ENTRY NO. 73

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
max 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 ... / separated ..... } Spiral, max . 40 deg
SECTOR ANGLE (SSC) ..... deg
TRIMMING COILS .. 2 sets of valley coils for ischronization
..... 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 ..... tons
COOLING system ... Demineralized water .....
ION ENERGY (Bending limit) E/A = .. 17.2 ... q^2/A^2 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
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 ϕ 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 ..... m^2; movable ..... m^2
TARGET STATIONS ..... in ..... rooms
STATIONS served at same time, max .....
MAG SPECTROGRAPH, type .....
COMPUTER model .....
OTHER FACILITIES .....
.....
.....

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) 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	pμA of ..... MeV ..... ions
PHASE EXC. max ..	RF deg	pμA of ..... MeV ..... ions
EXTRACT eff	%	pμA of ..... MeV ..... ions
RESOL ΔE/E	%	pμA of ..... MeV ..... ions
EMITTANCE		
(π mm-mrad)	... axial	
	... rad	.... pμA of ..... MeV .....

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS .... SOLID STATES PHYSICS .....
BIOMEDICAL APPLICAT..... ISOTOPE PRODUCTIONS .....
.....
.....

REFERENCES/NOTES

1)
2)

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 on ^{11}C, ^{13}N, ^{15}O, ^{18}F. Lead shielded hot cell.