ENTRY No. 65

NAME OF MACHINE The Edinburgh Cyclotron DATE 30th June, 1981.
INSTITUTION Medical Research Council,
ADDRESS Cyclotron Unit, Western General Hospital, Edinburgh. (United Kingdom)
TEL 031 - 332 - 2525 TELEX
IN CHARGE T.E. Saxton REPORTED BY T.E. Saxton

HISTORY AND STATUS Commercial Design - The Cyclotron Corporation
DESIGN, date ..... Model tests
ENG DESIGN, date
CONSTRUCTION, date
FIRST BEAM, date (or goal) Middle 1976.
MAJOR ALTERATIONS
COST, ACCELERATOR £ 850,000
COST, FACILITY, total £ 2,400,000
FUNDED BY Medical Research Council, Cancer Research Council & Scot. Home & Health Dept.

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS 2 ENGINEERS 2
TECHNICIANS 3 CRAFTS 2
GRAD STUDENTS involved during year
OPERATED BY ..... Research staff or ..... Operators
OPERATION 40 hr/wk, On target 15 hr/wk
TIME DISTR. in house 100 %, Outside ..... %
BUDGET, op & dev
FUNDED BY Medical Research Council

RESEARCH STAFF, not included above
USERS, in house ..... outside
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY

MAGNET T.C.C. model CS30 to standard specification
POLE FACE, diameter (compact) .... cm, R extraction .... cm
R injection ..... cm
GAP, min ..... cm, Field ..... kG
max ..... cm, Field ..... kG } at .....
AVERAGE FIELD at R ext ..... kG } Ampere turns
B max/ <B>
NUMBER OF SECTORS { compact ..... / separated ..... } Spiral, max .. deg
SECTOR ANGLE (SSC) ..... deg
TRIMMING COILS
CONDUCTOR, material and type
STORED ENERGY (cryogenic) ..... MJ
POWER : main coils ..... max, kW ; current stability .....
trimming coils ..... max, kW ; current stability .....
WEIGHT : Fe ..... tons ; coils ..... tons
COOLING system
ION ENERGY (bending limit) E/A = ... q^2/a^2 MeV/amu
(focusing limit) E/A = ... q /a MeV/amu

ACCELERATION SYSTEM
DEES, number ..... ; angle ..... deg
BEAM APERTURE ..... cm ; DC Bias ..... kV
TUNED by, coarse ..... fine .....
RF ..... to ..... mHz, stable ± .....
Orb F ..... to ..... mHz
HARMONICS, RF/Orb F, used
DEE - Gnd, max ..... kV, min gap ..... cm
STABILITY, (pk-pk noise)/(pk RF volt)
ENERGY GAIN, max ..... kV/turn
RF PHASE, stable to ± ..... deg
RF POWER input, max ..... kW
FREQUENCY MODULATION, rate ..... /s
modulator, type
beam pulse, width

VACUUM SYSTEM
OPERATING PRESSURE ..... Torr or mbar
PUMPS, No, Type, Size

ION SOURCES

INJECTION SYSTEM

EXTRACTION SYSTEM

FACILITIES FOR RESEARCH
SHIELDED AREA, fixed 80 m² ; movable ..... m²
TARGET STATIONS 2 in 2 rooms
STATIONS served at same time, max
MAG SPECTROGRAPH, type
COMPUTER model
OTHER FACILITIES Short-lived gas isotope production
Whole body neutron activation
2 Neutron Therapy Rooms

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
d		15		100
			routine	70
SECONDARY				(part/s)
				6.3 MeV

BEAM PROPERTIES

	MEASURED	CONDITIONS
PULSE WIDTH	RF deg	pμ A of .... MeV ... ions
PHASE EXC, max	RF deg	pμ A of .... MeV ... ions
EXTRACT eff	%	pμ A of .... MeV ... ions
RESOL ΔE/E	%	pμ A of .... MeV ... ions
EMITTANCE		
(π mm. mrad)	axial / rad	pμA of ..... MeV ... ions

OPERATING PROGRAMS, time distribution
BASIC NUCLEAR PHYSICS .. SOLID STATES PHYSICS ....
BIOMEDICAL APPLICAT. 100 ISOTOPE PRODUCTIONS ....

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS

Used for Fast Neutron Therapy, Whole Body Neutron Activation, Short-lived Radioactive Gases.
Two beams into separate treatment rooms -
One beam fixed horizontal, with fixed beryllium target
One beam Isocentric, with beryllium target in rotating gantry.
Target - Patient distance 125cm.
Patient Dose rate 25 rads/min.