ENTRY NO. 78

NAME OF MACHINE NEN Cyclotron 2 DATE 30 April 1984

INSTITUTION E.I. DuPont

ADDRESS 331 Treble Cove Road, N. Billerica, MA (USA)

TEL (617) 667-9531 TELEX 947126-NENNMTC

IN CHARGE R. Garniewicz 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. 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) 96.52 cm, R extraction 41.9 cm

R injection ..... cm

GAP, min 5.08 cm, Field 22.5 kG
min 10.16 cm, Field 14.4 kG
at 26x10^6

AVERAGE FIELD at R ext 17.5 kG Ampere turns

B max/ < B > 1.28

NUMBER OF SECTORS compact 3 Spiral, max ... deg
separated .....

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/a 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 POWEP 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 .....

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	26	26	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	pμ A of MeV

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