

ENTRY No. 81

NAME OF MACHINE AMERSHAM INTERNATIONAL CYCL. DATA NO. 1
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HISTORY AND STATUS

DESIGN, date 1962 Model tests (PHILIPS)
ENG DESIGN, date 1963-65
CONSTRUCTION, date 1965
FIRST BEAM, date (or goal) 1965
MAJOR ALTERATIONS computer control 1975
Full automation (without operator) 1977
COST, ACCELERATOR 35 M (1965 price)
COST, FACILITY, total 30 M (1965 price)
FUNDED BY United Kingdom Atomic Energy Authority
ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS 1 ENGINEERS 1
TECHNICIANS 2 CRAFTS
GRAD STUDENTS involved during year
OPERATED BY Research staff or Operators
OPERATION 165 hr/wk, On target 155 hr/wk
TIME DISTR. in house % Outside %
BUDGET, op & dev
FUNDED BY Amersham International Pharmaceuticals Division

MAGNET

POLE FACE, diameter (compact) 140 cm, R extraction cm
R injection cm
GAP, min 16 cm, Field 18 kG
max 30 cm, Field 12 kG at 50x106
AVERAGE FIELD at R ext 15 kG Ampere turns
B max/ <B> 1.5
NUMBER OF SECTORS {compact 3} Spiral, max 48 deg
{separated}
SECTOR ANGLE (SSC) deg
TRIMMING COILS

CONDUCTOR, material and type aluminium
STORED ENERGY (cryogenic) MJ
POWER: main coils 140 max, kW; current stability
trimming coils max, kW; current stability
WEIGHT: Fe 73.6 tons; coils 6.4 tons
COOLING system Closed loop demineralised water
ION ENERGY (bending limit) E/A = 30 q^2/a^2 MeV/amu
(focusing limit) E/A = q^2/a^2 MeV/amu

ACCELERATION SYSTEM

DEES, number 1; angle 180 deg
BEAM APERTURE 3.5 cm; DC Bias 7.5 kV
TUNED by, coarse MS fine MP
RF 10 to 21 MHz, stable +/- 50x10^-5
Orb F to MHz
HARMONICS, RF/Orb F, used 1
DEE - Gnd, max 50 kV, min gap cm
STABILITY, (pk-pk noise)/(pk RF volt) 10
ENERGY GAIN, max 100 kV/turn
RF PHASE, stable to +/- deg
RF POWER input, max 100 kW
FREQUENCY MODULATION, rate 6000 /s
modulator, type Thyatron Crowbar
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 5-10x10^-6 Torr or mbar
PUMPS, No, Type, Size 1 oil diff. pump, 5000 l/sec

ION SOURCES

PIG Filament Source (modified)

INJECTION SYSTEM

EXTRACTION SYSTEM

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m^2; movable m^2
TARGET STATIONS in rooms
STATIONS served at same time, max
MAG SPECTROGRAPH, type
COMPUTER model D.G. NOVVA 2, ROCRWELL microcomputer
OTHER FACILITIES

CHARACTERISTIC BEAMS

Table with columns: PARTICLE, ENERGY (MeV) Goal, Achieved, CURRENT (pA) Internal, External. Rows for p, alpha, and d.

SECONDARY

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 delta E/E % pA of MeV ions
EMITTANCE
(pi mm. mrad) {axial} pA of MeV ions
{rad}

OPERATING PROGRAMS, time distribution

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

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS

ISOTOPE PRODUCTION MACHINE 6Commercial)

- Remote controlled targetry
- Mini computer control since 1974 with no operator attendance
- Automatic Target change with no operator attendance since 1977