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Table 9 - Offsets and step adjustments of UTC.

Dates (at 0h UT)	Offsets	Steps
1961 Jan. 1	-150×10^{-10}	
Aug. 1	"	$+0^{s}.050$
1962 Jan. 1	-130×10^{-10}	
1963 Nov. 1	"	$-0^{s}.100$
1964 Jan. 1	-150×10^{-10}	
April 1	"	$-0^{s}.100$
Sept. 1	"	$-0^{s}.100$
1965 Jan. 1	"	$-0^{s}.100$
March 1	"	$-0^{s}.100$
July 1	"	$-0^{s}.100$
Sept. 1	"	$-0^{s}100$
1966 Jan. 1	-300×10^{-10}	
1968 Feb. 1	"	$+0^{s}.100$

Table valid until 1969 Aug. 1

Table 10 - Relationship between A3 and UTC, since 1965. J.D. : Julian Day Number.

Interval	A3 - UTC
1965 Jan. 1 - Feb. 28	$3^{s}.540130 + (J.J. - 2438761.5) \times 0^{s}.001296$
March 1 - June 30	$3^{s}.640130 + (J.J. - 2438761.5) \times 0^{s}.001296$
July 1 - Aug. 31	$3^{s}.740130 + (J.J. - 2438761.5) \times 0^{s}.001296$
Sept. 1 - Dec. 31	$3^{s}.840130 + (J.J. - 2438761.5) \times 0^{s}.001296$
1966 Jan. 1 - 1968 Jan. 31	$4^{s}.313170 + (J.J. - 2439126.5) \times 0^{s}.002592$
1968 Feb. 1	$4^{s}.213170 + (J.J. - 2439126.5) \times 0^{s}.002592$

Table valid until 1969 Aug. 1

Table 11 - Relationship between A3 and SAT.

Interval	A3 - SAT
1967 Jan. 1 - Feb. 28	$+5^{s}.354600$
March 1 - May 31	+5.554600
June 1 - Aug. 31	+5.754600
Sept. 1 - Nov. 30	+5.954600
Dec. 1 - 1968 Feb. 29	+6.154600
1968 March 1 - April 30	+6.354600
May 1 - July 31	+6.554600
Aug. 1 - Oct. 31	+6.754600
Nov. 1 - 1969 Jan. 31	+6.954600
1969 Feb. 1 - March 31	+7.154600
April 1 - June 30	+7.354600
July 1 -	+7.554600

Table valid until 1969 Aug. 1.

Table 12 - Relative frequency differences between the mean standard giving A3 and and the local standards (or local mean standards). Data deduced from the phase comparisons with standard frequencies.

A3 - standard (unit : 1×10^{-12})

Lab.	NBS	NPL	NRC	FOA	USNO	F	ROJ	MSO	PTB	NIS	RRL	TAO	RGO	URSS	DO
Weight	5	1	2	1	5	1	1	1	1	1 (1)	1 (4)	1	1	(3)	1
Month															
1968 1	0	- 5	- 1	+ 2	0	- 1	+ 9	- 1	+ 1	+ 4	+13	- 4	+ 1		
2	- 1	- 2	- 1	+ 2	- 2	+ 1	+ 9	+ 1	+ 3	- 1	+14	+ 3	0		
3	+ 1	- 5	- 1	0	- 1	- 2	0	- 4	0	+ 6	+ 3	+ 4	+ 1		
4	+ 1	- 1	+ 4	+ 1	- 2	+ 2	- 2	- 2	+ 1	+ 3	- 3	- 2	- 1		
5	+ 1	- 5	+ 2	0	- 1	- 2	+ 4	+ 1	0	+ 2	+ 1	- 1	- 3	-44	
6	0	+ 2	0	+ 1	- 1	- 5	- 1	- 1	+ 1	+ 6	0	- 2	+ 2	-38	
7	0	- 4	+ 4	+ 1	0	+ 5	+ 5	- 1	0	+ 2	- 7	- 8	0	-38	
8	0	- 3	+ 1	+ 2	- 1	- 2	+ 4	+ 1	- 2	+ 2	+ 4	- 2	0	-27	
9	- 2	0	0	+ 2	- 1	- 2	+ 3	- 4	0	+ 4	- 1	+ 5	+ 1	-37	+ 4
10	- 1	+ 1	0	+ 1	- 1	- 1	+ 4	- 6	- 1	+ 4	+ 1	+ 1	- 1	-44	+ 4
11	+ 2	- 7	0	- 2	- 1	- 2	0	+ 5	- 2	+ 8	- 2	(2)	- 2	-46	+ 1
12	- 1	+ 2	- 1	+ 4	- 1	- 1	+10	-10	0	- 9	+ 1	+ 9	+ 1	-36	0

Abbreviations

NBS	National Bureau of Standards, Boulder, USA.
NPL	National Physical Laboratory, Teddington, U.K.
NRC	National Reseach Council of Canada, Ottawa, Canada.
FOA	Research Institute of National Defense, Stockholm, Sweden.
USNO	U.S. Naval Observatory, Washington, USA.
F	Commission Nationale de l'Heure, Paris, France.
ROJ	Republic Observatory, Johannesburg, South Africa.
MSO	Mount Stromlo Observatory, Canberra, Australia.
PTB	Physikalish-Technische Bundesanstalt, Braunschweig, Germany, F.R.
NIS	National Institute for Standards, Le Caire, Republique Arabe Unie.
RRL	Radio Research Laboratory, Tokyo, Japan.
TAO	Tokyo Astronomical Observatory, Tokyo, Japan.
RGO	Royal Greenwich Observatory, Herstmonceux, U.K.
URSS	Laboratoire d'état de l'étalon de temps et de fréquence, URSS.
DO	Dominion Observatory, Ottawa, Canada.

(1) Weight 0 in December 1968. No phase value reported from dec. 1st to dec. 11th. The value given for december is doubtful.

(2) Not used in nov. : unexplained large deviation probably due to the vlf reception.

(3) Weight 0 because of the large systematic deviation.

(4) Weight 0 in January and February.
After amendment to the transmitted data, the value for January is +2.

Table 13 - Comparisons between A3 and atomic times kept by some laboratories. The errors are a few units of the last digit.

LABORATORY i	DESIGNATION OF THE TIME SCALE OF i	DATE	A3 - AT(i) µs	REMARKS
Commission Nationale de l'Heure (Paris)	TA (F)	1968 Jan. 1	+ 13	TA (F) is produced by a group of 2 to 5 caesium standards. Precautions have been taken since 1969 Jan. 1 to ensure the uniformity of TA(F) in spite of the variable number of partipating standards
		Feb. 1	+ 10	
		March 1	+ 13	
		April 1	+ 6	
		May 1	+ 11	
		June 1	+ 4	
		July 1	- 7	
		Aug. 1	+ 5	
		Sept. 1	- 2	
		Oct. 1	- 6	
		Nov. 1	- 7	
		Dec. 1	- 12	
		1969 Jan. 1, 0h	- 17.1	
		Feb. 1, 0h	- 19.4	
National Bureau of Standards (Boulder)	NBS - A	1968 Apr. 10	- 45 292	Change of the name of the time scale AT(NBS) ≡ NBS–A
	"	June 28	- 45 291	
	AT (NBS)	Aug. 22	- 45 292	
	"	Oct. 28	- 45 290	
	"	1969 Jan. 29, 16h	- 45 285.4	
		Feb. 20, 22h	- 45 284.4	
Physikalish-Technische Bundesanstalt (Braunschweig)	TA1	1968 Oct. 7	- 378	
		Nov. 1	- 377	
		Dec. 1	- 380	
		1969 Jan. 1, 0h	- 382.5	
		Feb. 1, 0h	- 383.0	
Royal Greenwich Obs. (Herstmonceux)	GA	1968 Apr. 9	- 957 712	GA - GA2 = 957 700 µs (RGO Time Service Not., Circular nº 632)
	GA2	"	- 12	
		1969 Feb. 25, 11h	- 09.8	
U.S. Naval Observatory (Washington)	A1	1968 Apr. 13	- 34 410	
		May 1	- 34 411	
		June 1	- 34 414	
		July 1	- 34 417	
		Aug. 1	- 34 419	
		Sept. 1	- 34 422	
		Oct. 1	- 34 424	
		Nov. 1	- 34 426	
		Dec. 1	- 34 428	
		1969 Jan. 1, 0h	- 34 428.8	
		Feb. 1, 0h	- 34 427.4	
		Feb. 24, 7h	- 34 427.0	

Table 14 - Comparisons between UTC and universal coordinated times kept by some laboratories. The errors are a few units of the last digit.

LABORATORY i	DESIGNATION OF THE TIME SCALE OF i	DATE	UTC - UTC(i) μs	REMARKS
Deutsches Hydrographisches Institut (Hamburg)	UTC(DHI)	1968 Dec. 14 1969 Jan. 15	- 2 + 2	(1) From LORAN-C receptions
Dominion Obs. (Ottawa)	UTC(DO)	1968 June 13	+ 251	(1)
Instituto elettro-tecnico nazionale (Torino)	UTC(IEN)	1969 Feb. 17	+ 50	(1)
National Bureau of Standards (Boulder)	UTC(NBS)	1968 Apr. 10 June 28 Aug. 22 Oct. 28 1969 Jan. 29,16h Feb. 20, 22h	+ 114 + 115 + 114 + 115 + 116,4 + 116,7	(1) (1) (1) (1) (1) (1)
National Research Council (Ottawa)	UTC(NRC)	1968 June 12	+ 266	(1)
Observatoire de Paris (Paris)	TUC(OP)	* 1968 Jan. 1 * Feb. 1 * March 1 * Apr. 1 May 1 June 1	+ 441 + 440 + 446 + 442 + 447 + 449	Computed from reception of standard frequencies on vlf.
		July 1 Aug. 1 Sept. 1 Oct. 1 Nov. 1 Dec. 1 1969 Jan. 1. 0h Feb. 1, 0h	+ 445 + 470 + 477 - 15 - 13 - 15 - 18.0 - 17.9	 Step of -500 μs, Oct.1, 0h UT. From LORAN-C receptions "
Physikalisch-Technische Bundesanstalt (Braunschweig)	UTA(PTB)	1968 Oct. 7 Nov. 1 Dec. 1 1969 Jan. 1, 0h Feb. 1, 0h	- 181 - 180 - 183 - 185.5 - 186.0	Clock transp. by PTB. From LORAN-C reception " " "
Radio Research Laboratory (Tokyo)	UTC(RRL)	1968 May 20 Nov. 18 Feb. 28, 1h	-1038 -1003 - 987.7	(1) (1) (1)
Royal Greenwich Observatory (Herstmonceux)	UTC(RGO)	1968 Apr. 9 1969 Feb. 25, 11h	+ 163 + 165.2	(1) (1)
Tokyo astronomical Observatory (Tokyo)	UTC(TAO)	1968 May 20 Nov. 18 1969 Feb. 28, 3h	- 1055 - 1078 - 1085.0	(1) (1) (1)

(1) Transportation of a cesium clock by the U.S. Naval Observatory.
* improved values (values of +452, +447, +450, +446 were published in Annual Report for 1967).

Table 14 - (cont.)

LABORATORY i	DESIGNATION OF THE TIME SCALE OF i	DATE	UTC-UTC(i) μs	REMARKS
U.S. Naval Observatory (Washington)	UTC(USNO)	* 1968 Apr. 13	+ 130	(1)
		May 1	+ 129	From reception of standard frequencies on vlf.
		June 1	+ 126	"
		July 1	+ 123	"
		Aug. 1	+ 121	"
		Sept. 1	+ 118	"
		Oct. 1	+ 116	"
		Nov. 1	+ 114	"
		Dec. 1	+ 112	"
		1969 Jan. 1, 0h	+ 110.9	From LORAN-C receptions
		Feb. 1, 0h	+ 112.3	"
		Feb. 24, 7h	+ 112.7	(1)
Ustav Radiotechniky a electroniky	TUC(CO)	1968 Feb. 15	- 132	From reception of television pulses in Prague and Paris
	"	July 3	- 138	
	"	Oct. 14	- 131	
	TUC(TP)	1969 March 3	+ 144	TUC(TP) = TUC(CO)-250μs

(1) Transportation of a cesium clock by the U.S. Naval Observatory.
* improved value (+132 was published in Annual Report for 1967).

Table 15 - Time of emission of time signals following the UTC system.

The asterisk (*) denotes that the error on E is less than $0^s.0001$.

E = UTC - Signal (unit : $0^s.0001$)

Signal	Month 1968	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
CHU		+ 5	+ 3	+ 3	+ 4	+ 4	+ 4	+ 5	+ 5	+ 4	+ 9	+ 9	+ 7
DAM (1)		- 1	- 2	- 2	- 2	- 1	- 2	- 1	- 1	- 2	- 2	- 2	- 4
DAN, DAO (2)		+ 2	+ 2	+ 3	+ 1	+ 3	0	+ 2	+ 2	+ 1	0	+ 1	- 2
DCF77(DHI) (3)		+ 11	+ 11	+ 9	+ 8	+ 5	+ 6	+ 2	+ 1	+ 2	+ 2	+ 1	0
DGI		+ 10	+ 6	+ 8	+ 7	+ 8	+ 8	+ 13	+ 9	+ 7	+ 9	+ 12	+ 13
DIZ		- 3	- 3	- 3	- 2	- 3	- 3	- 4	- 3	+ 4*	+ 4*	+ 4*	+ 4*
FFH		+ 5	+ 4	+ 6	+ 6	+ 5	+ 3	+ 1	+ 2	+ 3	+ 5	+ 1	0
FTA91 (4)		+ 9	+ 9	+ 9	+ 6	+ 6	+ 6	+ 6	+ 7	+ 2	- 6	- 1	- 6
FTH42, FTK77, FTN87 (4)		+ 4	+ 4	+ 4	+ 4	+ 4	+ 4	+ 5	+ 5	+ 5*	0*	0*	0*
HBG		0	0	0	+ 1	0	0	0	- 1	- 1	- 1	- 1	0
IAM		- 7	- 3	+ 3	+ 2	+ 4	+ 1	+ 6	+ 9	- 2	- 6	- 3	- 2
IBF		- 6	- 4	- 4	- 2	- 2	- 2	- 2	- 3	- 2	- 3	- 2	0
JJY, JAQ56		- 8	- 9	- 10	- 13	- 15	- 15	- 15	- 9	- 8	- 8	- 7	- 8
LOL		+ 4	+ 1	+ 4	+ 4	+ 5	+ 4	+ 8	+ 8	+ 9	+ 11	+ 11	+ 4
MSF, GBR, GPB, GIC (5)		+ 5	+ 6	+ 6	+ 8	+ 5	+ 4	+ 4	+ 5	+ 5	+ 2*	+ 2*	+ 2*
NSS (h.f.) (6)		- 26	- 49	- 67	- 72	- 81	-103	-108	-121	-130	-150	- 44	- 48
OLB5, OLD2		+ 9	+ 9	+ 9	+ 13	+ 12	+ 7	+ 7	+ 11	+ 11*	+ 11*	+ 11*	+ 11*
OMA 50 kHz (7) (8)		+ 7	+ 7	+ 7	+ 5	+ 7	+ 1	+ 6	+ 12	+ 21*	+ 21*	+ 21*	+ 21*
OMA 2.5 MHz (7)		0	+ 1	+ 1	0	- 1	0	0	- 3	+ 6*	+ 6*	+ 6*	+ 6*
PPE		+ 16	+ 15	+ 15	+ 16	+ 16	+ 15	+ 15	+ 16	+ 18	+ 14	+ 15	+ 16
RWM (9)		-910	+ 90	+ 88	+ 88	+ 86	+ 84	+ 84	+ 83	+ 83	+ 82	+ 80	+ 80
VHP (10)		+ 7	0	0	+ 1	+ 1	+ 3	+ 3	+ 1	0	- 1	- 1	- 2
VNG (10)		+ 10	+ 3	+ 4	+ 3	+ 2	+ 3	+ 3	+ 3	+ 2	0	+ 3	+ 1
WWV, WWVH		+ 1	+ 1	+ 1	+ 1	+ 1	+ 1	+ 2	+ 1	+ 1*	+ 1*	+ 1*	+ 1*
ZUO		+ 4	+ 3	+ 4	+ 1	+ 1	+ 3	+ 6	+ 2	0	+ 2	+ 3	+ 2

(1) DAM : irregularities smaller than 5ms on Oct.10, 11, 25, 26, 27, 29.

(2) DAN : June 10, 12^h UT, E =+43 ; July 10, 12^h UT, E =+17.

(3) DCF77(DHI) : Feb.1, 7^h UT, E =+1011 ; July 3, 7^h UT, E =+59 ; July 3, 10^h UT, E = +5 ; July 26, 7^h UT, E =-21 ; July 26, 10^h UT, E =+813 ; Aug. 3, 7^h UT, E =+118 ; Aug. 10, 7^h UT, E =+273 Aug. 14, 7^h UT, E =+40 ; Sept. 12, 7^h UT, E =+299 ; Oct. 1, 10^h UT, E =+25.

(4) FTA91, FTH42, FTK77, FTN87 signals advanced by 0.5 ms, Oct.1, 0^hUT.

(5) MSF 60kHz (interruptions of carrier) advanced by 0.6 ms ; MSF 60 kHz (modulation at 1000 Hz), advanced by 0.4 ms ; GBR, advanced by 0.5 ms ; others signals advanced by 0.4 ms ; on the 1st of Oct. between 8^h20 and 8^h40 UT.

(6) NSS (h.f.) : signal retarded by 15 ms, Nov. 4, 0^hUT.

(7) OMA 50 kHz and 2.5 MHz : signals emitted from Podebrady (50° 8'N, 15° 8'E) instead of Liblice from June 18 to Sept. 16.

(8) OMA 50 kHz : reference point, beginning of the interruption of the carrier.

(9) and other emissions from USSR.

(10) VHP, VNG : improved values of propagation delay from Feb. 1.

Table 16 - Time of emission of time signals following the SAT system.
The asterisk (*) denotes that the error on E is less than $0^{s}.0001$.

Signal	E = SAT - Signal (unit $0^{s}.0001$)											
Month 1968	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
DCF77(PTB)	- 4	- 3	- 3	0	0	- 2	- 2	- 1	0*	0*	0*	0*
WWVB	+ 1	+ 1	0	+ 1	+ 1	+ 1	+ 1	+ 1	+ 1*	+ 1*	+ 1*	+ 1*