ENTRY NO. C24 **Date** August 95

Name of Machine CP 42 H (KAZ)

Institution Forschungszentrum Karlsruhe, Technik und Umwelt, Cyclotron-Laboratory

Address D-76021 Karlsruhe, Postfach 3640, Germany

Tel 07247-82-2433 Telex 17724716 Fax 07247-82-3156 E-MAIL

In Charge: H. Schweickert Reported by: J. Möllenbeck

HISTORY

MILESTONE DATES:

Design 1978 Model Tests 1980

Construction 1982 First Beam 1983

DESIGN/CONSTRUCTION BY:

in house other TCC

COST: Accelerator $ 2.000.000 Facility $ 8.000.000

FUNDED BY: Federal Government + State of Bad. Württ.

STATUS

STAFF: Machine -

Scientists Engineers 2

Technicians 6 Students

Research (in house/external)

Scientists 1 / Engineers 1 /

Technicians 2 / Students 2 /

BUDGET: Machine $ 2.000.000 Funded by Income

Research Funded by

TIME DISTRIBUTION:

Basic Research (in house/external) 10 % / 90 %

Applied Program (in house/external) 90 % / 10 %

Maintenance 10 % Development 4 %

MAGNET

POLE PARAMETERS:

Diameter 120 cm $R_{extract}$ 53 cm R_{inject} cm

HILL PARAMETERS: Gap (min) 5 cm B_{max} 2.4 T

(@ AT) Gap (max) cm B_{min} T

VALLEY PARAMETERS: Gap (min) 12 cm B_{max} 1.6 T

(@ AT) Gap (max) cm B_{min} T

AVERAGE FIELD: $<B>_{min}$ T $<B>_{max}$ 1.84 T

NUMBER OF SECTORS: compact/separated 3 /

sector angle deg. spiral (max) 64 deg.

FIELD TRIMMING: Trim Coils 6

Harmonic Coils

Other

CURRENT: Main Coils 400 Amps Stability 10^{-5}

Trim Coils Amps Stability

Stored Energy (cryogenic) MJ

WEIGHT: Iron 35 tons Conductor 3 tons

ION ENERGY: Bending Limit E/A = 42 q^2/A^2 MeV/u

Focusing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description: self exited systems 2 Dees

No. of Gaps/turn 4 dE/dn(max) 0.100 MeV/q

Voltage (max) 0.035 MV Harmonic f_{rf}/f_{ion} 1

Freq 26.8 MHz Power in(max) 0.100 MW

Stability: Phase 10^{-4} Voltage

OTHER CAVITIES (Flattopping or otherwise):

Description:

Region of Influence: R_{min} cm R_{max} cm

No. of Gaps/turn dE/dn(max) MeV/q

Voltage (max) MV Harmonic f_{rf}/f_{ion}

Freq MHz Power in(max) MW

Stability: Phase Voltage

VACUUM SYSTEM

OPERATING PRESSURE: 6×10^{-6} Hz

PUMPS: (No. and type) Four 10 inches Diff. pumps

ION SOURCE(S)

	Type	Intensity (mA)	@ $\varepsilon_n = \beta\gamma\varepsilon$ (π mm mrad)	Ion Species
(a)	PIG	0.200		H^-
(b)				
(c)				
(d)				

INJECTION SYSTEM

Efficiency %

EXTRACTION SYSTEM

Charge Exchange Foil Efficiency 100 %

CHARACTERISTIC BEAMS

	Accelerated Ions	E/A (MeV/u)	Current (μA) Internal	Current (μA) External
(a)	H^-	42	200	200 p
(b)				
(c)				
(d)				

	Secondary Particles	E (MeV)	part/sec
(a)			
(b)			
(c)			

EXTRACTED BEAM PROPERTIES:

For 200 μA of 42 MeV/u ions

$\Delta E/E$ 1 % $\Delta\phi$ °rf

$\varepsilon_n = \beta\gamma\varepsilon$ x 10 π mm mrad z 10 π mm mrad

FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed: 350 m^2 Moveable m^2

Target Stations: 1 No. Served At Same Time:

MAGNETIC SPECTROMETERS:

OTHER FACILITIES:

8 Target Stations for Isotope Production

REFERENCES/NOTES

(a) Proc. 9th Int. Conf. on Cyclotrons, p. 125

(b) Proc. 13th Int. Conf. on Cyclotrons, p. 110

PLAN VIEW OF FACILITY, COMMENTS