

ENTRY NO. 50

NAME OF MACHINE BC 1710
 INSTITUTION National Research Inst. for Metals
 ADDRESS 2-3-12, Sengen, Sakura-mura, Niihari-gun, Ibaraki-ken, Japan 305
 TEL 0298-51-6311 TELEX
 IN CHARGE H. Shiraishi REPORTED BY H. Shiraishi

HISTORY AND STATUS

DESIGN, date Model tests
 ENG DESIGN, date
 CONSTRUCTION, date Dec. 25, 1985
 FIRST BEAM, date (or goal) Feb. 1, 1986
 MAJOR ALTERATIONS

COST, ACCELERATOR ¥ 250,000,000
 COST, FACILITY, total ¥ 520,000,000
 FUNDED BY Japanese Government

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ENGINEERS
 TECHNICIANS CRAFTS
 GRAD STUDENTS involved during year
 OPERATED BY N. Kishimoto, Research staff or Operators
 OPERATION 60 hr/wk, On target 60 hr/wk
 TIME DISTR. in house %, outside 100 %
 BUDGET, op & dev ¥ 40,000,000
 FUNDED BY Japanese Government

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) 50.5 cm, R-extraction 42 cm
 R injection cm
 GAP, min 7 cm, Field 19.6 kG
 max 13 cm, Field 11.2 kG at 1.3×10^5
 AVERAGE FIELD at R ext 15.4 kG Ampere turns
 B max / 1.27

NUMBER OF SECTORS { compact 4 } Spiral, max 0 deg
 { separated }
 SECTOR ANGLE (SSC) 45 deg

TRIMMING COILS Circular trimming coil 3 set
 Harmonic trimming coil 2 set
 CONDUCTOR, material and type Cu, Hollow conductor
 STORED ENERGY (cryogenic) MJ
 POWER: main coils 35 max kW; current stability $1 \times 10^{-5}/h$
 trimming coils 0.5 max kW; current stability $1 \times 10^{-7}/h$
 WEIGHT: Fe 21 tons; coils 1.5 tons
 COOLING system 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 45 deg
 BEAM APERTURE 2 cm; DC Bias 0 kV
 TUNED by, coarse MS fine VC, Trimmer
 RF 31.3, 43.5 to 47 Fixed MHz, stable $\pm 2 \times 10^{-6}$
 Orb F to MHz
 HARMONICS, RF/Orb F, used 2nd, 4th
 DEE-Gnd, max 50 kV, min gap 0.5 cm
 STABILITY, (pk-pk noise)/(pk RF volt) 0.01
 ENERGY GAIN, max 120 kV/turn
 RF PHASE, stable to \pm deg
 RF POWER input, max 22 kW
 FREQUENCY MODULATION, rate /s
 modulator, type
 beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 5×10^{-6} Torr or mbar
 PUMPS, No, Type, Size Diffusion pump, 2000l/sec
 Rotary pump

ION SOURCES

. Hot cathode

INJECTION SYSTEM

. V

EXTRACTION SYSTEM

. Electrostatic system

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 108 m²; movable m²
 TARGET STATIONS 50 in one rooms
 STATIONS served at same time, max one
 MAG SPECTROGRAPH, type
 COMPUTER model
 OTHER FACILITIES Irradiation creep

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (μ A)	
	Goal	Achieved	Internal	External
P	17	17.0		50
D	10	10.3		50
He-3	26	26.6		30
alpha	20	20.6		30
SECONDARY			(part/s)	

BEAM PROPERTIES

MEASURED CONDITIONS
 PULSE WIDTH RF deg μ A of MeV ions
 PHASE EXC. max RF deg μ A of MeV ions
 EXTRACT eff. 70 % 4 μ A of 17 MeV P ions
 RESOL $\Delta E/E$ 0.6 % 1 μ A of 17 MeV P ions
 EMITTANCE
 (π mm-mrad) 10 axial 3 μ A of 17 MeV P
 42 rad

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS 100 %
 BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS

REFERENCES/NOTES

- 1)
- 2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.