

ENTRY NO. 92

NAME OF MACHINE NEN Cyclotron 1 DATE 20 April 1984
INSTITUTION E. I. DuPont
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IN CHARGE R. Garniewicz REPORTED BY F. Buck

HISTORY AND STATUS Built by the Cyclotron Corp.

DESIGN, date Model tests
ENG DESIGN, date
CONSTRUCTION, date March 70
FIRST BEAM, date (or goal) July 70
MAJOR ALTERATIONS None

COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY E. I. DuPont

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ENGINEERS
TECHNICIANS CRAFTS
GRAD STUDENTS involved during year None
OPERATED BY Research staff or X Operators
OPERATION 100 hr/wk. On target hr/wk
TIME DISTR. in house 100 % outside %
BUDGET, op & dev
FUNDED BY E. I. DuPont

RESEARCH STAFF, not included above None
USERS, in house outside
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY

MAGNET

POLE FACE, diameter (compact) 96.6 cm, R-extraction 43 cm
R injection cm
GAP, min 5.1 cm, Field 21.0 kG
max 10.2 cm, Field 13.5 kG at 14 x 10^6
AVERAGE FIELD at R ext 16.5 kG Ampere turns
B max / < B > 1.22
NUMBER OF SECTORS compact 3 separated
SECTOR ANGLE (SSC) deg
TRIMMING COILS Outer harmonic only, one per sector

CONDUCTOR, material and type Strap copper
STORED ENERGY (cryogenic) MJ
POWER: main coils 45 max kW: current stability
trimming coils 0.5 max kW: current stability
WEIGHT: Fe 19.5 tons: coils 2.5 tons
COOLING system Deionized 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 angle 90 deg
BEAM APERTURE 2.5 cm; DC Bias 2.5 kV
TUNED by, coarse Tap Bars fine Panels
RF 25.0 to MHz, stable +/-
Orb F, 25.0 to MHz
HARMONICS, RF/Orb F, used 1st
DEE-Gnd, max 30 kV, min gap 40 cm
STABILITY, (pk-pk noise)/(pk RF volt)
ENERGY GAIN, max kV/turn
RF PHASE, stable to +/- deg
RF POWER input, max 55 kW
FREQUENCY MODULATION, rate None /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 10-20 Micro Torr or mbar
PUMPS, No, Type, Size 1, 10" oil diffusion

ION SOURCES

Pig. cold cathode radial

INJECTION SYSTEM

EXTRACTION SYSTEM

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m^2; movable m^2
TARGET STATIONS in rooms
STATIONS served at same time, max
MAG SPECTROGRAPH, type
COMPUTER model
OTHER FACILITIES

CHARACTERISTIC BEAMS

Table with columns: PARTICLE, ENERGY (MeV) Goal, Achieved, CURRENT (pA) Internal, External. Row for p shows Goal 22, Achieved 22, Internal 200.

BEAM PROPERTIES

Table with columns: MEASURED, CONDITIONS. Rows for PULSE WIDTH, PHASE EXC, EXTRACT eff, RESOL, EMITTANCE.

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
BIOMEDICAL APPLICAT ISOTOPE PRODUCTIONS 100

REFERENCES/NOTES

- 1)
2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.