

ENTRY NO. FM-11

NAME OF MACHINE Space Radiation Effects Laboratory (SREL) DATE July 11, 1978
 INSTITUTION College of William and Mary
 ADDRESS Newport News, Virginia

IN CHARGE Robert T. Siegel REPORTED by Robert T. Siegel

HISTORY AND STATUS

DESIGN, date 1960-62 MODEL tests _____
 ENG. DESIGN, date 1962-63
 CONSTRUCTION, date July, 1963
 FIRST BEAM date (or goal) January, 1965
 MAJOR ALTERATIONS 1972
 OPERATION, 136 hr/wk; On Target 128 hr/wk
 TIME DIST., in house _____%, outside 100 %
 USERS' SCHEDULING CYCLE 16 weeks
 COST, ACCELERATOR \$5,963,000 (incl. orig.
 COST, FACILITY, total \$16,900,000 beam
 FUNDED BY NASA (transport)

ACCELERATOR STAFF, OPERATION and DEVELOPMENT

SCIENTISTS 2 ENGINEERS 4
 TECHNICIANS 12 CRAFTS 1
 GRAD STUDENTS involved during year 60
 OPERATED BY _____ Res staff or X Operators
 BUDGET, op & dev \$750,000
 FUNDED BY NSF and State of Virginia

RESEARCH STAFF, not included above

USERS, in house _____ outside 45
 GRAD STUDENTS involved during year 60
 RES. BUDGET, in house _____
 FUNDED BY _____

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 350 m²
 movable 600 m²
 TARGET STATIONS 7 in 4 rooms
 STATIONS served at same time, max 3
 MAG SPECTROGRAPH, type _____
 COMPUTER, model IBM 360/44
 OTHER FACILITIES _____

REFERENCES/NOTES

Proceedings of Conference on Cyclotron Improvement, College of William and Mary, 1964. Papers by W. M. Brobeck, R. M. Nissen, J. R. Mulady.

MAGNET

POLE FACE diameter 500 cm; R extraction _____ cm
 GAP, min 36 cm; Field 19.5 kG } at 1.3 x 10⁶
 max 45 cm; Field 18.2 kG } ampere turns
 AVERAGE FIELD at R ext 18.2 kG
 CURRENT STABILITY 50 parts/10⁶; B_{max}/⟨B⟩ _____
 NUMBER OF SECTORS _____; SPIRAL, max _____ deg
 POLE FACE COIL PAIRS: AVF _____ /sec;
 Harmonic correction _____
 Rad grad _____ /sec or Circ coils _____
 WEIGHT: Fe 2700 tons; Coils 60 tons
 CONDUCTOR, Material and type _____
 STORED ENERGY _____ MJ
 COOLING SYSTEM _____
 POWER: Main coils 950 max, kW
 Trimming coils _____ max, kW
 YOKE/POLE AREA _____ %
 SECTOR ANGLE (Sep Sec) _____ deg
 ION ENERGY (Bending limit) E/A = _____ q²/A² MeV
 (Focusing limit) E/A = _____ q/A MeV

ACCELERATION SYSTEM

DEES, number 1 angle 180 deg
 BEAM APERTURE 12 cm; DC BIAS -1.4 kV
 TUNED by, coarse _____ fine _____
 RF 29.6 to 17.0 MHz, stable ± _____ /10⁶
 Orb F _____ to _____ MHz; GAIN, max _____ kV/turn
 HARMONICS, RF/Orb F, used _____
 DEE-Gnd, max 35 kV, min gap _____ cm
 STABILITY, (pk-pk noise)/(pk RF volt) 2-3%
 RF PHASE stable to ± _____ deg
 RF POWER input, max 60 kW
 RF PROTECT circuit, speed _____ μsec
 Type _____
 FREQUENCY MODULATION, rate 55 /sec
 MODULATOR, type Tuning Fork
 BEAM PULSE, width 50,000
10 msec, external, internal meso

VACUUM SYSTEM

PUMPS, No., Type, Size _____
 OPERATING PRESSURE _____ μTorr,
 PUMPDOWN TIME _____ hrs

ION SOURCES/INJECTION SYSTEM

Cold cathode

EXTRACTION SYSTEM

Regenerator-Magnetic Channel

CONTROL SYSTEM

