ENTRY No. 74

NAME OF MACHINE Medi-Physics Cyclotron DATE August 1, 1981
INSTITUTION Medi-Physics Inc.
ADDRESS 900 Durham Avenue, South Plainfield New Jersey 08805 (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 43 cm
R injection cm
GAP, min 5 cm, Field 21 kG
max 10 cm, Field 13.5 kG
at 1.5×10^5 Ampere turns
AVERAGE FIELD at R ext 16.5 kG
B max/ $<B>$ 1.22
NUMBER OF SECTORS compact 3 / separated; Spiral, max deg
SECTOR ANGLE (SSC) deg
TRIMMING COILS Harmonic Corr. 1pr/sec

CONDUCTOR, material and type Cu strap
STORED ENERGY (cryogenic) MJ
POWER : main coils 40 max, kW ; current stability $\pm 30/10^6$
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 = 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 inductor fine panel
RF 12 to 25 mHz, stable $\pm 4/10^5$
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 $\pm$ 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 m^2 ; movable m^2
TARGET STATIONS in 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	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	pμ A of MeV ions
PHASE EXC, max RF deg	pμ A of MeV ions
EXTRACT eff 65 %	100 pμ A of 12 MeV d ions
RESOL ΔE/E 25 %	pμ A of 32 MeV He3++ ions
EMITTANCE (π mm. mrad) 50 axial / 50 rad	pμA of 22 MeV p ions

OPERATING PROGRAMS, time distribution
BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS 100%

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS