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OAK RIDGE NATIONAL LABORATORY

MARTIN MARIETTA

Oak Ridge Research Reactor Quarterly Report April, May, and June 1986

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Operations Division
Reactor Operations Section

OAK RIDGE RESEARCH REACTOR QUARTERLY REPORT
APRIL, MAY, AND JUNE 1986

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SPONSOR: J. H. Swanks
Operations Division

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CONTENTS

LIST OF FIGURES

LIST OF TABLES

OAK RIDGE RESEARCH REACTOR QUARTERLY REPORT
APRIL, MAY, AND JUNE 1986

SUMMARY

The ORR operated at an average power level of 29.7 MW for 58.5% of the time during April, May, and June of 1986.

The reactor was shut down on seven occasions, four of which were scheduled. Reactor downtime needed for refueling and checks was normal. The reactor remained available for operation 66.0% of the time.

Maintenance activities, both mechanical and instrument, were essentially routine in nature with the exception of three Instrumentation and Controls Change memorandums.

POWER HISTORY

The power history for the quarter is displayed in Figs. 1 through 3.

OPERATIONS

The basic operating data presented in Table 1 indicate that the ORR operation for the quarter was normal.

Details relative to cycles of operation during the quarter are given in Table 2.

ORNL/DWG-86-14191

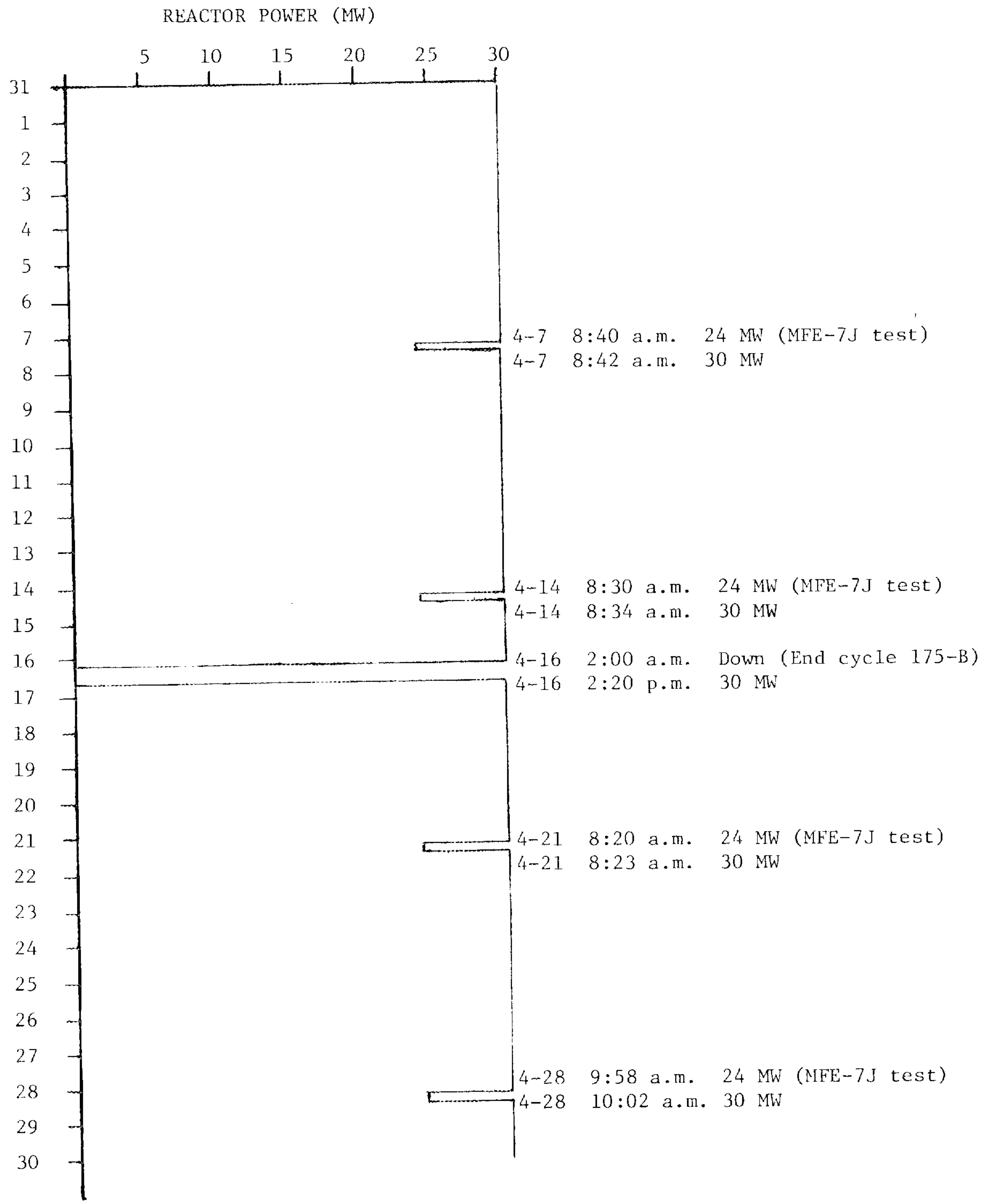

Fig. 1. Reactor power history - April 1986.

ORNL/DWG-86-14192

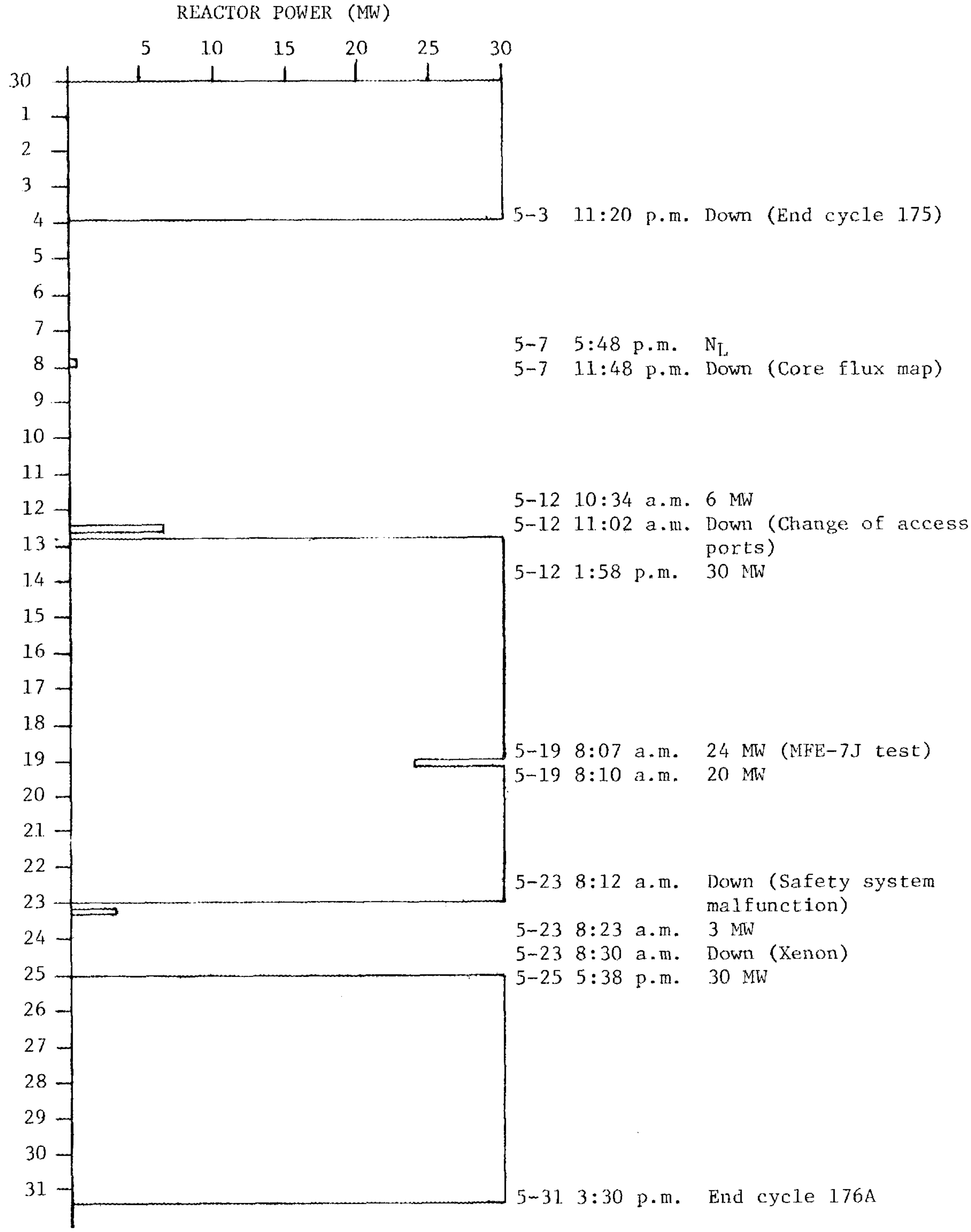

Fig. 2. Reactor power history - May 1986.

ORNL/DWG-86-14193

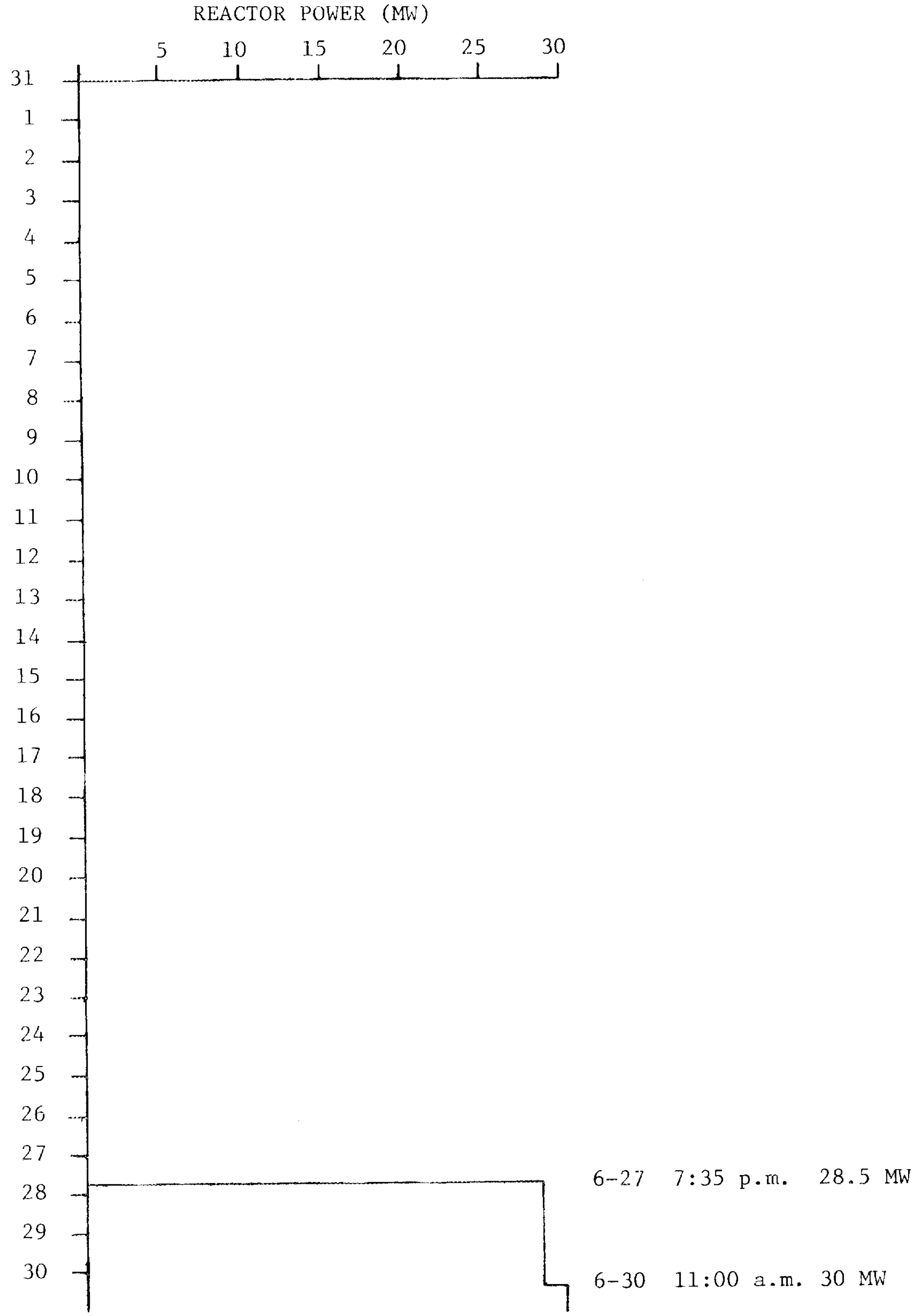

Fig. 3. Reactor power history - June 1986.

Table 1. Basic operating data
(April-June 1986)

	This quarter		Last quarter	Jan.-June 1986		Jan.-June 1985
Total energy, MWd	1,582.3		2,034.1	3,161.4		4,285.3
Average power, MW	29.7		29.8	29.7		29.9
Time operating, %	58.5		75.9	67.2		79.7
Availability, %	66.0		96.7	81.3		82.9
Reactor water radio-activity, cpm/ml (av)	43,200		38,400	40,800		29,650
Pool water radioactivity, cpm/ml (av)	1,390		1,280	1,335		860
Reactor water resistivity, ohm-cm (av)	1,359,000		1,249,000	1,304,000		1,619,500
Pool water resistivity, ohm-cm (av)	917,000		933,000	925,000		1,092,000
	HEU	LEU	HEU	HEU	LEU	HEU
Fuel elements depleted	13	0	14	27	0	35
Average burnup of fuel elements depleted, %	48.9	NA	48.5	48.7	NA	45.5
Shim-safety rods depleted	2	0	2	4	0	5
Average burnup of shim-safety rods depleted, %	74.9	NA	77.5	76.2	NA	76.2
Radioisotope samples	0		0	0		0
Research samples	27		37	64		7

Table 2. Cycles of operation

Cycle No.	Date begun	Date ended	Accumulated energy (MWd)
175	March 7, 1986	May 3, 1986	1,685.3[a]
176	May 12, 1986	In progress	605.8

[a]MWd this quarter

FUEL USAGE AND INVENTORY

HIGH-ENRICHED URANIUM (HEU)

There were no new HEU fuel elements or HEU shim-safety rods placed in service this quarter.

Forty-six spent HEU fuel elements and five HEU shim-safety rod fuel sections were shipped for chemical recovery.

LOW-ENRICHED URANIUM (LEU)

Eight new LEU fuel elements were placed in service this quarter. There were no LEU shim-safety rods placed in service this quarter.

Other details of fuel usage and inventory may be found in Table 3.

SHUTDOWNS AND POWER REDUCTIONS

Reactor downtime (power level $<N_L$) totaled approximately 906 hours. A summary of the shutdowns is given in Table 4, and details of each scheduled shutdown are contained in Table 5. Table 6 describes unscheduled shutdowns, while Table 7 describes power reductions which did not result in shutdowns.

Table 3. Fuel status

	This quarter	Last quarter	Jan.-June 1986	Jan.-June 1985
HEU				
Depleted fuel elements transferred for chemical recovery	46	0	46	27
Average percent burnup of fuel elements transferred	46.8	—	46.8	44
New elements start of quarter	139	141	—	—
New elements received	0	0	0	32
New elements placed in service	0	2	2	26
New elements end of quarter	139	139	—	—
Special or test elements	21	21	21	21
Depleted shim-safety rod elements transferred for chemical recovery	5	0	5	4
Average percent burnup of shim-safety rods transferred	81.8	0	81.8	82.2
New shim-safety rod elements start of quarter	8	10	—	—
New shim-safety rod elements received	0	0	0	0
New shim-safety rod elements placed in service	0	2	2	4
New shim-safety rod elements end of quarter	8	8	8	15

Table 3. (continued)

	This quarter	Last quarter	Jan.-June 1986	Jan.-June 1985
<u>LEU</u>				
Depleted fuel elements transferred for chemical recovery	0	0	0	0
Average percent burnup of fuel elements transferred	--	--	--	--
New elements start of quarter	54	20	--	--
New elements received	0	61	61	0
New elements placed in service	8	27	35	0
New elements end of quarter	46	54	--	--
Special or test elements	0	0	0	0
Depleted shim-safety rod elements transferred for chemical recovery	0	0	0	0
Average percent burnup of shim-safety rods transferred	--	--	--	--
New shim-safety rod elements start of quarter	8	0	0	0
New shim-safety rod elements received	0	12	12	0
New shim-safety rod elements placed in service	0	4	4	0
New shim-safety rod elements end of quarter	8	8	8	--

Table 4. Analysis of shutdowns

Description of shutdown	Number	Downtime (h)
Scheduled		
Regular, end of cycle	1	90.467
Special, refueling and experiment	2	662.550
Special, flux run	1	106.767
Subtotal:	4	859.784
Unscheduled		
Equipment failure, experiment	1	1.900
Instrument failure, reactor	1	0.183
Xenon decay	1	43.550
Subtotal:	3	45.633
TOTAL:	7	905.417

Table 5. Scheduled shutdowns, details

Date	Duration (h)	End cycle	Remarks
4-16-86	11.433	175B	The reactor was refueled, and iridium stringers were worked
5-3-86	90.467	175C	The shutdown activities included: (1) refueling, (2) cleaning of the primary and secondary side of pool heat exchanger, and (3) upgrading of servo system (end of cycle 175)
5-7-86	106.767	176AX1	The shutdown activities included: (1) a core map flux run and (2) refueling. Also, a scheduled electrical power outage occurred over a 48-hour period of the shutdown
5-31-86	651.117	176A	The shutdown activities included: (1) refueling, (2) repair of the pool secondary water line, and (3) fabrication and installation of two syphon-break standpipe braces

Table 6. Unscheduled shutdowns, details

Date	Duration (h)	End cycle	Remarks
5-12-86	1.900	--	The reactor was manually scrammed to change the viewing ports on the reactor tank top
5-23-86	0.183	--	All shim-safety rods were dropped during on-line testing of the reactor protection system channel "A"
5-23-86	43.550	--	The reactor was manually scrammed because of the increased xenon concentration while recovering from the previous shutdown (all rods at UL)

Table 7. Reductions in power not resulting in shutdowns

Date	Source of signal	Type of signal	Lowest power (MW)	Comments
4-7-86	Manual	Demand lowered	24	The power was lowered for continuity checks on MFE-7J
4-14-86	Manual	Demand lowered	24	The power was lowered for continuity checks on MFE-7J
4-21-86	Manual	Demand lowered	24	The power was lowered for continuity checks on MFE-7J
4-28-86	Manual	Demand lowered	24	The power was lowered for continuity checks on MFE-7J
5-19-86	Manual	Demand lowered	24	The power was lowered for continuity checks on MFE-7J

INSTRUMENTATION AND REACTOR CONTROLS

The performance of the instrumentation for the facility was satisfactory, and maintenance required is indicated in Table 8. Three instrumentation and controls design change memorandums were completed this quarter as shown in Table 9.

PROCESS SYSTEMS

The performance of the process systems was satisfactory, and maintenance required is indicated in Table 10.

Table 8. Maintenance and changes, instrumentation and controls

Date	Component	Trouble or change	Reason or maintenance
4-1-86	No.1 Log N channel	Inoperative recorder	The No. 1 Log N period recorder balance motor and slide wire were replaced
4-14-86	Main pump bearing high temperature channel	Inoperative recorder	The main pump bearing high temperature recorder slide wire was replaced
4-15-86	Control room monitron	Spurious recorder output	The monitron was retubed
4-15-86	First-level south continuous air monitor	Spurious recorder output	The air monitor was retubed
4-15-86	First-level east monitron	Spurious recorder output	The monitron was retubed
4-22-86	Fire alarm box	Relocation of fire alarm box	The first-level fire alarm box was relocated to a more accessable location
5-5-86	Servo channel	System upgrade	The servo system design was modified
5-9-86	No. 2 log N channel	Recorder spiking	The recorder amplifier was replaced
5-30-86	Reactor tower pH channel	Erratic operation	The pH recorder amplifier was replaced
6-6-86	Rod-drop timers	System upgrade	Modifications to the amplifier and selector switch were made

Table 8. (Continued)

Date	Component	Trouble or change	Reason or maintenance
6-11-86	No. 2 count rate channel	Broken slide wire	The slide wire on the count rate recorder was replaced
6-16-86	Seismic channel	System upgrade	The seismic channel was improved to provide protection through the safety system
6-28-86	Servo channel	Erratic operation	The amplifier zero offset and tachometer were adjusted

Table 9. Instrumentation and controls design change memorandums

Change memo number	Title of change	Reason for change	General description of change
ORR-132 Add. 1	ORR servo system instrumentation addendum 1	Improvements to the operation of the servo instrumentation	The modifications to the servo system included the following: (1) changed the method of operator demand control; (2) updated the servo tachnometer feedback amplifier; (3) removed the demand oscillation feature; (4) added a new feature for selection of flux calibration or calibration gain equal 1.0; and (5) added switches to permit sensitivity adjustments to the servo flux signal conditioner (1) The previous method of controlling demand required an operator to hold an SB switch in the raise or lower position until the desired demand was reached, then the operator released the switch. The new method uses a thumbwheel and pushbuttons. The operator sets the desired demand on the thumbwheel, then depresses the "Enter" pushbutton at which time the demand begins changing. The demand stops when it reaches the set point or when an operator depresses the "Stop" puhsbutton. The permissives for increasing demand were not changed

Table 9. (Continued)

Change memo number	Title of change	Reason for change	General description of change
ORR-132 Add. 1 (cont'd)			(2) A temporary servo tachometer feedback amplifier was replaced with a permanent tachometer feedback amplifier
			(3) The demand oscillation feature previously installed in the ORR servo was removed
			(4) A switch to the servo flux signal conditioner power supply module was added which permits the selection of flux calibration (based on heat power) or to set the flux calibration gain factor equal to 1.0
			(5) Pushbuttons to increase or decrease the servo flux signal conditioner sensitivity were installed. The different modes of operation and the changes in core configuration made it difficult to preset an optimum deadband. For this reason, pushbuttons were installed in amplifier cabinet C for deadband adjustment. The deadband adjustment has limits of 0.02% to 0.5%. The deadband changes 0.05% each time one of the deadband adjustment buttons is pushed

Table 9. (Continued)

Change memo number	Title of change	Reason for change	General description of change
ORR-136	Seismic channel annunciation	Provide a control room alarm from a strong motion accelerograph	An annunciator alarm (AP-54) was connected on the control room vertical board to a relay contact from a 12 V dc relay which is powered from a strong motion accelerograph. The strong motion accelerograph was mounted in the ORR basement adjacent to the south facility instrument rack
ORR-139	Reactor status remote monitor	To provide signals to the Laboratory Emergency Response Center	A signal from a spare normally open contact on the console key switch was provided to confirm "Reactor-On" to a telephone-line pair terminated in the northwest corner of the control room The power-level signal is generated from the Log N amplifiers. A 0- to 10-mV signal developed in the Log N amplifier is converted to a 4- to 20-mA current loop via an isolated voltage-to-current amplifier and transmitted through a telephone-line pair to the Laboratory Emergency Response Center

Table 10. Process systems, maintenance and changes

Date	Component	Remarks
		Reactor primary cooling system
6-19-86 thru 6-27-86	Syphon-break system	Braces were fabricated and installed on the syphon-break standpipes
		Pool primary cooling system
5-6-86	Pool heat exchanger	The primary and secondary sides of the tube bundle were cleaned
5-20-86	Pool demineralizer	The strainer on the recycle pump was changed
		Pool secondary cooling system
6-9-86 thru 6-20-86	Return water line	A new water line was installed at the secondary tower
		Miscellaneous
4-21-86	Air conditioning tower	Fan motor bearings were replaced
5-9-86	Hot cell crane	A hose on the south hot cell crane was replaced

MECHANICAL COMPONENTS

The performance of the mechanical components was satisfactory.

EXPERIMENT FACILITIES, GASEOUS-WASTE FILTERS, AND CORE CHANGES

Experiment facility usage is given in Table 11. Table 12 summarizes the results of efficiency tests of the various gaseous-waste filters. The core configurations used during the quarter are shown in Figs. 4 through 10.

SPECIAL TESTS CONDUCTED FOR THE LEU WHOLE-CORE DEMONSTRATION
(R. W. Hobbs)

Core physics measurements were made this quarter and include:

1. Configuration 176-AX1 (5-5-86 to 5-9-86)

   a. A core flux mapping by co-activation

   b. Shim-safety rod calibrations

   c. Reactivity worth of HSST experiment

   d. B_{eff}/ℓ measurements

2. Configuration 176-BX1 (all HEU)

   Measurements of the neutron level as a function of time after the drop of the No. 6 rod from a power level of 0.01 N_L were made by connecting the No. 1 fission chamber output to a 1024 channel multi-scaling card attached to a personal computer. The fission chamber was inserted near the core and approximately 40,000 cps could be obtained at 0.01 N_L before the chamber saturated. Runs with channel widths of 0.1, 0.2, and 0.3 s were made.

3. Configuration 176B

   a. B_{eff}/ℓ measurements

   b. Shim-safety rod calibrations

4. Configuration 176-BX2 (all HEU)

   B_{eff}/ℓ measurements

Table 11. Experiment facility usage

Facility	Access flange	Date installed	Date removed	Description of experiment	Division or sponsor
C-3	V-10	6-28-85		Material test, fusion program (MFE-7J)	Engineering Technology
C-7	V-2	6-28-85		Material test, fusion program (MFE-6J)	Engineering Technology
E-3	None	6-28-85		Aluminum-base, dispersion-type fuel plates (HFED)	Engineering Technology
Poolside[a] facility	None	12-13-85	5-2-86	Material test (HSST-6, Nos. 1 and 2)	Engineering Technology
HB-1	None	9-78		Neutron spectrometer	Solid State Physics
HB-2	None	11-1-58		Neutron diffraction experiments	Solid State Physics
HB-4	None	9-78		Neutron spectrometer	Solid State Physics
HB-6	None	4-76		Neutron small-angle scattering facility	Solid State Physics
HN-3	None	11-59		Activation analysis	Analytical Chemistry
HN-4	None	12-15-63		Neutron diffraction experiment	Instrumentation and Controls
South facility	None	12-16-63		Cold-finger plug[b]	Operations

[a]The LWR metallurgical pressure-vessel benchmark facility was installed on 4-21-80. The Heavy Section Steel Technology (HSST) Program uses the facility for irradiations.
[b]The facility is on standby.

Table 12. Status of filters, gaseous waste systems

Type filter	Bank designation	Date last changed	Date last tested	Type test	Retention efficiency (%)
Cell-ventilation system					
CWS	Overall[a]	North, 4-16-80 South, 8-14-85	3-7-86	DOP	99.993
Charcoal	Both banks	North, 11-9-83 South, 8-14-85	5-31-86	Elemental iodine	99.900
Basement hood exhaust					
CWS	South	3-11-80	3-7-86	DOP	99.995
CWS	North	3-11-80	3-7-86	DOP	99.993
Normal off-gas					
CWS	West	8-14-85	3-7-86	DOP	99.980
Charcoal	West	8-14-85	5-20-86	Elemental iodine	99.980
CWS	East[b]	5-1-85	3-7-86	DOP	99.986
Charcoal	East[b]	5-1-85	5-15-86	Elemental iodine	99.713[c]
Pressurizable off-gas[d]					

[a]The CWS filters in the cell-ventilation system were checked in series.
[b]Not in service.
[c]Failed test, to be replaced.
[d]The POG system is on standby; therefore, all filter tests have been discontinued.

ORNL/DWG-86-14112

Lattice loading

For fuel cycles 175-B

	1	2	3	4	5	6	7	8	9
A	Be	F	F	F	F	F	F	F	Be
B	Be	Be	F	SR	F	SR	F	Be	Be
C	Be	F	MFE 7J E	F	F	F	MFE 6J E	F	Be
D	Eu	F	F	SR	F	SR	F	F	Eu
E	Be	F	HFED E	F	Ir	F	Ir	F	Be
F	Eu	Be	F	SR	F	SR	F	Be	Eu
G	Be	Be	Be	Be	Be	Be	Be	Be	Be

Lattice component	Number
Fuel (F)	27
Shim-safety rod (SR)	6
Beryllium (Be)	21
Experiment (E)	3
Iridium (Ir)	2
Europium (Eu)	4

Fig. 4. Lattice configuration - March 26-April 16, 1986.

ORNL/DWG-85-14113

Lattice loading

For fuel cycles 175-C

	1	2	3	4	5	6	7	8	9
A	Be	F	F	F	F	F	F	F	Be
B	Be	Be	F	SR	F	SR	F	Be	Be
C	Be	F	MFE 7J E	F	F	F	MFE 6J E	F	Be
D	Eu	F	F	SR	F	SR	F	F	Eu
E	Be	F	HFED E	F	Ir	F	Al	F	Be
F	Eu	Be	F	SR	F	SR	F	Be	Eu
G	Be	Be	Be	Be	Be	Be	Be	Be	Be

Lattice component	Number
Fuel (F)	27
Shim-safety rod (SR)	6
Beryllium (Be)	21
Experiment (E)	3
Iridium (Ir)	1
Aluminum (Al)	1
Europium (Eu)	4

Fig. 5. Lattice configuration - April 16-May 3, 1986.

ORNL/DWG-85-14114

Lattice loading

For fuel cycles 176-AX1

	1	2	3	4	5	6	7	8	9
A	Be	F	F	F	F	F	F	F	Be
B	Eu	Be	F	SR	F	SR	F	Be	Eu
C	Be	F	MFE 7J E	F	F	F	MFE 6J E	F	Be
D	Eu	F	F	SR	F	SR	F	F	Eu
E	Be	F	HFED E	F	Ir	F	Al	F	Be
F	Eu	Be	F	SR	F	SR	F	Be	Eu
G	Be	Be	Be	Be	Be	Be	Be	Be	Be

Lattice component	Number
Fuel (F)	27
Shim-safety rod (SR)	6
Beryllium (Be)	19
Experiment (E)	3
Iridium (Ir)	1
Aluminum (Al)	1
Europium (Eu)	6

Fig. 6. Lattice configuration - May 4-9, 1986.

ORNL/DWG-85-14115

Lattice loading

For fuel cycles 176-A

	1	2	3	4	5	6	7	8	9
A	Be	F	F	F	F	F	F	F	Be
B	Be	Be	F	SR	F	SR	F	Be	Be
C	Be	F	MFE 7J E	F	F	F	MFE 6J E	F	Be
D	Be	F	F	SR	F	SR	F	F	Be
E	Be	F	HFED E	F	Ir	F	Al	F	Be
F	Eu	Be	F	SR	F	SR	F	Be	Eu
G	Be	Be	Be	Be	Be	Be	Be	Be	Be

Lattice component	Number
Fuel (F)	27
Shim-safety rod (SR)	6
Beryllium (Be)	23
Experiment (E)	3
Iridium (Ir)	1
Aluminum (Al)	1
Europium (Eu)	2

Fig. 7. Lattice configuration - May 9-31, 1986.

ORNL/DWG-85-14116

Lattice loading

For fuel cycles 176-B

	1	2	3	4	5	6	7	8	9
A	Be	F	F	F	F	F	F	F	Be
B	Be	Be	F	SR	F	SR	F	Be	Be
C	Be	F	MFE 7J E	F	F	F	MFE 6J E	F	Be
D	Be	F	F	SR	F	SR	F	F	Be
E	Be	F	HFED E	F	Ir	F	Al	F	Be
F	Eu	Be	F	SR	F	SR	F	Be	Eu
G	Be	Be	Be	Be	Be	Be	Be	Be	Be

Lattice component	Number
Fuel (F)	27
Shim-safety rod (SR)	6
Beryllium (Be)	23
Experiment (E)	3
Iridium (Ir)	1
Aluminum (Al)	1
Europium (Eu)	2

Fig. 8. Lattice configuration - May 31-June 6, 1986.

ORNL/DWG-85-14117

Lattice loading

For fuel cycles 176-BX, 176-BX2

	1	2	3	4	5	6	7	8	9
A	Be	F	F	F	F	F	F	F	Be
B	Be	Be	F	SR	F	SR	F	Be	Be
C	Be	F	MFE 7J E	F	F	F	MFE 6J E2	F	Be
D	*	F	F	SR	F	SR	F	F	*
E	Be	F	HFED E	F	Ir	F	Al	F	Be
F	Eu	Be	F	SR	F	SR	F	Be	Eu
G	Be	Be	Be	Be	Be	Be	Be	Be	Be

*Fission chamber

Lattice component	Number
Fuel (F)	27
Shim-safety rod (SR)	6
Beryllium (Be)	21
Experiment (E)	3
Iridium (Ir)	1
Aluminum (Al)	1
Europium (Eu)	2
Dry tube core pieces (*)	2

Fig. 9. Lattice configuration - June 6-18, 19-30, 1986.

ORNL/DWG-85-14118

Lattice loading

For fuel cycles 176-A (with HFED removed)

	1	2	3	4	5	6	7	8	9
A	Be	F	F	F	F	F	F	F	Be
B	Be	Be	F	SR	F	SR	F	Be	Be
C	Be	F	MFE 7J E	F	F	F	MFE 6J E	F	Be
D	Be	F	F	SR	F	SR	F	F	Be
E	Be	F	* E	F	Ir	F	Al	F	Be
F	Eu	Be	F	SR	F	SR	F	Be	Eu
G	Be	Be	Be	Be	Be	Be	Be	Be	Be

*Gamma heat measuring device

Lattice component	Number
Fuel (F)	27
Shim-safety rod (SR)	6
Beryllium (Be)	23
Experiment (E)	3**
Iridium (Ir)	1
Aluminum (Al)	1
Europium (Eu)	2

**Includes gamma heat measuring device in core position E-3 (in place of HFED).

Fig. 10. Lattice configuration - June 18-19, 1986.

IN-SERVICE INSPECTION

INTERNAL AND EXTERNAL INSPECTION OF ORR POOL HEAT EXCHANGER

The internal and external surfaces of the vessel shell and heads showed slight evidence of corrosion. The accessible surfaces of the tube bundle, including the tube sheet, tube ends, tube external surfaces, and baffle plates were visually inspected.

The pitting and corrosion on the baffle plates required no upgrading at this time. The heat exchanger was acceptable for further service.

SUMMARY OF SURVEILLANCE TESTS

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 quarter or longer. Other surveillance requirements which are not reported are satisfied by routine completion of daily and weekly check sheets, start-up checklists, hourly data sheets, the operating log book, and miscellaneous quality assurance tests.

Table 13. Summary of surveillance tests

Test	Most recent	Previous
Biennially		
Primary cooling flow channel calibration		
Direct flow channel	8-8-85	8-15-84
Core ΔP channel	8-14-85	8-15-84
^{16}N channel calibration	5-8-86	2-25-86
North-facility flow channel calibration	5-8-86	4-25-84
South-facility flow channel calibration	5-8-86	4-25-84
Normal off-gas vacuum monitor calibration	8-12-85	7-26-84
Pressurizable off-gas vacuum monitor calibration	Out of service	
Building ventilation flow monitor calibration	11-22-85	10-25-84
The dc pony motor battery bank		
Load-test No. 1 bank	11-3-85	8-8-85
Load-test No. 2 bank	5-4-86	11-3-85
Load-test No. 3 bank	2-20-86	11-3-85
Annually		
Safety-level channels calibration	5-8-86	3-6-86
Log-N channels calibration	5-8-86	3-4-86
ΔT channels calibration	3-6-86	8-21-85
Reactor water exit temperature channels calibration	3-6-86	8-21-85
Fission chamber channels calibration	5-8-86	3-4-86
Speed measurements of the shim-safety rod drive motors	5-6-86	3-6-86

Table 13. (Continued)

Test	Most recent	Previous
Annually (continued)		
Calibration of shim-safety rods	6-13-86	12-15-85
Reactivity assigned to the servo-control system	6-13-86	12-15-85
Semiannually		
Pressure-drop measurements across NOG filters	6-29-86	3-30-86
Pressure-drop measurements across POG filters	Out of service	
NOG filter system efficiency		
Elemental iodine test - east bank	12-5-85	6-20-85
Elemental iodine test - west bank	5-20-86	12-3-85
Dioctyl phthalate test - east bank	3-7-86	9-25-85
Dioctyl phthalate test - west bank	3-7-86	9-25-85
POG filter system efficiency	Out of service	
Containment closure system function test	5-6-86	3-4-86
Cell-ventilation filter system efficiency		
Elemental iodine measurements	5-31-86	12-10-85
Dioctyl phthalate measurements	3-7-86	9-26-85
Radiation monitoring equipment calibration	5-4-86	2-4-86
Stack radiation monitor calibration	5-6-86	10-8-85
Quarterly		
Primary coolant flow channels tested	5-8-86	3-6-86
^{16}N channels tested	5-8-86	3-6-86
North-facility flow channels tested	5-8-86	3-6-86

Table 13. (Continued)

Test	Most recent	Previous
Quarterly (continued)		
South-facility flow channels tested	5-8-86	3-6-86
Normal off-gas vacuum monitor tested	5-8-86	3-6-86
Pressurizable off-gas vacuum monitor tested	Out of service	
Building ventilation flow monitor tested	5-8-86	3-6-86
Manual scrams tested	5-8-86	3-6-86
Measurement of release time and time of flight for the shim-safety rods	5-6-86	3-6-86
Subcriticality with each shim-safety rod at its upper limit while all other shim-safety rods are fully inserted	5-6-86	3-6-86

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