ENTRY No. 48

NAME OF MACHINE MC40 CYCLOTRON DATE .....
INSTITUTION DAIICHI RADIOISOTOPE LAB. LTD CHIBA PLANT .....
ADDRESS 453-1 Shimookura Matsuomachi SanbugunChiba 289-15JAPAN.
TEL0479-86-4721 TELEX .....
IN CHARGE K. Nitta REPORTED BY T. Miyanaga .....

HISTORY AND STATUS
DESIGN, date ..... Model tests .....
ENG DESIGN, date SCANDITRONIX MC40.
CONSTRUCTION, date Aug 1984 .....
FIRST BEAM, date (or goal) .....
MAJOR ALTERATIONS .....
.....
COST, ACCELERATOR .....
COST, FACILITY, total .....
FUNDED BY .....

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS ..... ENGINEERS 3 .....
TECHNICIANS 8 ..... CRAFTS .....
GRAD STUDENTS involved during year .....
OPERATED BY ..... Research staff or 8 ... Operators
OPERATION 100 hr/wk, On target 90 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) 130 cm, R extraction .... cm
R injection ..... cm
GAP, min 10 cm, Field 21 kG } at .....
max 18 cm, Field ..... kG } Ampere turns
AVERAGE FIELD at R ext ..... 17.8 kG
B max/ <B> .....
NUMBER OF SECTORS { compact 3 / separated ..... } Spiral, max 50deg
SECTOR ANGLE (SSC) ..... deg
TRIMMING COILS Circular Trim Coils 8 pairs
Harmonic Coils .....
CONDUCTOR, material and type .....
STORED ENERGY (cryogenic) ..... MJ
POWER : main coils 160 max, kW ; current stability 1×10^{-5}
trimming coils 10 max, kW ; current stability .....
WEIGHT : Fe ..... 60 ..... tons ; coils ..... tons
COOLING system Deionized Water 400 l/min at 10kg/cm²
ION ENERGY (bending limit) E/A = ... q^2/a^2 MeV/amu
(focusing limit) E/A = ... q^2/a^2 MeV/amu

ACCELERATION SYSTEM
DEES, number 2 ; angle 90 deg
BEAM APERTURE 2 cm ; DC Bias — kV
TUNED by, coarse Movable Short fine .....
RF 14 to 26.5 mHz, stable ± 10^{-6}
Orb F ..... to ..... mHz
HARMONICS, RF/Orb F, used .....
DEE - Gnd, max 44 kV, min gap ..... cm
STABILITY, (pk-pk noise)/(pk RF volt) 10^{-3}
ENERGY GAIN, max ..... kV/turn
RF PHASE, stable to ± ..... deg
RF POWER input, max ..... 120 ..... kW
FREQUENCY MODULATION, rate ..... /s
modulator, type .....
beam pulse, width .....

VACUUM SYSTEM
OPERATING PRESSURE ..... $\leq 10^{-6}$ ..... Torr or mbar
PUMPS, No. Type, Size .....
3×40,0001/h Mechanical Pumps
3× 2,0001/s Diffusion Pumps.

ION SOURCES
PIG
.....

INJECTION SYSTEM
.....

EXTRACTION SYSTEM
.....

FACILITIES FOR RESEARCH
SHIELDED AREA, fixed ..... m² ; movable ..... m²
TARGET STATIONS 2 in 1 rooms
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type .....
COMPUTER model .....
OTHER FACILITIES .....
.....
.....

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
Proton		30	200	65
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 70 .. %		..... pμ A of 30 MeV P 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%

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REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS