

ENTRY No. 127
 NAME OF MACHINE U-400 M DATE
 INSTITUTION Joint Institute for Nuclear Research, Laboratory of Nuclear Reactions
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 IN CHARGE G. N. Flerov REPORTED BY

HISTORY AND STATUS

DESIGN, date Model tests
 ENG DESIGN, date 1984-1986
 CONSTRUCTION, date 1985-1988
 FIRST BEAM, date (or goal) 1989
 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 hr/wk, On target 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) 400. cm, R extraction 175 cm
 R injection cm
 GAP, min 10. cm, Field 25.5 kG }
 max 50. cm, Field 14. kG } at 1.26.10⁶
 AVERAGE FIELD at R ext 19.5 kG } Ampere turns
 B max/ 1.3

NUMBER OF SECTORS { compact 4 } Spiral, max 40. deg
 separated }
 SECTOR ANGLE (SSC) 45. deg
 TRIMMING COILS 15. circular

5. harmonic
 CONDUCTOR, material and type Copper
 STORED ENERGY (cryogenic) MJ

POWER: main coils 750. max, kW; current stability 10⁻⁴
 trimming coils 120. max, kW; current stability 10⁻³

WEIGHT: Fe 2100. tons; coils 115. tons
 COOLING system Demineralized water
 ION ENERGY (bending limit) E/A = .540. q²/a² MeV/amu
 (focusing limit) E/A = .120. q²/a² MeV/amu

ACCELERATION SYSTEM

DEES, number 4; angle 45. deg
 BEAM APERTURE 10. cm; DC Bias 0. kV
 TUNED by, coarse MS. fine VC

RF 11.5. to 25. mHz, stable ± 10⁻⁵
 Orb F 5.75. to 12.5 mHz

HARMONICS, RF/Orb F, used 2
 DEE - Gnd, max 150-200V, min gap .18. cm
 STABILITY, (pk-pk Noise)/(pk RF volt) 10⁻³

ENERGY GAIN, max 1200. kV/turn
 RF PHASE, stable to ± . deg
 RF POWER input, max 4x100. kW

FREQUENCY MODULATION, rate /s
 modulator, type
 beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE (0.5-1).10⁻⁶ Torr or mbar
 PUMPS, No, Type, Size 20000 l/s. for N

ION SOURCES

U-400, PIG with heated cathode

INJECTION SYSTEM

Carbon stripper after radial injection

EXTRACTION SYSTEM

electrostatic deflector, magnetic channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 1500. m²; movable m²

TARGET STATIONS 10. in rooms

STATIONS served at same time, max 1.

MAG SPECTROGRAPH, type

COMPUTER model

OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pA)	
	Goal	Achieved	Internal	External
16 ₀	1920			
238 _U	4760			

SECONDARY

(part/s)

BEAM PROPERTIES

MEASURED CONDITIONS

PULSE WIDTH RF deg pA of MeV ions

PHASE EXC, max RF deg pA of MeV ions

EXTRACT eff % pA of MeV ions

RESOL ΔE/E % pA of MeV ions

EMITTANCE

(π mm. mrad) { axial } pA of MeV ions

{ rad }

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS

BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS

REFERENCES/NOTES

1) Proc. of the X Int.Conf.on Cycl.and their Appl.,
 1984, East Lansing, USA, p.317

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS