MASTER

**Bulk Shielding Facility Quarterly Report
January, February, and March of 1979**

S. S. Hurt
E. D. Lance
K. E. Howard

OAK RIDGE NATIONAL LABORATORY
OPERATED BY UNION CARBIDE CORPORATION · FOR THE DEPARTMENT OF ENERGY

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

Printed in the United States of America. Available from
National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road, Springfield, Virginia 22161
Price: Printed Copy \$4.50; Microfiche \$3.00

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, contractors, subcontractors, or their employees, makes any warranty, express or implied, nor assumes any legal liability or responsibility for any third party's use or the results of such use of any information, apparatus, product or process disclosed in this report, nor represents that its use by such third party would not infringe privately owned rights.

THIS PAGE
WAS INTENTIONALLY
LEFT BLANK

CONTENTS

	<u>Page</u>
SUMMARY	1
BULK SHIELDING REACTOR	1
Operations	1
Shutdowns	6
Maintenance and Changes	7
Fuel	7
Experiment Facilities Assignment	7
Demineralizer Performance	7
Special Tests	13
Efficiency Tests	13
Operational Activities	13
Summary of Surveillance Tests at the BSR	15
POOL CRITICAL ASSEMBLY	17
Operations	17
Summary of Surveillance Tests at the PCA	21

THIS PAGE
WAS INTENTIONALLY
LEFT BLANK

FIGURE LIST

	<u>Page</u>
FIGURE 1. Core Loading BSR 54	3
FIGURE 2. Core Loading BSR 56	4
FIGURE 3. Core Loading BSR 57	5

THIS PAGE
WAS INTENTIONALLY
LEFT BLANK

TABLE LIST

	<u>Page</u>
TABLE 1. Basic Operating Data	2
TABLE 2. Analysis of Shutdowns	6
TABLE 3. Maintenance and Changes, Instrumentation and Controls .	8
TABLE 4. Maintenance and Changes, Mechanical System	9
TABLE 5. Fuel and Shim-Rod Status	10
TABLE 6. Facilities Assignment	11
TABLE 7. Demineralizer Performance Data	12
TABLE 8. Efficiency Tests	13
TABLE 9. Operational Activities.	14
TABLE 10. Summary of Surveillance Tests at the BSR	16
TABLE 11. Usage of Pool Critical Facility	18
TABLE 12. PCA Maintenance	20
TABLE 13. Summary of Surveillance Tests at the PCA	21

BULK SHIELDING FACILITY QUARTERLY REPORT

JANUARY, FEBRUARY, AND MARCH OF 1979

S. S. Hurt, E. D. Lance, and K. E. Howard

SUMMARY

The BSR was operated at an average power of 1,815 kW for 77.64% of the time this quarter. Water quality control in both the primary and secondary cooling systems was satisfactory.

The PCA was operated 182.80 hours for the usual training activities involving university students and TVA personnel.

BULK SHIELDING REACTOR

Operations

The reactor operated this quarter for the irradiation of experiments and samples and for training activities. Basic operating data for this quarter are given in Table 1. There were no large maintenance activities, abnormal operations, unusual occurrences or unscheduled shutdowns during this quarter.

Table 1. Basic Operating Data
(January 1, 1979 through March 31, 1979)

	This Quarter	Last Quarter	Year To Date
Total energy, kWd	128,258	90,055	128,258
Average operating power, kW	1,815 ^a	1,956	1,815
Time operating, %	77.64	50.01	77.64
Reactor availability, %	82.62	89.99	82.62
Reactor water radioactivity, counts min ⁻¹ ml ⁻¹ (av)	1964	2149	1964
Reactor water resistivity, ohm-cm (av)	1,183,000	1,328,000	1,183,000
Research samples	38	41	38

^aPower was maintained at 1200 kW for a LTIF run of 193 hours.

Core loading 54 (Figure 1) was converted to core loading 55 for six days during the last quarter of 1978. Core loading 55 was never used during this quarter.

Core loading 54 was converted to core loading 56 (Figure 2) on January 22, 1979, to provide excess reactivity for versatile operation. The initial operating mass of core loading 54 (5023 g ²³⁵U) had been reduced to 4881 g due to burn-up. The excess reactivity had been reduced to 3.31% $\Delta k/k$ (0.76% $\Delta k/k$ above xenon equilibrium). Core loading 56 was accomplished by replacing three MTR series partially depleted fuel elements with two new BSF series elements and one partially depleted MTR series fuel element. Also, two MTR series fuel elements were moved to more central locations in the core. Core loading 56 had an initial operating mass of 5088 g which provided an excess reactivity of 4.96% $\Delta k/k$ (2.4% $\Delta k/k$ excess reactivity above xenon equilibrium).

Core loading 56 was converted to core loading 57 (Figure 3) for LTIF run No. 21 by replacing a partially-depleted MTR series fuel element with an A1 water can.

				FC	YZP 0042 86 184	M-18-H 180	YZP 0046 88 185	A1
81	82	83	84	85	86	87	88	89
				M-12-H 172	E NRL	Solid A1	E NRL	YZP 0047 180
71	72	73	74	75	76	77	78	79
				YZP 0040 65 200	B-198-C 67	M-15-H 183	B-199-C 68	YZP 0041 69 195
61	62	63	64	65	66	67	68	69
				M-7-H 161	M-1-H 141	YZP 0044 187	M-2-H 138	YZP 003X 184
51	52	53	54	55	56	57	58	59
				YZP 0048 193	BSF-S-15 88	M-20-H 168	BSF-S-16 88	YZP 003Y 193
41	42	43	44	45	46	47	48	49
				M-13-H 159	M-10-H 145	YZP 003W 183	M-11-H 143	M-14-H 153
31	32	33	34	35	36	37	38	39
				M-16-H 153	BSF-S-13 69	M-19-H 174	BSF-S-14 68	M-6-H 158
21	22	23	24	25	26	27	28	29
				A1 Plug	M-9-H 161	M-3-H 141	M-8-H 161	A1
11	12	13	14	15	16	17	18	19

BSR CORE

54

LOADING NO.
October 31, 1978
DATE
5.16% $\Delta k/k$
EXCESS REACTIVITY
5023 g
OPERATING MASS

ROD POSITIONS AT CRITICAL (With Operating Mass)

ROD NO.	IN. WITHDRAWN	
1	8.93	11.09
2	8.93	11.09
3	8.93	11.09
4	8.93	11.09
5	23.00	11.09
6	23.00	11.09

REMARKS:

Figure 1. Core Loading BSR 54

BSR CORE

56

LOADING NO.

January 22, 1979

DATE

4.964% $\Delta k/k$

EXCESS REACTIVITY

5088

OPERATING MASS

ROD POSITIONS AT CRITICAL
(With Operating Mass)

ROD NO.	IN. WITHDRAWN	
1	9.22	11.21
2	9.22	11.21
3	9.22	11.21
4	9.22	11.21
5	23.00	11.21
6	23.00	11.21

REMARKS:

				FC	YZP 0042 181	M-18-H 178	YZP 0046 183	A1
81	82	83	84	85	86	87	88	89
				M-12-H 169	E NRL	Solid A1	E NRL	YZP 0047 177
71	72	73	74	75	76	77	78	79
				YZP 0040 194	B-198-C 64	M-15-H 177	B-199-C 66	YZP 0041 190
61	62	63	64	65	66	67	68	69
				M-7-H 156	M-13-H 154	YZP 0044 180	M-14-H 149	YZP 003X 179
51	52	53	54	55	56	57	58	59
				YZP 0048 187	BSF-S-15 E5	M-20-H 161	BSF-S-16 85	YZP 003Y 188
41	42	43	44	45	46	47	48	49
				BSF A-2 222	M-10-H 140	YZP 003W 176	M-11-H 137	BSF A-3 222
31	32	33	34	35	36	37	38	39
				M-16-H 149	BSF-S-13 67	M-19-H 168	BSF-S-14 66	M-6-H 155
21	22	23	24	25	26	27	28	29
				A1 Plug	M-9-H 157	M-17-H 167	M-8-H 159	A1
11	12	13	14	15	16	17	18	19

Figure 2. Core Loading BSR 56

				FC	YZP 0042 181	M-18-H 178	YZP 0046 183	A1
81	82	83	84	85	86	87	88	89
				M-12-H 169	E NRL	Solid A1	E NRL	YZP 0047 177
71	72	73	74	75	76	77	78	79
				YZP 0040 194	B-198-C 64	M-15-H 177	B-199-C 66	YZP 0041 190
61	62	63	64	65	66	67	68	69
				A1	M-13-H 154	YZP 0044 180	M-14-H 149	YZP 003X 179
51	52	53	54	55	56	57	58	59
				YZP 0048 187	BSF-S-15 85	M-20-H 161	BSF-S-16 85	YZP 003Y 188
41	42	43	44	45	46	47	48	49
				BSF A-2 222	M-10-H 140	YZP 003W 176	M-11-H 137	BSF A-3 222
31	32	33	34	35	36	37	38	39
				M-16-H 149	BSF-S-13 67	M-19-H 168	BSF-S-14 66	M-6-H 155
21	22	23	24	25	26	27	28	29
				A1 Plug	M-9-H 157	M-17-H 167	M-8-H 159	A1
11	12	13	14	15	16	17	18	19

BSR CORE

57

LOADING NO.

March 2, 1979

DATE

4.214% $\Delta k/k$

EXCESS REACTIVITY

4932

OPERATING MASS

ROD POSITIONS AT CRITICAL (With Operating Mass)

ROD NO.	IN. WITHDRAWN	
1	10.63	12.32
2	10.63	12.32
3	10.63	12.32
4	10.63	12.32
5	23.00	12.32
6	23.00	12.32

REMARKS:

Core for LTIF Runs.

Figure 3. Core Loading BSR 57

Shutdowns

There were no unscheduled shutdowns this quarter. The scheduled shutdowns are listed in Table 2.

Table 2. Analysis of Shutdowns

Description of Shutdown	Number	Downtime (hrs)
Scheduled		
Experimenters		
No request to operate	3	108.817
Experiment insertation, removal, or data taking	25	125.131
Reactor Operations		
Refueling	1	63.20
Training	121	24.083
Quarterly shutdown and maintenance	1	167.167
<u>Subtotal:</u>	<u>151</u>	<u>488.398</u>
Unscheduled		
Experimenter	0	
Reactor Operations	0	
<u>Subtotal:</u>	<u>0</u>	
TOTAL:	<u>151</u>	<u>488.398</u>

Maintenance and Changes

Maintenance or changes to the instrumentation and mechanical components in the complex are listed in Tables 3 and 4, respectively.

Fuel

Changes in the fuel inventory are shown in Table 5.

Experimental Facilities Assignment

Facility assignments are listed in Table 6. The tubes of the east D₂O tank are not permanently assigned; they are used by various laboratory personnel for short-term sample irradiations.

Demineralizer Performance

Table 7 gives detailed information on the condition of the primary water system for the preceding year and pertinent data on the performance of the bypass demineralizer.

Table 3. Maintenance and Changes, Instrumentation and Controls

Date	Component	Trouble or Change	Reason or Maintenance
2-15-79	Control room TV cameras	One camera was not focusing properly; one camera continually burned out transistors	New focusing motor installed and one camera replaced
2-26-79	Servo system	Solid state relay installed in system	Solid state relay performance tested during operation of servo system; relay removed after test
2-26-79 to 3-1-79	Instrumentation	Routine	Quarterly checks
2-27-79	No. 2 sigma amplifier	No. 2 sigma amplifier replaced	Not able to adjust pre-amp voltage
3-13-79	No. 4 shim-rod position indicator	Incorrect readouts	New position indicator installed
3-16-79	Count rate recorder	Intermittent readout	New slide wire assembly installed on recorder
3-29-79	Log count rate meter	Meter would not calibrate properly	Meter was replaced

Table 4. Maintenance and Changes, Mechanical System

Date	Component	Trouble or Change	Reason or Maintenance
1-31-79	No. 1 seat switch	Incorrect make-up and disengage action	Realigned the seat switch actuating mechanism
2-2-79	Primary pump packing	Excessive primary water leakage	Packing tightened
2-16-79	Skimmer pump	Leak in threads of 1/4 inch pipe entering pump casing	Pipe removed and rethreaded
2-28-79	Primary pump	Excessive primary water leakage; packing could not be tightened	Primary pump packing replaced

Table 5. Fuel and Shim Rod Status

	This Quarter	Last Quarter	Year To Date
Fuel elements depleted	0	0	0
Control-rod fuel elements depleted	0	0	0
New fuel elements placed in service	2	1	2
New control-rod fuel elements placed in service	0	0	0
New fuel elements available for use	12	13	12
New control-rod fuel elements available for use	2	2	2
Partially depleted fuel elements available for use	7 ^a	6	7
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

^aOne fuel element was classified as partially depleted during the last quarter of 1978 due to PCA usage. This same element was reclassified as a new element in the first quarter of 1979 due to no burn-up.

Table 6. Facilities Assignment

Facility	Location	Division or Sponsor
Liquid helium cryostat	Southwest corner of pool using west D ₂ O tank	Solid State
Heavy Section Steel Experiment	North and west face of core	Metals and Ceramics
Fast-neutron tube	Core position 15	Solid State
Water-cooled tube	Core position 15	Solid State
Steel Specimen Experiment	Core positions 76 & 78	NRL
Dry thermal-neutron tubes ^a (D-3-1 and -2)	East D ₂ O Tank	Operations
Wet thermal-neutron tubes ^a (D-4-1 and -2, D-6-1, -2, -3, -4, and -5)	East D ₂ O Tank	Operations
Liquid nitrogen cryostat ^b	On instrument bridge	Solid State
Ambient temperature facility ^b	North face of core	Solid State

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

^bOn standby.

Table 7. Demineralizer Performance Data

Run No.	Initiation Date	Termination Date	Throughput (gallons)	Gross Gamma (Counts min ⁻¹ ml ⁻¹)		pH		Specific Resistance (ohm-cm)	
				In	Out	In	Out	In	Out
39	1-9-74	3-13-74	1,320,000	1,931	101	6.2	6.0	666,000	908,000
40 ^a	3-15-74	7-30-74	1,400,000	9	0	6.2	6.0	364,000	1,132,000
41	8-16-74	12-4-74	1,500,000	2,316	385	5.8	5.8	630,000	895,000
42 ^b	12-17-74	4-15-75	3,850,000	2,116	119	5.8	6.0	1,018,000	1,611,000
43	4-16-75	7-7-75	2,550,000	2,712	174	5.7	5.8	937,000	1,823,000
44	7-10-75	11-5-75	2,750,000	2,528	144	5.7	5.9	968,000	1,428,000
45	11-5-75	4-29-76	2,325,000	2,146	154	5.3	5.5	902,000	1,593,000
46	4-30-76	9-2-76	2,800,000	1,430	124	5.4	5.6	1,085,000	1,808,000
47	9-2-76	1-27-77	3,450,000	1,700	126	5.4	5.6	975,000	1,548,000
48	2-1-77	4-22-77	2,000,000	2,026	146	5.6	5.7	1,052,000	1,971,000
49	4-25-77	9-21-77	2,700,000	2,005	140	5.6	5.8	1,054,000	1,815,000
50	9-22-77	3-6-78	2,950,000	1,585	134	5.5	5.7	1,191,000	1,953,000
51	3-8-78	8-2-78	2,350,000	2,112	122	5.6	5.8	1,030,000	1,634,000
52 ^b	8-15-78	9-18-78	1,950,000	2,077	157	5.7	5.9	1,363,000	2,209,000
53	9-19-78	12-19-78	2,580,000	2,194	163	5.6	5.8	1,194,000	3,207,000
54	12-19-78	In Service	2,970,000	1,964	134	5.6	5.9	1,183,000	1,910,000

^aThe reactor was shut down during the entire run.

^bNew resin in the demineralizer column.

Special Tests

Efficiency Tests

Methyl-iodine tests were performed on the cell ventilation filters by the Quality Assurance and Inspection Department. The results are given in Table 8.

Table 8. Test Results

Date	Unit	Type Test	Results
1-9-79	North	Methyl-iodine	66.66
1-9-79	Center	Methyl-iodine	38.20
1-9-79	South	Methyl-iodine	43.37

Operational Activities

The operational activities for the quarter are shown in Table 9.

Table 9. Operational Activities

Date	Remarks
1-3-79	The skimmer filters were changed.
1-10-79	The primary flow was increased from 1100 gpm to 1200 gpm. This was done to increase the primary flow Δp across the core.
1-16-79	The cooling tower basin screens were cleaned.
1-29-79	Measurement of half-life experiment for TVA training Group I.
1-31-79	Xenon override experiment for TVA training Groups I and II.
2-2-79	Measurement of half-life experiment for TVA training Group II.
2-5-79	NRL experiments 6A and 6B were removed and replaced by experiments 8A and 8B.
2-20-79	NRL capsules 6A and 6B were loaded into carriers and shipped to NRL.
2-23-79	Emergency Electrical Power Quarterly Test conducted
3-1-79	Containment Quarterly Functional checks were completed.
3-5-79	Measurement of half-life experiment for TVA training Group II.
3-6-79	Measurement of half-life experiment for TVA training Group I.
3-7-79	Xenon override experiment for TVA training Groups I and II.
3-8-79	Converted core loading 56 to core loading 57 for LTIF.
3-10-79	Converted core loading 57 to core loading 56 for NRL.
3-13-79	NRL capsules 8A and 8B removed from the core, CP-78. Dummy capsule inserted into CP-78.
3-13-79	Converted core loading 56 to core loading 57 for LTIF.
3-13-79	Converted core loading 57 to core loading 56 for NRL.
3-15-79	Xenon override experiment for Oklahoma University.

Table 9. (Cont'd)

Date	Remarks
3-19-79	NRL capsules 7A and 7B were removed from the core (CP-76). Dummy capsule inserted into CP-76.
3-19-79	Converted core loading 56 to core loading 57 for LTIF.
3-29-79 to 3-30-79	Xenon override experiment for Mississippi State University.

Summary of Surveillance Tests at the BSR

Table 10 is a tabulation of the completion dates of the surveillance tests required by the Technical Specifications. This table contains all the surveillance tests scheduled for frequencies of one month or longer. Other surveillance requirements which will not be reported are satisfied by routine completion of daily and weekly check sheets, startup check lists, hourly data sheets, the operating log book, and miscellaneous quality assurance tests.

Table 10. Summary of Surveillance Tests at the BSR

Test	Most Recent Test	Previous Test
Biennial Tests		
Inspection of the shim-safety rods	4-26-78	4-19-77
Annual Tests		
Calibration of shim-safety rods	11-20-78	5-4-78
Core ΔT channel calibration	3-1-79	11-13-78
Primary coolant flow channel calibration	8-16-78	7-20-77
Pool water level channel calibration	11-16-78	5-1-78
Maximum rate of reactivity addition by the shim-safety rods	2-28-79	11-15-78
Reactivity assigned to the servo-control system	2-27-79	8-17-78
Subcriticality with each shim-safety rod at its upper limit while all other shim-safety rods are fully inserted	2-28-79	11-15-78
Semiannual		
Cell ventilation filter efficiency		
A. Methy Iodine	1-9-79	6-22-78
B. Elemental Iodine	12-7-78	5-16-78
C. Dioctyl Phthalate	12-13-78	6-5-78
Radiation monitoring equipment calibration	2-1-79	10-4-78
Stack radiation monitor calibration ^a	3-1-79	2-15-79
Quarterly		
Safety channel No. 1 calibration	2-27-79	11-14-78
Safety channel No. 2 calibration	2-27-79	11-14-78

^aThis test is performed biweekly.

Table 10. (Cont'd)

Test	Most Recent Test	Previous Test
Safety channel No. 3 calibration	2-27-79	11-14-78
Log-N channel calibration	2-27-79	11-14-78
Fission chamber channel calibration	2-27-79	11-13-78
Flapper valve position channel functional test	3-1-79	11-15-78
Measurement of release time and flight time for the shim-safety rods	2-28-79	11-15-78
Containment closure system functional test	3-1-79	11-22-78
In-leakage during containment mode	3-1-79	11-22-78

POOL CRITICAL ASSEMBLY

Operations

The PCA was used 182.8 hours as an experimental facility for the benefit of nuclear engineering students from the University of Tennessee, University of Oklahoma, Louisiana State University, and Mississippi State University, and TVA Sequoyah and Watts Bar nuclear power reactor trainees. The operational activities are listed in Table 11 and maintenance is listed in Table 12.

Table 11. Usage of Pool Critical Facility

Date	Operational Activity	Hours Used
1-24-79	Approach-To-Critical experiment for UT Group I. Core 240 established.	9.8
1-25-79	Approach-To-Critical experiment for UT Group II. Core 241 established.	8.6
1-26-79	Approach-To-Critical experiment for UT Group III. Core 242 established.	8.9
1-29-79	Approach-To-Critical experiment for TVA Group I. Core 243 established.	10.1
1-30-79	Approach-To-Critical experiment for TVA Group II. Cores 244 and 77 established.	10.0
2-1-79	Rod Calibration and Importance Function experiments for TVA Group I.	7.5
2-2-79	Rod Calibration and Importance Function experiments for TVA Group II.	6.1
2-7-79	Control Rod Calibration experiment for UT Group I.	3.6
2-8-79	Control Rod Calibration experiment for UT Group II.	3.6
2-9-79	Control Rod Calibration experiment for UT Group III.	3.5
2-14-79	Importance Function experiment for UT Group I.	3.6
2-15-79	Importance Function experiment for UT Group II.	2.8
2-16-79	Importance Function experiment for UT Group III.	2.0
2-26-79	Approach-To-Critical for LSU. Cores 245 and 77 established.	11.1

Table 11. (Cont'd)

Date	Operational Activity	Hours Used
2-28-79	Regulating Rod calibration and Importance Function experiments for LSU.	6.0
3-5-79	Approach-To-Critical experiment for TVA Group I. Core 246 established.	9.9
3-6-79	Approach-To-Critical experiment for TVA Group II. Cores 247 and 77 established.	8.0
3-8-79	Rod Calibration and Importance Function experiments for TVA Group II.	8.3
3-9-79	Rod Calibration and Importance Function experiments for TVA Group I.	5.7
3-12-79	Approach-To-Critical experiment for OU. Cores 248 and 77 established.	9.8
3-14-79	Rod Calibration and Importance Function experiments for OU.	7.5
3-26-79	Approach-To-Critical experiments for MSU. Core 249 established.	10.0
3-27-79	Approach-To-Critical experiments for MSU. Cores 250 and 77 established.	10.1
3-28-79	Rod Calibration and Importance Function experiments for MSU.	8.1
3-29-79	Rod Calibration and Importance Function experiments for MSU.	8.2

Table 12. PCA Maintenance

Date	Trouble or Condition	Action
1-3-79	Loose connection on micro-microammeter range switch	Switch was repaired
1-3-79	No. 3 magnet amplifier power cable to amplifier making a loose connection	Cable was repaired
1-3-79	Improper reference voltage in the primary Count Rate Recorder	Reference voltage unit replaced
1-4-79	No. 2 sigma amplifier responding improperly	Amplifier replaced
2-26-79	Wire supplying power to the primary fission chamber was found to be broken	Wire repaired and connector replaced
3-7-79	Relay (RT-11) in Trouble Monitor sticking	Relay replaced

Summary of Surveillance Tests at the PCA

Table 13 is a tabulation of the completion dates of the surveillance tests required by the Technical Specifications. This table contains all the surveillance tests scheduled for frequencies of one month or longer. Other surveillance requirements which are not reported are satisfied by routine completion of daily and weekly check sheets, startup check lists, hourly data sheets, the operating log book, and miscellaneous quality assurance tests.

Table 13. Summary of Surveillance Tests at the PCA

Test	Most Recent Test	Previous Test
Annual		
Reactivity assigned to the servo-control system	3-28-79	6-26-78
Subcriticality with each shim-safety rod at its upper limit and all other shim-safety rods fully inserted	1-4-79	8-11-78
Semiannual		
Monitron calibration ^a	3-26-79	3-12-79
Radiation monitoring equipment calibration	2-1-79	10-4-78
Quarterly		
Safety channel No. 1 calibration	1-4-79	8-9-79
Safety channel No. 2 calibration	1-4-79	8-9-79
Safety channel No. 3 calibration	1-4-79	8-9-79
Log-N channel calibration	1-3-79	8-9-79
Fission chamber channel calibration	1-3-79	8-8-79
Measurement of release time and flight time for the shim-safety rods	1-4-79	8-11-79

^a This test is performed the first operating day of each week.

THIS PAGE
WAS INTENTIONALLY
LEFT BLANK

INTERNAL DISTRIBUTION

ORNL/TM-6911

1. G. H. Burger	15. E. D. Lance
2. C. D. Cagle	16. R. V. McCord
3. W. R. Casto	17. H. Postma
4. J. W. Cleland	18. M. E. Ramsey
5. G. H. Coleman	19-20. J. R. Thomas
6. R. R. Coltman, Jr.	21. K. W. West
7. J. A. Conlin	22. M. K. Wilkinson
8. J. A. Cox	23. F. W. Young
9. T. P. Hamrick	24-25. Laboratory Records Department
10. R. W. Hobbs	26. Laboratory Records, ORNL R. C.
11. C. C. Hopkins	27-28. Central Research Library
12. K. E. Howard	29. ORNL Patent Office
13. S. S. Hurt, III	30. Document Reference Section
14. E. B. Johnson	

EXTERNAL DISTRIBUTION

- 31. Safety and Environmental Control Division, DOE-ORO
- 32. Assistant Manager for Energy Research and Development, DOE-ORO
- 33-59. Technical Information Center, DOE