ENTRY NO. 130

NAME OF MACHINE ..... Kiev Isochronous Cyclot. ..... DATE .. July, 1981 .....
INSTITUTION ..... Institute Nuclear .. Research, Academy of Science USSR .....
ADDRESS ..... USSY Kiev 252028, Prospect Nauky, 119 .....
TEL .... 632349 ..... TELEX .... 132400 Proton .....
IN CHARGE .. O.F. Nemets ..... REPORTED BY .. A.F. Linev .....

HISTORY AND STATUS

DESIGN, date ... 1965–1970 ... Model tests ... 1963–1966 ....
ENG DESIGN, date ..... 1966–1972 .....
CONSTRUCTION, date .. 1066–1973 .....
FIRST BEAM, date (or goal) .... March 1976 .....
MAJOR ALTERATIONS .....
.....
COST, ACCELERATOR .....
COST, FACILITY, total .....
FUNDED BY .....

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ..... ENGINEERS .....
TECHNICIANS ..... CRAFTS .....
GRAD STUDENTS involved during year .....
OPERATED BY ..... Research staff or ..... Operators
OPERATION .... 120 ... hr/wk. On target .... 100 .... hr/wk
TIME DISTR. in house ..... %, outside ..... %
BUDGET, op & dev .....
FUNDED BY .....

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) .. 240 ... cm, R-extraction .. 103 .. cm
R injection ..... cm
GAP, min .. 232 cm, Field .. 23.0 kG
max .. 532 cm, Field .. 11.2 kG } at .. 0.83x106 .....
AVERAGE FIELD at R ext .... 17.0 kG Ampere turns
B max/ < B > ..... 1.35 .....
NUMBER OF SECTORS { compact ... 3 .. / separated ..... } Spiral, max 45 deg
SECTOR ANGLE (SSC) ..... deg
TRIMMING COILS ... 15 Circ. coils .....
..... Harmonic coils 3 per sector .....
CONDUCTOR, material and type .... Cupruous .....
STORED ENERGY (cryogenic) ..... MJ
POWER: main coils 200 . max kW: current stability 5..10^{-5} ..
trimming coils 800 . max kW: current stability 10^{-4} ....
WEIGHT: Fe .. 650 ..... tons: coils ..... 83.5 ..... tons
COOLING system ... Demineralized water .....
ION ENERGY (Bending limit) E/A = .. 140 ..... q^2/A^2 MeV/amu
(Focusing limit) E/A = .. 100 ..... q/A MeV/amu

ACCELERATION SYSTEM

DEES, number ..... 1 .....; angle ..... 180 ..... deg
BEAM APERTURE .. 5 ..... cm; DC Bias .... 0 ..... kV
TUNED by, coarse .. Moveable Sh .. fine ... VC auto .....
RF ..... 7.5 .. to .. 22.5 .... MHz, stable ± 0.01/106 ....
Orb F ... 2.5 ..... to .... 22.5 ..... MHz
HARMONICS, RF/Orb F, used .. 1, 3 .....
DEE–Gnd, max .... 125 ..... kV, min gap ..... 5 ..... cm
STABILITY, (pk-pk noise)/(pk RF volt) ... 1/1000 .....
ENERGY GAIN, max ..... 250 ..... kV/turn
RF PHASE, stable to ± ..... deg
RF POWER input, max. ..... 450 ..... kW
FREQUENCY MODULATION, rate ..... /s
modulator, type .....
beam pulse, width .....

VACUUM SYSTEM

OPERATING PRESSURE ..... 5/106 ..... Torr or mbar
PUMPS, No, Type, Size .. 3 Diffusion pumps .....
..... (50 cm) .....
.....

ION SOURCES

..... Heated Cathode .....

INJECTION SYSTEM

axial injection (1982).....

EXTRACTION SYSTEM dc electrostatic with compensated magnetic channel and iron channel.....

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 1000 .... m²; movable .. 1200 ... m²
TARGET STATIONS ... 15 ..... in .. 6 rooms .. rooms
STATIONS served at same time, max .... 1 .....
MAG SPECTROGRAPH, type . UBK-2, M-6000, M-400, EC-10-10
COMPUTER model .....
OTHER FACILITIES .....
.....
.....

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
p	100	72	100	15
d	70	64		
d	140	128		
SECONDARY			(part/s)	

BEAM PROPERTIES

	MEASURED		CONDITIONS		
PULSE WIDTH	15 RF deg	5.	pμA of 50. MeV	p	ions
PHASE EXC. max	15 RF deg	....	pμA of ..... MeV	.....	ions
EXTRACT eff	60%	....	pμA of ..... MeV	.....	ions
RESOL ΔE/E	0.3%	....	pμA of ..... MeV	.....	ions
EMITTANCE					
(π mm-mrad)	30 axial / 40 rad	5.	pμA of 50. MeV	p	...

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS 50%. SOLID STATES PHYSICS 30% .....
BIOMEDICAL APPLICAT.. 10%. ISOTOPE PRODUCTIONS 10% .....
.....
.....

REFERENCES/NOTES

1) Atomnaja Energia, 6, 1976.
2) VIII International Conference on Cyclotr. Bloomington, September, 18–21, 1978.

PLAN VIEW OF FACILITY, COMMENTS, ETC.

1. The valley coil will operate at Ep:80 MeV
2. The cyclotron is intended to be as a pulse neutron generator.
3. The source of polized protons and deuterons will be designed and installed (1982).