

ENTRY NO. 64

NAME OF MACHINE Date September 1986
 INSTITUTION Mallinckrodt Diagnostica(Holland)B.V. (until Jan. 1979 Philips Duphar B.V.)
 ADDRESS P.O. Box 3 1755 ZG Petten NETHERLANDS
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 IN CHARGE B. Reiff REPORTED BY J.G. van der Baan

HISTORY AND STATUS

DESIGN, date Model tests
 ENG DESIGN, date
 CONSTRUCTION, date 1963-1964
 FIRST BEAM, date (or goal) protons, June 1964
 MAJOR ALTERATIONS 1966
 COST, ACCELERATOR \$ 1 x 10⁶
 COST, FACILITY, total
 FUNDED BY privately Philips Duphar B.V.

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS 1 ENGINEERS 1
 TECHNICIANS 5 CRAFTS 10
 GRAD STUDENTS involved during year
 OPERATED BY Research staff or 10 Operators
 OPERATION 132 hr/wk. On target 130 hr/wk
 TIME DISTR, in house 100 %, outside %
 BUDGET, op & dev
 FUNDED BY privately

RESEARCH STAFF, not included above

USERS, in house outside
 GRAD STUDENTS involved during year
 RESEARCH BUDGET, in house
 FUNDED BY

MAGNET

POLE FACE, diameter (compact) 140 cm, R-extraction 57 cm
 R injection cm
 GAP, min 16 cm, Field kG }
 max 30 cm, Field kG } at 503.10⁶
 AVERAGE FIELD at R ext 15.3 kG } Ampere turns
 B max /

NUMBER OF SECTORS { compact 3 } Spiral, max 48 deg
 { separated }
 SECTOR ANGLE (SSC) deg
 TRIMMING COILS

CONDUCTOR, material and type Al
 STORED ENERGY (cryogenic) MJ
 POWER: main coils 160 max kW: current stability
 trimming coils max kW: current stability
 WEIGHT: Fe 100 tons: coils
 COOLING system closed circuit dem water
 ION ENERGY (Bending limit) E/A = 30 q²/A² MeV/amu
 (Focusing limit) E/A = q/A MeV/amu

ACCELERATION SYSTEM

DEES, number 1 angle 180 deg
 BEAM APERTURE 3.5 cm; DC Bias 0.75 kV
 TUNED by, coarse MS fine trim cap 6
 RF 10 to 21 MHz, stable ± 50:10⁻⁶
 Orb F 7 to 21 MHz
 HARMONICS, RF/Orb F, used 1st or 3rd
 DEE-Gnd, max 50 kV, min gap 3 cm
 STABILITY, (pk-pk noise)/(pk RF volt) 10⁻³
 ENERGY GAIN, max 100 keV /turn
 RF PHASE, stable to ± deg
 RF POWER input, max 90 kW
 FREQUENCY MODULATION, rate /s
 modulator, type
 beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 5-10 μ Torr or mbar
 PUMPS, No, Type, Size 1 Oil diff. pump 12000 l/s

ION SOURCES

INTERNAL, PIG, 800V, 8A
 Filament 8 V, 1000 A

INJECTION SYSTEM

EXTRACTION SYSTEM

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m²; movable m²
 TARGET STATIONS in rooms
 STATIONS served at same time, max
 MAG SPECTROGRAPH, type
 COMPUTER model
 OTHER FACILITIES none

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (μA)	
	Goal	Achieved	Internal	External
H 1	28	30	400	
H 2	15	16	400	
He3	45	48		
He4	30	32	200	

SECONDARY (part/s)

BEAM PROPERTIES

MEASURED CONDITIONS
 PULSE WIDTH RF deg μA of MeV ions
 PHASE EXC. max RF deg μA of MeV ions
 EXTRACT eff. % μA of MeV ions
 RESOL ΔE/E % μA of MeV ions
 EMITTANCE

(π mm-mrad) axial μA of MeV
 rad

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
 BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS .99%
 Development 1%

REFERENCES/NOTES

- Hagedoorn, H.L. and Verster, M.F.C.
- CERN report 63-19(1963) pp 286-290

PLAN VIEW OF FACILITY, COMMENTS, ETC.

Accelerator exclusively used for radionuclide production with protons.