

ENTRY NO: CU15**Date:** 04 Feb 2005 13:47:48**Machine Name:** CYPRI3-370(Two machines)**Institution:** S.H.I. Examination & Inspection**Address:** 1501 Imazaikai, Toyo-City, Ehime-Prefecture, 799-13**Telephone:** 81-898-64-6949**Fax:** 81-898-65-5997**Web Address:** www.shiei.co.jp**Person in Charge of Cyclotron:** Yoshiaki Nishihara**Person Reporting Information:** Yoshiaki Nishihara**E-mail Address:** nishihara@shiei.co.jp**History****Designed by:** Sumitomo Heavy Industries, LTD.**Construction Dates:** 1st machine:1985, 2nd machine:1997**First Beam Date:** the same years**Characteristic Beams**

ions / energy(MeV/N)/current(pps)/power(w)

p	8MeV	10uA	
p	4.5MeV	10uA	
p	2MeV	10uA	
p	18MeV	50uA	900W
d	10MeV	10uA	100W
He-3	24MeV	5uA	120W
He-4	17MeV	3uA	51W

Transmission Efficiency (source to extracted beam)**Typical (%)**: 50**Best (%)**:**Emittance****Emittance Definition:****Vertical (pi mm mrad)**: 30**Horizontal (pi mm mrad)**: 150**Longitudinal (dE/E[%] x RF[deg.])**:**USES****Basic Research (%)**: 0**Development (%)**: 10**Therapy (%)**: 0**Isotope Production (%)**: 5**Other Application (%)**: 80**Maintenance (%)**: 5**Beam Tuning (%)**: 0**Total Time (h/year)**: 2000**TECHNICAL DATA****(a)Magnet****Type:****Kb (MeV)**:**Kf (MeV)**:**Average Field (min./max. T)**: 0.54 – 1.66**Number of Sectors**: 4**Hill Angular Width (deg.)**:**Spiral (deg.)**:**Pole Diameter (m)**: 0.443**Injection Radius (m)**: 0.012**Extraction Radius (m)**: 0.370**Hill Gap (m)**: 0.078**Valley Gap (m)**: 0.120**Trim Coils****Number**: 5x2**Maximum Current (A-turns)**: 3000**Harmonic Coils****Number**: 1xNsectorsx2**Maximum Current (A-turns)**: 5700**Main Coils****Number**: 1x2**Total Ampere Turns**: 176400**Maximum Current (A)**: 700**Stored Energy (MJ)**:**Total Iron Weight (tons)**: 20**Total Coil Weight (tons)**: 0.8**Power****Main Coils (total KW)**: 70**Trim Coils (total, maximum, KW)**: 6**Refrigerator (cryogenic, KW)**:**(b)RF****Acceleration****Frequency Range (MHz)**: 17 - 40**Harmonic Modes**:**Number of Dees**: 1**Number of Cavities**: 1**Dee Angular Width (deg.)**: 180**Voltage****At Injection (peak to ground, KV)**:**At Extraction (peak to ground, KV)**:**Peak (peak to ground, KV)**: 40**Line Power (max, KW)**: 25**Phase Stability (deg.)**:**Voltage Stability (%)**:**(c)Injection****Ion Source**: internal**Source Bias Voltage (kV)**:**External Injection**:**Buncher Type**:**Injection Energy (MeV/n)**:**Component**:**Injection Efficiency (%)**:**Injector**:**(d)Extraction****Elements, Characteristic**:**Typical Efficiency (%)**:50**Best Efficiency (%)**:**(e)Vacuum****Pumps**: 2000 L/s**Achieved Vacuum (Pa)**: 2E-4 Torr.**REFERENCES****EXPERIMENTAL FACILITIES****COMMENTS**