and to the Nuclear Regulatory Commission in accordance with specification 6.7.1
- c. The occurrence shall be reviewed by the Radiation Safety Committee at their next scheduled meeting. |

## 6.8 Retention of Records

Records and logs of the following items, as a minimum, shall be kept in a manner convenient for review and shall be retained as detailed below. In addition, any additional federal requirement in regards to record retention shall be met.

- a. Records to be retained for a period of at least five (5) years:
  - i. Normal plant operation and maintenance.
  - ii. Principal maintenance activities.
  - iii. Reportable events.
  - iv. Equipment and components surveillance activities.
  - v. Experiments performed with the reactor.
  - vi. Changes to Operating Procedures
  - vii. Audit summaries
  - viii. RSC and RSAC meeting minutes
- b. Records to be retained for the life of the facility:
  - i. Gaseous and liquid radioactive waste released to the environs.
  - ii. Results of off-site environmental monitoring surveys.
  - iii. Radiation exposures for all PULSTAR personnel.
  - iv. Results of facility radiation and contamination surveys.
  - v. Fuel inventories and transfers.
  - vi. Drawings of the reactor facility.
- c. Records to be retained for at least one training cycle:
  - i. Records of retraining and requalification of certified operating personnel shall be maintained at all times the individual is employed, or until the certification is renewed.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 14 TO

FACILITY LICENSE NO. R-120

NORTH CAROLINA STATE UNIVERSITY

DOCKET NO. 50-297

1.0 INTRODUCTION

By letter dated August 23, 2000, as supplemented on January 9 and March 2, 2001, North Carolina State University (NCSU or the licensee) submitted a request to amend the Appendix A Technical Specifications (TSs) of Facility License No. R-120 for the NCSU PULSTAR Research Reactor. The licensee's request would change the name of the Radiation Protection Committee to the Radiation Safety Committee, change administrative requirements for the Radiation Safety Committee and the Reactor Safety and Audit Committee (RSAC), and make other administrative changes to the TSs.

2.0 EVALUATION

The licensee has requested changes in the cover page and table of contents to reflect the requested changes to the TSs and to correct several typographical errors. The staff noted several changes in the table of contents that were not discussed in the licensee's application. A telephone conversation between the NRC project manager and the Acting Associate Director of the licensee's Nuclear Reactor Program on March 7, 2001, confirmed that the purpose of the changes was to correct errors in the table of contents. These changes are acceptable to the staff because they are administrative in nature.

The licensee has requested that the TSs be updated to reflect a change in the name of the Radiation Protection Committee to the Radiation Safety Committee. This is a change in name only. The reactor oversight responsibilities and the function of the committee are unchanged except as discussed below. The committee's name would also be changed in Figure 6.1-1 of the TSs, "North Carolina State University PULSTAR Reactor Organizational Chart." The name of the Radiation Protection Office would be changed to Radiation Safety Division. This is a change in name only. The function and responsibilities of the division would remain the same. These name changes are acceptable to the staff.

In TS 3.7, Subsection *g* would be relettered as *f* to correct a lettering error. Because this change corrects an error, it is acceptable to the staff.

The licensee has also proposed changes to TS 6.2.2(a), which concerns the composition and qualifications of the Radiation Safety Committee (currently called the Radiation Protection Committee [RPC]). The TS now reads:

- a. RPC shall consist of at least seven voting members from the general faculty. At least five of these faculty members are appointed to three year staggered terms by the University. Their terms shall be staggered so that no more than three of these five members may be replaced each year. These members shall be selected from faculty who are actively engaged in teaching and/or research involving the use of radiation or who manifest a high degree of expertise in the areas of nuclear science and related fields. One voting member is appointed by the Faculty Senate, whose term shall not exceed three years, and another voting member is appointed from the Department of Nuclear Medicine. Less than a majority of the RPC members shall be from the line organization presented in Figure 6.1-1. Non-voting ex-officio members include the University Radiation Protection Officer and the Director of Environmental Health and Safety. Representatives from the Physical Plant Division, University Research Administration, and Nuclear Reactor Program may serve in a non-voting liaison capacity. The RPC shall prescribe which review items (detailed in 6.2.3) are to be delegated to RSAC.

This would be changed to read:

- a. RSC shall consist of at least five members from the general faculty who are actively engaged in teaching/research involving radioactive materials for terms of at least three years, no more than two permanent members from the line organization given in Figure 6.1-1, and at least one permanent member from the Radiation Safety Division of the Environmental Health and Safety Center. Non-faculty members who are knowledgeable in nuclear science or radiation safety fields may also serve as members for terms of at least three years. Requirements for membership and appointments to the committee are made by the University through the office of the Vice Chancellor for Finance and Business and the Provost.

A number of changes are requested by the licensee to this TS. The minimum number of members on the committee would be increased from seven to eight. The appointment of nonfaculty members may result in a larger serving committee than eight members. The requirement that some members of the committee be appointed to staggered terms would be eliminated. The purpose of the requirement was to avoid large simultaneous turnovers at the end of members' terms. The licensee states that a complete turnover of the committee will be unlikely with eight permanent members. The reference to nonvoting ex officio members would be eliminated because all members would have voting privileges. The requirement that a majority of the members of the committee be from outside the line organization of the reactor facility would be eliminated. However, because the committee would have eight permanent members, a quorum would be at least five members, and with no more than two members from the line organization, the members from the line organization could never be the majority of a quorum. The requirement in the existing TS that the RPC prescribe review items to the RSAC

would be eliminated. A similar requirement remains in TS 6.2.3 so the elimination has no effect. A statement would be added that the university, through the office of the Vice Chancellor for Finance and Business and the Provost sets requirements for membership and makes appointments to the committee.

Administrative requirements for nonpower reactor TSs are discussed in the standard, American National Standards Institute/American Nuclear Society (ANSI/ANS) 15.1 - 1990, "The Development of Technical Specifications for Research Reactors." The recommendations of ANSI/ANS 15.1 - 1990 are generally accepted by the staff. The standard requires that the review and audit group, have at least three members that represent a broad spectrum of expertise in reactor technology, that members be appointed by and report to upper management, and that a quorum be at least half the members and that the operating staff not constitute a majority of the quorum. The changes proposed by the licensee follow the recommendations of the standard. The staff concludes that the proposed changes to the RSC requirements maintain a sufficient level of expertise for the review and audit function. The proposed changes are, therefore, acceptable.

The licensee has proposed changes to the requirements for the RSAC in TS 6.2.2(b). The statement "At least three of the members are appointed from the general faculty by the University upon recommendation by the RPC" would be changed to read: "At least three of the members are appointed from the general faculty." A sentence would be added: "Appointments to the committee are made by the University through the office of the Vice Chancellor for Finance and Business and the Provost." These changes clarify the process for appointing members to the RSAC and are acceptable to the staff.

The licensee has proposed changes to TS 6.2.2(d), which concerns the frequency of committee meetings. The TS currently reads:

- d. The RPC shall meet at least six times per year. While the RSAC shall meet at least four times per year, with intervals between meetings not to exceed six months. RSAC may also meet as specifically required by the audit function or upon call of the Chairman.

The would be changed to read:

- d. RSC and RSAC shall meet at least four times per year, with intervals between meetings not to exceed six months. Both committees may also meet upon call of the Chair.

The licensee proposed reducing the frequency of RSC meetings from six to four per year to make the meeting frequency similar to the RSAC. The licensee states that reducing the frequency of meetings will not affect the numbers or rigor of RSC or RSAC reviews and approvals of reactor-related items. The chairs of the committees also can call additional meetings if needed. The requirement to meet as required by the audit function would also be dropped from the TS because the chair may call a meeting for an audit at any time. ANSI/ANS-15.1 - 1990 contains a requirement that review and audit committees meet at least once per calendar year and more frequently as circumstances warrant. The changes proposed by the licensee follow the recommendations of the standard. The staff concludes that the reduced frequency of RSC meetings will not impact the ability of the committee to conduct its

TS-required reviews and audits because the committee can meet more often than four times a year if necessary. Therefore the proposed changes are acceptable to the staff.

### 3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves changes in recordkeeping, reporting, or administrative procedures or requirements. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(10). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

### 4.0 CONCLUSION

The staff has concluded, on the basis of the considerations discussed above, that (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously evaluated, or create the possibility of a new or different kind of accident from any accident previously evaluated, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration; (2) there is reasonable assurance that the health and safety of the public will not be endangered by the proposed activities; and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or the health and safety of the public.

Principal Contributor: A. Adams, Jr.

Date: May 29, 2001