

ENTRY No. 97

NAME OF MACHINE NEN Cyclotron 2 DATE 30 April 1989

INSTITUTION E. I. Du Pont

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IN CHARGE P. Halton REPORTED BY F. Buck

HISTORY AND STATUS Designed and Built by the Cyclotron Corp. DESIGN, date Model tests ENG DESIGN, date CONSTRUCTION, date August 76 FIRST BEAM, date (or goal) November 76 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 None USERS, in house outside

GRAD STUDENTS involved during year RESEARCH BUDGET, in house FUNDED BY

MAGNET POLE FACE, diameter (compact) 96.52cm, R extraction 41.9 cm R injection cm

GAP, min 5.08 cm, Field 22.5 kG } at 26x10^6 max 10.16 cm, Field 14.4 kG } AVERAGE FIELD at R ext 17.5 kG } B max/ < B > 1.28

NUMBER OF SECTORS { compact 3 } Separated } Spiral, max deg SECTOR ANGLE (SSC) deg

TRIMMING COILS Inner and outer harmonic, one per sector CONDUCTOR, material and type Hollow copper

STORED ENERGY (cryogenic) MJ POWER: main coils 51 max, kW; current stability trimming coils 1.2 max, kW; current stability

WEIGHT: Fe 22.5 tons; coils 2 tons COOLING system ION ENERGY (bending limit) E/A = q^2/a^2 MeV/amu (focusing limit) E/A = .26 q^2/a^2 MeV/amu

ACCELERATION SYSTEM DEES, number 2; angle 81 deg BEAM APERTURE 1.9 cm; DC Bias 2.5 kV

TUNED by, coarse shorting bar, fine capacitor RF 26.9 to MHz, stable +/- Orb F 26.9 to MHz

HARMONICS, RF/Orb F, used 1st DEE - Gnd, max 34 kV, min gap 1 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 1-10^4 oil diffusion

ION SOURCES Pigg., 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

PARTICLE ENERGY (MeV) CURRENT (pA) Goal Achieved Internal External

p 26 26 200

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 % pA of MeV ions

RESOL ΔE/E % pA of MeV ions

EMITTANCE

(π mm. mrad) { axial } pA 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