

ENTRY NO. 10

NAME OF MACHINE Isochronous Cyclotron U-120 M DATE _____
 INSTITUTION Institute of Nuclear Physics
 ADDRESS Praha, CzSSR

IN CHARGE _____ REPORTED by Prof. V.P.DZHELEPOV

HISTORY AND STATUS

DESIGN, date 1969-71 MODEL tests 1971-75
 ENG. DESIGN, date _____
 CONSTRUCTION, date 1972-1975
 FIRST BEAM date (or goal) 1976
 MAJOR ALTERATIONS _____
 OPERATION, _____ hr/wk; On Target _____ hr/wk
 TIME DIST., in house _____ %, outside _____ %
 USERS' SCHEDULING CYCLE _____ weeks
 COST, ACCELERATOR _____
 COST, FACILITY, total _____
 FUNDED BY _____

ACCELERATOR STAFF, OPERATION and DEVELOPMENT

SCIENTISTS _____ ENGINEERS _____
 TECHNICIANS _____ CRAFTS _____
 GRAD STUDENTS involved during year _____
 OPERATED BY _____ Res staff or _____ Operators
 BUDGET, op & dev _____
 FUNDED BY _____

RESEARCH STAFF, not included above

USERS, in house _____ outside _____
 GRAD STUDENTS involved during year _____
 RES. BUDGET, in house _____
 FUNDED BY _____

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed _____ m²
 movable _____ m²
 TARGET STATIONS _____ in _____ rooms
 STATIONS served at same time, max _____
 MAG SPECTROGRAPH, type _____
 COMPUTER, model _____
 OTHER FACILITIES _____

REFERENCES/NOTES

MAGNET

POLE FACE diameter 120 cm; R extraction 52 cm
 GAP, min 8.2 cm; Field 20 kG } at 0.4×10^6
 max 22 cm; Field 16 kG } ampere turns
 AVERAGE FIELD at R ext _____ kG
 CURRENT STABILITY _____ parts/10⁶; B_{max}/ $\langle B \rangle$ 1.12
 NUMBER OF SECTORS 4; SPIRAL, max 70 deg
 POLE FACE COIL PAIRS: AVF _____ /sec;
 Harmonic correction _____
 Rad grad _____ /sec or Circ coils _____
 WEIGHT: Fe 117.5 tons; Coils 15 tons
 CONDUCTOR, Material and type Cu,
 STORED ENERGY _____ MJ
 COOLING SYSTEM H₂O
 POWER: Main coils 130 max, kW
 Trimming coils 60 max, kW
 YOKE/POLE AREA _____ %
 SECTOR ANGLE (Sep Sec) _____ deg
 ION ENERGY (Bending limit) E/A = _____ q²/A² MeV
 (Focusing limit) E/A = _____ q/A MeV

ACCELERATION SYSTEM

DEES, number 1 angle 180 deg
 BEAM APERTURE 2 cm; DC BIAS 0 kV
 TUNED by, coarse MP fine VC, auto
 RF 8.6 to 26.5 MHz, stable \pm 0.1 /10⁶
 Orb F 8.8 to 26.3 MHz; GAIN, max 100 kV/turn
 HARMONICS, RF/Orb F, used 1
 DEE-Gnd, max 50 kV, min gap 3 - 3 cm
 STABILITY, (pk-pk noise)/(pk RF volt) 1.10⁻³
 RF PHASE stable to \pm _____ deg
 RF POWER input, max 150 kW
 RF PROTECT circuit, speed _____ μ sec
 Type _____
 FREQUENCY MODULATION, rate _____ /sec
 MODULATOR, type _____
 BEAM PULSE, width _____

VACUUM SYSTEM

PUMPS, No., Type, Size 3 diffusion pumps
 OPERATING PRESSURE 10 μ Torr,
 PUMPDOWN TIME 6 hrs

ION SOURCES/INJECTION SYSTEM

Oak Ridge type

EXTRACTION SYSTEM

Electrostatic

CONTROL SYSTEM

ENTRY NO. 10 (cont.)

CHARACTERISTIC BEAMS

	Particle	Goal (MeV)	Achieved (MeV)
ENERGY	p	40.9	
	d	20.3	
	alpha	41.6	
CURRENT	He-3	50	
		(μA)	(μA)
Internal	20-50		
External	15-35		
Secondary		(part/s)	(part/s)

BEAM PROPERTIES

	Measured	Conditions
Pulse Width	RF deg	μA of MeV
Phase Exc, max	RF deg	μA of MeV
Extract Eff	%	μA of MeV
Res, ΔE/E	%	μA of MeV
Emittance	(mm-mrad) { axial } μA of MeV	
	{ radial }	

OPERATING PROGRAMS, time dist

Basic Nuclear Physics	%
Solid State Physics	%
Bio-Medical Applications	%
Isotope Production	%
Development	%
	%
	%

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, OPERATION SUMMARY, ADDITIONAL REFERENCES