BNL-62430
INFORMAL

REACTOR OPERATIONS

BROOKHAVEN MEDICAL RESEARCH REACTOR

BROOKHAVEN HIGH FLUX BEAM REACTOR

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JUNE 1995

INFORMAL REPORT

BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.
UPTON, NEW YORK 11973-5000

under contract No. DE-AC02-76CH00016 with the
United States Department of Energy

Part I

Brookhaven Medical Research Reactor

1. Reactor

The reactor ran for 16 days with 24 startups during the month of June. A total of 110.08 Mwhrs of thermal energy were produced bringing the total to date to 22,049.33 Mwhrs.

2. Instrumentation

There were no instrument occurrences during the month of June, 1995.

3. Mechanical Maintenance

All scheduled tickler card maintenance was completed.

4. Occurrence Reports

There were no reportable occurrences for the month of June 1995.

5. Safety

There were no first aid or lost time due to accidents for the month of June 1995.

BMRR TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS RECORD

MONTH June **YEAR** 1995

Requirement	Period	Previous Completion Date	Scheduled Date	Completion Date	Deadline if Not Completed
Operations					
Confinement System					
a. Nuclear Incident System (M-4.2.4)	M	05/18/95	06/95	06/19/95	
b. Bldg. Relief Valves (M-4.2.2)	M	05/15/95	06/95	06/15/95	
Control Rods					
a. Control Rod Seating Indicator Lights (M-4.8.6)	M	05/01/95	06/95	06/01/95	
Instrumentation					
a. Control Rod Drop Times (Q-4.3.4)	Q	02/06/95	06/95	06/06/95	
b. Building Manometers (M-4.2.3)	A	05/23/94	06/95	06/14/95	
c. Safety Amp.Delay (M-4.3.8)	A	**Note:** Cancelled 6/8/95			

[tssrr/juntechs]

M = Monthly A/2 = Semi-Annually
Q = Quarterly A = Annually
( ) = Date of the month in which card is issued

SUMMARY OF BMRR IRRADIATIONS
06/01/95 TO 06/30/95

DATE	PROJECT	HOURS	FACILITY	DESCRIPTION OF SAMPLE
06/07/95	CHEMISTRY	1.633	Pn-TUBE	POLYETHYLENE/H2SO4
06/07/95	MEDICAL	0.083	Pn-TUBE	In-115 STANDARDS
06/07/95	MEDICAL	0.167	Pn-TUBE	Gd-158 STANDARDS
06/07/95	MEDICAL	2.350	TREATMENT ROOM #2	Au FOILS/TLD's
06/07/95	MEDICAL	2.567	TREATMENT ROOM #2	BNCT PAT'NT CARE MT'L
06/08/95	MEDICAL	0.933	RADIAL	CELLS w/B-10
06/08/95	MEDICAL	5.217	TREATMENT ROOM #1	RATS
06/09/95	MEDICAL	1.167	TREATMENT ROOM #1	RATS
06/09/95	DAT	2.500	Pn-TUBE	SiO2 SLIDES
06/13/95	OHIO STATE UNIV	6.917	TREATMENT ROOM #1	RATS
06/14/95	MEDICAL	1.500	RADIAL	CELLS w/B-10
06/14/95	OHIO STATE UNIV	6.833	TREATMENT ROOM #1	RATS
06/15/95	MEDICAL	0.250	TREATMENT ROOM #2	BEAM CHECK
06/15/95	MEDICAL	4.733	RADIAL	BNCT PATIENT BLOOD
06/15/95	MEDICAL	0.933	TREATMENT ROOM #2	BNCT PATIENT
06/16/95	MEDICAL	4.500	TREATMENT ROOM #1	RATS
06/20/95	MEDICAL	5.750	TREATMENT ROOM #1	RATS
06/21/95	MEDICAL	0.033	TREATMENT ROOM #2	Ti SURGICAL CLIP
06/21/95	MEDICAL	3.917	RADIAL	CELLS w/B-10
06/21/95	DAT	3.750	Pn-TUBE	SiO2 SLIDES
06/22/95	MEDICAL	4.533	RADIAL	BNCT PATIENT BLOOD
06/22/95	MEDICAL	2.767	TREATMENT ROOM #2	BEAM CHECK
06/22/95	MEDICAL	0.817	TREATMENT ROOM #2	BNCT PATIENT
06/23/95	CHEMISTRY	6.533	Pn-TUBE	H2SO4 & Cr
06/27/95	CHEMISTRY	2.683	Pn-TUBE	H2SO4 & Cr
06/27/95	MEDICAL	2.567	TREATMENT ROOM #2	TLD's/Au FOILS
06/28/95	MEDICAL	0.967	RADIAL	CELLS w/B-10

DATE	PROJECT	HOURS	FACILITY	DESCRIPTION OF SAMPLE
06/28/95	MEDICAL	0.167	Pn-TUBE	Gd-158 STANDARDS
06/28/95	DAT	2.500	Pn-TUBE	SiO2 SLIDES
06/29/95	MEDICAL	0.333	TREATMENT ROOM #1	BEAM CHECK
06/29/95	MEDICAL	6.667	RADIAL	CELLS w/TISSUE
06/29/95	MEDICAL	1.000	TREATMENT ROOM #2	BNCT PATIENT
06/30/95	MEDICAL	6.333	RADIAL	CELLS w/B-10
06/30/95	MEDICAL	0.333	TREATMENT ROOM #2	BEAM CHECK
06/30/95	MEDICAL	1.500	TREATMENT ROOM #2	BNCT PATIENT

TOTAL NO. OF HOURS: 95.43333
TOTAL NO. OF SAMPLE CAPSULES LOADED: 9

End of Report

PART II

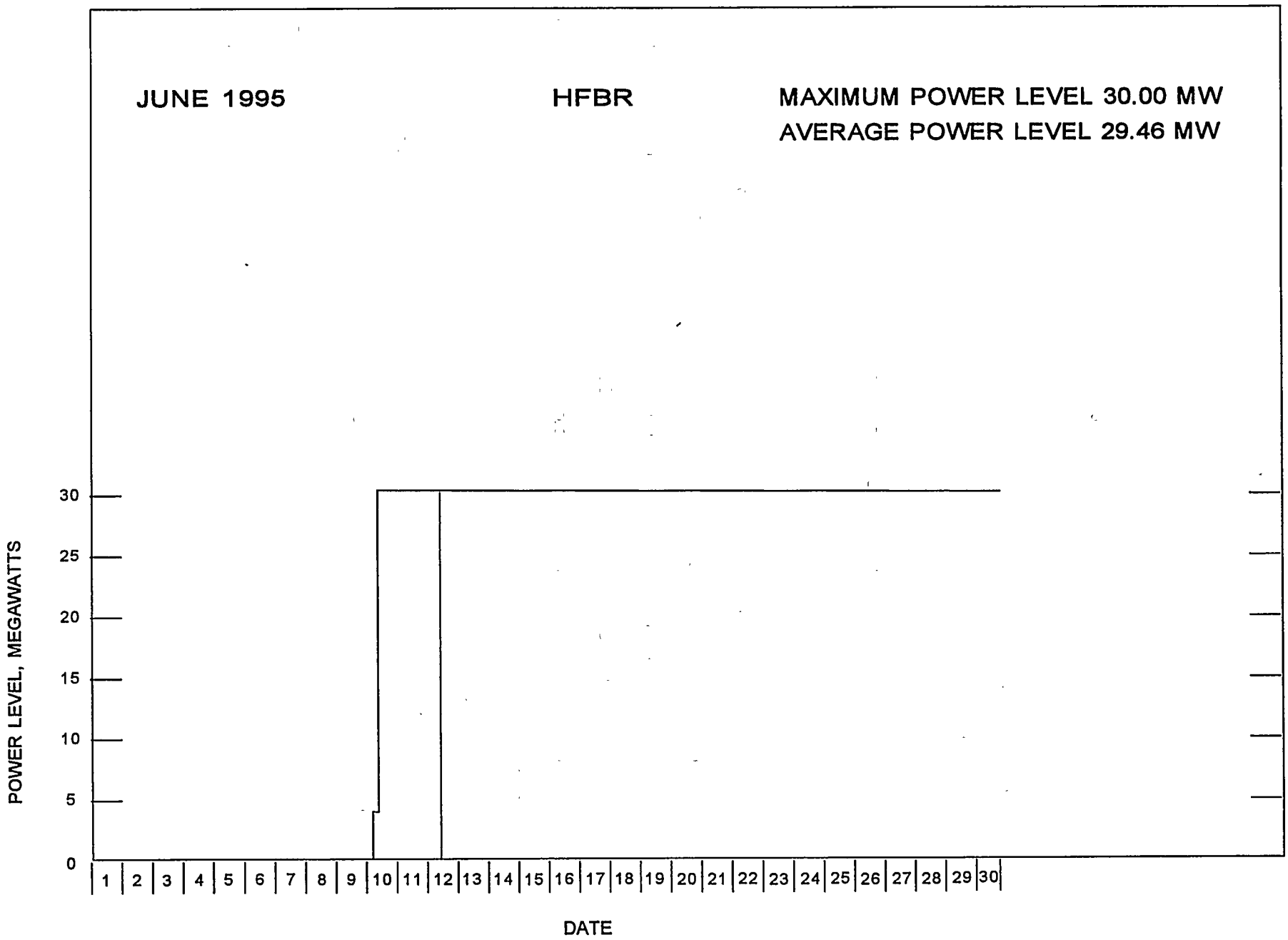
Brookhaven High Flux Beam Reactor

June

30 Days

10807 - 10836

Reactor Operation to Date	278,289.16	MWD
Reactor Operation for Month	617.86	MWD
Hours of Operation	503.33	HRS
Average Power Level ((MWDx24) / Hours of Operation)	29.46	MW
Maximum Power Level	30.00	MW
Downtime	30.09	%
Electrical Energy Consumed within HFBR Bldg.	897,000.	KWH
Electrical Energy Consumed by Sec. Water Pumps	205,600.	KWH
Electrical Energy Consumed in Pumphouse 440V System	21,900.	KWH
Total Electrical Energy Consumed within HFBR Complex	1,124,500.	KWH
Electrical Energy Consumed by CNF Compressor	216,800.	KWH
Elements Charged this Month	7	
Elements Discharged this Month	7	
Reactor D_2O Inventory (within 200 pounds)	102,416.00 (46,455.89	LBS KG)
Reactor D_2O Isotopic Purity (Average All Systems)	99.50	%
Helium Consumed (NTP)	26,200. (741.	CF CM)
CO2 Consumed	10,200. (4,626.	LBS KG)


JUNE 1995
HFBR
MAXIMUM POWER LEVEL 30.00 MW
AVERAGE POWER LEVEL 29.46 MW
POWER LEVEL, MEGAWATTS
0
5
10
15
20
25
30
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
DATE

2. Explanation of Histogram

Shutdown No. 280 was in progress at the beginning of this report period.

On June 10, 1995 at 0552 hours, the reactor was started up to verify Estimated Critical Position. The reactor was operated periodically from 0605 to 0636 hours in order to perform training startups to 100kW. At 0714 hours reactor power was raised to 4MW for a Health Physics Shield Survey. AT 0903 hours reactor power was increased to 30 MW for Operating Cycle No. 281.

At 0252 on June 12, 1995 a reactor scram occurred due to a momentary loss of incoming power as a result of severe thunderstorms in the area. The reactor was restarted at 0345 hours, with 30 MW operation attained at 0350 hours.

3. Operating Difficulties:

On June 5, 1995, during final core inspections, two pieces of foreign material were retrieved from the top of two fuel elements. A portion of a glass fuse was identified on a fuel element that had just been discharged to the canal. Subsequent investigation identified the source of the material as originating from a fuse box. The fuse box was apparently the result of poor housekeeping practices in the upper tritium containment and was inadvertently introduced into the reactor vessel. Details are contained in RD Nonconformance Report No. 95-11.

4. Reactivity Comments:

The excess reactivity at the beginning of Operating Cycle No. 281 was 21.09 $.

5. Building Confinement - Test and Changes

A planned building confinement break took place June 1-3, 1995 by having the Exit Air Bypass Filters in bypass mode in order to permit painting within the building confinement.

6. Changes to Reactor or Process Systems

None.

7. Instrumentation

There were no reportable instrument occurrences for the month of June, 1995.

8. Mechanical Maintenance

All scheduled tickler card maintenance was performed.

9. Occurrence Reports

There was one reportable occurrence for the month of June 1995.

CH-BH-BNL-HFBR-1995-0005, Reactor Shutdown due to Momentary Interruption of Off-Site Electric Power, June 12, 1995.

10. Experimental Facilities

The reactor was shutdown for maintenance on June 1 - 10, 1995.
Experimental work was in progress on the following beam lines from June 10 - 20, 1995.

H-1B Physics Department - Nuclear Structure Group - work in progress.
H-1A Powder diffractometer in service.

H-2 Physics Department - TRISTAN Experiment Dismantled

H-3 Biology Department - On 5/15 experiment shutdown for modification work.

H-3A Experimental work in progress.

H-3B Experimental work in progress.

H-4 Physics Department - Neutron Scattering Group.

H-4M Experimental work in progress.

H-4S Experimental work in progress.

H-5 Chemistry Department - Chemistry Department Neutron Scattering Group.

H-6 Chemistry Department - Chemical Crystallography Group.

H-6M & H-6S - Experimental work in progress.

H-7 Physics Department - Neutron Scattering Group.

H-8 Physics Department - Neutron Scattering Group.

H-9 Reactor Division - Cold Neutron Facility.

H-9A Physics - Experimental work in progress.

H-9B Biology - Experimental work in progress.

H-9R Physics - Neutron Reflectometer in-service.

11. Cold Neutron Facility

Operating History

The CNF was shutdown at the beginning of the reporting period. The CNF started up with the Reactor on Saturday, June 10, 1995. The CNF operated from 1031 hours until 1145 hours on 6/10/95. The CNF automatically vented and purged on 6/10/95 due to a failure of the compressor high discharge temperature TAY341. The CNF was refilled at 1841 hours on the same day and operated until 0252 hours on Monday, June 12, 1995. The CNF automatically vented and purged at the same time the reactor shutdown due to severe weather conditions (thunder storm). The CNF restarted on 6/12/95 at 1135 hours and operated for the remainder of the reporting period.

The CNF operated 478 hours during the month of June. Lost time was caused by failure of TAY341 and severe weather conditions. The CNF produced cold neutrons 97% of the time that the reactor was at full power.

Operating Difficulties

The CNF experienced hardware failure of TAY341, compressor high discharge temperature. The defective relay was removed, replaced and satisfactorily tested. Severe weather, thunderstorms, shutdown the reactor and the CNF briefly.

The CNF lost 16 hours due to the relay failure and severe weather conditions.

Maintenance Activities

All required maintenance and surveillance testing was completed.

12. Safety

There were no first aid or lost time due to accidents for the month of June, 1995.

13. Fuel Element Inventory

Elements in Use as of June 30, 1995

In Reactor(s)	HFBR 28	BMRR 36	64

Element Movement during the Month

Charged to reactor	7
Discharged from reactor	7

HFBR TECHNICAL SAFETY
SURVEILLANCE REQUIREMENTS RECORD

June 1995.

Requirement	Tech Spec Period	Previous Completion Date	Current Completion Date	Tech Spec Deadline
IC 2.1.exp *Chloride Content in Experimental System* BIMONTHLY	M	06/13/95	06/29/95	08/06/95
IC 2.1.pri *Chloride Content in Primary System* BIMONTHLY	M	06/13/95	06/29/95	08/06/95
IR 2.exp *Isotopic Purity of Experimental System* WEEKLY	M	06/13/95	06/29/95	08/06/95
IR 2.pri *Isotopic Purity of Primary System* WEEKLY	M	06/13/95	06/29/95	08/06/95
MIS 1.1 *Determination of pD with Orion pH meter (Primary System)* WEEKLY	M	05/26/95	06/29/95	08/06/95
TC 302 *Criticality Alarm System Operability Test* MONTHLY	M	05/01/95	06/01/95	07/09/95
TC 310 *SPAM Station Checks* MONTHLY	M	05/15/95	06/15/95	07/23/95
TC 175 *Main Control Rod SCRAM Times (Digital System)* JAN/APR/JUL/OCT	3M	05/28/95	06/10/95	09/30/95
TC 296 *LI-107 / LI-109 Operability Check* JAN/APR/JUL/OCT	3M	04/22/95	06/02/95	09/22/95
TC 117 *Bldg. Confinement Leak Rate* MAR/SEP	6M/2Y **DUE**	09/25/94	01/28/95	09/09/95

Requirement	Tech Spec Period	Previous Completion Date	Current Completion Date	Tech Spec Deadline
TC 131 *Poison Water Chemical Content* MAY	A	01/10/95	06/02/95	09/02/96
TC 225 *HFBR Technical Specification Review* APR	A	04/29/94	06/28/95	09/28/96
TC 163 *Test & Inspection of Poison Water Dump Valves* MAY 1995	2Y	05/13/93	06/07/95	12/07/97
TC 205A.5Y *Load Test - 250V DC Batteries NO. 1* APR 1995	5Y **DUE**		02/21/91	08/21/96
TC 205B.5Y *Load Test - 250V DC Batteries NO. 2* APR 1995	5Y **DUE**		02/25/91	08/25/96
TC 1143 *Review of HFBR Experiments* JUN	2Y		06/02/95	12/02/97
HE 3&11(A) *24 VDC Battery Float Voltage* MONTHLY	M	06/02/95	06/30/95	08/07/95
HB 126&127 *GA-101A & B Pump Circuits Cal, Trip Pt & Time Delay Check* JUN/DEC	6M **DUE**	06/02/94	12/20/94	08/01/95
HB 10-12 *NSS Amplifier Calibration* JUN/DEC	A	12/01/94	06/20/95	09/20/96
HB 110(A) *Conductivity Recorder Calibration* JUN/DEC	A	11/30/94	06/12/95	09/12/96

Requirement	Tech Spec Period	Previous Completion Date	Current Completion Date	Tech Spec Deadline
HB 110(B) *Conductivity Cells CR1-5 Calibration* JUN	A **DUE**	06/02/93	08/18/94	11/18/95
HB 172-174 *Fuel Cladding Failure Indicator Modules 1,2,3 Calibration* JUN	A	06/27/94	06/21/95	09/21/96
HB 247 *CH 9 Internal 7.5 VDC Battery Load Test and Replacement* DEC	A	12/27/94	06/19/95	09/19/96
HB 26 *RRa-100 Calibration* MAY	A	04/27/94	06/06/95	09/06/96
HB 53 *Pyrometer Recorder and Thermocouple (TRa-3,4,9,6,11) Calib* JUN/DEC	A	12/02/94	06/12/95	09/12/96
HB 54 *TRa-101 & TR 102 Calibration* FEB/JUN/OCT	A	03/02/95	06/28/95	09/28/96
HE 14 *Electronic Alarm Module Calibration (24VDC Annun Relay)* MAY	A		06/05/95	09/05/96
HO 14...HU143 *Criticality Alarm System Calibration* JUN	A	12/15/94	06/26/95	09/26/96
HP 22 *NSS CH1 Chamber Characteristics Curve* MAR/JUN/SEP/DEC	A	03/22/95	06/23/95	09/23/96
HP 25 *NSS CH2 Chamber Characteristics Curve* MAR/JUN/SEP/DEC	A	03/22/95	06/23/95	09/23/96

Requirement	Tech Spec Period	Previous Completion Date	Current Completion Date	Tech Spec Deadline
HP 28 *NSS CH3 Chamber Characteristics Curve* MAR/JUN/SEP/DEC	A	03/22/95	06/23/95	09/23/96
HP 36 *LI-107 Calibration* FEB	A **OVERDUE**	02/02/93	02/10/94 **NOTE: LI107 is out of service due to a clogged dip tube.**	05/10/95
HT 27 *FRa-201 Calibration* MAY	A	04/25/94	06/06/95	09/06/96
HT 28 *FI-202 Calibration* MAY	A	04/26/94	06/06/95	09/06/96
HT 47 *FI-207 Calibration* MAY	A	04/28/94	06/06/95	09/06/96
HT 49 *PdIa-102 Calibration* JUN/DEC	A **DUE**	07/08/94	12/20/94	03/20/96
HT 50 *PdIa-103 Calibration* JUN/DEC	A **DUE**	07/08/94	12/20/94	03/20/96
HT 51 *PdRa-101 Calibration* JUN/DEC	A **DUE**	07/08/94	12/20/94	03/20/96
HT 67-70 *FCF Chambers (RRa-101, 102, 103 and Spare) Calibration* MAR/JUN/SEP/DEC	A	03/22/95	06/23/95	09/23/96
TC 627E *250V Monthly Battery Inspection* MONTHLY	M	05/02/95	06/01/95	07/09/95
TC 632E *Monthly Pony Motor Battery Inspection* MONTHLY	M	05/02/95	06/01/95	07/09/95

...end...

SUMMARY OF HFBR IRRADIATIONS
06/01/95 TO 06/30/95

DATE	PROJECT	HOURS	FACILITY	DESCRIPTION OF SAMPLE
06/10/95	OAK RIDGE NAT LAB	858.000	V-15	V/Cr/Ti
06/13/95	CHEMISTRY	20.000	V-10	LIMESTONE
06/14/95	PHYSICS	60.583	V-14	Cu-63
06/14/95	DAT	0.500	V-11	SiO2 SLIDES
06/15/95	CHEMISTRY	0.042	V-11	LIMESTONE
06/15/95	UNIV OF MARYLAND	4.000	V-11	TEFLON FILTERS/ COAL STANDARDS
06/19/95	PHYSICS	71.233	V-14	Cu-63
06/20/95	UNIV OF MARYLAND	4.000	V-11	TEFLON FILTERS/ COAL STANDARDS
06/20/95	CHEMISTRY	20.067	V-10	LIMESTONE
06/22/95	TENN TECH UNIV	144.000	V-15	elemental Ca
06/23/95	PHYSICS	68.833	V-14	Cu-63
06/27/95	UNIV OF MARYLAND	4.017	V-11	TEFLON FILTERS
06/29/95	PHYSICS	144.367	V-14	Cu-63

TOTAL NO. OF HOURS: 1399.642
TOTAL NO. OF SAMPLE CAPSULES LOADED: 13

End of Report