December 7, 2006

Dr. Eva J. Pell
Vice President for Research
Dean of the Graduate School
The Pennsylvania State University
304 Old Main
University Park, PA 16802-1504

SUBJECT: NRC ROUTINE INSPECTION REPORT NO. 50-5/2006-202

Dear Dr. Pell:

This letter refers to the inspection conducted on November 27-29, 2006, at your Pennsylvania State University Breazeale Research Reactor facility. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. Based on the results of this inspection, no safety concerns or noncompliances of NRC requirements were identified. No response to this letter is required

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) http://www.nrc.gov/reading-rm/adams.html.

Should you have any questions concerning this inspection, please contact Mr. Kevin M. Witt at 301-415-4075.

Sincerely,

/RA/

Johnny Eads, Branch Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-5
License No. R-2

Enclosure: NRC Inspection Report No. 50-5/2006-202
cc w/enclosure: Please see next page

cc:

Mr. Eric J. Boeldt, Manager of
Radiation Protection
The Pennsylvania State University
304 Old Main
University Park, PA 16802-1504

Dr. C. Frederick Sears, Director
The Pennsylvania State University
Breazeale Nuclear Reactor
University Park, PA 16802-1504

Mr. William P. Dornsife, Director
Bureau of Radiation Protection
Department of Environmental Protection
13th Floor, Rachel Carson State Office Bldg.
P.O. Box 8469
Harrisburg, PA 17105-8469

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

December 7, 2006

Dr. Eva J. Pell
Vice President for Research
Dean of the Graduate School
The Pennsylvania State University
304 Old Main
University Park, PA 16802-1504

SUBJECT: NRC ROUTINE INSPECTION REPORT NO. 50-5/2006-202

Dear Dr. Pell:

This letter refers to the inspection conducted on November 27-29, 2006, at your Pennsylvania State University Breazeale Research Reactor facility. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. Based on the results of this inspection, no safety concerns or noncompliances of NRC requirements were identified. No response to this letter is required

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) http://www.nrc.gov/reading-rm/adams.html.

Should you have any questions concerning this inspection, please contact Mr. Kevin M. Witt at 301-415-4075.

Sincerely,
/RA/
Johnny Eads, Branch Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-5
License No. R-2
Enclosure: NRC Inspection Report No. 50-5/2006-202
cc w/enclosure: Please see next page

DISTRIBUTION:

PUBLIC	PRTA r/f	PRTB r/f	JQuichocho	HNieh
RidsNrrDprPrta	RidsNrrDprPrtb	RidsOgcMailCenter		
BDavis (cover letter only)(O5-A4)				

ACCESSION NO.: ML063450271 **TEMPLATE #: NRR106-**

OFFICE	PRTB		PRTA:LA		PRTB:BC	
NAME	KWitt		EHylton		JEads	
DATE	12/07/2006		12/07/2006		12./07/2006	

OFFICIAL RECORD COPY

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

Docket No:	50-5
License No:	R-2
Report No:	50-5/2006-202
Licensee:	Pennsylvania State University
Facility:	Breazeale Research Reactor Facility
Location:	State College, PA
Date:	November 27-29, 2006
Inspectors:	Kevin M. Witt Jessie Quichocho (In Training)
Approved by:	Johnny H. Eads, Jr., Branch Chief Research and Test Reactors Branch B Division of Policy and Rulemaking Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

Pennsylvania State University Breazeale Research Reactor facility
NRC Inspection Report No.: 50-5/2006-202

The primary focus of this routine, announced inspection was the on-site review of selected aspects and activities since the last NRC inspection of the licensee's Class II non-power reactor safety programs including: organization and staffing, operations logs and records, surveillance and limiting conditions for operations, design changes, committees, audits and reviews, maintenance logs and records, fuel handling, and emergency preparedness.

The licensee's programs were acceptably directed toward the protection of public health and safety and in compliance with NRC requirements.

Organization and Staffing

- The organization and staffing were consistent with Technical Specification requirements.

Operations Logs and Records

- The operations program being implemented at the facility satisfied Technical Specification and procedural requirements.

Surveillance and Limiting Conditions for Operation (LCOs)

- The licensee's program for completing surveillance inspections and LCO confirmations satisfied Technical Specification and licensee administrative controls.

Design Changes

- Based on the records reviewed, the inspector determined that the licensee's design change program was being implemented as required.

Committees, Audits and Reviews

- Review and oversight functions required by the Technical Specifications were acceptably completed by the Reactor Safeguards Committee.

Maintenance Logs and Records

- Maintenance logs, records, and performance satisfied Technical Specification and procedure requirements.

Fuel Handling

- Fuel handling and control rod inspection activities were completed and documented as required by Technical Specification and facility procedures.

Emergency Preparedness

- The emergency preparedness program was conducted in accordance with the approved Emergency Plan.

REPORT DETAILS

Summary of Plant Status

The licensee's 1 Megawatt (MW) Training, Research, and Isotope Production, General Atomics (TRIGA) Mark III research reactor at the Pennsylvania State University (PSU) has been operated in support of experiments, reactor operator training, and periodic equipment surveillances. During the inspection, the reactor was operated in support of on-going work and operator training.

1. Organization and Staffing

a. Inspection Scope (Inspection Procedure [IP] 69001)

The inspector reviewed the following to verify compliance with the organization and staffing requirements in Technical Specification (TS) Section 6.1:

- staff qualifications and management responsibilities
- staffing requirements for the safe operation of the reactor
- selected portions of the operations logbooks for the past twelve months
- organizational structure and staffing
- administrative controls
- Reactor Safeguards Committee (RSC) meeting minutes, dated October 11, 2005 and January 17, April 11, July 11, and October 17, 2006
- Pennsylvania State Breazeale Reactor (PSBR) Annual Operating Report for July 1, 2004 through June 30, 2005
- TS for the PSBR, Amendment No. 37, dated October 14, 2004
- Reactor Logbooks Nos. 78, 79 and 80 dated from September 16, 2005 to March 20, 2006, March 21, 2006 to September 10, 2006 and September 11, 2006 to present, respectively
- Administrative Procedure (AP) -1, "Personnel Requirements for Reactor Operations," Revision (Rev.) 2, dated December 23, 2003
- AP-2, "Regulations for Reactor Facility Keys," Rev. 3, dated October 14, 2005
- AP-6, "Penn State Reactor Safeguards Committee Charter and Operating Procedure," Rev. 4, dated April 20, 2006
- AP-11, "Administrative Responsibilities in the Absence of the PSBR Director," Rev. 4, dated March 10, 2004
- AP-12, "Change," Rev. 4, dated October 14, 2005
- AP-24, "Annual Operating Report to the NRC," Rev. 1, dated October 17, 2005

b. Observations and Findings

Through discussions with licensee representatives, the inspector determined that management responsibilities, as well as the organizational structure at the facility, had not changed since the last inspection in the area of operations (refer to NRC Inspection Report No. 50-5/2006-201). All day-to-day coordination of facility operations is conducted by the facility director (FD) and the associate director for operations (ADO).

The PSBR staff's qualifications satisfied the training and experience requirements stipulated in the TSs. The operations log and associated records confirmed that shift staffing met the minimum requirements for duty personnel. Review of records verified that management responsibilities were administered as required by TS and applicable procedures. The annual reports summarized the required information and was issued at the frequency specified in TS Section 6.6.1. No special reports were submitted pursuant to TS Section 6.6.2. After discussing facility operations with licensee personnel, the inspector determined that there were eleven qualified Senior Reactor Operators (SROs). Three individuals were in training to become licensed SROs.

c. Conclusions

The organization and staffing were consistent with TS requirements.

2. Operations Logs and Records

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to ensure that the operations program was being implemented as required in TS Sections 3, 4, and 6:

- Reactor Logbooks Nos. 78, 79 and 80 dated from September 16, 2005 to March 20, 2006, March 21, 2006 to September 10, 2006 and September 11, 2006 to present, respectively
- RSC meeting minutes, dated October 11, 2005 and January 17, April 11, July 11, and October 17, 2006
- PSBR Annual Operating Report for July 1, 2004 through June 30, 2005
- AP-1, "Personnel Requirements for Reactor Operations," Rev. 2, dated December 23, 2003
- AP-2, "Regulations for Reactor Facility Keys," Rev. 3, dated October 14, 2005
- Standard Operating Procedure (SOP) -1, "Reactor Operating Procedure," Rev. 14, dated August 21, 2006
- SOP-2, "Daily Checkout Procedure," Rev. 17, dated January 31, 2006
- SOP-3, "Core Loading and Fuel Handling," Rev. 3, dated April 18, 2005
- SOP-4, "Radiation, Evacuation, and Alarm Checks," Rev. 9, dated April 6, 2005
- SOP-7, "Qualification of Reactor Pool Reactor Operating Positions," Rev. 4, dated May 24, 2004
- Special Procedure (SP)-3, "Pool Cooling System," Rev. 3, dated December 22, 2004
- Completed SOP-1, "Hourly Readings" forms, dated from January 4, 2006 to present
- Completed SOP-2 forms, dated from January 4, 2006 to present

b. Observations and Findings

The inspector verified that reactor operating characteristics, and other TS and procedure required entries, were recorded on the operations log. A review of the logs indicated that TS operational limits had not been exceeded. The information required for the startup checkout and the shutdown checklist are included in the operations log. Operations records confirmed that shift staffing met the minimum requirements for duty personnel. The inspector determined that reactor operations were carried out following written procedures and TS requirements. Unplanned scrams that occurred during reactor operations were recorded in the reactor logbook. When a scram occurs, the root cause analysis is completed by the SRO on duty before the resumption of operations.

The inspector conducted observations of the reactor staff operating the reactor on November 28, 2006, and reviewed the checkout sheet and the reactor logbook. The inspector noted that the licensed operators on duty were knowledgeable and competent. Observation of operational activities also confirmed that reactor operations were carried out in accordance with written procedures and TS requirements.

c. Conclusions

The operations program being implemented at the facility satisfied TS and procedural requirements.

3. Surveillance and Limiting Conditions for Operation

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the surveillance requirements and limiting conditions for operation (LCOs) specified in TS Section 4.0 were met:

- PSBR Annual Operating Report for July 1, 2004 through June 30, 2005
- RSC meeting minutes, dated October 11, 2005 and January 17, April 11, July 11, and October 17, 2006
- AP-15, “CCP/SOP Implementation Relations to Technical Specifications Surveillance Requirements,” Rev. 1, dated June 17, 2004
- Checks and Calibrations Procedure (CCP)-1, “Control Rod Speed and Scram Time Checks,” Rev. 6, dated November 13, 2006
- CCP-1, “Checks and Calibrations Procedure, Partial Tr Rod Only,” Rev. 6, dated November 13, 2006
- CCP-2, “Reactor Thermal Power Calibration,” Rev. 1, dated October 25, 2005
- CCP-3, “Pool Temperature Measuring Channel Calibrations,” Rev. 2, dated May 6, 2005
- CCP-4, “Interlocks Channel Checks,” Rev. 3, dated October 17, 2005
- CCP-9, “Transient Rod Drive and Air Supply,” Rev. 4, dated January 23, 2006

- CCP-11, “Core Reactivity Evaluation,” Rev. 3, dated April 29, 2004
- CCP-13, “Annual Pulse Comparison,” Rev. 1, dated April 26, 2001
- CCP-15, “Control Rod Reactivity Worth,” Rev. 5, dated May 22, 2006
- CCP-18, “Review of Procedures,” Rev. 4, dated October 17, 2005
- CCP-27, “Heat Exchanger Differential Alarm Test,” Rev. 3, dated June 27, 2005
- SOP-2, “Daily Checkout Procedure,” Rev. 17, dated January 31, 2006
- SOP-4, “Radiation, Evacuation, and Alarm Checks,” Rev. 9, dated April 6, 2005
- Completed CCP-1 Form, dated June 22, 2006
- Completed CCP-2 Forms, dated August 18, 2005 and August 7, 2006
- Completed CCP-4 Forms, dated December 20, 2005 and July 13, 2006
- Completed CCP-9 Forms, dated March 28, 2005 and June 23, 2006
- Completed CCP-27 Forms, dated June 8, 2005 and July 13, 2006
- Completed SOP-2 forms, dated from January 4, 2006 to present
- Completed SOP-4 Forms, dated from January 4, 2006 to present

b. Observations and Findings

The inspector noted that daily, monthly, semiannual, and annual channel checks, tests, and/or calibrations for TS-required surveillance were completed as required. The LCO verifications were completed on schedule and in accordance with licensee procedures. All of the recorded results were within the TS and procedurally prescribed parameters. The records and logs were noted to be complete and were being maintained as required. The licensee recorded checks of the radiation and facility alarms, as well as the evacuation alarm on a routine basis, as required by the TS. The procedures for the surveillances provided clear and concise direction and control of reactor operational tests and surveillances.

The inspector observed the licensee complete part of the startup checkout form for TS required items on November 28, 2006. The inspector verified that all of the checks conducted were in compliance with TS required values and parameters.

c. Conclusions

The licensee's program for completing surveillance inspections and LCO confirmations satisfied TS and licensee administrative controls.

4. Design Changes

a. Inspection Scope (IP 69001)

In order to verify that any modifications to the facility were consistent with 10 CFR 50.59, the inspector reviewed selected aspects of:

- facility design changes and records
- facility configuration and associated records

- RSC meeting minutes, dated October 11, 2005 and January 17, April 11, July 11, and October 17, 2006
- PSBR Annual Operating Report for July 1, 2004 through June 30, 2005
- AP-6, "Penn State Reactor Safeguards Committee Charter and Operating Procedure," Rev. 4, dated April 20, 2006
- AP-12, "Change," Rev. 4, dated October 14, 2005
- Completed AP-12 form #06-01, "Replacement of Control Rod Connecting Rod Fasteners," dated June 2006
- Special Repair Procedure, "Control Rod Split Roll Pin Replacement," Rev. 0, dated June 20, 2006

b. Observations and Findings

Through review of applicable records and interviews with licensee personnel, the inspector determined that no changes requiring prior NRC approval had been initiated and/or completed at the facility in the last two years. The inspector verified that any changes or modifications to the facility would be analyzed by the staff, presented to and reviewed by the RSC, determined to be acceptable, and approved as required. The inspector reviewed one design change relating to the control rod connecting pins. The design change is described further in section (8) of this document.

c. Conclusions

Based on the records reviewed, the inspector determined that the licensee's design change program was being implemented as required.

5. Committees, Audits, and Reviews

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the audits and reviews stipulated in TS Section 6.2 were being completed by the RSC:

- safety review records and audit reports since June 2001
- responses to the review and audit reports
- PSBR RSC Member List, dated January 3, 2006
- RSC meeting minutes, dated October 11, 2005 and January 17, April 11, July 11, and October 17, 2006
- Report of 2006 Audit of the Penn State Breazeale Nuclear Reactor, dated October 2, 2006
- AP-6, "Penn State Reactor Safeguards Committee Charter and Operating Procedure," Rev. 4, dated April 20, 2006

b. Observations and Findings

The RSC is defined in the TSs and the inspector verified that the committee is following all aspects of the requirements. The RSC had quarterly meetings and a quorum was always present as required. Review of the minutes indicated the

RSC provided guidance, direction and oversight, and ensured suitable use of the reactor. The minutes provided an acceptable record of RSC review functions and of their safety oversight of reactor operations.

Audits of the items required by TS 6.2.4 were completed by members of the RSC. Minor issues that were not safety related were noted in the audit reports and meeting minutes and the inspector observed that any safety related items were properly controlled. The inspector noted that the safety reviews and audits, and the associated findings, were acceptably detailed. The licensee immediately responded to all audit findings and ensured that the corrective actions were properly completed.

c. Conclusions

Review and oversight functions required by the TSs were acceptably completed by the RSC.

6. Maintenance Logs and Records

a. Inspection Scope (IP 69001)

To verify that the licensee was complying with the applicable regulations, the inspector reviewed selected aspects of:

- AP-4, “Identification, Evaluation, and Documentation of Safety System Failures, Abnormal Events, and Operational Events,” Rev. 3, dated May 18, 2004
- AP-13, “Maintenance/Repair,” Rev. 4, dated September 6, 2004
- Auxiliary Operating Procedure (AOP)-7, “Preventive Maintenance Program,” Rev. 2, dated April 18, 2003
- AOP-8, “Reactor Pool Make-up and Demineralizer Operating Procedure,” Rev. 8, dated April 13, 2006
- CCP-32, “UPS Preventive Maintenance,” Rev. 1, dated March 28, 2003
- CCP-34, “Console Preventive Maintenance,” Rev. 2, dated May 6, 2005
- CCP-35, “Console Calibration/Maintenance,” Rev. 2, dated June 7, 2005
- CCP-37, “Air Compressor Preventive Maintenance,” Rev. 3, dated April 18, 2003
- CCP-38, “Heat Exchanger Preventive Maintenance,” Rev. 3, dated December 6, 2004
- Radiation Science and Engineering Center (RSEC) Condition Reporting System Procedure, undated
- Completed AP-4 form for failure of linear power channel scram, dated January 3, 2006
- Completed AP-13 forms, dated from March 30, 2005 to present
- Completed CCP-37 forms, dated June 24, 2005 and August 4, 2006
- Completed CCP-38 forms, dated April 21, 2005 and May 11, 2006
- Completed RSEC Condition Reporting Forms, dated from February 22, 2006 to present

b. Observations and Findings

The inspector reviewed the maintenance records related to 2005 and 2006 scheduled and unscheduled preventive and corrective maintenance activities. Routine/preventive maintenance was controlled and documented on facility maintenance forms. These documents indicated that all maintenance activities were controlled and documented in accordance with the requirements in 10 CFR 50.59. The inspector observed that there was an entry for the replacement of a scram electronic card for the power range linear power channel. The problem observed with the scram card was a failure of the reactor control system to initiate a scram upon receipt of a high power level signal. This particular issue was noted during the startup checkouts while the reactor was shut down. The signal was generated from the calibration switch on the instrumentation and was reading 117% power before the test was cancelled. The linear power level channel should have scrammed at 108% power. The licensee immediately tested all components of the system and was unable to identify the exact cause of the problem. The scram card was replaced and further testing revealed that the system was working properly. The inspector reviewed the documentation of the problem and solution to verify that the issue was acceptably controlled.

All maintenance of reactor systems were reviewed by the ADO and/or the FD. Implementation of changes to equipment, systems, tests, or experiments are generally done by the staff at the facility. After all maintenance items are completed, system operational checks are performed to ensure the affected systems function before returning them to service. The inspector also reviewed the licensee's condition reporting system, which is used to control deficiencies in materials, instruments, or any equipment at the facility. The licensee appeared to be effectively utilizing this system to ensure that all systems are functioning as normal as possible. During a facility tour, the inspector noted that the equipment in the Control Room and the Reactor Room was operational.

c. Conclusions

Maintenance logs, records, and performance satisfied TS and procedure requirements.

7. Fuel Movement and Handling

a. Inspection Scope (IP 69001)

To verify that TS and procedural requirements were being met, the inspector reviewed selected aspects of:

- fuel examination records
- fuel handling equipment and instrumentation
- RSC meeting minutes, dated October 11, 2005 and January 17, April 11, July 11, and October 17, 2006
- Operations Log Book No. 54, dated from December 6, 2005 to present
- AP-12, "Change," Rev. 4, dated October 14, 2005

- CCP-16, “Inspection of Fuel Elements,” Rev. 4, dated April 29, 2004
- CCP-17, “Inspection of Control Rods and Rod Drives,” Rev. 5, dated April 21, 2006
- SOP-3, “Core Loading and Fuel Handling,” Rev. 3, dated April 18, 2005
- SOP-7, “Qualification of Reactor Pool Reactor Operating Positions,” Rev. 4, dated May 24, 2004
- Memorandum entitled, “PSBR Fuel Inspection,” dated June 15, 2006
- Completed AP-12 form #06-01, “Replacement of Control Rod Connecting Rod Fasteners,” dated June 2006
- Special Repair Procedure, “Control Rod Split Roll Pin Replacement,” Rev. 0, dated June 20, 2006
- PSBR Special Procedure, “Fuel Element 214 Removal,” Rev. 0, dated June 8, 2006
- PSBR Procedure, “Fuel Inspection Procedure June 2006,” Rev. 0, dated May 26, 2006

b. Observations and Findings

The inspector determined that the licensee was maintaining the required records of the various fuel movements that had been completed and verified that the movements were conducted and recorded in compliance with procedure. During a recent fuel inspection conducted on May 31, 2006, the licensee found a fuel element that had swelled to the point that it could not be removed through the upper core grid plate. The licensee unloaded all of the fuel except for the one deformed element and eventually removed the upper grid plate, while ensuring stable control of the deformed fuel element. The licensee noted that there was no damage to the core grid structure or any other fuel elements. The licensee created a procedure for this process and the inspector determined that the procedure suitably ensured a safe way of accomplishing the task. While the fuel element was being removed, the licensee noted that the control rod extension tubes were not properly secured to two of the control rods. Several of the split pins had fallen out of the tube. The licensee initiated a review of the design and decided to change the pins used to connect the control rod. The licensee recovered all of the missing split pins and replaced all of the lower connections on these control rods with bolts, nuts and washers. The licensee is continuing to ensure the operability of all control rods by performing routine checks. The inspector noted that the process used during this incident ensured the continued safe operation of the facility.

All fuel movements were noted in the Operating Logbook as well as in the Fuel Element Inspection records. The fuel element inspections were conducted on a two and four year cycle, depending on the normalized power level of each element. The control rod inspections were consistently completed on a two year cycle. Inspections of the fuel elements and control rods showed consistency with accepted values and did not indicate any deterioration of cladding. The fuel element that was stuck in the core met the TS requirements, however, the licensee determined that since the clearance on the upper grid plate is smaller than the TS requirements, they have decided to permanently remove it from service. Data recorded for fuel handling was clear and cross-referenced in the

fuel movement records and the core map. The licensee is currently using core loading #52. Log entries clearly identified, as required by procedure, that a minimum of two persons were present when fuel was being moved. The inspector determined that the procedures and the controls specified for these operations were acceptable.

c. Conclusions

Fuel handling and control rod inspection activities were completed and documented as required by TS and facility procedures.

8. Emergency Preparedness

a. Inspection Scope (IP 69001)

To verify that the licensee was implementing and complying with the Emergency Plan requirements, the inspector reviewed selected aspects of:

- emergency response supplies, equipment and instrumentation
- training records for emergency response personnel
- offsite support and support agreements
- PSBR Emergency Preparedness Plan (E-Plan), Rev. 4, dated September 21, 2000
- Letter of Agreement (LOA) between PSU Police Department and PSBR, dated October 4, 2005
- LOA between Alpha Fire Company of State College and PSBR, dated December 19, 2005
- LOA between Mount Nittany Medical Center and PSBR, dated October 4, 2005
- CCP-21, “Emergency Support Center Supplies Check,” Rev. 3, dated February 27, 2006
- CCP-22, “Emergency Drill and Preparedness,” Rev. 2, dated July 18, 2005
- CCP-25, “Emergency Fill Fire Hose Inspection,” Rev. 6, dated April 15, 2005
- CCP-28, “Annual Review of PSBR Emergency Preparedness Plan,” Rev. 2, dated April 27, 2004
- Emergency Procedure (EP)-1, “Emergency Preparedness Plan Implementation,” Rev. 11, dated October 19, 2006
- Reactor Emergency Call List (Appendix to EP-1), Rev. 11, dated October 19, 2006
- EP-2, “Fire or Explosion,” Rev. 4, dated October 19, 2006
- EP-3, “Power Failure,” Rev. 4, dated May 19, 2005
- EP-4, “Loss of Pool Water,” Rev. 2, dated December 13, 2004
- EP-5, “Release of Airborne Radioactive Material,” Rev. 3, dated July 5, 2006
- EP-6, “Medical Emergencies,” Rev. 3, dated November 8, 2006
- EP-7, “Civil Disorder,” Rev. 1, dated September 2, 2004
- EP-8, “Bomb Threat Procedure,” Rev. 4, dated October 12, 2005

- EP-9, “Threat of Theft or Theft of Special Nuclear Material,” Rev. 3, dated December 13, 2004
- EP-11, “Unauthorized Intrusion Procedure,” Rev. 3, dated December 13, 2004
- EP-12, “Industrial Sabotage,” Rev. 3, dated December 13, 2004
- EP-13, “Building Evacuation,” Rev. 2, dated February 10, 2005
- Report of Annual Drill, dated March 29, 2006
- Report of Biennial Drill and Critique, dated January 18, 2005
- Review of Emergency Preparedness Plan, dated December 20, 2005 and November 16, 2006
- Completed CCP-21 Forms, dated from January 30, 2006 to present
- Completed CCP-25 Forms, dated July 29, 2005 and July 24, 2006

b. Observations and Findings

The E-Plan in use at the PSBR was verified to be the same as the version most recently approved by the NRC. The E-Plan was audited and reviewed annually as required. Emergency Procedures were also reviewed and revised as needed to effectively execute the E-Plan. The inspector verified that a list of emergency personnel, management, and offsite agencies was in the Control Room.

Supplies, instrumentation, and equipment maintained at the facility and at the Emergency Support Center located in the Academic Projects Building, were being controlled and inventoried as required in the E-Plan and Emergency Procedures. This included inspections and testing of the fire extinguishers and the fire suppression system at the facility. LOAs with offsite response organizations and support groups had been updated biennially and maintained as required. Communications capabilities with these support groups were acceptable and had been tested as required. While at the facility, the inspector observed a daily checkout test of the emergency evacuation alarm system. The inspector verified that the system is functioning properly.

The documentation of the drills conducted during the past year was reviewed. Emergency preparedness and response training was being completed typically just prior to the drills. Through drill scenario and record reviews, emergency responders were determined to be knowledgeable of the proper actions to take in case of an emergency. Emergency drills had been conducted annually as required by the E-Plan. Critiques were written following the drills to document the strengths and weaknesses identified during the exercise. Action items were developed to correct the problems identified.

The inspector visited the Mount Nittany Medical Center on November 29, 2006, and talked to the Vice President of Plant Services and the Environmental and Safety Coordinator about the supplies and equipment at the hospital site that would be available in case of an emergency. The individuals stated that designated individuals in the emergency room had radiation training and if additional support is needed, other support staff more familiar with treating radiologically contaminated individuals can respond. The inspector observed that there appeared to be a good working relationship between the licensee and

the hospital. The inspector confirmed that the hospital was well prepared to handle a variety of injuries that could happen at the PSBR.

c. Conclusions

The emergency preparedness program was conducted in accordance with the approved E-Plan.

9. Exit Interview

The inspection scope and results were summarized on November 29, 2006, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

E. Boeldt, Manager, Radiation Protection
M. Bryan, Research Engineer
L. Burton, Associate Dean of Engineering
M. Claver, Director, Environmental Health and Safety
C. Davison, Research and Education Specialist/Reactor Supervisor
T. Flinchbaugh, Associate Director for Operations
B. Heidrich, Senior Research Assistant
T. Litzinger, Chair, Reactor Safeguards Committee
E. Pell, Vice President for Research and Dean of the Graduate School
F. Sears, Director, Radiation Science & Engineering Center

Other Personnel

L. Brungard, Environmental and Safety Coordinator, Mount Nittany Medical Center
W. Stranahan, Vice President of Plant Services, Mount Nittany Medical Center

INSPECTION PROCEDURES USED

IP 69001 Class II Non-power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
ADO	Associate Director for Operations
AOP	Auxiliary Operating Procedure
AP	Administrative Procedure
CCP	Checks and Calibrations Procedure
CFR	Code of Federal Regulations
E-Plan	Emergency Plan
FD	Facility Director
IP	Inspection Procedure
LCO	Limiting Conditions for Operation
LOA	Letter of Agreement
MW	Megawatt

NRC	Nuclear Regulatory Commission
PSBR	Pennsylvania State Breazeale Reactor
PSU	Pennsylvania State University
Rev.	Revision
RSC	Reactor Safeguards Committee
RSEC	Radiation Science and Engineering Center
SOP	Standard Operating Procedure
SP	Special Procedure
SRO	Senior Reactor Operator
TS	Technical Specification
TRIGA	Training, Research, and Isotope Production, General Atomics