ENTRY NO. 69

NAME OF MACHINE ... Research Centre Medical Cyclotron
INSTITUTION ..... King Faisal Specialist Hospital and Research Centre
ADDRESS ..... Riyadh 11211, Saudi Arabia
TEL .. 464-7272 ..... TELEX .... 201050 ROSPEC SJ
IN CHARGE . Dale K. Wells ..... REPORTED BY .. Paul S. Plascjak

HISTORY AND STATUS

DESIGN, date ..... Model tests
ENG DESIGN, date .... TCC Model Cs-30
CONSTRUCTION, date .... Factory Tests: March 1977
FIRST BEAM, date (or goal) .. October 1981
MAJOR ALTERATIONS .... None
COST, ACCELERATOR .... -
COST, FACILITY, total .... -
FUNDED BY ..... Kingdom of Saudi Arabia

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS .... 1 ..... ENGINEERS ... 1
TECHNICIANS ... 7 ..... CRAFTS 2
GRAD STUDENTS involved during year 0
OPERATED BY ..... Research staff or ..... x ... Operators
OPERATION ..... 84 ... hr/wk. On target ..... 40 .... hr/wk
TIME DISTR. in house .... 100 .... %, outside ... - ..... %
BUDGET, op & dev ..... -
FUNDED BY ... Kingdom of Saudi Arabia

RESEARCH STAFF, not included above

USERS, in house ..... 5 ..... outside 0
GRAD STUDENTS involved during year .....
RESEARCH BUDGET, in house .....
FUNDED BY ... Kingdom of Saudi Arabia

MAGNET

POLE FACE, diameter (compact) .. 96.5 ... cm, R-extraction .. 42 .. cm
R injection ..... cm
GAP, min .... 5 cm, Field .. 19.5 .. kG
max ... 10 cm, Field .. 12 .... kG } at .0.2 x 10^6 .....
AVERAGE FIELD at R ext ... 16 .... kG Ampere turns
B max/<B> ..... -
NUMBER OF SECTORS { compact ..... / separated ... 3 ... } Spiral, max ... deg
SECTOR ANGLE (SSC) ..... - ... deg
TRIMMING COILS .... Harmonic coils
... 3. inner - 3. outer
CONDUCTOR, material and type .... Copper, hollow
STORED ENERGY (cryogenic) ..... - ..... MJ
POWER: main coils .. 60. max kW: current stability 5 x 10^-4
trimming coils ... -. max kW: current stability .....
WEIGHT: Fe ..... 20 ..... tons: coils ..... 2 ..... tons
COOLING system ..... D.I. Water
ION ENERGY (Bending limit) E/A = ... - .... q^2/A^2 MeV/amu
(Focusing limit) E/A = ... - ..... q/A MeV/amu

ACCELERATION SYSTEM

DEES, number ..... 2 ..... angle ..... 81 .... deg
BEAM APERTURE ... 1.9 ..... cm; DC Bias ..... 1.5 ... kV
TUNED by, coarse . shorting Bar ... fine . Capacitor .....
RF ..... 14 ... to . 26.5 ..... MHz, stable ± .....
Orb F ..... to ..... MHz
HARMONICS, RF/Orb F, used ..... First .....
DEE–Gnd, max ..... 30 ..... kV, min gap ..... 1 ..... cm
STABILITY, (pk-pk noise)/(pk RF volt) ..... -
ENERGY GAIN, max ..... 100 ..... kV/turn
RF PHASE, stable to ± ..... - ..... deg
RF POWER input, max. ..... 70 ..... kW
FREQUENCY MODULATION, rate ..... - ..... /s
modulator, type ..... -
beam pulse, width ..... -

VACUUM SYSTEM

OPERATING PRESSURE ..... 3 x 10^-5 ..... Torr or mbar
PUMPS, No, Type, Size .. 1 Diffusion Pump .....
..... 10" .....

ION SOURCES

..... "Cold Cathode" (1) .....

INJECTION SYSTEM

..... -

EXTRACTION SYSTEM

.. Electrostatic and Magnetic Channel (2) .....

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed . 190 .... m^2; movable None .... m^2
TARGET STATIONS ..... 9 ..... in ..... 4 ..... rooms
STATIONS served at same time, max .... 1 .....
MAG SPECTROGRAPH, type . 101.5° .....
COMPUTER model ..... PDP 11/70 .....
OTHER FACILITIES ..... Isotope Production .....
..... Isocentric Neutron Production
.....

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
... P	... 26 ...	.. 26.5 .	200	... 60 .....
... d	... 15 ...	.. 14.8 .	300	.. 100 .....
... ^{3}He ...	... 38 ...	.. 38.1 .	135	... 60 .....
... α	... 30 ...	.. 29.6 .	.. 90	... 50 .....

SECONDARY (part/s)
.... n. 27. Rad/min. @. 125. cm. ... .
....

BEAM PROPERTIES

	MEASURED		CONDITIONS		
PULSE WIDTH	RF deg		pμA of	MeV	ions
PHASE EXC. max ..	RF deg		pμA of	MeV	ions
EXTRACT eff .	80 .. %	55 ..	pμA of 26.5	MeV	ions P
RESOL ΔE/E .	0.5 %	0.2 .	pμA of 14.8	MeV	ions d
EMITTANCE					
(π mm-mrad)	22 .. axial / 9 .. rad	. 2 ..	pμA of 26.5	MeV .. p ...	

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS . 0 .. SOLID STATES PHYSICS .. 0 .....
BIOMEDICAL APPLICAT ... 0 .. ISOTOPE PRODUCTIONS . 40% ....
.. Neutron Production ... 40% .....
.. R. & D. ..... 20% .....

REFERENCES/NOTES

1) IEEE Trans. Nucl. Sci. NS-14 , 70-71 (1967)
2) IEEE Trans. Nucl. Sci. NS-16 , 500-503 (1969)

PLAN VIEW OF FACILITY, COMMENTS, ETC.