

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Report: 50-188/82-01

Docket: 50-188

License: R-88

Licensee: Kansas State University (KSU)
Manhattan, Kansas

Facility Name: TRIGA Research Reactor (250 kW) Category G

Inspection At: Manhattan, Kansas

Inspection Conducted: September 16-17, 1982

Inspectors: R. J. Redano 10-1-82
R. J. Redano, Reactor Inspector Date
Reactor Project Section A (Pars. 1-5, 12)

M. E. Murphy 10/1/82
M. E. Murphy, Reactor Inspector Date
Reactor Project Section C (Pars. 2, and 9-11)

T. F. Westerman for 10/1/82
W. S. Schum, Reactor Inspector Date
Reactor Project Section B (Pars. 6-8)

Reviewed: T. F. Westerman for 10/1/82
W. A. Crossman, Chief Date
Reactor Project Section B

D. M. Hunnicutt 10/1/82
D. M. Hunnicutt, Acting Chief Date
Reactor Project Section C

Approved: T. F. Westerman 10/1/82
T. F. Westerman, Chief Date
Reactor Project Section A

Inspection SummaryInspection Conducted September 16-17, 1982 (Report 50-188/82-01)

Areas Inspected: Routine, unannounced inspection of reactor facility programs in the areas of organization; audit and review; operator requalification training; procedures; surveillance; experiments; environmental protection; emergency planning; and radiation control. The inspection involved 27 inspector hours onsite by three NRC inspectors.

Results: Within the areas inspected, no violations or deviations were identified.

DETAILS1. Persons ContactedKansas State University

- *R. Faw, Facility Director
- *T. Debay, Reactor Supervisor
- *N. Eckhoff, Department Head of Nuclear Engineering
- *J. Lambert, Radiation Safety Officer
- A. Stone, Security Director

*Denotes presence at exit interview conducted on September 17, 1982.

2. Status of Previously Reported Items

Closed (reference IE Report 50-188/81-01, Details, paragraph 3). Open Item 8101-01 dealing with power oscillations in the TRIGA reactor is considered closed. The licensee has changed the orientation of the reactor diffuser and has taken experimental data on the neutronic and thermal hydraulic effects of this change as part of a graduate level laboratory project during the 1981 summer session. The NRC inspector examined the experimental results and the licensee's analysis of the experimental data and has concluded that the power oscillation phenomenon has apparently been eliminated.

Closed (reference IE Report 50-188/81-01, Details, paragraph 9). Open Item 8101-02 waste water collection pit samples should be more representative and contamination levels in the pit periodically identified. The licensee's actions in this area were reviewed and found to be satisfactory.

3. Review and Audit

The NRC inspector examined the last four Reactor Safety Committee (RSC) meeting records and the associated audit reports to determine whether the licensee's review and audit program conformed to regulatory and procedural requirements. All audit reports examined were thorough, timely, and technically adequate. The RSC reviews of audits were complete in scope and carefully performed. The NRC inspector informed the licensee that the review and audit program appeared to be well organized and properly implemented.

No violations or deviations were identified in this portion of the inspection.

4. Operator Requalification Training

The NRC inspector evaluated the licensee's requalification program to determine if it conformed to regulatory requirements and licensee commitments. The written exams administered to the licensee's operators, along with the operations log entries documenting each operators "hands-on" experience for the requalification period, were examined by the NRC inspector. The subject matter covered by the written exam was thorough and in-depth. The licensee's operator requalification program appeared to be in total compliance with regulatory requirements and procedural commitments.

No violations or deviations were identified in this portion of the inspection.

5. Experiments

The NRC inspector examined the licensee's experiment program to determine whether proposed experiments are properly reviewed, prepared, conducted, and documented. The administrative controls implemented in the experimentation area appeared adequate to ensure that experiments will be conducted within Technical Specification limits. The NRC inspector examined the procedure and sample preparation for a KI irradiation experiment. The procedure and sample preparation observed conformed to licensee's program requirements and Technical Specifications.

No violations or deviations were identified in this section of the inspection.

6. Organization - Logs and Records

The NRC inspector reviewed the organization of KSU Nuclear Reactor section and found a clear, well established and functioning management organization. Inspection of logs and records revealed no deviations from required standards. The record keeping is complete and informative in all required areas.

No deviations or violations were identified in this portion of the inspection.

7. Surveillance

The NRC inspector reviewed surveillance records and had discussions with operators. The licensee's surveillance program is adequate and is being conducted in accordance with the Technical Specifications. Surveillance records were reviewed for the preceding 18 months. All requirements were met and recorded.

No deviations or violations were identified in this portion of the inspection.

8. Procedures

The NRC inspector reviewed all required procedures for operations and maintenance. The following items were identified:

a. Procedure 1 Biennial Control Rod Inspection

In the required test section the words used are, "it is recommended that ten rod drop time measurements" are conducted. It is felt the requirement for testing should be made more positive, such as ten rod drop time measurements shall be conducted.

b. Procedure 5 Part 2 Not signed by RSC
 Procedure 6 " " " "
 Procedure 7 " " " "

Although there is no written requirement that these documents be signed, all other procedures have been signed; therefore, some doubt exists as to whether or not these are the authorized documents.

No deviations or violations were identified in this portion of the inspection.

9. Radiation Control

The NRC inspector reviewed the licensee's radiation control procedures, contained in the Radiation Safety Manual, and found them to be technically adequate.

Personnel exposure records for the past year were reviewed and found complete with no exposure limits exceeded. Personnel monitoring devices are being used as required by procedures.

A calibration program for the radiation dosimetry and survey instruments is established. Five instruments were checked for calibration and found satisfactory. Posting and labeling is satisfactory. Restricted areas are properly posted as "Radiation," "High Radiation," and "Radioactive Material Working Areas." General access control is very adequate.

The waste water collection pit is now labeled as a radioactive material area and representative samples are taken at the top and bottom of the water, before and after pumping. These samples are counted and contaminants identified; records are retained.

No violations or deviations were identified in this area of the inspection.

10. Environmental Protection

Since the licensee is in an agreement state, the small amount of solid waste generated is disposed of under state cognizance. Liquids released from the facility were sampled prior to discharge to the KSU sewage system. The NRC inspector reviewed the discharge log and sample results for discharges made on April 8, 1981, June 3, 1981, August 5, 1981, and February 12, 1982. All releases were well below established limits.

No violations or deviations were identified in this area of the inspection.

11. Emergency Planning

The licensee has just completed a complete update and rewrite of the emergency plan, which the licensee plans to submit for approval within the month. The NRC inspector reviewed the licensee's existing plan for adequacy. Support organizations were contacted and it was determined that the campus police department and fire department periodically receive refresher training and are included in periodic drills. The NRC inspector expressed concern that these drills were not formally documented.

No violations or deviations were identified in this area of the inspection.

12. Exit Interview

An exit interview was conducted on September 17, 1982, with those persons denoted in paragraph 1 of this report. At the interview, the inspector discussed the findings indicated in the previous paragraphs. The licensee acknowledged these findings.

INSPECTOR'S REPORT
Office of Inspection and Enforcement

Redano, Richard T

REVIEWER
Westerman, Tom F

INSPECTORS
Schum, W. S.

Murphy, Michael E

LICENSEE/VENDOR	TRANSACTION TYPE	DOCKET NO. (8 digits) OR LICENSE NO. (BY PRODUCT) (13 digits)	REPORT		NEXT INSP. DATE		
			NO.	SEQ.	MO.	YR.	
Kansas State University	I - INSERT	05000188	8201	A			
	M - MODIFY						B
	D - DELETE						C
	R - REPLACE						D
	1	2	14	15	18		

PERIOD OF INVESTIGATION/INSPECTION						INSPECTION PERFORMED BY						ORGANIZATION CODE OF REGION/HQ CONDUCTING ACTIVITY (See IEMC 0530 Manpower Reporting - Weekly Manpower Reporting for code)		
FROM			TO			1 - REGIONAL OFFICE STAFF			OTHER			REGION	DIVISION	BRANCH
MO.	DAY	YR.	MO.	DAY	YR.	2 - RESIDENT INSPECTOR						4	C	A
09	16	82	09	17	82	3 - PERFORMANCE APPRAISAL TEAM								
20	25	28	31	32								33	34	35

REGIONAL ACTION (Check one box only)	TYPE OF ACTIVITY CONDUCTED (Check one box only)															
<input type="checkbox"/> 1 - NRC FORM 591 <input checked="" type="checkbox"/> 2 - REGIONAL OFFICE LETTER	<input checked="" type="checkbox"/> 02 - SAFETY	<input type="checkbox"/> 06 - MGMT VISIT	<input type="checkbox"/> 10 - PLANT SEC.	<input type="checkbox"/> 14 - INQUIRY	<input type="checkbox"/> 03 - INCIDENT	<input type="checkbox"/> 07 - SPECIAL	<input type="checkbox"/> 11 - INVENT. VER.	<input type="checkbox"/> 15 - INVESTIGATION	<input type="checkbox"/> 04 - ENFORCEMENT	<input type="checkbox"/> 08 - VENDOR	<input type="checkbox"/> 12 - SHIPMENT/EXPORT	<input type="checkbox"/> 05 - MGMT. AUDIT	<input type="checkbox"/> 09 - MAT. ACCT.	<input type="checkbox"/> 13 - IMPORT		

INSPECTION/INVESTIGATION FINDINGS (Check one box only)				TOTAL NUMBER OF VIOLATIONS AND DEVIATIONS	ENFORCEMENT CONFERENCE HELD	REPORT CONTAIN 2790 INFORMATION	LETTER OF REPORT TRANSMITTAL DATE						
A	B	C	D	A	B	C	D	MO.	DAY	YR.	MO.	DAY	YR.
1													
1 - CLEAR 2 - VIOLATION 3 - DEVIATION 4 - VIOLATION & DEVIATION				1 - YES		1 - YES		OCT 23 1982					

MODULE INFORMATION														MODULE INFORMATION																			
REC. ORD.	MODULE NUMBER INSP.				PRIORITY	DIRECT INSP. TICKETS OPEN IN STATES EXP. THIS INSPECTION	PERCENTAGE COMPLETED	STATUS	MODULE REQ. FOLLOWUP				REC. ORD.	MODULE NUMBER INSP.				PRIORITY	DIRECT INSP. TICKETS OPEN IN STATES EXP. THIS INSPECTION	PERCENTAGE COMPLETED	STATUS	MODULE REQ. FOLLOWUP											
TYPE	NUMBER	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER					LEVEL	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL	TYPE	NUMBER	PHASE	MANUAL CHAPTER					PROCEDURE NUMBER	LEVEL	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL						
B	3	0	7	0	3	B	A	0	0	1		B	4	2	7	4	5	A	0	0	3	1	0	0	C								
B	4	0	7	4	5	A	A	0	0	3	1	0	0	C		B	6	1	7	4	5	A	0	0	3	1	0	0	C				
B	3	9	7	4	5	A	A	0	0	3	1	0	0	C		B	6	9	7	4	5	A	0	0	2	1	0	0	C				
B	4	1	7	4	5	A	A	0	0	3	1	0	0	C		B	8	0	7	4	5	A	0	0	2	1	0	0	C				

* CIRCLE SEQUENCE IF VIOLATION OR DEVIATION

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FROM			TO			X 1 - REGIONAL OFFICE STAFF			OTHER			REGION		
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INSPECTION/INVESTIGATION FINDINGS (Check one box only)				TOTAL NUMBER OF VIOLATIONS AND DEVIATIONS				ENFORCEMENT CONFERENCE HELD				REPORT CONTAIN 2,790 INFORMATION				LETTER OR REPORT TRANSMITTAL DATE					
A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	MO.	DAY	YR.	MO.	DAY	YR.
1																10	23	1982			

MODULE INFORMATION												MODULE INFORMATION													
REC. ORD.	MODULE NUMBER INSP.				PRIORITY	DIRECT INSPEC. EFFORT IN STAFF HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED TO DATE	STATUS	MODULE REQ. FOLLOWUP				REC. ORD.	MODULE NUMBER INSP.				PRIORITY	DIRECT INSPEC. EFFORT IN STAFF HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED TO DATE	STATUS	MODULE REQ. FOLLOWUP			
TYPE	NUMBER	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER					LEVEL	TYPE	NUMBER	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL	TYPE	NUMBER					PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL
B	3	07	03	B	A	0.01						B	42	7	45	A	0.03	1.00	C						
B	4	07	45	A	A	0.03	1.00	C				B	6	1	7.45	A	0.03	1.00	C						
B	3	9	7.45	A	A	0.03	1.00	C				B	6	9	7.45	A	0.02	1.00	C						
B	4	1	7.45	A	A	0.03	1.00	C				B	8	0	7.45	A	0.02	1.00	C						