

ENTRY NO. 13

NAME OF MACHINE Y-20
 INSTITUTION Institute of Atomic Energy
 ADDRESS Box 275, Beijing, PRC
 TEL 868221 TELEX
 IN CHARGE REPORTED BY

HISTORY AND STATUS

DESIGN, date Model tests
 ENG DESIGN, date
 CONSTRUCTION, date October 1, 1958
 FIRST BEAM, date (or goal)
 MAJOR ALTERATIONS

COST, ACCELERATOR 6 million yuan
 COST, FACILITY, total 10 million yuan
 FUNDED BY

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ENGINEERS
 TECHNICIANS CRAFTS
 GRAD STUDENTS involved during year
 OPERATED BY Research staff or Operators
 OPERATION 120 hr/wk, On target 100 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) 120 cm, R-extraction 52.5 cm
 R injection cm
 GAP, min 148 cm, Field 15.95 kG
 max 218 cm, Field 13.05 kG at 286944
 AVERAGE FIELD at R ext 14.50 kG Ampere turns
 B max / < B >

NUMBER OF SECTORS {compact separated} Spiral, max 45 deg
 SECTOR ANGLE (SSC) deg
 TRIMMING COILS 7 coils

CONDUCTOR, material and type Cu
 STORED ENERGY (cryogenic) MJ
 POWER: main coils 130 max kW: current stability 2×10^{-3}
 trimming coils max kW: current stability 1×10^{-3}
 WEIGHT: Fe 120 tons: coils 15 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 180 deg
 BEAM APERTURE 35 cm; DC Bias kV
 TUNED by, coarse fine
 RF 5.9 to 19.3 MHz, stable $\pm 2 \times 10^{-6}$
 Orb F 6 to 17.2 MHz
 HARMONICS, RF/Orb F, used 1st
 DEE-Gnd, max 70 kV, min gap 26.5 cm
 STABILITY, (pk-pk noise)/(pk RF volt) 1×10^{-3}
 ENERGY GAIN, max 200 kV/turn
 RF PHASE, stable to ± 1 deg
 RF POWER input, max, 120 kW
 FREQUENCY MODULATION, rate 300 /s
 modulator, type outside modulator
 beam pulse, width 2-3 ns

VACUUM SYSTEM

OPERATING PRESSURE 1×10^{-5} Torr or mbar
 PUMPS, No, Type, Size

ION SOURCES

PIG type

INJECTION SYSTEM

EXTRACTION SYSTEM Electrostatic deflector

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 150 m²; movable m²
 TARGET STATIONS 3 in 2 rooms
 STATIONS served at same time, max 1
 MAG SPECTROGRAPH, type
 COMPUTER model
 OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (μ A)	
	Goal	Achieved	Internal	External
P	3-20	6-15	200	60
D	3-15	4.5-15	200	60
Alpha	6-30	9-30	10	3

SECONDARY (part/s)

BEAM PROPERTIES

MEASURED CONDITIONS
 PULSE WIDTH 6 RF deg 1 μ A of 12 MeV ions
 PHASE EXC, max RF deg μ A of MeV ions
 EXTRACT eff % μ A of MeV ions
 RESOL $\Delta E/E$ 0.7 % μ A of MeV ions
 EMITTANCE
 (π mm-mrad) axial μ A of MeV
 rad

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS 90% SOLID STATES PHYSICS
 BIOMEDICAL APPLICAT ISOTOPE PRODUCTIONS

REFERENCES/NOTES

- 1)
- 2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.