

ENTRY NO. CB2 Date 27 September 1995
 Name of Machine TARN - II
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HISTORY

MILESTONE DATES:

Design 1984 - 1985 Model Tests
 Construction 1985 - 1989 First Beam 1989

DESIGN/CONSTRUCTION BY:

in house Design/assembly Components
 COST: Accelerator 13 M\$ Facility
 FUNDED BY: Ministry of Education, Science, Sports and Culture

STATUS

STAFF: Machine

Scientists 5 Engineers 3
 Technicians Students 1

Research (in house/external)

Scientists / Engineers /
 Technicians / Students /

BUDGET: Machine 1 M\$ Funded by Ministry of Education
 Research Funded by

TIME DISTRIBUTION:

Basic Research (in house/external) % / %
 Applied Program (in house/external) % / %
 Maintenance % Development %

MAIN PARAMETERS

MACHINE TYPE: Cooler Synchrotron
 ION TYPES: Light Ions ENERGY: 370 (q/A=0.5), 1100 (pMeV/u)
 RING: Geometry Circular, 6 fold Sym Circumference 78 m

INJECTED BEAM CHARACTERISTICS

PARAMETERS: Injected Ions $P, \alpha, HeH^+, {}^3HeH^+, HD^+, CD^+$, etc.
 Energy 5 - 20 MeV/u Ions/bunch
 EMITTANCE: h 15 π mm mrad v 15 π mm mrad
 $\Delta E/E$ 0.1 % Bunch length nsec
 TIMING: Bunch freq MHz Filling Time sec
 INJECTION METHOD: Multiturn Injection, Cooling Stacking,
 Resonance Injection

MAGNET SYSTEM

LATTICE: Focusing Type Separated Function
 Focusing Order FBBDBBFO
 Betatron Freq: v_h 1.706 v_v 1.725
 No. Short Straight Sections 6 Length 4 m
 No. Long Straight Sections Length m
 BENDING MAGNETS: No. 24 Length (ea) 1.0 m
 Field: max 1.5 T
 QUADRUPOLES: No. 18 Length (ea) 0.2 m
 Gradient: max 7.0 T/m
 OTHER MAGNETS: Sextupole magnet for Slow Extraction

RF SYSTEM

CAVITIES: No. 1 Type 2 x $\lambda/4$ re-entrant
 RF FREQ 0.62 - 7.5 MHz HARMONIC f_H/f_{ion} 2
 PEAK VOLTS/CAV 0.002 MV
 PEAK POWER/CAV 0.005 MW

VACUUM SYSTEM

VACUUM CHAMBER: Material Stainless Steel
 Aperture 5 x 20 cm²
 PUMPS: (No., Type, Speed) TGP: 26 (1500 l/s x 8, 1000 l/s x 3, 700 l/s x 4, 400 l/s x 11),
 SIP: 17 (800 l/s x 6, 400 l/s x 5, 160 l/s x 6), NEG: 31 (4000 l/s, total)
 PRESSURE: 1×10^{-11} Torr

EXTRACTION SYSTEM

TYPE: (a) slow extraction (1/3 resonance)
 (b)
 (c)
 LENGTH OF SPILL: (a) 1 - 800 sec
 (b) sec
 (c) sec

CHARACTERISTIC BEAMS

	Ion	E/A (MeV/u)	Ions/pulse	$\Delta E/E$ (%)
(a)				
(b)				
(c)				
(d)				

EXTRACTED BEAM PROPERTIES:

Rep. Rate (pulse/sec)
 $n = \beta \gamma c$ h π mm mrad for μA of MeV/u ions
 v π mm mrad for μA of MeV/u ions

FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed: 650 m² Moveable m²
 Target Stations: No. Served At Same Time:
 MAGNETIC SPECTROMETERS:
 OTHER FACILITIES:
 Electron Cooler, 120 kV, 5A. Adiabatic Expansion Type
 Scraper

REFERENCES/NOTES

(a) T. Katayama et al., Particle Acc., Vol. 37 (1992).
 (b) T. Tanabe et al., N.I.M. A307 (1991).

OTHER RELEVANT PARAMETERS, RECENT IMPROVEMENTS, ETC.

PLAN VIEW OF FACILITY, COMMENTS

