ENTRY NO: C-20
Machine Name: RCNP AVF Cyclotron
Date: 9/11/01 4:11:44 AM
Institution: Researc Center for Nuclear Physics
Address 10-1, Mihogaoka, Ibaraki, Osaka, 567-0047, Japan
In Charge of Cyclotron: Prof. Kenji Sato
Telephone: +81-6-879-8830
Fax: +81-6-879-8899
Person Reporting: Dr. Shiro Ninomiya
Web: http://www.rcnp.osaka-u.ac.jp/
E-mail: ninomiya@rcnp.osaka-u.ac.jp

HISTORY
Designed By: RCNP Osaka University
Construction Dates: 1971-1973
First Beam Date: 1974
CHARACTERISTIC BEAMS

ions	/ **energy**(MeV/N)/**curre**nt(pps)/**powe**r(w)	
Proton	80	3x10^13
3He	53	3x10^13
4He	35	3x10^13
18O^6+	13.7	3x10^11

transmision efficiency(source to extract beam)
typical: 80% - **best:** 100%
tranverse emmitance
emmitance definition: RMS
vertical: 3π mm mrad
horizontal: 6π mm mrad
longitudinal: 0.1x12(Δ) E/E)%xdeg RF

USES
basic research: 42% **therapy:** %
development: 27% **isotope production:** %
other: % **maintenance:** 24%
beam tuning: 7% **Total Time:** 6800h/year

TECHNICAL DATA
a)magnet: **type:** normal conductor compact
Kb: 140MeV/A **Kf:** 80MeV/A
average field (min/max): 1.6 T
number of magnet sectors: 3
hill angular width: hill angular width
spiral (max): 52 deg
pole parameters
diameter: 2.3 m
injection radius: m
extraction radius: 1.0 m
hill gap: 0.207m **valley gap:** 0.347m
trim coils
-number: 16x2
-current(max): 3000 A-turns
harmonic coils
-number: 3xNsectorsx2
-current(max): 1000 A-turns
main coils
number: 1x2
total ampere-turns: 4x10^5 A-turns
current: 1430 A
stored energy: MJ
weight - iron: 400t coils: 13t
power
main coils (total): 450 kW
trim coils (total max): 265 kW
refrigerator (cryogenic): kW
b)RF
acceleration
frequency range: 6-18MHz
harmonic modes: 1 and 3
number of dees: 1
number of cavities: 1
dee angular width: 180degrees
voltage
at injection: 80kV(peak to ground, max)
at extraction: 80kV(peak to ground, max)
peak: 80kV(peak to ground, max)
line power(max): 400kW
stability
phase: 0.1 deg
voltage: 0.1%
injection
c)ion source: Atomic Polarized Ion Source and ECR Ion Source
external injection: axial
components: inflector
source bias voltage: 15kV
injection energy: MeV/N
buncher: f+2f+3f
injection efficiency: 12%
d)injector:
e)extraction
Electric Static Deflector
efficiency
typical: 90%
best: 100%
f)vacuum
pumps: 3 Diddusion Pumps
achieved vacuum: 4x10^-5Pa
REFERENCES

EXPERIMENTAL FACILITIES
Injection System to the Ring Cyclotron
COMMENTS