

ENTRY NO: C-44
Machine Name: Indiana University Cyclotron Facility
Date: 5/21/01 5:13:14 PM
Institution: Indiana University
Address 2401 Milo Sampson Lane
In Charge of Cyclotron: John Cameron, Director
Telephone: (812) 855-9365
Fax: (812) 855-6645
Person Reporting: Gary W. East
Web: www.iucf.indiana.edu
E-mail: east@iucf.indiana.edu

HISTORY

Designed By: IUCF staff with various vendors
Construction Dates: 1968-1975
First Beam Date: September 1975

CHARACTERISTIC BEAMS

ions	/ energy(MeV/N)	/current(pps)	/power(w)
H+	205	3×10^{13}	1000

transmission efficiency(source to extract beam)

typical: 20% - best: 25%

transverse emittance

emittance definition: RMS

vertical: 1.5π mm mrad

horizontal: 1.5π mm mrad

longitudinal: 0.1%, $4(\Delta) E/E$ % x deg RF

USES

basic research: %	therapy: %
development: 10%	isotope production: %
other: 80%	maintenance: %
beam tuning: 10%	Total Time: 2000h/year

TECHNICAL DATA

a)magnet: type: Separated sector

Kb: 215MeV/A Kf: 215MeV/A

average field (min/max): 0.64 (<0.02-1.65) T

number of magnet sectors: 4

hill angular width: 36hill angular width

spiral (max): N/A deg

pole parameters

diameter: N/A m

injection radius: 1.01 m

extraction radius: 3.3 m

hill gap: 0.76m valley gap: m

trim coils

-number: 21x2

-current(max): 950 A-turns

harmonic coils

-number: 4xNsectorsx2

-current(max): 40 A-turns

main coils

number: 1x2

total ampere-turns: 40,000 A-turns

current: 1000 A

stored energy: N/AMJ

weight - iron: 2200t coils: 10t

power

main coils (total): 250 kW

trim coils (total max): 100 kW

refrigerator (cryogenic): N/A kW

b)RF

acceleration

frequency range: 35.52MHz

harmonic modes: 4

number of dees: 2

number of cavities: 2

dee angular width: 38degrees

voltage

at injection: 200kV(peak to ground, max)

at extraction: 200kV(peak to ground, max)

peak: 200kV(peak to ground, max)

line power(max): 200kW

stability

phase: 0.25 deg

voltage: 8×10^{-5} %

injection

c)ion source: ECR

external injection: radial

components: electrostatic inflector

source bias voltage: 600kV

injection energy: 0.6MeV/N

buncher: RF

injection efficiency: 75%

d)injector:

e)extraction

electrostatic septum-70KV magnetic deflector

efficiency

typical: 99%

best: 99%

f)vacuum

pumps: 4 cryogenic, 2 diffusion

achieved vacuum: 0.0004Pa

REFERENCES

1995 IUCF Scientific and Technical Report IUCF Status Report,
R.E. Pollock,IEEE Trans.Nucl. Sci. NS-26

EXPERIMENTAL FACILITIES

None

COMMENTS

