

ENTRY NO. C60 Date October 1995
 Name of Machine Nuffield 60" Cyclotron
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HISTORY

MILESTONE DATES:

Design Model Tests
 Construction First Beam
 DESIGN/CONSTRUCTION BY:
 in house other
 COST: Accelerator Facility
 FUNDED BY:

STATUS

STAFF: Machine
 Scientists - Engineers 2
 Technicians 4 Students
 Research (in house/external)
 Scientists / Engineers /
 Technicians / Students /
 BUDGET: Machine Funded by
 Research Funded by
 TIME DISTRIBUTION:
 Basic Research (in house/external) % / %
 Applied Program (in house/external) % / %
 Maintenance % Development %

MAGNET

POLE PARAMETERS:

Diameter cm R_{extract} cm R_{inject} cm
 HILL PARAMETERS: Gap (min) cm B_{max} T
 (@ AT) Gap (max) cm B_{min} T
 VALLEY PARAMETERS: Gap (min) cm B_{max} T
 (@ AT) Gap (max) cm B_{min} T
 AVERAGE FIELD: $\langle B \rangle_{\text{min}}$ T $\langle B \rangle_{\text{max}}$ T
 NUMBER OF SECTORS: compact/separated /
 sector angle deg. spiral (max) deg.
 FIELD TRIMMING: Trim Coils
 Harmonic Coils
 Other
 CURRENT: Main Coils Amps Stability
 Trim Coils Amps Stability
 Stored Energy (cryogenic) MJ
 WEIGHT: Iron 250 tons. Conductor Cu 40 tons.
 ION ENERGY: Bending Limit E/A = q^2/A^2 MeV/u
 Focusing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description:
 No. of Gaps/turn dE/dn(max) MeV/q
 Voltage (max) MV Harmonic $f_{\text{rf}}/f_{\text{ion}}$
 Freq MHz Power in(max) MW
 Stability: Phase Voltage
 OTHER CAVITIES (Flattopping or otherwise):
 Description:
 Region of Influence: R_{min} cm R_{max} cm
 No. of Gaps/turn dE/dn(max) MeV/q
 Voltage (max) MV Harmonic $f_{\text{rf}}/f_{\text{ion}}$
 Freq MHz Power in(max) MW
 Stability: Phase Voltage

VACUUM SYSTEM

OPERATING PRESSURE: 1.2×10^{-5} mmHg
 PUMPS: (No. and type) 2 x 15" oil diffusion plus
 1 booster pump

ION SOURCE(S)

Type	Intensity (mA)	@ $\epsilon_n = \beta\gamma\epsilon$ (π mm mrad)	Ion Species
(a) Hooded Arc			
(b)			
(c)			
(d)			

INJECTION SYSTEM

Efficiency %

EXTRACTION SYSTEM

Electrostatic Deflector Efficiency %

CHARACTERISTIC BEAMS

Accelerated Ions	E/A (MeV/u)	Current (part μ A)	
		Internal	External
(a)			
(b)			
(c)			
(d)			

Secondary Particles	E (MeV)	part/sec
(a)		
(b)		
(c)		

EXTRACTED BEAM PROPERTIES:

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

FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed: m² Moveable m²
 Target Stations: No. Served At Same Time:
 MAGNETIC SPECTROMETERS:
 OTHER FACILITIES:

REFERENCES/NOTES

(a)
 (b)

PLAN VIEW OF FACILITY, COMMENTS

This cyclotron is run purely for the production of radio isotopes and is considered to be the oldest running machine in the world today.