

K1200 OPERATING STATISTICS

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1999 was unique in that the shut down for the upgrade to the coupled mode of operation began. Normal operations proceeded from the beginning of the year until the first of July. Table I gives the operating time statistics and table II the number of hours for the various beams. There were 53 different beams run in this period.

There were 2553.75 hours of research versus 4651.25 hours for the full year of 1998. The category of operation, which is research plus development plus overhead, was 3090.5 hours, and represents the amount of time that the cyclotron was running. The efficiency as defined in table I means the period of time that the cyclotron ran divided by the amount of time that we tried to run it. This was 86.2%

There were 4344 hours in the first half of 1999. Research was therefore carried on 58.8% of the time.

After the end of June the K1200 was shut down and the project begun of installing and testing the stripper foil mechanism.

TABLE I: K1200 Time Distribution for first half of 1999

	Hours	Percentage
OPERATION		
Research	2553.75	64.14
Development	82.75	2.08
Overhead	454.00	11.40
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(R + D + O)	3090.50	77.62
MAINTENANCE	394.00	9.90
BREAKDOWN	496.75	12.48
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TOTAL	3981.25	100.00
OFF	362.75	

$$\text{EFFICIENCY} = E = (R + D + O) / (\text{TOTAL} - \text{MAINTENANCE})$$

$$E = 3090.50 / (3981.25 - 394.00) = 0.862 = 86.2 \%$$

TABLE II: K1200 CYCLOTRON BEAMS in 1999

Ion	E/A [MeV/u]	Hours	
2D1+	140	24.20	0.8%
2D1+	200	139.75	4.6%
4He2+	140	371.25	12.3%
6(D-He)+	22	13.75	0.5%
11B3+	50	53.55	1.8%
12C3+	50	17.12	0.6%
12C3+	60	11.75	0.4%
12C4+	75	17.78	0.6%
12C4+	100	17.87	0.6%
12C5+	125	177.50	5.9%
13C4+	80	335.99	11.1%
13C4+	100	143.25	4.7%
15N5+	100	22.75	0.8%
16O4+	40	9.50	0.3%
16O4+	60	24.00	0.8%
16O7+	130	128.58	4.2%
16O8+	200	19.57	0.6%
17O7+	150	20.50	0.7%
18O3+	22	2.50	0.1%
18O6+	80	21.75	0.7%
20Ne6+	100	184.73	6.1%
22Ne7+	80	105.50	3.5%
36Ar9+	50	3.37	0.1%
36Ar12+	75	8.33	0.3%
36Ar12+	100	161.04	5.3%
40Ar10+	60	47.50	1.6%
40Ar12+	90	90.59	3.0%
40Ar12+	100	146.25	4.8%
40Ar16+	150	52.00	1.7%
58Ni18+	105	65.75	2.2%
64Ni16+	60	126.00	4.2%
70Zn18+	70	120.50	4.0%
84Kr21+	50	14.97	0.5%
84Kr21+	60	48.00	1.6%
84Kr21+	70	30.75	1.0%
86Kr22+	70	31.25	1.0%
129Xe26+	40	120.00	4.0%
129Xe28+	50	11.75	0.4%
129Xe30+	60	40.29	1.3%
197Au29+	20	48.50	1.6%
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		3029.98	100.0%