ENTRY No. 100

NAME OF MACHINE NEN Cyclotron 5 DATE 30 April 1989
INSTITUTION E. I. Du Pont
ADDRESS 331 Treble Cove Road, N. Billerica, MA (USA)
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IN CHARGE P. Holton REPORTED BY F. Buck

HISTORY AND STATUS Designed and built by Scandtronix
DESIGN, date Model tests
ENG DESIGN, date
CONSTRUCTION, date Nov. 88
FIRST BEAM, date (or goal) Jan. 89
MAJOR ALTERATIONS None
COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY E. I. Du Pont

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. Du Pont

RESEARCH STAFF, not included above
USERS, in house outside
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY

MAGNET
POLE FACE, diameter (compact) 135. cm, R extraction cm
R injection cm
GAP, min 10 cm, Field 21.2 kG
max 18 cm, Field 13.3 kG } at 241 Ampere turns
AVERAGE FIELD at R ext kG
B max/ <B> 1.19
NUMBER OF SECTORS { compact 3 / separated } Spiral, max 4.5 deg
SECTOR ANGLE (SSC) deg
TRIMMING COILS 8 Circular Coils
2 sets of Harmonic Coils
CONDUCTOR, material and type Hollow Copper
STORED ENERGY (cryogenic) MJ
POWER: main coils 100 max, kW ; current stability 10^{-5}
trimming coils 10 max, kW ; current stability 10^{-4}
WEIGHT: Fe 57 tons ; coils 2.4 tons
COOLING system 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 90 deg
BEAM APERTURE 2 cm ; DC Bias 0 kV
TUNED by, coarse fine Var. Cap.
RF to 24.5 mHz, stable ±
Orb F to mHz
HARMONICS, RF/Orb F, used
DEE - Gnd, max 44 kV, min gap cm
STABILITY, (pk-pk noise)/(pk RF volt) 10^{-3}
ENERGY GAIN, max kV/turn
RF PHASE, stable to ± 5 deg
RF POWER input, max 50 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width 15-20

VACUUM SYSTEM
OPERATING PRESSURE 10^{-5} Torr or mbar
PUMPS, No, Type, Size
Two 10 in. Diffusion Pumps

ION SOURCES
Hot Cathode, Axially Mounted

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

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
p	30	30	200	
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 % pμ A of MeV ions
EMITTANCE
(π mm. mrad) { axial / rad } pμA of MeV ions

OPERATING PROGRAMS, time distribution
BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS