

ENTRY NO. C45 Date February 14, 1996
 Name of Machine U-200
 Institution Joint Institute for Nuclear Research
 Address Dubna, Russia
 Tel Telex MSK DUBNA 4 12621 Fax E-MAIL
 In Charge: Yu. Ts. Oganessian Reported by: G. G. Gulbekian

HISTORY

MILESTONE DATES:

Design 1966 Model Tests
 Construction 1966-67 First Beam 1968

DESIGN/CONSTRUCTION BY:

in house other

COST: Accelerator Facility

FUNDED BY:

STATUS

STAFF: Machine

Scientists Engineers
 Technicians 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 200 cm R_{extract} 86 cm R_{inject} cm

HILL PARAMETERS: Gap (min) cm B_{max} T
 (@ 0.59×10^6 AT) Gap (max) 3 cm B_{min} 2.6 T

VALLEY PARAMETERS: Gap (min) cm B_{max} T
 (@ AT) Gap (max) 15 cm B_{min} 2.4 T

AVERAGE FIELD: $\langle B \rangle_{\text{min}}$ T $\langle B \rangle_{\text{max}}$ T

NUMBER OF SECTORS: compact/separated 4 /
 sector angle deg. spiral (max) deg.

FIELD TRIMMING: Trim Coils

Harmonic Coils 4
 Other 7 circular

CURRENT: Main Coils 350 kW Stability 10^{-4}
 Trim Coils 20 kW Stability 10^{-3}
 Stored Energy (cryogenic) MJ

WEIGHT: Iron 220 tons Conductor 11.5 tons Cu

ION ENERGY: Bending Limit $E/A = 145$ q²/A² MeV/u
 Focusing Limit $E/A = 20$ q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description: Two 42° dees
 No. of Gaps/turn dE/dn(max) 0.275 MeV/q
 Voltage (max) 0.075 MV Harmonic f_r/f_{ion} 2.3
 Freq 12 - 21.5 MHz Power in(max) 0.05 MW
 Stability: Phase ± 4 deg Voltage 10^{-2}

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_r/f_{ion}
 Freq MHz Power in(max) MW
 Stability: Phase Voltage

VACUUM SYSTEM

OPERATING PRESSURE: 2×10^{-6} mbar

PUMPS: (No. and type) 2 oil diffusion pumps
 400 l/s each

ION SOURCE(S)

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

INJECTION SYSTEM

Efficiency %

EXTRACTION SYSTEM

Stripping and magnetic channel Efficiency 40-100 %

CHARACTERISTIC BEAMS

Accelerated Ions	E/A (MeV/u)	Current (part μ A)	Internal	External
(a) $^4\text{He}^{+1}$	37	600	60	
(b) $^{12}\text{C}^{3+}$	198	20	10	
(c) $^{40}\text{Ar}^{6+}$	220	0.012	0.006	
(d)				

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

EXTRACTED BEAM PROPERTIES:

For 5 μ A of 37 MeV α ions
 $\Delta E/E$ 1 % $\Delta\phi$ 30 °
 $\epsilon = 70 \pi$ mm mrad z 30 π mm mrad

FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed: 225 m² Moveable m²

Target Stations: 4 No. Served At Same Time: 1

MAGNETIC SPECTROMETERS:

OTHER FACILITIES:

REFERENCES/NOTES

(a)
 (b)

PLAN VIEW OF FACILITY, COMMENTS