ENTRY NO. 65

CS-22

NAME OF MACHINE Medi-Physics Cyclotron (The Cyclotron Corp.) DATE 7-10-78
INSTITUTION Medi-Physics, Inc.
ADDRESS 900 Durham Avenue, South Plainfield, New Jersey

IN CHARGE R.E. Hubbard REPORTED by R.E. Hubbard

HISTORY AND STATUS

DESIGN, date _____ MODEL tests _____
ENG. DESIGN, date _____
CONSTRUCTION, date _____
FIRST BEAM date (or goal) Accepted Feb. 1973
MAJOR ALTERATIONS None

OPERATION, 168 hr/wk; On Target 120 hr/wk
TIME DIST., in house 100 %, outside 0 %
USERS' SCHEDULING CYCLE 1 weeks
COST, ACCELERATOR _____
COST, FACILITY, total _____
FUNDED BY Medi-Physics, Inc.

ACCELERATOR STAFF, OPERATION and DEVELOPMENT

SCIENTISTS 1 ENGINEERS _____
TECHNICIANS 5 CRAFTS _____
GRAD STUDENTS involved during year _____
OPERATED BY _____ Res staff or X Operators
BUDGET, op & dev _____
FUNDED BY Medi-Physics, Inc.

RESEARCH STAFF, not included above

USERS, in house _____ outside _____
GRAD STUDENTS involved during year _____
RES. BUDGET, in house _____
FUNDED BY _____

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed ~100 m^2
movable _____ m^2
TARGET STATIONS 8 in 1 rooms
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type None
COMPUTER, model None
OTHER FACILITIES None

REFERENCES/NOTES

(1) IEEE Trans.Nucl.Sci. NS-14 70-71 (1967)
(2) IEEE Trans.Nucl.Sci. NS-16 500-503 (1969)

MAGNET

POLE FACE diameter 97 cm; R extraction 42.4 cm
GAP, min 5 cm; Field 21 kG
max 10 cm; Field 13.5 kG
} at 2 X 10^6 ampere turns
AVERAGE FIELD at R ext 16.5 kG
CURRENT STABILITY ± 30 parts/10^6; $B_{max}/\langle B \rangle$ 1.22
NUMBER OF SECTORS 3 ; SPIRAL, max 45 deg
POLE FACE COIL PAIRS: AVF None /sec;
Harmonic correction 3 Sets
Rad grad _____ /sec or Circ coils X
WEIGHT: Fe 19.5 tons; Coils 2.5 tons
CONDUCTOR, Material and type Cu Strap
STORED ENERGY _____ MJ
COOLING SYSTEM De-ionized water
POWER: Main coils 40 max, kW
Trimming coils 0 max, kW
YOKE/POLE AREA _____ %
SECTOR ANGLE (Sep Sec) _____ deg
ION ENERGY (Bending limit) E/A = _____ q^2/A^2 MeV
(Focusing limit) E/A = _____ q/A MeV

ACCELERATION SYSTEM

DEES, number 2 angle 90 deg
BEAM APERTURE 2 cm; DC BIAS 1.5 kV
TUNED by, coarse straps fine panel
RF 12 to 25 mHz, stable ± _____ /10^6
Orb F _____ to _____ mHz; GAIN, max 100 kV/turn
HARMONICS, RF/Orb F, used None
DEE-Gnd, max 30 kV, min gap 5 cm
STABILITY, (pk-pk noise)/(pk RF volt) _____
RF PHASE stable to ± _____ deg
RF POWER input, max 70 kW
RF PROTECT circuit, speed _____ μsec
Type Series tube
FREQUENCY MODULATION, rate _____ /sec
MODULATOR, type _____
BEAM PULSE, width _____

VACUUM SYSTEM

PUMPS, No., Type, Size 1 Diffusion Pump 10"
OPERATING PRESSURE 10 μTorr,
PUMPDOWN TIME 1 hrs

ION SOURCES/INJECTION SYSTEM

"Cold Cathode" (1)

EXTRACTION SYSTEM

Electrostatic and Magnetic Channel (2)

CONTROL SYSTEM

ENTRY NO. 65 (cont.)

CHARACTERISTIC BEAMS

	Particle	Goal (MeV)	Achieved (MeV)
ENERGY	p		22
	d		12
	He^3		32
		(μA)	(μA)
CURRENT Internal	p		400
	d		400
	He^3		100
External	p		60
	d		100
	He^3		50
		(part/s)	(part/s)
Secondary			

BEAM PROPERTIES

	Measured	Conditions
Pulse Width	____ RF deg	____ μA of ____ MeV ____
Phase Exc, max	____ RF deg	____ μA of ____ MeV ____
Extract Eff	____ %	____ μA of ____ MeV ____
Res, ΔE/E	____ %	____ μA of ____ MeV ____
Emittance		
(mm-mrad) { ____ axial, ____ radial }		____ μA of ____ MeV ____

OPERATING PROGRAMS, time dist

Basic Nuclear Physics ____ %
Solid State Physics ____ %
Bio-Medical Applications ____ %
Isotope Production ____ %
Development ____ %
____ %
____ %

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, OPERATION SUMMARY, ADDITIONAL REFERENCES