ENTRY No. 96

NAME OF MACHINE 60 inch cyclotron DATE 7/28/81
INSTITUTION University of Washington
ADDRESS Seattle, Washington 98195 (USA)
TEL (206) 543-4080 TELEX
IN CHARGE William G. Weitkamp REPORTED BY William G. Weitkamp

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HISTORY AND STATUS
DESIGN, date 1947* Model tests
ENG DESIGN, date
CONSTRUCTION, date 1948
FIRST BEAM, date (or goal) July 1951
MAJOR ALTERATIONS None

COST, ACCELERATOR $500,000 (1950)
COST, FACILITY, total $900,000 (1950)
FUNDED BY State of Washington, ONR, U.S. A.E.C.

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS 1 ENGINEERS
TECHNICIANS 1 CRAFTS
GRAD STUDENTS involved during year 0
OPERATED BY Research staff or 1 Operators
OPERATION 40 hr/wk, On target 20 hr/wk
TIME DISTR. in house 2 %, Outside 98 %
BUDGET, op & dev $50,000
FUNDED BY Income from user charges

RESEARCH STAFF, not included above
USERS, in house 2 outside 20
GRAD STUDENTS involved during year 1
RESEARCH BUDGET, in house variable
FUNDED BY U.S. D.O.E., National Inst. of Health

MAGNET
POLE FACE, diameter (compact) 152 cm, R extraction 63 cm
R injection 1 cm
GAP, min 25 cm, Field kG
max cm, Field kG
at 3.6×10^5 Ampere turns
AVERAGE FIELD at R ext 15 kG
B max/ <B>
NUMBER OF SECTORS compact -, separated - Spiral, max deg
SECTOR ANGLE (SSC) - deg
TRIMMING COILS -

CONDUCTOR, material and type copper bar
STORED ENERGY (cryogenic) MJ
POWER : main coils 160 max, kW ; current stability $1:10^5$
trimming coils max, kW ; current stability
WEIGHT : Fe 200 tons ; coils 18 tons
COOLING system oil/water
ION ENERGY (bending limit) E/A = q^2/a^2 MeV/amu
(focusing limit) E/A = q /a MeV/amu

ACCELERATION SYSTEM
DEES, number 2 ; angle 180 deg
BEAM APERTURE 3-10 cm ; DC Bias - kV
TUNED by, coarse shorting stubs fine var. capacitor
RF to 11.5 mHz, stable ±
Orb F to 11.5 mHz
HARMONICS, RF/Orb F, used -
DEE - Gnd, max 110 kV, min gap variable cm
STABILITY, (pk-pk noise)/(pk RF volt) -
ENERGY GAIN, max 250 kV/turn
RF PHASE, stable to ± deg
RF POWER input, max 125 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM
OPERATING PRESSURE 5×10^5 Torr or mbar
PUMPS, No, Type, Size 1 DPI MC-7000 20 in.,
MCF 1400, MCF 700

ION SOURCES
Internal PIG source

INJECTION SYSTEM
conventional

EXTRACTION SYSTEM
Electrostatic deflector-RF combination

FACILITIES FOR RESEARCH
SHIELDED AREA, fixed 300 m² ; movable m²
TARGET STATIONS 3 in 2 rooms
STATIONS served at same time, max
MAG SPECTROGRAPH, type -
COMPUTER model -
OTHER FACILITIES Fast neutron production target and collimator

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
p		11.5	100	1
d		21	150	1
α		42	30	1

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	%	pμ A of	MeV	ions	
EMITTANCE (π mm. mrad)	axial	pμA of	MeV	ions	
	rad				

OPERATING PROGRAMS, time distribution
BASIC NUCLEAR PHYSICS 2 SOLID STATES PHYSICS
BIOMEDICAL APPLICAT. 98 ISOTOPE PRODUCTIONS

REFERENCES/NOTES

*F.H. Schmidt, G.W. Farwell, J.E. Henderson, T.J. Morgan and J.F. Streib, Rev. Sci. Instrum. 25, 499 (1954)

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS