

ENTRY No. 123

NAME OF MACHINE W.U. Med School Cyclotron II DATE 5/10/89
INSTITUTION Washington University Medical School, Barnard Hospital
ADDRESS St. Louis, MO 63110 USA
TEL 314-454-3596 TELEX
IN CHARGE JT Hood, Director REPORTED BY John T. Hood
M.M. Ter-Pogossian, Professor 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

COST, ACCELERATOR \$650,000
COST, FACILITY, total \$900,000
FUNDED BY NIH (Heart and Lung)

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS 2 ENGINEERS 1
TECHNICIANS 2 CRAFTS 2

GRAD STUDENTS involved during year
OPERATED BY Research staff or X Operators
OPERATION hr/wk, On target hr/wk

TIME DISTR. in house %, Outside %
BUDGET, op & dev
FUNDED BY NIH

RESEARCH STAFF, not included above
USERS, in house 6 outside
GRAD STUDENTS involved during year 2

RESEARCH BUDGET, in house
FUNDED BY NIH

MAGNET
POLE FACE, diameter (compact) .81 cm, R extraction .35 cm
R injection cm
GAP, min cm, Field kg }
max cm, Field kg } at

AVERAGE FIELD at R ext 16.5 kg } Ampere turns
B max/ < B >

NUMBER OF SECTORS { compact 3 } Spiral, max deg
separated }
SECTOR ANGLE (SSC) deg

TRIMMING COILS
CONDUCTOR, material and type Aluminum ribbon
STORED ENERGY (cryogenic) MJ

POWER: main coils 60 max, kW; current stability
trimming coils max, kW; current stability

WEIGHT: Fe tons; coils tons
COOLING system water

ION ENERGY (bending limit) E/A = q²/a² MeV/amu
(focusing limit) E/A = q²/a² MeV/amu

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 ±
Orb F to MHz

HARMONICS, RF/Orb F, used
DEE - Gnd, max kV, min gap cm

STABILITY, (pk-pk noise)/(pk RF volt)
ENERGY GAIN, max kV/turn
RF PHASE, stable to ± deg

RF POWER input, max kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM
OPERATING PRESSURE 10 μ Torr or mbar
PUMPS, No, Type, Size 1 - Oil diffusion
ten inch

ION SOURCES
Penning

INJECTION SYSTEM

EXTRACTION SYSTEM
Electrostatic and Magnetic Channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m²; movable m²
TARGET STATIONS 3 in rooms
STATIONS served at same time, max

MAG SPECTROGRAPH, type
COMPUTER model
OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pA)	
	Goal	Achieved	Internal	External
D		1.5		50
d		8		75
e		16		
He		20		50

SECONDARY (part/s)

BEAM PROPERTIES

MEASURED	CONDITIONS	
	MEASURED	CONDITIONS
PULSE WIDTH RF deg	pA of MeV ions	
PHASE EXC, max RF deg	pA of MeV ions	
EXTRACT eff %	pA of MeV ions	
RESOL ΔE/E %	pA of MeV ions	

EMITTANCE
(π mm. mrad) { .50 axial } pA of MeV ions
{ .50 rad }

OPERATING PROGRAMS, time distribution
BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
BIOMEDICAL APPLICAT 100% ISOTOPE PRODUCTIONS

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES,
COMMENTS