

ENTRY No. 53
 NAME OF MACHINE BC 1710 DATE May 8, 1989
 INSTITUTION National Research Institute for Metals
 ADDRESS Sengen 1-2-1, Tsukuba City, Ibaraki 305, Japan
 TEL 298-51-6311 TELEX
 IN CHARGE H. Shiraishi REPORTED BY N. Kishimoto

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 Science and Technology Agency
ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
 SCIENTISTS 5 ENGINEERS
 TECHNICIANS CRAFTS
 GRAD STUDENTS involved during year
 OPERATED BY 4 Research staff or Operators
 OPERATION 48 hr/wk, On target 48 hr/wk
 TIME DISTR. in house 0 %, Outside 100 %
 BUDGET, op & dev ¥ 40,000,000
 FUNDED BY Science and Technology Agency
RESEARCH STAFF, not included above
 USERS, in house outside 2
 GRAD STUDENTS involved during year
 RESEARCH BUDGET, in house ¥ 5,000,000
 FUNDED BY Science and Technology Agency
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 1.3x10⁵
 AVERAGE FIELD at R ext 15.4 kG } Ampere turns
 B max/ 1.27
 NUMBER OF SECTORS { compact 4 } Spiral, max .. deg
 separated
 SECTOR ANGLE (SSC) 45 deg
 TRIMMING COILS Circular Trim Coil 3 sets
 Harmonic Trim Coil 2 sets
 CONDUCTOR, material and type Cu, Hollow conductor
 STORED ENERGY (cryogenic) MJ
 POWER: main coils 35 max, kW ; current stability 1x10⁻⁵/h
 trimming coils 0.5 max, kW ; current stability 1x10⁻⁵/h
 WEIGHT: Fe 21 tons ; coils 1.5 tons
 COOLING system Purified water
 ION ENERGY (bending limit) E/A = q²/a² MeV/amu
 (focusing limit) E/A = q²/a² 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 MHz, stable ± 2x10⁻⁶
 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 ± deg
 RF POWER input, max 22 kW
 FREQUENCY MODULATION, rate /s
 modulator, type
 beam pulse, width
VACUUM SYSTEM
 OPERATING PRESSURE 5 x 10⁻⁶ Torr or mbar
 PUMPS, No, Type, Size Diffusion pump, 2000 liter/s
 Rotary pump
ION SOURCES
 Hot Cathode

INJECTION SYSTEM

Gas
EXTRACTION SYSTEM
 Electrostatic Deflector

FACILITIES FOR RESEARCH
 SHIELDED AREA, fixed 10⁶ m² ; movable m²
 TARGET STATIONS 50 in rooms
 STATIONS served at same time, max 1
 MAG SPECTROGRAPH, type
 COMPUTER model
 OTHER FACILITIES Irradiation Creep Apparatur

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pμA)	
	Goal	Achieved	Internal	External
P	17	17.0	50	50
D	10	10.3	50	50
He-3	26	26.6	20	20
alpha	20	20.6	20	20

SECONDARY (part/s)

BEAM PROPERTIES

MEASURED CONDITIONS
 PULSE WIDTH RF deg μA of MeV ions
 PHASE EXC, max RF deg μA of MeV ions
 EXTRACT eff .60 % 4 μA of .17 MeV .P. ions
 RESOL ΔE/E 0.6 % 1 μA of .17 MeV .P. ions
 EMITTANCE
 (π mm. mrad) { 10 axial } 3 μA of .17 MeV .P. ions
 { 42 rad }
OPERATING PROGRAMS, time distribution
 BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
 BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS