ENTRY NO: C-36
Machine Name: NAC Injector Cyclotron 1
Date: 6/11/01 3:01:53 AM
Institution: National Accelerator Centre
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HISTORY
Designed By: National Accelerator staff
Construction Dates: 1978 - 1983
First Beam Date: December 1983
CHARACTERISTIC BEAMS

ions	/ **energy**(MeV/N)/**curre**nt(pps)/**powe**r(w)		
p	3.15	2.1e15	1017
p	8.0	8.2e13	104
d	1.9	1.9e13	5.7
He	2.5	9.3e12	8

transmision efficiency(source to extract beam)
typical: % - **best:** %
tranverse emmitance
emmitance definition: RMS
vertical: 10π mm mrad
horizontal: 15π mm mrad
longitudinal: 0.042(Δ) E/E)%xdeg RF

USES
basic research: 10% **therapy:** 35%
development: % **isotope production:** 40%
other: % **maintenance:** 3%
beam tuning: 12% **Total Time:** 7000h/year

TECHNICAL DATA
a)magnet: **type:** sector magnets
Kb: 8MeV/A **Kf:** 8MeV/A
average field (min/max): 1.0 - 0.3 T
number of magnet sectors: 4
hill angular width: 45hill angular width
spiral (max): deg
pole parameters
diameter: 1.16 m
injection radius: m
extraction radius: 0.476 m
hill gap: 0.156m **valley gap:** 0.250m
trim coils
-number: 5x2
-current(max): 180 A-turns
harmonic coils
-number: 2xNsectorsx2
-current(max): 20 A-turns
main coils
number: 1x2
total ampere-turns: 154560 A-turns
current: 690 A
stored energy: 0.1MJ
weight - iron: 54.5t coils: 1.85t
power
main coils (total): 46 kW
trim coils (total max): 9 kW
refrigerator (cryogenic): kW
b)RF
acceleration
frequency range: 8.6 - 26MHz
harmonic modes: 2 and 6
number of dees: 2
number of cavities: 4
dee angular width: 90degrees
voltage
at injection: kV(peak to ground, max)
at extraction: kV(peak to ground, max)
peak: 60kV(peak to ground, max)
line power(max): 2x 25kW
stability
phase: 0.1 deg
voltage: 0.1%
injection
c)ion source: PIG
external injection:
components:
source bias voltage: kV
injection energy: MeV/N
buncher:
injection efficiency: %
d)injector:
e)extraction
electrostatic channel 2x magnetic channels
efficiency
typical: 75%
best: 96%
f)vacuum
pumps: turbo 4.8 cub m/s, roots 350 cub m/h and rotary va
achieved vacuum: 1.5e-3Pa
REFERENCES
Proc. 10th Int. Conf. on Cyclotrons (1984) 67, 94, 373 Proc. 11th Int. Conf. on Cyclotrons (1986) 9, 109
EXPERIMENTAL FACILITIES

COMMENTS