ENTRY NO. 23

NAME OF MACHINE CYCLOTRON 520 CGR-MEV

INSTITUTION ATOMIC ENERGY COMMISSION - Department of Biology

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IN CHARGE C. CROUZEL REPORTED BY C. CROUZEL

HISTORY AND STATUS

DESIGN, date 1973 Model tests

ENG DESIGN, date 1973

CONSTRUCTION, date 1974

FIRST BEAM, date (or goal) May 1975

MAJOR ALTERATIONS

COST, ACCELERATOR

COST, FACILITY, total

FUNDED BY

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ENGINEERS

TECHNICIANS 2 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 AEC

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 cm

R injection cm

GAP, min 8,6 cm, Field 17 kG
max 14 cm, Field 10,6 kG } at 136 x 10^6 Ampere turns

AVERAGE FIELD at R ext kG

B max/<B> 1.21

NUMBER OF SECTORS { compact / separated } Spiral, max 34 deg

SECTOR ANGLE (SSC) deg

TRIMMING COILS

CONDUCTOR, material and type

STORED ENERGY (cryogenic) MJ

POWER: main coils 65 max kW: current stability
trimming coils 10 max kW: current stability

WEIGHT: Fe 28 tons: coils 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 50 deg

BEAM APERTURE 2 cm; DC Bias 1 kV

TUNED by, coarse Yes fine Yes

RF 20 to 62 MHz, stable ±

Orb F 6 to 20 MHz

HARMONICS, RF/Orb F, used 236

DEE–Gnd, max 35 kV, min gap 2 cm

STABILITY, (pk-pk noise)/(pk RF volt) 0.001

ENERGY GAIN, max kV/turn

RF PHASE, stable to ± 0.1 deg

RF POWER input, max. 20 kW

FREQUENCY MODULATION, rate /s

modulator, type

beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE Torr or mbar

PUMPS, No, Type, Size

ION SOURCES

Levingston

INJECTION SYSTEM

EXTRACTION SYSTEM

Electrostatic deflector

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m^2; movable m^2

TARGET STATIONS 4 in 2 rooms

STATIONS served at same time, max

MAG SPECTROGRAPH, type

COMPUTER model

OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
p	24		200	100
d	14,5		400	100
^{3}He	33		100	50
^{4}He	29		100	50
SECONDARY			(part/s)	

BEAM PROPERTIES

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

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS

BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS 100 %

REFERENCES/NOTES

1)

2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.