**ENTRY NO.** C48 **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
(@ $0.59 \times 10^6$ 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: $<B>_{min}$ ... T $<B>_{max}$ ... 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 350kW Stability $10^{-4}$
Trim Coils 20kW Stability $10^{-3}$
Stored Energy (cryogenic) ... MJ
WEIGHT: Iron 220tons Conductor 11.5 tons Cu
ION ENERGY: Bending Limit E/A = 145 $q^2/A^2$ 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 $f_{rf}/f_{ion}$ 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 $f_{rf}/f_{ion}$ ...
Freq ... MHz Power in(max) ... MW
Stability: Phase ... Voltage ...

## VACUUM SYSTEM

OPERATING PRESSURE: $2 \times 10^{-6}$ mbar
PUMPS: (No. and type) 2 oil diffusion pumps
400 ℓ/s each

## ION SOURCE(S)

| | Type | Intensity (mA) | @ $\varepsilon_n = \beta\gamma\varepsilon$ ($\pi$ 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 μA) Internal | External |
|---|---|---|---|
| (a) $^4He^{+1}$ | 37 | 600 | 60 |
| (b) $^{12}C^{3+}$ | 198 | 20 | 10 |
| (c) $^{40}Ar^{8+}$ | 220 | 0.012 | 0.006 |
| (d) | | | |

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

EXTRACTED BEAM PROPERTIES:
For 5 pμA of 37 MeV alpha ions
ΔE/E 1 % Δφ 30 °rf
ε = x 70 π 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