

ENTRY No. 108

NAME OF MACHINE Medi-Physics Cyclotron DATE  
INSTITUTION Medi-Physics Inc.  
ADDRESS 900 Durham Ave., South Plainfield, New Jersey, 07080 U.S.A.  
TEL 201-757-0500 TELEX  
IN CHARGE W. S. Bueia REPORTED BY E. A. Kowalski

HISTORY AND STATUS (CS-22)

DESIGN, date Model tests 72  
ENG DESIGN, date  
CONSTRUCTION, date  
FIRST BEAM, date (or goal) Feb. 1973  
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 XX Operators

OPERATION 168 hr/wk, On target 123 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 1.5x10<sup>5</sup>

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 (ISSC) 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 3x10<sup>-5</sup>

trimming coils 5 max, kW; current stability

WEIGHT: Fe tons; coils

COOLING system D.I. Water

ION ENERGY (bending limit) E/A = q<sup>2</sup>/a<sup>2</sup> MeV/amu

(focusing limit) E/A = q<sup>2</sup>/a<sup>2</sup> 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 ± 4/10<sup>5</sup>

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<sup>-5</sup> Torr or mbar

PUMPS, No, Type, Size 10" Oil Diffusion

ION SOURCES

Radial Pig

INJECTION SYSTEM

EXTRACTION SYSTEM

Electrostatic Channel & Magnetic Channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m<sup>2</sup>; movable m<sup>2</sup>

TARGET STATIONS in rooms

STATIONS served at same time, max

MAG SPECTROGRAPH, type

COMPUTER model

OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pA)	
	Goal	Achieved	Internal	External
P	22	22.4	200	50
D	12	12.4	200	100
He <sup>3++</sup>	32	32.4	100	50
He <sup>4++</sup>	24	24.8	100	50

SECONDARY (part/s)

BEAM PROPERTIES

MEASURED CONDITIONS

PULSE WIDTH RF deg pA of MeV ions

PHASE EXC, max RF deg pA of MeV ions

EXTRACT eff 65% 100 pA of 12 MeV ions

RESOL ΔE/E 25% pA of 32 MeV ions

EMITTANCE

(π mm. mrad) { .50 axial } pA of .22 MeV ions

{ .50 rad }

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS

BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS 100%

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES,

COMMENTS