

Chapter 3 Storage Ring Operation

The SPring-8 accelerator systems have continued to develop and mature into a stable synchrotron radiation facility. The top-up operation, started in 2004, becomes a level of routine service to users that delivers constant synchrotron radiation beams to experimental stations.

The downtime rate for failure and trouble is 2.3 % in average since 1997, and the beam availability is as high as 97 %. Synchrotron radiation beams have been delivered to beamlines for approximately 5,000 hours annually in recent years.

In the fall of 2004, JASRI altered the operation schedule for 2004B because of the typhoon damages.

Although it was supposed to be approximately 5,500 hours in 2004A and 2004B, the storage ring operation time was changed to be approximately 4,900 hours after rescheduling the 2004B research term because of the typhoon damages. Despite rescheduling, JASRI managed to keep the whole user time as planned beforehand.

Table 3-1 SPring-8 storage ring operations (1997B-2004B)

Research Term	Period	Scheduled	Operational		
		Storage Ring Operation Time (hours)	User Time (hours)	Downtime for failure (Rate) (hours (%))	Machine Study, Beamline Study & Beamline Tuning (hours)
1997B	October 1997-March 1998	1932.0	1286.0	32.0 (1.7)	614.0
1998A	April 1998-October 1998	2674.0	1700.5	73.5 (2.7)	900.0
1999A	November 1998-June 1999	3555.3	2584.5	71.6 (2.0)	899.2
1999B	September 1999-December 1999	2117.2	1371.1	21.2 (1.0)	724.9
2000A	January 2000-June 2000	2756.5	2051.0	55.0 (2.0)	650.5
2000B	October 2000-January 2001	2645.2	1522.4	35.7 (1.3)	1087.1
2001A	February 2001-June 2001	2696.4	2313.0	68.2 (2.5) ⁽ⁱ⁾	315.2
2001B	September 2001-February 2002	2788.7	1867.1	26.1 (0.9)	895.5
2002A	February 2002-July 2002	2795.2	2093.4	161.3 (5.8) ⁽ⁱⁱ⁾	540.5
2002B	September 2002-February 2003	2665.9	1867.5	27.4 (1.0)	771.0
2003A	February 2003-July 2003	2748.9	2245.9	32.7 (1.2)	470.3
2003B	September 2003-February 2004	2823.0	1843.8	171.2 (6.1) ⁽ⁱⁱⁱ⁾	808.0
2004A	February 2004-July 2004	2575.5	2095.1	16.8 (0.7)	463.6
2004B	September 2004-December 2004	2394.3	1970.9	62.9 (2.6) ^(iv)	360.5
Total		37168.1	26812.2	855.6 (2.3)	9500.3

User Time: Actual beam time for users

(Storage Ring Operation Time)

= (User Time) + (Downtime) + (Machine Study, Beamline Study & Beamline Tuning)

(Downtime Ratio)= (Downtime) / (Storage Ring Operation Time)

(Scheduled User Time) = (User Time) + (Downtime)

(i): Storage ring trouble (RF C-station, vacuum trouble), 2001/6/24 (36:12)

(ii): Storage ring trouble (ID22, vacuum trouble), 2002/6/20 (134:29)

(iii): Linac trouble (electron gun trouble), 2003/9/18 (31:59)

Storage ring trouble (damage of injection vacuum chamber), 2003/10/5 (119:37)

(iv): Typhoon alert, 2004/10/20 (28:36)

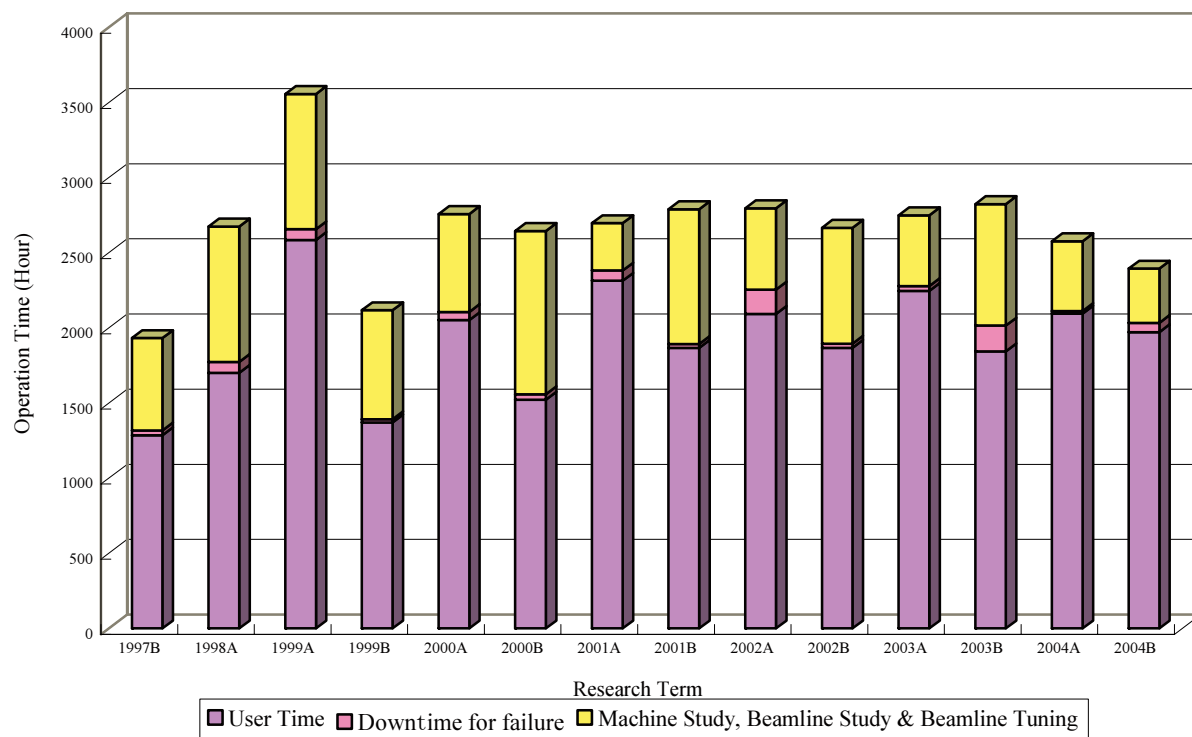


Figure 3-1 SPring-8 storage ring operations (1997B-2004B)

