ENTRY No. 38

NAME OF MACHINE NMP cyclotron 1 ..... DATE 1 August 1981
INSTITUTION Nihon Medi-Physics Co., Ltd.
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IN CHARGE M. Hazue ..... REPORTED BY S. Nakamoto

HISTORY AND STATUS

DESIGN, date ..... Model tests TCC CS-30
ENG DESIGN, date .....
CONSTRUCTION, date 1974 Aug. - Nov.
FIRST BEAM, date (or goal) 1974 Nov.
MAJOR ALTERATIONS Addition of yoke iron (1976)
.....
COST, ACCELERATOR .....
COST, FACILITY, total .....
FUNDED BY ... Nihon Medi-Physics Co., Ltd.

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ..... ENGINEERS .... 4 .....
TECHNICIANS .... 4 ..... CRAFTS .....
GRAD STUDENTS involved during year .....
OPERATED BY ..... Research staff or ..... Operators
OPERATION ..... hr/wk, On target ..... hr/wk
TIME DISTR. in house 100 ..... %, Outside ..... %
BUDGET, op & dev .....
FUNDED BY .....

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) 96 cm, R extraction 42 cm
R injection ..... cm
GAP, min ..... cm, Field ..... kG } at .....
max ..... cm, Field ..... kG } at .....
AVERAGE FIELD at R ext ..... 17.5 .... kG } Ampere turns
B max/ <B> .....
NUMBER OF SECTORS { compact ..... } Spiral, max .. deg
{ separated ..... }
SECTOR ANGLE (SSC) ..... deg
TRIMMING COILS .....
.....
CONDUCTOR, material and type .....
STORED ENERGY (cryogenic) ..... MJ
POWER : main coils ..... max, kW ; current stability .....
trimming coils ..... max, kW ; current stability .....
WEIGHT : Fe ..... tons ; coils ..... tons
COOLING system .. Circulated 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 ..... cm ; DC Bias ... 1-2 ..... kV
TUNED by, coarse ..... fine .....
RF ..... to ..... mHz, stable ± .....
Orb F ..... to ..... mHz
HARMONICS, RF/Orb F, used .....
DEE - Gnd, max . 20 .. kV, min gap ..... cm
STABILITY, (pk-pk noise)/(pk RF volt) .....
ENERGY GAIN, max ..... kV/turn
RF PHASE, stable to ± ..... deg
RF POWER input, max ..... kW
FREQUENCY MODULATION, rate ..... /s
modulator, type .....
beam pulse, width .....

VACUUM SYSTEM

OPERATING PRESSURE .. 2×10^{-6} ..... Torr or mbar
PUMPS, No, Type, Size ... 1 x 10" diffusion .....
..... 1 x 4" diffusion .....
.....

ION SOURCES

..... PIG Type .....

INJECTION SYSTEM

.....

EXTRACTION SYSTEM

..... Deflector & Mag. channel .....

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed ..... m^2 ; movable ..... m^2
TARGET STATIONS .... 3 .... in .... 1 ... 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
Proton	26	26	200	50
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 100%
.....
.....

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS