ENTRY NO. 109
NAME OF MACHINE U-300
INSTITUTION Joint Institute for Nuclear Research
ADDRESS Dubna, USSR
TEL ... TELEX MSK DUBNA 412621
IN CHARGE G.N.FLEROV ... REPORTED BY ...

HISTORY AND STATUS
DESIGN, date 1955 ... Model tests -
ENG DESIGN, date 1956-1958
CONSTRUCTION, date 1956-1959
FIRST BEAM, date (or goal) int. 1960; ext. 1965
MAJOR ALTERATIONS
COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS ... ENGINEERS
TECHNICIANS ... CRAFTS
GRAD STUDENTS involved during year
OPERATED BY ... Research staff or ... Operators
OPERATION 70 hr/wk. On target 58 hr./wk
TIME DISTR. in house 95 % Outside 5 %
BUDGET, op & dev
FUNDED BY

RESEARCH STAFF, not included above
USERS, in house ... outside
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY

MAGNET
POLE FACE, diameter (compact) 310 cm, R extraction 137 cm
R injection - cm
GAP, min - cm, Field - kG
min 42 cm, Field kG at $0,9 \times 10^6$ Ampere turns
AVERAGE FIELD at R ext 16,7 kG
B max/ < B > 1
NUMBER OF SECTORS compact - ; separated - ; Spiral, max - deg
SECTOR ANGLE (SSC) - deg
TRIMMING COILS 3 harmonic
CONDUCTOR, material and type Cu
STORED ENERGY (cryogenic) -4 MJ
POWER: main coils 500 max, kW; current stability 10^{-3}
trimming coils 10 max, kW; current stability 10^{-3}
WEIGHT: Fe 2090 tons; coils 101 tons
COOLING system Demineralized water
ION ENERGY (bending limit) E/A = 250 q^2/a^2 MEV/amu
(focusing limit) E/A = 11 q/a MeV/amu

ACCELERATION SYSTEM
DEES, number $2,180^o$ deg
BEAM APERTURE 14 cm; DC Bias 0 kV
TUNED by, coarse MS fine VC
RF 3 to 6 mHz, stable ± 10^{-5}
Orb F 1,5 to 5,6 mHz
HARMONICS, RF/Orb F, used 1,3
DEE—Gnd, max 150 kV, min gap 10 cm
STABILITY, (pk-pk noise)/(pk RF volt) 10^{-2}
ENERGY GAIN, max 600 kV/turn
RF PHASE, stable to ± 2 deg
RF POWEP input, max 250 kW
FREQUENCY MODULATION, rate - /s
modulator, type -
beam pulse, width -

VACUUM SYSTEM
OPERATING PRESSURE 2×10^{-6} Torr or mbar
PUMPS, No, Type, Size 7 oil diffusion pumps
$4000\ l\ s^{-1}$ each

ION SOURCES
Arc type with heated cathode

INJECTION SYSTEM

EXTRACTION SYSTEM
dc electrostatic + magnetic channel

FACILITIES FOR RESEARCH
SHIELDED AREA, fixed 1500 m²; movable ... m²
TARGET STATIONS 12 in 7
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type
COMPUTER model
OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
$^{14}C^{3+}$		160		0,3
$^{22}Ne^{4+}$		182		12
$^{40}Ar^{7+}$		305		0,5
$^{136}Xe^{9+}$		150		1
SECONDARY		(part/s)		

BEAM PROPERTIES

MEASURED		CONDITIONS			
PULSE WIDTH	RF deg	pμ A of	MeV	ions	
PHASE EXC. max	RF deg	pμ A of	MeV	ions	
EXTRACT eff 25-35	%	pμ A of	MeV	ions	
RESOL ΔE/E 0,5	%	pμ A of	MeV	ions	
EMITTANCE (π mm. mrad) 80 axial; 30 rad		10 pμ A of	83 MeV	$^{12}C^{2+}$	

OPERATING PROGRAMS, time distribution
BASIC NUCLEAR PHYSICS 95 SOLID STATES PHYSICS 5
BIOMEDICAL APPLICAT - ISOTOPE PRODUCTIONS -

REFERENCES/NOTES
1) Nucl. Instr. Meth. 93, 3, 557 (1971)
2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.