

ENTRY NO. 60
 NAME OF MACHINE MC 16 F DATE 1981-07-07
 INSTITUTION KAROLINSKA HOSPITAL
 ADDRESS S-104 01 STOCKHOLM (Sweden)
 TEL (0)8 - 7361000 TELEX
 IN CHARGE Prof. L. Widen REPORTED BY S. Lindback, Scanditronix

HISTORY AND STATUS

DESIGN, date 1980 Model tests 1980
 ENG DESIGN, date 1980-81
 CONSTRUCTION, date 1980-81
 FIRST BEAM, date (or goal) April 1981
 MAJOR ALTERATIONS

COST, ACCELERATOR
 COST, FACILITY, total
 FUNDED BY

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

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

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) .84 cm, R extraction .33.. cm
 R injection .-.. cm
 GAP, min 6.6. cm, Field 20.7 kG }
 min 11.9. cm, Field 12.8 kG } at 160,000
 AVERAGE FIELD at R ext 17.4 kG } Ampere turns
 B max/ < B > 1.16 }
 NUMBER OF SECTORS { compact 3 } Spiral, max 40 deg
 { separated }
 SECTOR ANGLE (SSC) deg

TRIMMING COILS 2 sets of valley coils for ischroniza-
 tion
 2 sets of valley coils for harmonics

CONDUCTOR, material and type Cu, indirectly cooled
 STORED ENERGY (cryogenic) MJ
 POWER: main coils 35. max, kW; current stability 10⁻⁵
 trimming coils 5. max, kW; current stability 10⁻⁴
 WEIGHT: Fe 17. tons; coils 0.8
 COOLING system Demineralized water
 ION ENERGY (bending limit) E/A = 17.2 q/a² MEV/amu
 (focusing limit) E/A = q/a MeV/amu

ACCELERATION SYSTEM

DEES, number 2; angle 76-90 deg
 BEAM APERTURE 2.0 cm; DC Bias - kV
 TUNED by, coarse fine flaps
 RF 26 to 26.2 MHz, stable ± 10⁻⁶
 Orb F 13 to 26.2 MHz, stable
 HARMONICS, RF/Orb F, used 1,2
 DEE-Gnd, max 40 kV, min gap - cm
 STABILITY, (pk-pk noise)/(pk RF volt) < 10⁻³
 ENERGY GAIN, max 160 kV/turn
 RF PHASE, stable to ± 0.5 deg
 RF POWER input, max 30 kW
 FREQUENCY MODULATION, rate /s
 modulator, type
 beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE < 10⁻⁵ Torr or mbar
 PUMPS, No, Type, Size 2 oil diffusion pumps Ø 250
 1 mechanical fore pump

ION SOURCES

Internal, cold cathode, Horizontally mounted

INJECTION SYSTEM

EXTRACTION SYSTEM

Electrostatic deflector, magn. focusing channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m²; movable m²
 TARGET STATIONS in
 STATIONS served at same time, max
 MAG SPECTROGRAPH, type
 COMPUTER model
 OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pA)	
	Goal	Achieved	Internal	External
p	16	17.2	>500	>50
d	8	8.5	>500	>50

SECONDARY (part/s)

BEAM PROPERTIES

MEASURED CONDITIONS
 PULSE WIDTH RF deg pA of MeV ions
 PHASE EXC. max RF deg pA of MeV ions
 EXTRACT eff % pA of MeV ions
 RESOL ΔE/E % pA of MeV ions
 EMITTANCE
 (π mm. mrad) { axial } pA of MeV
 { rad }

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
 BIOMEDICAL APPLICAT ISOTOPE PRODUCTIONS

REFERENCES/NOTES

PLAN VIEW OF FACILITY, COMMENTS, ETC.

CONTROL: Programmable microprocessor controller,
 compact desk-top console
 OPTION: Local radiation shield around cyclotron.
 Targets and chemical processing system
 for production of ¹¹C, ¹³N, ¹⁵O, ¹⁸F.
 Lead shielded hot cell.