ENTRY NO. 89

NAME OF MACHINE W. U. Medical School Cyclotron II DATE 7/19/78
INSTITUTION Wash. Univ. Medical School, Barnard Hospital
ADDRESS St. Louis, Mo. USA 63110

IN CHARGE J.T. Hood, Director REPORTED by J.T. Hood
M.M. Ter-Pogossian, Prof. of Radiation Sciences

HISTORY AND STATUS

DESIGN, date _____ MODEL tests _____
ENG. DESIGN, date Cyc. Corp. CS-15
CONSTRUCTION, date _____
FIRST BEAM date (or goal) June 1978
MAJOR ALTERATIONS _____

OPERATION, _____ hr/wk; On Target _____ hr/wk
TIME DIST., in house _____ %, outside _____ %
USERS' SCHEDULING CYCLE _____ weeks
COST, ACCELERATOR $650,000.00
COST, FACILITY, total $900,000.00
FUNDED BY NIH (Heart and Lung)

ACCELERATOR STAFF, OPERATION and DEVELOPMENT

SCIENTISTS 1 ENGINEERS 1
TECHNICIANS 2 CRAFTS 2
GRAD STUDENTS involved during year _____
OPERATED BY _____ Res staff or X Operators
BUDGET, op & dev _____
FUNDED BY NIH

RESEARCH STAFF, not included above

USERS, in house 6 outside _____
GRAD STUDENTS involved during year 2
RES. BUDGET, in house _____
FUNDED BY NIH

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed _____ m^2
movable _____ m^2
TARGET STATIONS 3 in 1 rooms
STATIONS served at same time, max _____
MAG SPECTROGRAPH, type _____
COMPUTER, model _____
OTHER FACILITIES _____

REFERENCES/NOTES

MAGNET

POLE FACE diameter 81 cm; R extraction 35 cm
GAP, min _____ cm; Field _____ kG } at _____ X 10^6
max _____ cm; Field _____ kG } ampere turns
AVERAGE FIELD at R ext 16.5 kG
CURRENT STABILITY _____ parts/10^6; $B_{max}/\langle B \rangle$ _____
NUMBER OF SECTORS 3 ; SPIRAL, max _____ deg
POLE FACE COIL PAIRS: AVF _____ /sec;
Harmonic correction _____
Rad grad _____ /sec or Circ coils _____
WEIGHT: Fe _____ tons; Coils _____ tons
CONDUCTOR, Material and type Al. Ribbon
STORED ENERGY _____ MJ
COOLING SYSTEM Water
POWER: Main coils 60 max, kW
Trimming coils _____ max, kW
YOKE/POLE AREA _____ %
SECTOR ANGLE (Sep Sec) _____ deg
ION ENERGY (Bending limit) E/A = _____ q^2/A^2 MeV
(Focusing limit) E/A = _____ q/A MeV

ACCELERATION SYSTEM

DEES, number 2 angle 120 deg
BEAM APERTURE _____ cm; DC BIAS _____ kV
TUNED by, coarse short fine _____
RF 12 to 25 mHz, stable ± _____ /10^6
Orb F _____ to _____ mHz; GAIN, max _____ kV/turn
HARMONICS, RF/Orb F, used _____
DEE-Gnd, max _____ kV, min gap _____ cm
STABILITY, (pk-pk noise)/(pk RF volt) _____
RF PHASE stable to ± _____ deg
RF POWER input, max _____ kW
RF PROTECT circuit, speed 40 μsec
Type Crowbar
FREQUENCY MODULATION, rate _____ /sec
MODULATOR, type _____
BEAM PULSE, width _____

VACUUM SYSTEM

PUMPS, No., Type, Size 1-Oil Diffusion -10 Inch
OPERATING PRESSURE 10 μTorr,
PUMPDOWN TIME 1/2 hrs

ION SOURCES/INJECTION SYSTEM

Penning

EXTRACTION SYSTEM

Electrostatic & Magnetic Channel

CONTROL SYSTEM

ENTRY NO. 89 (cont.)

CHARACTERISTIC BEAMS

	Particle	Goal (MeV)	Achieved (MeV)
ENERGY	p		15
	d		8
	α		16
	^{3}He		20
CURRENT		(μA)	(μA)
Internal	p		150
	d		250
	^{3}He		135
External	p		50
	d		75
	^{3}He		50
		(part/s)	(part/s)
Secondary			

BEAM PROPERTIES

	Measured	Conditions
Pulse Width	____ RF deg	____ μA of ____ MeV ____
Phase Exc, max	____ RF deg	____ μA of ____ MeV ____
Extract Eff	____ %	____ μA of ____ MeV ____
Res, ΔE/E	1 %	____ μA of ____ MeV ____
Emittance		
(mm-mrad) { 50 axial / 50 radial }		____ μA of ____ MeV ____

OPERATING PROGRAMS, time dist

Basic Nuclear Physics ____ %
Solid State Physics ____ %
Bio-Medical Applications 100 %
Isotope Production ____ %
Development ____ %
____ %
____ %

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, OPERATION SUMMARY, ADDITIONAL REFERENCES