

ENTRY No. 31

NAME OF MACHINE MC-35, Scanditronix DATE
 INSTITUTION Medizinische Hochschule Hannover, Abt. f. Nuklearmedizin u. spezielle Biophysik
 ADDRESS Post. Box 61 01 80, Konstanty-Gutschow-Str. 8, 3000 H a n n o v e r 61
 TEL (0511) 532-3087 TELEX 092.20.44.med.ho.d.
 IN CHARGE Dr. D. Junker REPORTED BY Dr. H.-J. Helmeke/Dr. D. Junker

HISTORY AND STATUS

DESIGN, date Model tests 1976
 ENG DESIGN, date
 CONSTRUCTION, date
 FIRST BEAM, date (or goal) 21.01.1977
 MAJOR ALTERATIONS

COST, ACCELERATOR

COST, FACILITY, total
 FUNDED BY

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS 2 ENGINEERS 1
 TECHNICIANS 1 CRAFTS
 GRAD STUDENTS involved during year
 OPERATED BY Research staff or 2 Operators
 OPERATION 20 hr/wk, On target 8 hr/wk
 TIME DISTR. in house 100 % Outside %
 BUDGET, op & dev
 FUNDED BY

RESEARCH STAFF, not included above

USERS, in house 3 outside
 GRAD STUDENTS involved during year
 RESEARCH BUDGET, in house
 FUNDED BY

MAGNET

POLE FACE, diameter (compact) 130 cm, R extraction 51 cm
 R injection cm
 GAP, min 10 cm, Field 20.3 kG }
 max 18 cm, Field 12.6 kG } at 800/280
 AVERAGE FIELD at R ext 17.2 kG } Ampere turns
 B max/

NUMBER OF SECTORS { compact 3 } Spiral, max 50 deg
 separated

SECTOR ANGLE (SSC) deg

TRIMMING COILS 4 harmonic
 8 circular

CONDUCTOR, material and type Cu-coils, H-type

STORED ENERGY (cryogenic) MJ

POWER: main coils 10 max, kW; current stability 10⁻⁴
 trimming coils 10 max, kW; current stability 10⁻⁴

WEIGHT: Fe 53 tons; coils 2.3 tons

COOLING system water

ION ENERGY (bending limit) E/A = q²/a² MeV/amu
 (focusing limit) E/A = q²/a² MeV/amu

ACCELERATION SYSTEM

DEES, number 2; angle 90 deg
 BEAM APERTURE cm; DC Bias kV
 TUNED by, coarse resonator fine flaps
 RF 12 to 24 MHz, stable ± quartz oscillat
 Orb F to MHz 10⁻⁶
 HARMONICS, RF/Orb F, used
 DEE - Gnd, max 40 kV, min gap cm
 STABILITY, (pk-pk noise)/(pk RF volt)
 ENERGY GAIN, max kV/turn
 RF PHASE, stable to ± automatically regulated deg
 RF POWER input, max kW
 FREQUENCY MODULATION, rate /s
 modulator, type
 beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 10⁻⁵ Torr or mbar
 PUMPS, No, Type, Size two diffusion pumps
 tree preva

ION SOURCES

PIG - type

INJECTION SYSTEM

EXTRACTION SYSTEM

electrostatic deflector and magnetic channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 65 m²; movable m²
 TARGET STATIONS 1 with six targets
 STATIONS served at same time, max 1
 MAG SPECTROGRAPH, type
 COMPUTER model
 OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pA)	
	Goal	Achieved	Internal	External
protons	7.5-35			65 (2)
deuterons	3.8-18			65
helium-3	5.6-47			30
helium-4	7.5-36			30

SECONDARY (part/s) guaranteed

BEAM PROPERTIES

MEASURED CONDITIONS
 PULSE WIDTH RF deg pA of MeV ions
 PHASE EXC, max RF deg pA of MeV ions
 EXTRACT eff 85 % 60 pA of 35 MeV p ions
 RESOL ΔE/E 0.5 % guaranteed pA of 35 MeV p ions
 EMITTANCE teed
 (π mm. mrad) { 30 axial } .1... pA of 35 MeV He-4 ions
 { 30. rad }

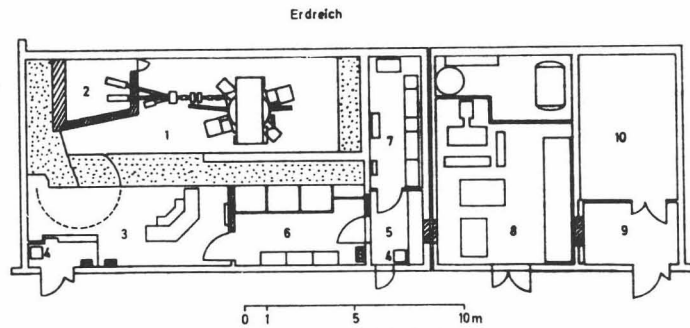
OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS .. SOLID STATES PHYSICS ..
 BIOMEDICAL APPLICAT. .. ISOTOPE PRODUCTIONS 100 %
 C-11, N-13, O-15, F-18, Rb-81

REFERENCES/NOTES

- 1) guaranteed axial and rad ; 50 mm mrad
- 2) max. measured : 35 MeV p⁺ = 100 μA
 35 MeV He-4 = 55 μA

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS



- | | |
|--|--|
| 1 Zyklotronraum | 6 Radiochemie |
| 2 Targetbunker | 7 Hilfmaschinenraum (Zyklotronelektronik) |
| 3 Schaltraum mit Bedienungspult und Eingangsschleuse | 8 Maschinenraum (Stromversorgung Zyklotron, Lüftung, Kühl- und Abwasser) |
| 4 Hand- und Fußmonitor | 9 Rechneraum für Positronenkamera |
| 5 Targetvorbereitung mit Notausgang | 10 Untersuchungsraum mit Positronenkamera |