

**ENTRY NO. 36**

NAME OF MACHINE ..... MGC (manufactured by NIIIEFA, Leningrad)  
 INSTITUTION ..... Institute of Nuclear Research of the Hungarian Acad. of Sciences  
 ADDRESS ..... Bem tér 18/c, H-4001 Debrecen Pf. 51 HUNGARY  
 TEL ..... 52/17266 TELEX ..... 72-210  
 IN CHARGE ..... A. Valek REPORTED BY .....

**HISTORY AND STATUS**

DESIGN, date ..... Model tests .....  
 ENG DESIGN, date .....  
 CONSTRUCTION, date ..... 1982-1984 .....  
 FIRST BEAM, date (or goal) August 1985 .....  
 MAJOR ALTERATIONS .....  
 COST, ACCELERATOR .....  
 COST, FACILITY, total 250 x 10<sup>6</sup> Hungarian Ft  
 FUNDED BY Hungarian Academy of Sciences

**ACCELERATOR STAFF, OPERATION AND DEVELOPMENT**

SCIENTISTS ..... 2 ENGINEERS ..... 4  
 TECHNICIANS ..... CRAFTS ..... 8  
 GRAD STUDENTS involved during year .....  
 OPERATED BY ..... Research staff or ..... Operators  
 OPERATION ..... 106 hr/wk. On target ..... hr/wk  
 TIME DISTR. in house ..... %, outside ..... %  
 BUDGET, op & dev .....  
 FUNDED BY Hung. Acad. Sciences

**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) 103 cm, R-extraction 46 cm  
 R injection ..... cm  
 GAP, min 7.2 cm, Field 16.5 kG  
 max 12 cm, Field 12.5 kG at .....  
 AVERAGE FIELD at R ext ..... kG Ampere turns  
 B max / < B > ..... 14.5 .....  
 NUMBER OF SECTORS { compact 3 } Spiral, max 35 deg  
 separated .....  
 SECTOR ANGLE (SSC) ..... deg  
 TRIMMING COILS ..... 4 sets

CONDUCTOR, material and type .....  
 STORED ENERGY (cryogenic) ..... MJ  
 POWER: main coils 35 max kW: current stability .....  
 trimming coils 1 max kW: current stability .....  
 WEIGHT: Fe 24 tons: coils 1.2 tons  
 COOLING system Demineralized water  
 ION ENERGY (Bending limit) E/A = 20 q<sup>2</sup>/A<sup>2</sup> MeV/amu  
 (Focusing limit) E/A = ..... q/A MeV/amu

**ACCELERATION SYSTEM**

DEES, number 2 angle ..... deg  
 BEAM APERTURE 2 cm; DC Bias ..... kV  
 TUNED by, coarse panels fine capacitors  
 RF 8.5 to 26 MHz, stable ± 10 ppm  
 Orb F ..... to ..... MHz  
 HARMONICS, RF/Orb F, used 1st, 3rd  
 DEE-Gnd, max 35 kV, min gap ..... cm  
 STABILITY, (pk-pk noise)/(pk RF volt) .....  
 ENERGY GAIN, max 120 kV/turn  
 RF PHASE, stable to ± ..... deg  
 RF POWER input, max 80 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 3 diffusion pumps

**ION SOURCES**

hot-filament Livingstone-Jones

**INJECTION SYSTEM**

EXTRACTION SYSTEM ..... electrostatic defl. and magnetic channel

**FACILITIES FOR RESEARCH**

SHIELDED AREA, fixed ..... m<sup>2</sup>, movable 550 m<sup>2</sup>  
 TARGET STATIONS 10 in 5 rooms  
 STATIONS served at same time, max 1  
 MAG SPECTROGRAPH, type .....  
 COMPUTER model TPA 11440  
 OTHER FACILITIES .....

**CHARACTERISTIC BEAMS**

| PARTICLE        | ENERGY (MeV) |          | CURRENT (µA) |          |
|-----------------|--------------|----------|--------------|----------|
|                 | Goal         | Achieved | Internal     | External |
| p               | 20           | 18       | 200          | 50       |
| d               | 10           | 10       | 300          | 50       |
| α               | 20           | 20       | 25           | 12       |
| <sup>3</sup> He | 26           | 26       | 25           | 12       |

SECONDARY ..... (part/s)

**BEAM PROPERTIES**

MEASURED CONDITIONS  
 PULSE WIDTH ..... RF deg ..... µA of ..... MeV ..... ions  
 PHASE EXC. max ..... RF deg ..... µA of ..... MeV ..... ions  
 EXTRACT eff 50. % ..... µA of 18 MeV p ..... ions  
 RESOL ΔE/E 0.3 % ..... µA of 18 MeV p ..... ions  
 EMITTANCE .....  
 17 axial ..... µA of ..... MeV  
 (π mm-mrad) 17 rad

**OPERATING PROGRAMS, time distribution**

BASIC NUCLEAR PHYSICS 30% SOLID STATES PHYSICS .....  
 BIOMEDICAL APPLICAT. 20% ISOTOPE PRODUCTIONS 30%  
 INDUSTRIAL APPLICAT. 20%

**REFERENCES/NOTES**

1) The project is partly supported by the IAEA Vienna

**PLAN VIEW OF FACILITY, COMMENTS, ETC.**

