

ENTRY NO. CM19 Date 16 August 1995
 Machine Name OSCAR
 Manufacturer Oxford Instruments
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HISTORY AND STATUS

DATES: Design 86 - 88 First Machine 90
 SALES: No. Sold/Operational 9 / 7 Currently Available Yes
 COST: Accelerator Facility

MAGNET

POLE PARAMETERS:

Diameter 50 cm $R_{extract}$ 21 cm R_{inject} 1.3 cm
 HILL PARAMETERS: Gap (min) 2.9 cm B_{max} 3.1 T
 (@ 600.000 AT) Gap (max) cm B_{min} T
 VALLEY PARAMETERS: Gap (min) cm B_{max} T
 (@ AT) Gap (max) cm B_{min} T
 AVERAGE FIELD: $\langle B \rangle_{min}$ 2.36 T $\langle B \rangle_{max}$ 2.37 T
 NUMBER OF SECTORS: compact/separated 3 /
 sector angle 54 deg. spiral (max) 0 deg.
 FIELD TRIMMING: Trim Coils
 Harmonic Coils
 Other
 CURRENT: Main Coils 353 Amps Stability Persistent
 Trim Coils Amps Stability
 Stored Energy (cryogenic) 0.55 MJ
 WEIGHT: Iron 1.5 Ton Conductor 250 kg
 ION ENERGY: Bending Limit E/A = 12 q²/A² MeV/u
 Focusing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description 3 x 60° Axial
 No. of Gaps/turn 6 dE/dn(max) 0.2 MeV/q
 Voltage (max) 0.033 MV Harmonic f_r/f_{ion} 3
 Freq 108 MHz Power in(max) 0.011 MW
 Stability: Phase 1° Voltage 10⁻³

VACUUM SYSTEM

OPERATING PRESSURE: 5 x 10⁻⁷ mbar
 PUMPS: (No. and type) 2 x 1000 l/s turbo

ION SOURCE(S)

| Type | Intensity (mA) | @ | $\epsilon_n = \beta\gamma\epsilon$ (π mm mrad) | Ion Species |
|---------------|----------------|---|-----------------------------------------------------|----------------|
| (a) Multicusp | 1 | | 0.16 | H ⁻ |
| (b) | | | | |

INJECTION SYSTEM

Axial, spiral inflector Efficiency over 10 %

EXTRACTION SYSTEM

Stripper foil Efficiency 100 %

CHARACTERISTIC BEAMS

| Accelerated Ions | E/A (MeV/u) | Current (part. μ A) | |
|--------------------|-------------|-------------------------|---------------|
| | | Internal | External |
| (a) H ⁻ | 12 | 100 | 100 (150 max) |
| (b) | | | |

EXTRACTED BEAM PROPERTIES:

For 50 μ A of 12 MeV/u ions
 $\Delta E/E$ % $\Delta\phi$ °rf
 $\epsilon_n = \beta\gamma\epsilon$ x 1.5 π mm mrad z 3 π mm mrad

REFERENCES/NOTES

(a)
 (b)