

ENTRY No. CU121

NAME OF MACHINE W.U. Med. School Cyclotron I 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
MM Ter-Pogossian, Professor of Radiation Sciences

HISTORY AND STATUS

DESIGN, date 1962 Model tests
ENG DESIGN, date 1963
CONSTRUCTION, date 1963-64 Allis-Chalmers
FIRST BEAM, date (or goal) 1964
MAJOR ALTERATIONS

COST, ACCELERATOR \$120,000
COST, FACILITY, total \$190,000
FUNDED BY NIH

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 33 cm
R injection cm
GAP, min cm, Field kG }
max cm, Field kG } at
AVERAGE FIELD at R ext 15 kG } Ampere turns
B max/

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

CONDUCTOR, material and type Copper, Hollow Conductor
STORED ENERGY (cryogenic) MJ
POWER: main coils 40 max, kW; current stability
trimming coils max, kW; current stability

WEIGHT: Fe tons; coils tons
COOLING system water
ION ENERGY (bending limit) E/A = q^2/a^2 MeV/amu
(focusing limit) E/A = q^2/a^2 MeV/amu

ACCELERATION SYSTEM

DEES, number 1; angle 180 deg
BEAM APERTURE 2.5 cm; DC Bias 0 kV
TUNED by, coarse fine
RF 11.4 to MHz, stable $\pm$
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 $\pm$ deg
RF POWER input, max 25 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 20 μ Torr or mbar
PUMPS, No, Type, Size 2 oil diffusion
Seven inch

ION SOURCES

Hot filament

INJECTION SYSTEM

EXTRACTION SYSTEM

Electrostatic and Magnetic Channel
FACILITIES FOR RESEARCH
SHIELDED AREA, fixed m²; movable m²
TARGET STATIONS 1 in 1 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		6.8		80

SECONDARY

(part/s)

BEAM PROPERTIES

MEASURED		CONDITIONS	
PULSE WIDTH	RF deg	μ A of	MeV ions
PHASE EXC, max	RF deg	μ A of	MeV ions
EXTRACT eff	%	μ A of	MeV ions
RESOL $\Delta E/E$	%	μ A of	MeV ions

EMITTANCE
(π mm, mrad) { axial } μ A of MeV ions
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