ENTRY No. 73

NAME OF MACHINE Medi-Physics Cyclotron DATE 8/30/78*

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..4cm
R injection ..... cm
GAP, min 5. cm, Field ..... 21. kG
max 10. cm, Field ..... 13.5 kG } at 2.10^6 Ampere turns
AVERAGE FIELD at R ext 16.5 ..... kG
B max/ <B> 1.22
NUMBER OF SECTORS { compact ..... / separated ..... } Spiral, max 45 deg
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 /a 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 ± .....
Orb F ..... to ..... mHz
HARMONICS, RF/Orb F, used none
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 ± ..... 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 cathode 1)

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) Goal	Achieved	CURRENT (μA) Internal	External
p		22	400	60
d		12	400	100
^{3}He		32	100	50
SECONDARY			(part/s)	

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. .... 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.