ENTRY NO. C15 **Date** June 1992

Name of Machine SARA (Post-Accelerator)

Institution INSTITUT DES SCIENCES NUCLEAIRES

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HISTORY

MILESTONE DATES:
Design 1976 Model Tests 1977
Construction 1978-1981 First Beam 1981

DESIGN/CONSTRUCTION BY:
in house Yes other

COST: Accelerator 1.6 10⁶ $ Facility 6 10⁵ $

FUNDED BY: IN2P3/CNRS

STATUS

STAFF: Machine
Scientists 1 Engineers 9
Technicians 27 Students 1
Research (in house/external)
Scientists 40 / 50 Engineers 2 /
Technicians 8 / Students 8 /

BUDGET: Machine 10⁶ $ Funded by IN2P3/CNRS
Research 0.5 10⁶ $ Funded by IN2P3/CNRS

TIME DISTRIBUTION:
Basic Research (in house/external) 70 % / 30 %
Applied Program (in house/external) 2 % / 6 %
Development 7 % Maintenance 6 %

MAGNET

POLE PARAMETERS:
Diameter 450 cm $R_{extract}$ 214 cm R_{inject} 90 cm
HILL PARAMETERS: Gap (min) 6 cm B_{max} 1.65 T
(@ AT) Gap (max) 6 cm B_{min} 1.65 T
VALLEY PARAMETERS: Gap (min) cm B_{max} 0 T
(@ AT) Gap (max) cm B_{min} 0 T
AVERAGE FIELD: $< B >_{min}$ 0.9 T $< B >_{max}$ 0.9 T
NUMBER OF SECTORS: compact/separated / 4
sector angle 48 deg. spiral (max) 0 deg.
FIELD TRIMMING: Trim Coils 15
Harmonic Coils 2
Other
CURRENT: Main Coils 900 Amps Stability ± 10⁻⁵
Trim Coils 200 Amps Stability 10⁻³
Stored Energy (cryogenic) MJ
WEIGHT: Iron 400 t Conductor 14 x 14 mm
ION ENERGY: Bending Limit E/A = 160 q^2/A^2 MeV/u
Focussing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:
Description: Δ shaped dees moving pannels
No. of Gaps/turn 4 dE/dn(max) 0.2 MeV/q
Voltage(max) 0.05 MV Harmonic f_{rf}/f_{ion} 4.6
Freq 20 - 32 MHz Power in(max) 0.03 MW
Stability: Phase 0.1° Voltage 10⁻⁴

OTHER CAVITIES (Flattopping or otherwise):
Description:
Region of Influence: R_{min} cm R_{max} cm
No. of Gaps/turn dE/dn(max) MeV/q
Voltage(max) MV Harmonic f_{rf}/f_{ion}
Freq MHz Power in(max) MW
Stability: Phase Voltage

VACUUM SYSTEM

OPERATING PRESSURE: 10⁻⁶ mbar
PUMPS: No. and type Cryogenic
6X CTI CT320

ION SOURCE(S)

	Type	Intensity (mA)	@	$\epsilon_n = \beta\gamma\epsilon$ (πmm mrad)	Ion Species
(a)					
(b)	See preceeding entry.				
(c)					
(d)					

INJECTION SYSTEM

3 magnetic + 1 electrostatic channel Efficiency 75 %

EXTRACTION SYSTEM

1 electrostatic +1 electrostic channels Efficiency 75 %

CHARACTERISTIC BEAMS

Accelerated Ions	E/A (MeV/u)	Current(part μA) Internal	External
(a) $^{20}Ne^{10+}$	38		0,6 euA
(b) $^{58}Ni^{13+}$	35		0,02 euA
(c) $^{58}Ni^{24+}$	28		0,03 euA
(d)			

Secondary Particles	E (MeV)	part/sec
(a)		
(b)		
(c)		

EXTRACTED BEAM PROPERTIES:
For 0.2 μA of 30 MeV/u $Neon^{10+}$ ions
$\Delta E/E$ 0,5 % $\Delta\phi$ 20 °rf
$\epsilon_n = \beta\gamma\epsilon$ x 20 πmm mrad z 10 πmm mrad

FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed 900 m² Moveable m²
Target Stations: 7 No. Served At Same Time: 1
MAGNETIC SPECTROMETERS:
OTHER FACILITIES:

REFERENCES/NOTES

(a) IEEE/NS-30 N° 4 August 1983
(b)

PLAN VIEW OF FACILITY, COMMENTS

See preceeding entry