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Table 9 - Offsets and step adjustments of UTC, until 1986 Dec. 31

Date(at 0h UTC)	Offsets	Steps
1961 Jan. 1	- 150x10	
Aug. 1	"	+ 0.050s
1962 Jan. 1	- 130x10	
1963 Nov. 1	"	- 0.100s
1964 Jan. 1	- 150x10	
April 1	"	- 0.100s
Sept. 1	"	- 0.100s
1965 Jan. 1	"	- 0.100s
March 1	"	- 0.100s
July 1	"	- 0.100s
Sept. 1	"	- 0.100s
1966 Jan. 1	- 300x10	
1968 Feb. 1	"	+ 0.100s

Date(at 0h UTC)	Offsets	Steps
1972 Jan. 1	0	- 0.107 7580s
July 1	"	- 1s
1973 Jan. 1	"	- 1s
1974 Jan. 1	"	- 1s
1975 Jan. 1	"	- 1s
1976 Jan. 1	"	- 1s
1977 Jan. 1	"	- 1s
1978 Jan. 1	"	- 1s
1979 Jan. 1	"	- 1s
1980 Jan. 1	"	- 1s
1981 July 1	"	- 1s
1982 July 1	"	- 1s
1983 July 1	"	- 1s
1985 July 1	"	- 1s

Table 10 - Relationship between TAI and UTC, until 1986 Dec. 31

Limits of validity(at 0h UTC)	TAI - UTC
1961 Jan. 1 - 1961 Aug. 1	1.422 818 0s + (MJD - 37 300) x 0.001 296s
Aug. 1 - 1962 Jan. 1	1.372 818 0s + " "
1962 Jan. 1 - 1963 Nov. 1	1.845 858 0s + (MJD - 37 665) x 0.001 123 2s
1963 Nov. 1 - 1964 Jan. 1	1.945 858 0s + " "
1964 Jan. 1 - April 1	3.240 130 0s + (MJD - 38 761) x 0.001 296s
April 1 - Sept. 1	3.340 130 0s + " "
Sept. 1 - 1965 Jan. 1	3.440 130 0s + " "
1965 Jan. 1 - March 1	3.540 130 0s + " "
March 1 - July 1	3.640 130 0s + " "
July 1 - Sept. 1	3.740 130 0s + " "
Sept. 1 - 1966 Jan. 1	3.840 130 0s + " "
1966 Jan. 1 - 1968 Feb. 1	4.313 170 0s + (MJD - 39 126) x 0.002 592s
1968 Feb. 1 - 1972 Jan. 1	4.213 170 0s + " "
1972 Jan. 1 - July 1	10s (integral number of seconds)
July 1 - 1973 Jan. 1	11s
1973 Jan. 1 - 1974 Jan. 1	12s
1974 Jan. 1 - 1975 Jan. 1	13s
1975 Jan. 1 - 1976 Jan. 1	14s
1976 Jan. 1 - 1977 Jan. 1	15s
1977 Jan. 1 - 1978 Jan. 1	16s
1978 Jan. 1 - 1979 Jan. 1	17s
1979 Jan. 1 - 1980 Jan. 1	18s
1980 Jan. 1 - 1981 July 1	19s
1981 July 1 - 1982 July 1	20s
1982 July 1 - 1983 July 1	21s
1983 July 1 - 1985 July 1	22s
1985 July 1	23s

TABLE 11 - Atomic time, collaborating laboratories

AOS	Astronomical Latitude Observatory, Borowiec, Polska
APL	Applied Physics Laboratory, Laurel, USA
ASMW	Amt für Standardisierung, Messwesen und Warenprüfung, Berlin, Deutsche Demokratische Republik
ATC	Australian Telecommunications Commission, Melbourne, Australia
AUS	Consortium of laboratories in Australia
BEV	Bundesamt für Eich - und Vermessungswesen, Wien, Oesterreich
BAO	Beijing Observatory, Beijing, China
CAO	Astronomical Observatory of Cagliari University, Cagliari, Italy
CH	Consortium of laboratories in Switzerland (see Table 12)
CSAO	Shaanxi Astronomical Observatory, Lintong, China
DDR	Consortium of laboratories in Deutsche Demokratische Republik
DHI	Deutsches Hydrographisches Institut, Hamburg, Bundesrepublik Deutschland
DNM	Division of National Mapping, Canberra, Australia
F	Commission Nationale de l'Heure, Paris, France (see Table 12)
FTZ	Fernmeldetechnisches Zentralamt, Darmstadt, Bundesrepublik Deutschland
IEN	Istituto Elettrotecnico Nazionale, Torino, Italia
IFAG	Institut für Angewandte Geodäsie, Frankfurt am Main, Bundesrepublik Deutschland
IGMA	Instituto Geografico Militar, Buenos-Aires, Argentina
ILOM	International Latitude Observatory, Mizusawa, Japan
INTI	Instituto Nacional de Tecnologia Industrial, Buenos-Aires, Argentina
KSRI	Korea Standards Research Institute, Korea
MSSD	Measurement Standards and Services Division, Colombo, Sri Lanka
NBS	National Bureau of Standards, Boulder, USA
NIM	National Institute of Metrology, Beijing, China
NIS	National Institute for Standards, Cairo, Arab Republic of Egypt
NML	National Measurement Laboratory, CSIRO, Australia
NPL	National Physical Laboratory, Teddington, U.K.
NPLI	National Physical Laboratory, New-Delhi, India
NPRL	National Physical Research Laboratory, Pretoria, South Africa
NRC	National Research Council of Canada, Ottawa, Canada
NRLM	National Research Laboratory of Metrology, Tsukuba, Japan
OAB	Observatoire Astronomique Bouzaréah, Alger, République Algérienne
OMH	Orszagos Mérésügyi Hivatal, Budapest, Hungary
OMSF	Instituto y Observatorio de Marina, San Fernando, España
ONBA	Observatorio Naval, Buenos-Aires, Argentina
ONRJ	Observatorio National, Rio de Janeiro, Brazil
OP	Observatoire de Paris, Paris, France
ORB	Observatoire Royal de Belgique, Bruxelles, Belgique
PAGA	Philippine Atmospheric, Geophysical and Astronomical Services Administration, Philippines
PEL	Physics and Engineering Laboratory, New-Zealand
PKNM	Polski Komitet Normalizacji Miar I Jakości, Warszawa, Polska
PTB	Physikalisch-Technische Bundesanstalt, Braunschweig, Bundesrepublik Deutschland

TABLE 11 - Atomic time, collaborating laboratories (cont.)

RGO	Royal Greenwich Observatory, Herstmonceux, U.K.
RO	Royal Observatory, Hong-Kong
RRL	Radio Research Laboratory, Tokyo, Japan
SIS	Singapore Institute of Standards and Industrial Research, Singapore
SO	Shanghai Observatory, Shanghai, China
STA	Swedish Telecommunications Administration, Stockholm, Sweden
SU	Laboratoire d'état de l'étalon de temps et de fréquences, URSS
TAO	Tokyo Astronomical Observatory, Tokyo, Japan
TL	Telecommunication Laboratories, Taiwan, China
TP(1)	Ústav Radiotechniky a Electroniky, Praha, Československo Astronomický Ústav, Praha, Československo
TPC	Telecommunication Public Corporation, Indonesia
TUG	Technische Universität Graz, Oesterreich
USNO	U.S. Naval Observatory, Washington D.C., USA
VSL	Van Swinden Laboratorium, Den Haag, Nederland
YUZM	Bureau Fédéral des Mesures et Métaux Précieux, Belgrade, République Socialiste Fédérative de Yougoslavie
ZIPE	Zentralinstitut Physik der Erde, Potsdam, Deutsche Demokratische Republik

(1) Both laboratories cooperate in the derivation of UTC(TP).

TABLE 12 - Laboratories keeping an independent local atomic time

Laboratories (i)	Equipment in atomic standards(1)	Information on TA(i)-UTC(i): Interval of validity (in MJD at 0h UTC)	TA(i)-UTC(i) in s
CH	13 Ind. Cs 1 prototype Cs (6)	46066-46149	22.000 020 765 $+26\times10^{-9}\times$(MJD-46059)
		46149-46179	22.000 023 106 $+28\times10^{-9}\times$(MJD-46149)
		46179-46239	22.000 023 946 $+30\times10^{-9}\times$(MJD-46179)
		46239-46247	22.000 025 746 $+35\times10^{-9}\times$(MJD-46239)
		46247-46269	23.000 026 026 $+35\times10^{-9}\times$(MJD-46247)
		46269-46329	23.000 026 796 $+40\times10^{-9}\times$(MJD-46269)
		46329-46369	23.000 029 196 $+35\times10^{-9}\times$(MJD-46329)
		46369-46429	23.000 030 596 $+32\times10^{-9}\times$(MJD-46369)
		46429-	23.000 032 516 $+28\times10^{-9}\times$(MJD-46429)
DDR	3 Ind. Cs (2)	year 1985	TA(DDR)-UTC(ASMW) is sent to BIH
F	20 Ind. Cs (3)	year 1985	TA(F)-UTC(OP) is published in bulletin H by OP (LPTF)
NBS	16 Ind. Cs 2 lab. Cs 2 H Maser (4)	year 1985	TA(NBS)-UTC(NBS) is published in the NBS T and F Bulletin
NRC	1 Ind. Cs 1 2.1 m lab. Cs 3 1 m lab. Cs (5)	46066-46247 46247-46430	21.999 968 931 22.999 968 931
PTB	10 Ind. Cs 1 lab. Cs (7)	46066-46247 46247-46430	22.000 363 400 23.000 363 400
RGO	6 Ind. Cs	46066-46247 46247-46430	21.999 926 09 22.999 926 09
RRL	1 lab. Cs 8 Ind. Cs 3 H Masers	year 1985	published in RRL Standard Frequency and Time Bulletin

SO	1 lab. Cs 3 Ind. Cs 3 H Masers	year 1985	TA(SO)-UTC(SO) is published by the SO Atomic Time Bulletin
USNO	60 Ind. Cs 2 H Masers (2 VLG II B serial # 18,19) (8)	year 1985	A.1(MEAN)-UTC(USNO,MC) values are available upon request. (9)

Notes of Table 12

(1) Ind. Cs designates an industry made Cs standard ; lab. Cs a laboratory Cs standard and H Maser an Hydrogen Maser.

(2) The standards are located as follows : ASMW, 2Cs ; ZIPE, 1 Cs.

(3) The standards are located as follows (at the end of 1985).

Centre Electronique de l'Armement (Rennes)	2 Cs
Centre National d'Etudes Spatiales	2 Cs
Centre National d'Etudes des Télécommunications	3 Cs
Centre d'Etudes et de Recherches Géodynamiques et Astronomiques	3 Cs
Electronique Serge Dassault (Suresnes)	1 Cs
Hewlett-Packard (Orsay)	1 Cs
Observatoire de Paris : Laboratoire Primaire du Temps et des Fréquences (LPTF)	5 Cs
Observatoire de Besançon	2 Cs
Lab. de Physique et de Métrologie des Oscillateurs (Besançon)	1 Cs

They are intercompared by the TV method and linked to the foreign laboratories through OP (LPTF) (see Table 13).

(4) The laboratory primary standards control TA(NBS) via an accuracy algorithm. Three of the commercial standards provide the reference for WWV and WWVB but do not contribute directly to TA(NBS) ; they are available for NBS time scales back-up and are compared to TA(NBS) to within 0.1 μs. The hydrogen masers are passively operated.

(5) The 2.1 meter primary cesium clock, CsV, operated continuously during 1985, producing the scale of proper time PT(NRC CsV).
The time scales UTC(NRC) and TA(NRC) were derived from PT(NRC CsV) according to the following expressions given in microseconds :

$$UTC(NRC) = PT(NRC\ CsV) - (MJD - 43144) \times 0.000\ 97 + 52.041$$

$$TA(NRC) = PT(NRC\ CsV) - (MJD - 43144) \times 0.000\ 97 + 20.972$$

with integral seconds disregarded.

Three 1 meter laboratory cesium clocks, CsVIA, -B, and -C, operated continuously as primary standards during 1985 producing the scales of proper time PT(NRC CsVIA), PT(NRC CsVIB) and PT(NRC CsVIC).

Notes of Table 12 (cont.)

(6) The standards are located as follows (at the end of 1985).

Office Fédéral de Métrologie (Berne)	1 prototype	Cs
		7 Cs
Observatoire de Neuchâtel (Neuchâtel)		4 Cs
Direction Générale des PTT (Berne)		2 Cs

They are intercompared by the TV method and linked to the foreign laboratories through the Office Fédéral de Métrologie.

(7) TA(PTB) and UTC(PTB) are derived directly from a local oscillator monitored by the primary clock CS1.
MEZ(D) = UTC(PTB) + 1h or MESZ(D) = UTC(PTB) + 2h (summer time) is the legal time of the Federal Republic of Germany.

(8) The time scales UTC(USNO) and TA(USNO) depend on nominally 25 Cs selected clocks (selection on the basic of observed 5-day stability).

(9) TA(USNO) is designated by A.1 (MEAN) in USNO publications.

Table 13 - Equipment and links of the collaborating laboratories in 1985

Laboratory (i)	Equipment (1)	Source of UTC(i)	LORAN-C reception (2)	Television link with	GPS reception
AOS	1 Ind. Cs	1 Cs,1 Rb		TP, ZIPE	
APL(3)	2 Ind. Cs 1 H Maser	1 Cs + microstepper		USNO	* (since Nov. 1985)
ASMW	2 Ind. Cs	corrected mean of 2 Cs	7970-W	ZIPE, TP, PTB	
ATC	7 Ind. Cs	1 Cs + microstepper		other lab. in Australia	(4)
BEV	1 Ind. Cs	1 Cs	7970-W 7990-M 7990-X 7990-Y (5)	OMH, TUG, lab. in Czechoslovakia	
CAO	2 Ind. Cs	1 Cs	7990-M 7990-X 7990-Z	IEN, other lab. in Italy	
CH	see Table 12	all the Cs	7970-W 7990-Z	other lab. in Switzerland	
CSAO	4 Ind. Cs 3 H Masers	all the Cs	9970-Y	lab. in China	
DHI	2 Ind. Cs	1 Cs + microstepper	7970-W	PTB, TP, ZIPE	
DNM	5 Ind. Cs	all the Cs		other lab. in Australia	* (4) (since Oct. 1985)
FTZ	7 Ind. Cs	1 Cs	7970-W		
IEN	5 Ind. Cs	1 Cs + microstepper	7990-M 7990-X 7990-Z	CAO, other lab. in Italy	* (since June 1985)
IFAG	3 Ind. Cs 2 H Maser	1 Cs + microstepper	7970-W		(6)
IGMA	4 Ind. Cs	1 Cs + microstepper		ONBA, other lab. in Argentina	

Table 13 - (cont.)

Laboratory (i)	Equipment (1)	Source of UTC(i)	LORAN-C reception (2)	Television link with	GPS reception
ILOM	5 Ind. Cs	1 Cs	9970-M 9970-X	RRL, TAO, NRLM	
KSRI	4 Ind. Cs	1 Cs	9970-Y		
NBS	see Table 12	13 Cs 1 lab. Cs 2 H Maser	9940-M 9960-Z		*
NIM	3 Ind. Cs	1 Cs + microstepper	9970-Y	lab. in China	
NML	2 Ind. Cs 2 H masers	all the Cs		other lab. in Australia	(4)
NPL	7 Ind. Cs 1 lab. Cs	1 Cs	7970-W	transmitting station at Rugby	(7)
NPLI	3 Ind. Cs	1 Cs			
NPRL(8)	2 Ind. Cs	1 Cs			
NRC	see Table 12	Cs V	9960-M		*
NRLM	3 Ind. Cs 2 lab. Cs	1 Cs	9970-M	ILOM, RRL, TAO	
OAB	3 Ind. Cs	1 Cs	7990-Z		
OMH	1 Ind. Cs	1 Cs		BEV, SU, TP	
OMSF	6 Ind. Cs	all the Cs	7990-Z		
ONBA(8)	2 Ind. Cs	2 Cs		IGMA other lab. in Argentina	
ONRJ(8)	2 Ind. Cs	2 Cs		other lab. in Brasil	
OP	5 Ind. Cs	1 Cs	7970-W 7990-Z	16 lab. in France.	*

Table 13 - (cont.)

Laboratory (i)	Equipment (1)	Source of UTC(i)	LORAN-C reception (2)	Television link with	GPS reception
ORB	2 Ind. Cs	1 Cs	7970-W		
PKNM	4 Ind. Cs	corrected mean of 4 Cs	7970-W (5)		
PTB	see Table 12	Ind. Cs + microstepper steered by PTB primary standard	7970-W	ASMW, DHI, TP, ZIPE and other lab.	*
RGO	see Table 12	selection of the Cs	7970-M 7970-W 7990-Z 9980-X		
RRL	see Table 12	1 Cs	9970-M	ILOM, TAO, NRLM	*
SO	see Table 12	1 Cs + microstepper	9970-Y	lab. in China	
STA	3 Ind. Cs	1 Cs	7970-W	other lab. in Sweden	
SU	2 lab. Cs 2 Ind. Cs 4 H Masers 4 H clocks	2 lab. Cs 1 Cs 4 H Masers 4 H clocks	7970-W 7990-X 7990-Y 9970-X	other lab. in URSS, TP, OMH, ASMW	
TAO	5 Ind. Cs	1 Cs + microstepper	9970-M 9970-Y	ILOM, RRL, NRLM	*
TL	4 Ind. Cs	1 Cs + microstepper	9970-M		
TP	1 Ind. Cs	1 Cs + microstepper		DHI, PTB, AOS SU, ZIPE, ASMW OMH	
TUG	2 Ind. Cs	1 Cs	7970-W 7990-M	BEV	*
USNO(9)	see table 12	selection of the Cs	(10)	APL	*

Table 13 - (cont.)

Laboratory (i)	Equipment (1)	Source of UTC(i)	LORAN-C reception (2)	Television link with	GPS reception
VSL	4 Ind. Cs	Cs	7970-M 7970-W 9980-X	other lab. in Holland	*
YUZM	1 Ind. Cs	Cs	7970-W		
ZIPE	1 Ind. Cs	1 Cs	7970-W	AOS, ASMW, DHI, TP, PTB	

Notes of Table 13

(1) Ind. Cs designates an industry made Cs standard ; lab. Cs a laboratory Cs standard and H.Maser an Hydrogen Maser.Rb designates a Rubidium standard

(2) LORAN-C stations :

7970-M	Norwegian Sea chain,	Ejde
7970-W	.. ..	Sylt
7990-M	Mediterranean chain,	Simeri Crichi
7990-X	.. ..	Lampedusa
7990-Y	.. ..	Kargabarun
7990-Z	.. ..	Estartit
9940-M	West Coast chain,	Fallon
9960-M	Northeast Coast chain,	Seneca
9960-X	.. ..	Nantucket
9960-Z	.. ..	Dana
9970-M	Northwest Pacific chain,	Iwo Jima
9970-X	.. ..	Hokkaido
9970-Y	.. ..	Gesashi
9980-M	North Atlantic chain,	Angissog
9980-X	.. ..	Edje

(3) Monthly Cs clock transfers were carried out between APL and USNO until Nov. 1985.

Notes of Table 13 (cont.)

(4) GPS receivers located at Tidbinbilla Deep Space Communications Center, DNM and NML were used to derive UTC(AUS)-UTC(USNO) as follows :

1985 Jan. - June,	GPS	receptions	at	Tidbinbilla,	local	TV links
1985 July - Aug.,	"	"	at	NML	"	" "
1985 Sept.,	"	"	at	Tidbinbilla	"	" "
1985 Oct.,	"	"	at	DNM	"	" "
1985 Nov. - Dec.,	"	"	at	NML	"	" "

(5) Reception of the Soviet Union LORAN chain 8000.

(6) At IFAG, GPS receptions since 1986 January 1.

(7) At NPL, GPS receptions since 1986 February 1.

(8) NPRL, ONBA, ONRJ are linked to the other laboratories by VLF receptions.

(9) USNO Time Service Publication, Series 16, entitled Precise Time Transfer Report, lists UTC(USNO MC) - UTC(Reference Clock). Difference from Satellite Communication terminals as well as many international timing centers using the Global Positioning System are reported. USNO Time Service Publication, Series 17, entitled Transit Satellite Reports, lists UTC(USNO MC) - UTC(Satellite Clock) and also the frequency offset of each satellite. Series 17 is available via the Automated Data Service and the General Electric Mark 3 international computer network (RC28 catalog).

(10) The daily phase values (published weekly, Series 4 of USNO) gives the values of UTC(USNO MC) - transmitting station for :

the LORAN-C chains	the US TV Network NBC
the OMEGA stations A, H, L, ND	the NNSS and the GPS satellite systems
the VLF station GBR	

These data are also available via the Automated Data Service (ADS) and the General Electric Mark 3 international computer network (RC28 catalog).
The ADS may be accessed on 202 - 653.1095 (CCITT x 21 standard).

* Laboratories with GPS receiver equipment.

TABLE 14 - TIME COMPARISONS BETWEEN LABORATORIES BY CLOCK TRANSPORTATION IN 1985

UNLESS OTHERWISE STATED, THE TRANSPORTATION WAS CARRIED OUT BY THE FIRST MENTIONED LABORATORY

DATE		MJD	TIME COMPARISONS		UNCERT.	SOURCE
1985			(UNIT : 1 MICROSECOND)			
JAN	14	46079	UTC(SU) - UTC(PKNM) =	-26.72	0.05	SU LETTER
JAN	19	46084.1	UTC(USNO) - UTC(ILOM) =	-5.4	0.1	USNO DPV 942 (1)
JAN	21	46086.2	UTC(USNO) - UTC(RRL) =	-7.2	0.1	USNO DPV 942
JAN	22	46087.9	UTC(USNO) - UTC(TAO) =	3.05	0.07	USNO DPV 942
JAN	23	46088.2	UTC(USNO) - UTC(NRLM) =	-6.68	0.03	USNO DPV 942
FEB	5	46101	UTC(SU) - UTC(STA) =	-29.52	0.05	SU LETTER
APR	6	46161.3	UTC(USNO) - UTC(NPL) =	-0.41	0.03	USNO DPV 954
APR	18	46173.2	UTC(USNO) - UTC(RRL) =	-7.5	0.1	USNO DPV 956 (2)
APR	18	46173.2	UTC(USNO) - UTC(TAO) =	4.8	0.1	USNO DPV 956 (2)
APR	25	46180.9	UTC(USNO) - UTC(CSAO) =	2.0	0.1	USNO DPV 956 (2)
APR	28	46183.0	UTC(USNO) - UTC(SO) =	-9.9	0.1	USNO DPV 956 (2)
MAY	15	46200.3	UTC(USNO) - UTC(FTZ) =	4.09	0.10	USNO DPV 965
MAY	20	46205.2	UTC(USNO) - UTC(TUG) =	-1.05	0.13	USNO DPV 965
MAY	21	46206.2	UTC(USNO) - UTC(IEN) =	-16.95	0.11	USNO DPV 965
MAY	21	46206.3	UTC(USNO) - UTC(CH) =	1.64	0.11	USNO DPV 965
MAY	23	46208.3	UTC(USNO) - UTC(NPL) =	0.16	0.04	USNO DPV 965
JUN	2	46218.96	UTC(USNO) - UTC(DNM) =	1.76	0.05	USNO DPV 968 (3)
JUN	5	46221.3	UTC(USNO) - UTC(ATC) =	-2.40	0.05	USNO DPV 968
JUN	9	46225.95	UTC(USNO) - UTC(NML) =	-13.64	0.05	USNO DPV 968 (4)
JUN	18	46234.5	UTC(OMH) - UTC(TP) =	-0.61	0.01	OMH LETTER
AUG	16	46293.6	UTC(USNO) - UTC(VSL) =	4.90	0.12	USNO DPV 972
AUG	19	46296.4	UTC(USNO) - UTC(STA) =	3.47	0.11	USNO DPV 972
AUG	19	46296.6	UTC(USNO) - UTC(NRC) =	-7.66	0.16	USNO DPV 972
AUG	20	46297.3	UTC(USNO) - UTC(ORB) =	-21.56	0.10	USNO DPV 972
AUG	21	46298.3	UTC(USNO) - UTC(OP) =	2.88	0.08	USNO DPV 972
AUG	22	46299.6	UTC(USNO) - UTC(RGO) =	-7.74	0.05	USNO DPV 972
AUG	23	46300.4	UTC(USNO) - UTC(NPL) =	1.12	0.02	USNO DPV 972
SEP	18	46326	UTC(ASMW) - UTC(SU) =	30.48	0.02	ASMW TELEX
SEP	25	46333.25	UTC(ILOM) - UTC(NRLM) =	3.97	0.05	ILOM LETTER
SEP	30	46338	UTC(ASMW) - UTC(TP) =	6.37	0.02	ASMW TELEX
OCT	25	46363.0	UTC(USNO) - UTC(KSRI) =	-5.33	0.07	USNO DPV 981
NOV	5	46374.2	UTC(USNO) - UTC(RRL) =	-3.72	0.06	USNO DPV 981
NOV	6	46375.9	UTC(USNO) - UTC(TAO) =	8.40	0.03	USNO DPV 981
NOV	7	46376.1	UTC(USNO) - UTC(NRLM) =	-6.81	0.03	USNO DPV 981
NOV	17	46386.67	UTC(STA) - UTC(SU) =	22.40	0.02	STA LETTER
NOV	22	46391.25	UTC(STA) - UTC(SU) =	22.77	0.02	STA LETTER

TABLE 14 - (CONT.)

COMPLEMENTARY RESULTS FOR THE PREVIOUS YEAR

DATE 1984	MJD	TIME COMPARISONS (UNIT : 1 MICROSECOND)	UNCERT.	SOURCE
MAY 29	45849	UTC(SU) - UTC(ASMW) = -28.4		SU LETTER
JUN 26	45877.8	UTC(YUZM) - UTC(OP) = 61.9		YUZM LETTER

(1) UTC(USNO) stands for UTC(USNO MC)
DPV : DAILY PHASE VALUES, SERIES 4, PUBLISHED BY USNO.

(2) Measurements considered reliable but should be given low weight ; the portable clock malfunctioned during the trip.

(3) UTC(DNM) stands for Cs205,DNM ; that provides
UTC(USNO) - UTC(AUS) = 1.76 (from UTC(AUS) - Cs205,DNM = 0.00 at the measurement date)

(4) UTC(NML) stands for Cs201,NML ; that provides
UTC(USNO) - UTC(AUS) = 1.89 (from UTC(AUS) - Cs201,NML = -15.53 at the measurement date) .

TABLE 15 - INDEPENDENT ATOMIC TIMES

TA(I) DENOTES THE ATOMIC TIME OF THE LABORATORY I

UNIT IS ONE MICROSECOND

DATE 1985	MJD	TAI - TA(I) CH	DDR	F	NBS	NRC
JAN 4	46069	-20.84	-4.90	-2.15	-45075.89	21.27
JAN 14	46079	-21.07	-4.83	-1.73	-45076.12	21.09
JAN 24	46089	-21.49	-4.83	-1.25	-45076.34	21.06
FEB 3	46099	-21.82	-4.83	-0.77	-45076.62	21.04
FEB 13	46109	-21.82	-4.78	-0.32	-45076.90	21.00
FEB 23	46119	-22.23	-4.95	0.14	-45077.13	20.99
MAR 5	46129	-22.68	-4.96	0.66	-45077.35	20.75
MAR 15	46139	-22.96	-5.10	1.14	-45077.61	20.72
MAR 25	46149	-23.29	-5.15	1.64	-45077.84	20.70
APR 4	46159	-23.59	-5.19	2.17	-45078.05	20.71
APR 14	46169	-23.94	-5.34	2.58	-45078.36	20.64
APR 24	46179	-24.30	-5.41	3.04	-45078.60	20.67
MAY 4	46189	-24.57	-5.43	3.49	-45078.84	20.69
MAY 14	46199	-24.92	-5.49	3.93	-45079.09	20.70
MAY 24	46209	-25.32	-5.58	4.43	-45079.33	20.76
JUN 3	46219	-25.70	-5.81	4.90	-45079.61	20.76
JUN 13	46229	-26.07	-6.09	5.35	-45079.86	20.77
JUN 23	46239	-26.45	-6.17	5.80	-45080.09	20.81
JUL 3	46249	-26.78	-6.34	6.27	-45080.35	20.88
JUL 13	46259	-27.17	-6.59	6.73	-45080.63	20.93
JUL 23	46269	-27.60	-6.90	7.24	-45080.91	20.97
AUG 2	46279	-27.85	-7.05	7.72	-45081.17	21.00
AUG 12	46289	-28.26	-7.14	8.18	-45081.44	21.04
AUG 22	46299	-28.61	-7.23	8.63	-45081.73	21.08
SEP 1	46309	-28.90	-7.40	9.11	-45082.02	21.12
SEP 11	46319	-29.26	-7.60	9.57	-45082.29	21.16
SEP 21	46329	-29.59	-7.77	10.06	-45082.52	21.23
OCT 1	46339	-29.91	-7.96	10.56	-45082.73	21.31
OCT 11	46349	-30.19	-8.21	11.03	-45083.02	21.34
OCT 21	46359	-30.46	-8.42	11.51	-45083.26	21.37
OCT 31	46369	-30.81	-8.56	11.98	-45083.48	21.41
NOV 10	46379	-31.10	-8.70	12.46	-45083.70	21.42
NOV 20	46389	-31.15	-8.68	12.91	-45083.98	21.43
NOV 30	46399	-31.49	-8.78	13.41	-45084.23	21.47
DEC 10	46409	-31.85	-8.94	13.94	-45084.48	21.52
DEC 20	46419	-32.16	-9.06	14.43	-45084.71	21.59
DEC 30	46429	-32.27	-9.04	14.89	-45084.94	21.65

TABLE 15 - (CONT.)

UNIT IS ONE MICROSECOND

DATE 1985	MJD	TAI - TA(I) PTB	RGO	RRL	SO	USNO
JAN 4	46069	-360.82	63.05	-2.28	-46.49	-34501.39
JAN 14	46079	-360.75	63.06	-2.45	-46.76	-34501.73
JAN 24	46089	-360.67	63.26	-2.63	-46.62	-34502.09
FEB 3	46099	-360.59	63.30	-2.85	-46.62	-34502.50
FEB 13	46109	-360.57	63.16	-3.07	-46.53	-34502.90
FEB 23	46119	-360.52	63.19	-3.35	-46.26	-34503.27
MAR 5	46129	-360.44	63.26	-3.58	-46.06	-34503.59
MAR 15	46139	-360.44	63.25	-3.80	-46.11	-34503.96
MAR 25	46149	-360.42	63.26	-3.92	-45.95	-34504.32
APR 4	46159	-360.38	63.24	-4.05	-45.88	-34504.67
APR 14	46169	-360.41	63.24	-4.20	-45.96	-34505.09
APR 24	46179	-360.39	63.26	-4.32	-46.01	-34505.45
MAY 4	46189	-360.37	63.23	-4.35	-46.04	-34505.77
MAY 14	46199	-360.34	63.26	-4.40	-46.06	-34506.12
MAY 24	46209	-360.31	63.34	-4.40	-46.09	-34506.45
JUN 3	46219	-360.27	63.37	-4.44	-46.13	-34506.84
JUN 13	46229	-360.22	63.40	-4.48	-46.23	-34507.21
JUN 23	46239	-360.22	63.46	-4.51	-46.20	-34507.57
JUL 3	46249	-360.16	63.58	-4.45	-46.27	-34507.93
JUL 13	46259	-360.14	63.76	-4.42	-46.35	-34508.30
JUL 23	46269	-360.18	63.84	-4.37	-46.46	-34508.67
AUG 2	46279	-360.14	63.94	-4.28	-46.67	-34509.06
AUG 12	46289	-360.14	63.93	-4.22	-46.54	-34509.43
AUG 22	46299	-360.12	63.97	-4.19	-46.56	-34509.80
SEP 1	46309	-360.10	63.89	-4.17	-46.48	-34510.20
SEP 11	46319	-360.08	63.97	-4.12	-46.56	-34510.59
SEP 21	46329	-360.09	64.03	-4.11	-46.55	-34510.95
OCT 1	46339	-360.11	64.03	-4.03	-46.53	-34511.32
OCT 11	46349	-360.10	64.05	-4.02	-46.48	-34511.71
OCT 21	46359	-360.15	64.08	-3.96	-46.27	-34512.09
OCT 31	46369	-360.10	64.11	-3.97	-46.02	-34512.45
NOV 10	46379	-360.13	64.10	-3.99	-45.91	-34512.81
NOV 20	46389	-360.10	63.93	-4.06	-46.04	-34513.21
NOV 30	46399	-360.09	63.99	-4.09	-45.87	-34513.58
DEC 10	46409	-359.99	64.03	-4.10	-45.77	-34513.95
DEC 20	46419	-359.92	64.05	-4.14	-45.91	-34514.32
DEC 30	46429	-359.85	63.97	-4.13	-45.78	-34514.74

TABLE 16 - PRIMARY STANDARDS USED AS CLOCKS

UNIT IS ONE MICROSECOND

DATE 1985	MJD	TAI-LAB.STD.				
			NRC			
		PTB CS1 (1)	CsV (2)	CsVI A (2)	CsVI B (2)	CsVI C (2)
JAN 4	46069	2.61	39.40	28.17	38.36	32.86
JAN 14	46079	2.66	39.21	28.31	38.41	32.87
JAN 24	46089	2.76	39.18	28.42	38.50	32.86
FEB 3	46099	2.81	39.15	28.42	38.62	32.78
FEB 13	46109	2.83	39.10	28.41	38.52	32.69
FEB 23	46119	2.89	39.08	28.42	38.51	32.73
MAR 5	46129	2.95	38.82	28.38	38.42	32.68
MAR 15	46139	2.97	38.79	28.43	38.44	32.68
MAR 25	46149	2.99	38.76	28.42	38.40	32.65
APR 4	46159	3.04	38.75	28.37	38.50	32.63
APR 14	46169	2.99	38.69	28.22	38.47	32.57
APR 24	46179	3.00	38.70	28.08	38.41	32.59
MAY 4	46189	3.04	38.71	27.97	38.29	32.62
MAY 14	46199	3.05	38.71	27.94	38.12	32.65
MAY 24	46209	3.09	38.76	27.94	38.02	32.67
JUN 3	46219	3.13	38.75	27.95	37.87	32.62
JUN 13	46229	3.16	38.75	27.98	37.73	32.69
JUN 23	46239	3.18	38.79	28.00	37.58	32.59
JUL 3	46249	3.24	38.86	28.06	37.41	32.56
JUL 13	46259	3.23	38.88	28.13	37.26	32.48
JUL 23	46269	3.25	38.91	28.20	37.20	32.38
AUG 2	46279	3.24	38.93	28.14	37.13	32.31
AUG 12	46289	3.27	38.96	28.04	37.06	32.20
AUG 22	46299	3.30	38.99	27.96	36.99	32.06
SEP 1	46309	3.32	39.02	27.84	36.91	32.05
SEP 11	46319	3.30	39.05	27.71	36.82	32.03
SEP 21	46329	3.30	39.11	27.61	36.77	31.99
OCT 1	46339	3.30	39.18	27.52	36.77	31.92
OCT 11	46349	3.27	39.20	27.39	36.66	31.73
OCT 21	46359	3.27	39.23	27.31	36.63	31.54
OCT 31	46369	3.26	39.25	27.22	36.67	31.44
NOV 10	46379	3.30	39.26	27.16	36.84	31.32
NOV 20	46389	3.30	39.25	27.12	36.74	31.15
NOV 30	46399	3.32	39.28	27.16	37.00	31.00
DEC 10	46409	3.40	39.32	27.39	37.17	30.88
DEC 20	46419	3.48	39.38	27.60	37.39	30.79
DEC 30	46429	3.56	39.44	27.72	37.60	30.78

See notes, following page.

NOTES

(1) The time scale under the headline PTB CS 1 is a coordinate time scale at sea level derived from the scale of proper time applying a gravitation frequency correction of -0.00066μs/d .

(2) The time scales under the headline NRC Cs V, Cs VI A, Cs VI B, Cs VI C are the scales of proper time PT(NRC Cs V), PT(NRC Cs VI A), PT(NRC Cs VI B), PT(NRC Cs VI C) produced directly by primary frequency standards Cs V, Cs VI A, Cs VI B, Cs VI C of NRC used as clocks. The gravitational frequency correction to these time scales of proper time to obtain coordinate times at sea level is -0.00097μs/d .

TABLE 17 - COORDINATED UNIVERSAL TIME

UTC(I) DENOTES THE APPROXIMATION TO UTC KEPT BY THE LABORATORY I

UNIT IS ONE MICROSECOND

DATE 1985	MJD	UTC - UTC(I) AOS	APL (1)	ASMW	AUS (2)	BEV (3)	CAO
JAN 4	46069	-0.40	0.03	0.35	-0.18	-4.58	-
JAN 14	46079	-0.19	0.01	0.51	-0.14	-4.30	4.40
JAN 24	46089	0.36	0.00	0.61	-0.07	-4.23	4.32
FEB 3	46099	0.59	-0.07	0.71	-0.06	-4.16	-
FEB 13	46109	0.44	-0.11	0.86	-0.14	-4.06	-
FEB 23	46119	0.83	-0.14	0.79	-0.19	-	-
MAR 5	46129	-	-0.13	0.88	-0.07	-	4.74
MAR 15	46139	0.75	-0.18	0.84	-0.05	-	4.87
MAR 25	46149	0.67	-0.23	0.79	0.06	-	4.99
APR 4	46159	0.69	-0.26	0.79	-0.09	-	5.11
APR 14	46169	0.19	-0.37	0.67	-0.14	-	5.57
APR 24	46179	0.49	-0.49	0.62	-0.13	-	5.51
MAY 4	46189	0.12	-0.50	0.63	-0.32	-	5.69
MAY 14	46199	0.50	-0.49	0.59	-0.32	-	5.83
MAY 24	46209	-0.55	-0.46	0.52	-0.38	-	6.01
JUN 3	46219	-0.67	-0.55	0.27	-0.51	-	6.14
JUN 13	46229	-0.54	-0.62	-0.01	-0.52	-	6.22
JUN 23	46239	-0.53	-0.69	-0.08	-0.56	-	6.53
JUL 3	46249	-0.67	-0.69	-0.22	-0.63	-	6.61
JUL 13	46259	-0.49	-0.70	-0.41	-0.81	-	6.79
JUL 23	46269	-0.47	-0.72	-0.76	-0.89	-	6.75
AUG 2	46279	-0.10	-0.82	-0.99	-0.88	2.01	6.76
AUG 12	46289	-0.06	-0.85	-1.24	-0.96	5.26	6.62
AUG 22	46299	-0.01	-0.89	-1.71	-1.03	8.69	6.57
SEP 1	46309	-0.11	-0.94	-1.63	-1.09	-8.61	6.59
SEP 11	46319	-0.28	-0.99	-1.57	-1.14	-5.53	6.63
SEP 21	46329	-0.40	-1.01	-1.50	-1.15	-2.30	6.49
OCT 1	46339	-0.49	-1.01	-1.45	-1.50	1.02	6.42
OCT 11	46349	-0.67	-1.06	-1.46	-1.47	4.09	6.56
OCT 21	46359	-0.74	-1.10	-1.42	-1.76	7.15	6.42
OCT 31	46369	-0.82	-1.12	-1.18	-1.79	10.34	6.38
NOV 10	46379	-0.95	-1.15	-0.92	-1.58	13.39	6.35
NOV 20	46389	-0.81	-1.21	-0.50	-1.66	16.49	6.33
NOV 30	46399	-0.78	-1.27	-0.21	-1.72	-12.01	6.13
DEC 10	46409	-0.73	-1.27	0.02	-1.71	-10.79	6.06
DEC 20	46419	-0.60	-1.33	0.29	-1.66	-9.47	5.96
DEC 30	46429	-0.32	-1.38	0.68	-1.63	-7.95	5.82

TABLE 17 - (CONT.)

UNIT IS ONE MICROSECOND

DATE 1985	MJD	UTC - UTC(I) CH (4)	CSAO	DHI	FTZ	IEN	IFAG
JAN 4	46069	0.19	3.31	0.50	1.20	-17.00	-6.33
JAN 14	46079	0.21	2.42	0.54	1.15	-17.10	-5.47
JAN 24	46089	0.06	1.50	0.86	1.23	-17.46	-4.72
FEB 3	46099	-0.02	1.67	1.12	1.19	-17.68	-3.95
FEB 13	46109	0.24	0.93	1.05	1.11	-17.57	-2.96
FEB 23	46119	0.10	0.36	1.14	1.15	-17.80	-2.06
MAR 5	46129	-0.09	-0.12	1.46	1.23	-17.84	-1.60
MAR 15	46139	-0.12	-0.28	1.72	1.32	-17.96	-1.60
MAR 25	46149	-0.19	-0.51	1.80	1.43	-18.13	-1.61
APR 4	46159	-0.21	-0.66	2.02	1.56	-18.20	-1.70
APR 14	46169	-0.27	-0.94	2.22	1.63	-18.44	-1.81
APR 24	46179	-0.35	-1.06	2.52	1.70	-18.66	-2.06
MAY 4	46189	-0.33	-1.15	2.80	1.80	-18.80	-2.20
MAY 14	46199	-0.37	-1.02	2.96	1.93	-18.91	-2.37
MAY 24	46209	-0.48	-0.78	2.96	2.04	-19.11	-2.42
JUN 3	46219	-0.55	-0.62	2.82	2.17	-19.24	-2.41
JUN 13	46229	-0.63	-0.47	2.83	2.33	-19.38	-2.27
JUN 23	46239	-0.70	-0.34	2.95	2.45	-19.42	-2.10
JUL 3	46249	-0.68	-0.08	3.23	2.65	-19.45	-2.32
JUL 13	46259	-0.73	0.12	3.36	2.76	-19.39	-2.10
JUL 23	46269	-0.81	0.32	3.51	2.85	-19.39	-2.15
AUG 2	46279	-0.65	0.58	3.49	3.05	-19.40	-1.95
AUG 12	46289	-0.66	0.89	3.27	3.18	-19.40	-1.76
AUG 22	46299	-0.61	1.06	3.02	3.26	-19.47	-1.74
SEP 1	46309	-0.50	1.26	2.84	3.31	-19.45	-1.68
SEP 11	46319	-0.46	1.51	2.67	3.38	-19.48	-1.56
SEP 21	46329	-0.39	1.75	2.62	3.50	-19.54	-1.48
OCT 1	46339	-0.36	2.06	2.54	3.53	-19.65	-1.38
OCT 11	46349	-0.29	2.23	2.50	3.52	-19.59	-1.16
OCT 21	46359	-0.21	2.68	2.39	3.53	-19.71	-1.06
OCT 31	46369	-0.20	2.98	2.26	3.46	-19.72	-0.83
NOV 10	46379	-0.18	3.18	1.71	3.30	-19.79	-0.94
NOV 20	46389	0.09	3.15	1.33	3.30	-19.88	-0.57
NOV 30	46399	0.08	3.25	1.07	3.34	-19.99	-0.58
DEC 10	46409	0.03	3.33	0.83	3.34	-20.04	-0.92
DEC 20	46419	0.05	3.28	0.72	3.36	-20.21	-1.33
DEC 30	46429	0.25	3.35	0.55	3.46	-20.40	-1.23

TABLE 17 - (CONT.)

UNIT IS ONE MICROSECOND

DATE 1985	MJD	UTC - UTC(I) ILOM	KSRI	NBS	NIM	NPL	NRC
JAN 4	46069	-6.97	-	-3.60	2.24	-4.17	-9.80
JAN 14	46079	-7.14	-	-3.53	2.00	-3.95	-9.98
JAN 24	46089	-7.39	-	-3.44	1.81	-3.64	-10.01
FEB 3	46099	-7.56	-1.08	-3.41	2.13	-3.42	-10.02
FEB 13	46109	-7.88	-1.17	-3.36	2.07	-3.50	-10.07
FEB 23	46119	-8.09	-1.31	-3.28	2.19	-3.30	-10.08
MAR 5	46129	-8.30	-1.42	-3.18	2.19	-3.03	-10.32
MAR 15	46139	-8.52	-1.74	-3.10	2.48	-2.93	-10.35
MAR 25	46149	-8.76	-1.99	-3.01	2.82	-2.72	-10.37
APR 4	46159	-8.92	-2.01	-2.91	3.01	-2.47	-10.36
APR 14	46169	-9.31	-2.41	-2.87	-	-2.45	-10.43
APR 24	46179	-9.59	-2.50	-2.76	3.27	-2.29	-10.40
MAY 4	46189	-9.84	-2.69	-2.65	3.34	-2.16	-10.38
MAY 14	46199	-10.09	-3.10	-2.55	3.44	-2.04	-10.37
MAY 24	46209	-10.35	-3.27	-2.43	3.57	-1.89	-10.31
JUN 3	46219	-10.62	-3.45	-2.37	3.98	-1.81	-10.31
JUN 13	46229	-10.92	-3.79	-2.27	4.52	-1.80	-10.30
JUN 23	46239	-11.12	-4.02	-2.17	4.92	-1.68	-10.26
JUL 3	46249	-11.32	-4.12	-2.06	5.02	-1.55	-10.19
JUL 13	46259	-11.60	-4.41	-1.97	5.13	-1.44	-10.14
JUL 23	46269	-11.78	-4.77	-1.86	5.40	-1.39	-10.10
AUG 2	46279	-12.00	-4.98	-1.77	5.94	-1.36	-10.07
AUG 12	46289	-12.19	-5.36	-1.68	6.00	-1.32	-10.03
AUG 22	46299	-12.34	-5.56	-1.59	5.91	-1.25	-9.99
SEP 1	46309	-12.54	-6.03	-1.52	6.12	-1.21	-9.95
SEP 11	46319	-12.77	-6.45	-1.45	6.49	-1.21	-9.91
SEP 21	46329	-12.95	-6.74	-1.34	6.78	-1.30	-9.84
OCT 1	46339	-13.58	-7.08	-1.22	7.10	-1.16	-9.76
OCT 11	46349	-13.75	-7.52	-1.19	7.49	-1.10	-9.73
OCT 21	46359	-13.85	-7.83	-1.11	7.82	-1.14	-9.69
OCT 31	46369	-14.31	-8.30	-1.04	7.30	-0.98	-9.66
NOV 10	46379	-14.59	-8.68	-0.97	7.56	-0.88	-9.65
NOV 20	46389	-14.93	-9.07	-0.92	8.03	-0.93	-9.64
NOV 30	46399	-15.30	-9.52	-0.87	8.43	-0.71	-9.60
DEC 10	46409	-15.69	-9.88	-0.83	8.70	-0.56	-9.55
DEC 20	46419	-16.03	-10.22	-0.78	9.11	-0.45	-9.48
DEC 30	46429	-16.49	-10.56	-0.75	9.51	-0.27	-9.42

TABLE 17 - (CONT.)

UNIT IS ONE MICROSECOND

DATE 1985	MJD	UTC - UTC(I) NRLM	OAB	OMH (5)	OMSF	OP	ORB (6)
JAN 4	46069	-8.82	-207.10	1.28	2.38	0.03	-23.64
JAN 14	46079	-8.66	-205.38	2.31	2.38	-0.10	-23.82
JAN 24	46089	-8.52	-203.71	2.36	2.11	-0.15	-24.60
FEB 3	46099	-8.42	-201.63	2.36	2.00	-0.17	-24.90
FEB 13	46109	-8.34	-199.12	2.49	2.22	-0.19	-25.43
FEB 23	46119	-8.21	-196.83	2.75	2.13	-0.26	-26.10
MAR 5	46129	-8.06	-194.67	-	1.92	-0.27	-26.69
MAR 15	46139	-7.99	-192.71	-	1.90	-0.28	-27.18
MAR 25	46149	-7.91	-190.49	1.57	1.74	-0.29	-27.69
APR 4	46159	-7.81	-	3.44	1.69	-0.23	-28.18
APR 14	46169	-7.82	-	3.27	1.81	-0.16	-28.08
APR 24	46179	-7.81	-	2.19	1.81	-0.12	-28.18
MAY 4	46189	-7.76	-	3.55	1.77	-0.12	-28.55
MAY 14	46199	-7.74	-	-	1.85	-0.09	-28.98
MAY 24	46209	-7.76	-	3.66	1.65	0.00	-28.49
JUN 3	46219	-7.81	-	3.64	1.64	0.08	-27.74
JUN 13	46229	-7.91	-	3.83	1.61	0.18	-27.49
JUN 23	46239	-7.98	-	4.17	1.66	0.20	-27.09
JUL 3	46249	-8.06	-	3.88	1.64	0.18	-26.45
JUL 13	46259	-8.16	-	3.41	1.74	0.13	-26.03
JUL 23	46269	-8.20	-	3.56	1.63	0.15	-25.37
AUG 2	46279	-8.36	-	3.28	1.53	0.28	-24.70
AUG 12	46289	-8.47	-	3.36	1.46	0.33	-24.05
AUG 22	46299	-8.58	-	4.14	1.42	0.37	-23.97
SEP 1	46309	-8.71	-	4.87	1.38	0.40	-23.64
SEP 11	46319	-8.86	-	4.84	1.38	0.44	-22.94
SEP 21	46329	-9.01	-	4.89	1.28	0.51	-22.21
OCT 1	46339	-9.12	-	4.98	1.18	0.59	-22.11
OCT 11	46349	-9.22	-	5.22	1.13	0.60	-21.12
OCT 21	46359	-9.32	-	5.22	1.03	0.55	-20.92
OCT 31	46369	-9.42	-	5.56	1.00	0.36	-20.56
NOV 10	46379	-9.59	-	5.70	1.19	0.21	-20.27
NOV 20	46389	-9.73	-	5.48	1.34	0.05	-19.66
NOV 30	46399	-9.84	-	5.64	1.27	-0.21	-19.42
DEC 10	46409	-9.93	-	5.87	1.26	-0.11	-19.12
DEC 20	46419	-9.98	-	6.04	1.09	0.05	-18.60
DEC 30	46429	-10.09	-	6.01	1.16	0.21	-18.60

TABLE 17 - (CONT.)

UNIT IS ONE MICROSECOND

DATE 1985	MJD	UTC - UTC(I) PKNM	PTB	RGO	RRL	SO	STA
JAN 4	46069	1.64	2.58	-10.85	-8.72	-12.73	0.04
JAN 14	46079	1.85	2.65	-10.85	-8.81	-12.89	-0.20
JAN 24	46089	1.85	2.73	-10.65	-8.90	-12.63	-0.22
FEB 3	46099	2.03	2.81	-10.61	-9.01	-12.54	-0.44
FEB 13	46109	2.16	2.83	-10.75	-9.17	-12.47	-0.77
FEB 23	46119	2.08	2.88	-10.72	-9.32	-12.22	-1.00
MAR 5	46129	1.73	2.96	-10.65	-9.44	-12.04	-1.10
MAR 15	46139	1.44	2.96	-10.66	-9.61	-12.13	-1.26
MAR 25	46149	1.02	2.98	-10.65	-9.66	-12.03	-1.47
APR 4	46159	0.70	3.02	-10.67	-9.69	-12.00	-1.67
APR 14	46169	0.39	2.99	-10.67	-9.77	-12.01	-1.88
APR 24	46179	0.29	3.01	-10.65	-9.78	-12.11	-1.93
MAY 4	46189	0.17	3.03	-10.68	-9.62	-12.20	-1.88
MAY 14	46199	-0.07	3.06	-10.65	-9.49	-12.26	-2.01
MAY 24	46209	-0.44	3.09	-10.57	-9.34	-12.33	-1.98
JUN 3	46219	-0.98	3.13	-10.54	-9.19	-12.41	-1.96
JUN 13	46229	-0.94	3.18	-10.51	-9.09	-12.48	-1.94
JUN 23	46239	-1.15	3.18	-10.45	-8.94	-12.42	-1.93
JUL 3	46249	-1.60	3.24	-10.33	-8.74	-12.47	-1.74
JUL 13	46259	-2.03	3.26	-10.15	-8.51	-12.51	-1.67
JUL 23	46269	-2.41	3.22	-10.07	-8.33	-12.58	-1.13
AUG 2	46279	-2.76	3.26	-9.97	-8.11	-12.75	-0.30
AUG 12	46289	-3.02	3.26	-9.98	-7.92	-12.59	0.46
AUG 22	46299	-3.28	3.28	-9.94	-7.74	-12.59	1.20
SEP 1	46309	-3.53	3.30	-10.02	-7.57	-12.48	1.97
SEP 11	46319	-3.67	3.32	-9.94	-7.38	-12.56	2.81
SEP 21	46329	-3.66	3.31	-9.88	-7.22	-12.57	3.61
OCT 1	46339	-3.69	3.29	-9.88	-7.01	-12.57	4.36
OCT 11	46349	-3.72	3.30	-9.86	-6.86	-12.57	5.19
OCT 21	46359	-3.69	3.25	-9.83	-6.66	-12.42	5.98
OCT 31	46369	-3.35	3.30	-9.80	-6.53	-12.23	6.74
NOV 10	46379	-2.90	3.27	-9.81	-6.39	-12.02	6.73
NOV 20	46389	-2.31	3.29	-9.98	-6.32	-12.04	5.72
NOV 30	46399	-1.73	3.31	-9.92	-6.21	-11.75	4.82
DEC 10	46409	-1.69	3.41	-9.88	-6.09	-11.68	3.98
DEC 20	46419	-1.42	3.48	-9.86	-6.01	-11.86	3.04
DEC 30	46429	-0.96	3.55	-9.94	-5.87	-11.77	2.09

TABLE 17 - (CONT.)

UNIT IS ONE MICROSECOND

DATE 1985	MJD	UTC - UTC(I) VSL	YUZM	ZIPE
JAN 4	46069	2.21	-68.79	-0.45
JAN 14	46079	2.31	-69.52	-0.19
JAN 24	46089	2.44	-70.50	0.35
FEB 3	46099	2.51	-71.04	0.62
FEB 13	46109	2.57	-71.44	0.73
FEB 23	46119	2.71	-72.30	0.64
MAR 5	46129	2.86	-72.99	0.74
MAR 15	46139	2.90	-73.52	0.74
MAR 25	46149	3.02	-74.03	0.64
APR 4	46159	3.17	-74.48	0.59
APR 14	46169	3.27	-74.84	0.39
APR 24	46179	3.25	-75.27	0.19
MAY 4	46189	3.18	-75.72	0.03
MAY 14	46199	3.05	-76.11	-0.16
MAY 24	46209	3.00	-76.34	-0.24
JUN 3	46219	2.94	-76.56	-0.48
JUN 13	46229	2.81	-76.88	-0.74
JUN 23	46239	2.67	-77.23	-0.63
JUL 3	46249	2.59	-77.62	-0.57
JUL 13	46259	2.52	-77.92	-0.49
JUL 23	46269	2.45	-78.05	-0.27
AUG 2	46279	2.39	-78.17	-0.10
AUG 12	46289	2.44	-78.21	-0.06
AUG 22	46299	2.48	-78.29	-0.01
SEP 1	46309	2.55	-78.49	-0.11
SEP 11	46319	2.65	-78.82	-0.28
SEP 21	46329	2.78	-79.45	-0.40
OCT 1	46339	2.91	-79.90	-0.49
OCT 11	46349	3.03	-80.36	-0.67
OCT 21	46359	3.14	-81.05	-0.74
OCT 31	46369	3.23	-81.59	-0.82
NOV 10	46379	3.26	-82.13	-0.95
NOV 20	46389	3.28	-82.66	-0.81
NOV 30	46399	3.32	-83.38	-0.78
DEC 10	46409	3.40	-83.76	-0.73
DEC 20	46419	3.65	-84.22	-0.60
DEC 30	46429	3.87	-84.79	-0.32

Notes of Table 17

(1) APL . Time step of UTC(APL) of -2.53 μs on MJD = 46069

(2) AUS . Time step of UTC(AUS) of -20 μs on MJD = 46066
Rate step of UTC(AUS) of -18 ns/d on MJD = 46066

(3) BEV . Time step of UTC(BEV) of 20 μs on MJD = 46300.5
Time step of UTC(BEV) of 30 μs on MJD = 46397.5

(4) CH . UTC(CH) designates the UTC scale of Switzerland. Starting from 1985 January 1, UTC(OFM), UTC(ON) and UTC(PTCH) are discontinued.

(5) OMH . The irregularities of the tabulated data, especially during the first half of 1985, are mainly due to bad time links.

(6) ORB . Adjustement by BIH of the adopted delays for the LORAN-C, on 1985 January 1 (the apparent step of UTC -UTC(ORB) is -600 ns).

(7) TUG . Changes of master clock on MJD = 46121.628 and on MJD = 46153.6

TABLE 17 A - COORDINATED UNIVERSAL TIME (VLF)

UTC(I) DENOTES THE APPROXIMATION TO UTC KEPT BY THE LABORATORY

UNIT IS ONE MICROSECOND

DATE 1985	MJD	UTC - UTC(I) IGMA (1)	INTI (1)	NPRL (2)	ONBA (3)
JAN 4	46069	0	30	34.8	-2014
JAN 14	46079	-3	28	34.5	-2016
JAN 24	46089	-2	30	31.7	-2017
FEB 3	46099	-7	23	28.6	-2023
FEB 13	46109	-1	29	25.9	-2017
FEB 23	46119	1	33	23.2	-2016
MAR 5	46129	1	34	21.3	-2015
MAR 15	46139	2	31	19.3	-2014
MAR 25	46149	0	30	17.7	-2017
APR 4	46159	2	31	15.6	-2016
APR 14	46169	2	30	13.1	-2016
APR 24	46179	-6	-	10.8	-2025
MAY 4	46189	-4	27	8.3	-2023
MAY 14	46199	-2	24	6.1	-2021
MAY 24	46209	-	-	4.0	-
JUN 3	46219	-6	22	1.9	-2028
JUN 13	46229	-7	22	36.9 (4)	-2030
JUN 23	46239	-5	23	35.6	-2028
JUL 3	46249	-5	24	31.3 (5)	-2029
JUL 13	46259	-6	23	30.1	-2031
JUL 23	46269	-7	22	28.6	-2032
AUG 2	46279	-4	23	27.1	-2030
AUG 12	46289	-4	23	29.9 (6)	-2031
AUG 22	46299	-6	23	8.3 (7)	-2033
SEP 1	46309	-5	23	7.0	-2033
SEP 11	46319	-7	23	5.9	-2035
SEP 21	46329	-10	23	4.5	-2039
OCT 1	46339	-11	23	3.1	-2041
OCT 11	46349	-13	20	1.4	-2043
OCT 21	46359	-12	26	-0.2	-2043
OCT 31	46369	-8	31	-1.8	-2040
NOV 10	46379	-8	29	-3.4	-2041
NOV 20	46389	-5	33	-5.0	-2039
NOV 30	46399	-8	27	-6.8	-2043
DEC 10	46409	-12	26	-8.4	-2048
DEC 20	46419	-10	27	-9.9	-2046
DEC 30	46429	-13	21	-11.6	-2050

TABLE 17 A - (CONT.)

NOTES

(1) Uncertainties on the origins.

(2) Computed by NPRL.

(3) Referred to clock ONBA1. The results for 1984 were referred to clock ONBA2. Uncertainty on the origin.

(4) 1985 June 3, 16h 16m UTC (MJD = 46219.68) UTC(NPRL) clock failure.
1985 June 10, 11h UTC (MJD = 46226.46) UTC(NPRL) clock resynchronised after repair.

(5) 1985 June 24, 10h UTC (MJD = 46240.42) UTC(NPRL) clock resynchronised after adjustment.

(6) 1985 August 7, 7h UTC (MJD = 46284.92) UTC(NPRL) clock resynchronised after adjustment.

(7) 1985 August 12, 12h UTC (MJD = 46289.50) UTC(NPRL) clock resynchronised after adjustment.

TABLE 18 - COMPARISONS BETWEEN THE CLOCK TRANSPORTATIONS AND THE BIH RESULTS

THE TABLE GIVES THE DIFFERENCES BETWEEN THE CLOCK TRANSPORTATION RESULTS AND THOSE DERIVED FROM THE DATA OF TABLE 17 (BEFORE ROUNDING-OFF)

DATE 1985	MJD	TIME COMPARISONS	DIFFERENCE CLOCK TR. - BIH (UNIT : 1 MICROSECOND)	
JAN 14	46079	UTC(SU) - UTC(PKNM)	0.69	
JAN 19	46084.1	UTC(USNO) - UTC(ILOM)	0.0	
JAN 21	46086.2	UTC(USNO) - UTC(RRL)	-0.1	
JAN 22	46087.9	UTC(USNO) - UTC(TAO)	0.02	
JAN 23	46088.2	UTC(USNO) - UTC(NRLM)	0.02	
FEB 5	46101	UTC(SU) - UTC(STA)	0.63	
APR 6	46161.3	UTC(USNO) - UTC(NPL)	0.00	
APR 18	46173.2	UTC(USNO) - UTC(RRL)	0.2	
APR 18	46173.2	UTC(USNO) - UTC(TAO)	0.1	
APR 25	46180.9	UTC(USNO) - UTC(CSAO)	0.9	
APR 28	46183.0	UTC(USNO) - UTC(SO)	0.1	
MAY 15	46200.3	UTC(USNO) - UTC(FTZ)	0.03	
MAY 20	46205.3	UTC(USNO) - UTC(TUG)	-0.13	
MAY 21	46206.2	UTC(USNO) - UTC(IEN)	0.00	
MAY 21	46206.3	UTC(USNO) - UTC(CH)	-0.02	
MAY 23	46208.3	UTC(USNO) - UTC(NPL)	-0.05	
JUN 2	46218.96	UTC(USNO) - UTC(AUS)	0.12	(1)
JUN 5	46221.3	UTC(USNO) - UTC(AUS)	-0.39	(1)
JUN 9	46225.95	UTC(USNO) - UTC(AUS)	0.25	(1)
JUN 18	46234.5	UTC(OMH) - UTC(TP)	-0.37	
AUG 16	46293.6	UTC(USNO) - UTC(VSL)	0.06	
AUG 19	46296.4	UTC(USNO) - UTC(STA)	0.07	
AUG 19	46296.6	UTC(USNO) - UTC(NRC)	-0.05	
AUG 20	46297.3	UTC(USNO) - UTC(ORB)	0.03	
AUG 21	46298.3	UTC(USNO) - UTC(OP)	0.11	
AUG 22	46299.6	UTC(USNO) - UTC(RGO)	-0.20	
AUG 23	46300.4	UTC(USNO) - UTC(NPL)	-0.02	
SEP 18	46326	UTC(ASMW) - UTC(SU)	0.98	
SEP 25	46333.25	UTC(ILOM) - UTC(NRLM)	-0.19	
SEP 30	46338	UTC(ASMW) - UTC(TP)	0.64	
OCT 25	46363.0	UTC(USNO) - UTC(KSRI)	0.03	
NOV 5	46374.2	UTC(USNO) - UTC(RRL)	0.05	
NOV 6	46375.9	UTC(USNO) - UTC(TAO)	0.05	
NOV 7	46376.1	UTC(USNO) - UTC(NRLM)	0.04	
NOV 17	46386.67	UTC(STA) - UTC(SU)	0.372	
NOV 22	46391.25	UTC(STA) - UTC(SU)	0.447	

COMPLEMENTARY RESULTS FOR THE PREVIOUS YEAR

1984			
MAY 29	45849	UTC(SU) - UTC(ASMW)	-0.6

(1) From clock transportations to DNM, ATC and NML (see Table 14).

TABLE 19 - INTERNATIONAL ATOMIC TIME , BI-MONTHLY RATES OF TAI-CLOCK FOR 1985

THE RATES ARE AVERAGED OVER INTERVALS OF TWO MONTHS ENDING AT THE GIVEN DATES

UNIT IS NS/DAY , 0.0 DENOTES THAT THE CLOCK WAS NOT USED

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
APL	14 773	-124.49	-129.91	-124.82	-122.20	-121.71	-120.15
APL	14 793	227.16	224.12	233.98	239.65	233.88	244.70
APL	42 6	-2.56	-3.23	-4.79	-7.29	-4.59	-4.15
ASMW	13 29	50.17	0.0	0.0	0.0	0.0	0.0
ASMW	16 76	-33.54	0.0	-10.41	1.89	-7.40	12.67
ASMW	16 165	-13.40	-19.59	-21.60	-21.46	-18.82	-7.64
AUS	11 288	-0.56	0.0	0.0	0.0	-41.68	-12.08
AUS	12 201	-53.17	0.0	0.0	0.0	0.0	0.0
AUS	12 590	115.12	108.34	104.72	92.85	103.61	127.20
AUS	14 902	-92.95	-106.27	0.0	0.0	0.0	0.0
AUS	22 109	-332.27	-331.04	-331.25	-331.00	0.0	0.0
AUS	22 708	0.0	0.0	0.0	0.0	-183.68	0.0
AUS	22 823	56.84	70.67	54.80	59.78	0.0	0.0
AUS	24 443	-160.67	-163.80	0.0	0.0	0.0	0.0
AUS	24 719	0.0	0.0	26.59	0.0	0.0	0.0
AUS	24 777	0.0	0.0	-140.02	-145.36	-159.82	-130.47
AUS	24 844	57.73	73.63	52.79	45.86	0.0	0.0
AUS	34 10	0.0	-14.37	-23.93	-34.98	-50.69	-36.77
AUS	34 20	0.0	0.0	0.0	0.0	0.0	-59.98
AUS	44 1	0.0	0.0	0.0	8.86	11.47	22.31
AUS	44 2	36.38	52.34	26.12	32.46	32.02	39.44
AUS	44 3	5.38	0.0	0.0	0.0	0.0	0.0
BEV	16 71	0.0	0.0	0.0	0.0	315.89	186.25
CAO	16 52	0.0	0.0	0.0	-30.55	-28.06	-27.35
CAO	16 183	0.0	0.0	0.0	0.39	-2.90	-9.63
CH	12 285	-21.41	-23.39	-25.04	-24.63	-30.67	0.0
CH	12 863	9.16	-17.46	-54.11	-60.07	-53.90	-39.90
CH	13 14	-2.80	5.16	-20.99	-16.93	-13.87	-17.54
CH	16 64	0.0	-16.08	-43.44	-56.05	-41.72	-3.89
CH	16 69	-94.38	-104.22	-106.64	-98.06	-86.06	-88.71
CH	16 77	11.19	4.83	0.95	4.92	13.61	17.32
CH	16 114	0.0	17.31	17.92	32.31	-3.23	-3.74
CH	16 140	0.0	89.77	39.00	-18.79	-4.94	78.64
CH	17 206	47.61	41.08	45.52	45.71	50.46	53.38
CH	17 208	-164.94	-172.71	-174.38	-171.26	-167.76	-163.67
CH	21 179	-66.93	-72.07	-72.25	-72.65	-68.88	-63.07
CH	21 194	72.52	40.44	11.13	-4.38	-10.26	0.0
CH	24 796	-17.88	-28.03	-30.93	-40.89	0.0	0.0
CH	99 1	-224.13	-260.07	-280.97	61.69	278.97	330.09
CH	99 5	-90.33	-85.99	-47.39	0.0	0.0	0.0

TABLE 19 - (CONT.)

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
CSAO	22 646	-433.83	-417.64	0.0	0.0	0.0	0.0
CSAO	22 647	-240.03	-237.28	-200.31	-201.32	-202.37	-239.52
CSAO	22 648	22.26	8.35	11.89	4.09	-0.82	-7.82
F	12 158	0.0	-300.67	-276.11	-250.79	-254.90	-264.35
F	12 195	264.70	275.88	269.28	0.0	0.0	0.0
F	12 347	-78.20	-97.94	-71.03	-28.40	-48.95	-64.18
F	12 439	-24.97	-27.90	-61.07	0.0	0.0	0.0
F	12 475	0.0	243.60	234.36	188.50	194.99	198.95
F	14 134	-2.12	-0.37	-6.44	-3.80	4.27	-1.74
F	14 500	-35.77	-30.99	-21.13	-14.51	-16.65	-12.66
F	14 594	-204.43	-195.37	-191.78	-194.42	-196.59	0.0
F	14 753	103.50	120.36	126.74	138.06	153.88	165.68
F	16 106	0.0	11.61	0.0	0.0	0.0	0.0
F	16 187	0.0	0.0	-67.68	-69.13	-63.12	-52.27
F	22 120	0.0	-13.02	-14.54	-8.54	-7.99	-9.61
F	24 407	-133.24	-124.87	-137.27	-137.17	-138.10	-136.36
F	24 645	-95.96	-100.11	0.0	0.0	-75.82	-77.60
F	24 712	0.0	0.0	0.0	-39.65	-37.46	-27.40
F	24 842	-123.89	-128.30	-128.04	-124.83	0.0	0.0
F	32 405	0.0	0.0	0.0	0.0	-15.17	-13.62
FTZ	14 312	0.0	0.0	18.44	14.80	5.12	4.61
FTZ	14 895	-0.98	7.00	11.13	9.74	5.60	1.36
FTZ	16 130	0.0	0.0	0.0	8.42	4.23	3.08
FTZ	24 217	-1.80	9.67	12.67	13.35	3.56	0.61
FTZ	24 482	-2.53	10.04	14.35	15.05	4.96	1.27
FTZ	24 656	0.0	0.0	11.55	13.02	3.81	0.03
FTZ	24 674	-1.24	9.81	12.06	12.92	3.77	0.20
IEN	12 303	0.0	0.0	103.47	121.77	120.69	115.66
IEN	12 609	75.87	70.78	74.04	77.60	77.41	69.80
IEN	14 893	25.55	25.35	24.01	33.46	29.60	22.84
IEN	16 84	146.57	134.32	0.0	0.0	112.14	136.53
IFAG	16 131	131.24	120.40	109.32	116.27	117.22	125.92
IFAG	16 138	-19.74	-12.12	-12.56	15.43	0.0	-15.18
IFAG	16 173	86.35	89.30	58.92	54.24	58.65	76.09
ILOM	11 176	2327.73	2521.94	2725.34	3064.23	3069.47	3173.80
ILOM	14 614	-653.34	0.0	0.0	0.0	-103.71	-118.99
ILOM	14 885	-39.61	-39.50	-44.77	-41.74	-57.31	-73.72
ILOM	24 315	-69.69	-72.25	-73.33	-68.24	-76.05	-83.92
ILOM	34 146	-20.24	-22.43	-28.17	-25.74	-16.01	-21.97
KSRI	22 403	0.0	0.0	-304.64	-298.21	-323.25	-311.64
KSRI	22 406	0.0	349.97	350.99	352.21	322.75	312.23
KSRI	22 903	0.0	-2.89	-4.18	-4.86	0.82	-4.48
KSRI	24 516	0.0	-20.78	-25.47	-27.32	-37.78	-38.16
NBS	11 169	64.51	68.91	57.03	44.81	52.52	61.30
NBS	13 61	0.0	0.0	-119.97	-144.21	-121.32	-93.60

TABLE 19 - (CONT.)

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
NBS	14 323	-91.52	-98.72	-98.86	-106.31	-108.30	-99.62
NBS	14 324	-16.10	-6.07	0.55	-5.34	-10.52	-12.55
NBS	14 601	-83.66	-86.56	-84.30	-87.37	-91.55	-98.99
NBS	18 8	252.64	255.03	251.26	255.01	260.02	251.64
NBS	18 113	-968.75	-960.33	-946.68	0.0	0.0	0.0
NBS	22 375	44.50	0.0	0.0	0.0	0.0	-305.91
NBS	24 316	-101.46	-105.19	-105.10	-105.25	-104.78	-104.02
NBS	34 165	0.0	-50.51	0.0	0.0	0.0	0.0
NBS	40 4	0.0	0.0	0.0	0.0	-766.65	0.0
NBS	40 14	0.0	0.0	0.0	0.0	78.31	0.0
NIM	22 615	-70.40	-66.62	-34.53	-17.16	-34.23	-77.34
NIM	22 633	-33.37	-10.32	-3.62	-11.88	-6.38	15.27
NIM	22 640	31.19	10.50	18.73	-2.17	12.98	-10.97
NPL	12 418	0.0	0.0	0.0	-83.32	-83.75	-99.75
NPL	12 832	-303.12	-292.95	-297.52	-300.18	-304.00	-304.59
NPL	24 334	0.0	0.0	0.0	-30.54	-33.37	-9.50
NPL	24 813	21.60	22.71	15.90	12.60	9.39	17.95
NPL	34 64	-5.05	-0.05	0.0	8.11	3.63	-3.32
NRC	14 267	-33.34	-19.15	-20.70	-21.36	-25.86	63.26
NRC	90 5	-7.99	-5.21	1.36	3.12	4.08	3.11
NRC	90 61	6.05	-5.08	-0.72	-0.61	-10.77	9.59
NRC	90 62	2.96	-0.51	-13.75	-9.29	-4.85	15.46
NRC	90 63	-3.36	-2.49	0.51	-8.86	-9.36	-11.81
NRLM	12 363	80.77	120.42	77.62	111.12	-114.37	-192.69
NRLM	14 906	12.16	7.30	0.0	0.0	0.0	0.0
NRLM	24 632	0.0	0.0	-3.10	-10.19	-12.02	-10.71
OAB	16 189	199.09	0.0	0.0	0.0	0.0	0.0
OMH	22 67	26.24	9.68	23.73	-4.56	15.38	8.65
OMSF	14 896	15.57	14.96	14.07	10.41	8.37	15.80
OMSF	16 113	-103.39	-81.49	-105.69	-82.68	-86.67	0.0
OMSF	16 177	12.79	7.99	-1.38	-4.39	33.77	222.93
OMSF	22 223	217.93	213.26	215.52	194.15	193.83	206.41
ORB	12 205	-170.87	-156.92	-142.00	0.0	0.0	0.0
ORB	12 804	-0.68	14.34	-13.18	-40.23	-36.90	-52.99
PKNM	16 124	29.04	10.85	-5.45	-27.35	-17.81	42.98
PKNM	16 125	43.40	-86.87	-62.34	-60.36	52.08	74.10
PKNM	16 154	-44.50	-37.98	-42.99	-75.54	-78.67	-10.98
PKNM	24 144	-35.89	-31.33	-14.06	-15.86	-16.52	-12.23
PTB	12 320	-36.11	-32.33	-35.02	-39.30	-42.10	-51.96
PTB	12 462	-6.23	7.29	0.67	3.46	-0.75	2.61
PTB	14 394	-29.48	-27.75	-23.98	-19.87	-25.45	-28.36
PTB	14 395	-45.26	-44.46	-29.49	0.0	0.0	0.0
PTB	14 867	0.0	-183.86	-180.36	-175.91	-181.11	-183.60
PTB	16 119	-89.76	-92.25	-88.05	-77.26	-65.84	-48.89
PTB	24 103	-17.76	-15.79	-13.13	-11.49	-12.36	-12.83

TABLE 19 - (CONT.)

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
PTB	34 379	0.0	0.0	79.10	71.37	74.99	78.07
PTB	92 1	5.72	1.67	3.07	1.49	-0.61	4.92
RGO	12 348	-65.38	-51.41	-48.19	-29.18	-46.11	-59.56
RGO	12 484	-197.49	-184.22	-192.18	-186.51	-182.43	-195.46
RGO	14 202	0.0	0.0	0.0	-617.00	-603.76	-620.60
RGO	14 560	-63.37	-64.85	-64.63	-60.85	-61.95	-64.54
RGO	14 868	-128.57	-129.12	-130.87	-131.90	-132.79	-129.45
RGO	20 133	-326.62	-307.98	-295.69	-299.55	-287.20	-289.84
RRL	12 189	60.53	80.71	65.95	71.82	73.21	73.94
RRL	12 290	-98.42	-92.23	-80.92	-79.16	-77.94	-88.44
RRL	14 764	-11.43	0.0	0.0	0.0	0.0	-109.51
RRL	14 865	-326.78	-327.85	-322.44	-311.91	-313.22	-316.92
RRL	14 932	-165.50	-160.62	-150.33	-143.92	-146.59	-153.55
RRL	22 725	-67.36	-19.88	4.21	7.58	3.22	-4.35
RRL	22 729	43.57	0.0	0.0	0.0	0.0	0.0
RRL	24 729	0.0	0.0	-105.55	-116.02	-122.90	-131.58
RRL	34 456	0.0	0.0	0.0	0.0	0.0	-58.19
RRL	45 3	0.0	0.0	39.51	33.96	30.88	31.86
SO	12 67	58.20	63.46	123.94	97.29	90.89	38.91
SO	12 997	-94.04	-88.10	-100.28	-109.24	-97.74	-107.20
SO	16 180	-4.02	-6.45	-2.85	-2.74	1.46	-3.91
STA	14 900	-120.69	-131.68	-124.25	-105.73	-88.32	-81.18
STA	16 137	-9.10	-2.52	-13.48	-30.88	-7.86	-4.14
STA	24 376	-94.52	-91.39	-100.24	-86.77	-84.59	-91.64
TAO	12 204	-165.69	56.35	0.0	0.0	135.00	104.63
TAO	14 390	-77.05	0.0	0.0	0.0	0.0	-94.50
TAO	24 75	-48.28	0.0	0.0	-25.47	-29.84	-26.88
TAO	24 498	-122.80	-119.80	-118.07	-121.98	-112.05	-116.64
TL	12 115	-73.40	-70.58	-107.39	30.15	-182.50	-193.08
TL	12 477	198.24	267.69	237.19	206.33	222.10	153.39
TL	22 145	92.17	99.16	188.76	178.83	192.20	137.81
TL	22 276	0.0	212.77	176.72	158.25	159.13	0.0
TP	12 335	0.0	0.0	0.0	0.0	12.46	22.09
TUG	12 524	98.25	94.47	98.55	102.47	104.90	95.20
TUG	24 654	35.41	0.0	30.41	30.20	27.89	29.02
USNO	12 58	0.0	-159.07	-152.95	-111.48	-91.52	-95.67
USNO	12 60	0.0	730.42	676.20	602.89	531.75	350.33
USNO	12 120	0.0	0.0	86.41	130.60	95.77	134.31
USNO	12 346	0.0	0.0	404.33	0.0	0.0	0.0
USNO	12 532	0.0	67.71	0.0	101.43	0.0	0.0
USNO	12 583	0.0	0.0	-651.32	-659.70	-642.83	-591.56
USNO	12 591	0.0	0.0	-1078.46	-1099.18	-1001.21	-962.81
USNO	12 752	-151.63	-157.01	-170.48	-183.45	-183.81	-157.45
USNO	12 778	226.18	221.26	226.22	230.07	235.24	238.50
USNO	12 873	0.0	0.0	14.72	10.83	10.95	-1.45

TABLE 19 - (CONT.)

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
USNO	14 345	188.16	189.54	183.44	198.05	0.0	0.0
USNO	14 571	0.0	-104.95	-105.68	-102.78	-108.57	-105.47
USNO	14 573	0.0	0.0	0.0	0.0	29.32	32.31
USNO	14 653	0.0	0.0	0.0	0.0	46.18	48.27
USNO	14 656	2.16	8.62	9.65	12.53	14.43	15.78
USNO	14 660	-81.74	-80.52	-59.04	-56.01	0.0	0.0
USNO	14 787	0.0	0.0	26.16	21.64	16.08	2.01
USNO	14 834	-135.98	-127.49	-122.50	-120.59	-107.37	-112.60
USNO	14 837	0.0	0.0	0.0	0.0	-3.56	-4.37
USNO	14 862	231.38	229.41	237.05	215.67	210.94	209.67
USNO	14 871	82.94	91.26	97.71	94.67	94.16	85.77
USNO	14 875	-136.03	-140.90	-137.37	-140.74	-143.39	-136.95
USNO	18 107	0.0	0.0	0.0	266.41	450.00	543.44
USNO	18 130	0.0	0.0	0.0	-42.14	0.0	0.0
USNO	18 133	0.0	0.0	0.0	0.0	0.0	-85.69
USNO	18 159	0.0	0.0	0.0	0.0	0.0	-39.73
USNO	22 710	0.0	-204.17	-206.62	-203.66	-202.32	0.0
USNO	24 25	-227.33	-237.63	-37.67	0.0	0.0	0.0
USNO	24 28	-104.94	-109.76	-90.95	-97.04	0.0	0.0
USNO	24 35	-89.52	-87.67	-89.50	-93.94	-94.90	-110.84
USNO	24 94	-11.91	-22.86	-25.57	-42.23	-47.24	-58.76
USNO	24 117	-84.61	-87.11	-76.12	-71.11	-75.12	-76.00
USNO	24 300	-323.89	-311.69	-317.98	-321.41	-318.66	-323.90
USNO	24 301	-150.42	-151.39	-151.86	-145.44	-139.75	-141.50
USNO	24 305	0.0	-164.18	-138.93	0.0	0.0	0.0
USNO	24 343	-34.96	-33.27	-22.91	-23.12	-22.93	-21.60
USNO	24 362	0.0	-540.17	-444.93	-469.18	-495.11	-496.97
USNO	24 423	-39.73	-45.94	-42.49	-44.47	-39.82	-40.12
USNO	24 449	0.0	-228.44	0.0	0.0	0.0	0.0
USNO	24 450	0.0	0.0	63.03	99.10	0.0	0.0
USNO	24 452	6.74	13.35	26.97	36.01	38.35	42.31
USNO	24 586	-93.23	-91.00	-84.04	-83.51	-82.62	-83.81
USNO	24 605	20.83	29.14	29.53	41.20	41.97	42.03
USNO	24 653	24.07	20.98	11.13	16.65	16.86	28.33
USNO	24 688	-44.93	-41.12	-49.22	-42.60	0.0	0.0
USNO	24 809	0.0	0.0	0.0	0.0	1052.42	0.0
USNO	24 846	0.0	0.0	-21.60	-26.72	-17.34	-16.84
USNO	24 947	0.0	86.73	-55.43	177.57	0.0	0.0
USNO	34 81	0.0	8.24	0.0	0.0	0.0	0.0
USNO	34 98	-22.27	-21.94	-19.60	-22.19	-17.08	-16.97
USNO	34 100	-111.18	-119.27	-118.96	-122.64	-123.16	-121.35
USNO	34 157	-101.14	-106.78	-104.56	-111.08	-108.82	-110.82
USNO	34 208	0.0	0.0	0.0	0.0	0.0	-43.83
USNO	34 257	-13.81	0.0	0.0	0.0	0.0	0.0
USNO	34 268	-28.64	-37.62	-36.61	-32.05	-19.93	0.0

TABLE 19 - (CONT.)

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
USNO	34 277	0.0	-89.14	-81.12	-88.96	-87.64	-89.59
USNO	34 278	-22.74	-27.90	0.0	0.0	0.0	0.0
USNO	34 285	-48.39	-71.95	-52.26	-59.77	-50.81	-68.24
USNO	34 312	0.0	0.0	-57.90	-35.87	-7.15	0.0
USNO	34 313	-77.43	-64.20	-63.37	0.0	0.0	0.0
USNO	34 314	-34.22	-28.84	-34.63	-24.07	-22.87	-18.12
USNO	34 315	-27.21	-45.23	-37.92	-33.82	-38.96	-25.90
USNO	34 481	0.0	0.0	0.0	0.0	0.0	-28.03
USNO	34 482	0.0	0.0	0.0	0.0	0.0	-34.73
USNO	34 484	0.0	0.0	0.0	0.0	0.0	-43.34
USNO	34 485	0.0	0.0	0.0	0.0	0.0	-37.03
USNO	34 486	0.0	0.0	0.0	0.0	0.0	4.88
USNO	34 487	0.0	0.0	0.0	0.0	0.0	-19.29
USNO	34 489	0.0	0.0	0.0	0.0	0.0	-59.40
USNO	40 18	-196.52	0.0	0.0	0.0	7.22	0.0
USNO	40 19	-192.26	0.0	0.0	0.0	6.77	0.0
USNO	43 8	-71.77	189.03	-3.67	20.38	19.25	2.44
VSL	14 503	-163.75	-163.22	-182.07	-176.42	-161.48	-162.63
VSL	22 34	-5.15	-8.86	0.0	0.0	0.0	0.0
VSL	22 489	-193.78	-329.93	-322.47	-365.48	-396.94	-392.67
VSL	24 34	0.0	0.0	0.0	-74.75	-85.74	-89.34
VSL	24 190	0.0	0.0	0.0	0.0	-18.41	-12.88
YUZM	22 189	-70.99	-48.46	-30.81	-16.59	-48.79	-53.14
ZIPE	12 979	0.0	0.0	-147.64	-146.83	-164.24	-165.76

THE CLOCKS ARE DESIGNATED BY THEIR MODEL (2 DIGITS) AND SERIAL NO.
THE CODES FOR THE MODELS ARE

11 HEWLETT-PACKARD 5060A
12 OR 22 HEWLETT-PACKARD 5061A (22 001 EQUIVALENT TO 12 1001)
13 OR 23 EBAUCHES , OSCILLATOM B5000 (23 001 EQUIVALENT TO 13 1001)
14 OR 24 HEWLETT-PACKARD 5061A OPT.4 (24 001 EQUIVALENT TO 14 1001)
OR 34 HEWLETT-PACKARD 5061A OPT.4 (34 001 EQUIVALENT TO 14 2001)
16 OR 26 OSCILLOQUARTZ 3200 (26 001 EQUIVALENT TO 16 1001)
17 OR 27 OSCILLOQUARTZ 3000 (27 001 EQUIVALENT TO 17 1001)
18 OR 28 FREQ. AND TIME SYSTEMS INC. 4000
19 ROHDE AND SCHWARZ XSC
20 FREQ. AND TIME SYSTEMS INC. 5000
25 HEWLETT-PACKARD 5062C (ADD 1000 TO THE SERIAL NO.)
40 TO 49 HYDROGEN MASERS
90 LABORATORY CS STANDARD NRC 91 LABORATORY CS STANDARD NBS
92 LABORATORY CS STANDARD PTB 99 PROTOTYPE CS

TABLE 20 - INTERNATIONAL ATOMIC TIME , WEIGHTS OF THE CLOCKS FOR 1985

THE WEIGHTS ARE GIVEN FOR INTERVALS OF TWO MONTHS ENDING AT THE GIVEN DATES

*** DENOTES THAT THE CLOCK WAS NOT USED

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
APL	14 773	200	200	200	200	200	200
APL	14 793	200	200	184	200	200	174
APL	42 6	200	200	200	200	200	200
ASMW	13 29	90	***	***	***	***	***
ASMW	16 76	65	***	0	84	175	77
ASMW	16 165	200	200	200	200	200	179
AUS	11 288	200	***	***	***	0	15
AUS	12 201	139	***	***	***	***	***
AUS	12 590	65	148	200	131	180	74
AUS	14 902	200	87	***	***	***	***
AUS	22 109	23	38	56	77	***	***
AUS	22 708	***	***	***	***	0	***
AUS	22 823	32	21	28	51	***	***
AUS	24 443	200	200	***	***	***	***
AUS	24 719	***	***	0	***	***	***
AUS	24 777	***	***	0	200	69	55
AUS	24 844	200	115	112	104	***	***
AUS	34 10	***	0	135	68	33	47
AUS	34 20	***	***	***	***	***	0
AUS	44 1	***	***	***	0	200	150
AUS	44 2	200	140	103	122	119	123
AUS	44 3	0	***	***	***	***	***
BEV	16 71	***	***	***	***	0	0
CAO	16 52	***	***	***	0	200	200
CAO	16 183	***	***	***	0	200	198
CH	12 285	175	200	200	200	200	***
CH	12 863	87	73	20	12	10	14
CH	13 14	45	61	31	30	30	96
CH	16 64	***	0	17	17	29	20
CH	16 69	177	184	200	190	173	148
CH	16 77	200	200	200	200	190	200
CH	16 114	***	0	200	106	74	78
CH	16 140	***	0	0	0	3	0
CH	17 206	200	200	200	200	200	200
CH	17 208	200	194	200	200	200	200
CH	21 179	200	200	200	200	200	200
CH	21 194	0	12	8	7	8	***
CH	24 796	172	78	71	52	***	***
CH	99 1	3	3	4	0	0	0
CH	99 5	17	35	31	***	***	***

TABLE 20 - (CONT.)

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
CSAO	22 646	0	48	***	***	***	***
CSAO	22 647	0	200	15	17	21	23
CSAO	22 648	0	65	137	134	118	89
F	12 158	***	0	21	12	15	22
F	12 195	110	59	70	***	***	***
F	12 347	21	12	11	12	15	17
F	12 439	105	95	53	***	***	***
F	12 475	***	0	144	6	11	14
F	14 134	200	200	200	200	193	200
F	14 500	179	200	184	180	145	113
F	14 594	200	187	200	200	196	***
F	14 753	12	14	19	21	21	19
F	16 106	***	0	***	***	***	***
F	16 187	***	***	0	200	200	145
F	22 120	***	0	200	200	200	200
F	24 407	200	191	171	200	200	200
F	24 645	176	147	***	***	0	200
F	24 712	***	***	***	0	200	179
F	24 842	200	200	200	200	***	***
F	32 405	***	***	***	***	0	200
FTZ	14 312	***	***	0	200	152	163
FTZ	14 895	196	145	94	78	179	200
FTZ	16 130	***	***	***	0	200	200
FTZ	24 217	196	124	77	61	124	200
FTZ	24 482	0	79	94	122	169	191
FTZ	24 656	***	***	0	200	187	200
FTZ	24 674	185	115	75	59	117	200
IEN	12 303	***	***	0	38	68	115
IEN	12 609	72	55	62	95	200	193
IEN	14 893	192	200	200	186	200	198
IEN	16 84	27	38	***	***	0	22
IFAG	16 131	151	150	115	143	140	169
IFAG	16 138	17	22	37	46	***	0
IFAG	16 173	26	19	21	33	43	42
ILOM	11 176	0	0	0	0	0	0
ILOM	14 614	23	***	***	***	0	52
ILOM	14 885	0	200	200	200	156	52
ILOM	24 315	190	123	111	200	194	192
ILOM	34 146	200	200	200	200	184	200
KSRI	22 403	***	***	0	200	43	70
KSRI	22 406	***	0	200	200	40	25
KSRI	22 903	***	0	200	200	200	200
KSRI	24 516	***	0	200	200	158	147
NBS	11 169	97	110	166	109	135	132
NBS	13 61	***	***	0	21	39	19

TABLE 20 - (CONT.)

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
NBS	14 323	200	197	200	196	194	192
NBS	14 324	200	183	191	180	187	200
NBS	14 601	98	156	168	200	200	194
NBS	18 8	25	24	40	200	175	190
NBS	18 113	7	5	4	***	***	***
NBS	22 375	26	***	***	***	***	0
NBS	24 316	200	200	200	200	200	200
NBS	34 165	***	0	***	***	***	***
NBS	40 4	***	***	***	***	0	***
NBS	40 14	***	***	***	***	0	***
NIM	22 615	28	47	26	16	15	16
NIM	22 633	25	38	46	63	72	41
NIM	22 640	45	68	99	76	84	44
NPL	12 418	***	***	***	0	200	79
NPL	12 832	0	121	200	200	200	200
NPL	24 334	***	***	***	0	200	44
NPL	24 813	144	200	198	200	200	192
NPL	34 64	200	200	***	0	200	197
NRC	14 267	189	162	200	200	200	0
NRC	90 5	199	200	200	200	179	200
NRC	90 61	115	141	200	200	183	134
NRC	90 62	200	200	166	200	200	95
NRC	90 63	200	200	200	186	200	200
NRLM	12 363	48	12	12	13	0	0
NRLM	14 906	159	194	***	***	***	***
NRLM	24 632	***	***	0	198	200	200
OAB	16 189	200	***	***	***	***	***
OMH	22 67	40	42	79	59	58	78
OMSF	14 896	178	200	200	200	200	198
OMSF	16 113	10	23	25	36	49	***
OMSF	16 177	200	200	163	130	44	0
OMSF	22 223	55	164	200	126	77	87
ORB	12 205	19	37	67	***	***	***
ORB	12 804	32	30	17	10	11	15
PKNM	16 124	200	71	31	16	18	0
PKNM	16 125	23	0	3	3	0	2
PKNM	16 154	12	15	18	21	25	0
PKNM	24 144	138	133	113	112	113	100
PTB	12 320	200	200	200	200	200	182
PTB	12 462	200	165	199	200	200	200
PTB	14 394	200	200	200	200	200	200
PTB	14 395	200	200	159	***	***	***
PTB	14 867	***	0	200	200	200	200
PTB	16 119	45	40	35	42	45	35
PTB	24 103	200	200	200	200	200	200

TABLE 20 - (CONT.)

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
PTB	34 379	***	***	0	194	200	200
PTB	92 1	200	200	200	200	200	200
RGO	12 348	157	64	51	26	39	63
RGO	12 484	36	38	35	71	200	167
RGO	14 202	***	***	***	0	72	89
RGO	14 560	20	53	200	200	200	200
RGO	14 868	200	200	200	200	200	200
RGO	20 133	14	9	8	9	13	47
RRL	12 189	0	31	66	109	154	200
RRL	12 290	35	44	60	120	149	146
RRL	14 764	200	***	***	***	***	0
RRL	14 865	107	110	145	181	200	200
RRL	14 932	36	47	64	131	137	144
RRL	22 725	0	0	5	7	9	12
RRL	22 729	200	***	***	***	***	***
RRL	24 729	***	***	0	115	95	65
RRL	34 456	***	***	***	***	***	0
RRL	45 3	***	***	0	0	0	0
SO	12 67	0	7	0	9	16	0
SO	12 997	179	103	103	141	175	159
SO	16 180	200	200	200	200	200	200
STA	14 900	157	151	158	103	42	24
STA	16 137	52	29	39	57	80	94
STA	24 376	140	122	82	166	200	196
TAO	12 204	8	0	***	***	0	13
TAO	14 390	56	***	***	***	***	0
TAO	24 75	5	***	***	0	200	200
TAO	24 498	89	71	67	85	183	200
TL	12 115	14	71	28	0	0	1
TL	12 477	11	0	8	8	11	0
TL	22 145	70	109	0	5	4	0
TL	22 276	***	0	10	9	12	***
TP	12 335	***	***	***	***	0	147
TUG	12 524	36	30	40	200	200	183
TUG	24 654	200	***	0	200	200	200
USNO	12 58	***	0	200	11	8	9
USNO	12 60	***	0	0	0	0	0
USNO	12 120	***	***	0	6	13	14
USNO	12 346	***	***	0	***	***	***
USNO	12 532	***	0	***	0	***	***
USNO	12 583	***	***	0	179	101	0
USNO	12 591	***	***	0	29	0	2
USNO	12 752	140	163	144	76	57	50
USNO	12 778	200	200	200	200	200	200
USNO	12 873	***	***	0	200	200	156

TABLE 20 - (CONT.)

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
USNO	14 345	167	107	125	97	***	***
USNO	14 571	***	0	200	200	200	200
USNO	14 573	***	***	***	***	0	200
USNO	14 653	***	***	***	***	0	200
USNO	14 656	200	200	200	200	200	200
USNO	14 660	102	75	74	70	***	***
USNO	14 787	***	***	0	200	200	72
USNO	14 834	151	190	200	200	100	95
USNO	14 837	***	***	***	***	0	200
USNO	14 862	200	200	195	123	78	72
USNO	14 871	96	191	200	200	200	190
USNO	14 875	200	200	200	200	200	200
USNO	18 107	***	***	***	0	0	0
USNO	18 130	***	***	***	0	***	***
USNO	18 133	***	***	***	***	***	0
USNO	18 159	***	***	***	***	***	0
USNO	22 710	***	0	200	200	200	***
USNO	24 25	28	24	0	***	***	***
USNO	24 28	91	56	58	96	***	***
USNO	24 35	200	200	200	200	200	132
USNO	24 94	105	125	200	80	56	32
USNO	24 117	183	200	179	144	126	200
USNO	24 300	200	172	186	200	200	200
USNO	24 301	200	200	200	200	200	200
USNO	24 305	***	0	20	***	***	***
USNO	24 343	200	200	182	200	200	200
USNO	24 362	***	0	0	3	5	7
USNO	24 423	200	200	200	200	200	200
USNO	24 449	***	0	***	***	***	***
USNO	24 450	***	***	0	10	***	***
USNO	24 452	200	200	129	63	44	48
USNO	24 586	200	200	199	200	200	200
USNO	24 605	200	191	200	158	114	126
USNO	24 653	193	200	107	95	190	178
USNO	24 688	200	200	192	200	***	***
USNO	24 809	***	***	***	***	0	***
USNO	24 846	***	***	0	200	186	200
USNO	24 947	***	0	0	0	***	***
USNO	34 81	***	0	***	***	***	***
USNO	34 98	200	200	200	200	200	200
USNO	34 100	200	193	200	200	200	200
USNO	34 157	196	200	200	200	200	200
USNO	34 208	***	***	***	***	***	0
USNO	34 257	200	***	***	***	***	***
USNO	34 268	53	50	61	81	74	***

TABLE 20 - (CONT.)

LAB.	CLOCK	46119	46179	46239	46299	46369	46429
USNO	34 277	***	0	193	194	200	200
USNO	34 278	14	17	***	***	***	***
USNO	34 285	17	11	19	26	35	102
USNO	34 312	***	***	0	26	11	***
USNO	34 313	46	95	148	***	***	***
USNO	34 314	200	200	200	181	200	200
USNO	34 315	0	39	88	142	200	170
USNO	34 481	***	***	***	***	***	0
USNO	34 482	***	***	***	***	***	0
USNO	34 484	***	***	***	***	***	0
USNO	34 485	***	***	***	***	***	0
USNO	34 486	***	***	***	***	***	0
USNO	34 487	***	***	***	***	***	0
USNO	34 489	***	***	***	***	***	0
USNO	40 18	0	***	***	***	0	***
USNO	40 19	0	***	***	***	0	***
USNO	43 8	0	0	0	0	0	0
VSL	14 503	161	200	139	178	144	131
VSL	22 34	200	200	***	***	***	***
VSL	22 489	6	0	1	1	1	2
VSL	24 34	***	***	***	0	105	120
VSL	24 190	***	***	***	***	0	200
YUZM	22 189	48	53	29	20	27	28
ZIPE	12 979	***	***	0	200	75	75

THE CLOCKS ARE DESIGNATED BY THEIR MODEL (2 DIGITS) AND SERIAL NO.
THE CODES FOR THE MODELS ARE

11 HEWLETT-PACKARD 5060A
12 OR 22 HEWLETT-PACKARD 5061A (22 001 EQUIVALENT TO 12 1001)
13 OR 23 EBAUCHES , OSCILLATOM B5000 (23 001 EQUIVALENT TO 13 1001)
14 OR 24 HEWLETT-PACKARD 5061A OPT.4 (24 001 EQUIVALENT TO 14 1001)
OR 34 HEWLETT-PACKARD 5061A OPT.4 (34 001 EQUIVALENT TO 14 2001)
16 OR 26 OSCILLOQUARTZ 3200 (26 001 EQUIVALENT TO 16 1001)
17 OR 27 OSCILLOQUARTZ 3000 (27 001 EQUIVALENT TO 17 1001)
18 OR 28 FREQ. AND TIME SYSTEMS INC. 4000
19 ROHDE AND SCHWARZ XSC
20 FREQ. AND TIME SYSTEMS INC. 5000
25 HEWLETT-PACKARD 5062C (ADD 1000 TO THE SERIAL NO.)
40 TO 49 HYDROGEN MASERS
90 LABORATORY CS STANDARD NRC 91 LABORATORY CS STANDARD NBS
92 LABORATORY CS STANDARD PTB 99 PROTOTYPE CS

TABLE 21 - MEASUREMENTS OF THE EAL AND TAI FREQUENCY

GRAVITATIONAL FREQUENCY CORRECTIONS ARE APPLIED . THE FREQUENCIES ARE EXPRESSED AT SEA LEVEL .

f(EAL) - f(STANDARD) IN 10**-13

INTERVAL MJD	CENTRAL DATE	NBS NBS6	NRC CsV	NRC CsVIA	NRC CsVIB	NRC CsVIC	PTB CS1	RRL CS1
45309-45389	1983 JAN15		7.86	6.36	6.26	6.10	8.62	
45389-45469	1983 APR 5		8.32	7.37	8.55	8.11	8.52	
45469-45549	1983 JUN24		7.15	6.35	8.62	6.96	8.06	
45489-45569	1983 JUL14	7.34						
45549-45629	1983 SEP12		7.44	6.94	7.17	6.62	7.98	
45629-45699	1983 NOV25		7.54	6.97	7.05	6.95	8.10	
45699-45759	1984 JAN30		8.58	8.50	8.36	8.23	8.59	
45759-45819	1984 MAR30		8.49	8.43	8.21	8.26	8.65	
45789-45849	1984 APR29							6.45
45819-45879	1984 MAY29		-	5.78	7.41	7.38	8.43	
45879-45939	1984 JUL28		7.18	7.30	6.84	6.57	7.91	
45889-45949	1984 AUG17	7.24						
45939-45999	1984 SEP26		7.04	7.45	8.08	6.38	8.19	
45959-46019	1984 OCT16	7.70						
45999-46059	1984 NOV25		6.40	7.07	8.20	6.95	8.43	7.53
46059-46119	1985 JAN24		7.19	8.81	8.45	7.72	8.66	
46079-46139	1985 FEB13							7.54
46119-46179	1985 MAR25		7.51	7.52	8.05	7.82	8.19	
46179-46239	1985 MAY24		8.27	8.03	6.52	8.17	8.36	
46239-46299	1985 JUL23		8.47	8.04	7.03	7.08	8.17	
46299-46369	1985 SEP26		8.58	6.86	7.55	7.03	7.93	
46369-46429	1985 NOV30		8.47	9.22	9.90	6.74	8.57	

TABLE 21 - (CONT.)

f(TAI) - f(STANDARD) IN 10**-13

INTERVAL MJD	CENTRAL DATE	NBS NBS6	NRC CsV	NRC CsVIA	NRC CsVIB	NRC CsVIC	PTB CS1	RRL CS1
45309-45389	1983 JAN15		0.06	-1.44	-1.54	-1.70	0.82	
45389-45469	1983 APR 5		0.52	-0.43	0.75	0.31	0.72	
45469-45549	1983 JUN24		-0.65	-1.45	0.82	-0.84	0.26	
45489-45569	1983 JUL14	-0.46						
45549-45629	1983 SEP12		-0.36	-0.86	-0.63	-1.18	0.18	
45629-45699	1983 NOV25		-0.26	-0.83	-0.75	-0.85	0.30	
45699-45759	1984 JAN30		0.78	0.70	0.56	0.43	0.79	
45759-45819	1984 MAR30		0.49	0.43	0.21	0.26	0.65	
45789-45849	1984 APR29							-1.55
45819-45879	1984 MAY29		-	-2.22	-0.59	-0.62	0.43	
45879-45939	1984 JUL28		-0.82	-0.70	-1.16	-1.43	-0.09	
45889-45949	1984 AUG17	-0.76						
45939-45999	1984 SEP26		-0.96	-0.55	0.08	-1.62	0.19	
45959-46019	1984 OCT16	-0.30						
45999-46059	1984 NOV25		-1.60	-0.93	0.20	-1.05	0.43	-0.47
46059-46119	1985 JAN24		-0.81	0.81	0.45	-0.28	0.66	
46079-46139	1985 FEB13							-0.46
46119-46179	1985 MAR25		-0.49	-0.48	0.05	-0.18	0.19	
46179-46239	1985 MAY24		0.27	0.03	-1.48	0.18	0.36	
46239-46299	1985 JUL23		0.47	0.04	-0.97	-0.92	0.17	
46299-46369	1985 SEP26		0.58	-1.14	-0.45	-0.97	-0.07	
46369-46429	1985 NOV30		0.47	1.22	1.90	-1.26	0.57	

TABLE 22 - MEAN DURATION OF THE TAI SCALE INTERVAL IN SI SECOND AT SEA LEVEL .

FOR THE MONTHS	MEAN DURATION	UNCERTAINTY (one sigma)
1980 JAN - FEB	1 - 0.3*10**-13	0.5*10**-13
1980 MAR - APR	- 0.5	0.5
1980 MAY - JUN	- 0.1	0.5
1980 JUL - AUG	+ 0.3	0.5
1980 SEP - OCT	+ 0.5	0.5
1980 NOV - DEC	+ 0.1	0.5
1981 JAN - FEB	1 - 0.3*10**-13	0.5*10**-13
1981 MAR - APR	- 0.4	0.5
1981 MAY - JUN	+ 0.0	0.5
1981 JUL - AUG	+ 0.6	0.5
1981 SEP - OCT	+ 0.8	0.5
1981 NOV - DEC	+ 0.5	0.5
1982 JAN - FEB	1 + 0.1*10**-13	0.5*10**-13
1982 MAR - APR	+ 0.0	0.5
1982 MAY - JUN	+ 0.2	0.5
1982 JUL - AUG	+ 0.5	0.5
1982 SEP - OCT	+ 0.5	0.5
1982 NOV - DEC	+ 0.3	0.5
1983 JAN - FEB	1 + 0.3*10**-13	0.5*10**-13
1983 MAR - APR	+ 0.1	0.5
1983 MAY - JUN	+ 0.1	0.5
1983 JUL - AUG	+ 0.3	0.5
1983 SEP - OCT	+ 0.3	0.5
1983 NOV - DEC	+ 0.2	0.5
1984 JAN - FEB	1 - 0.1*10**-13	0.5*10**-13
1984 MAR - APR	- 0.1	0.5
1984 MAY - JUN	+ 0.1	0.5
1984 JUL - AUG	+ 0.2	0.5
1984 SEP - OCT	+ 0.2	0.5
1984 NOV - DEC	+ 0.0	0.5
1985 JAN - FEB	1 - 0.0*10**-13	0.5*10**-13
1985 MAR - APR	- 0.0	0.5
1985 MAY - JUN	- 0.0	0.5
1985 JUL - AUG	- 0.1	0.5
1985 SEP - OCT	- 0.1	0.5
1985 NOV - DEC	- 0.3	0.5

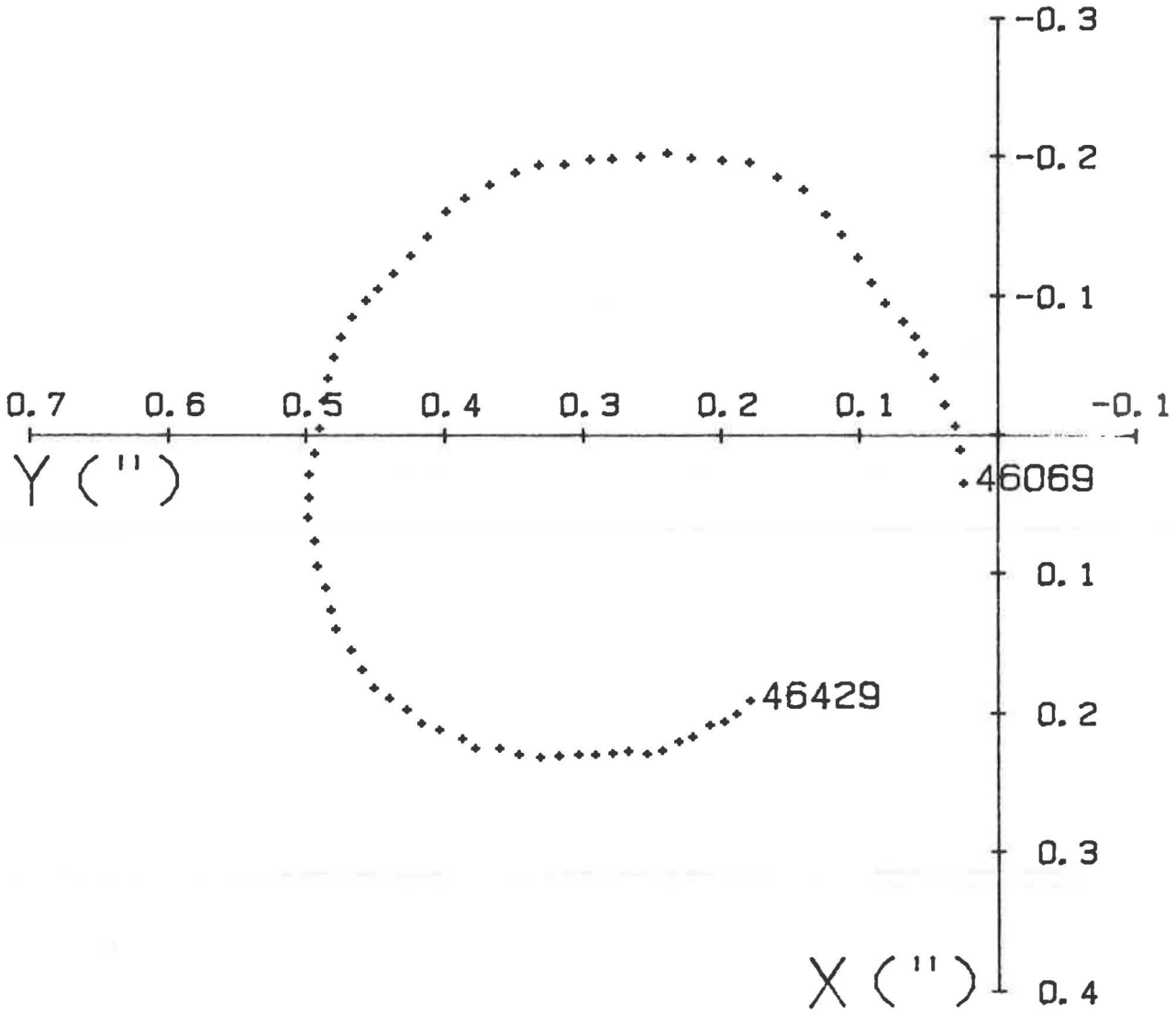

Figure 1 - Path of the pole from 1985 Jan. 4 to Dec. 30.
(MJD 46069 - 46429). Raw values of Table 6.

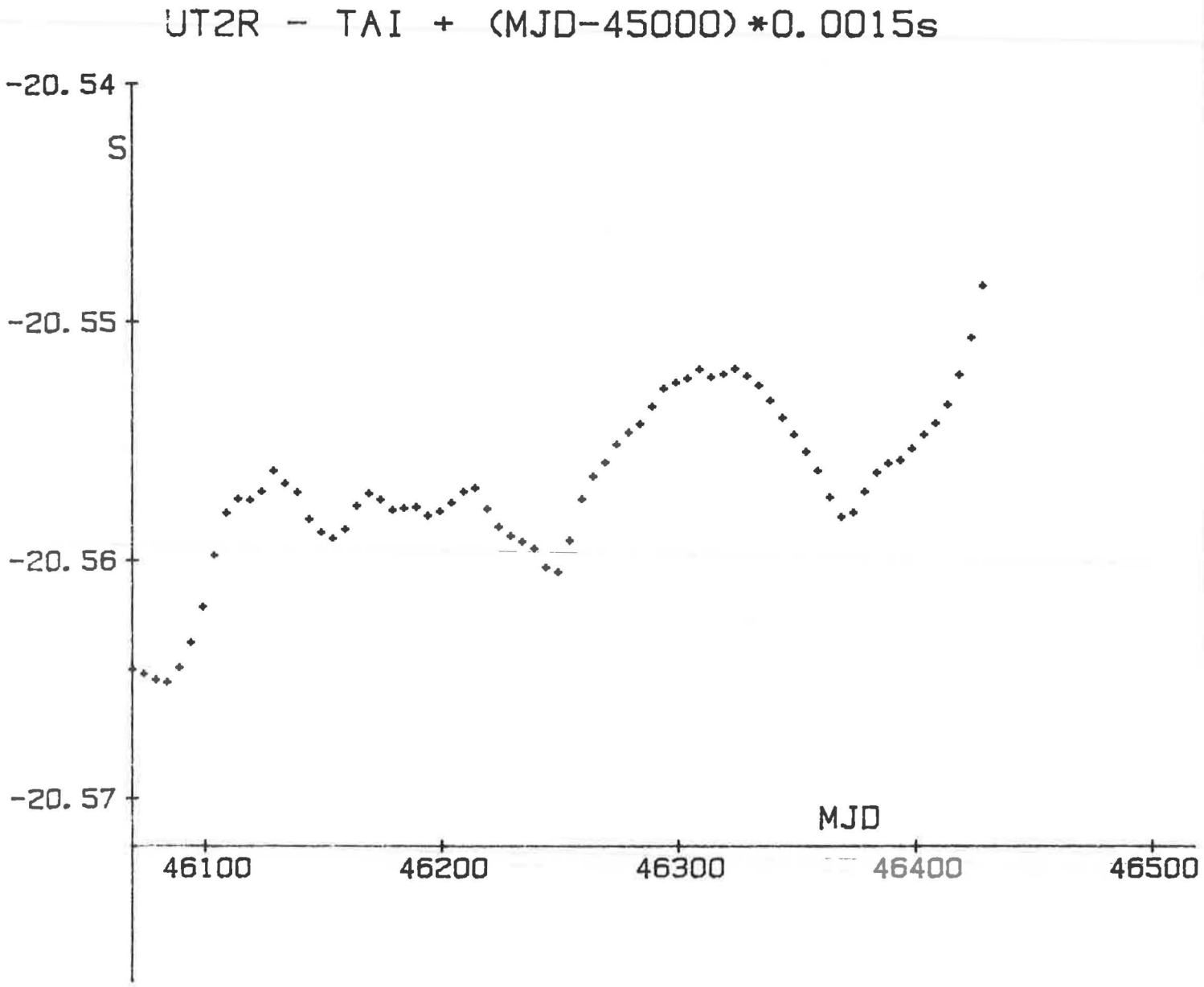

Figure 2 - UT2R-TAI from 1985 Jan. 4 to Dec. 30.
(MJD 46069 - 46429). Raw values of Table 6.

The following conventional formula is used :

UT2-UT1 = 0.0220 $\sin 2\pi t$ - 0.0120 $\cos 2\pi t$ - 0.0060 $\sin 4\pi t$ + 0.0070 $\cos 4\pi t$, the unit being the second and t being the date in besselian years. UT2R is corrected for the effect of zonal tides for periods up to 35 days.

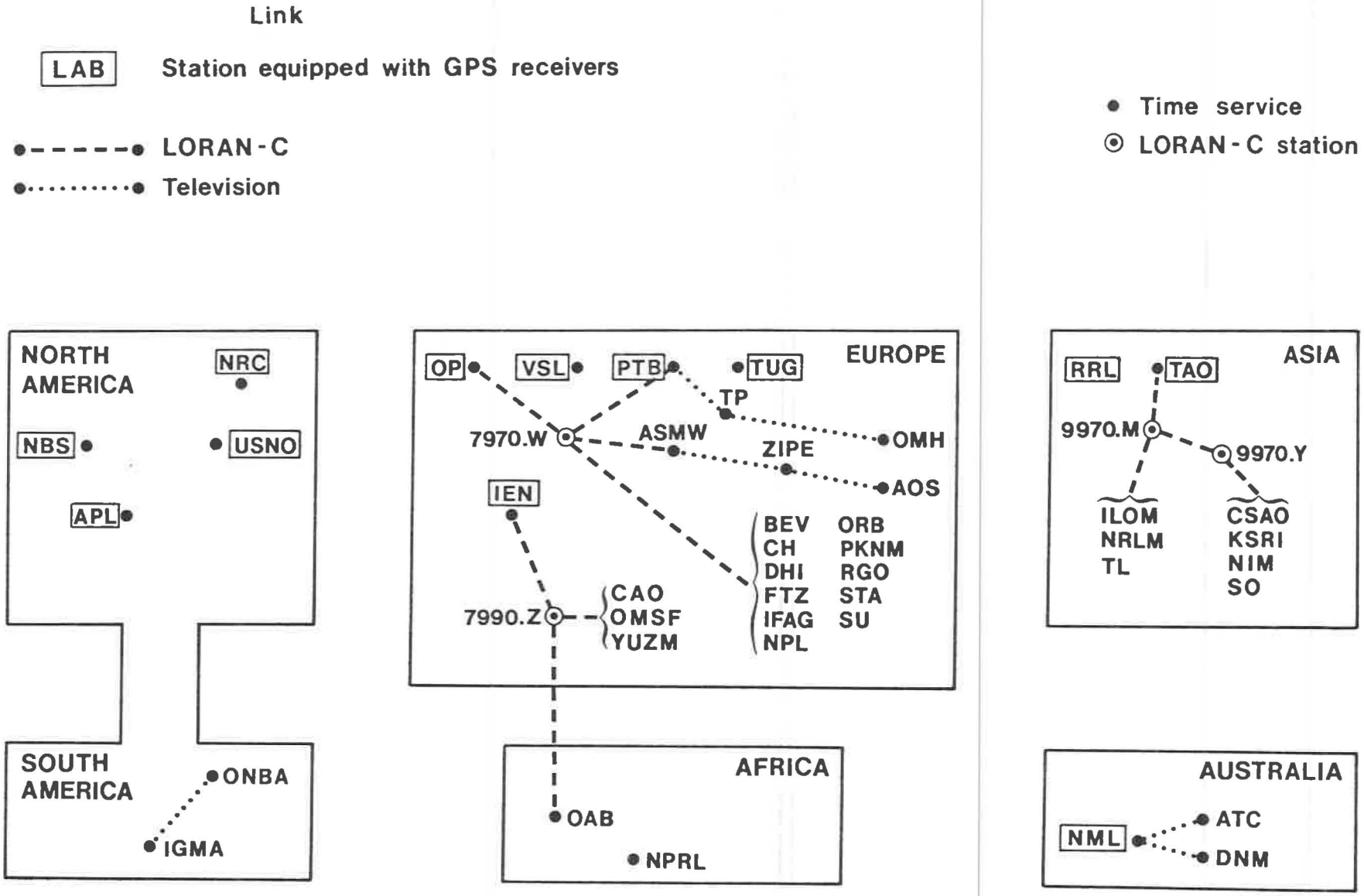

Fig. 3 - Time links used by the BIH (31 Dec. 1985)

The links GPS-7970W via OP and PTB are averaged.
In Australia, GPS receptions at Tidbinbilla Deep Space Communications Center and at DNM have been also used during 1985. For ONBA, IGMA and NPRL, VLF and clock transportations provide the link with other laboratories.

PART C

TIME SIGNAL (1986)

The time signal emissions reported thereafter follow the UTC system, in accordance with the Recommandations 460-3 of the International Radio Consultative Committee (CCIR), unless otherwise stated.

Their maximum departure from the Universal Time UT1 is thus 0.9 second.

AUTHORITIES RESPONSIBLE FOR THE TIME SIGNAL EMISSIONS

Signal	Authority
ATA	National Physical Laboratory Hillside Road New Delhi - 110012, India
BPM	Shaanxi Astronomical Observatory Academica Sinica P.O. Box 18 - Lintong Shaanxi, China
BSF	Telecommunication Laboratories Directorate General of Telecommunications Ministry of Communications P.O. Box 71 - Chung-Li 32099 Taiwan, R.O.C.
CHU	National Research Council, Electrical and Time Standards Section Physics Division (M-36) Ottawa K1A OR6, Ontario, Canada Attn : Dr. J. Vanier
DCF77	Physikalisch-Technische Bundesanstalt, Laboratorium 4.41 Bundesallee 100 D33 Braunschweig Federal Republic of Germany
DGI, Y3S	Amt für Standardisierung, Messwesen und Warenprüfung Fachabteilung Elektrizität und Magnetismus Fachgebeit Zeit und Frequenz Fürstenwalder Damm 388 DDR 1162 Berlin
EBC	Instituto y Observatorio de Marina San Fernando Cadiz, Spain

Signal	Authority
GBR	National Physical Laboratory Electrical Science Division Teddington, Middlesex TW11 OLW, United Kingdom
HBG	Service horaire HBG Observatoire Cantonal CH - 2000 Neuchâtel, Suisse
HLA	Time and Electromagnetics Standards Laboratory Korea Standards Research Institute P. O. Box 3, Taedok Science Town Taejon, Ch'ungnam 300-31 Republic of Korea
IAM	Istituto Superiore delle Poste e delle Telecomunicazioni Ufficio 8°, Rep.2° - Viale Europa 190 00144 - Roma, Italy
IBF	Istituto Elettrotecnico Nazionale Galileo Ferraris Strada delle Cacce, 91 10135 - Torino, Italy
JJY, JG2AS	Standards and Measurements Division The Radio Research Laboratory Ministry of Posts and Telecommunications Koganei, Tokyo 184, Japan
LOL	Director Observatorio Naval Av. Espana 2099 1107 - Buenos-Aires, Republica Argentina
MSF	National Physical Laboratory Electrical Science Division Teddington, Middlesex TW11 OLW United Kingdom

Signal	Authority
OLB5, OMA	1/ Time information : Astronomický Ústav ČSAV, Budecksá 6 120 23 Praha 2, Vinohrady, Czechoslovakia. TELEX : 122 486 2/ Standard frequency information : Ústav radiotechniky a electroniky ČSAV, Lumumbova 1, 182 51 Praha 8, Kobylisy, Czechoslovakia. TELEX : 122 646
PPE, PPR	Serviço da hora Observatorio Nacional (CNPq) Rua General Bruce, 586 20921 Rio de Janeiro - RJ, Brasil
RBU, RCH, RID, **RTA, RTZ, RWM,** **UNW3, UPD8, UQC3,** **USB2, UTR3**	Comité d'Etat des Normes Conseil des Ministres de l'URSS Moscou 117049, URSS, Leninski prosp., 9
TDF	Centre National d'Etudes des Télécommunications PAB - STC - Etalons de fréquence et de temps 196 rue de Paris - 92220 Bagneux, France
VNG	Telecom Australia Research Laboratories Reference Measurements Section Box 249 - Clayton, Victoria 3168, Australia
WWV, WWVH **WWVB**	Time and Frequency Services Group Time and Frequency Division, 524.00 325 Broadway National Bureau of Standards Boulder, Colorado 80303, U.S.A.
YVTO	Direccion de Hidrografia y Navegacion Observatori Cagigal Apartado Postal No 6745 Caracas, Venezuela
Y3S	See DGI
ZUO	National Physical Research Laboratory P.O. Box 395 - Pretoria, South Africa

TIME - SIGNALS EMITTED IN THE UTC SYSTEM

Station	Location Latitude Longitude	Frequency (kHz)	Schedule (UTC)	Form of time signals
ATA	Greater Kailash New Delhi India 28° 34'N 77° 19'E	5 000 10 000 15 000	12 h 30 m to 3 h 30 m continuous 3 h 30 m to 12 h 30 m	Second pulses of 5 cycles of a 1 kHz modulation. Minute pulses of 100 ms duration. (the time signals are advanced by 50 ms on UTC).
BPM	Pucheng China 35° 0'N 139° 31'E	2 500 5 000 10 000 15 000	0 h to 10 h 9 h to 1 h continuous 1 h to 9 h	UTC time signals (the signals are emitted in advance on UTC by 20 ms). Second pulses of 10 ms of 1 kHz modulation. Minute pulses of 300 ms of 1 kHz modulation. From minutes 0 to 10, 15 to 25, 30 to 40, 45 to 55. UT1 time signals are emitted from minutes 25 to 29, 55 to 59.
BSF	Chung-Li Taiwan ROC 24° 57'N 121° 9'E	5 000 15 000	continuous except interruption between minutes 35 and 40	(a) From min. 5 to 10, 15 to 20, 25 to 30, 45 to 50, 55 to 60, second pulses of 5 ms duration without 1 kHz modulation. (b) From min. 0 to 5, 10 to 15, ..., 50 to 55, second pulses of 5 ms duration with 1 kHz modulation. The 1 kHz modulation is interrupted 40 ms before and after the pulses. (c) Minute pulses are extended to 300 ms. (d) DUT1, CCIR code by lengthening.
CHU	Ottawa Canada 45° 18'N 75° 45'W	3 300 7 335 14 670	continuous	Second pulses of 300 cycles of a 1 kHz modulation, with 29th and 51st to 59th pulses of each minute omitted. Minute pulses are 0.5 s long. Hour pulses are 1.0 s long, with the following 1st to 10th pulses omitted. A bilingual (Fr. Eng.) announcement of time is made each minute following the 50th second pulse. FSK time code after 10 cycles on the 31st to 39th seconds. Broadcoast is single sideband ; upper sideband with carrier reinsert. DUT1 : CCIR code by split pulses.
DCF77	Mainflingen Germany, F.R. 50° 1'N 9° 0'E	77.5	continuous	At the beginning of each second (except the 59th second) the carrier amplitude is reduced to about 25 % for a duration of 0.1 s or 0.2 s respectively. Coded transmission of year, month, day, hour, minute and day of the week in a BCD code from second marker No 20 to No 58 (the second marker durations of 0.1 s or 0.2 s correspond to a binary 0 or a binary 1 respectively). Zonal time code by the second markers No 16 to 18. Second marker No 15 with a duration of 0.2 s indicates that the reserve antenna is in use. No transmission of DUT1.
DGI	Oranienburg Germ.Dem.Rep. 52° 48'N 13° 24'E	182	5 h 59 m 30 s to 6 h 00, 11 h 59 m 30 s to 12 h 00, 17 h 59 m 30 s to 18 h 00	A2 type second pulses of 0.1 s duration for seconds 30-40, 45-50, 55-60. The last pulse is prolonged. (one hour earlier in summer time)
EBC	San Fernando Spain 36° 28'N 6° 12'W	12 008 6 840	10 h 00 m to 10 h 25 m 10 h 30 m to 10 h 55 m	Second pulses of 0.1 s duration of a 1 kHz modulation. Minute pulses of 0.5 s duration of 1 250 Hz modulation. DUT1, CCIR code, double pulse. Type A3H.
GBR (1)	Rugby United Kingdom 52° 22'N 1° 11'W	16	2 h 55 m to 3 h 00 m 8 h 55 m to 9 h 00 m 14 h 55 m to 15 h 00 m 20 h 55 m to 21 h 00 m	A1 type second pulses lasting 100 ms, lengthened to 500 ms at the minute. The reference point is the start of carrier rise. Uninterrupted carrier is transmitted for 24 s from 54 m 30 s and from 0 m 6 s. DUT1 : CCIR code by double pulses.
HBG	Prangins Switzerland 46° 24'N 6° 15'E	75	continuous	Interruption of the carrier at the beginning of each second, during 100 ms. The minutes are identified by a double pulse, the hours by a triple pulse. No transmission of DUT1. Time code and other coded information.

Notes : see p. C-10

Station	Location Latitude Longitude	Frequency (kHz)	Schedule (UTC)	Form of time signals
HLA	Taedok Science Town Republic of Korea 36° 23'N 127° 22'E	5 000	1 h to 8 h on Monday to Friday	Pulses of 9 cycles of 1800 Hz modulation. 59th and 29th second pulses omitted. Hour identified by 0.5 second long 1500 Hz tone. Beginning of each minute identified by 0.5 second long 1800 Hz tone. Voice announcement of hours and minutes each minute following 52nd second pulse. BCD time code given on 100 Hz subcarrier. DUT1 : CCIR code by double pulse.
IAM	Rome Italy 41° 47'N 12° 27'E	5 000	7 h 30 m to 8 h 30 m 10 h 30 m to 11 h 30 m except Sat. afternoon, Sund., and national holidays. Advanced by 1 hour in summer.	Second pulses of 5 cycles of 1 kHz modulation. Minute pulses of 20 cycles. Voice announcements every 15 m beginning at 0 h 0 m. Time announcement by Morse code beginning at 0 h 5 m. DUT1 : CCIR code by double pulse.
IBF	Torino Italy 45° 2'N 7° 42'E	5 000	During 15 m preceding 7 h, 9 h, 10 h, 11 h, 12 h, 13 h, 14 h, 15h, 16 h, 17 h, 18 h. Advanced by 1 hour in summer.	Second pulses of 5 cycles of 1 kHz modulation. These pulses are repeated 7 times at the minute. Voice announcements at the beginning and end of each emission. Time announcement (C.E.T.) by Morse code every ten minutes beginning at 0 h 0 m. DUT1 : CCIR code by double pulse.
JG2AS	Sanwa Ibaraki Japan 36° 11'N 139° 51'E	40	continuous, except interruptions during communications.	A1 type second pulses of 0.5 s duration. Second 59 is of 0.1 s. No DUT1 code.
JJY	Sanwa Ibaraki Japan 36° 11'N 139° 51'E	2 500 5 000 8 000 10 000 15 000	continuous, except interruption between minutes 35 and 39.	Second pulses of 8 cycles of 1 600 Hz modulation Minute pulses are preceded by a 600 Hz modulation. DUT1 : CCIR code by lengthening.
LOL1 (2)	Buenos-Aires Argentina 34° 37'S 58° 21'W	5 000 10 000 15 000	11 h to 12 h, 14 h to 15 h, 17 h to 18 h, 20 h to 21 h, 23 h to 24 h	Second pulses of 5 cycles of 1 000 Hz modulation. Second 59 is omitted. Announcement of hours and minutes every 5 minutes, followed by 3 m of 1 000 Hz or 440 Hz modulation. DUT1 : CCIR code by lengthening.
LOL2 LOL3 (2)	Buenos-Aires Argentina 34° 37'S 58° 21'W	4 856 8 030 17 180	1 h, 13 h, 21 h	A1 second pulses during the 5 minutes preceding the indicated times. Second 29 is omitted. Minute pulses are prolonged. DUT1 : CCIR code by double pulse.
MSF	Rugby United Kingdom 52° 22'N 1° 11'W	60	continuous except for an interruption for maintenance from 10 h 0 m to 14 h 0 m on the first Tuesday in each month.	Interruptions of the carrier of 100 ms for the second pulses of 500 ms for the minute pulses. The signal is given by the beginning of the interruption. BCD NRZ code, 100 bits/s (month, day of month, hour, minute), during minute interruption. BCD PWM code, 1 bit/s (year, month, day of month, day of week, hour, minute) from seconds 17 to 59 in each minute. DUT1 : CCIR code by double pulse.
MSF	Rugby United Kingdom 52° 22'N 1° 11'W	2 500 5 000 10 000	between minutes 0 and 5, 10 and 15, 20 and 25, 30 and 35, 40 and 45, 50 and 55.	second pulses of 5 cycles of 1 kHz modulation. Minute pulses are prolonged. DUT1 : CCIR code by double pulse.
OLB5	Poděbrady Czechoslovakia 50° 9'N 15° 9'E	3 170	continuous except from 6 h to 12 h on the first Wednesday of every month	A1 type, second pulses. No transmission of DUT1.
OMA (3)	Liblice Czechoslovakia 50° 4'N 14° 53'E	50	continuous (from 6 h to 12 h on the first Wednesday in each month, emitted from Poděbrady with reduced power)	Interruption of the carrier of 100 ms at the beginning of every second, of 500 ms at the beginning of every minute. The precise time is given by the beginning of the interruption. Phase coded announcement of date, UT and local civil time. No DUT1 code.

Notes : see p. c-10

Station	Location Latitude Latitude	Frequency (kHz)	Schedule (UTC)	Form of time signals
OMA	Liblice Czechoslovakia 50° 4'N 14° 53'E	2 500	continuous except from 6 h to 12 h on the first Wednesday of every month	Pulses of 100 cycles of 1 kHz modulation (prolonged for the minutes) No DUT1 code.
PPE (2)	Rio-de-Janeiro Brasil 22° 54'S 43° 13'W	8 721	0 h 30 m, 11 h 30 m, 13 h 30 m, 19 h 30 m, 20 h 30 m, 23 h 30 m	Second ticks, of A1 type, during the five minutes preceding the indicated times. The minute ticks are longer. DUT1 : CCIR code by double pulse.
PPR	Rio-de-Janeiro Brasil 22° 59'S 43° 11'W	435 4 244 8 634 13 105 17 194.4 22 603	1 h 30 m, 14 h 30 m, 21 h 30 m	Second ticks, of A1 type, during the five minutes preceding the indicated times. The minute ticks are longer.
RBU (4)	Moscow USSR 55° 48'N 38° 18'E	66 2/3	continuous	DXXXW type signals. The time of day in hours, minutes and seconds is transmitted in BCD code
RCH (4)	Tashkent USSR 41° 19'N 69° 15'E	2 500 5 000 10 000	between minutes 0 and 10, 30 and 40 0 h to 3 h 40 m 5 h to 23 h 40 m 0 h to 3 h 40 m 14 h to 23 h 40 m 5 h to 13 h 10 m	A1X type second pulses. The pulses at the beginning of the minute are prolonged to 0.5 s.
RID (4)	Irkutsk USSR 52° 26'N 104° 2'E	5 004 10 004 15 004	The station simultaneously operates on three frequencies between minutes 20 and 30, 50 and 60	A1X type second pulses. The pulses at the beginning of the minute are prolonged to 0.5 s.
RTA (4)	Novosibirsk USSR 55° 4'N 82° 58'E	10 000 15 000	between minutes 0 and 10, 30 and 40 0 h to 5 h 10 m 14 h to 23 h 40 m 6 h 30 m to 13 h 10 m	A1X type second pulses. The pulses at the beginning of the minute are prolonged to 0.5 s.
RWM (4)	Moscow USSR 55° 48'N 38° 18'E	4 996 9 996 14 996	The station simultaneously operates on three frequencies between 10 and 20, 40 and 50	A1X type second pulses. The pulses at the beginning of the minute are prolonged to 0.5 s.
RTZ (4)	Irkutsk USSR 52° 26'N 104° 2'E	50	between minutes 0 and 5 0 h to 20 h 05 m 22 h to 23 h 05 m in winter 0 h to 19 h 05 m 21 h to 23 h 05 m in summer	A1X type second pulses. The pulses at the beginning of the minute are prolonged to 0.5 s.
TDF	Allouis France 47° 10'N 2° 12'E	162	continuous except every Tuesday from 1 h to 5 h	Phase modulation of the carrier by + and - 1 radian in 0.1 s every second except the 59th second of each minute. This modulation is doubled to indicate binary 1. The numbers of the minute, hour, day of the month, day of the week, month and year are transmitted each minute from the 21st to the 58th second, in accordance with the French legal time scale. In addition a binary 1 at the 17th second indicates that the local time is 2 hours ahead of UTC(summer time), a binary 1 at the 18th second indicates when the local time is one hour ahead of UTC(winter time) ; a binary 1 at the 14th second indicates that the current day is a public holiday (Christmas, 14 July, etc...).

Notes : see p. c-10

Station	Location Latitude Longitude	Frequency (kHz)	Schedule (UT)	Form of time signals
UNW3	Molodechno USSR 54° 26'N 26° 48'E	25	7 h 43 m to 7 h 52 m 19 h 43 m to 20 h 52 m in winter 7 h 43 m to 7 h 52 m 20 h 43 m to 20 h 52 m in summer	A1N type 0.1 second pulses of 0.025 s duration. Second pulses are prolonged to 0.1 s. 10 second pulses are prolonged to 1 s and minute pulses are prolonged to 10 s. No transmission of DUT1 code.
UPD8	Arkhangelsk USSR 64° 24'N 41° 32'E	25	8 h 43 m to 8 h 52 m 11 h 43 m to 11 h 52 m	A1N type 0.1 second pulses of 0.025 s duration. Second pulses are prolonged to 0.1 s. 10 second pulses are prolonged to 1 s and minute pulses are prolonged to 10 s. No transmission of DUT1 code.
UQC3	Chabarovsk USSR 48° 30'N 134° 51'E	25	0 h 43 m to 0 h 52 m 6 h 43 m to 6 h 52 m 17 h 43 m to 17 h 52 m in winter 2 h 43 m to 2 h 52 m 6 h 43 m to 6 h 52 m 18 h 43 m to 18 h 52 m in summer	A1N type 0.1 second pulses of 0.025 s duration. Second pulses are prolonged to 0.1 s. 10 second pulses are prolonged to 1 s and minute pulses are prolonged to 10 s. No transmission of DUT1 code.
USB2	Frunze USSR 43° 04'N 73° 39'E	25	4 h 43 m to 4 h 52 m 9 h 43 m to 9 h 52 m 21 h 43 m to 21 h 52 m in winter 4 h 43 m to 4 h 52 m 10 h 43 m to 10 h 52 m 22 h 43 m to 22 h 52 m in summer	A1N type 0.1 second pulses of 0.025 s duration. Second pulses are prolonged to 0.1 s. 10 second pulses are prolonged to 1 s and minute pulses are prolonged to 10 s. No transmission of DUT1 code.
UTR3	Gorki USSR 56° 11'N 43° 58'E	25	5 h 43 m to 5 h 52 m 13 h 43 m to 13 h 52 m 18 h 43 m to 18 h 52 m in winter 7 h 43 m to 7 h 52 m 14 h 43 m to 14 h 52 m 19 h 43 m to 19 h 52 m in summer	A1N type 0.1 second pulses of 0.025 s duration. Second pulses are prolonged to 0.1 s 10 second pulses are prolonged to 1 s and minute pulses are prolonged to 10 s. No transmission of DUT1 code.
VNG	Shepparton Australia 36° 20'S 145° 25'E	4 500 7 500 12 000	9h 45 m to 21 h 30 m continuous except 22 h 30 m to 22 h 45 m 21 h 45 m to 9 h 30 m	Second markers of 50 cycles of 1 kHz modulation ; 5 cycles only for second markers 55 to 58 ; second marker 59 is omitted ; 500 cycles for minute markers. During the 5th, 10th, 15th, etc... minutes, 5 cycles for second markers 50 to 58. Coded transmission of minutes, hours and day of year in a BCD code from second markers 20 to 46 (the second marker durations of 100 or 200 cycles of 1 kHz modulation correspond to a binary 0 or binary 1 respectively).Identification by voice announcement during 15th, 30th, 45th and 60th minutes. DUT1 : CCIR code by 45 cycles of 900 Hz modulation immediately following the normal second markers.
WWV	Fort-Collins USA 40° 41'N 105° 2'W	2 500 5 000 10 000 15 000 20 000	continuous	Pulses of 5 cycles of 1 kHz modulation. 59th and 29th second pulses omitted. Hour is identified by 0.8 second long 1 500 Hz tone. beginning of each minute identified by 0.8 second long 1 000 Hz tone. DUT1 : CCIR code by double pulse. BCD time code given on 100 Hz subcarrier, includes DUT1 correction.
WWVB	Fort-Collins USA 40° 40'N 105° 3'W	60	continuous	Second pulses given by reduction of the amplitude of the carrier. Coded announcement of the date, time, correction to obtain UT1, daylight savings time in effect and leap year. No CCIR code.

Notes : see p. C-10

Station	Location Latitude Longitude	Frequency (kHz)	Schedule (UTC)	Form of time signals
WWVH	Kauai USA 21° 59'N 159° 46'W	2 500 5 000 10 000 15 000	continuous	Pulses of 6 cycles of 1 200 Hz modulation. 59th and 29th second pulses omitted. Hour identified by 0.8 second long 1 500 Hz tone. Beginning of each minute identified by 0.8 second long 1 200 Hz tone. DUT1 : CCIR code by double pulse. BCD time code given on 100 Hz subcarrier, includes DUT1 correction.
YVTO	Caracas Venezuela 10° 30'N 66° 56'W	6 100	continuous	Second pulses of 1 kHz modulation with 0.1 s duration. The minute is identified by a 800 Hz tone and a 0.5 s duration. Second 30 is omitted. Between seconds 40 and 50 of each minute, voice announcement of the identification of the station. Between seconds 52 and 57 of each minute, voice announcement of hour, minute and second.
Y3S (5)	Nauen Germ. Dem. Rep. 52° 39'N 12° 55'E	4 525	continuous except from 8 h 15 m to 9 h 45 m for maintenance if necessary	A1 type second pulses of 0.1 s duration. Minute pulses prolonged to 0.5 s. DUT1 : CCIR code by double pulse.
ZUO	Olifantsfontein South Africa 25° 58'S 28° 14'E	2 500 5 000	18 h to 4 h continuous	Pulses of 5 cycles of 1 kHz modulation. Second 0 is prolonged.
ZUO	Johannesburg South Africa 26° 11'S 28° 4'E	100 000	continuous	Pulses of 5 cycles of 1 kHz modulation. Second 0 is prolonged.

Notes : see p. C-10

NOTES ON THE CHARACTERISTICS OF THE SIGNALS

(1) Changes are to be expected in the modulation system used by GBR outside the time signals. Details are not yet available. Some standard-frequency and phase-tracking receivers may not work without modification. Extended tests may be scheduled at short notice.

(2) No recent information on these time signals.

(3) OMA, 50 kHz

a. The main transmitter in Liblice radiates approx. 7 kW and the stand-by transmitter in Poděbrady approx. 50 W.

b. The details of the time code were published in Nomenclature des stations de radiorepérage et des stations effectuant des services spéciaux - Liste VI, Volume I, édition 7 de U.I.T. in Geneva in July 1980.

(4) The radiostations of the USSR emit UT1 information in accordance with the CCIR code. Furthermore they give an additional information dUT1 specifying more precisely the difference UT1 - UTC down to multiples of 0.02 s, the total value of the correction being DUT1 + dUT1. Positive values of dUT1 are transmitted by the marking of p second markers within the range between the 21th an 24th second so that dUT1 = + 0.02 s x p. Negative values of dUT1 are transmitted by the marking of q second markers within the range between the 31th and the 34th second, so that dUT1 = -0.02 s x q.

(5) DUT1 information in CCIR code.
dUT1 information. This additional information specifies more precisely the difference UT1 - UTC down to multiples of 0.02 s, the total value of the correction being DUT1 + dUT1.

A positive value of dUT1 is indicated by doubling a number (p) of consecutive seconds markers from second marker 21 to second marker (20 + p) inclusive ; (p) being an integer from 1 to 5 inclusive.

$$dUT1 = p.0.02 \text{ s.}$$

A negative value of dUT1 is indicated by doubling a number (q) of consecutive seconds markers following the minute marker from second marker 31 to second marker (30 + q) inclusive ; (q) being an integer from 1 to 5 inclusive.

$$dUT1 = -(q.0.02) \text{ s.}$$

The second marker 28 following the minute marker is doubled as parity bit, if the value of (p) or (q) is an even number or if dUT1 = 0.

Time-information. During the last 20 seconds of each minute in a BCD-Code an information about the value "minute" and "hour" in the UTC time scale of the following minute marker is given.

UNCERTAINTY OF THE CARRIER FREQUENCY

The carriers of the following time signals are standard frequencies.

Station	Relative uncertainty of the carrier frequency in 10^{-}
ATA	0.1
BPM	0.1
BSF	0.2
CHU	0.05
DCF77	0.005
EBC	0.1
GBR	0.02
HBG	0.005
IAM	0.5
IBF	0.1
JJY, JG2 AS	0.1
LOL1	0.1
MSF (60KHz)	0.02
MSF (h.f.)	0.02
OMA (all frequencies)	0.5
RBU, RTZ	0.05
RCH, RID, RTA, RWM	0.5
TDF	0.02
UNW3, UPD8, UQC3, USB2, UTR3	0.05
VNG	0.1
WWV	0.1
WWVB	0.1
WWVH	0.1
ZUO	0.1

TIME OF EMISSION OF THE TIME SIGNALS IN THE UTC SYSTEM, IN 1985

The following deviations of the time of emission of the time signals, from UTC, have been reported to the BIH, or observed.

ATA	UTC-ATA = -0.0500 s
BPM	UTC-BPM = -0.0200 s
OLB5	UTC-OLB5= 0.0008 s