ENTRY NO. 67

NAME OF MACHINE K500 DATE 8/78
INSTITUTION Michigan State University
ADDRESS Cyclotron Laboratory, East Lansing, MI 48824

IN CHARGE H. Blosser REPORTED by H. Blosser

**HISTORY AND STATUS**

DESIGN, date 75 MODEL tests 6/75-6/77
ENG. DESIGN, date
CONSTRUCTION, date 8/77 (magnet 6/75)
FIRST BEAM date (or goal) 10/79
MAJOR ALTERATIONS

OPERATION, hr/wk; On Target hr/wk
TIME DIST., in house %, outside %
USERS' SCHEDULING CYCLE weeks
COST, ACCELERATOR $1,740,000
COST, FACILITY, total
FUNDED BY National Science Foundation

**ACCELERATOR STAFF, OPERATION and DEVELOPMENT**

SCIENTISTS ENGINEERS
TECHNICIANS CRAFTS
GRAD STUDENTS involved during year
OPERATED BY Res staff or Operators
BUDGET, op & dev
FUNDED BY

**RESEARCH STAFF, not included above**

USERS, in house outside
GRAD STUDENTS involved during year
RES. BUDGET, in house
FUNDED BY

**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

**REFERENCES/NOTES**

Blosser, et al., Proc. VII Int. Conf. on Cyclotrons and their Applications
MSU Cyc. Lab. annual report 1974-76
MSU Cyc. Lab. annual report 1976-77
MSU Cyc. Lab. annual report 1977-78

**MAGNET**

POLE ~~FACE~~ Base diameter 142 cm; R extraction 67 cm
GAP, min 6.35 cm; Field 58 kG } at X $10^6$
max 91.4 cm; Field 43 kG } ampere turns
AVERAGE FIELD at R ext 49 kG
CURRENT STABILITY parts/$10^6$; $B_{max}/\langle B \rangle$
NUMBER OF SECTORS 3 ; SPIRAL, max 113.5 deg
POLE FACE COIL PAIRS: AVF /sec;
Harmonic correction
Rad grad 13 /sec or Circ coils
WEIGHT: Fe 100 tons; Coils 8 tons
CONDUCTOR, Material and type NbTi in Cu
STORED ENERGY 18 MJ
COOLING SYSTEM He bath
POWER: Main coils 0 max, kW
Trimming coils 50 max, kW
YOKE/POLE AREA 200 %
SECTOR ANGLE (Sep Sec) deg
ION ENERGY (Bending limit) E/A = 500 $q^2/A^2$ MeV
(Focusing limit) E/A = 160 q/A MeV

**ACCELERATION SYSTEM**

DEES, number 3 angle 53 deg
BEAM APERTURE 2.5 cm; DC BIAS 0 kV
TUNED by, coarse sliding short ~~fine~~ variable cap.
RF 9 to 32 mHz, stable ± 0.1 /$10^6$
Orb F 1.3 to 32 mHz; GAIN, max 600 kV/turn
HARMONICS, RF/Orb F, used 1,2,3,4,5,7
DEE-Gnd, max 100 kV, min gap 1.0 cm
STABILITY, (pk-pk noise)/(pk RF volt)
RF PHASE stable to ± deg
RF POWER input, max kW
RF PROTECT circuit, speed μsec
Type
FREQUENCY MODULATION, rate /sec
MODULATOR, type
BEAM PULSE, width

**VACUUM SYSTEM**

PUMPS, No., Type, Size

OPERATING PRESSURE μTorr,
PUMPDOWN TIME hrs

**ION SOURCES/INJECTION SYSTEM**

Penning

**EXTRACTION SYSTEM**

3 electrostatic deflectors @90kv/cm

**CONTROL SYSTEM**

computerized with conventional console