

ENTRY NO. FM-1
NAME OF MACHINE THE BUENOS AIRES 180 cm SYNCHROCYCLOTRON
INSTITUTION Comisión Nacional de Energía Atómica (CNEA)
ADDRESS Av. del Libertador 8250, (1429) Buenos Aires, Argentina
TEL 70-7711 (Ext: 393) **TELEX** 21388 PREAT AR
IN CHARGE N.A. Fazzini **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

COST, ACCELERATOR 10⁶ dollars
COST, FACILITY, total 2 x 10⁶ dollars
FUNDED BY CNEA

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS 3 **ENGINEERS** 4
TECHNICIANS 6 **CRAFTS** 1
GRAD STUDENTS involved during year 4
OPERATED BY CNEA **Research staff or** X **Operators**
OPERATION 90 hr/wk **On target** 80 hr/wk
TIME DISTR. in house 90 % **Outside** 10 %
BUDGET, op & dev 70,000 dollars
FUNDED BY CNEA

RESEARCH STAFF, not included above

USERS, in house 11 **outside** 3
GRAD STUDENTS involved during year 5
RESEARCH BUDGET, in house 60,000 dollars
FUNDED BY CNEA

MAGNET

POLE FACE, diameter (compact) 180 cm, **R extraction** 76 cm
R injection 0 cm
GAP, min cm, **Field** kG }
max/min 35.5 cm, **Field** 14.4 kG at - }
AVERAGE FIELD at R ext kG } Ampere turns
B max/ < B > }
NUMBER OF SECTORS { compact } Spiral, max . deg
{ separated }
SECTOR ANGLE (SSC) deg
TRIMMING COILS

CONDUCTOR, material and type Aluminium
STORED ENERGY (cryogenic) MJ
POWER: main coils 220 max, kW; current stability 10 parts/10⁶
trimming coils max, kW; current stability
WEIGHT: Fe 180 tons; coils 9
COOLING system water
ION ENERGY (bending limit) E/A = q²/a² MEV/amu
(focusing limit) E/A = q/a MeV/amu

ACCELERATION SYSTEM

DEES, number One 180 deg
BEAM APERTURE 10 cm; **DC Bias** 0.5 kV
TUNED by, coarse fine
RF 10.1 to 10.5 MHz, stable ± 10/10⁶
Orb F to MHz
HARMONICS, RF/Orb F, used
DEE—Gnd, max 12 kV, **min gap** 10 cm
STABILITY, (pk-pk noise)/(pk RF volt)
ENERGY GAIN, max kV/turn
RF PHASE, stable to ± deg
RF POWER input, max 29 kW
FREQUENCY MODULATION, rate 2,000 C/s
modulator, type rotating capacitor
beam pulse, width 30 μSEC

VACUUM SYSTEM

OPERATING PRESSURE 1.9 · 10⁻⁵ Torr or mbar
PUMPS, No, Type, Size 2, oil diffusion
5,000 l/sec and 12,000 l/sec

ION SOURCES

arc and filament

INJECTION SYSTEM

conventional

EXTRACTION SYSTEM

regenerative with magnetic channels

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 17 m²; **movable** m²
TARGET STATIONS 2 in one room
STATIONS served at same time, max one
MAG SPECTROGRAPH, type
COMPUTER model
OTHER FACILITIES internal beam

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pμA)	
	Goal	Achieved	Internal	External
d	28	27.2	14	0.020
α	56	55	3	0.0013

SECONDARY

(part/s)

BEAM PROPERTIES

	MEASURED	CONDITIONS
PULSE WIDTH	RF deg	pμ A of MeV ions
PHASE EXC. max	RF deg	pμ A of MeV ions
EXTRACT eff	%	pμ A of MeV ions
RESOL ΔE/E	1 %	pμ A of MeV ions
EMITTANCE (π mm. mrad)	{ 50 axial } { 70 rad }	3 pμ A of 27 MeV d

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS 70 % **SOLID STATES PHYSICS** 10 %
BIOMEDICAL APPLICAT 20 % **ISOTOPE PRODUCTIONS**

REFERENCES/NOTES

2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.