ENTRY NO. 122

NAME OF MACHINE W.U. Med. School Cyclotron I

INSTITUTION Washington University Medical School, Barnard Hospital

ADDRESS St. Louis, Missouri, 63110 USA

TEL 314-889-6509 TELEX

IN CHARGE J.T. Hood REPORTED BY J.T. Hood

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 3 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	pμA of MeV ions
PHASE EXC. max	RF deg	pμA of MeV ions
EXTRACT eff	%	pμA of MeV ions
RESOL ΔE/E	%	pμA of MeV ions
EMITTANCE		
(π mm-mrad)	axial	pμA of MeV
	rad	

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS

BIOMEDICAL APPLICAT. 100% ISOTOPE PRODUCTIONS

REFERENCES/NOTES

1)

2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.