ENTRY No. 82

NAME OF MACHINE ... NEN Cyclotron 2 ..... DATE .. 06 July 1981
INSTITUTION ..... New England Nuclear Corporation
ADDRESS ..... 601 Treble Cove Road, N. Billerica, MA ... (USA)
TEL . (617) 667-9531 ..... TELEX .. 947126-NENNMTC
IN CHARGE .... J.. L.. Need ..... REPORTED BY .... J.. L.. Need

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HISTORY AND STATUS Designed and Built by the Cyclotron Corp.
DESIGN, date ..... Model tests
ENG DESIGN, date
CONSTRUCTION, date ..... Aug.. 76
FIRST BEAM, date (or goal) ..... Nov..76
MAJOR ALTERATIONS ..... None
COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY ..... New England Nuclear Corp.

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS .....1..... ENGINEERS ....1.....
TECHNICIANS ....2..... CRAFTS .....2.....
GRAD STUDENTS involved during year ..... None .....
OPERATED BY ..... Research staff or ..... X ... Operators
OPERATION ... 90 ..... hr/wk, On target .... 85 ..... hr/wk
TIME DISTR. in house ..... 100 . %, Outside ..... %
BUDGET, op & dev
FUNDED BY . New England Nuclear Corporation

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 } at .26 x .106 Ampere turns
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 .. Deionized water
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 .....61..... deg
BEAM APERTURE ...1.9... cm ; DC Bias ....2.5..... kV
TUNED by, coarse .. shorting bar fine .. capacitor
RF .....26.943 to ....-.-... mHz, stable ± ..-.-.....
Orb F ...26.943 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 ..... Torr or mbar
PUMPS, No, Type, Size .. 1-10" oil diffusion

ION SOURCES
...Pig, cold cathode, radial

INJECTION SYSTEM

EXTRACTION SYSTEM
None

FACILITIES FOR RESEARCH None
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 (μA) Internal	External
p	26.1	26.1	450	
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 .90.
MACHINE DEVELOPMENT ... 10

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS