

ENTRY NO. 42
 NAME OF MACHINE NMP cyclotron 2 (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 1981 Apr. - Aug.
 FIRST BEAM, date (or goal) 1981 July
 MAJOR ALTERATIONS From negative iron source to positive one (1981)
 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 hr/wk. On target hr/wk
 TIME DISTR. in house % 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 } 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 = q²/a² 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 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 x 10⁻⁶ Torr or mbar
 PUMPS, No, Type, Size 2 x 10" diffusion
 1 x 4" diffusion

ION SOURCES

PIG Type

INJECTION SYSTEM

EXTRACTION SYSTEM

Deflector & magnet channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m²; movable m²
 TARGET STATIONS 3 in 1 room
 STATIONS served at same time, max
 MAG SPECTROGRAPH, type
 COMPUTER model
 OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pA)	
	Goal	Achieved	Internal	External
Proton	26	26.0		
SECONDARY			(part/s)	

BEAM PROPERTIES

MEASURED	CONDITIONS	
	PULSE WIDTH	PHASE EXC.
RF deg	RF deg	RF deg
EXTRACT eff %	%	%
RESOL ΔE/E %	%	%
EMITTANCE (π mm. mrad)	axial	rad
	μA of MeV ions	μA of MeV ions

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.

This cyclotron was originally an injector, model CNI-22 located in Canberra, Australia