ENTRY NO. FM-1

NAME OF MACHINE The Buenos Aires 180 cm Synchrocyclotron DATE 12-18-78
INSTITUTION Comision Nacional Energia Atomica
ADDRESS Av. Libertador, 8250 Buenos Aires, Argentina

IN CHARGE A. Cevallos REPORTED by N. A. Fazzini

HISTORY AND STATUS

DESIGN, date _____ MODEL tests _____
ENG. DESIGN, date _____
CONSTRUCTION, date 1952
FIRST BEAM date (or goal) November 1954
MAJOR ALTERATIONS 1968

OPERATION, 90 hr/wk; On Target 80 hr/wk
TIME DIST., in house 90 %, outside 10 %
USERS' SCHEDULING CYCLE - weeks
COST, ACCELERATOR 10^6 dollars
COST, FACILITY, total 2 x 10^6 dollars
FUNDED BY Comision Nacional Energia Atomica (C.N.E.A.)

ACCELERATOR STAFF, OPERATION and DEVELOPMENT

SCIENTISTS 3 ENGINEERS 4
TECHNICIANS 6 CRAFTS 1
GRAD STUDENTS involved during year 2
OPERATED BY CNEA Res staff or _____ Operators
BUDGET, op & dev $50,000
FUNDED BY CNEA

RESEARCH STAFF, not included above

USERS, in house 10 outside 3
GRAD STUDENTS involved during year 4
RES. BUDGET, in house $60,000
FUNDED BY CNEA

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed One 17 m^2
movable - m^2
TARGET STATIONS 2 in one rooms
STATIONS served at same time, max one
MAG SPECTROGRAPH, type -
COMPUTER, model -
OTHER FACILITIES
Internal beam

REFERENCES/NOTES

MAGNET

POLE FACE diameter 180 cm; R extraction 76 cm
GAP, min - cm; Field - kG
max 35.5 cm; Field 14.4 kG
AVERAGE FIELD at R ext _____ kG
} at - X 10^6 ampere turns
CURRENT STABILITY 10 parts/10^6; $B_{max}/\langle B \rangle$ -
NUMBER OF SECTORS - ; SPIRAL, max - deg
POLE FACE COIL PAIRS: AVF - /sec;
Harmonic correction -
Rad grad - /sec or Circ coils -
WEIGHT: Fe 180 tons; Coils 9 tons
CONDUCTOR, Material and type Al
STORED ENERGY - MJ
COOLING SYSTEM Water
POWER: Main coils 220 max, kW
Trimming coils - max, kW
YOKE/POLE AREA - %
SECTOR ANGLE (Sep Sec) - deg
ION ENERGY (Bending limit) E/A = - q^2/A^2 MeV
(Focusing limit) E/A = - q/A MeV

ACCELERATION SYSTEM

DEES, number One angle 180 deg
BEAM APERTURE 10 cm; DC BIAS - 0.5 kV
TUNED by, coarse - fine -
RF 10.1 to 10.5 mHz, stable ± 10 /10^6
Orb F - to - mHz; GAIN, max 19 kV/turn
HARMONICS, RF/Orb F, used -
DEE-Gnd, max 12 kV, min gap 10 cm
STABILITY, (pk-pk noise)/(pk RF volt) -
RF PHASE stable to ± - deg
RF POWER input, max 29 kW
RF PROTECT circuit, speed - μsec
Type -
FREQUENCY MODULATION, rate 2000 c/sec
MODULATOR, type rotating capacitor
BEAM PULSE, width 30 μsec

VACUUM SYSTEM

PUMPS, No., Type, Size 2, oil diffusion 5000 ℓ/sec and 12,000 ℓ/sec
OPERATING PRESSURE 19 μTorr,
PUMPDOWN TIME 3 hrs

ION SOURCES/INJECTION SYSTEM
arc and filament

EXTRACTION SYSTEM
Regenerative with magnetic channels

CONTROL SYSTEM
Conventional

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CHARACTERISTIC BEAMS

	Particle	Goal (MeV)	Achieved (MeV)
ENERGY	d	28	27.2
	α	56	55
CURRENT		(μA)	(μA)
Internal	d	20	14
	α	4	3
External	d	0.030	0.020
	α	0.002	0.0013
		(part/s)	(part/s)
Secondary			

BEAM PROPERTIES

	Measured		Conditions			
Pulse Width	____	RF deg	____	μA of	____	MeV
Phase Exc, max	____	RF deg	____	μA of	____	MeV
Extract Eff	____	%	____	μA of	____	MeV
Res, ΔE/E	1	%	____	μA of	____	MeV

Emittance

(mm-mrad) { 50 axial / 70 radial } 3 μA of 27 MeV d

OPERATING PROGRAMS, time dist

Basic Nuclear Physics	80 %
Solid State Physics	- %
Bio-Medical Applications	10 %
Isotope Production	5 %
Development	5 %
	%
	%

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, OPERATION SUMMARY, ADDITIONAL REFERENCES