

ENTRY No. **CU106**

NAME OF MACHINE Medi-Physics Cyclotron DATE

INSTITUTION Medi-Physics, Inc.

ADDRESS 5855 Christie Ave., Emeryville, CA 94608 - USA

TEL TELEX

IN CHARGE E.R. Russell REPORTED BY E.R. Russell

HISTORY AND STATUS

DESIGN, date Model tests

ENG DESIGN, date

CONSTRUCTION, date

FIRST BEAM, date (or goal) Accepted 12/70

MAJOR ALTERATIONS None

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 Research staff or Operators

OPERATION 168 hr/wk, On target 120 hr/wk

TIME DISTR. in house 99 %, Outside 1 %

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) .97 cm, R extraction 42 cm

R injection cm

GAP, min 5 cm, Field 21 kG }
 max 10 cm, Field 13.5 kG } at 2×10^6

AVERAGE FIELD at R ext 16.5 kG } Ampere turns
 B max/ 1.22

NUMBER OF SECTORS { compact } Spiral, max .. deg
 separated

SECTOR ANGLE (SSC) deg

TRIMMING COILS Harmonic correction 1

CONDUCTOR, material and type

STORED ENERGY (cryogenic) MJ

POWER: main coils max, kW ; current stability 3×10^{-5}

trimming coils max, kW ; current stability

WEIGHT: Fe 19.5 tons ; coils tons

COOLING system

ION ENERGY (bending limit) E/A = q^2/a^2 MeV/amu
 (focusing limit) E/A = q^2/a^2 MeV/amu

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 \pm

Orb F to MHz

HARMONICS, RF/Orb F, used

DEE - Gnd, max 30 kV, min gap cm

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

ENERGY GAIN, max 100 kV/turn

RF PHASE, stable to \pm deg

RF POWER input, max 70 kW

FREQUENCY MODULATION, rate /s
 modulator, type

beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE Torr or mbar

PUMPS, No, Type, Size

.....

ION SOURCES

..... Internal cold cathode¹⁾

INJECTION SYSTEM

EXTRACTION SYSTEM
 Electrostatic and magnetic channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 100 m² ; movable m²

TARGET STATIONS 8 in 1 rooms

STATIONS served at same time, max 1

MAG SPECTROGRAPH, type None

COMPUTER model None

OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pμA)	
	Goal	Achieved	Internal	External
p	..... 22 .....	..... 22	400	60
d	..... 12 .....	..... 12	400	100
³ He	..... 32 .....	..... 32	100	50

SECONDARY

(part/s)

BEAM PROPERTIES

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

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS .. SOLID STATES PHYSICS

BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS 100.

REFERENCES/NOTES

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

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS

Designed by the Cyclotron Corporation.
 * Data confirmed October, 1981.