ENTRY NO. 41

NAME OF MACHINE NMP cyclotron 1 (TCC CS-30)

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 .....

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 7 CRAFTS .....

GRAD STUDENTS involved during year .....

OPERATED BY ..... Research staff or ..... Operators

OPERATION 120 hr/wk. On target 100 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
min ..... cm, Field ..... kG } at .....

AVERAGE FIELD at R ext 17.5 kG } Ampere turns

B max/ < B > .....

NUMBER OF SECTORS { compact ..... / separated ..... } Spiral, max ... deg

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 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 ..... kV, min gap ..... cm

STABILITY, (pk-pk noise)/(pk RF volt) .....

ENERGY GAIN, max ..... kV/turn

RF PHASE, stable to ± ..... deg

RF POWEP 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 room

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	26.5	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}	..... 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.