

ENTRY NO. 49

NAME OF MACHINE NTT CYCLOTRON
 INSTITUTION NTT Electrical Communications Laboratories
 ADDRESS Tokai, Ibaraki 319-11 (Japan)
 TEL TELEX
 IN CHARGE T. SHIGEMATSU REPORTED BY H. YONEZAWA

HISTORY AND STATUS

DESIGN, date Model tests
 ENG DESIGN, date
 CONSTRUCTION, date October 1984
 FIRST BEAM, date (or goal) October 1984
 MAJOR ALTERATIONS

COST, ACCELERATOR
 COST, FACILITY, total
 FUNDED BY

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ENGINEERS
 TECHNICIANS 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) cm, R-extraction 37.5 cm
 R injection cm
 GAP, min cm, Field kG
 max cm, Field kG at
 AVERAGE FIELD at R ext 15.4 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
 ION ENERGY (Bending limit) E/A = q²/A² MeV/amu
 (Focusing limit) E/A = q/A MeV/amu

ACCELERATION SYSTEM

DEES, number angle deg
 BEAM APERTURE cm; DC Bias kV
 TUNED by, coarse fine
 RF 31.3 to 47 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 POWER input, max. kW
 FREQUENCY MODULATION, rate /s
 modulator, type
 beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE Torr or mbar
 PUMPS, No, Type, Size

ION SOURCES

INJECTION SYSTEM

EXTRACTION SYSTEM

FACILITIES FOR RESEARCH

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

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (nA)	
	Goal	Achieved	Internal	External
p		1.8 - 16		50
d		3.6 - 8		20
³ He		5.4 - 21		10
⁴ He		7.2 - 16		10
SECONDARY			(part/s)	

BEAM PROPERTIES

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

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
 BIOMEDICAL APPLICAT ISOTOPE PRODUCTIONS

ION BEAM ANALYSIS

REFERENCES/NOTES

- 1)
- 2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.