

ENTRY No. 131

NAME OF MACHINE Cyclotron IAE DATE March 23, 1989

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IN CHARGE REPORTED BY N.I. Venikov

HISTORY AND STATUS

DESIGN, date 1971-73 Model tests 1973-74
ENG DESIGN, date 1974-75
CONSTRUCTION, date 1976
FIRST BEAM, date (or goal) 1976
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) 150 cm, R extraction 67.5 cm
R injection cm
GAP, min 20 cm, Field 21 kG
max 34 cm, Field 15 kG at 8.3x10^5
AVERAGE FIELD at R ext 18 kG Ampere turns
B max/ <B> 1.18

NUMBER OF SECTORS {compact 3} Spiral, max 50 deg
{separated}

SECTOR ANGLE (SSC)

TRIMMING COILS Harmonic, 3 pairs;
concentric, 8 pairs

CONDUCTOR, material and type copper

STORED ENERGY (cryogenic)

POWER: main coils 180 max, kW; current stability 2x10^-5
trimming coils 70 max, kW; current stability 10^-4

WEIGHT: Fe 300 tons; coils 70 tons

COOLING system Air, water

ION ENERGY (bending limit) E/A = 62 q^2/a^2 MeV/amu
(focusing limit) E/A = 35 q^2/a^2 MeV/amu

ACCELERATION SYSTEM

DEES, number 2; angle 180 deg
BEAM APERTURE 4 cm; DC Bias 0 kV
TUNED by coarse MS fine VC, auto
RF 6 to 20 MHz, stable +/- 10^-3%
Orb F 2 to 20 MHz
HARMONICS, RF/Orb F, used 3
DEE - Gnd, max kV, min gap cm
STABILITY, (pk-pk noise)/(pk RF volt) 0.2%
ENERGY GAIN, max 300 kV/turn
RF PHASE, stable to +/- deg
RF POWER input, max 150 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 10^-5 Torr or mbar
PUMPS, No, Type, Size

ION SOURCES

Penning type

INJECTION SYSTEM

EXTRACTION SYSTEM

Electrostatic defl., magnetic channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m^2; movable m^2
TARGET STATIONS 7 in 4 rooms
STATIONS served at same time, max
MAG SPECTROGRAPH, type MASE
COMPUTER model
OTHER FACILITIES

CHARACTERISTIC BEAMS

Table with columns: PARTICLE, ENERGY (MeV), CURRENT (pA) Internal, External. Rows include 6Li, 12C, 14N with Goal and Achieved values.

SECONDARY

(part/s)

BEAM PROPERTIES

MEASURED CONDITIONS
PULSE WIDTH 7 RF deg 2 pA of 20 MeV p. ions
PHASE EXC, max RF deg pA of MeV ions
EXTRACT eff 60 % 30 pA of 30 MeV p. ions
RESOL Delta E/E 0.5 % 2 pA of MeV ions
EMITTANCE

(pi mm. mrad) 30 axial 0.3 pA of 93 MeV 6Li ions
20 rad

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS

REFERENCES/NOTES

1) Venikov N. e.a. IEEE Trans. on Nucl. Sci., v. NS-26 (1979) 1996.

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS

