**ENTRY NO.** C74 Date October 13, 1995

Name of Machine U-150

Institution Nuclear Physics, Tashkent

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In Charge: Rylov Reported by: Rylov

## HISTORY

MILESTONE DATES:

Design 1956 Model Tests 1964

Construction 1963 First Beam 1964

DESIGN/CONSTRUCTION BY:

in house Inst. other NIIFA, Leningrad, Russia

COST: Accelerator $2,0mil Facility $1,0mil

FUNDED BY: CKAZ, USSR

## STATUS

STAFF: Machine

Scientists 30 Engineers 30

Technicians 10 Students 10

Research (in house/external)

Scientists 30 / Engineers 15 /

Technicians 10 / Students 20 /

BUDGET: Machine budget Funded by Academy of

Research budget Funded by Sciences

TIME DISTRIBUTION:

Basic Research (in house/external) 20 % / - %

Applied Program (in house/external) 80 % / - %

Maintenance 10 % Development 5 %

## MAGNET

POLE PARAMETERS:

Diameter 150 cm $R_{extract}$ 66,7 cm $R_{inject}$ 0 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: $<B>_{min}$ 0,8 T $<B>_{max}$ 1,4 T

NUMBER OF SECTORS: compact/separated -- /

sector angle - deg. spiral (max) - deg.

FIELD TRIMMING: Trim Coils 2 pairs

Harmonic Coils 8 pairs

Other

CURRENT: Main Coils 1000 Amps Stability 0,01

Trim Coils 600 Amps Stability 0,01

Stored Energy (cryogenic) MJ

WEIGHT: Iron 220,0 tons Conductor 12,0 tons

ION ENERGY: Bending Limit E/A = 22,0 $q^2/A^2$ MeV/u

Focusing Limit E/A = 22,0 q/A MeV/u

## ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description: Classic

No. of Gaps/turn 2 dE/dn(max) 0,2 MeV/q

Voltage (max) 0,2 MV Harmonic $f_{rf}/f_{ion}$ ---

Freq 8 - 16,5 MHz Power in(max) 0,3 MW

Stability: Phase 1% Voltage 0,1%

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:

PUMPS: (No. and type) 2 oil pumps

3 mech. pumps

## ION SOURCE(S)

| | Type | Intensity (mA) | @ $\varepsilon_n = \beta\gamma\varepsilon$ ($\pi$ mm mrad) | Ion Species |
|---|---|---|---|---|
| (a) | PIG | 4 | 1,0 | |
| (b) | | | | |
| (c) | | | | |
| (d) | | | | |

## INJECTION SYSTEM

Radial Efficiency 50 %

## EXTRACTION SYSTEM

Deflector Efficiency 30 %

## CHARACTERISTIC BEAMS

| | Accelerated Ions | E/A (MeV/u) | Current (part $\mu$A) Internal | External |
|---|---|---|---|---|
| (a) | p | 10-22 | 700 | 20 |
| (b) | d | 12-24 | 700 | 20 |
| (c) | $He^3$ | 30-50 | 15 | 5 |
| (d) | $He^4$ | 24-48 | 15 | 5 |

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

EXTRACTED BEAM PROPERTIES:

For 10 $\mu$A of MeV/u ions

$\Delta E/E$ 0,1 % $\Delta\phi$ 2-3 nsec °rf

$\varepsilon_n = \beta\gamma\varepsilon$ x 10,0 $\pi$ mm mrad z 6,0 $\pi$ mm mrad

## FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed: 200,0 $m^2$ Moveable --- $m^2$

Target Stations: 6 No. Served At Same Time: 1

MAGNETIC SPECTROMETERS: 1

OTHER FACILITIES:

## REFERENCES/NOTES

(a)

(b)

## PLAN VIEW OF FACILITY, COMMENTS