

ENTRY NO. **CM19** Date **16 August 1995**
 Machine Name **OSCAR**
 Manufacturer **Oxford Instruments**
 Address **Osney Mead, OXFORD, OX2 ODX**
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 In Charge: **A. Reed** Reported by: **M. Kruij**

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)