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**BULK SHIELDING FACILITY
QUARTERLY REPORT OCTOBER,
NOVEMBER, AND DECEMBER OF 1972**

W. H. Tabor
S. S. Hurt, III
E. D. Lance

MASTER

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OPERATIONS DIVISION

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CONTENTS

	<u>Page</u>
Summary	4
Bulk Shielding Reactor	4
Operations	4
Shutdowns	8
Maintenance and Changes	9
Fuel	19
Experiment Facilities Assignment	20
Demineralizer Performance	20
Operating Manual	22
Special Tests	22
Efficiency Tests	22
Special Programs	23
Xenon Buildup and Decay Experiment	23
Measurement of Half-Life of Simple Radioactive Decay	23
Chamber Classes	23
Unusual Occurrences	24
Water Leak in the Pool Wall	24
Pool Critical Facility	24
Operations	24
Experiments	27
Approach-to-Critical	27
Regulating Rod Calibration	27
Statistical Weight	27
Distribution	28

SUMMARY

The BSR operated at an average power level of 1839 kw for 25% of the time during October, November, and December. Water-quality control in both the reactor primary and secondary cooling systems was satisfactory. There was one unscheduled shutdown during the quarter as indicated in Table 2.

Changes as authorized by Reactor Instrument and Controls Design Change Memo BSR-2Mw-38 were completed as indicated in Table 4.

The BSR was operated at low and variable power during this quarter for 40 hrs as a training aid for three trainees from the Tennessee Valley Authority (TVA) Sequoyah Nuclear Power Reactor.

The PCA was operated during the quarter as follows: two days as a training aid for students from the Nuclear Engineering Department of the University of Kentucky and four days as a training aid for trainees from the TVA Sequoyah Nuclear Power Reactor.

BULK SHIELDING REACTOR

Operations

During this quarter, the reactor operated 25% of the time primarily for the irradiation of research experiments. It was also operated at low and variable power (7.2% of the operating time) for training of TVA Sequoyah Nuclear Power Reactor personnel. Basic operating data for this period are given in Table 1.

Table 1. Basic Operating Data
(October, November, and December of 1972)

	This Quarter	Last Quarter	Year To Date
Total energy, kwd	42,255	116,497	277,736
Average power, kw/operating hr	1,839	1,983	1,861
Time operating, %	25	63.9	40.3
Reactor availability, %	95.8	81	90
Reactor water radioactivity, counts min ⁻¹ ml ⁻¹ (av)	1,848	2.075	1,870
Reactor water resistivity, ohm-cm (av)	855,000	820,000	860,000
Standard fuel elements depleted	2	0	10
Control fuel elements depleted	0	0	2
Research samples	55	63	213

Core loading 22 (Figure 1) was converted to core loading 23 (Figure 2) on November 15, 1972, to provide adequate excess reactivity for versatile operation. The initial operating mass (4082.976 g) of core loading 22 had been reduced to 3938.601 g due to burnup, thereby reducing the excess reactivity from 5.65% $\Delta k/k$ to 3.86% $\Delta k/k$ ($\sim 1.31\%$ $\Delta k/k$ excess reactivity above xenon equilibrium).

Core loading 23 was accomplished by replacing two depleted BSF-series fuel elements with new BSF-series fuel elements. Core loading 23 had an initial operating mass of 4037.242 g which provided an excess reactivity of 5.28% $\Delta k/k$ (2.73% $\Delta k/k$ excess reactivity above xenon equilibrium). At the end of the quarter, the excess reactivity is $\sim 5.05\%$ $\Delta k/k$ ($\sim 2.5\%$ $\Delta k/k$ excess reactivity above xenon equilibrium).

ORNL DWG. 73-1415

BSR CORE

EAST
D₂O
TANK

FC								
81	82	83	84	85	86	87	88	89
71	72	73	74	75	76	77	78	79
BSF-23 146.036	BSF-S-7 Shim Rod No. 5	BSF-36 177.083	BSF-S-8 Shim Rod No. 6	BSF-12 146.643				
61	62	63	64	65	66	67	68	69
BSF-34 177.726	BSF-26 148.371	M-193-D 179.733	BSF-27 146.813	BSF-35 177.290				
51	52	53	54	55	56	WEST D ₂ O TANK		59
BSF-32 148.000	BSF-S-11 Shim Rod No. 3	M-192-D 181.980	BSF-S-12 Shim Rod No. 4	BSF-31 149.960				
41	42	43	44	45	46			49
BSF-33 152.863	BSF-28 152.680	BSF-38 183.462	BSF-30 151.838	BSF-29 152.428				
31	32	33	34	35	36	37	38	39
M-194-D 201.000	BSF-S-9 Shim Rod No. 1	BSF-37 176.198	BSF-S-10 Shim Rod No. 2	M-195-D 200.000				
21	22	23	24	25	26	27	28	29
EXP	BSF-14 144.402	BSF-1 145.367	BSF-9 144.408	EXP				
11	12	13	14	15	16	17	18	19

22
LOADING NO.
July 31, 1972
DATE
Excess Reactivity - 5.65%
CRITICAL MASS
4082.976
OPERATING MASS

ROD POSITIONS AT CRITICAL (With Operating Mass)

ROD NO.	IN. WITHDRAWN	
1	9.64	10.98
2	9.64	10.98
3	9.64	10.98
4	9.64	10.98
5	23.00	10.98
6	23.00	10.98

REMARKS:

Kwhr at beginning - 40,122,489

Fig. 1. Core Loading No. 22 - BSR

ORNL DWG. 73-1416

BSR CORE

EAST
D₂O
TANK

FC								
81	82	83	84	85	86	87	88	89
71	72	73	74	75	76	77	78	79
BSF-23 142.188	BSF-S-7 71.734	BSF-36 171.185	BSF-S-8 71.642	BSF-12 142.918				
61	62	63	64	65	66	67	68	69
BSF-34 172.145	BSF-26 142.632	M-193-D 172.004	BSF-27 140.660	BSF-35 171.480		WEST D ₂ O TANK		59
51	52	53	54	55	56			
BSF-32 142.664	BSF-S-11 87.088	M-192-D 172.748	BSF-S-12 86.690	BSF-31 144.517				
41	42	43	44	45	46			49
BSF-33 147.853	BSF-39 190.370	BSF-38 174.647	BSF-40 190.160	BSF-29 147.266				
31	32	33	34	35	36	37	38	39
M-194-D 194.881	BSF-S-9 81.631	BSF-37 169.870	BSF-S-10 81.718	M-195-D 194.595				
21	22	23	24	25	26	27	28	29
EXP	BSF-28 146.179	BSF-1 141.357	BSF-30 145.019	EXP				
11	12	13	14	15	16	17	18	19

23
LOADING NO.
November 15, 1972
DATE
Excess Reactivity - 5.28%
CRITICAL MASS
4037.242
OPERATING MASS

ROD POSITIONS AT CRITICAL (With Operating Mass)

ROD NO.	IN. WITHDRAWN	
1	10.23	11.38
2	10.23	11.38
3	10.23	11.38
4	10.23	11.38
5	23.00	11.38
6	23.00	11.38

REMARKS:

Kwhr at beginning - 42,859,864

Fig. 2. Core Loading No. 23 - BSR

Shutdowns

There was one unscheduled shutdown during the quarter. The unscheduled shutdown and the associated incident report number is listed in Table 2.

Table 3 gives an analysis of both scheduled and unscheduled shutdowns.

Table 2. Unscheduled Shutdowns

Date	Duration (hr)	Incident Report No.	Remarks
11-4-72	0.283	ORNL-72-69	Momentary failure of a manual slow scram (drop-out to scram) relay.

Table 3. Analysis of Shutdowns

Description of Shutdown	Number	Downtime (hrs)
Scheduled		
Experimenters:		
No request to operate	21	1,565.083
Experiment insertion, removal, or data taking	7	10.683
Reactor Operations:		
Unusual*	1	20.467
Refueling	1	0.500
TVA personnel training	33	6.651
Quarterly	<u>1</u>	<u>54.000</u>
Subtotal	64	1,657.384
Unscheduled		
Experimenters:	0	0.000
Reactor Operations:	<u>1</u>	<u>0.283</u>
Subtotal	<u>1</u>	<u>0.283</u>
Total	65	1,657.667

* Shutdown as a precautionary measure due to plane hijacker's threat to the Oak Ridge area.

Maintenance and Changes

Changes made in the reactor control instrumentation to improve operating conditions are documented by the BSR control-change-memoranda system. Those changes which were made during this report period are listed in Table 4. Maintenance or changes on the instrumentation and mechanical components in the complex are listed in Tables 5, 6, and 7. Table 8 presents the status of the ionization and fission chambers.

Table 4. Instrumentation and Control Change Memoranda Completed During This Report Period

Change Memo No.	Subject	General Description
BSR-2Mw-38	Primary coolant circulating pump interlock.	To prevent the possibility of conflicting cooling water flows (upward flow due to natural convection and concurrently an attempt of downflow due to forced flow if flapper were open) during Mode I operation, an interlock was installed in the primary pump starter circuit. The interlock prevents the pump from being started or operated when the flapper valve is fully open.

Table 5. Maintenance and Changes, Instrumentation and Controls

Date	Component	Trouble or Change	Reason or Maintenance
10-25-72	Secondary pH channel	Faulty operation	Maintenance was performed as follows: (1) electrical lead wires between pH probes and pump house pH transmitter checked satisfactory; (2) installed new pH measuring probe; and (3) installed new temperature compensator probe (probably the cause of the faulty operation).
11-1-72	Log-N amplifier	Excessive noise	The log-N amplifier was replaced with a spare unit.
11-17-72	Pool outlet radiation channel (unshielded sensor element)	Faulty operation	The sensor element and the gamma monitor were replaced to correct the condition.
11-17-72	Northwest Monitron (reactor room)	Erratic operation	The Monitron was removed to the shop for a general overhaul.
11-22-72	Counting-rate channel	Excessive noise	The counting rate meter was replaced with a spare unit.
11-28-72	Portable pH meter	Erratic operation	New pH probes and an electronic tube were installed.
12-6-72	Monitron, pump house	Failure of the high level alarm contact	The high level alarm contact was cleaned to correct the condition.
12-11-72 to 12-13-72	Instrumentation and controls	Routine	Quarterly checks were performed.

Table 5 (Continued)

Date	Component	Trouble or Change	Reason or Maintenance
12-12-72	Counting-rate channel	Improper operation of scaler	The scaler was replaced with a spare unit.
12-12-72	Log-N channel	Excessive noise	The voltage regulator tube in the log-N amplifier was replaced.
12-12-72	Magnet control bin No. 2 (dual voltage comparator)	Failure of the Bus Protect Latch light circuit	The dual voltage comparator was replaced with a spare unit.

Table 6. Maintenance and Changes, Mechanical Systems

Date	Component	Trouble or Change	Reason or Maintenance
10-19-72	No. 5 shim-rod-drive assembly	Failure of the clutch-assembly	The drive assembly was removed for inspection and the following jobs were performed: (1) the mechanical and electrical aspects of the clutch-switch checks were checked and found to be satisfactory; (2) The armature was flushed with water; and (3) It was assumed that a particle had lodged between the clutch-switch push rod lower retainer ring and the magnet housing, thereby preventing the downward movement of the push rod causing the initial trouble. Clutch-switch operation was satisfactory following reinstallation of the rod-drive assembly.
12-8-72	In pool shim-rod inspection rack	Extension-securing bracket installed	The extension-securing bracket was installed to permit hanging the rack in the pool and to provide a means by which the rack could be positioned to a lower level if desired.
12-11-72	Shim-rod assembly from CP-44 (No. 4)	Routine inspection	A major visual and mechanical inspection was completed on the boron-stainless steel shim rod with the following results: (1) visual inspection using a magnifying glass indicated no evidence of cracks; (2) straight-edge inspection of the flat and edge sides indicated a satisfactory condition; and (3) after inserting the rod into a

Table 6. (Continued)

Date	Component	Trouble or Change	Reason or Maintenance
12-11-72	Shim-rod assembly from CP-64 (No. 6)	Routine inspection	<p>0.010-in. oversized gauge and using feeler gauges, it was determined that the rod was dimensionally acceptable. No absolute dimensional changes from the initial condition can be assessed since the original information was not recorded.</p> <p>A major visual and mechanical inspection was completed on the boron-stainless steel shim rod with the following results: (1) visual inspection using a magnifying glass indicated no evidence of cracks; (2) straight-edge inspection of the flat and edge sides indicated a satisfactory condition; and (3) after inserting the rod into a 0.010-in. oversized gauge and using feeler gauges, it was determined that the rod was dimensionally acceptable. The flat side measurements were: bottom, 0.875 in.; middle, 0.874 in.; and top, 0.873 in. The edge-side measurements were 2.250 in. The flat-side dimensions as measured with a micrometer for the shim rod as installed on January 27, 1967, were: bottom, 0.860 in.; middle, 0.861 in.; and top, 0.862 in. The edge-side dimension as measured with a micrometer for this shim rod, as installed on January 27, 1967, were: bottom, 2.233 in.; middle, 2.234 in.; and top, 2.231 in.</p>

Table 7. Maintenance and Changes, Process System

Date	Component	Trouble or Change	Reason or Maintenance
10-25-72	Secondary acid addition system	Installed a head reservoir in pH probe hutment	To assure a constant flow through the pH probe housing, a reservoir on the inlet side to the pH probes was permanently installed. Excess water in the reservoir will overflow via the overflow line (bypassing the pH probes) to the basin.
10-25-72	Acid storage tank	Faulty transfer flex hose	New flex hose was installed for transferring acid from the acid truck to the acid storage tank. Couplings were installed to allow removal of the flex hose for flushing with water following use.
11-20-72	Cell-ventilation filter banks	Routine	The prefilters for the north, center and south banks were replaced with new filter units.
11-30-72	Cell-ventilation system	Sheet metal blank placed in the west exhaust duct (reactor room south)	A sheet metal blank was installed in the west duct, thereby routing all of the air flow through the east duct. As per Reactor Instrument and Control Design Change Memo BSR-2Mw-35, the air flow sensor elements are located in the east exhaust duct. A temporary cover which had been used in the west duct was allowing air leakage.

Table E. Status of Ionization Chambers

Chamber Serial No.	Location	Date Present Service Started	Previous Service	Remarks
Chambers in Service				
CTC-3 (J-118)	Position A, No. 2 safety	10-8-69	LITR	The chamber was modified for underwater service in 1969.
PCP-III-106, SN-66-1	Position B, servo	1-29-68	None	The uncompensated sec- tion of this dual chamber failed on June 16, 1969, while in service as the No. 2 safety.
CTC-4 (C-771)	Position C, No. 1 safety	12-1-69	LITR	The chamber was modified for underwater service in 1969.
PCP-III-106, SN-66-4	Position D, Log-N and No. 3 safety	8-26-70	BSR	This dual chamber was in- stalled in the BSR in June, 1968. In May, 1969, the uncompensated section failed. The chamber was removed for repairs. In August, 1970, the chamber was reinstalled in the BSR.
C-1045	CF-81, fission chamber	10-1-69	PCA	This fission chamber assembly was trans- ferred to the BSR from the PCA in October, 1969.

Table 8. Status of Ionization Chambers

Chamber Serial No.	Location	Date Present Service Started	Previous Service	Remarks
Chambers Not in Service				
PCP-III-106, SN-66-3	Position E, spare dual chamber	10-6-72	BSR and ORR	This dual chamber was installed in the BSR in December, 1967. In March, 1969, the chamber was removed for repairs due to failure of the uncompensated section. In November, 1969, the chamber was installed in the BSR. In April, 1970, the uncompensated section failed. In August, 1970, the compensated section failed. The chamber was removed for repairs. In May, 1971, the chamber was installed in the ORR. In November, 1971, the chamber was removed for repairs. In October, 1972, the chamber was installed in the BSR as a spare chamber.
CTC-2 (C-768)	BSR Storage	August, 1970	LITR and BSR	The chamber was modified for underwater service in 1969. The chamber was installed in the

Table 8 (Continued)

Chamber Serial No.	Location	Date Present Service Started	Previous Service	Remarks
CTC-2 (Continued)				BSR in April, 1970. In August, 1970, the chamber was removed to storage due to installation of a dual chamber.
PCP (old type, no serial number)	Warehouse storage		BSR	This chamber is of the old type and will be repaired if needed.
CIC (No. 62)	BSR Storage		BSR	This chamber is reserved for the PCA but can be used in an emergency for the BSR.
CIC (No. 63)	BSR Storage		BSR	This chamber is reserved for the PCA but can be used in an emergency for the BSR.
PCP (Q975, No. 2)	BSR Storage		BSR	This chamber is reserved for the PCA but can be used in an emergency for the BSR.

Fuel

Changes in the fuel inventory are reflected in Table 9.

Table 9. Fuel and Shim Rod Status

	This Quarter	Last Quarter	Year To Date
Fuel elements depleted	2	8	10
Control-rod fuel elements depleted	0	0	2
New fuel elements placed in service	2	2	5
New control-rod fuel elements placed in service	0	0	2
New fuel elements available for use	2	4	2
New control-rod fuel elements available for use	8	8	8
Partially depleted fuel elements available for use	0	0	0
New shim rods placed in service	0	0	0
Boron stainless steel shim rods in use	6	6	6
Boron stainless steel shim rods available for use	2	2	2

Experiment Facilities Assignment

Facility assignments are listed in Table 10.

Table 10. Facilities Assignment

Facility	Location	Division or Sponsor
Liquid helium cryostat	Southwest corner of pool using west D ₂ O tank	Solid State
Liquid nitrogen cryostat	On instrument bridge	Solid State
Ambient temperature facility	North face of core	Solid State
Front-face tube	North face of core	Solid State
Fast-neutron tube	Core position 15	Solid State
Water-Cooled tube	Core position 11	Solid State
Dry thermal-neutron tubes* (N-4 and S-3)	East D ₂ O tank	Operations
Dry thermal-neutron tubes* (east, center, southwest, and northwest)	East D ₂ O tank	Operations

* These facility tubes are for sample irradiations and are used by personnel of several divisions, primarily Analytical Chemistry and Solid State Divisions.

Demineralizer Performance

Table 11 gives detailed information on the condition of the primary water system for the preceding year and pertinent data on the performance of the by-pass demineralizer.

Table 11. Demineralizer Performance Data

Run No.	Initiation Date	Termination Date	Throughput (gal)	Gross Gamma (Counts min ⁻¹ ml ⁻¹)		pH		Specific Resistance (ohm-cm)	
				In	Out	In	Out	In	Out
25	5-11-71	7-29-71	1,638,900	780	61	6.1	5.9	939,000	1,623,000
26	8-3-71	10-5-71	1,261,800	1,426	139	5.9	5.8	1,204,000	1,855,000
27	10-8-71	1-19-72	1,308,600	1,903	129	5.8	5.7	818,000	1,663,000
28	1-20-72	3-28-72	1,840,600	1,778	117	5.8	5.8	874,000	1,301,000
29	3-29-72	6-1-72	1,885,700	1,716	153	6.0	6.0	950,000	1,737,000
30	6-8-72	8-3-72	1,761,600	1,682	157	5.9	6.0	853,000	1,405,000
31	8-7-72	10-13-72	1,778,616	2,308	156	5.9	5.9	777,000	1,183,000
32	10-13-72	In service	1,795,700	1,848	120	5.7	5.8	855,000	1,261,000

Operating Manual

Changes which were made to the BSR operating manual during this quarter are listed in Table 12.

Table 12. Revisions to BSR Operating Manual (ORNL-TM-2676)

Date	Section	Remarks
11-30-72 and 12-29-72	Table of Contents	This reflects revisions to maintain a current edition.
11-30-72	3.1e. Procedures for Checking the Control and Safety System	This reflects revisions to the table of contents and maintenance check sheets which were made to reflect improvements in the check-out procedure.
11-30-72	3.2f. Process Instrumentation Checkout Procedures	Improvements were made in the check-out procedures.
12-29-72	10. Emergency Procedures	This reflects revisions to the existing procedure to maintain a current edition.

Special Tests

Efficiency Tests

Tests were performed by Inspection Engineering on the cell ventilation filters. Details are given in Table 13.

Table 13. Efficiency Test Results, Filters

Date	Unit	Type Test	Efficiency (%)
10-3-72	South Bank	Elemental iodine	99.987
12-5-72	North Bank	Elemental iodine	99.932
12-13-72	North, Center, and South Banks	DOP	99.998
12-28-72	Center Bank	Methyl iodide	59.39
12-28-72	South Bank	Methyl iodide	94.75

Special Programs

The experiments described below were three of a series of six performed by TVA trainees. The remaining experiments were performed at the Pool Critical Assembly and are described elsewhere in this report.

Xenon Buildup and Decay Experiment

Following operation at 2 Mw to achieve xenon equilibrium, the power level of the BSR was reduced to 4 kw to begin the experiment for the TVA trainees to study the buildup and decay of xenon in the BSR core. The trainees performed all activities associated with the experiment under the direct supervision of an Operations Division supervisor. The experiment, performed on a 24-hr-day schedule until completion, was an exercise in: (1) startup of the reactor, maintaining the reactor critical at 4 kw, and shutdown of the reactor at 30-minute intervals; (2) determining the reactivity worth of the shim rods under varying concentrations of xenon following each reactor startup; and (3) determining the reactivity worth of xenon in the core as a function of time.

Measurement of Half-Life of Simple Radioactive Decay

The BSR was operated at a power level of 100 kw to irradiate five aluminum samples at the east face of the east D₂O tank. The samples were irradiated for 10, 8, 6, 4, and 2 minutes, respectively. The TVA trainees performed all activities associated with the experiment under the direct supervision of an Operations Division supervisor. The experiment was an exercise in: (1) handling of radioactive materials; (2) measuring the half-life of a radioactive sample; and (3) determining the saturated activity for the neutron source used for activation.

Chamber Classes

The exercise was conducted in the north end of the BSR pool. A counting-rate channel was set up ready for use. A Sb-Be source was used as a source of neutrons. The class was conducted by an engineer of the

Instrumentation and Controls Division and was an exercise in: (1) instrumentation used in the counting-rate channel; (2) behavior of the fission chamber; (3) counting rate versus PHS with the neutron source withdrawn; (4) counting rate versus PHS with the neutron source present; (5) uncompensated ionization chamber; and (6) compensated ionization chambers.

Unusual Occurrences

Water Leak in the Pool Wall

A seepage-type water leak from the pool was found in the pool wall around the exit primary water line. A thorough inspection indicated that approximately 1 qt/hr of pool water was leaking from the pool into the valve pit via the grout-filled annulus in the concrete wall for the exit primary water line. The leak does not presently present a problem, and repairs will be made at a later convenient time.

POOL CRITICAL ASSEMBLY

Operations

The PCA was used 42.2 hrs as an experiment facility for the benefit of the University of Kentucky nuclear engineering students (24 hrs) and trainees from the TVA Sequoyah nuclear power reactor (18.2 hrs). Operational activities in preparing the facility for use included a checkout of the reactor control instrumentation and preparation of the required loading. The operational activities are listed in Table 14 (Usage of Pool Critical Facility). The PCA maintenance is listed in Table 15. Changes in the PCA operating manual are listed in Table 16.

Table 14. Usage of Pool Critical Facility

Date	Operational Activity	Purpose
October 31, November 2 and 3	Checkout of reactor instrumentation	Preparing for the approach-to-critical experiment for the University of Kentucky.
November 16 and 17	Established cores Nos. 126 and 128 to obtain a critical mass following the standard approach-to-critical procedure. Established cores Nos. 127 and 129 to permit calibration of the regulating rod.	Conducting experiments for the University of Kentucky nuclear engineering students.
November 29	Established core No. 130 to obtain a critical mass following the standard approach-to-critical procedure. Established core No. 77 to permit calibration of the regulating rod and the performance of the importance function experiment.	Conducting experiments for the TVA trainees from the Sequoyah nuclear power reactor.

Table 15. PCA Maintenance

Date	Trouble or Condition	Action
October 9, 10, and 11	Routine inspection of the B ₄ C shim-rod assemblies and the stainless steel regulating rod assembly.	The assemblies were gauged with a micrometer and checked with a straight edge with satisfactory results. The armatures and magnets were free of corrosion. The clutch-switch assemblies were cleaned and inspected. The magnet (No. 8) on the No. 2 drive assembly, which had faulty insulation on the coil, was replaced with a spare Ni plated unit (magnet No. 5).
October 31, November 2 and 3	Quarterly Instrumentation Checks	
	No. 3 safety channel	Replaced the sigma amplifier with a spare unit.
	Primary counting-rate channel	Replaced the scaler with a spare unit.
	Auxiliary counting-rate channel	Replaced the counting-rate meter and preamplifier with spare units.
	Servo channel	Retubed the micromicroammeter.
November 15	No. 3 Safety Channel	Replaced the sigma amplifier with a spare unit.
November 15	Memo change PCA-30	Installed noise suppressing condensers on the coil circuit of shim rod Nos. 1, 2, and 3 insert relays.
November 29	No. 2 shim-rod armature alignment joint wire broke.	Replaced the armature with a spare unit.

Table 16. Revisions to PCA Operating Manual (ORNL-TM-2340)

Date	Section	Remarks
11-30-72	Appendix B, Reactor Operations Department Emergency Procedures	This reflects revisions to the existing procedure.

Experiments

Experiments were conducted at the PCA by students from the Nuclear Engineering Department of the University of Kentucky and trainees from the TVA Sequoyah nuclear power reactor as indicated in Table 14. These experiments are described briefly and were directly supervised by the qualified Operations personnel.

Approach-to-Critical

To demonstrate the technique of assembling a reactor core, a critical mass was loaded by the nuclear engineering students and the TVA trainees following the standard approach-to-critical procedure.

Regulating Rod Calibration

A technique used in calibrating reactor control rods was demonstrated by using the period method in calibrating the regulating rod. The exercise was performed by the nuclear engineering students and the TVA trainees.

Statistical Weight

An experiment was performed to determine the effect of absorbers on the reactivity as a function of position in a special fuel element located in the reactor core. Using guidelines provided by the Operations supervisor, the experiment was performed by the TVA trainees.

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