ENTRY NO. C10 **Date** June 30 / 1992

Name of Machine U-120M

Institution Nuclear Physics Institute

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In Charge: Z.Trejbal Reported by: J.Stursa

HISTORY

MILESTONE DATES:
Design 1972 Model Tests 1975
Construction Beam August 1977

DESIGN/CONSTRUCTION BY:
in house no other JINR Dubna Russia

COST: Accelerator 1.2 MS Facility

FUNDED BY: Czechoslovak Academy of Sciences

STATUS

STAFF: Machine
Scientists 4 Engineers 3
Technicians 15 Students 1
Research (in house/external)
Scientists 0 / 9 Engineers 0 /
Technicians 0 / Students 0 /

BUDGET: Machine Funded by
Research Funded by

TIME DISTRIBUTION:
Basic Research (in house/external) % / 40 %
Applied Program (in house/external) 1 % / 40 %
Development 5 % Maintenance 15 %

MAGNET

POLE PARAMETERS:
Diameter 120 cm $R_{extract}$ 50 cm R_{inject} 1.8 cm
HILL PARAMETERS: Gap (min) 8.2 cm B_{max} 1.80 T
(@ AT) Gap (max) 12.0 cm B_{min} 2.05 T
VALLEY PARAMETERS: Gap (min) 22 cm B_{max} 1.72 T
(@ AT) Gap (max) 22 cm B_{min} 1.61 T
AVERAGE FIELD: $< B >_{min}$ 1 T $< B >_{max}$ 1.85 T
NUMBER OF SECTORS: compact/separated 4 /
sector angle deg. spiral (max) 70 deg.
FIELD TRIMMING: Trim Coils 18
Harmonic Coils 1 (first harm.)
Other
CURRENT: Main Coils 600 Amps Stability 1e-5
Trim Coils 500 Amps Stability 1e-3
Stored Energy (cryogenic) MJ
WEIGHT: Iron 110 t Conductor 11.6 t
ION ENERGY: Bending Limit E/A = 40 q^2/A^2 MeV/u
Focussing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:
Description: 1 dee 180°
No. of Gaps/turn 2 dE/dn(max) 0.08 MeV/q
Voltage(max) 0.04 MV Harmonic f_{rf}/f_{ion} 1
Freq 10-26 MHz Power in(max) 0.1 MW
Stability: Phase Voltage 5e-3

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: 6.10^{-4} Pa
PUMPS: No. and type 2 x 2000 l/s diff.pumps

ION SOURCE(S)

	Type	Intensity (mA)	@	$\epsilon_n = \beta\gamma\epsilon$ (πmm mrad)	Ion Species
(a)	Inner PIG	0.6			p, d^{++}
(b)	Inner PIG	0.05			$^3He^{++}, ^4He^{++}$
(c)					
(d)					

INJECTION SYSTEM

Axial injection,spiral inflec. Efficiency 12-40 %

EXTRACTION SYSTEM

Magnetic regenerator, Efficiency 30 %
3 electrostatic defl.sections

CHARACTERISTIC BEAMS

	Accelerated Ions	E/A (MeV/u)	Current(part μA) Internal	External
(a)	p	37	100	4-10
(b)	d^{++}	10	100	4-10
(c)	$^3He^{++}$	18	20	2-6
(d)	^4He	10	20	2-6

	Secondary Particles	E (MeV)	part/sec
(a)	neutrons	6	10^{12}
(b)			
(c)			

EXTRACTED BEAM PROPERTIES:
For 10 μA of 30 MeV/u p ions
$\Delta E/E$ 1 % $\Delta\phi$ 40 °rf
$\epsilon_n = \beta\gamma\epsilon$ x 11 πmm mrad z 2.5 πmm mrad

FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed 265 m² Moveable 0 m²
Target Stations: 8 No. Served At Same Time: 1
MAGNETIC SPECTROMETERS: R=0.8m, 124deg, $\Delta E/E=5.10^{-4}$
OTHER FACILITIES:
Multichannel magnetic analyzer $E/\Delta E=2500$
Achromatic magnetooptical system (AMOS) 90°, 5m

REFERENCES/NOTES

(a) J.Stursa,et al, Proc.EPAC 92, Berlin
(b) V.Bejsovec,et al,II.Int.Conf...Czechoslov., JINR,D9-89-708,Dubna 1989,pp.44-48

PLAN VIEW OF FACILITY, COMMENTS