

ENTRY No. C46

NAME OF MACHINE CI-100 DATE  
INSTITUTION Joint Institute for Nuclear Research, Laboratory of Nuclear Reactions  
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IN CHARGE R. Ts. Oganessian REPORTED BY R. Ts. Oganessian

#### HISTORY AND STATUS

DESIGN, date 1974 Model tests 1984  
ENG DESIGN, date 1984  
CONSTRUCTION, date 1984-1985  
FIRST BEAM, date (or goal) May, 1985  
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) 105 cm, R extraction 46 cm

R injection cm

GAP, min 2 cm, Field 25 kG } at 0.17-10<sup>6</sup>

max 11 cm, Field 11 kG }  
AVERAGE FIELD at R ext 19.4 kG } Ampere turns

B max/ <B> 1.25

NUMBER OF SECTORS { compact 4 } Spiral, max D. deg

SECTOR ANGLE (SSC) { separated } 56 deg

TRIMMING COILS

CONDUCTOR, material and type Copper

STORED ENERGY (cryogenic) MJ

POWER: main coils 110 max, kW; current stability 10<sup>-4</sup>

trimming coils max, kW; current stability

WEIGHT: Fe 43 tons; coils 0.7 tons

COOLING system Demineralized Water

ION ENERGY (bending limit) E/A = 40 q<sup>2</sup>/a<sup>2</sup> MeV/amu

(focusing limit) E/A = q<sup>2</sup>/a<sup>2</sup> MeV/amu

#### ACCELERATION SYSTEM

DEES, number 2; angle 34 deg

BEAM APERTURE 2 cm; DC Bias 0 kV

TUNED by, coarse MS fine VC

RF 20.4 to 20.9 MHz, stable ± 10<sup>-5</sup>

Orb F 5.1 to 5.22 MHz

HARMONICS, RF/Orb F, used 4

DEE - Gnd, max 70 kV, min gap 3, 5 cm

STABILITY, (pk-pk noise)/(pk RF volt)

ENERGY GAIN, max 200 kV/turn

RF PHASE, stable to ± deg

RF POWER input, max 25 kW

FREQUENCY MODULATION, rate /s

modulator, type

beam pulse, width

#### VACUUM SYSTEM

OPERATING PRESSURE (5-10) 10<sup>-6</sup> Torr or mbar

PUMPS, No, Type, Size 3 oil diffusion pumps

one 4000 L/S, two 500 L/S (each)

ION SOURCES

Arc type with heated cathode

#### INJECTION SYSTEM

#### EXTRACTION SYSTEM

dc electrostatic and stripping

#### FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m<sup>2</sup>; movable m<sup>2</sup>

TARGET STATIONS 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
12C <sup>2+</sup>		13	12	5
16O <sup>3+</sup>		20	1	1
22Ne <sup>4+</sup>		27	1	0.5
40Ar <sup>7+</sup>		46	0.5	0.25

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 50 % 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 100%

BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS

#### REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS