

ENTRY No. 103

NAME OF MACHINE NIH, TCC CS-30 DATE
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HISTORY AND STATUS

DESIGN, date Model tests
ENG DESIGN, date TCC model CS-30
CONSTRUCTION, date Factory tests: March 1985
FIRST BEAM, date (or goal): Accepted: March 1986
MAJOR ALTERATIONS
COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY National Institutes of Health
ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS ENGINEERS 4
TECHNICIANS CRAFTS support
GRAD STUDENTS involved during year 1
OPERATED BY Research staff or X Operators
OPERATION 50 hr/wk, On target 10 hr/wk
TIME DISTR. in house 100% % Outside %
BUDGET, op & dev
FUNDED BY National Institutes of Health
RESEARCH STAFF, not included above
USERS, in house PET Facility outside Nuclear Med
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY National Institutes of Health

MAGNET

POLE FACE, diameter (compact) 96.5 cm, R extraction .42 cm
R injection cm
GAP, min .5 cm, Field 19.5 kG
max .10 cm, Field 12 kG at 0.2x10^6
AVERAGE FIELD at R ext 16 kG Ampere turns
B max/ <B>

NUMBER OF SECTORS {compact 3 separated 3} Spiral, max deg
SECTOR ANGLE (SSC) deg
TRIMMING COILS Harmonic Coils
3 inner, 3 outer

CONDUCTOR, material and type Copper, Hollow
STORED ENERGY (cryogenic) MJ
POWER: main coils .60 max, kW; current stability 5x10^-4
trimming coils max, kW; current stability

WEIGHT: Fe 20 tons; coils 2.5 tons
COOLING system chilled, deionized 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 2; angle 81 deg
BEAM APERTURE 1.9 cm; DC Bias 1.5 kV
TUNED by, coarse Shorting Plane fine Capacitor
RF 13.5 to 27.5 MHz, stable +/- 1x10^-4
Orb F 14.4 to 27.1 MHz
HARMONICS, RF/Orb F, used 1st
DEE - Gnd, max 32 kV, min gap 1.0 cm
STABILITY, (pk-pk noise)/(pk RF volt)
ENERGY GAIN, max 100 kV/turn
RF PHASE, stable to +/- deg
RF POWER input, max 70 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 3x10^-5 Torr or mbar
PUMPS, No, Type, Size 1 Oil Diffusion, 10^n

ION SOURCES

Cold Cathode (1)

INJECTION SYSTEM

EXTRACTION SYSTEM

Electrostatic Deflector, Magnetic Channel (2)

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 90 m^2; movable 0 m^2

TARGET STATIONS 1 internal, 3 ext. in rooms

STATIONS served at same time, max 1

MAG SPECTROGRAPH, type

COMPUTER model

OTHER FACILITIES Isotope Production, Hot Cells

CHARACTERISTIC BEAMS

Table with columns: PARTICLE, ENERGY (MeV) Goal, Achieved, CURRENT (pA) Internal, External. Rows include Protons, Deuterons, 3-Helium, 4-Helium.

SECONDARY

(part/s)

BEAM PROPERTIES

MEASURED CONDITIONS
PULSE WIDTH RF deg pA of MeV ions
PHASE EXC, max RF deg pA of MeV ions
EXTRACT eff .70 % .60 pA of 26.5 MeV H+ ions
RESOL AE/E .0.5 % .0.2 pA of 14.8 MeV d+ ions
EMITTANCE

(pi mm. mrad) {25 axial Horiz. 10 rad Vert.} pA of 26.5 MeV H+ ions

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS

BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS 100%

50% Radiopharmaceutical Production

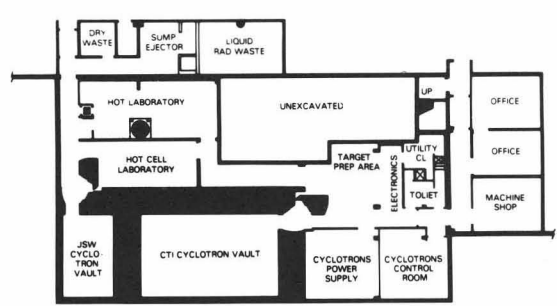
50%

REFERENCES/NOTES

(1) IEEE Trans. Nucl. Sci. NS-14, 70-71 (1967)

(2) IEEE Trans. Nucl. Sci. NS-16, 500-503 (1969)

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS



NIH CYCLOTRON FACILITY B-3 LEVEL