

ENTRY NO. CM11 Date
 Machine Name BC2010N
 Manufacturer The Japan Steel Works, LTD.
 Address 4 Chatsu-machi Muroran, Hokkaido, Japan
 Tel (0143)22-9211 Telex 0987601
 Fax (0143)23-8161 E-MAIL
 In Charge: Y. Toda Reported by: Y. Toda

HISTORY AND STATUS
 DATES: Design 1992-1994 First Machine 1995
 SALES: No. Sold/Operational 1 / 1 Currently Available yes
 COST: Accelerator Facility

MAGNET
 POLE PARAMETERS:
 Diameter 101 cm $R_{extract}$ 42 cm R_{inject} cm
 HILL PARAMETERS: Gap (min) 6 cm B_{max} T
 (@ 1.2×10^5 AT) Gap (max) 6 cm B_{min} T
 VALLEY PARAMETERS: Gap (min) 14 cm B_{max} T
 (@ 1.2×10^5 AT) Gap (max) 14 cm B_{min} T
 AVERAGE FIELD: $\langle B \rangle_{min}$ 1.51 T $\langle B \rangle_{max}$ 1.51 T
 NUMBER OF SECTORS: compact/separated 4 /
 sector angle 45 deg. spiral (max) none deg.
 FIELD TRIMMING: Trim Coils 3
 Harmonic Coils 2
 Other
 CURRENT: Main Coils 350 Amps Stability $\pm 2 \times 10^{-5}$
 Trim Coils 30 Amps Stability $\pm 1 \times 10^{-4}$
 Stored Energy (cryogenic) MJ
 WEIGHT: Iron 26 ton Conductor 1 ton
 ION ENERGY: Bending Limit E/A = q^2/A^2 MeV/u
 Focusing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM
 FUNDAMENTAL ACCELERATION:
 Description: 2 sets of pie/4 shape dee with lambda/4 stems
 No. of Gaps/turn 4 $dE/dn(max)$ 0.16 MeV/q
 Voltage (max) 0.04 MV Harmonic f_H/f_{ion} 2 / 4
 Freq 46 MHz Power in(max) 0.02 MW
 Stability: Phase 1 Voltage 1×10^{-3}

VACUUM SYSTEM
 OPERATING PRESSURE: 1×10^{-6} Torr
 PUMPS: (No. and type) 2 diffusion pumps

ION SOURCE(S)

| Type | Intensity (mA) | @ $\epsilon_n = \beta\gamma\epsilon$ (π mm mrad) | Ion Species |
|---------|----------------|---|----------------|
| (a) PIG | 1 | | H ⁻ |
| (b) PIG | 1 | | D ⁻ |

INJECTION SYSTEM
 Efficiency %

EXTRACTION SYSTEM
 Stripping Efficiency 100 %

CHARACTERISTIC BEAMS

| Accelerated Ions | E/A (MeV/u) | Current (part. μ A) | |
|--------------------|-------------|-------------------------|----------|
| | | Internal | External |
| (a) H ⁻ | 20 | 100 | 100 |
| (b) D ⁻ | 10 | 50 | 50 |

EXTRACTED BEAM PROPERTIES:
 For 50 μ A of 20 MeV/u H⁺ ions
 $\Delta E/E$ 1 % $\Delta\phi$ °rf
 $\epsilon_n = \beta\gamma\epsilon$ x 30 π mm mrad z 10 π mm mrad

REFERENCES/NOTES
 (a)
 (b)

ENTRY NO. CM12 Date
 Machine Name BC2211
 Manufacturer The Japan Steel Works, LTD.
 Address 4 Chatsu-machi Muroran, Hokkaido, Japan
 Tel (0143)22-9211 Telex 0987601
 Fax (0143)23-8161 E-MAIL
 In Charge: Y. Toda Reported by: Y. Toda

HISTORY AND STATUS
 DATES: Design 1988-1989 First Machine 1989
 SALES: No. Sold/Operational 1 / 1 Currently Available yes
 COST: Accelerator Facility

MAGNET
 POLE PARAMETERS:
 Diameter 101 cm $R_{extract}$ 42 cm R_{inject} cm
 HILL PARAMETERS: Gap (min) 7 cm B_{max} T
 (@ 1.3×10^5 AT) Gap (max) 7 cm B_{min} T
 VALLEY PARAMETERS: Gap (min) 13 cm B_{max} T
 (@ 1.3×10^5 AT) Gap (max) 13 cm B_{min} T
 AVERAGE FIELD: $\langle B \rangle_{min}$ 1.60 T $\langle B \rangle_{max}$ 1.60 T
 NUMBER OF SECTORS: compact/separated 4 /
 sector angle 45 deg. spiral (max) none deg.
 FIELD TRIMMING: Trim Coils 3
 Harmonic Coils 2
 Other
 CURRENT: Main Coils 400 Amps Stability $\pm 2 \times 10^{-5}$
 Trim Coils 50 Amps Stability $\pm 1 \times 10^{-4}$
 Stored Energy (cryogenic) MJ
 WEIGHT: Iron 30 ton Conductor 1 ton
 ION ENERGY: Bending Limit E/A = q^2/A^2 MeV/u
 Focusing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM
 FUNDAMENTAL ACCELERATION:
 Description: 2 sets of pie/4 shape dee with lambda/4 stems
 No. of Gaps/turn 4 $dE/dn(max)$ 0.16 MeV/q
 Voltage (max) 0.04 MV Harmonic f_H/f_{ion} 2 / 4
 Freq 48 MHz Power in(max) 0.02 MW
 Stability: Phase 1 Voltage 1×10^{-3}

VACUUM SYSTEM
 OPERATING PRESSURE: 1×10^{-6} Torr
 PUMPS: (No. and type) 1 diffusion pump

ION SOURCE(S)

| Type | Intensity (mA) | @ $\epsilon_n = \beta\gamma\epsilon$ (π mm mrad) | Ion Species |
|---------------------|----------------|---|----------------|
| (a) Hot Cathode PIG | 1 | | H ⁺ |
| (b) Hot Cathode PIG | 1 | | D ⁺ |

INJECTION SYSTEM
 Efficiency %

EXTRACTION SYSTEM
 Electrostatic deflector Efficiency 80 %

CHARACTERISTIC BEAMS

| Accelerated Ions | E/A (MeV/u) | Current (part. μ A) | |
|--------------------|-------------|-------------------------|----------|
| | | Internal | External |
| (a) H ⁺ | 22 | 150 | 70 |
| (b) D ⁺ | 11 | 150 | 70 |

EXTRACTED BEAM PROPERTIES:
 For 50 μ A of 22 MeV/u H⁺ ions
 $\Delta E/E$ 1 % $\Delta\phi$ °rf
 $\epsilon_n = \beta\gamma\epsilon$ x 30 π mm mrad z 10 π mm mrad

REFERENCES/NOTES
 (a)
 (b)