ENTRY NO. 105

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

INSTITUTION Washington University Medical School, Barnard Hospital

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IN CHARGE J.T. 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 NTH (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 NTH

RESEARCH STAFF, not included above

USERS, in house 6 outside

GRAD STUDENTS involved during year 2

RESEARCH BUDGET, in house

FUNDED BY NTH

MAGNET

POLE FACE, diameter (compact) 81 cm, R extraction 35 cm

R injection ... cm

GAP, min ... cm, Field ... kG
min ... cm, Field ... kG } at

AVERAGE FIELD at R ext 16.5 kG } Ampere turns

B max/ < B > ...

NUMBER OF SECTORS { compact 3 / separated ... } Spiral, max ... deg

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 = ... q^2/a^2 MEV/amu

(focusing limit) E/A = ... q/a MeV/amu

ACCELERATION SYSTEM

DEES, number 2 120 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 POWEP input, max ... kW

FREQUENCY MODULATION, rate ... /s

modulator, type

beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 10^{7} 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 ... m^2; movable ... m^2

TARGET STATIONS 3 in 1

STATIONS served at same time, max

MAG SPECTROGRAPH, type

COMPUTER model

OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
p		15		50
d		8		75
α		16		
^{3}He		20		50
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 1 %	... pμ A of ... MeV ... ions
EMITTANCE (π mm. mrad) { 50 axial / 50 rad }	... pμ A of ... MeV

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS ... SOLID STATES PHYSICS ...

BIOMEDICAL APPLICAT 100 % ISOTOPE PRODUCTIONS ...

REFERENCES/NOTES

1)

2)

AN VIEW OF FACILITY, COMMENTS, ETC.