ENTRY No. 99

NAME OF MACHINE W.U. Med. School Cyclotron I DATE 7/15/81
INSTITUTION Washington University Medical School, Barnard Hospital
ADDRESS St. Louis, Missouri, 63110, U.S.A.
TEL 314-454-3596 TELEX
IN CHARGE J. T. Hood, Director REPORTED BY John T. Hood
M. M. 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 Classical
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/ <B>
NUMBER OF SECTORS { compact / separated } Spiral, max deg
SECTOR ANGLE (SSC) 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 /a 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 ±
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 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 m^2 ; movable m^2
TARGET STATIONS 1 in 1 rooms
STATIONS served at same time, max
MAG SPECTROGRAPH, type
COMPUTER model
OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	ENERGY (MeV) Achieved	CURRENT (pμA) Internal	CURRENT (pμA) External
d		6.8		80
SECONDARY				(part/s)

BEAM PROPERTIES

MEASURED	CONDITIONS
PULSE WIDTH RF deg	pμ A of MeV ions
PHASE EXC, max RF deg	pμ A of MeV ions
EXTRACT eff %	pμ A of MeV ions
RESOL ΔE/E %	pμ A of MeV ions
EMITTANCE	
(π mm. mrad) { axial / rad }	pμA of MeV ions

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

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS