

## ENTRY No. 126

NAME OF MACHINE ..... U-200 ..... DATE .....

INSTITUTION ..... Joint Institute for Nuclear Research .....

ADDRESS ..... Dubna, USSR .....

TEL ..... TELEX ..... MSK DUBNA 4.12621 .....

IN CHARGE ..... G. N. Flerov ..... REPORTED BY .....

## HISTORY AND STATUS

DESIGN, date ..... 1966 ..... Model tests .....

ENG DESIGN, date ..... 1966-67 .....

CONSTRUCTION, date ..... 1966-67 .....

FIRST BEAM, date (or goal) ..... 1968 .....

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 ..... 30 ..... hr/wk, On target ..... 25 ..... hr/wk .....

TIME DISTR. in house ..... %, Outside ..... % .....

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) 200 cm, R extraction .86. cm  
R injection ..... cm

GAP, min ..... 3 ..... cm, Field ..... 26 ..... kG  
max ..... 15 ..... cm, Field ..... 24 ..... kG } at  $0.59 \times 10^6$

AVERAGE FIELD at R ext ..... 20 ..... kG Ampere turns

B max/  $\langle B \rangle$  ..... 1.3 .....

NUMBER OF SECTORS { compact ..... 4. } Spiral, max  $\pm$  deg  
separated ..... deg .....

SECTOR ANGLE (SSC) ..... deg .....

TRIMMING COILS ..... 7. circular .....

..... 4. harmonic .....

CONDUCTOR, material and type ..... Cu .....

STORED ENERGY (cryogenic) ..... MJ

POWER : main coils ..... 350. max, kW ; current stability  $10^{-4}$ .  
trimming coils ..... 20. max, kW ; current stability  $10^{-3}$ .

WEIGHT : Fe ..... 220. tons ; coils ..... 11.5 ..... tons

COOLING system ..... Demineralized water .....

ION ENERGY (bending limit) E/A = ..... 145.  $q^2/a^2$  MeV/amu  
(focusing limit) E/A = ..... 20.  $q^2/a^2$  MeV/amu

ACCELERATION SYSTEM

DEES, number ..... 2,429 ..... ; angle ..... deg

BEAM APERTURE ..... 2.5 ..... cm ; DC Bias ..... 0 ..... kV

TUNED by, coarse ..... MS ..... fine ..... NC ..... kV

RF ..... 12 ..... to ..... 21.5 ..... mHz, stable  $\pm$  .....  $10^{-5}$

Orb F ..... 3 ..... to ..... 10.7 ..... mHz

HARMONICS, RF/Orb F, used ..... 2.3 .....

DEE - Gnd, max ..... 7.5 ..... kV, min gap ..... 4 ..... cm

STABILITY, (pk-pk noise)/(pk RF volt) .....  $10^{-2}$  .....

ENERGY GAIN, max ..... 275 ..... kV/turn

RF PHASE, stable to  $\pm$  ..... 4 ..... deg

RF POWER input, max ..... 50 ..... kW

FREQUENCY MODULATION, rate ..... /s

modulator, type .....

beam pulse, width ..... ? .....

VACUUM SYSTEM

OPERATING PRESSURE .....  $2 \times 10^{-6}$  ..... Torr or mbar

PUMPS, No, Type, Size ..... 2 oil diffusion pumps .....

..... 4000 l.s. each .....

ION SOURCES

..... Arc type with heated cathode .....

## INJECTION SYSTEM

## EXTRACTION SYSTEM

..... Stripping + magnetic channel .....

## FACILITIES FOR RESEARCH

SHIELDED AREA, fixed ..... 225 ..... m<sup>2</sup> ; movable ..... m<sup>2</sup>  
TARGET STATIONS ..... 4 ..... in ..... 2 ..... rooms  
STATIONS served at same time, max ..... 1 .....

MAG SPECTROGRAPH, type .....

COMPUTER model .....

OTHER FACILITIES .....

## CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)	CURRENT (p $\mu$ A)		
Goal	Achieved	Internal	External	
$^4\text{He}^{1+}$	39	37	600	60
$^{12}\text{C}^{3+}$	208	198	20	10
$^{40}\text{Ar}^{8+}$	230	220	0,012	0,006

SECONDARY ..... (part/s) .....

## BEAM PROPERTIES

MEASURED	CONDITIONS
PULSE WIDTH ..... 30. RF deg	p $\mu$ A of ..... MeV ... ions
PHASE EXC, max ..... RF deg	p $\mu$ A of ..... MeV ... ions
EXTRACT eff 40-100. %	p $\mu$ A of ..... MeV ... ions
RESOL AE/E ..... 1. %	p $\mu$ A of ..... MeV ... ions
EMITTANCE	$\{ 30 \text{ axial} \atop 70 \text{ rad} \} \dots 5 \dots \text{p}\mu\text{A of} \dots 37 \dots \text{MeV} \dots \text{ions}$

OPERATING PROGRAMS, time distribution .....

BASIC NUCLEAR PHYSICS 100% SOLID STATES PHYSICS ....  
BIOMEDICAL APPLICAT. .... ISOTOPE PRODUCTION ....

## REFERENCES/NOTES

- 1) Proc. of the VIth Int.Cyclotron Conf., New York, 1972

## PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS