

ENTRY NO. 85
 NAME OF MACHINE Medi-Physics Cyclotron DATE April 1, 1984
 INSTITUTION Medi-Physics Inc.
 ADDRESS 900 Durham Avenue, South Plainfield, New Jersey 07080 (USA)
 TEL (201) 757-0500 TELEX
 IN CHARGE W. S. Buela REPORTED BY W. S. Buela

HISTORY AND STATUS (Cyclotron Corp CS-22)

DESIGN, date Model tests April 72
 ENG DESIGN, date
 CONSTRUCTION, date
 FIRST BEAM, date (or goal) Accepted Feb 73
 MAJOR ALTERATIONS

COST, ACCELERATOR
 COST, FACILITY, total
 FUNDED BY

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ENGINEERS 1
 TECHNICIANS 5 CRAFTS
 GRAD STUDENTS involved during year
 OPERATED BY Research staff or X Operators
 OPERATION 168 hr/wk. On target 125 hr/wk
 TIME DISTR. in house 100 % Outside %

BUDGET, op & dev
 FUNDED BY Medi-Physics, Inc.

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) 96.5 cm, R extraction 4.3 cm
 R injection cm
 GAP, min 5 cm, Field 21 kG }
 min 10 cm, Field 13.5 kG } at 1.5 x 10⁵
 AVERAGE FIELD at R ext 16.5 kG } Ampere turns
 B max / < B > 1.22 }
 NUMBER OF SECTORS { compact 3 } Spiral, max deg
 { separated }
 SECTOR ANGLE (SSC) deg
 TRIMMING COILS Harmonic Corr. 1 pr/sec

CONDUCTOR, material and type Cu strap
 STORED ENERGY (cryogenic) MJ
 POWER: main coils 40 max, kW; current stability +30/10⁶
 trimming coils 5 max, kW; current stability
 WEIGHT: Fe 19.5 tons; coils 2.5 tons
 COOLING system D. I. Water
 ION ENERGY (bending limit) E/A = q²/a² MEV/amu
 (focusing limit) E/A = q/a MeV/amu

ACCELERATION SYSTEM

DEES, number 2 ; angle 90 deg
 BEAM APERTURE 2 cm; DC Bias 1.5 kV
 TUNED by coarse inductor fine panel
 RF 12 to 25 MHz, stable ± 4/10⁵
 Orb F 12 to 25 MHz
 HARMONICS, RF/Orb F used 1st
 DEE-Gnd, max 30 kV, min gap 1 cm
 STABILITY, (pk-pk noise)/(pk RF volt)
 ENERGY GAIN, max 100 kV/turn
 RF PHASE, stable to ± deg
 RF POWER input, max 70 kW
 FREQUENCY MODULATION, rate /s
 modulator, type
 beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 10⁻⁵ Torr or mbar
 PUMPS, No, Type, Size 1.10" oil diffusion

ION SOURCES

1. radial PIG

INJECTION SYSTEM

EXTRACTION SYSTEM

Electrostatic Channel and Magnetic Channel

FACILITIES FOR RESEARCH

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

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pμA)	
	Goal	Achieved	Internal	External
P	22	22.4	200	60
d	12	12.4	200	100
He3++	32	32.4	100	50
He4++	24	24.8	100	50

SECONDARY (part/s)

BEAM PROPERTIES

MEASURED CONDITIONS
 PULSE WIDTH RF deg μA of MeV ions
 PHASE EXC. max RF deg μA of MeV ions
 EXTRACT eff 65 % 100 μA of 12 MeV d ions
 RESOL ΔE/E 25 % μA of 32 MeV He3++ ions
 EMITTANCE { .50 axial } μA of 22 MeV P
 (π mm. mrad) { .50 rad }

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.