

ENTRY No. 68

NAME OF MACHINE SCX MC17F DATE 15-03-89  
INSTITUTION PET Center, University Hospital  
ADDRESS Oostersingel 59, 9713 BZ Groningen, The Netherlands  
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IN CHARGE W. Vaalburg REPORTED BY A.M.J. Paans

#### HISTORY AND STATUS

DESIGN, date 1980 Model tests 1980  
ENG DESIGN, date 1980-1981  
CONSTRUCTION, date 1989-1990  
FIRST BEAM, date (or goal) February 1991  
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 } Spiral, max 40 deg  
separated

SECTOR ANGLE (SSC) deg  
TRIMMING COILS 2 sets of valley coils for isochronization  
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<sup>-4</sup>  
trimming coils 5 max, kW; current stability 10<sup>-3</sup>

WEIGHT: Fe 17 tons; coils 0.8 tons  
COOLING system demineralized water

ION ENERGY (bending limit) E/A = 17.2 q<sup>2</sup>/a<sup>2</sup> MeV/amu  
(focusing limit) E/A = q<sup>2</sup>/a<sup>2</sup> MeV/amu

#### ACCELERATION SYSTEM

DEES, number 2; angle 90 deg  
BEAM APERTURE cm; DC Bias kV  
TUNED by, coarse fine flaps 6  
RF 26 to 26.2 MHz, stable ± 10<sup>-6</sup>  
Orb F 13 to 26.2 MHz

HARMONICS, RF/Orb F, used 1, 2

DEE - Gnd, max kV, min gap -3 cm

STABILITY, (pk-pk noise)/(pk RF volt) 10<sup>-3</sup>

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<sup>-5</sup> Torr or mbar

PUMPS, No, Type, Size 1 oil diffusion pump

#### ION SOURCES

Internal, cold cathode. Horizontally mounted

#### INJECTION SYSTEM

#### EXTRACTION SYSTEM

Electrostatic deflector, magnetic focussing channel

#### FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 40 m<sup>2</sup>; movable m<sup>2</sup>

TARGET STATIONS 1 in 1 rooms

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
p	17.2			50 uA
d	8.5			50 uA

#### SECONDARY

(part/s)

#### BEAM PROPERTIES

MEASURED	CONDITIONS	
	RF deg	μA of MeV ions
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 ions

{ rad }

#### OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS

BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS

#### REFERENCES/NOTES

#### PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS

8 position target changer mounted at exit accelerator chamber for the production of <sup>11</sup>C, <sup>13</sup>N, <sup>15</sup>O and <sup>18</sup>F. Chemical processing systems in hot cells on top of vault.