Entry: CU127 Date: June 1998

Machine Name: Clinical Cyclotron Institution: **University of Washington**
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HISTORY

Design by: Scanditronix, Uppsala, MC-50
Construction time: 1981/82
First beam: Factory: June 1982, Facility: June 1983

CHARACTERISTIC BEAMS

ions / energy (MeV) / current (μA) / power (W) :
- p / 28 to 50.5 / 80
- d / 15 to 24 / 50
- 3He++ / 21 to 35 / 2
- 4He++ / 30 to 48 / 2

transmission efficiency (total)
- **typical**: ....% - **best**: ....%

transverse emittance (rms)
- **vertical**: 14 π mmmrad
- **horizontal**: 12 π mmmrad

longitudinal emittance (rms) ....ΔE/E.deg RF

USES

basic research:	1.. %	**therapy**:	78 . %
development:	3.. %	**isotope production**:	7.. %
therapy QA:	5.. %	**maintenance**:	2.. %
beam tuning:	5.. %		

total time: 1800 h/year

TECHNICAL DATA

a) magnet
type: compact
Kb: 51 MeV/A **Kf**: .... MeV/A
average field (min-max): 1.75 T
number of magnet sectors: 3
- **angle**: deg
- **spiral (max)**: 55 deg

pole parameters
- **diameter**: 1.55..... m
- **injection radius**: ..... m
- **extraction radius**: 0.57..... m

hill gap: 0.115 m **valley gap**: 0.205 ... m

field trimming
- **trim coils**
  - **number**: 10.....
  - **current (max)**: 70.....A
- **harmonic coils**
  - **number**: 4 sets
  - **current (max)**: 4.0..... A
- **others**
  - **number**:
  - **current (max)**: ..... A

main coils:
- **number**:
- **Ampere-turns**: 288000 A.T.
- **current**: 900..... A

stored energy: ..... MJ
weight : - iron: 90 t - **coils**: ..... t

power
- **main coils (total)**: 120..... kW
- **trim coils (total max)**: 3.0..... kW
- **refrigerator (cryogenic)**: ..... kW

b) RF
- **acceleration**
  - **frequency range**: 19.5 to 26.0 MHz
  - **harmonic modes**: 1, 2
  - **number of dees**: 2
  - **angular aperture**: 90..... deg
  - **voltage:- average (min-max)**: 40..... kV
  - **- variation with radius**: .....
  - **power in (max)**: 60..... kW
  - **stability: - phase**: 0.1 deg - **voltage**: 0.1.... %

- **other cavities**
  - **purpose**:
  - **frequency range**: .... MHz
  - **region of influence**: .... m
  - **voltage (max)**: .... kV
  - **power in (max)**: .... kW
  - **stability:- phase**: ..... deg - **voltage**: .....%

c) injection
- **internal source**: Dual chimney cold cathode PIG
- **external (radial/axial)**:
  - **elements**:
  - **source voltage**:....kV
  - **injection energy**:.... MeV/n
  - **buncher**:
- **injection efficiency**: .... %

d) ion sources/injector

e) extraction
- **elements, characteristics:**
  - Electrostatic Deflector, 45 kV max
  - Electromagnetic Channel, 1200 A max
  - Two Passive Focusing Channels
  -
- **efficiency**
  - **typical**: 85 (protons)... % - **best**: 90.... %

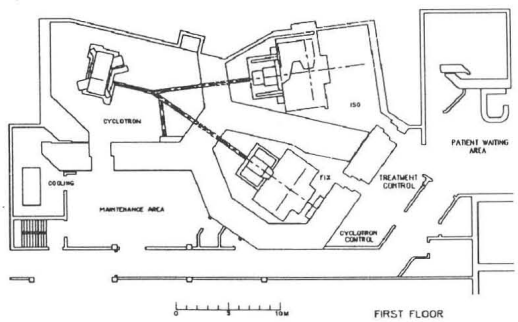
f) vacuum
- **pumps**: Two diffusion pumps, 2 x 4300 liter /sec....
- **achieved vacuum**: 3 . 10E-04..... Pa

REFERENCES

R. Risler et al., these Proceedings

EXPERIMENTAL FACILITIES

PLAN VIEW OF FACILITY



COMMENTS