

ENTRY No. CU126

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/)

NUMBER OF SECTORS { compact 3 } Spiral, max deg
 separated }
 SECTOR ANGLE (ISS) 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 (pμA)
 Goal Achieved Internal External

p 15 50
 d 8 75
 α 16
³He 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 } pμA 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