

ENTRY No. 94

NAME OF MACHINE .CP-42. H<sup>-</sup> Cyclotron..... DATE .....

INSTITUTION ..... THE CYCLOTRON CORPORATION.....

ADDRESS ..... 950 Gilman St., Berkely, California, U.S.A.....

TEL. (415) 524-8670..... TELEX ... 910-366-7116.....

IN CHARGE .G. O. Hendry..... REPORTED BY ... T.Y.T. Kao.....

### HISTORY AND STATUS

DESIGN, date .Mid..1977..... Model tests .....

ENG DESIGN, date .Mid..1977.....

CONSTRUCTION, date .Mid..1978.....

FIRST BEAM, date (or goal) .July.1979.....

MAJOR ALTERATIONS .....

### COST, ACCELERATOR

COST, FACILITY, total .....

FUNDED BY .....

### ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ..... ENGINEERS .....

TECHNICIANS ..... CRAFTS .....

GRAD STUDENTS involved during year .....

OPERATED BY ..... Research staff or ..... Operators

OPERATION ..... hr/wk, On target ..... hr/wk

TIME DISTR. in house ..... %, Outside ..... %

BUDGET, op & dev .....

FUNDED BY .....

### 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) 120 cm, R extraction 53. cm

R injection ..... cm

GAP, min ..... 5 ..... cm, Field ..... 24 ..... kG }  
max ..... 12 ..... cm, Field ..... 16 ..... kG } at 92,400...  
AVERAGE FIELD at R ext ..... 18.4 ..... kG } Ampere turns

B max/ <B> ..... 1.3 .....

NUMBER OF SECTORS { compact .. 3... } Spiral, max 64 deg  
                          { separated .....

SECTOR ANGLE (SSC) ..... deg

TRIMMING COILS .....

CONDUCTOR, material and type ..... Hollow Copper.....

STORED ENERGY (cryogenic) ..... MJ

POWER: main coils . 100 max, kW ; current stability 10(+5)  
trimming coils ..... max, kW ; current stability .....

WEIGHT: Fe ..... 35 ..... tons ; coils ..... 3 ..... tons

COOLING system ..... Recirculated Water.....

ION ENERGY (bending limit) E/A = ..... 42. 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 ..... 1.8 ..... cm ; DC Bias ..... 1.5 ..... kV

TUNED by, coarse ..... fine Capacitors, Trimmer.

RF ..... to 26.8 ..... MHz, stable ± .....

Orb F ..... to 26.8 ..... MHz

HARMONICS, RF/Orb F, used ..... 1.....

DEE - Gnd, max . 35. kV, min gap ..... 0.5 ..... cm

STABILITY, (pk-pk noise)/(pk RF volt) ..... 10(-4).....

ENERGY GAIN, max ..... 100 ..... kV/turn

RF PHASE, stable to ± .....

RF POWER input, max ..... 100 ..... kW

FREQUENCY MODULATION, rate ..... /s

modulator, type .....

beam pulse, width .....

### VACUUM SYSTEM

OPERATING PRESSURE ..... 6x10<sup>-6</sup> ..... H<sub>2</sub> ..... Torr or mbar

PUMPS, No, Type, Size .....

..... 4 . 10+ inches Diff. Pumps .....

### ION SOURCES

..... PIG .....

### INJECTION SYSTEM

### EXTRACTION SYSTEM

..... Charge Exchange Foil.....

### 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 (pμA)	
	Goal	Achieved	Internal	External
H <sup>-</sup>	11-42	11-42	200	200 p.

### SECONDARY

(part/s)

### BEAM PROPERTIES

MEASURED	CONDITIONS	
	MEASURED	CONDITIONS
PULSE WIDTH .40.. RF deg	.200... pμ A of .42. MeV μ <sup>-</sup> ions	
PHASE EXC, max .. RF deg	pμ A of .... MeV ... ions	
EXTRACT eff .100.. %	pμ A of .... MeV ... ions	
RESOL ΔE/E .1.. %	pμ A of .... MeV ... ions	
EMITTANCE		

(π mm. mrad) { .10 axial } ..... pμ A of ..... MeV ... ions  
                          { .10 rad }

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS .. SOLID STATES PHYSICS .....

BIOMEDICAL APPLICAT. .... ISOTOPE PRODUCTIONS (+) .....

NEUTRON PRODUCTION (+) .....

(+). Varied .....

### REFERENCES/NOTES

1) G.O. Hendry et al. Proceedings of 9th Int. Conf. on  
Cyc. and their Appl., 125 (1981).

### PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS