

U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 78-03

Docket No. 50-05

License No. R-2 Priority - Category F

Licensee: The Pennsylvania State University  
University Park, Pennsylvania 16802

Facility Name: Breazeale Nuclear Reactor

Inspection at: University Park, Pennsylvania

Inspection conducted: December 12-14, 1978

Inspectors: L. E. Briggs  
L. E. Briggs, Reactor Inspector

12/29/78  
date signed

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Approved by: E. C. McCabe, Jr.  
E. C. McCabe, Jr., Chief, Reactor Projects  
Section No. 2, RO&NS Branch

12/29/78  
date signed

Inspection Summary:

Inspection on December 12-14, 1978 (Report No. 50-05/78-03)

Areas Inspected: Organization and Logs and Records; Review and Audit; Requalification Program; Procedures; Surveillance; Experiments; and, IE Circular/Bulletin followup. The inspection involved 17 inspector-hours onsite by one NRC inspector.

Results: No items of noncompliance were identified.

## DETAILS

### 1. Persons Contacted

T. Flinchbaugh, Reactor Supervisor/Nuclear Education Specialist  
R. Houtz, Reactor Supervisor/Nuclear Education Specialist  
\*Dr. S. Levine, Professor/Director  
\*I. McMaster, Research Assistant/Deputy Director  
J. Penkala, Research Assistant/Training Supervisor  
K. Rudy, Senior Engineering Aide - Mechanical Service Supervisor  
R. Totenbier, Research Assistant/Operations Supervisor  
D. Vonada, Electronics Designer  
\*Dr. W. Witzig, Nuclear Engineering Department Head

\* present at the exit interview

### 2. Organization, Logs and Records

- a. The inspector reviewed the facility organization and compared it to the organization defined in the 23rd Annual Progress Report. The information presented was accurate relative to the job assignment and licenses required and possessed. There are presently 8 individuals with an NRC SRO license and 2 individuals with NRC RO licenses. During this inspection, the inspector determined that the individuals operating the reactor had the required NRC license and were complying with the special requirements of their licenses while performing the activities for which they are licensed. No unacceptable conditions were identified.
- b. The control room operator's console log book was reviewed for the period June 16, 1978 through December 12, 1978. The purpose of the review was to identify any events which might be reportable, determine the type of operations, ensure the required information was recorded and signed. No unacceptable conditions were identified.
- c. Records in areas of surveillance testing, experiments, requalification training and safety committee performance were requested and determined to be retrievable.

### 3. Review and Audit

The inspector reviewed all minutes of the Reactor Safety Committee from November 1977 through August 1978. The inspector determined that the safety committee had a written procedure outlining its duties. Review of the committee minutes indicated that the committee was performing its required duties, that it had a quorum at all meetings, and that it was meeting frequently enough to satisfy Technical Specification requirements.

#### 4. Requalification

The inspector reviewed the Licensed Operator Requalification Program. Individual folders were maintained on each individual. These included the completed and graded examination as well as records of reactivity manipulations and other required practical factors. The examination was reviewed to determine that it contained the elements required by 10 CFR 55. No unacceptable conditions were identified in this area.

#### 5. Procedures

The inspector reviewed all facility procedures including the copies maintained in the control room. All procedures were the current revision and approved. The inspector witnessed a reactor startup and shutdown and determined that they were accomplished in accordance with the approved procedure. During this review, the inspector determined that the licensee is upgrading procedures on a periodic basis. No unacceptable conditions were identified in this area.

#### 6. Experiments

The inspector reviewed the Annual Progress Report to determine the type of experiments performed. The administrative procedure used to control experiments was reviewed and discussed with the licensee. The inspector selected a sample of recent experiments and reviewed them to determine if the required review and approval was accomplished. No unacceptable conditions were identified in this area.

#### 7. Surveillance

##### a. Technical Specifications Operating Limitations

The following Technical Specifications (TS) operating limits were reviewed to verify compliance:

<u>TS</u>	<u>Requirement</u>	<u>Setting</u>	<u>Results</u>
D.	Reactor Water Level	Greater than 16 feet above top grid plate	Level verified by IO of installed instrumentation
D.	Bulk Pool Temperature	110°F	86° F by IO of installed instrumentation

(IO) - Verified by direct inspector observation

<u>TS</u>	<u>Requirement</u>	<u>Setting</u>	<u>Results</u>
E.	Fuel Temperature	800°C Max.	330°C by IO of installed instrumentation
A.2	Reactor Power Level	1 MW Steady State	Power verified by IO of installed instrumentation and recorder charts

(IO) - Verified by direct inspector observation

No items of noncompliance were identified.

b. Technical Specification Surveillances

The following procedures were reviewed to verify compliance with T. S. surveillance requirements:

- CCP-1, Rod Drop Time Determination (August, 1976). Data reviewed for January 11, 1977 through July 1, 1977, February 1, 1978 and June 26, 1978.
- CCP-2, Thermal Power Calibration. Data reviewed for January 19, 1977, July 21 and 22, 1977, January 27, 1978, June 21 and 22, 1978, August 15 and 16, 1978 and September 8 and 15, 1978.
- CCP-4, Functional Check of PSBR Interlocks (August, 1976). Data reviewed for February 14, 1977, August 17, 1977, March 6, 1978, and August 4, 1978.
- CCP-5, Fuel Temperature Versus Power Curve (August, 1976). Data reviewed for February 14, 1977, September 16, 1977, March 8, 1978 and July 19, 1978.
- CCP-6, Overpower Scram Checks (July, 1976). Data reviewed for February 14, 1977, September 12, 1977, March 8, 1978 and August 4, 1978.
- \*-- CCP-9, Transient Rod Drive and Air Supply Inspection. Data reviewed for February 14, 1977, September 16, 1977, March 8, 1978, July 19, 1978, and December 13, 1978.
- CCP-17, Inspection of Control Rods (August, 1976). Data reviewed for August, 1976, July, 1977 and June, 1978.

- \* Actual performance of CCP-9 was observed by the inspector to verify that the procedure was technically adequate to fulfill the Technical Specification requirements.

The inspector did not identify any unacceptable conditions in the above review or observation of CCP-9 performance.

## 8. IE Bulletins and Circulars

### a. Bulletins

Licensee actions concerning the following IE Bulletin was reviewed by the inspector to verify that the Bulletin was forwarded to appropriate onsite management, that a review for applicability was performed, that information in the licensee's reply was accurate, that corrective action taken was as described in the reply, and that the reply was within the time period described in the Bulletin.

- IEB 78-07, Protection Afforded by Air-Line Respirators and Supplied-Air Hoods. The inspector verified the licensee's response that they do not use either the supplied-air respirators or hood at the Penn State facility. This verification was performed by inspector observation and discussion with licensee personnel.

The inspector had no further questions in this area.

### b. Circulars

Licensee actions concerning the following IE Circulars were reviewed to verify that the circular was received by licensee management, that a review for applicability was performed, and that action taken or planned is appropriate.

- IEC 76-03, Radiation Exposures in Reactor Cavities. The inspector reviewed the licensee's action concerning this circular as stated in their November 9, 1976 response. The licensee had, as stated, instituted a semiannual check/evaluation procedure to survey plant areas where a radiation hazard could exist. A review of surveys conducted on November 8, 1976, May 31, 1977, November 22, 1977, and June 2, 1978 revealed no area radiation problems.

The licensee has concluded that the semiannual checks were redundant to existing procedural requirements and has sent a letter dated June 9, 1978, to RI stating this conclusion and that further semiannual checks will be cancelled. A specific list of procedures was referenced in the letter as providing the same protection. A review of these procedures and their content relating to this item was reviewed by the inspector. It was concluded that the procedures are adequate to control personnel exposure and were redundant to the semiannual checks performed.

No unacceptable conditions were identified.

- IEC 77-14, Separation of Contaminated Water Systems from Noncontaminated Plant Systems. The licensee as a result of this circular has capped/plugged various lines and disconnected the old 200 KW heat exchanger to prevent contaminating uncontaminated plant systems. The inspector reviewed documents and toured the facility to verify the adequacy of licensee action.

No unacceptable conditions were identified.

#### 9. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) on December 14, 1978 at the conclusion of the inspection, and summarized the inspection scope and findings.