ENTRY NO. 87

NAME OF MACHINE University of Washington 60 inch Cyclotron DATE 8/14/78
INSTITUTION University of Washington
ADDRESS Seattle, Washington 98195

IN CHARGE William G. Weitkamp REPORTED by William G. Weitkamp

HISTORY AND STATUS

DESIGN, date 1947* MODEL tests
ENG. DESIGN, date
CONSTRUCTION, date 1948
FIRST BEAM date (or goal) July 1951
MAJOR ALTERATIONS

OPERATION, 40 hr/wk; On Target 20 hr/wk
TIME DIST., in house 2 %, outside 98 %
USERS' SCHEDULING CYCLE 1 weeks
COST, ACCELERATOR $500,000 (1950)
COST, FACILITY, total $900,000 (1950)
FUNDED BY State of Washington, Office of Naval Research, U.S. Atomic Energy Commission

ACCELERATOR STAFF, OPERATION and DEVELOPMENT

SCIENTISTS 1 ENGINEERS
TECHNICIANS 1 CRAFTS 1/2
GRAD STUDENTS involved during year 0
OPERATED BY Res staff or 1 Operators
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
RES. BUDGET, in house Variable
FUNDED BY U.S. Department of Energy

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 300 m^2
movable m^2
TARGET STATIONS 1 in 1 rooms
STATIONS served at same time, max
MAG SPECTROGRAPH, type
COMPUTER, model
OTHER FACILITIES

REFERENCES/NOTES

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

MAGNET

POLE FACE diameter 152 cm; R extraction 63 cm
GAP, min 25 cm; Field kG
max cm; Field kG
at 0.36 X 10^6 ampere turns
AVERAGE FIELD at R ext 15 kG
CURRENT STABILITY 100 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 200 tons; Coils 18 tons
CONDUCTOR, Material and type copper bar
STORED ENERGY MJ
COOLING SYSTEM oil/water
POWER: Main coils 160 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 2 angle 180 deg
BEAM APERTURE 3-10 cm; DC BIAS kV
TUNED by, coarse shorting stubs fine Variable Vac. capacitor
RF -- to 11.5 mHz, stable ± /10^6
Orb F to 11.5 mHz; GAIN, max 250 kV/turn
HARMONICS, RF/Orb F, used --
DEE-Gnd, max 110 kV, min gap cm
STABILITY, (pk-pk noise)/(pk RF volt)
RF PHASE stable to ± deg
RF POWER input, max 125 kW
RF PROTECT circuit, speed -- μsec
Type
FREQUENCY MODULATION, rate -- /sec
MODULATOR, type --
BEAM PULSE, width

VACUUM SYSTEM

PUMPS, No., Type, Size 1 DPI MC-7000 20 in. MCF 1400 MCF 700
OPERATING PRESSURE 50 μTorr,
PUMPDOWN TIME 1 1/2 hrs

ION SOURCES/INJECTION SYSTEM

Internal PIG source

EXTRACTION SYSTEM

Electrostatic deflector- RF Combination

CONTROL SYSTEM

Conventional

ENTRY NO. 87 (cont.)

CHARACTERISTIC BEAMS

	Particle	Goal (MeV)	Achieved (MeV)
ENERGY	p		11.5
	d		21
	α		42
CURRENT		(μA)	(μA)
Internal	p		100
target	d		150
	α		30
External	p		1
scattering	d		1
chamber	α		1
		(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	____ %	____ μA of	____ MeV	____
Emittance				
(mm-mrad) { ____ axial / ____ radial }		____ μA of	____ MeV	____

OPERATING PROGRAMS, time dist

Basic Nuclear Physics	2 %
Solid State Physics	-- %
Bio-Medical Applications	98 %
Isotope Production	%
Development	%
	%
	%

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