

ENTRY NO. 81

NAME OF MACHINE Injector Cyclotron DATE July '78
INSTITUTION Lawrence Livermore Laboratory
ADDRESS P. O. Box 808, Livermore California 94550

IN CHARGE Carl H. Poppe REPORTED by Ivan D. Proctor

HISTORY AND STATUS

DESIGN, date * MODEL tests _____
ENG. DESIGN, date _____
CONSTRUCTION, date 1968
FIRST BEAM date (or goal) 1969
MAJOR ALTERATIONS None
OPERATION, 80 hr/wk; On Target ~70 hr/wk
TIME DIST., in house 90 %, outside 10 %
USERS' SCHEDULING CYCLE ~8 weeks
COST, ACCELERATOR \$430,000
COST, FACILITY, total \$580,000
FUNDED BY USDOE

ACCELERATOR STAFF, OPERATION and DEVELOPMENT

SCIENTISTS 0.5 ENGINEERS 1
TECHNICIANS ~6 CRAFTS _____
GRAD STUDENTS involved during year 0
OPERATED BY _____ Res staff or 4 Operators
BUDGET, op & dev _____
FUNDED BY USDOE

RESEARCH STAFF, not included above

USERS, in house 9.5 outside 3
GRAD STUDENTS involved during year 0
RES. BUDGET, in house _____
FUNDED BY USDOE

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed _____ m²
movable _____ m²
TARGET STATIONS 5 in 2 rooms
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type Split pole
COMPUTER, model PDP 8, PDP 15
OTHER FACILITIES _____
16 Detector 10.7 m TOF Array

REFERENCES/NOTES

*Cyclotron Corporation
Model CNI-15

MAGNET

POLE FACE diameter 82 cm; R extraction 35 cm
GAP, min 5 cm; Field 20 kG } at 0.16 x 10⁶
max 10 cm; Field 12 kG } ampere turns
AVERAGE FIELD at R ext 16.5 kG
CURRENT STABILITY 40 parts/10⁶; B_{max}/(B) 1.016
NUMBER OF SECTORS 3; SPIRAL, max 30 deg
POLE FACE COIL PAIRS: AVF 0 /sec;
Harmonic correction _____
Rad grad 1 /sec or Circ coils _____
WEIGHT: Fe 14 tons; Coils 1.16 tons
CONDUCTOR, Material and type Al
STORED ENERGY _____ MJ
COOLING SYSTEM LCW
POWER: Main coils 58 max, kW
Trimming coils 0 max, kW
YOKE/POLE AREA 100 %
SECTOR ANGLE (Sep Sec) _____ deg
ION ENERGY (Bending limit) E/A = 15 q²/A² MeV
(Focusing limit) E/A = 15 q/A MeV

ACCELERATION SYSTEM

DEES, number 2 angle 120 deg
BEAM APERTURE 1.9 cm; DC BIAS -1.0 kV
TUNED by, coarse Strap fine Capacitor
RF 12.5 to 25.0 MHz, stable ± 5 /10⁶
Orb F 12.5 to 25 MHz; GAIN, max 100 kV/turn
HARMONICS, RF/Orb F, used _____
DEE-Gnd, max 30 kV, min gap 1 cm
STABILITY, (pk-pk noise)/(pk RF volt) 0.1%
RF PHASE stable to ± _____ deg
RF POWER input, max 36 kW
RF PROTECT circuit, speed 20 μsec
Type Crowbar series regulator
FREQUENCY MODULATION, rate _____ /sec
MODULATOR, type _____
BEAM PULSE, width _____

VACUUM SYSTEM

PUMPS, No., Type, Size 1500 l/s turbo
and 4" DP
OPERATING PRESSURE 1.5 μTorr,
PUMPDOWN TIME ~8 hrs

ION SOURCES/INJECTION SYSTEM

P.I.G. Internal and External

EXTRACTION SYSTEM

Electrostatic Channel

CONTROL SYSTEM

Manual

