

TABLE 6. MEASUREMENTS OF THE DURATION OF THE TAI SCALE INTERVAL

The following table gives the difference d between the duration of the TAI scale interval and the SI second as produced by the primary standards CRL-01, LPTF-JPO, LPTF-FO1, NIST-7, NRC CsVI A and C, NRLM-4, PTB CS1, PTB CS2, PTB CS3 and SU MCsR 102 for the period 1993-1998. Previous calibrations are available in the successive annual reports of the BIPM Time Section volumes 1 to 10.

The frequencies of the primary frequency standards are corrected for the gravitational shift (of about 1×10^{-13} for an altitude of 1000 m), and for the black-body radiation shift (of about 2×10^{-14} for a temperature of 40 °C) when available (standards tagged with a *).

The characteristics of the calibrations of the TAI frequency provided by the different primary standards are as follows:

Standard	Unc. (1σ)	Operation	Comparison with	Transfer to TAI
CRL-01*	1.0×10^{-14}	discontinuous	H maser	25 d
LPTF-JPO*	1.1×10^{-13}	discontinuous	UTC(OP)	10 d
LPTF-FO1*	2.2×10^{-15}	discontinuous	H maser	5 d, 10 d or 30d
NIST-7*	0.7 or 1.0×10^{-14}	discontinuous	H maser	5 d or 10 d
NRC CsVI A	$\approx 1 \times 10^{-13}$	continuous	TAI	60 d
NRC CsVI C	$\approx 1 \times 10^{-13}$	continuous	TAI	60 d
NRLM-4*	2.9×10^{-14}	discontinuous	TAI	5 d or 10 d
PTB CS1*(1)	3.0 or 0.7×10^{-14}	continuous	TAI	60 d
PTB CS2*	1.5×10^{-14}	continuous	TAI	60 d
PTB CS3*	1.4×10^{-14}	continuous	TAI	60 d
SU MCsR 102*	5×10^{-14}	discontinuous	UTC(SU)	60 d

(1) Until MJD = 49889, $1 \sigma = 3.0 \times 10^{-14}$. From MJD = 50994, $1 \sigma = 0.7 \times 10^{-14}$

Note :

The uncertainty quoted in this table is the type B standard uncertainty of the primary frequency standard, as declared to the BIPM by the laboratory. It does not include any additional uncertainty due to frequency transfer from the primary frequency standard to TAI.

TABLE 6. (CONT.)

Interval for transfer to TAI	Central date of the calibration	d in 10-14 s					
		CRL CRL-01*	LPTF JPO*	NIST NIST-7*	NRLM NRLM-4*	SU MCsR 102*	LPTF FO1*
48979-49039	1993 Jan 30					+4.0	
49039-49099	1993 Mar 31					-2.0	
49119-49129	1993 May 17		+11.6				
49099-49159	1993 May 30					-1.9	
49159-49229	1993 Jul 30					-1.3	
49229-49289	1993 Sep 30					+0.6	
49289-49349	1993 Nov 30					+5.2	
49469-49529	1994 May 30					+0.6	
49529-49589	1994 Jul 31					-0.5	
49589-49649	1994 Sep 30					-3.5	
49649-49709	1994 Nov 30					+0.3	
49789-49799	1995 Mar 16			+2.0			
49809-49819	1995 Apr 5			+3.0			
49819-49829	1995 Apr 15			+2.9			
49829-49839	1995 Apr 25			+2.0			
49839-49849	1995 May 8			+2.2			
49899-49909	1995 Jul 7			+2.2			
49959-49969	1995 Sep 3			+3.3			
49959-50019	1995 Sep 30					+3.5	
49969-49979	1995 Sep 14						+1.4
49979-49989	1995 Sep 24						+1.6
49989-49999	1995 Oct 4						+1.8
49999-50009	1995 Oct 14						+2.2
50009-50019	1995 Oct 24						+1.4
50029-50039	1995 Nov 13						+1.3
50039-50049	1995 Nov 23						+1.1
50049-50059	1995 Dec 3						+0.6
50059-50069	1995 Dec 13						+1.1
50069-50079	1995 Dec 23						+1.6
50019-50029	1995 Nov 7			+2.2			
50019-50079	1995 Nov 30					+4.3	
50079-50084	1995 Dec 30			+2.5			
50094-50124	1996 Jan 27					+8.4	
50124-50154	1996 Feb 26					+2.4	
50144-50149	1996 Mar 4			+2.1			
50154-50184	1996 Mar 27					+1.9	
50199-50209	1996 May 1			+2.5			
50209-50214	1996 May 8						+1.8
50214-50219	1996 May 13						+2.3
50219-50224	1996 May 18						+2.2
50439-50449	1996 Dec 27			+2.7			
50619-50629	1997 Jun 25			+1.7			
50739-50749	1997 Oct 23			-0.3			
50754-50784	1997 Nov 17						+0.99
50869-50874	1998 Feb 27				-2.4		
50879-50889	1998 Mar 12			-0.9			
50889-50894	1998 Mar 19				-0.3		
50929-50964	1998 May 13			+1.2			
50934-50939	1998 May 3				-1.0		
50969-50979	1998 Jun 10				-0.7		
51014-51024	1998 Jul 25				-0.9		
51009-51039	1998 Jul 30			-1.1			
51019-51044	1998 Aug 6	-1.2					
51034-51044	1998 Aug 14				-1.9		
51099-51129	1998 Oct 28			-0.3			
51124-51134	1998 Nov 12				-3.9		
51144-51174	1998 Dec 12			-0.1			

TABLE 6. (CONT.)

		d in 10-14 s					
Interval for transfer to TAI	Central date of the calibration	NRC CsV	NRC CsVIA	NRC CsVIC	PTB CS1*	PTB CS2*	PTB CS3*
48979-49039	1993 Jan 22	-	-	-19.0	+2.0	+1.4	-
49039-49099	1993 Mar 23	-	-	-11.8	+2.8	+0.6	-
49099-49159	1993 May 22	-	-	-13.1	+0.8	+2.4	-
49159-49229	1993 Jul 26	-	-	-9.0	+1.3	+2.1	-
49229-49289	1993 Sep 29	-	-	-9.4	+2.3	+2.9	-
49289-49349	1993 Nov 28	-	-	-12.6	-0.7	+2.3	-
49349-49409	1994 Jan 27	-	-	-10.2	+0.6	+1.4	-
49409-49469	1994 Mar 28	-	-	-11.6	+1.4	+1.3	-
49469-49529	1994 May 27	-	-	-11.4	+1.2	+2.9	-
49529-49589	1994 Jul 26	-	-	-10.8	+2.1	+3.3	-
49589-49649	1994 Sep 24	-	-	-10.8	+1.0	+2.4	-
49649-49709	1994 Nov 23	-	-	-10.4	+0.6	+1.9	-
49709-49769	1995 Jan 22	-	-	-	+2.5	+2.7	-
49769-49829	1995 Mar 23	-	-7.5	-1.7	-0.1	+3.0	-
49829-49889	1995 May 22	-	-10.7	-6.1	+3.5	+2.0	-
49889-49959	1995 Jul 26	-	-11.6	-5.0	-	+3.5	-
49959-50019	1995 Sep 29	-	-11.1	-5.8	-	+2.7	+4.9
50019-50079	1995 Nov 28	-	-9.2	-6.3	-	+2.5	+4.3
50079-50139	1996 Jan 27	-	-15.7	-8.2	-	+3.1	-
50139-50199	1996 Mar 27	-	-17.6	-7.2	-	+2.8	-
50199-50264	1996 May 28	-	-15.5	-5.9	-	+2.6	-
50264-50324	1996 Jul 30	-	-15.6	-7.7	-	+2.9	+5.6
50324-50384	1996 Sep 28	-	-13.7	-2.5	-	+2.2	+2.6
50384-50444	1996 Nov 27	-	-12.5	-5.3	-	+2.9	+5.0
50444-50504	1997 Jan 26	-	-10.9	+1.7	-	+2.8	+5.6
50504-50564	1997 Mar 27	-	-11.0	+2.4	-	+2.8	+4.5
50564-50629	1997 May 28	-	-11.0	-0.5	-	+2.6	+4.9
50629-50689	1997 Jul 30	-	-11.2	+0.7	-	+0.4	+3.4
50689-50749	1997 Sep 28	-	-12.1	+0.7	-	+1.4	+3.8
50749-50809	1997 Nov 27	-	-12.3	+0.5	-	+0.5	+2.5
50809-50844	1998 Jan 13		-12.6	+0.6	-	+0.6	+1.6
50844-50869	1998 Feb 12		-13.6	-0.4	-	+0.6	+0.8
50869-50899	1998 Mar 12		-13.1	+0.2	-	+0.2	+3.3
50899-50929	1998 Apr 11		-13.5	-0.1	-	-0.1	+0.5
50929-50964	1998 May 13		-12.2	+0.3	-	+0.4	+0.1
50964-50994	1998 Jun 15		-13.4	-0.4	-	-0.3	+0.8
50994-51024	1998 Jul 15		-13.4	+0.1	-0.3	+0.2	+0.5
51024-51054	1998 Aug 14		-15.1	+0.2	-0.7	+0.5	+1.7
51054-51084	1998 Sep 13		-	+1.5	-0.8	+0.2	+2.4
51084-51114	1998 Oct 13		-	+0.4	-0.2	-0.6	+2.6
51114-51144	1998 Nov 12		-	+0.2	-1.0	-0.1	+4.0
51144-51174	1998 Dec 12		-	-0.1	-0.4	+0.1	+1.7