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Practical information about the BIPM Time Section

The Time Section of the BIPM issues two periodic publications. These are the monthly *Circular T* and the *Annual Report of the BIPM Time Section*. The complete text of *Circular T* and most tables of the present Annual Report are available through the INTERNET network (see page 135, just before the yellow pages of this volume, for the log-on procedure).

La Section du temps du BIPM produit deux publications périodiques: la Circulaire T, mensuelle, et le Rapport annuel de la Section du temps du BIPM. Les circulaires T et la plupart des tableaux de ce rapport annuel sont disponibles par utilisation du réseau INTERNET (voir la page 135, juste avant les pages jaunes de ce volume, pour la mise en oeuvre de la communication).

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Leap seconds

Secondes intercalaires

Since 1 January 1988, the maintenance of International Atomic Time, TAI, and of Coordinated Universal Time, UTC (with the exception of decisions and announcements concerning leap seconds of UTC) has been the responsibility of the Bureau International des Poids et Mesures (BIPM) under the authority of the Comité International des Poids et Mesures (CIPM). The dates of leap seconds of UTC are decided and announced by the International Earth Rotation Service (IERS), which is responsible for the determination of Earth rotation parameters and for maintenance of the related celestial and terrestrial reference systems. The adjustments of UTC and the relationship between TAI and UTC are given in Tables 1 and 2 of this volume.

Depuis le 1^er^ janvier 1988, l'établissement du Temps atomique international, TAI, et du Temps universel coordonné, UTC, (à l'exception de l'annonce des secondes intercalaires de l'UTC) est placé sous la responsabilité du Bureau international des poids et mesures (BIPM) et du Comité international des poids et mesures (CIPM). Le choix des dates et l'annonce des secondes intercalaires de l'UTC constituent quelques-unes des missions du Service international de la rotation terrestre (IERS), qui est responsable de la détermination des paramètres de la rotation terrestre et de la conservation des systèmes de référence terrestre et céleste associés. Les ajustements de l'UTC et la relation entre le TAI et l'UTC sont donnés dans les tableaux 1 et 2 de ce volume.

Information on IERS can be obtained from:

Des renseignements sur l'IERS peuvent être obtenus à l'adresse suivante:

Central Bureau of IERS
Dr. Martine FEISSEL
Observatoire de Paris
61, avenue de l'Observatoire
75014 Paris, France

Telephone: + 33 1 40 51 22 26
Telefax: + 33 1 40 51 22 91
Electronic mail: services@obspm.fr
Anonymous ftp on 145.238.2.21 (subdirectory IERS)

Establishment of the International Atomic Time and of the Coordinated Universal Time

1. Data and computation

The International Atomic Time, TAI, and the Coordinated Universal Time, UTC, are obtained from a combination of data from about 230 atomic clocks kept by 65 laboratories spread worldwide and regularly reported to the BIPM by 49 timing centres maintaining a local UTC, UTC(k) (list in Table 3). This data is in the form of time differences [UTC(k) - Clock] taken at 5 day intervals for Modified Julian Dates (MJD) ending in 4 and 9, at 0h UTC, dates designated here as 'standard dates'. The equipment maintained by these 49 timing centres is detailed in Table 4.

An iterative algorithm produces a free atomic time scale, EAL (Echelle atomique libre) defined as a weighted average of clock readings. The processing is done in deferred-time and treats as a whole two month blocks of data [1]. The weighting procedure and clock frequency prediction are chosen so that EAL is optimized for long-term stability. No attempt is made to ensure the conformity of the EAL scale interval with the second of the International System of Units.

2. Accuracy

The duration of the scale interval of EAL is evaluated by comparison with the data of primary caesium standards, after conversion on the rotating geoid. The TAI is then derived from EAL by adding a linear function of time with a convenient slope to ensure the accuracy of the TAI scale interval. The frequency offset between TAI and EAL is changed when necessary to maintain accuracy, the magnitude of the changes being of the same order as the frequency fluctuations resulting from the instability of EAL. This operation is referred to as the 'steering of TAI'. Table 5 gives the normalized frequency offsets between EAL and TAI. Measurements of the duration of the TAI scale interval and estimates of its mean duration are reported in Tables 6 and 7.

3. Availability

The TAI and UTC are made available in the form of time differences with respect to the local time scales UTC(k), which approximate UTC, and TA(k), which are independent local atomic time scales. These differences, [UTC - UTC(k)] and [TAI - TA(k)], reported in Tables 8 and 9, are computed for the standard dates.

The computation of TAI is carried out every two months. A provisional computation, however, is made every odd-numbered month (January, March, etc.) with the data which is available. In the following month, TAI is recomputed for the whole span of two months. The deviations between the provisional one-month and complete two-month solutions are usually smaller than 2 ns. This arrangement allows the monthly publication of results in Circular T. When preparing the Annual Report, the results shown in Circular T are revised taking into account any improvement in the data made known after its publication. The computation is then strictly made for the six two-month intervals of the year.

4. Time links

In 1996, the network of time links used by the BIPM was non-redundant and mainly relied on the observation of GPS satellites in common views. Two international GPS tracking schedules were published by the BIPM:

- GPS schedule No 27, reported in Table 10, implemented on 3 July 1996 (MJD 50267), and
- GPS schedule No 28, reported in Table 11, implemented on 3 January 1997 (MJD 50451).

Laboratories regularly send their GPS observations to the BIPM where they are processed following a unified procedure. Strict common views, synchronized to within 1 s, are used to remove the clock-dither noise brought about by the voluntary degradation, Selective Availability, of GPS signals.

The BIPM organizes the international GPS network which takes the form of local stars within a continent joined by two long-distance links, OP-CRL and OP-NIST, chosen because measured ionospheric delays are routinely available for these three sites. Precise GPS satellites ephemerides, produced by the International Geodynamics Service with a delay of a few days, are also routinely used for these long-distance links. The ultimate precision of one single measurement of [UTC(k_1) - UTC(k_2)], obtained at the BIPM with these procedures, is about 2 ns for short distances and 4 ns for long distances. The BIPM also publishes an evaluation of [UTC - GPS time] which is reported in Table 12 of this volume.

In 1996, the BIPM published two international GLONASS tracking schedules :

- GLONASS schedule No 2, reported in Table 13, implemented on 3 July 1996 (MJD 50267), and
- GLONASS schedule No 3, reported in Table 14, implemented on 3 January 1997 (MJD 50451).

The BIPM regularly publishes an evaluation of [UTC - GLONASS time], given here in Table 15, using current observations of both the GPS and GLONASS satellite systems provided by Prof. P. Daly, University of Leeds, United Kingdom.

5. Time scales established in retrospect

For the most demanding applications, such as millisecond pulsar timing, the BIPM issues atomic time scales in retrospect. These are designated TT(BIPMxx) where 1900 + xx is the year of computation [2]. The successive versions of TT(BIPMxx) are both updates and revisions: they may differ for common dates. These time scales are available on request from the BIPM or via the INTERNET network.

Notes

Tables 16 and 17 of this report give the rates relative to TAI and the weights of the contributing clocks to TAI in 1996.

The yellow pages, at the end of this volume, give indications about time signal emissions.

The report of the BIPM Time Section, for the year October 1995 - September 1996, to be published in 'Comité International des Poids et Mesures, Report of the 85th Meeting, 1996, Tome 64, BIPM Publications', is reproduced after the yellow pages. All the publications mentioned in this report are available on request from the BIPM.

References

[1] C. Thomas and J. Azoubib, TAI computation : study of an alternative choice for implementing an upper limit of clock weights, *Metrologia*, 1996, **33**, 227-240.

[2] B. Guinot, Atomic time scales for pulsar studies and other demanding applications, *Astron. Astrophys.*, 1988, **192**, 370-373.

Etablissement du Temps atomique international et du Temps universel coordonné

1. Données et mode de calcul

Le Temps atomique international (TAI) et le Temps universel coordonné (UTC) sont obtenus par une combinaison de données provenant d'environ 230 horloges atomiques conservées par 65 laboratoires répartis dans le monde entier, et fournies régulièrement au BIPM par 49 laboratoires de temps qui maintiennent un UTC local, UTC(k) (liste donnée dans le tableau 3). Ces données prennent la forme de differences de temps [UTC(k) - Horloge] enregistrées de 5 jours en 5 jours pour les dates juliennes modifiées (MJD) se terminant par 4 et 9, à 0hUTC, 'dates normales'. L'équipement maintenu par ces 49 laboratoires de temps est décrit dans le tableau 4.

Un algorithme itératif qui traite en temps différé des blocs de 2 mois de données [1] produit une échelle atomique libre, EAL, définie comme étant une moyenne pondérée de lectures d'horloges. Le choix de la pondération et du mode de prédiction de fréquence optimise la stabilité de l'EAL à long terme. Il n'est pas tenté d'assurer la conformité de l'intervalle unitaire de l'EAL avec la seconde du Système international d'unités.

2. Exactitude

La durée de l'intervalle unitaire de l'EAL est évaluée par comparaison aux données d'étalons de fréquence à césium primaires, après conversion sur le géoïde en rotation. Ensuite le TAI se déduit de l'EAL par l'addition d'une fonction linéaire du temps dont la pente est convenablement choisie pour assurer l'exactitude de l'intervalle unitaire du TAI. Le décalage de fréquence entre le TAI et l'EAL est changé quand c'est nécessaire pour maintenir l'exactitude, les changements ayant le même ordre de grandeur que les fluctuations de fréquence qui résultent de l'instabilité de l'EAL. Cette opération est désignée par l'expression 'pilotage du TAI'. Le tableau 5 donne les différences de fréquences normalisées entre l'EAL et le TAI. Des mesures de la durée de l'intervalle unitaire du TAI et des estimations de sa durée moyenne sont données dans les tableaux 6 et 7.

3. Disponibilité

Le TAI et l'UTC sont disponibles sous forme de différences de temps avec les échelles locales de temps UTC(k), approximation de l'UTC, et TA(k), temps atomique local indépendant, reportées dans les tableaux 8 et 9.

Le calcul du TAI doit être fait, en principe, tous les deux mois. Mais un calcul provisoire est fait un mois sur deux (pour janvier, mars, etc.) avec les données disponibles. Le mois suivant, le calcul du TAI est repris pour une durée de deux mois.

L'écart entre les résultats des calculs provisoire et complet est ordinairement inférieur à 2 ns. Cette organisation permet la publication mensuelle des résultats dans la Circulaire T du BIPM. Quand le Rapport annuel est préparé, les résultats de la Circulaire T sont révisés, compte-tenu des améliorations de données, connues après la publication de la Circulaire T. Les calculs sont alors strictement faits par période de deux mois.

4. Liaisons horaires

En 1996, le système des liaisons horaires utilisé par le BIPM était non-redondant et reposait principalement sur l'observation des satellites du GPS en vues simultanées.

Deux programmes de poursuite des satellites du GPS ont été produits par le BIPM:
- *le programme No 27, reproduit dans le tableau 10, mis en oeuvre le 3 juillet 1996 (MJD 50267), et*
- *le programme No 28, reproduit dans le tableau 11, mis en oeuvre le 3 janvier 1997 (MJD 50451).*

Les laboratoires envoient régulièrement leurs données au BIPM où les calculs sont effectués d'une manière unifiée. On utilise des observations en vues simultanées strictes, c'est-à-dire synchronisées à la seconde près, ceci afin de supprimer la dégradation des signaux des horloges embarquées, due à l'implantation de 'l'accés sélectif'.

Le BIPM organise le réseau international de comparaisons horaires utilisant le GPS selon un schéma en étoile au niveau des continents, et en deux liaisons à longue distance, OP-CRL et OP-NIST, choisies parce que des données de retards ionosphériques mesurés sont disponibles pour ces trois sites. Des éphémérides précises des satellites du GPS, produites par l'IGS et accessibles en quelques jours, sont aussi utilisées de manière courante pour ces deux liaisons. La précision ultime d'une mesure unique [UTC(k_1) - UTC(k_2)] est alors d'environ 2 ns pour les liaisons à courte distance et d'environ 4 ns pour les liaisons à longue distance. Le BIPM publie aussi une évaluation de [UTC - temps du GPS], donnée dans le tableau 12 de ce volume.

En 1996, le BIPM a produit deux programmes de poursuite des satellites du GLONASS en vues simultanées :
- *le programme No 2, reproduit dans le tableau 13, mis en oeuvre le 3 juillet 1996 (MJD 50267), et*
- *le programme No 3, reproduit dans le tableau 14, mis en oeuvre le 3 janvier 1997 (MJD 50451).*

Le BIPM publie régulièrement une évaluation de [UTC - temps du GLONASS], donnée dans le tableau 15 du présent volume et déduite des observations habituelles des deux systèmes GPS et GLONASS, réalisées par le Professeur P. Daly de l'Université de Leeds, Royaume-Uni.

5. *Echelles de temps établies rétrospectivement*

Pour les applications les plus exigeantes, comme le chronométrage des pulsars milliseconde, le BIPM produit des échelles de temps rétrospectivement, désignées par TT(BIPMxx), 1900 + xx étant l'année du calcul [2]. Les versions successives de TT(BIPMxx) ne sont pas seulement des mises à jour, mais aussi des révisions, de sorte qu'elles peuvent différer pour les dates communes. Ces échelles de temps sont disponibles sur demande faite au BIPM ou par utilisation du réseau INTERNET.

Notes

Les tableaux 16 et 17 de ce rapport donnent les fréquences relatives au TAI et les poids des horloges qui ont contribué au calcul en 1996.

Les pages jaunes, à la fin de ce volume, concernent les émissions de signaux horaires.

Le rapport à un an (octobre 1995 - septembre 1996) de la section du temps du BIPM à paraître dans 'Comité international des poids et mesures, Procès-verbaux 85e session, 1996, Tome 64, Publications du BIPM', est reproduit après les pages jaunes. Toutes les publications qui y sont mentionnées sont disponibles sur demande au BIPM.

Les références sont données dans le texte anglais, page 9.

List of the Tables included in the Annual Report of the BIPM Time Section for 1996

Tables indicated with * are available through the INTERNET network (see Annex I, just before the yellow pages of this volume) under the file names given in this list.

TABLE 1. FREQUENCY OFFSETS AND STEP ADJUSTMENTS OF UTC, UNTIL 31 DECEMBER 1997

DATE (AT 0h UTC)	OFFSETS	STEPS
1961 Jan. 1	-150×10^{-10}	
1961 Aug. 1	"	+0.050 s
1962 Jan. 1	-130×10^{-10}	
1963 Nov. 1	"	-0.100 s
1964 Jan. 1	-150×10^{-10}	
1964 Apr. 1	"	-0.100 s
1964 Sep. 1	"	-0.100 s
1965 Jan. 1	"	-0.100 s
1965 Mar. 1	"	-0.100 s
1965 Jul. 1	"	-0.100 s
1965 Sep. 1	"	-0.100 s
1966 Jan. 1	-300×10^{-10}	
1968 Feb. 1	"	+0.100 s
1972 Jan. 1	0	-0.107 7580 s
1972 Jul. 1	"	-1 s
1973 Jan. 1	"	-1 s
1974 Jan. 1	"	-1 s
1975 Jan. 1	"	-1 s
1976 Jan. 1	"	-1 s
1977 Jan. 1	"	-1 s
1978 Jan. 1	"	-1 s
1979 Jan. 1	"	-1 s
1980 Jan. 1	"	-1 s
1981 Jul. 1	"	-1 s
1982 Jul. 1	"	-1 s
1983 Jul. 1	"	-1 s
1985 Jul. 1	"	-1 s
1988 Jan. 1	"	-1 s
1990 Jan. 1	"	-1 s
1991 Jan. 1	"	-1 s
1992 Jul. 1	"	-1 s
1993 Jul. 1	"	-1 s
1994 Jul. 1	"	-1 s
1996 Jan. 1	"	-1 s
1997 Jul. 1	"	-1 s

TABLE 2. RELATIONSHIP BETWEEN TAI AND UTC, UNTIL 31 DECEMBER 1997

LIMITS OF VALIDITY (AT 0h UTC)	TAI - UTC (IN SECONDS)
1961 Jan. 1 - 1961 Aug. 1	1.422 8180 + (MJD - 37300) x 0.001 296
1961 Aug. 1 - 1962 Jan. 1	1.372 8180 + " "
1962 Jan. 1 - 1963 Nov. 1	1.845 8580 + (MJD - 37665) x 0.001 1232
1963 Nov. 1 - 1964 Jan. 1	1.945 8580 + " "
1964 Jan. 1 - 1964 Apr. 1	3.240 1300 + (MJD - 38761) x 0.001 296
1964 Apr. 1 - 1964 Sep. 1	3.340 1300 + " "
1964 Sep. 1 - 1965 Jan. 1	3.440 1300 + " "
1965 Jan. 1 - 1965 Mar. 1	3.540 1300 + " "
1965 Mar. 1 - 1965 Jul. 1	3.640 1300 + " "
1965 Jul. 1 - 1965 Sep. 1	3.740 1300 + " "
1965 Sep. 1 - 1966 Jan. 1	3.840 1300 + " "
1966 Jan. 1 - 1968 Feb. 1	4.313 1700 + (MJD - 39126) x 0.002 592
1968 Feb. 1 - 1972 Jan. 1	4.213 1700 + " "
1972 Jan. 1 - 1972 Jul. 1	10 (integral number of seconds)
1972 Jul. 1 - 1973 Jan. 1	11
1973 Jan. 1 - 1974 Jan. 1	12
1974 Jan. 1 - 1975 Jan. 1	13
1975 Jan. 1 - 1976 Jan. 1	14
1976 Jan. 1 - 1977 Jan. 1	15
1977 Jan. 1 - 1978 Jan. 1	16
1978 Jan. 1 - 1979 Jan. 1	17
1979 Jan. 1 - 1980 Jan. 1	18
1980 Jan. 1 - 1981 Jul. 1	19
1981 Jul. 1 - 1982 Jul. 1	20
1982 Jul. 1 - 1983 Jul. 1	21
1983 Jul. 1 - 1985 Jul. 1	22
1985 Jul. 1 - 1988 Jan. 1	23
1988 Jan. 1 - 1990 Jan. 1	24
1990 Jan. 1 - 1991 Jan. 1	25
1991 Jan. 1 - 1992 Jul. 1	26
1992 Jul. 1 - 1993 Jul. 1	27
1993 Jul. 1 - 1994 Jul. 1	28
1994 Jul. 1 - 1996 Jan. 1	29
1996 Jan. 1 - 1997 Jul. 1	30
1997 Jul. 1 -	31

TABLE 3. ACRONYMS AND LOCATIONS OF THE TIMING CENTRES WHICH MAINTAIN A LOCAL APPROXIMATION OF UTC, UTC(k), OR/AND AN INDEPENDENT LOCAL TIME SCALE, TA(k)

AOS	Astronomiczne Obserwatorium Szerokościowe, Borowiec, Polska
APL	Applied Physics Laboratory, Laurel, MA, USA
AUS	Consortium of laboratories in Australia
BEV	Bundesamt für Eich - und Vermessungswesen, Wien, Oesterreich
BIRM	Beijing Institute of Radio Metrology and Measurement, Beijing, P. R. China
CAO	Cagliari Astronomical Observatory , Cagliari, Italia
CH	Consortium of laboratories in Switzerland
CNM	Centro Nacional de Metrologia, Queretaro, Mexico
CRL	Communications Research Laboratory, Tokyo, Japan
CSAO	Shaanxi Astronomical Observatory, Lintong, P.R. China
CSIR	Council for Scientific and Industrial Research, Pretoria, South Africa
F	Commission Nationale de l'Heure, Paris, France
DLR	Deutsche Forschungsanstalt fuer Luft-und Raumfahrt, Oberpfaffenhofen, Germany
DTAG (1)	Deutsche Telecom AG, Darmstadt, Deutschland
GUM	Główny Urząd Miar, Central Office of Measures, Warszawa, Polska
IEN	Istituto Elettrotecnico Nazionale Galileo Ferraris, Torino, Italia
IFAG	Institut für Angewandte Geodäsie, Frankfurt am Main, Deutschland
IGMA	Instituto Geografico Militar, Buenos-Aires, Argentina
INPL	National Physical Laboratory, Jerusalem, Israel
IPQ	Institute Português da Qualidade (Portuguese Institute for Quality), Monte de Caparica, Portugal.
JATC	Joint Atomic Time Commission, Lintong, P.R. China
KRIS	Korea Research Institute of Standards and Science, Taejon, Rep. of Korea
LDS	The University of Leeds, Leeds, United Kingdom
MSL	Measurement Standards Laboratory, Lower Hutt, New Zealand
NAOM	National Astronomical Observatory, Misuzawa, Japan
NAOT	National Astronomical Observatory, Tokyo, Japan
NIM	National Institute of Metrology, Beijing, P.R. China
NIST	National Institute of Standards and Technology, Boulder, CO, USA
NPL	National Physical Laboratory, Teddington, United Kingdom
NPLI	National Physical Laboratory, New-Delhi, India
NRC	National Research Council of Canada, Ottawa, Canada
NRLM	National Research Laboratory of Metrology, Tsukuba, Japan
OMH	Orszagos Mérésügyi Hivatal, Budapest, Hungary
ONBA	Observatorio Naval, Buenos-Aires, Argentina

(1) Formerly FTZ

TABLE 3. ACRONYMS AND LOCATIONS OF THE TIMING CENTRES WHICH MAINTAIN A LOCAL APPROXIMATION OF UTC, UTC(k), OR/AND AN INDEPENDENT LOCAL TIME SCALE, TA(k) (CONT.)

ONRJ	Observatorio Nacional, Rio de Janeiro, Brazil
OP	Observatoire de Paris, Paris, France
ORB	Observatoire Royal de Belgique, Bruxelles, Belgique
PTB	Physikalisch-Technische Bundesanstalt, Braunschweig, Deutschland
RC	Comité Estatal de Normalizacion, Habana, Cuba
ROA	Real Instituto y Observatorio de la Armada, San Fernando, Espana
SCL	Standards and Calibration Laboratory, Hong Kong
SO	Shanghai Observatory, Shanghai, P.R. China
SP	Swedish National Testing and Research Institute, Boras, Sweden
SU	Institute of Metrology for Time and Space (IMVP), NPO "VNIIFTRI" Mendeleevo, Moscow Region, Russia
TL	Telecommunication Laboratories, Chung-Li, Taiwan
TP	Institute of Radio Engineering and Electronics, Academy of Sciences of Czech Republic - Czech Republic
TUG	Technische Universität, Graz, Oesterreich
UME	Ulusai Metroloji Enstitüsü, Marmara Research Centre, National Metrology Institute, Gebze-Kocaeli, Turkey
USNO	U.S. Naval Observatory, Washington D.C., USA
VSL	Van Swinden Laboratorium, Delft, Nederland

(1) SNT ceased its time activities in May 1995.

TABLE 4. EQUIPMENT AND SOURCE OF UTC(K) OF THE LABORATORIES CONTRIBUTING TO TAI IN 1996.

Ind. Cs : Industrial Cs standard

Lab. Cs : Laboratory Cs standard

H-maser : Hydrogen maser

* means 'yes'

Lab k	Equipment	Source of UTC(k) (1)	TA(k)	Time Links		
				GPS	GLONASS	Two-Way
AOS	2 Ind. Cs	1 Cs + micro-phase-stepper		*		
APL	2 Ind. Cs 4 H-masers	1 H-maser	* (2)	*		*
AUS	18 Ind. Cs 4 H-masers (3)	1 Cs + micro-phase-stepper	*	*		
BEV	1 Ind. Cs	1 Cs		*		
BIRM	3 Ind. Cs	1 Cs		*		
CAO	3 Ind. Cs	1 Cs		*		
CH	13 Ind. Cs (4)	all the Cs	*	*		
CNM (5)	6 Ind. Cs	1 Cs		*		
CRL	16 Ind. Cs 1 Lab. Cs 4 H-masers	7 Cs	*	*		*
CSAO	5 Ind. Cs 2 H-masers	all the Cs	*	*		
CSIR	1 Ind. Cs	1 Cs		*		
DLR (6)	2 Ind. Cs 2 H-masers	1 H-maser		*	*	
DTAG (7)	4 Ind. Cs	1 Cs		*		*

TABLE 4. EQUIPMENT AND SOURCE OF UTC(K)... (CONT.)

Ind. Cs : Industrial Cs standard

Lab. Cs : Laboratory Cs standard

H-maser : Hydrogen maser

* means 'yes'

Lab k	Equipment	Source of UTC(k) (1)	TA(k)	Time Links		
				GPS	GLONASS	Two-Way
GUM	4 Ind. Cs	1 Cs		*		
IEN	5 Ind. Cs	1 Cs + micro-phase-stepper	*	*		
IFAG	5 Ind. Cs 3 H-masers	1 Cs + micro-phase-stepper		*		
IGMA	4 Ind. Cs	1 Cs + micro-phase-stepper		* (8)		
INPL	5 Ind. Cs	4 Cs	*	*		
IPQ	2 Ind. Cs	1 Cs		*		
JATC	7 Ind. Cs 1 Lab. Cs 3 H-masers (9)	1 Cs + micro-phase-stepper	*	*		
KRIS	5 Ind. Cs 1 H-maser	1 Cs + micro-phase-stepper	*	*		
LDS	1 Ind. Cs	1 Cs		*	* (10)	
MSL	3 Ind. Cs	1 Cs		*		
NAOM	3 Ind. Cs 1 H-maser	1 Cs + micro-phase-stepper		*		
NAOT	4 Ind. Cs	1 Cs + micro-phase-stepper		*		
NIM (11)	3 Ind. Cs	1 Cs + micro-phase-stepper	*	* (8)		

TABLE 4. EQUIPMENT AND SOURCE OF UTC(K)... (CONT.)

Ind. Cs : Industrial Cs standard

Lab. Cs : Laboratory Cs standard

H-maser : Hydrogen maser

* means 'yes'

Lab k	Equipment	Source of UTC(k) (1)	TA(k)	Time Links		
				GPS	GLONASS	Two-Way
NIST	20 Ind. Cs 1 Lab. Cs 3 H-masers	11 Cs 3 H-maser	*	*	*	*
NPL	6 Ind. Cs 1 H-maser	1 H-maser (12)		*		*
NPLI (11)	3 Ind. Cs	1 Cs		*		
NRC	1 Ind. Cs 3 Lab. Cs 2 H-masers	1 Lab. Cs + micro-phase-stepper (13)	*	*		*
NRLM	5 Ind. Cs	1 Cs		*		
OMH	1 Ind. Cs	1 Cs		*		
ONBA (14)	2 Ind. Cs	1 Cs + micro-phase-stepper				
ONRJ	5 Ind. Cs 2 H-masers	1 Cs		*		
OP	5 Ind. Cs 2 Lab. Cs 1 H-maser	1 Cs + micro-phase-stepper	* (15)	*		
ORB	4 Ind. Cs 1 H-maser	1 Cs + micro-phase-stepper		*		
PTB	5 Ind. Cs 3 Lab. Cs (16) 3 H-masers	1 Lab. Cs	* (17)	*		*
RC (18)	3 H-masers	1 H-maser	*			

TABLE 4. EQUIPMENT AND SOURCE OF UTC(K)... (CONT.)

Ind. Cs : Industrial Cs standard

Lab. Cs : Laboratory Cs standard

H-maser : Hydrogen maser

* means 'yes'

Lab k	Equipment	Source of UTC(k) (1)	TA(k)	Time Links		
				GPS	GLONASS	Two-Way
ROA	7 Ind. Cs	all the Cs		*		
SCL	3 Ind. Cs	1 Cs + micro-phase-stepper		*		
SO	1 Ind. Cs 1 Lab. Cs 3 H-masers	1 H-maser + micro-phase-stepper	*	* (8)		
SP (19)	3 Ind. Cs	1 Cs + micro-phase-stepper		*		
SU	2 Lab. Cs 10 H-masers	6 H-masers	* (20)	*	*	
TL	5 Ind. Cs	1 Cs + micro-phase-stepper		*		
TP	4 Ind. Cs	1 Cs + output frequency steering		*		
TUG	4 Ind. Cs	1 Cs		*		*
UME	2 Ind. Cs	1 Cs		*		
USNO	78 Ind. Cs 12 H-masers 1 prototype Mercury Ion Frequency Standard 1 Linear Ion Trap Standard	UTC(USNO,MC) is an H-maser + frequency synthesizer steered to UTC(USNO) (21)	* (21)	*	*	*
VSL	4 Ind. Cs	1 Cs + micro-phase-stepper		*	*	*

NOTES

(1) When several clocks are indicated as source of UTC(k), laboratory k computes a software clock, steered to UTC. Often a physical realization of UTC(k) is obtained using a Cs clock and a micro-phase-stepper.

(2) APL . TA(APL)-UTC(APL) = 29.999 998 537 s from MJD = 50083 to MJD = 50448.

(3) AUS . Some of the standards are located as follows (at the end of 1996) :

* National Measurements Laboratory (NML-CSIRO, Sydney)	3 Cs, 2 H-Masers,
* Orroral Observatory (ORR, Belconnen)	3 Cs,
* Canberra Deep Space Communication Complex (CDSCC, Canberra)	2 Cs, 2 H-Masers,
* Philips Calibration Service (PHILIPS, Sydney)	1 Cs,
* Telstra Corporation Ltd (TELSTRA, Perth)	1 Cs,
* Telstra Corporation Ltd (TELSTRA, Melbourne)	7 Cs,
* Hewlett-Packard (HP, Melbourne)	1 Cs.

Australian laboratories are intercompared by GPS.

(4) CH . The standards are located as follows (at the end of 1996) :

* Office Fédéral de Métrologie (OFMET, Bern)	8 Cs,
* Observatoire de Neuchâtel (ON, Neuchâtel)	3 Cs,
* Direction Générale des PTT (PTT, Bern)	2 Cs.

They are intercompared by GPS (OFMET-ON) and the TV method (OFMET-PTT) and linked to the foreign laboratories through the Swiss Federal Office of Metrology.

(5) CNM . Centro Nacional de Metrologia, Queretaro, Mexico.

(6) DLR . Deutsche Forschungsanstalt für Luft und Raumfahrt, Oberpfaffenhofen, Germany.

(7) DTAG. Deutsche Telekom A.G., Darmstadt, Germany, formerly FTZ.

(8) GPS link via local restitution of GPS time.

(9) JATC. The standards are located as follows :

* Shaanxi Astronomical Observatory (CSAO),
* Shanghai Astronomical Observatory (SO),
* Wuhan Time Observatory.

The link between UTC(JATC) and UTC(CSAO) is obtained by internal connection.

(10) LDS . Reception of GPS and GLONASS signals on a common custom-built receiver allowing observation of the difference between GPS time and GLONASS time.

(11) Information based on the Annual Report for 1995, not confirmed by the laboratory.

NOTES (CONT.)

(12) NPL . The source of UTC(NPL) has been 1 H-maser + micro-phase-stepper before MJD = 50286.33, and 1 H-maser since then.

(13) NRC . In 1996, UTC(NRC) was generally derived from NRC Cs VI C, except from MJD = 50367 to MJD = 50435 when it was derived from an industrial caesium standard.

(14) ONBA. Linked by TV to IGMA.

(15) OP . The French atomic time scale TA(F) is computed by the BNM-LPTF with data from 19 industrial caesium clocks located as follows (at the end of 1996) :

* Centre Electronique de l'Armement (CELAR, Rennes)	1 Cs,
* Centre National d'Etudes Spatiales (CNES, Toulouse)	2 Cs,
* Centre National d'Etudes des Télécommunications (CNET, Bagneux)	2 Cs,
* Observatoire de la Côte d'Azur (OCA, Grasse)	1 Cs,
* Electronique Serge Dassault (ESD, Trappes)	1 Cs,
* Hewlett-Packard (HP, Orsay)	3 Cs,
* Observatoire de Paris : Laboratoire Primaire du Temps et des Fréquences (BNM-LPTF, Paris)	5 Cs,
* Observatoire de Besançon (OB, Besançon)	2 Cs,
* Laboratoire de Physique et de Métrologie des Oscillateurs (LPMO, Besançon)	1 Cs,
* Société d'Etudes, Recherches et Constructions Electroniques (SERCEL, Carquefou)	1 Cs.

Links by GPS : OP-OB, OP-SERCEL, OP-OCA, OP-CNES, OP-CELAR, OP-HP.
Cable links : OB-LPMO.
Other national links by the TV method.

(16) PTB . The laboratory Cs, PTB CS1, which had been working continuously as a clock since 1978, was stopped on MJD = 49929 (31 July 1995).
The laboratory Cs, PTB CS2, is operated continuously as a clock.
The laboratory Cs, PTB CS3, has been operating continuously as a clock since MJD = 49939 (10 August 1995) with an interruption from MJD = 50104 (22 January 1996) to MJD = 50238 (4 June 1996).
TA(PTB) and UTC(PTB) were directly derived from PTB CS2 in 1996.

(17) PTB . TA(PTB)-UTC(PTB) = 30.000 363 400 s from MJD = 50083 to MJD = 50448.

(18) RC . Linked via LORAN-C to USNO.

(19) SP . Swedish National Testing and Research Institute, Boras, Sweden.

(20) SU . TA(SU)-UTC(SU) = 27.172 750 000 s from MJD = 50083 to MJD = 50414.
TA(SU)-UTC(SU) = 27.172 759 000 s from MJD = 50414 to MJD = 50448.

(21) USNO. The time scales A.1(MEAN) and UTC(USNO) are computed by USNO. They rely on a number of Cs clocks and H-masers. A.1(MEAN) is a free atomic time scale while UTC(USNO) is closely steered on UTC.

TABLE 5. DIFFERENCES BETWEEN THE NORMALIZED FREQUENCIES OF EAL AND TAI, UNTIL FEBRUARY 1997

(File available via INTERNET under the name EALTAI96.AR)

Date	MJD	f(EAL) - f(TAI) in 10^{-13}
until 1977 Jan 1	until 43144	0
1977 Jan 1 - 1977 Apr 26	43144 - 43259	10.0
1977 Apr 26 - 1977 Jun 25	43259 - 43319	9.8
1977 Jun 25 - 1977 Aug 24	43319 - 43379	9.6
1977 Aug 24 - 1977 Oct 23	43379 - 43439	9.4
1977 Oct 23 - 1978 Oct 28	43439 - 43809	9.2
1978 Oct 28 - 1979 Jun 25	43809 - 44049	9.0
1979 Jun 25 - 1979 Aug 24	44049 - 44109	8.8
1979 Aug 24 - 1979 Oct 23	44109 - 44169	8.6
1979 Oct 23 - 1982 Apr 30	44169 - 45089	8.4
1982 Apr 30 - 1982 Jun 29	45089 - 45149	8.2
1982 Jun 29 - 1982 Aug 28	45149 - 45209	8.0
1982 Aug 28 - 1984 Feb 29	45209 - 45759	7.8
1984 Feb 29 - 1987 Apr 24	45759 - 46909	8.0
1987 Apr 24 - 1987 Dec 30	46909 - 47159	8.0125
1987 Dec 30 - 1989 Jun 22	47159 - 47699	8.0
1989 Jun 22 - 1989 Dec 29	47699 - 47889	7.95
1989 Dec 29 - 1990 Feb 27	47889 - 47949	7.90
1990 Feb 27 - 1990 Apr 28	47949 - 48009	7.85
1990 Apr 28 - 1990 Jun 27	48009 - 48069	7.80
1990 Jun 27 - 1990 Aug 26	48069 - 48129	7.75
1990 Aug 26 - 1991 Feb 22	48129 - 48309	7.70
1991 Feb 22 - 1991 Apr 23	48309 - 48369	7.625
1991 Apr 23 - 1991 Aug 31	48369 - 48499	7.55
1991 Aug 31 - 1991 Oct 30	48499 - 48559	7.50
1991 Oct 30 - 1992 Apr 27	48559 - 48739	7.45
1992 Apr 27 - 1992 Jun 26	48739 - 48799	7.40
1992 Jun 26 - 1993 Apr 22	48799 - 49099	7.35
1993 Apr 22 - 1995 Feb 21	49099 - 49769	7.40
1995 Feb 21 - 1995 Apr 22	49769 - 49829	7.39
1995 Apr 22 - 1995 Jun 21	49829 - 49889	7.38
1995 Jun 21 - 1995 Aug 30	49889 - 49959	7.37
1995 Aug 30 - 1995 Oct 29	49959 - 50019	7.36
1995 Oct 29 - 1995 Dec 28	50019 - 50079	7.35
1995 Dec 28 - 1996 Feb 26	50079 - 50139	7.34
1996 Feb 26 - 1996 Apr 26	50139 - 50199	7.33
1996 Apr 26 - 1996 Jun 30	50199 - 50264	7.32
1996 Jun 30 - 1996 Aug 29	50264 - 50324	7.31
1996 Aug 29 - 1996 Oct 28	50324 - 50384	7.295
1996 Oct 28 - 1996 Dec 27	50384 - 50444	7.280
1996 Dec 27 - 1997 Feb 25	50444 - 50504	7.265

As the time scales UTC and TAI differ by an integral number of seconds (see Tables 1 and 2), UTC is necessarily subjected to the same intentional frequency adjustment as TAI.

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

(File available via INTERNET under the name UTAI96.AR)

The following table gives the difference d between the duration of the TAI scale interval and the SI second as produced by the primary standards CRL Cs1, LPTF JPO, LPTF F01, NIST-7, NRC CsV, NRC CsVI A and C, PTB CS1, PTB CS2, PTB CS3 and SU MCsR 102 for the period 1991-1996. Previous calibrations are available in the successive annual reports of the BIPM Time Section volumes 1 to 8.

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

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

Standard	Unc. (1 σ)	Operation	Comparison with	Transfer to TAI
CRL Cs1*	$1.1\mathrm{x}10^{-13}$	discontinuous	UTC(CRL)	60 d
LPTF JPO*	$1.1\mathrm{x}10^{-13}$	discontinuous	UTC(OP)	10 d
LPTF F01*	$0.3\mathrm{x}10^{-14}$	discontinuous	H maser	5 d or 10 d
NIST NIST-7*	$1\mathrm{x}10^{-14}$	discontinuous	H maser	5 d or 10 d
NRC CsV	$\approx 1\mathrm{x}10^{-13}$	continuous	TAI	60 d
NRC CsVI A	$\approx 1\mathrm{x}10^{-13}$	continuous	TAI	60 d
NRC CsVI C	$\approx 1\mathrm{x}10^{-13}$	continuous	TAI	60 d
PTB CS1*	$3\mathrm{x}10^{-14}$	continuous	TAI	60 d
PTB CS2*	$1.5\mathrm{x}10^{-14}$	continuous	TAI	60 d
PTB CS3*	$1.4\mathrm{x}10^{-14}$	continuous	TAI	60 d
SU MCsR 102*	$5\mathrm{x}10^{-14}$	discontinuous	UTC(SU)	60 d

TABLE 6. (CONT.)

d in 10^{-14} s

Interval for transfer to TAI	Central date of the calibration	CRL Cs1*	LPTF JPO*	NIST NIST-7*	SU MCsR 102*	LPTF FO1*
48499-48559	1991 Sep 27	+1.3				
48859-48919	1992 Sep 30				+0.1	
48919-48979	1992 Nov 30				-0.9	
48949-49009	1992 Dec 23	-2.6				
48979-49039	1993 Jan 30				+4.0	
49039-49099	1993 Mar 31				-2.0	
49119-49129	1993 May 17		+11.6			
49099-49159	1993 May 30				-1.9	
49159-49229	1993 Jul 30				-1.3	
49229-49289	1993 Sep 30				+0.6	
49289-49349	1993 Nov 30				+5.2	
49469-49529	1994 May 30				+0.6	
49529-49589	1994 Jul 31				-0.5	
49589-49649	1994 Sep 30				-3.5	
49649-49709	1994 Nov 30				+0.3	
49789-49799	1995 Mar 16			+2.0		
49809-49819	1995 Apr 5			+3.0		
49819-49829	1995 Apr 15			+2.9		
49829-49839	1995 Apr 25			+2.0		
49839-49849	1995 May 8			+2.2		
49899-49909	1995 Jul 7			+2.2		
49959-49969	1995 Sep 3			+3.3		
49959-50019	1995 Sep 30				+3.5	
49969-49979	1995 Sep 14					+1.4
49979-49989	1995 Sep 24					+1.6
49989-49999	1995 Oct 4					+1.8
49999-50009	1995 Oct 14					+2.2
50009-50019	1995 Oct 24					+1.4
50029-50039	1995 Nov 13					+1.3
50039-50049	1995 Nov 23					+1.1
50049-50059	1995 Dec 3					+0.6
50059-50069	1995 Dec 13					+1.1
50069-50079	1995 Dec 23					+1.6
50019-50029	1995 Nov 7			+2.2		
50019-50079	1995 Nov 30				+4.3	
50079-50084	1995 Dec 30			+2.5		
50094-50124	1996 Jan 27				+8.4	
50124-50154	1996 Feb 26				+2.4	
50144-50149	1996 Mar 4			+2.1		
50154-50184	1996 Mar 27				+1.9	
50199-50209	1996 May 1			+2.5		
50209-50214	1996 May 8					+1.8
50214-50219	1996 May 13					+2.3
50219-50224	1996 May 18					+2.2

TABLE 6. (CONT.)

Interval for transfer to TAI	Central date of the calibration	NRC CsV	NRC CsVIA	NRC CsVIC	PTB CS1*	PTB CS2*	PTB CS3*
		d in 10^{-14} s					
48249-48309	1991 Jan 23	-6.7	+13.8	+11.7	+3.6	+5.6	-
48309-48369	1991 Mar 24	-10.7	-20.1	+17.0	+3.8	+7.0	-
48369-48429	1991 May 23	-7.9	-25.2	+5.1	+2.4	+3.4	-
48429-48499	1991 Jul 27	-2.3	-12.2	+2.1	+1.7	+4.4	-
48499-48559	1991 Sep 30	+3.5	-7.4	+4.9	+2.3	+5.3	-
48559-48619	1991 Nov 29	+10.6	-12.5	-0.6	+1.9	+3.4	-
48619-48679	1992 Jan 28	+9.5	-15.6	+0.4	-0.4	+2.1	-
48679-48739	1992 Mar 28	+13.3	-20.3	0.0	+0.7	+2.6	-
48739-48799	1992 May 27	+12.2	-22.2	-6.0	+1.3	+4.3	-
48799-48859	1992 Jul 26	+7.6	-20.6	-14.6	+0.1	+4.1	-
48859-48919	1992 Sep 24	-5.5	-14.5	-20.2	+0.7	+3.4	-
48919-48979	1992 Nov 23	-	-	-20.3	+2.6	+1.8	-
48979-49039	1993 Jan 22	-	-	-19.0	+2.0	+1.4	-
49039-49099	1993 Mar 23	-	-	-11.8	+2.8	+0.6	-
49099-49159	1993 May 22	-	-	-13.1	+0.8	+2.4	-
49159-49229	1993 Jul 26	-	-	-9.0	+1.3	+2.1	-
49229-49289	1993 Sep 29	-	-	-9.4	+2.3	+2.9	-
49289-49349	1993 Nov 28	-	-	-12.6	-0.7	+2.3	-
49349-49409	1994 Jan 27	-	-	-10.2	+0.6	+1.4	-
49409-49469	1994 Mar 28	-	-	-11.6	+1.4	+1.3	-
49469-49529	1994 May 27	-	-	-11.4	+1.2	+2.9	-
49529-49589	1994 Jul 26	-	-	-10.8	+2.1	+3.3	-
49589-49649	1994 Sep 24	-	-	-10.8	+1.0	+2.4	-
49649-49709	1994 Nov 23	-	-	-10.4	+0.6	+1.9	-
49709-49769	1995 Jan 22	-	-	-	+2.5	+2.7	-
49769-49829	1995 Mar 23	-	-7.5	-1.7	-0.1	+3.0	-
49829-49889	1995 May 22	-	-10.7	-6.1	+3.5	+2.0	-
49889-49959	1995 Jul 26	-	-11.6	-5.0	-	+3.5	-
49959-50019	1995 Sep 29	-	-11.1	-5.8	-	+2.7	+4.9
50019-50079	1995 Nov 28	-	-9.2	-6.3	-	+2.5	+4.3
50079-50139	1996 Jan 27	-	-15.7	-8.2	-	+3.1	-
50139-50199	1996 Mar 27	-	-17.6	-7.2	-	+2.8	-
50199-50264	1996 May 28	-	-15.5	-5.9	-	+2.6	-
50264-50324	1996 Jul 30	-	-15.6	-7.7	-	+2.9	+5.6
50324-50384	1996 Sep 28	-	-13.7	-2.5	-	+2.2	+2.6
50384-50444	1996 Nov 27	-	-12.5	-5.3	-	+2.9	+5.0

TABLE 7. MEAN DURATION OF THE TAI SCALE INTERVAL IN SI SECOND ON THE ROTATING GEOID

(File available via INTERNET under the name SITAI96.AR)

The estimate of the mean duration of the TAI scale interval in SI second on the rotating geoid, and its relative uncertainty are computed by the BIPM according to the method described in 'Azoubib J., Granveaud M., Guinot B., Metrologia 13, 1977, pp. 87-93', using all available measurements from the six most accurate primary frequency standards LPTF-F01, NIST-7, PTB CS1, PTB CS2, PTB CS3 and SU MCsR 102, consistently corrected for the black-body radiation shift.

For the months	Mean duration in s	Relative uncertainty
1991 Jan - Feb	$1 + 5.1\times10^{-14}$	1.2×10^{-14}
1991 Mar - Apr	+ 6.1	1.2
1991 May - Jun	+ 4.5	1.2
1991 Jul - Aug	+ 4.0	1.2
1991 Sep - Oct	+ 4.7	1.2
1991 Nov - Dec	+ 3.3	1.2
1992 Jan - Feb	$1 + 2.1\times10^{-14}$	1.2×10^{-14}
1992 Mar - Apr	+ 2.5	1.2
1992 May - Jun	+ 3.8	1.2
1992 Jul - Aug	+ 3.0	1.2
1992 Sep - Oct	+ 2.5	1.1
1992 Nov - Dec	+ 1.9	1.1
1993 Jan - Feb	$1 + 1.7\times10^{-14}$	0.9×10^{-14}
1993 Mar - Apr	+ 1.3	0.9
1993 May - Jun	+ 1.8	0.9
1993 Jul - Aug	+ 1.9	0.9
1993 Sep - Oct	+ 2.1	0.9
1993 Nov - Dec	+ 1.9	0.9
1994 Jan - Feb	$1 + 1.7\times10^{-14}$	0.9×10^{-14}
1994 Mar - Apr	+ 1.8	0.9
1994 May - Jun	+ 2.1	0.9
1994 Jul - Aug	+ 2.3	0.9
1994 Sep - Oct	+ 2.0	0.8
1994 Nov - Dec	+ 2.0	0.8
1995 Jan - Feb	$1 + 2.3\times10^{-14}$	0.7×10^{-14}
1995 Mar - Apr	+ 2.4	0.5
1995 May - Jun	+ 2.3	0.5
1995 Jul - Aug	+ 2.4	0.6
1995 Sep - Oct	+ 2.1	0.4
1995 Nov - Dec	+ 1.7	0.4
1996 Jan - Feb	$1 + 2.2\times10^{-14}$	0.6×10^{-14}
1996 Mar - Apr	+ 2.3	0.6
1996 May - Jun	+ 2.3	0.5
1996 Jul - Aug	+ 2.5	0.7
1996 Sep - Oct	+ 2.4	0.8
1996 Nov - Dec	+ 2.4	0.9

TABLE 8 - INDEPENDENT LOCAL ATOMIC TIME SCALES

(File available via Internet under the name TAI96.AR)

The following table gives the values of [TAI - TA(k)], where TA(k) denotes the independent atomic time scale established by laboratory k.

Unit is one nanosecond.

Date 1996 0h UTC	MJD	TAI - TA(k) APL	AUS (1)	CH	CRL	CSAO (2)
Jan 2	50084	3455	-66447	-63789	63781	6707
Jan 7	50089	-	-66571	-63668	63996	6701
Jan 12	50094	3489	-66711	-63538	64204	6613
Jan 17	50099	3510	-66857	-63398	64409	6579
Jan 22	50104	3522	-66986	-63268	64616	6510
Jan 27	50109	3532	-67094	-63132	64822	6433
Feb 1	50114	3542	-67248	-62987	65032	6384
Feb 6	50119	3580	-67362	-62842	65245	6241
Feb 11	50124	3610	-67499	-62702	65454	6142
Feb 16	50129	3635	-67593	-62568	65659	6179
Feb 21	50134	3664	-67726	-62423	65870	6074
Feb 26	50139	3668	-67848	-62275	66079	5935
Mar 2	50144	3666	-67998	-62130	66283	5885
Mar 7	50149	3679	-68137	-61980	66494	5836
Mar 12	50154	3685	-68295	-61822	66701	5810
Mar 17	50159	3704	-68391	-61668	66906	5714
Mar 22	50164	3699	-68522	-61512	67112	5646
Mar 27	50169	3704	-68629	-61360	67317	5562
Apr 1	50174	3709	-68754	-61224	67525	5562
Apr 6	50179	3698	-68897	-61059	67730	5507
Apr 11	50184	3681	-69009	-60908	67943	5402
Apr 16	50189	3659	-69102	-60754	68154	5414
Apr 21	50194	3629	-69223	-60603	68362	5302
Apr 26	50199	-	-69399	-60458	68571	5243
May 1	50204	3517	-69491	-60308	68775	5175
May 6	50209	3451	-69598	-60173	68986	5102
May 11	50214	3393	-69722	-60026	69192	5030
May 16	50219	3331	-69829	-59874	69397	4983
May 21	50224	3276	-69953	-59728	69605	4943
May 26	50229	3244	-70070	-59574	69821	4851
May 31	50234	3205	-70192	-59421	70029	4792
Jun 5	50239	-	-70357	-59271	70240	4921
Jun 10	50244	1303	-70421	-59116	70444	4887
Jun 15	50249	1259	-70497	-58960	70657	4789
Jun 20	50254	1214	-70642	-58806	70863	4702
Jun 25	50259	1175	-70766	-58652	71070	4648
Jun 30	50264	1173	-70866	-58488	71275	4599

(1) Apparent time step of TAI-TA(AUS) of +54 ns on MJD = 50315.33 due to change of the value of the cable delay introduced in the GPS receiver.
(2) Time step of TAI-TA(CSAO) of + 200 ns between MJD = 50234 and MJD = 50239 due to a change of GPS receiver.

TABLE 8. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	TAI - TA(k) APL	AUS (1)	CH	CRL	CSAO (2)
Jul 5	50269	1175	-71063	-58330	71482	4499
Jul 10	50274	1182	-71171	-58161	71692	4462
Jul 15	50279	1188	-71303	-58007	71901	4393
Jul 20	50284	1192	-71404	-57853	72112	4325
Jul 25	50289	1191	-71578	-57693	72314	4292
Jul 30	50294	1184	-71775	-57539	72520	4223
Aug 4	50299	1172	-71829	-57383	72732	4131
Aug 9	50304	1160	-71950	-57220	72945	4076
Aug 14	50309	1146	-72063	-57073	73150	4047
Aug 19	50314	1127	-72195	-56908	73362	3981
Aug 24	50319	1103	-72277	-56753	73566	3902
Aug 29	50324	1085	-72403	-56604	73775	3844
Sep 3	50329	1061	-72536	-56456	73986	3788
Sep 8	50334	1039	-72636	-56303	74192	3724
Sep 13	50339	1013	-72775	-56138	74400	3657
Sep 18	50344	990	-72882	-55982	74604	3585
Sep 23	50349	975	-72987	-55836	74810	3506
Sep 28	50354	948	-73104	-55675	75027	3458
Oct 3	50359	-	-73195	-55513	75233	3402
Oct 8	50364	-	-73318	-55355	75444	3348
Oct 13	50369	-	-73423	-55198	75654	3272
Oct 18	50374	-	-73550	-55043	75866	3204
Oct 23	50379	-	-73680	-54886	76074	3135
Oct 28	50384	-	-73831	-54728	76275	3084
Nov 2	50389	-	-73911	-54566	76483	2991
Nov 7	50394	-	-74047	-54405	76695	2976
Nov 12	50399	-	-74170	-54245	76896	2845
Nov 17	50404	-	-74288	-54088	77103	2790
Nov 22	50409	-	-74415	-53922	77311	2770
Nov 27	50414	-	-74535	-53753	77518	2681
Dec 2	50419	-	-74659	-53577	77730	2647
Dec 7	50424	-	-74775	-53405	77941	2599
Dec 12	50429	-	-74884	-53235	78144	2495
Dec 17	50434	1896	-75015	-53062	78349	2453
Dec 22	50439	1937	-75102	-52886	78557	2393
Dec 27	50444	1968	-75204	-52709	78762	2302

(1) Apparent time step of TAI-TA(AUS) of +54 ns on MJD = 50315.33 due to change of the value of the cable delay introduced in the GPS receiver.
(2) Time step of TAI-TA(CSAO) of + 200 ns between MJD = 50234 and MJD = 50239 due to a change of GPS receiver.

TABLE 8. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	TAI - TA(k) F	IEN	INPL	JATC	KRIS
Jan 2	50084	150630	-493	-318567	12711	2215
Jan 7	50089	150795	-478	-319231	12792	2261
Jan 12	50094	150953	-463	-319900	12744	2302
Jan 17	50099	151111	-448	-320562	12767	2342
Jan 22	50104	151273	-438	-321252	12717	2375
Jan 27	50109	151431	-427	-321949	12699	2397
Feb 1	50114	151590	-415	-322639	12715	2458
Feb 6	50119	151752	-402	-323310	12526	2506
Feb 11	50124	151919	-391	-323991	12427	2535
Feb 16	50129	152083	-382	-324675	12545	2561
Feb 21	50134	152248	-372	-325343	12527	2604
Feb 26	50139	152413	-359	-326025	12410	2642
Mar 2	50144	152582	-352	-326711	12441	2678
Mar 7	50149	152747	-343	-327415	12391	2727
Mar 12	50154	152915	-327	-328098	12466	2754
Mar 17	50159	153074	-311	-328773	12432	2792
Mar 22	50164	153238	-285	-329446	12430	2829
Mar 27	50169	153417	-258	-330126	12457	2861
Apr 1	50174	153579	-242	-330788	12580	2921
Apr 6	50179	153736	-242	-331458	12629	2984
Apr 11	50184	153910	-236	-332114	12646	3034
Apr 16	50189	154085	-208	-332794	12785	3096
Apr 21	50194	154258	-170	-333468	12800	3148
Apr 26	50199	154433	-151	-334133	12876	3201
May 1	50204	154609	-128	-334834	12826	3233
May 6	50209	154778	-101	-335517	13000	3272
May 11	50214	154953	-74	-336191	13182	3305
May 16	50219	155129	-46	-336874	-	3354
May 21	50224	155321	-9	-337540	-	3389
May 26	50229	155503	26	-338200	-	3438
May 31	50234	155685	71	-338875	-	3481
Jun 5	50239	155864	110	-339534	13470	3530
Jun 10	50244	156041	157	-340218	13576	3606
Jun 15	50249	156221	211	-340899	13616	3725
Jun 20	50254	156401	264	-341550	13668	3794
Jun 25	50259	156577	314	-342194	13761	3870
Jun 30	50264	156760	355	-342855	13857	3927

TABLE 8. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	TAI - TA(k) F	IEN	INPL	JATC	KRIS
Jul 5	50269	156938	396	-343491	13794	3990
Jul 10	50274	157121	441	-344138	13772	4040
Jul 15	50279	157304	484	-344768	13742	4081
Jul 20	50284	157478	530	-345417	13730	4112
Jul 25	50289	157653	576	-346051	13700	4147
Jul 30	50294	157832	623	-346686	13681	4170
Aug 4	50299	158014	665	-347340	13658	4205
Aug 9	50304	158192	714	-347991	13682	4254
Aug 14	50309	158362	762	-348633	13742	4296
Aug 19	50314	158541	810	-349266	13758	4357
Aug 24	50319	158720	853	-349897	13748	4416
Aug 29	50324	158900	894	-350537	13765	4470
Sep 3	50329	159082	932	-351177	13759	4508
Sep 8	50334	159263	979	-351831	13751	4552
Sep 13	50339	159449	1025	-352469	13747	4596
Sep 18	50344	159636	1078	-353139	13731	4628
Sep 23	50349	159819	1122	-353807	13705	4665
Sep 28	50354	160006	1175	-354469	13707	4715
Oct 3	50359	160185	1229	-355137	13699	4768
Oct 8	50364	160368	1278	-355815	13695	4842
Oct 13	50369	160554	1317	-356481	13670	4900
Oct 18	50374	160740	1365	-357132	13639	4972
Oct 23	50379	160925	1420	-357821	13623	5032
Oct 28	50384	161112	1479	-358513	13623	5072
Nov 2	50389	161300	1516	-359203	13607	5094
Nov 7	50394	161475	1551	-359880	13651	5120
Nov 12	50399	161645	1592	-360582	13578	5162
Nov 17	50404	161815	1644	-361312	13575	5189
Nov 22	50409	161994	1691	-361976	13612	5215
Nov 27	50414	162170	1733	-362665	13580	5234
Dec 2	50419	162348	1777	-363334	13603	5271
Dec 7	50424	162524	1802	-364024	13616	5296
Dec 12	50429	162701	1821	-364715	13562	5316
Dec 17	50434	162878	1848	-365427	13572	5349
Dec 22	50439	163056	1893	-366145	13575	5367
Dec 27	50444	163235	1940	-366857	13548	5386

TABLE 8. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	TAI - TA(k) NIM	NISA (3)	NRC	PTB
Jan 2	50084	-6926	-45138715	25369	-361168
Jan 7	50089	-6891	-45138934	25398	-361168
Jan 12	50094	-6869	-45139150	25429	-361170
Jan 17	50099	-6800	-45139368	25461	-361178
Jan 22	50104	-6799	-45139585	25504	-361189
Jan 27	50109	-6751	-45139801	25539	-361200
Feb 1	50114	-6723	-45140021	25567	-361206
Feb 6	50119	-6681	-45140239	25607	-361212
Feb 11	50124	-6625	-45140459	25659	-361216
Feb 16	50129	-6557	-45140680	25693	-361226
Feb 21	50134	-6525	-45140896	25723	-361234
Feb 26	50139	-6498	-45141113	25746	-361238
Mar 2	50144	-6466	-45141329	25772	-361237
Mar 7	50149	-6442	-45141548	25788	-361233
Mar 12	50154	-6412	-45141764	25830	-361241
Mar 17	50159	-6380	-45141981	25866	-361239
Mar 22	50164	-6330	-45142202	25903	-361241
Mar 27	50169	-6308	-45142420	25940	-361243
Apr 1	50174	-6283	-45142638	25971	-361251
Apr 6	50179	-6243	-45142854	25998	-361253
Apr 11	50184	-6214	-45143076	26017	-361265
Apr 16	50189	-6167	-45143296	26052	-361270
Apr 21	50194	-6145	-45143516	26080	-361288
Apr 26	50199	-6146	-45143732	26110	-361294
May 1	50204	-6109	-45143950	26134	-361303
May 6	50209	-6076	-45144169	26157	-361309
May 11	50214	-6055	-45144388	26182	-361321
May 16	50219	-6027	-45144608	26209	-361326
May 21	50224	-5998	-45144828	26236	-361332
May 26	50229	-5991	-45145047	26263	-361332
May 31	50234	-5966	-45145271	26289	-361330
Jun 5	50239	-5913	-45145491	26316	-361332
Jun 10	50244	-5883	-45145710	26329	-361338
Jun 15	50249	-5857	-45145930	26355	-361344
Jun 20	50254	-5846	-45146142	26387	-361342
Jun 25	50259	-5807	-45146365	26417	-361343
Jun 30	50264	-5758	-45146586	26443	-361352

(3) TA(NISA) designates the scale AT1 of NIST.

TABLE 8. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	TAI - TA(k) NIM	NISA (3)	NRC	PTB
Jul 5	50269	-5739	-45146805	26482	-361362
Jul 10	50274	-5716	-45147022	26513	-361366
Jul 15	50279	-5691	-45147242	26543	-361376
Jul 20	50284	-5656	-45147464	26574	-361385
Jul 25	50289	-5600	-45147684	26613	-361391
Jul 30	50294	-5559	-45147907	26645	-361393
Aug 4	50299	-5525	-45148129	26679	-361394
Aug 9	50304	-5547	-45148347	26713	-361402
Aug 14	50309	-5499	-45148568	26737	-361410
Aug 19	50314	-5505	-45148784	26772	-361410
Aug 24	50319	-5460	-45149006	26811	-361411
Aug 29	50324	-5420	-45149227	26849	-361418
Sep 3	50329	-5407	-45149442	26877	-361416
Sep 8	50334	-5383	-45149663	26892	-361420
Sep 13	50339	-5363	-45149883	26908	-361423
Sep 18	50344	-5363	-45150106	26921	-361427
Sep 23	50349	-5397	-45150327	26939	-361429
Sep 28	50354	-5422	-45150548	26933	-361430
Oct 3	50359	-5393	-45150769	26944	-361433
Oct 8	50364	-5353	-45150989	26959	-361431
Oct 13	50369	-5295	-45151207	26950	-361434
Oct 18	50374	-5316	-45151422	26970	-361438
Oct 23	50379	-5316	-45151643	26983	-361441
Oct 28	50384	-5259	-45151861	27002	-361447
Nov 2	50389	-	-45152076	27024	-361452
Nov 7	50394	-	-45152293	27052	-361454
Nov 12	50399	-	-45152507	27072	-361458
Nov 17	50404	-	-45152720	27098	-361464
Nov 22	50409	-	-45152936	27128	-361463
Nov 27	50414	-	-45153151	27151	-361470
Dec 2	50419	-	-45153365	27170	-361471
Dec 7	50424	-	-45153581	27191	-361481
Dec 12	50429	-	-45153798	27209	-361485
Dec 17	50434	-	-45154012	27235	-361495
Dec 22	50439	-	-45154229	27268	-361503
Dec 27	50444	-	-45154445	27262	-361520

(3) TA(NISA) designates the scale AT1 of NIST.

TABLE 8. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	TAI - TA(k) RC	SO	SU (4)	USNO (5)
Jan 2	50084	-	-45822	27242727	-34738918
Jan 7	50089	-	-45852	27242716	-34739249
Jan 12	50094	-	-45874	27242709	-34739578
Jan 17	50099	-	-45883	27242699	-34739908
Jan 22	50104	-	-45913	27242695	-34740238
Jan 27	50109	-	-45891	27242686	-34740570
Feb 1	50114	-	-45895	27242674	-34740900
Feb 6	50119	-	-45935	27242657	-34741226
Feb 11	50124	-	-45953	27242648	-34741557
Feb 16	50129	-	-45937	27242632	-34741888
Feb 21	50134	-	-45932	27242618	-34742218
Feb 26	50139	-	-45933	27242609	-34742549
Mar 2	50144	-	-45946	27242601	-34742877
Mar 7	50149	-	-45941	27242588	-34743207
Mar 12	50154	-	-45986	27242578	-34743535
Mar 17	50159	-	-46000	27242570	-34743863
Mar 22	50164	-	-46011	27242559	-34744194
Mar 27	50169	-	-46031	27242555	-34744524
Apr 1	50174	-	-46050	27242547	-34744855
Apr 6	50179	-	-46070	27242528	-34745186
Apr 11	50184	-	-46078	27242524	-34745518
Apr 16	50189	-	-46055	-	-34745851
Apr 21	50194	-	-46099	-	-34746179
Apr 26	50199	-	-46043	-	-34746507
May 1	50204	-	-46147	-	-34746837
May 6	50209	-	-46176	-	-34747161
May 11	50214	-	-46203	-	-34747489
May 16	50219	-	-46205	-	-34747823
May 21	50224	-	-46199	-	-34748154
May 26	50229	-	-46246	-	-34748479
May 31	50234	-	-46257	-	-34748809
Jun 5	50239	-	-46228	-	-34749141
Jun 10	50244	-	-46227	-	-34749473
Jun 15	50249	-	-46228	27242343	-34749803
Jun 20	50254	-	-46251	27242336	-34750129
Jun 25	50259	-	-46247	27242326	-34750457
Jun 30	50264	-	-46238	27242311	-34750789

(4) Listed values are TAI-TA(SU) - 2.80 seconds.
(5) TA(USNO) designates the scale A1(MEAN) of USNO.

TABLE 8. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	TAI - TA(k) RC	SO	SU (4)	USNO (5)
Jul 5	50269	-	-46244	27242295	-34751117
Jul 10	50274	-	-46277	27242295	-34751447
Jul 15	50279	-	-46281	27242284	-34751778
Jul 20	50284	-	-46258	27242270	-34752108
Jul 25	50289	-	-46252	27242254	-34752437
Jul 30	50294	-	-46266	27242240	-34752764
Aug 4	50299	-	-46288	27242227	-34753094
Aug 9	50304	-	-46307	27242220	-34753422
Aug 14	50309	-	-46284	27242207	-34753751
Aug 19	50314	-	-46291	27242195	-34754079
Aug 24	50319	-	-46273	27242180	-34754409
Aug 29	50324	-	-46285	27242168	-34754736
Sep 3	50329	-	-46284	27242160	-34755063
Sep 8	50334	-	-46280	27242150	-34755393
Sep 13	50339	-	-46274	27242142	-34755719
Sep 18	50344	-	-46285	27242131	-34756048
Sep 23	50349	-	-46305	27242120	-34756372
Sep 28	50354	-	-46303	27242114	-34756703
Oct 3	50359	-	-46263	27242105	-34757031
Oct 8	50364	-	-46267	27242096	-34757359
Oct 13	50369	-	-46270	27242087	-34757685
Oct 18	50374	-	-46263	27242079	-34758010
Oct 23	50379	-	-46286	27242069	-34758338
Oct 28	50384	-	-46241	27242061	-34758667
Nov 2	50389	-	-46260	27242055	-34758988
Nov 7	50394	-	-46239	27242050	-34759315
Nov 12	50399	-	-46231	27242042	-34759639
Nov 17	50404	-	-46260	27242032	-34759965
Nov 22	50409	-	-46245	27242027	-34760291
Nov 27	50414	-	-46272	27242022	-34760616
Dec 2	50419	-	-46285	27242015	-34760939
Dec 7	50424	-	-46290	27242003	-34761266
Dec 12	50429	-	-46292	27241994	-34761591
Dec 17	50434	-	-46323	27241985	-34761917
Dec 22	50439	-	-46315	27241976	-34762241
Dec 27	50444	-	-46316	27241962	-34762569

(4) Listed values are TAI-TA(SU) - 2.80 seconds.
(5) TA(USNO) designates the scale A1(MEAN) of USNO.

TABLE 9. LOCAL REPRESENTATIONS OF UTC : VALUES OF [UTC - UTC(K)]

(File available via Internet under the name UTC96.AR)

The following table gives the values of [UTC - UTC(k)], where UTC(k) denotes the approximation to UTC kept by laboratory k.

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) AOS (1)	APL (2)	AUS (3)	BEV	BIRM	CAO
Jan 2	50084	-450	1992	-413	9683	-93	-
Jan 7	50089	-291	-	-442	9506	-157	-
Jan 12	50094	-224	2026	-472	9333	-224	-
Jan 17	50099	-132	2047	-482	9153	-313	-
Jan 22	50104	-60	2059	-511	8957	-399	-
Jan 27	50109	4	2069	-509	8817	-489	-
Feb 1	50114	57	2079	-506	8655	-531	-
Feb 6	50119	97	2117	-549	8453	-586	-
Feb 11	50124	171	2147	-552	8285	-635	-
Feb 16	50129	177	2172	-559	8110	-708	-
Feb 21	50134	156	2201	-577	7876	-747	-
Feb 26	50139	126	2205	-590	7627	-807	-
Mar 2	50144	152	2203	-607	7449	-964	-
Mar 7	50149	186	2216	-621	7777	-883	-
Mar 12	50154	256	2222	-645	7538	-989	-
Mar 17	50159	289	2241	-657	7367	-1039	-
Mar 22	50164	270	2236	-670	7162	-1115	-
Mar 27	50169	266	2241	-631	6978	-1186	-
Apr 1	50174	228	2246	-595	6793	-1189	-
Apr 6	50179	198	2235	-587	6616	-1220	-
Apr 11	50184	213	2218	-556	6425	-1265	-
Apr 16	50189	168	2196	-506	6245	-1308	-
Apr 21	50194	161	2166	-478	6066	-1363	-
Apr 26	50199	74	2121	-458	5890	-1422	-
May 1	50204	83	2054	-424	5716	-	-
May 6	50209	169	1988	-368	5557	-	-
May 11	50214	282	1930	-335	5350	-1611	-
May 16	50219	221	1868	-293	5172	-1684	-
May 21	50224	168	1813	-247	4999	-1733	-
May 26	50229	197	1781	-226	4835	-1783	-
May 31	50234	221	1742	-177	4647	-1837	-
Jun 5	50239	211	1698	-175	4497	-1880	-
Jun 10	50244	125	-160	-150	4356	-1932	-
Jun 15	50249	-69	-204	-133	4176	-1986	-
Jun 20	50254	-162	-249	-100	4021	-2024	-
Jun 25	50259	-79	-288	-80	-	-2072	-
Jun 30	50264	58	-290	-49	-	-2140	-

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) AOS (1)	APL (2)	AUS (3)	BEV	BIRM	CAO
Jul 5	50269	161	-288	-17	-	-2204	-
Jul 10	50274	169	-281	-16	3067	-2252	-
Jul 15	50279	233	-275	22	2934	-2301	-
Jul 20	50284	281	-271	41	2838	-2359	-
Jul 25	50289	379	-272	47	2721	-2404	-
Jul 30	50294	316	-279	39	2728	-2460	-
Aug 4	50299	203	-291	38	-	-2523	-
Aug 9	50304	77	-303	33	-	-2559	-
Aug 14	50309	-20	-317	31	-	-2603	-
Aug 19	50314	-169	-336	11	-	-2649	-
Aug 24	50319	-223	-360	64	-	-2681	-
Aug 29	50324	-231	-378	69	-	-2725	-
Sep 3	50329	-206	-402	51	-	-2779	-
Sep 8	50334	-210	-424	44	-	-2827	-
Sep 13	50339	-110	-450	3	-	-2881	-
Sep 18	50344	-86	-473	-6	-	-2920	-
Sep 23	50349	-39	-488	-16	-	-2973	-
Sep 28	50354	-41	-515	-35	-	-3021	-
Oct 3	50359	-50	-	-42	-	-3081	-1136
Oct 8	50364	-72	-	-70	-	-3151	-1261
Oct 13	50369	-73	-	-89	-	-3219	-1375
Oct 18	50374	-91	-	-91	-	-3295	-1514
Oct 23	50379	-112	-	-110	-	-3361	-1630
Oct 28	50384	-71	-	-78	-	-3409	-1757
Nov 2	50389	-25	93	-95	-	-3468	-1865
Nov 7	50394	-15	135	-94	-	-3558	-1978
Nov 12	50399	9	177	-89	-	-3613	-2099
Nov 17	50404	7	219	-93	-	-3670	-2204
Nov 22	50409	50	256	-99	-	-3741	-2295
Nov 27	50414	121	286	-79	-	-3805	-2388
Dec 2	50419	271	320	-84	-	-3870	-2501
Dec 7	50424	388	363	-87	-	-3905	-2611
Dec 12	50429	519	401	-76	-	-3978	-2724
Dec 17	50434	541	433	-85	-	-4043	-2852
Dec 22	50439	518	474	-62	-	-4111	-2959
Dec 27	50444	527	505	-60	-	-4136	-3049

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) CH (4)	CNM (5)	CRL (6)	CSAO (7)	CSIR (8)	DLR (9)
Jan 2	50084	204	-	302	-256	4947	-
Jan 7	50089	211	-	292	-197	5051	-
Jan 12	50094	226	-	276	-220	5168	-
Jan 17	50099	248	-	259	-190	5294	-
Jan 22	50104	260	-	245	-194	5345	-
Jan 27	50109	277	-	224	-206	5333	-
Feb 1	50114	304	-	212	-190	5346	-
Feb 6	50119	331	-	200	-268	5335	-
Feb 11	50124	348	-	184	-302	5388	-
Feb 16	50129	342	-	172	-201	5417	-
Feb 21	50134	346	-	156	-241	5435	-
Feb 26	50139	354	-	136	-315	5542	-2087
Mar 2	50144	359	-	117	-300	5590	-2086
Mar 7	50149	368	-	103	-284	5640	-2091
Mar 12	50154	384	-	83	-245	5679	-2099
Mar 17	50159	390	-	66	-277	5705	-2110
Mar 22	50164	397	-	44	-280	5705	-2122
Mar 27	50169	401	86	27	-299	5730	-2125
Apr 1	50174	388	75	9	-234	5782	-2129
Apr 6	50179	404	35	-13	-224	5847	-2133
Apr 11	50184	404	24	-20	-264	5949	-2133
Apr 16	50189	394	-1	-19	-188	6063	-2136
Apr 21	50194	381	-41	-22	-235	6137	-2136
Apr 26	50199	362	-42	-22	-229	6250	-2138
May 1	50204	348	-68	-32	-232	6335	-2144
May 6	50209	319	-116	-38	-240	6469	-2146
May 11	50214	300	-150	-41	-247	6575	-2154
May 16	50219	279	-158	-48	-230	6685	-2162
May 21	50224	252	-182	-49	-205	6789	-2168
May 26	50229	233	-200	-47	-232	7039	-2169
May 31	50234	212	-222	-55	-226	7164	-2178
Jun 5	50239	189	-223	-50	-32	7111	-2188
Jun 10	50244	174	-239	-57	-1	7023	-2194
Jun 15	50249	169	-255	-60	-35	7018	-2205
Jun 20	50254	163	-283	-64	-57	7038	-2213
Jun 25	50259	157	-1557	-64	-46	7076	-2224
Jun 30	50264	160	-1630	-77	-30	7094	-2233

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) CH (4)	CNM (5)	CRL (6)	CSAO (7)	CSIR (8)	DLR (9)
Jul 5	50269	158	-1734	-86	-65	7142	-2240
Jul 10	50274	168	-1837	-86	-37	7186	-2244
Jul 15	50279	167	-1820	-94	-42	7212	-2248
Jul 20	50284	166	-1802	-96	-45	7187	-2256
Jul 25	50289	171	-1801	-98	-13	7151	-2264
Jul 30	50294	171	-1817	-98	-17	7083	-2273
Aug 4	50299	172	-1816	-89	-44	7014	-2275
Aug 9	50304	179	-1753	-84	-34	6977	-2277
Aug 14	50309	166	-1773	-87	1	6943	-2283
Aug 19	50314	170	-1772	-84	0	6895	-2286
Aug 24	50319	165	-1940	-80	-14	6846	-2292
Aug 29	50324	154	-2118	-77	-7	6846	-2298
Sep 3	50329	142	-2280	-73	2	6857	-2299
Sep 8	50334	133	-2410	-68	3	6869	-2303
Sep 13	50339	133	-2554	-72	1	6901	-2302
Sep 18	50344	123	-2693	-71	-7	6902	-2300
Sep 23	50349	103	-2843	-65	-21	6908	-2300
Sep 28	50354	98	-2989	-58	-4	6912	-2294
Oct 3	50359	94	-3105	-61	5	6890	-2291
Oct 8	50364	87	-3252	-57	16	6915	-2285
Oct 13	50369	80	-3405	-54	5	6906	-2283
Oct 18	50374	70	-3543	-44	1	6888	-2275
Oct 23	50379	63	-3648	-51	-3	6886	-2271
Oct 28	50384	57	-3708	-46	11	6867	-2265
Nov 2	50389	55	-3804	-40	-17	6880	-2261
Nov 7	50394	53	-3887	-40	33	6898	-2251
Nov 12	50399	57	-3969	-39	-33	6907	-2243
Nov 17	50404	58	-4073	-39	-24	6934	-2239
Nov 22	50409	68	-4141	-33	21	6898	366
Nov 27	50414	81	-4230	-31	-3	6932	380
Dec 2	50419	101	-4312	-30	28	6919	399
Dec 7	50424	116	-4412	-24	45	6923	411
Dec 12	50429	125	-4487	-23	6	6931	429
Dec 17	50434	138	-4578	-23	28	6994	447
Dec 22	50439	154	-4664	-28	33	7082	466
Dec 27	50444	170	-4664	-26	7	7120	485

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) DTAG (10)	GUM	IEN (11)	IFAG (12)	IGMA (13)	INPL
Jan 2	50084	-256	-334	16	-4722	77	-2867
Jan 7	50089	-	-336	24	-4768	77	-2890
Jan 12	50094	-	-334	46	-4770	73	-2912
Jan 17	50099	-272	-337	60	-4791	71	-2922
Jan 22	50104	-277	-342	70	-4813	70	-2950
Jan 27	50109	-263	-342	84	-4842	68	-2975
Feb 1	50114	-274	-343	96	-4885	66	-2982
Feb 6	50119	-275	-346	106	-4910	72	-2959
Feb 11	50124	-287	-348	111	-4931	71	-2935
Feb 16	50129	-291	-352	113	-4928	65	-2903
Feb 21	50134	-298	-351	118	-4938	83	-2845
Feb 26	50139	-293	-348	124	-4927	78	-2790
Mar 2	50144	-297	-352	117	-4947	78	-2729
Mar 7	50149	-314	-360	112	-4955	67	-2680
Mar 12	50154	-325	-360	124	-4975	77	-2603
Mar 17	50159	-314	-361	139	-4960	82	-2511
Mar 22	50164	-311	-360	158	-4977	96	-2411
Mar 27	50169	-318	-364	184	-4951	73	-2309
Apr 1	50174	-332	-361	180	-4950	72	-2184
Apr 6	50179	-326	-362	172	-4919	84	-2059
Apr 11	50184	-328	-358	162	-4872	77	-1915
Apr 16	50189	-340	-358	159	-4860	97	-1787
Apr 21	50194	-353	-352	159	-4847	81	-1647
Apr 26	50199	-352	-339	165	-4842	87	-1492
May 1	50204	-360	-337	166	-4842	79	-1368
May 6	50209	-373	-330	164	-4812	78	-1226
May 11	50214	-377	-330	166	-4747	91	-1076
May 16	50219	-391	-319	167	-4714	93	-939
May 21	50224	-409	-308	183	-4692	97	-791
May 26	50229	-398	-306	187	-4641	91	-643
May 31	50234	-412	-306	198	-4604	88	-517
Jun 5	50239	-423	-299	205	-	101	-381
Jun 10	50244	-427	-292	210	-4563	111	-276
Jun 15	50249	-432	-283	227	-4544	102	-176
Jun 20	50254	-414	-278	248	-4556	117	-53
Jun 25	50259	-404	-274	263	-	117	70
Jun 30	50264	-415	-270	280	-	113	166

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) DTAG (10)	GUM	IEN (11)	IFAG (12)	IGMA (13)	INPL
Jul 5	50269	-409	-271	294	-4587	111	279
Jul 10	50274	-397	-263	313	-4613	113	371
Jul 15	50279	-401	-255	326	-4632	105	470
Jul 20	50284	-407	-248	348	-4608	108	539
Jul 25	50289	-403	-244	365	-4611	101	614
Jul 30	50294	-421	-239	381	-4612	125	677
Aug 4	50299	-441	-233	393	-4611	103	711
Aug 9	50304	-447	-232	394	-4613	113	739
Aug 14	50309	-449	-233	395	-4596	107	765
Aug 19	50314	-445	-232	395	-4589	118	792
Aug 24	50319	-457	-227	390	-4580	105	814
Aug 29	50324	-455	-220	381	-4571	117	817
Sep 3	50329	-466	-216	380	-4583	124	811
Sep 8	50334	-475	-221	378	-4598	129	785
Sep 13	50339	-463	-225	381	-4580	143	768
Sep 18	50344	-471	-218	388	-4543	127	713
Sep 23	50349	-489	-209	383	-4509	138	652
Sep 28	50354	-493	-197	388	-4462	132	592
Oct 3	50359	-493	-190	392	-4470	130	521
Oct 8	50364	-487	-178	394	-4439	124	436
Oct 13	50369	-492	-166	391	-4413	118	362
Oct 18	50374	-498	-155	399	-4392	118	302
Oct 23	50379	-514	-138	397	-4360	119	209
Oct 28	50384	-514	-131	401	-4336	116	117
Nov 2	50389	-531	-125	401	-4333	120	32
Nov 7	50394	-530	-112	406	-4288	134	-36
Nov 12	50399	-552	-100	410	-4233	156	-126
Nov 17	50404	-563	-87	423	-4169	124	-245
Nov 22	50409	-551	-69	434	-4132	138	-286
Nov 27	50414	-566	-60	443	-4095	162	-346
Dec 2	50419	-563	-51	453	-4078	167	-378
Dec 7	50424	-571	-43	452	-4041	176	-422
Dec 12	50429	-566	-33	445	-3985	172	-464
Dec 17	50434	-582	-29	441	-3938	167	-520
Dec 22	50439	-607	-15	448	-3893	184	-575
Dec 27	50444	-603	-11	457	-3849	195	-613

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) IPQ (14)	JATC	KRIS (15)	LDS	MSL	NAOM (16)
Jan 2	50084	-8171	1553	299	212	-5342	-3135
Jan 7	50089	-8213	1685	306	202	-5316	-3131
Jan 12	50094	-8269	1621	308	199	-5296	-3140
Jan 17	50099	-8337	1593	308	208	-5239	-3141
Jan 22	50104	-8380	1501	300	189	-5246	-3144
Jan 27	50109	-8427	1546	280	200	-5253	-3143
Feb 1	50114	-8486	1609	272	183	-5304	-3148
Feb 6	50119	-8530	1482	268	162	-5273	-3144
Feb 11	50124	-8582	1443	251	158	-5273	-3144
Feb 16	50129	-8633	1617	231	179	-5168	-3150
Feb 21	50134	-8686	1648	219	162	-5096	-3136
Feb 26	50139	-8755	1576	207	137	-5103	-3129
Mar 2	50144	-8802	1619	197	147	-5045	-3125
Mar 7	50149	-8854	1580	208	157	-5011	-3115
Mar 12	50154	-8891	1659	190	130	-5058	-3106
Mar 17	50159	-8947	1682	188	156	-5066	-3097
Mar 22	50164	-9003	1730	182	152	-5098	-3083
Mar 27	50169	-9061	1772	173	142	-5090	-3064
Apr 1	50174	-9123	1911	182	137	-5131	-3050
Apr 6	50179	-9178	1989	186	119	-5120	-3045
Apr 11	50184	-9227	2025	172	122	-5052	-3049
Apr 16	50189	-9293	2179	174	129	-4948	-3040
Apr 21	50194	-9351	2205	165	107	-4957	-3040
Apr 26	50199	-9404	2300	160	103	-4962	-3037
May 1	50204	-9466	2250	142	116	-4923	-3033
May 6	50209	-9521	2456	129	116	-4860	-3037
May 11	50214	-9583	2679	114	118	-4874	-3038
May 16	50219	-9630	-	114	114	-4829	-3042
May 21	50224	-9691	-	109	117	-4788	-3034
May 26	50229	-9741	-	113	84	-4831	-3020
May 31	50234	-	-	105	100	-4831	-3005
Jun 5	50239	-9857	3118	89	107	-4766	-2999
Jun 10	50244	-9	3218	90	119	-4795	-2996
Jun 15	50249	-12	3255	104	128	-4819	-2983
Jun 20	50254	-11	3296	100	114	-4864	-2959
Jun 25	50259	-6	3378	100	107	-4901	-2941
Jun 30	50264	-10	3462	84	128	-4884	-2934

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) IPQ (14)	JATC	KRIS (15)	LDS	MSL	NAOM (16)
Jul 5	50269	-13	3389	86	113	-4933	-2913
Jul 10	50274	-11	3370	86	93	-4972	-2904
Jul 15	50279	1	3331	80	92	-5041	-2878
Jul 20	50284	1	3317	63	101	-4989	-2859
Jul 25	50289	-4	3301	50	121	-4991	-2841
Jul 30	50294	2	3274	30	120	-5072	-2836
Aug 4	50299	84	3250	11	103	-5106	-2792
Aug 9	50304	97	3272	8	98	-5145	-2772
Aug 14	50309	96	3315	4	106	-5159	-2771
Aug 19	50314	99	3329	8	118	-5123	-2741
Aug 24	50319	107	3329	7	118	-5106	-2722
Aug 29	50324	116	3345	-4	123	-5094	-2712
Sep 3	50329	118	3368	-24	115	-5102	-2704
Sep 8	50334	119	3372	-26	115	-5124	-2695
Sep 13	50339	121	3379	-24	97	-5169	-2694
Sep 18	50344	122	3380	-39	100	-5137	-2705
Sep 23	50349	129	3371	-43	84	-5183	-2721
Sep 28	50354	143	3391	-39	80	-5172	-2742
Oct 3	50359	142	3404	-48	98	-5251	-2769
Oct 8	50364	157	3418	-39	91	-5325	-2774
Oct 13	50369	141	3412	-54	79	-5276	-2797
Oct 18	50374	145	3402	-49	69	-5299	-2819
Oct 23	50379	149	3408	-53	66	-5402	-2845
Oct 28	50384	155	3430	-83	85	-5435	-2858
Nov 2	50389	161	3407	-112	63	-5464	-2875
Nov 7	50394	170	3470	-120	86	-5518	-2888
Nov 12	50399	170	3412	-112	68	-5607	-2908
Nov 17	50404	172	3436	-120	38	-5620	-2928
Nov 22	50409	179	3500	-129	58	-5608	-2943
Nov 27	50414	175	3489	-142	55	-5583	-2965
Dec 2	50419	177	3526	-138	44	-5555	-2985
Dec 7	50424	174	3552	-145	14	-5611	-3001
Dec 12	50429	178	3505	-156	28	-5621	-3027
Dec 17	50434	176	3536	-151	15	-5662	-3069
Dec 22	50439	193	3553	-161	13	-5668	-3106
Dec 27	50444	216	3541	-168	4	-5633	-3135

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) NAOT	NIM	NIST	NPL (17)	NPLI	NRC (18)
Jan 2	50084	-3137	8011	14	40	-	59
Jan 7	50089	-3072	8020	13	46	-	67
Jan 12	50094	-3040	8022	14	51	-	76
Jan 17	50099	-2958	8078	14	54	-	86
Jan 22	50104	-2909	8058	14	58	-	108
Jan 27	50109	-2872	8094	16	63	-	121
Feb 1	50114	-2808	8106	13	62	-	110
Feb 6	50119	-2773	8121	13	67	-	112
Feb 11	50124	-2738	8146	10	60	-	125
Feb 16	50129	-2734	8198	7	57	-	120
Feb 21	50134	-2707	8209	8	51	-	111
Feb 26	50139	-2694	8219	9	46	-	95
Mar 2	50144	-2703	8231	10	42	-	82
Mar 7	50149	-2668	8240	9	34	-	59
Mar 12	50154	-2660	8243	10	36	-	63
Mar 17	50159	-2676	8254	11	35	-	60
Mar 22	50164	-2690	8278	7	28	-	58
Mar 27	50169	-2677	8285	7	24	-	59
Apr 1	50174	-2550	8290	6	21	-	51
Apr 6	50179	-2426	8302	8	15	-	39
Apr 11	50184	-2325	8314	3	12	-	19
Apr 16	50189	-2221	8339	1	10	-	16
Apr 21	50194	-2123	8347	-2	10	-	5
Apr 26	50199	-2004	8336	0	12	-	-4
May 1	50204	-1887	8352	-1	12	-	-19
May 6	50209	-1767	8365	-2	14	-	-27
May 11	50214	-1666	8377	-4	16	-	-32
May 16	50219	-1544	8383	-6	12	-	-36
May 21	50224	-1437	8397	-9	13	-	-38
May 26	50229	-1337	8394	-10	16	-	-41
May 31	50234	-1231	8398	-17	14	-	-46
Jun 5	50239	-1138	8424	-19	9	-	-49
Jun 10	50244	-1049	8442	-21	7	-	-66
Jun 15	50249	-974	8442	-23	5	-	-71
Jun 20	50254	-887	8444	-18	8	-	-69
Jun 25	50259	-811	8472	-23	9	-	-68
Jun 30	50264	-730	8496	-27	2	-	-73

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) NAOT	NIM	NIST	NPL (17)	NPLI	NRC (18)
Jul 5	50269	-658	8505	-26	-1	-	-64
Jul 10	50274	-575	8505	-23	-2	-	-60
Jul 15	50279	-508	8522	-23	-1	-	-56
Jul 20	50284	-468	8536	-25	-2	-	-50
Jul 25	50289	-412	8576	-25	-6	-	-37
Jul 30	50294	-350	8611	-28	-7	-	-31
Aug 4	50299	-279	8635	-29	-8	-	-23
Aug 9	50304	-250	8590	-24	-5	-	-14
Aug 14	50309	-181	8620	-23	-6	-	-17
Aug 19	50314	-121	8608	-16	-7	-	-7
Aug 24	50319	-68	8629	-16	-3	-	5
Aug 29	50324	-9	8653	-14	-3	-	14
Sep 3	50329	32	8656	-7	-1	-	12
Sep 8	50334	82	8659	-5	0	-	-4
Sep 13	50339	140	8672	-3	5	-	-18
Sep 18	50344	195	8650	-3	5	-	-35
Sep 23	50349	244	8602	-2	10	-	-48
Sep 28	50354	266	8551	0	16	-	-85
Oct 3	50359	311	8574	0	18	-	-103
Oct 8	50364	349	8591	0	25	-	-97
Oct 13	50369	388	8634	2	27	-	-91
Oct 18	50374	416	8605	7	34	-	-73
Oct 23	50379	441	8584	6	36	-	-61
Oct 28	50384	484	8629	8	37	-	-43
Nov 2	50389	533	-	13	41	-	-23
Nov 7	50394	548	-	16	47	-	5
Nov 12	50399	596	-	22	54	-	23
Nov 17	50404	650	-	29	58	-	48
Nov 22	50409	690	-	33	66	-	77
Nov 27	50414	745	-	38	72	-	99
Dec 2	50419	796	-2097	44	73	-	117
Dec 7	50424	865	-2084	47	74	-	138
Dec 12	50429	890	-2049	49	77	-	154
Dec 17	50434	936	-2050	54	78	-	179
Dec 22	50439	947	-2028	50	81	-	194
Dec 27	50444	980	-1990	47	85	-	187

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) NRLM (19)	OMH	ONBA (20)	ONRJ (21)	OP (22)	ORB
Jan 2	50084	-5278	13502	-8581	948	60	289
Jan 7	50089	-5201	13740	-8611	1149	56	277
Jan 12	50094	-5132	13922	-8599	1260	57	256
Jan 17	50099	-5062	13982	-8756	1395	50	264
Jan 22	50104	-4996	14095	-8704	1589	45	263
Jan 27	50109	-4933	14362	-8649	1646	37	250
Feb 1	50114	-4865	14574	-	1798	35	264
Feb 6	50119	-4794	14769	-	1975	39	239
Feb 11	50124	-4726	14998	-	2079	36	223
Feb 16	50129	-4659	15140	-	2132	30	197
Feb 21	50134	-4586	15266	-	2225	24	191
Feb 26	50139	-4511	15341	-	2355	22	216
Mar 2	50144	-4450	15378	-8455	2720	23	210
Mar 7	50149	-4383	15476	-8504	3214	27	218
Mar 12	50154	-4316	15552	-8422	3410	31	185
Mar 17	50159	-4243	15730	-8340	3553	34	174
Mar 22	50164	-4174	15939	-8278	4056	34	162
Mar 27	50169	-4105	16069	-8291	4702	31	165
Apr 1	50174	-4034	16185	-8503	5331	30	156
Apr 6	50179	-3973	16198	-8657	5983	34	124
Apr 11	50184	-3899	16178	-8816	6845	40	98
Apr 16	50189	-3831	16225	-9060	7549	38	75
Apr 21	50194	-3762	16055	-9559	8160	35	96
Apr 26	50199	-3690	-	-9898	8704	42	74
May 1	50204	-3620	-	-10165	9218	51	65
May 6	50209	-3546	-	-10350	9722	60	61
May 11	50214	-3472	-	-10526	10171	56	52
May 16	50219	-3413	-	-10778	10691	54	60
May 21	50224	-3355	-	-11231	11531	52	73
May 26	50229	-3289	-	-11718	12336	50	46
May 31	50234	-3224	-	-12231	13012	39	35
Jun 5	50239	-3157	-	-12823	13767	35	47
Jun 10	50244	-3089	-	-13255	14487	25	45
Jun 15	50249	-3031	-	-13645	15152	18	42
Jun 20	50254	-2960	-	-14082	15664	17	27
Jun 25	50259	-2890	-	-14725	16186	12	38
Jun 30	50264	-2828	-	-15442	16625	10	43

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) NRLM (19)	OMH	ONBA (20)	ONRJ (21)	OP (22)	ORB
Jul 5	50269	-2769	-	-16353	16925	3	70
Jul 10	50274	-2703	-	-16965	17465	2	60
Jul 15	50279	-2639	-	-4808	18160	8	82
Jul 20	50284	-2573	-	-5332	18896	10	93
Jul 25	50289	-2507	-	-5889	19520	8	76
Jul 30	50294	-2442	-	-6453	19983	5	77
Aug 4	50299	-2385	-	-7088	20478	4	60
Aug 9	50304	-2311	-	-7647	21016	4	71
Aug 14	50309	-2256	-	-8239	21397	1	70
Aug 19	50314	-2194	-	-8718	21732	-1	79
Aug 24	50319	-2129	-	-8857	22105	-8	80
Aug 29	50324	-2074	-	-9212	22477	-1	64
Sep 3	50329	-2009	-	-9642	22881	2	45
Sep 8	50334	-1949	68	-10279	23287	-2	81
Sep 13	50339	-1877	66	-10812	23708	3	78
Sep 18	50344	-1817	68	-11085	24146	6	66
Sep 23	50349	-1768	80	-11713	24610	9	66
Sep 28	50354	-1696	79	-12230	25005	10	67
Oct 3	50359	-1635	98	-12525	25354	16	75
Oct 8	50364	-1572	120	-12846	25804	12	58
Oct 13	50369	-1521	127	-12896	26235	5	94
Oct 18	50374	-1455	145	-13240	26599	7	66
Oct 23	50379	-1384	-	-13549	26861	11	87
Oct 28	50384	-1311	-	-13893	27278	13	81
Nov 2	50389	-47	-	-14167	27706	19	84
Nov 7	50394	-46	-	-14257	28099	26	77
Nov 12	50399	-42	-	-14504	28471	23	79
Nov 17	50404	-38	-	-14618	28869	23	105
Nov 22	50409	-39	-	-14660	29218	35	87
Nov 27	50414	-30	-	-14786	29511	39	90
Dec 2	50419	-24	-	-14941	29850	50	83
Dec 7	50424	-28	-	-14910	30144	59	70
Dec 12	50429	-33	-	-15172	30438	58	83
Dec 17	50434	-30	-	-15121	30786	64	102
Dec 22	50439	-23	-	-15124	31103	64	99
Dec 27	50444	-18	-	-15260	31426	59	97

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) PTB (23)	RC	ROA	SCL (24)	SO	SP (25)	SU (26)
Jan 2	50084	2232	-	127	293	1676	-	-7273
Jan 7	50089	2232	-	139	242	1638	-	-7284
Jan 12	50094	2230	-	147	231	1616	-	-7291
Jan 17	50099	2222	-	138	208	1610	-	-7301
Jan 22	50104	2211	-	138	222	1577	-	-7305
Jan 27	50109	2200	-	135	242	1593	-	-7314
Feb 1	50114	2194	-	134	252	1585	-	-7326
Feb 6	50119	2188	-	123	243	1556	-	-7343
Feb 11	50124	2184	-	130	235	1545	-	-7352
Feb 16	50129	2174	-	132	247	1549	-	-7368
Feb 21	50134	2166	-	140	237	1546	-	-7382
Feb 26	50139	2162	-	138	208	1533	-	-7391
Mar 2	50144	2163	-	135	207	1508	-	-7399
Mar 7	50149	2167	-	131	188	1522	-	-7412
Mar 12	50154	2159	-	124	191	1482	-	-7422
Mar 17	50159	2161	-	119	178	1469	-	-7430
Mar 22	50164	2159	-	109	151	1462	-	-7441
Mar 27	50169	2157	-	104	126	1441	-	-7445
Apr 1	50174	2149	-	106	96	1433	-6027	-7453
Apr 6	50179	2147	-	106	80	1424	-6129	-7472
Apr 11	50184	2135	-	113	60	1417	-6217	-7476
Apr 16	50189	2130	-	107	22	1447	-6311	-
Apr 21	50194	2112	-	107	-5	1410	-6398	-
Apr 26	50199	2106	-	118	-41	1409	-6490	-
May 1	50204	2097	-	113	-86	1386	-6582	-
May 6	50209	2091	-	124	-159	1360	-6659	-
May 11	50214	2079	-	130	-219	1337	-6747	-
May 16	50219	2074	-	135	-308	1336	-6834	-
May 21	50224	2068	-	128	-376	1345	-6926	-
May 26	50229	2068	-	123	-401	1303	-7014	-
May 31	50234	2070	-	113	-	1293	-7113	-
Jun 5	50239	2068	-	97	-	1319	-7199	-
Jun 10	50244	2062	-	98	-	1314	-7289	-
Jun 15	50249	2056	-	96	-	1312	-7379	-7657
Jun 20	50254	2058	-	101	-	1284	-7473	-7664
Jun 25	50259	2057	-	90	-419	1288	-7570	-7674
Jun 30	50264	2048	-	85	-341	1296	-7663	-7689

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC		MJD	UTC - UTC(k) PTB (23)	RC	ROA	SCL (24)	SO	SP (25)	SU (26)
Jul	5	50269	2038	-	83	-440	1287	-7743	-7705
Jul	10	50274	2034	-	82	-345	1250	-7824	-7705
Jul	15	50279	2024	-	84	-431	1245	-7928	-7716
Jul	20	50284	2015	-	82	-429	1266	-8026	-7730
Jul	25	50289	2009	-	79	-352	1273	-8115	-7746
Jul	30	50294	2007	-	83	-326	1256	-8205	-7760
Aug	4	50299	2006	-	82	-473	1234	-8289	-7773
Aug	9	50304	1998	-	81	-425	1207	-8369	-7780
Aug	14	50309	1990	-	84	-465	1227	-8455	-7793
Aug	19	50314	1990	-	87	-514	1214	-8549	-7805
Aug	24	50319	1989	-	91	-515	1228	-8637	-7820
Aug	29	50324	1982	-	88	-510	1217	-8730	-7832
Sep	3	50329	1984	366	89	-549	1219	-8818	-7840
Sep	8	50334	1980	269	89	-582	1227	-8897	-7850
Sep	13	50339	1977	274	94	-602	1234	-44	-7858
Sep	18	50344	1973	292	90	-647	1223	-40	-7869
Sep	23	50349	1971	295	91	-628	1198	-36	-7880
Sep	28	50354	1970	300	96	-614	1195	-40	-7886
Oct	3	50359	1967	367	97	-608	1231	-40	-7895
Oct	8	50364	1969	306	97	-598	1218	-36	-7904
Oct	13	50369	1966	195	91	-600	1208	-37	-7913
Oct	18	50374	1962	53	92	-578	1207	-32	-7921
Oct	23	50379	1959	-136	87	-587	1180	-29	-7931
Oct	28	50384	1953	-137	90	-568	1219	-25	-7939
Nov	2	50389	1948	16	90	-552	1196	-33	-7945
Nov	7	50394	1946	102	89	-516	1208	-28	-7950
Nov	12	50399	1942	194	90	-475	1206	-31	-7958
Nov	17	50404	1936	277	86	-470	1170	-32	-7968
Nov	22	50409	1937	298	85	-427	1200	-28	-7973
Nov	27	50414	1930	247	75	-411	1191	-20	1022
Dec	2	50419	1929	184	76	-393	1193	-23	1015
Dec	7	50424	1919	-	62	-360	1190	-32	1003
Dec	12	50429	1915	-	54	-366	1188	-25	994
Dec	17	50434	1905	-	38	-322	1156	-21	985
Dec	22	50439	1897	-	26	-287	1166	-22	976
Dec	27	50444	1880	-	25	-245	1174	-15	962

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) TL	TP (27)	TUG	UME (28)	USNO	VSL (29)
Jan 2	50084	-21	-286	-210	-3103	15	-231
Jan 7	50089	-20	-280	-186	-3105	12	-242
Jan 12	50094	-25	-273	-172	-3097	14	-249
Jan 17	50099	-8	-276	-164	-3087	12	-243
Jan 22	50104	-6	-275	-153	-3078	11	-249
Jan 27	50109	28	-261	-144	-3074	9	-257
Feb 1	50114	44	-260	-127	-3071	8	-268
Feb 6	50119	33	-256	-117	-3067	11	-266
Feb 11	50124	32	-258	-106	-3060	9	-278
Feb 16	50129	64	-250	-90	-3058	8	-287
Feb 21	50134	66	-262	-76	-3054	7	-279
Feb 26	50139	55	-249	-60	-3048	4	-287
Mar 2	50144	67	-237	-47	-3037	4	-286
Mar 7	50149	81	-221	-34	-3028	4	-299
Mar 12	50154	82	-199	-17	-3028	7	-290
Mar 17	50159	93	-203	0	-3024	8	-290
Mar 22	50164	96	-183	7	-3017	6	-299
Mar 27	50169	104	-164	23	-3003	8	-301
Apr 1	50174	109	-155	38	-2991	7	-315
Apr 6	50179	117	-154	47	-2977	10	-328
Apr 11	50184	111	-145	61	-2969	7	-336
Apr 16	50189	103	-132	64	-2964	3	-352
Apr 21	50194	101	-117	83	-2952	2	-362
Apr 26	50199	107	-116	104	-2939	1	-365
May 1	50204	114	-96	118	-2942	-1	-379
May 6	50209	125	-76	136	-2937	-4	-382
May 11	50214	191	-58	154	-	-3	-391
May 16	50219	194	-43	170	-	-11	-401
May 21	50224	218	-34	187	25	-11	-413
May 26	50229	207	-20	210	35	-11	-423
May 31	50234	223	-13	221	38	-14	-446
Jun 5	50239	237	-14	239	43	-14	-443
Jun 10	50244	256	-14	258	44	-16	-440
Jun 15	50249	260	-13	274	86	-22	-450
Jun 20	50254	257	-5	302	103	-18	-447
Jun 25	50259	267	-6	320	110	-16	-443
Jun 30	50264	284	-10	338	116	-19	-444

TABLE 9. (CONT.)

Unit is one nanosecond.

Date 1996 0h UTC	MJD	UTC - UTC(k) TL	TP (27)	TUG	UME (28)	USNO	VSL (29)
Jul 5	50269	289	-20	360	123	-16	-437
Jul 10	50274	271	-7	380	130	-17	-431
Jul 15	50279	281	-6	392	146	-19	-428
Jul 20	50284	289	-10	408	160	-20	-428
Jul 25	50289	302	-14	432	164	-20	-420
Jul 30	50294	311	-22	451	182	-18	-421
Aug 4	50299	236	-30	472	195	-18	-413
Aug 9	50304	250	-26	495	216	-15	-419
Aug 14	50309	245	-28	523	214	-15	-410
Aug 19	50314	243	-29	546	229	-13	-399
Aug 24	50319	243	-25	565	233	-13	-400
Aug 29	50324	241	-28	578	232	-10	-402
Sep 3	50329	-	-2	598	240	-8	-396
Sep 8	50334	-	15	614	247	-9	-396
Sep 13	50339	-	35	641	258	-6	-389
Sep 18	50344	-	41	657	263	-6	-389
Sep 23	50349	-	37	671	258	0	-383
Sep 28	50354	-	46	694	265	-1	-388
Oct 3	50359	-	46	717	269	1	-392
Oct 8	50364	-	53	748	275	2	-389
Oct 13	50369	-	52	767	280	7	-396
Oct 18	50374	-	53	791	296	11	-386
Oct 23	50379	-	65	824	308	11	-379
Oct 28	50384	-	61	853	324	9	-383
Nov 2	50389	-	72	878	339	14	-391
Nov 7	50394	-	83	904	334	14	-387
Nov 12	50399	-	98	938	147	18	-383
Nov 17	50404	-	93	964	143	19	-392
Nov 22	50409	-	92	988	151	19	-382
Nov 27	50414	-	92	1007	164	21	-380
Dec 2	50419	-	96	1042	181	22	-382
Dec 7	50424	-	86	1065	188	21	-375
Dec 12	50429	-	81	1091	198	21	-374
Dec 17	50434	-	90	1117	205	19	-381
Dec 22	50439	-	94	1147	222	19	-387
Dec 27	50444	-	79	1171	230	14	-393

TABLE 9. (CONT.)

Notes

(1) AOS . Apparent time step of UTC-UTC(AOS) of - 370 ns on MJD = 50083 due to calibration of the GPS link.

(2) APL . Time step of UTC(APL) between MJD = 50239 and MJD = 50244 due to a reconfiguration of the laboratory.
New master clock starting MJD = 50389.

(3) AUS . Apparent time step of UTC-UTC(AUS) of + 54 ns on MJD = 50315.33 due to change of the value of the cable delay introduced in the GPS receiver.
Frequency steps of UTC(AUS) in ns/d :

MJD	Freq. step
50139	-1.123
50163	-8.726
50234	+6.566
50285	+4.320
50369	-3.283

(4) CH . Frequency steps of UTC(CH) in ns/d :

MJD	Freq. step
50093	+0.88
50123	+4.43
50153	+1.64
50183	+3.06
50213	+1.84
50243	-2.57
50273	-1.11
50303	+1.1
50333	+1.1
50393	-1.65
50423	+0.89

(5) CNM . Centro Nacional de Metrologia, Queretaro, Mexico.
Change of master clock on MJD = 50258.
Frequency steps of UTC(CNM) in ns/d :

MJD	Freq. step
50318	+9.85
50374	-9.85
50440	-26.87

(6) CRL . Frequency steps of UTC(CRL) in ns/d :

MJD	Freq. step
50184.0	-3.000
50288.0	-1.359

(7) CSAO. Time step of UTC-UTC(CSAO) of + 200 ns between MJD = 50234 and MJD = 50239 due to a change of GPS receiver.

(8) CSIR. Frequency step of UTC(CSIR) of +25.92 ns/d between MJD = 50223 and MJD = 50230.

(9) DLR . Deutsche Forschungsanstalt fuer Luft und Raumfahrt, Oberpfaffenhofen, Germany.
Time step of UTC(DLR) of - 2600 ns on MJD = 50406.

(10) DTAG. Deutsche Telekom AG, Darmstadt, Germany, formerly FTZ.

(11) IEN . Change of master clock on MJD = 50167. Frequency step of UTC(IEN) of +3.83 ns/d on MJD = 50297.6

(12) IFAG. Frequency step of UTC(IFAG) of -52.0 ns/d on MJD = 50161.

(13) IGMA. Time step of UTC(IGMA) of + 300 ns on MJD = 50083.0

(14) IPQ . Time step of UTC(IPQ) of -9850 ns on MJD = 50239.58
Apparent time step of UTC-UTC(IPQ) of + 82 ns between MJD = 50294 and MJD = 50299 due to GPS receiver calibration.

(15) KRIS. Frequency steps of UTC(KRIS) in ns/d :

MJD	Freq. step
50085.0	+0.864
50330.0	-0.864
50430.0	-0.864

(16) NAOM. Change of master clock on MJD = 50321.03

(17) NPL . Frequency steps of UTC(NPL) in ns/d :

MJD	Freq. step
50100.61	+0.3
50129.71	+1.0
50183.43	-0.7
50316.66	-0.35
50372.65	+0.4
50405.62	+0.5

(18) NRC . UTC(NRC) temporarily derived from a HP 5071A from MJD = 50367.56 to MJD = 50435.79
Frequency steps of UTC(NRC) in ns/d :

MJD	Freq. step
50109.00	+3.46
50204.00	-1.73
50269.00	-0.864
50319.00	+0.87
50359.00	-4.32

(19) NRLM. Change of master clock on MJD = 50386.0

(20) ONBA. Time step of UTC(ONBA) of - 12000 ns between MJD = 50274 and MJD = 50279.

(21) ONRJ. Change of master clock on MJD = 50287.5

(22) OP . Frequency steps of UTC(OP) in ns/d :

MJD	Freq. step
50082.56	+0.432
50143.56	-0.864
50205.56	+0.864
50234.56	+0.432
50265.56	-0.432
50325.56	-0.432
50419.56	+0.432

(23) PTB . Apparent time step of UTC-UTC(PTB) of + 9 ns on MJD = 50083 due to calibration of the GPS link.

(24) SCL . Change of master clock on MJD = 50289.292
Frequency steps of UTC(SCL) in ns/d :

MJD	Freq. step
50226.357	-5.00
50261.073	-12.00
50344.072	-6.13

(25) SP . Swedish National Testing and Research Institute, Boras, Sweden.
On MJD = 50336.31 time step of UTC(SP) of - 8900 ns and frequency step of UTC(SP) of - 17.8 ns/d.

(26) SU . Time step of UTC(SU) of - 9000 ns on MJD = 50414.0

(27) TP . Frequency steps of UTC(TP) in ns/d :

MJD	Freq. step
50265.29	+1.64
50448.5	+1.12

(28) UME . Apparent time step of UTC-UTC(UME) of - 170 ns between MJD = 50394 and MJD = 50399.

(29) VSL . Frequency step of UTC(VSL) of -2.592 ns/d on MJD = 50235.323

TABLE 10. INTERNATIONAL GPS TRACKING SCHEDULE NO 27 FOR MJD = 50267 (1996 JULY 3) AT 0H UTC

This is a suggested tracking schedule for international time comparisons using GPS satellites in common-view between ten areas of the globe.

Area		Participating laboratories
Europe	E	AOS, CAO, CH, DLR, DTAG, GUM, IEN, IFAG, IPQ, LDS, Mad*, NPL, OMH, OP, ORB, PTB, ROA, SP, SU, TP, TUG, UME, VSL
East North America	ENA	AO*, APL, NRC, USNO
West North America	WNA	CNM, Gold*, NIST, WWV*
Hawaii	H	WWVH*
East Asia	EA	BIRM, CRL, CSAO, KRIS, NAOM, NAOT, NIM, NRLM, SCL, SO, TL
Australia and New Zealand	A	Can*, ATC*, ORR*, MSL, NML*
India	I	NPLI
Middle East	ME	INPL
South Africa	SAF	CSIR
South America	SAM	IGMA, ONBA, ONRJ, Kou*

* Mad, Gold, Can : JPL Deep Space Network, Madrid, Goldstone, Canberra.
WWV, WWVH : NIST stations in Colorado and Hawaii.
AO : Arecibo Observatory.
Kou: CNES Kourou Center
ATC, ORR and NML: Australian laboratories.

Other laboratories are designated by their usual acronyms.

The start times of the tracks are referenced to UTC. The start time of a track is the date of the first observation. It may be necessary to advance this time by 2 minutes if you operate an NBS-type receiver, in order to allow the lock-on procedure onto the satellite signal. The track length is 780 s. All the track times should be decremented 4 minutes eachday, to account for the GPS sidereal orbits. The track times were chosen to maximize elevation angles between pairs of stations. The class bytes are such that in association with the satellite number they form a unique identifyer for each common view.

The European area, having numerous possible connections, has a heavy schedule. The establishment of sub-schedules permits the sharing of thework. European laboratories have been contacted to ensure the coordinationof sub-schedules.

TABLE 10. SCHEDULE NO 27, 1996 JULY 3 (CONT.)

*** Europe ***

Class	PRN	Start h	Start m	Connects	E1	E2	E3	E4
10	27	0	18	EA,ME,I	*	*	*	*
68	9	0	34	ENA,SAM		*		
19	9	1	22	ENA,WNA,SAM	*	*	*	*
10	2	1	38	EA,ME,I			*	
00	23	1	54	ENA,WNA,SAM		*		
54	23	2	26	SAM,ENA,WNA	*	*	*	*
10	7	2	42	EA,ME,I			*	
00	5	3	30	ENA,ME,SAM	*	*	*	*
19	20	4	34	ENA,WNA,ME,SAM	*	*	*	*
4C	6	4	50	SAF,ME,SAM				*
7C	1	5	6	WNA,SAM,ENA		*		
10	4	5	38	EA,I,ME	*	*	*	*
10	24	5	54	EA,ME,I			*	
10	5	6	26	EA,ME,I			*	
00	6	6	42	ENA,ME	*	*	*	*
54	25	7	46	SAM,ME	*	*	*	*
10	16	8	34	EA,ME,I			*	
55	25	8	50	SAM,ME,ENA,SAF	*	*	*	*
18	28	9	6	ENA,WNA,SAM		*		
10	6	9	38	EA,ME,I			*	
54	3	9	54	SAM,ENA,WNA	*	*	*	*
4C	23	10	26	SAF,ME,I				*
10	17	10	58	EA,ME,I	*	*	*	*
4C	21	11	14	SAF,ME				*
4C	22	12	2	SAF,SAM	*	*	*	*
10	23	12	50	EA,ME,I			*	
54	15	13	6	SAM,ENA,WNA	*	*	*	*
08	15	13	22	WNA,ENA,SAM		*		
10	21	14	10	EA,ME,I	*	*	*	*
10	1	14	42	EA,ME,I			*	
4C	31	15	14	SAF	*	*	*	*
00	14	15	30	ENA,SAM,ME		*		
4C	29	16	18	SAF,ME,SAM	*	*	*	*
00	7	16	50	ENA,WNA,SAM		*		
4C	15	17	6	SAF,ME,I				*
10	25	17	22	EA,ME,I	*	*	*	*
54	18	17	38	SAM,SAF,ME				*
10	14	18	26	EA,ME,I	*	*	*	*
00	4	18	58	ENA,WNA,ME,SAM		*		
08	24	19	30	WNA,ENA,SAM	*	*	*	*
4C	19	19	46	SAF,ME				*
10	29	20	18	EA,ME,I			*	
54	24	20	34	SAM,ENA,WNA,ME	*	*	*	*
08	16	21	38	WNA,ENA,SAM	*	*	*	*
10	18	21	54	EA			*	
01	16	22	42	ENA,ME,SAM	*	*	*	*
10	19	23	14	EA,ME,I			*	
08	26	23	46	WNA,ENA,SAM	*	*	*	*

TABLE 10. SCHEDULE NO 27, 1996 JULY 3 (CONT.)

*** E. North America ***

Class	PRN	Start h	Start m	Connects
68	9	0	34	SAM,E
34	3	0	50	H,WNA,EA
18	17	1	6	WNA,SAM
19	9	1	22	WNA,E,SAM
18	21	1	38	WNA,H
00	23	1	54	E,WNA,SAM
54	23	2	26	E,SAM,WNA
68	21	2	58	SAM,WNA
00	5	3	30	E,ME,SAM
20	15	3	46	EA,WNA,H
19	20	4	34	WNA,E,ME,SAM
7C	1	5	6	WNA,SAM,E
28	14	5	22	EA,WNA,H
00	6	6	42	E,ME
18	25	7	14	WNA,SAM
28	18	7	46	EA,WNA,H
18	3	8	18	WNA,SAM
55	25	8	50	E,SAM,ME,SAF
18	28	9	6	WNA,E,SAM
18	22	9	22	WNA,ME,SAM
68	31	9	38	SAM,WNA
54	3	9	54	E,SAM,WNA
18	18	10	10	WNA
18	19	10	26	WNA,H
18	27	10	42	WNA,H,EA
68	18	11	14	SAM,WNA
18	31	12	34	WNA,ME
54	15	13	6	E,SAM,WNA
08	15	13	22	E,WNA,SAM
18	2	14	26	WNA,H
00	14	15	30	E,SAM,ME
20	9	15	46	EA,WNA,H
00	7	16	50	E,WNA,SAM
20	5	17	6	EA,WNA,H
18	24	17	22	WNA,H
28	20	18	42	WNA,EA,H
00	4	18	58	E,WNA,ME,SAM
60	18	19	14	ME
08	24	19	30	E,WNA,SAM
18	16	20	2	WNA
54	24	20	34	E,SAM,WNA,ME
28	17	21	22	WNA,EA,H
08	16	21	38	E,WNA,SAM
01	16	22	42	E,ME,SAM
08	26	23	46	E,WNA,SAM

*** W. North America ***

Class	PRN	Start h	Start m	Connects
34	3	0	50	H,ENA,EA
18	17	1	6	ENA,SAM
19	9	1	22	ENA,E,SAM
18	21	1	38	ENA,H
00	23	1	54	E,ENA,SAM
54	23	2	26	E,SAM,ENA
68	21	2	58	ENA,SAM
98	31	3	14	EA,A,H
20	15	3	46	EA,ENA,H
19	20	4	34	ENA,E,ME,SAM
7C	1	5	6	SAM,E,ENA
28	14	5	22	EA,ENA,H
18	25	7	14	ENA,SAM
28	18	7	46	EA,ENA,H
18	3	8	18	ENA,SAM
18	28	9	6	ENA,E,SAM
18	22	9	22	ENA,ME,SAM
68	31	9	38	ENA,SAM
54	3	9	54	E,SAM,ENA
18	18	10	10	ENA
18	19	10	26	ENA,H
18	27	10	42	ENA,H,EA
68	18	11	14	ENA,SAM
18	31	12	34	ENA,ME
54	15	13	6	E,SAM,ENA
08	15	13	22	E,ENA,SAM
28	26	13	38	EA,H
18	2	14	26	ENA,H
20	9	15	46	ENA,EA,H
00	7	16	50	E,ENA,SAM
20	5	17	6	ENA,EA,H
18	24	17	22	ENA,H
28	20	18	42	EA,H,ENA
00	4	18	58	E,ENA,ME,SAM
28	6	19	14	EA,H
08	24	19	30	E,ENA,SAM
80	17	19	46	A,H
18	16	20	2	ENA
54	24	20	34	E,SAM,ENA,ME
28	17	21	22	EA,H,ENA
08	16	21	38	E,ENA,SAM
80	22	23	30	A,EA,H
08	26	23	46	E,ENA,SAM

*** East Asia ***

Class	PRN	Start h	Start m	Connects
10	27	0	18	E,ME,I
34	3	0	50	H,WNA,ENA
10	2	1	38	E,ME,I
98	14	2	10	A
10	7	2	42	E,ME,I
98	31	3	14	A,H,WNA
20	15	3	46	ENA,WNA,H
36	14	4	2	H
98	2	4	50	A
28	14	5	22	WNA,ENA,H
10	4	5	38	E,I,ME
10	24	5	54	E,ME,I
10	5	6	26	E,ME,I
28	18	7	46	WNA,ENA,H
10	16	8	34	E,ME,I
98	26	8	50	A,I
10	6	9	38	E,ME,I
18	27	10	42	ENA,WNA,H
10	17	10	58	E,ME,I
98	9	11	46	A
10	23	12	50	E,ME,I
28	26	13	38	WNA,H
10	21	14	10	E,ME,I
10	1	14	42	E,ME,I
98	20	14	58	A
20	9	15	46	ENA,WNA,H
20	5	17	6	ENA,WNA,H
10	25	17	22	E,ME,I
98	22	17	54	A
10	14	18	26	E,ME,I
28	20	18	42	WNA,H,ENA
98	1	18	58	A
28	6	19	14	WNA,H
98	28	20	2	A,I
10	29	20	18	E,ME,I
98	3	20	50	A,I
98	25	21	6	A,H
28	17	21	22	WNA,H,ENA
10	18	21	54	E
37	3	22	26	H,I
98	29	22	58	A,I
10	19	23	14	E,ME,I
80	22	23	30	WNA,A,H

TABLE 10. SCHEDULE NO 27, 1996 JULY 3 (CONT.)

*** Hawaii ***

Class	PRN	Start h	Start m	Connects
34	3	0	50	WNA,ENA,EA
18	21	1	38	ENA,WNA
98	31	3	14	EA,A,WNA
3C	3	3	30	A
20	15	3	46	EA,ENA,WNA
36	14	4	2	EA
3C	29	4	34	A
3C	18	5	6	A
28	14	5	22	EA,WNA,ENA
3C	7	5	54	A
3C	19	6	58	A
28	18	7	46	EA,WNA,ENA
3C	27	8	2	A
3C	4	8	34	A
3C	2	9	22	A
3C	24	9	38	A
18	19	10	26	ENA,WNA
18	27	10	42	ENA,WNA,EA
3C	16	12	50	A
28	26	13	38	WNA,EA
3C	5	14	10	A
18	2	14	26	ENA,WNA
20	9	15	46	ENA,EA,WNA
3C	26	16	2	A
3C	6	16	50	A
20	5	17	6	ENA,EA,WNA
18	24	17	22	ENA,WNA
3C	1	18	10	A
28	20	18	42	WNA,EA,ENA
28	6	19	14	EA,WNA
80	17	19	46	WNA,A
3C	23	20	34	A
98	25	21	6	EA,A
28	17	21	22	WNA,EA,ENA
3C	21	21	54	A
37	3	22	26	EA,I
80	22	23	30	WNA,A,EA

*** Australia ***

Class	PRN	Start h	Start m	Connects
CC	18	0	34	SAF
98	14	2	10	EA
98	31	3	14	EA,H,WNA
3C	3	3	30	H
F9	19	4	18	A
3C	29	4	34	H
98	2	4	50	EA
3C	18	5	6	H
CC	16	5	38	SAF
3C	7	5	54	H
F9	27	6	10	A
3C	19	6	58	H
CC	26	7	14	SAF
3C	27	8	2	H
3C	4	8	34	H
98	26	8	50	EA,I
CC	9	9	6	SAF
3C	2	9	22	H
3C	24	9	38	H
F9	4	9	54	A
CC	5	10	10	SAF
98	9	11	46	EA
CC	6	12	18	SAF
3C	16	12	50	H
3C	5	14	10	H
98	20	14	58	EA
3C	26	16	2	H
3C	6	16	50	H
F9	23	17	6	A
CC	3	17	22	SAF
98	22	17	54	EA
3C	1	18	10	H
98	1	18	58	EA
CC	31	19	30	SAF
80	17	19	46	WNA,H
98	28	20	2	EA,I
3C	23	20	34	H
98	3	20	50	EA,I
98	25	21	6	EA,H
3C	21	21	54	H
CC	14	22	10	SAF
98	29	22	58	EA,I
80	22	23	30	WNA,EA,H

*** India ***

Class	PRN	Start h	Start m	Connects
10	27	0	18	E,EA,ME
10	2	1	38	E,EA,ME
10	7	2	42	E,EA,ME
10	4	5	38	E,EA,ME
10	24	5	54	E,EA,ME
10	5	6	26	E,EA,ME
10	16	8	34	E,EA,ME
98	26	8	50	EA,A
10	6	9	38	E,EA,ME
4C	23	10	26	E,SAF,ME
10	17	10	58	E,EA,ME
10	23	12	50	E,EA,ME
BC	1	13	6	ME,SAF
10	21	14	10	E,EA,ME
10	1	14	42	E,EA,ME
4C	15	17	6	E,SAF,ME
10	25	17	22	E,EA,ME
10	14	18	26	E,EA,ME
98	28	20	2	EA,A
10	29	20	18	E,EA,ME
98	3	20	50	EA,A
37	3	22	26	H,EA
98	29	22	58	EA,A
10	19	23	14	E,EA,ME

TABLE 10. SCHEDULE NO 27, 1996 JULY 3 (CONT.)

*** Middle East ***

Class	PRN	Start h	Start m	Connects
10	27	0	18	E,EA,I
BC	7	0	50	SAF
10	2	1	38	E,EA,I
10	7	2	42	E,EA,I
00	5	3	30	E,ENA,SAM
19	20	4	34	ENA,WNA,E,SAM
4C	6	4	50	E,SAF,SAM
BC	9	5	22	SAF
10	4	5	38	E,EA,I
10	24	5	54	E,EA,I
10	5	6	26	E,EA,I
00	6	6	42	E,ENA
54	25	7	46	E,SAM
10	16	8	34	E,EA,I
55	25	8	50	E,SAM,ENA,SAF
18	22	9	22	ENA,WNA,SAM
10	6	9	38	E,EA,I
4C	23	10	26	E,SAF,I
10	17	10	58	E,EA,I
4C	21	11	14	E,SAF
18	31	12	34	ENA,WNA
10	23	12	50	E,EA,I
BC	1	13	6	SAF,I
10	21	14	10	E,EA,I
10	1	14	42	E,EA,I
00	14	15	30	E,ENA,SAM
4C	29	16	18	E,SAF,SAM
4C	15	17	6	E,SAF,I
10	25	17	22	E,EA,I
54	18	17	38	E,SAM,SAF
10	14	18	26	E,EA,I
00	4	18	58	E,ENA,WNA,SAM
60	18	19	14	ENA
4C	19	19	46	E,SAF
BC	14	20	2	SAF
10	29	20	18	E,EA,I
54	24	20	34	E,SAM,ENA,WNA
BC	4	21	6	SAF
01	16	22	42	E,ENA,SAM
10	19	23	14	E,EA,I

*** South Africa ***

Class	PRN	Start h	Start m	Connects
CC	18	0	34	A
BC	7	0	50	ME
4C	6	4	50	E,ME,SAM
BC	9	5	22	ME
CC	16	5	38	A
CC	26	7	14	A
55	25	8	50	E,SAM,ME,ENA
CC	9	9	6	A
CC	5	10	10	A
4C	23	10	26	E,ME,I
4C	21	11	14	E,ME
4C	22	12	2	E,SAM
CC	6	12	18	A
BC	1	13	6	ME,I
4C	31	15	14	E
4C	29	16	18	E,ME,SAM
CA	19	16	34	SAM
4C	15	17	6	E,ME,I
CC	3	17	22	A
54	18	17	38	E,SAM,ME
CC	31	19	30	A
4C	19	19	46	E,ME
BC	14	20	2	ME
BC	4	21	6	ME
CC	14	22	10	A

*** South America ***

Class	PRN	Start h	Start m	Connects
68	9	0	34	ENA,E
18	17	1	6	ENA,WNA
19	9	1	22	ENA,WNA,E
00	23	1	54	E,ENA,WNA
54	23	2	26	E,ENA,WNA
68	21	2	58	ENA,WNA
00	5	3	30	E,ENA,ME
19	20	4	34	ENA,WNA,E,ME
4C	6	4	50	E,SAF,ME
7C	1	5	6	WNA,E,ENA
18	25	7	14	ENA,WNA
54	25	7	46	E,ME
18	3	8	18	ENA,WNA
55	25	8	50	E,ME,ENA,SAF
18	28	9	6	ENA,WNA,E
18	22	9	22	ENA,WNA,ME
68	31	9	38	ENA,WNA
54	3	9	54	E,ENA,WNA
68	18	11	14	ENA,WNA
4C	22	12	2	E,SAF
54	15	13	6	E,ENA,WNA
08	15	13	22	E,WNA,ENA
00	14	15	30	E,ENA,ME
4C	29	16	18	E,SAF,ME
CA	19	16	34	SAF
00	7	16	50	E,ENA,WNA
54	18	17	38	E,SAF,ME
00	4	18	58	E,ENA,WNA,ME
08	24	19	30	E,WNA,ENA
54	24	20	34	E,ENA,WNA,ME
08	16	21	38	E,WNA,ENA
01	16	22	42	E,ENA,ME
F8	9	22	58	SAM
08	26	23	46	E,WNA,ENA

TABLE 11. INTERNATIONAL GPS TRACKING SCHEDULE NO 28 FOR MJD = 50451 (1997 JANUARY 3) AT 0H UTC

This is a suggested tracking schedule for international time comparisons using GPS satellites in common-view between ten areas of the globe.

Area		Participating laboratories
Europe	E	AOS, BEV, CAO, CH, DLR, DTAG, GUM, IEN, IFAG, IPQ, LDS, Mad*, NPL, OMH, OP, ORB, PTB, ROA, SP, SU, TP, TUG, UME, VSL
East North America	ENA	AO*, APL, NRC, USNO
West North America	WNA	CNM, Gold*, NIST, WWV*
Hawaii	H	WWVH*
East Asia	EA	BIRM, CRL, CSAO, KRIS, NAOM, NAOT, NIM, NRLM, SCL, SO, TL
Australia and New Zealand	A	Can*, ATC*, ORR*, MSL, NML*
India	I	NPLI
Middle East	ME	INPL
South Africa	SAF	CSIR
South America	SAM	IGMA, ONBA, ONRJ, Kou*

* Mad, Gold, Can : JPL Deep Space Network, Madrid, Goldstone, Canberra.
WWV, WWVH : NIST stations in Colorado and Hawaii.
AO : Arecibo Observatory.
Kou: CNES Kourou Center
ATC, ORR and NML: Australian laboratories.

Other laboratories are designated by their usual acronyms.

The start times of the tracks are referenced to UTC. The start time of a track is the date of the first observation. It may be necessary to advance this time by 2 minutes if you operate an NBS-type receiver, in order to allow the lock-on procedure onto the satellite signal. The track length is 780 s. All the track times should be decremented 4 minutes each day, to account for the GPS sidereal orbits. The track times were chosen to maximize elevation angles between pairs of stations. The class bytes are such that in association with the satellite number they form a unique identifyer for each common view.

The European area, having numerous possible connections, has a heavy schedule. The establishment of sub-schedules permits the sharing of the work. European laboratories have been contacted to ensure the coordination of sub-schedules.

TABLE 11. SCHEDULE NO 28, 1997 JANUARY 3 (CONT.)

*** Europe ***

Class	PRN	Start		Connects	Subschedules			
		h	m		E1	E2	E3	E4
54	15	0	18	SAM,ENA,WNA	*	*	*	*
08	15	0	34	WNA,ENA,SAM		*		
10	21	1	22	EA,ME,I	*	*	*	*
10	1	1	54	EA,ME,I			*	
4C	31	2	26	SAF,ME	*	*	*	*
00	14	2	42	ENA,SAM,ME		*		
4C	29	3	30	SAF,ME,I	*	*	*	*
00	7	4	2	ENA,WNA,SAM		*		
4C	15	4	18	SAF,ME,I				*
10	25	4	34	EA,ME,I	*	*	*	*
54	18	4	50	SAM,SAF,ME				*
48	14	5	38	ME,I	*	*	*	*
00	4	6	10	ENA,WNA,ME		*		
60	18	6	26	ENA,ME		*		
08	24	6	42	WNA,ENA	*	*	*	*
4C	19	6	58	SAF,ME				*
54	24	7	46	SAM,ENA,WNA	*	*	*	*
07	10	8	50	ENA,WNA,ME	*	*	*	*
10	18	9	6	EA,ME,I			*	
10	19	9	54	EA,ME,I	*	*	*	*
08	26	10	58	WNA,ENA,SAM	*	*	*	*
10	27	12	2	EA,ME,I	*	*	*	*
19	9	12	34	ENA,WNA,SAM		*		
10	2	13	6	EA,ME,I	*	*	*	*
00	23	13	22	ENA,WNA,SAM		*		
54	23	13	38	SAM,ENA,WNA		*		
10	7	14	10	EA,ME,I	*	*	*	*
11	7	14	26	EA,ME,I			*	
00	5	14	42	ENA,ME,SAM	*	*	*	*
07	30	15	14	ENA,SAM	*	*	*	*
7C	1	16	18	WNA,SAM,ENA	*	*	*	*
BC	9	16	34	ME,SAF,I				*
10	4	16	50	EA,I,ME			*	
10	24	17	22	EA,ME,I	*	*	*	*
10	5	17	38	EA,ME,I			*	
48	6	17	54	ME,ENA		*		
18	25	18	26	ENA,WNA,SAM,ME	*	*	*	*
54	25	19	30	SAM,ME,ENA	*	*	*	*
55	25	20	2	SAM,ME,ENA,SAF		*		
4C	17	20	18	SAF,ME,I				*
18	22	20	34	ENA,WNA,ME	*	*	*	*
10	6	20	50	EA,ME,I			*	
54	3	21	6	SAM,ENA,WNA		*		
4C	23	21	38	SAF,ME,I	*	*	*	*
10	17	22	10	EA,ME,I			*	
4C	21	22	42	SAF,ME,I	*	*	*	*
4C	22	23	14	SAF,SAM,ME				*
10	23	23	46	EA,ME,I	*	*	*	*

TABLE 11. SCHEDULE NO 28, 1997 JANUARY 3 (CONT.)

*** E. North America ***

Class	PRN	Start h	Start m	Connects
54	15	0	18	E,SAM,WNA
08	15	0	34	E,WNA,SAM
18	2	1	38	WNA,H
00	14	2	42	E,SAM,ME
20	9	2	58	EA,WNA
18	4	3	30	WNA,H,SAM
00	7	4	2	E,WNA,SAM
20	5	4	18	EA,WNA,H
18	24	4	34	WNA,H
18	5	5	6	WNA,H
20	30	5	38	EA,WNA,H
28	30	5	54	WNA,EA,H
00	4	6	10	E,WNA,ME
60	18	6	26	ME,E
08	24	6	42	E,WNA
20	6	7	14	EA,WNA,H
54	24	7	46	E,SAM,WNA
07	10	8	50	E,WNA,ME
18	6	9	54	WNA,H,SAM
18	23	10	26	WNA,H
69	9	10	42	SAM
08	26	10	58	E,WNA,SAM
68	9	12	2	SAM,WNA
18	17	12	18	WNA,SAM
19	9	12	34	WNA,E,SAM
18	21	12	50	WNA,H
18	1	13	6	WNA,H
00	23	13	22	E,WNA,SAM
54	23	13	38	E,SAM,WNA
00	5	14	42	E,ME,SAM
20	15	14	58	EA,WNA,H
07	30	15	14	E,SAM
19	25	15	30	WNA,H,SAM
7C	1	16	18	WNA,SAM,E
28	14	16	34	EA,WNA,H
48	6	17	54	E,ME
18	25	18	26	WNA,SAM,ME,E
19	18	19	14	WNA,EA
54	25	19	30	E,SAM,ME
55	25	20	2	E,SAM,ME,SAF
18	22	20	34	WNA,ME,E
68	31	20	50	SAM,WNA
54	3	21	6	E,SAM,WNA
18	18	21	22	WNA,H
18	19	21	38	WNA,H
18	27	21	54	WNA,H,EA
68	18	22	26	SAM,WNA
19	27	22	58	WNA,H

*** W. North America ***

Class	PRN	Start h	Start m	Connects
54	15	0	18	E,SAM,ENA
08	15	0	34	E,ENA,SAM
28	26	0	50	EA,H
18	2	1	38	ENA,H
20	9	2	58	ENA,EA
18	4	3	30	ENA,H,SAM
00	7	4	2	E,ENA,SAM
20	5	4	18	ENA,EA,H
18	24	4	34	ENA,H
18	5	5	6	ENA,H
20	30	5	38	ENA,EA,H
28	30	5	54	EA,H,ENA
00	4	6	10	E,ENA,ME
28	6	6	26	EA,H
08	24	6	42	E,ENA
20	6	7	14	ENA,EA,H
54	24	7	46	E,SAM,ENA
28	17	8	34	EA,H
07	10	8	50	E,ENA,ME
18	6	9	54	ENA,H,SAM
18	23	10	26	ENA,H
80	22	10	42	A,EA,H
08	26	10	58	E,ENA,SAM
68	9	12	2	ENA,SAM
18	17	12	18	ENA,SAM
19	9	12	34	ENA,E,SAM
18	21	12	50	ENA,H
18	1	13	6	ENA,H
00	23	13	22	E,ENA,SAM
54	23	13	38	E,SAM,ENA
3C	31	14	26	A,H
20	15	14	58	EA,ENA,H
19	25	15	30	ENA,H,SAM
7C	1	16	18	SAM,E,ENA
28	14	16	34	EA,ENA,H
18	25	18	26	ENA,SAM,ME,E
28	18	18	58	EA,H
19	18	19	14	ENA,EA
18	22	20	34	ENA,ME,E
68	31	20	50	ENA,SAM
54	3	21	6	E,SAM,ENA
18	18	21	22	ENA,H
18	19	21	38	ENA,H
18	27	21	54	ENA,H,EA
68	18	22	26	ENA,SAM
19	27	22	58	ENA,H

*** East Asia ***

Class	PRN	Start h	Start m	Connects
28	26	0	50	WNA,H
10	21	1	22	E,ME,I
10	1	1	54	E,ME,I
20	9	2	58	ENA,WNA
20	5	4	18	ENA,WNA,H
10	25	4	34	E,ME,I
98	22	5	6	A,I
3C	1	5	22	A,H
20	30	5	38	ENA,WNA,H
28	30	5	54	WNA,H,ENA
98	1	6	10	A
28	6	6	26	WNA,H
20	6	7	14	ENA,WNA,H
8C	29	7	30	ME,I
98	3	8	2	A,I
98	25	8	18	A,H
28	17	8	34	WNA,H
10	18	9	6	E,ME,I
37	3	9	38	H,I
10	19	9	54	E,ME,I
80	22	10	42	WNA,A,H
10	27	12	2	E,ME,I
10	2	13	6	E,ME,I
98	14	13	22	A,H
10	7	14	10	E,ME,I
11	7	14	26	E,ME,I
20	15	14	58	ENA,WNA,H
36	14	15	14	H
98	2	16	2	A,I
3C	18	16	18	A,H
28	14	16	34	WNA,ENA,H
10	4	16	50	E,I,ME
3C	7	17	6	A,H,I
10	24	17	22	E,ME,I
10	5	17	38	E,ME,I
28	18	18	58	WNA,H
19	18	19	14	ENA,WNA
98	26	20	2	A,I
3C	4	20	34	A,H
10	6	20	50	E,ME,I
3C	24	21	6	A,H
18	27	21	54	ENA,WNA,H
10	17	22	10	E,ME,I
98	9	22	58	A
36	10	23	14	H,A
10	23	23	46	E,ME,I

TABLE 11. SCHEDULE NO 28, 1997 JANUARY 3 (CONT.)

*** Hawaii ***

Class	PRN	Start		Connects
		h	m	
28	26	0	50	WNA,EA
3C	5	1	22	A
18	2	1	38	ENA,WNA
3C	30	2	58	A
3C	26	3	14	A
18	4	3	30	ENA,WNA,SAM
3C	6	4	2	A
20	5	4	18	ENA,EA,WNA
18	24	4	34	ENA,WNA
18	5	5	6	ENA,WNA
3C	1	5	22	A,EA
20	30	5	38	ENA,EA,WNA
28	30	5	54	WNA,EA,ENA
28	6	6	26	EA,WNA
3C	17	6	58	A
20	6	7	14	ENA,EA,WNA
98	25	8	18	EA,A
28	17	8	34	WNA,EA
3C	21	9	6	A
37	3	9	38	EA,I
18	6	9	54	ENA,WNA,SAM
18	23	10	26	ENA,WNA
80	22	10	42	WNA,A,EA
18	21	12	50	ENA,WNA
18	1	13	6	ENA,WNA
98	14	13	22	EA,A
3D	29	13	54	A
3C	29	14	10	A
3C	31	14	26	A,WNA
3C	3	14	42	A
20	15	14	58	EA,ENA,WNA
36	14	15	14	EA
19	25	15	30	ENA,WNA,SAM
3D	31	15	46	A
3C	18	16	18	A,EA
28	14	16	34	EA,WNA,ENA
3C	7	17	6	A,EA,I
3C	19	18	10	A
28	18	18	58	EA,WNA
3C	27	19	14	A
3C	4	20	34	A,EA
3C	2	20	50	A
3C	24	21	6	A,EA
18	18	21	22	ENA,WNA
18	19	21	38	ENA,WNA
18	27	21	54	ENA,WNA,EA
19	27	22	58	ENA,WNA
36	10	23	14	EA,A

*** Australia ***

Class	PRN	Start		Connects
		h	m	
3C	5	1	22	H
3C	30	2	58	H
3C	26	3	14	H
3C	6	4	2	H
CC	3	4	34	SAF
F9	23	4	50	A
98	22	5	6	EA,I
3C	1	5	22	H,EA
98	1	6	10	EA
CD	31	6	26	SAF
CC	31	6	42	SAF
3C	17	6	58	H
98	3	8	2	EA,I
98	25	8	18	EA,H
CC	15	8	34	SAF
3C	21	9	6	H
CC	14	9	54	SAF
80	22	10	42	WNA,EA,H
CC	18	11	46	SAF,I
CD	18	12	2	SAF
98	14	13	22	EA,H
3D	29	13	54	H
3C	29	14	10	H
3C	31	14	26	H,WNA
3C	3	14	42	H
F9	19	15	30	A
3D	31	15	46	H
98	2	16	2	EA,I
3C	18	16	18	H,EA
3C	7	17	6	H,EA,I
F9	27	17	22	A
CD	26	17	54	SAF
3C	19	18	10	H
CC	26	18	26	SAF
3C	27	19	14	H
98	26	20	2	EA,I
3C	4	20	34	H,EA
3C	2	20	50	H
3C	24	21	6	H,EA
CC	5	21	22	SAF
F9	4	21	38	A
98	9	22	58	EA
36	10	23	14	EA,H
CC	6	23	30	SAF,I
CD	6	23	46	SAF

*** India ***

Class	PRN	Start		Connects
		h	m	
BC	1	0	18	ME,SAF
10	21	1	22	E,EA,ME
10	1	1	54	E,EA,ME
4C	29	3	30	E,SAF,ME
4C	15	4	18	E,SAF,ME
10	25	4	34	E,EA,ME
98	22	5	6	EA,A
48	14	5	38	E,ME
BC	14	7	14	ME,SAF
8C	29	7	30	EA,ME
98	3	8	2	EA,A
10	18	9	6	E,EA,ME
37	3	9	38	H,EA
10	19	9	54	E,EA,ME
CC	18	11	46	A,SAF
10	27	12	2	E,EA,ME
10	2	13	6	E,EA,ME
10	7	14	10	E,EA,ME
11	7	14	26	E,EA,ME
98	2	16	2	EA,A
BC	9	16	34	ME,SAF,E
10	4	16	50	E,EA,ME
3C	7	17	6	A,H,EA
10	24	17	22	E,EA,ME
10	5	17	38	E,EA,ME
98	26	20	2	EA,A
4C	17	20	18	E,SAF,ME
10	6	20	50	E,EA,ME
4C	23	21	38	E,SAF,ME
10	17	22	10	E,EA,ME
4C	21	22	42	E,SAF,ME
CC	6	23	30	A,SAF
10	23	23	46	E,EA,ME

TABLE 11. SCHEDULE NO 28, 1997 JANUARY 3 (CONT.)

*** Middle East ***

Class	PRN	Start		Connects
		h	m	
BC	1	0	18	SAF,I
10	21	1	22	E,EA,I
10	1	1	54	E,EA,I
4C	31	2	26	E,SAF
00	14	2	42	E,ENA,SAM
4C	29	3	30	E,SAF,I
4C	15	4	18	E,SAF,I
10	25	4	34	E,EA,I
54	18	4	50	E,SAM,SAF
48	14	5	38	E,I
00	4	6	10	E,ENA,WNA
60	18	6	26	ENA,E
4C	19	6	58	E,SAF
BC	14	7	14	SAF,I
8C	29	7	30	EA,I
BC	4	8	18	SAF,SAM
07	10	8	50	E,ENA,WNA
10	18	9	6	E,EA,I
10	19	9	54	E,EA,I
10	27	12	2	E,EA,I
10	2	13	6	E,EA,I
10	7	14	10	E,EA,I
11	7	14	26	E,EA,I
00	5	14	42	E,ENA,SAM
CA	6	16	2	SAF,SAM
BC	9	16	34	SAF,I,E
10	4	16	50	E,EA,I
10	24	17	22	E,EA,I
10	5	17	38	E,EA,I
48	6	17	54	E,ENA
18	25	18	26	ENA,WNA,SAM,E
54	25	19	30	E,SAM,ENA
55	25	20	2	E,SAM,ENA,SAF
4C	17	20	18	E,SAF,I
18	22	20	34	ENA,WNA,E
10	6	20	50	E,EA,I
4C	23	21	38	E,SAF,I
10	17	22	10	E,EA,I
4C	21	22	42	E,SAF,I
4C	22	23	14	E,SAF,SAM
10	23	23	46	E,EA,I

*** South Africa ***

Class	PRN	Start		Connects
		h	m	
BC	1	0	18	ME,I
4C	31	2	26	E,ME
4C	29	3	30	E,ME,I
CA	19	3	46	SAM
4C	15	4	18	E,ME,I
CC	3	4	34	A
54	18	4	50	E,SAM,ME
CD	31	6	26	A
CC	31	6	42	A
4C	19	6	58	E,ME
BC	14	7	14	ME,I
BC	4	8	18	ME,SAM
CC	15	8	34	A
CC	14	9	54	A
CC	18	11	46	A,I
CD	18	12	2	A
CA	6	16	2	SAM,ME
BC	9	16	34	ME,I,E
CD	26	17	54	A
CC	26	18	26	A
55	25	20	2	E,SAM,ME,ENA
4C	17	20	18	E,ME,I
CC	5	21	22	A
4C	23	21	38	E,ME,I
4C	21	22	42	E,ME,I
4C	22	23	14	E,SAM,ME
CC	6	23	30	A,I
CD	6	23	46	A

*** South America ***

Class	PRN	Start		Connects
		h	m	
54	15	0	18	E,ENA,WNA
08	15	0	34	E,WNA,ENA
00	14	2	42	E,ENA,ME
18	4	3	30	ENA,WNA,H
CA	19	3	46	SAF
00	7	4	2	E,ENA,WNA
54	18	4	50	E,SAF,ME
54	24	7	46	E,ENA,WNA
BC	4	8	18	ME,SAF
18	6	9	54	ENA,WNA,H
69	9	10	42	ENA
08	26	10	58	E,WNA,ENA
68	9	12	2	ENA,WNA
18	17	12	18	ENA,WNA
19	9	12	34	ENA,WNA,E
00	23	13	22	E,ENA,WNA
54	23	13	38	E,ENA,WNA
00	5	14	42	E,ENA,ME
07	30	15	14	E,ENA
19	25	15	30	ENA,WNA,H
CA	6	16	2	SAF,ME
7C	1	16	18	WNA,E,ENA
18	25	18	26	ENA,WNA,ME,E
54	25	19	30	E,ME,ENA
55	25	20	2	E,ME,ENA,SAF
68	31	20	50	ENA,WNA
54	3	21	6	E,ENA,WNA
68	18	22	26	ENA,WNA
4C	22	23	14	E,SAF,ME

TABLE 12. [TAI - GPS TIME] AND [UTC - GPS TIME]

(File available via INTERNET under the name UTCGPS96.AR)

The GPS satellites disseminate a common time scale designated as 'GPS time'. The relation between GPS time and TAI is :

$$[\text{TAI} - \text{GPS time}] = 19\ \text{s} + \text{C0},$$

where the time difference of 19 seconds is kept constant and C0 is a quantity of the order of a few hundreds of nanoseconds, varying with time.

The relation between GPS time and UTC involves a variable number of seconds as a consequence of the leap seconds of the UTC system and is as follows :

from 1994 July 1, 0h UTC, until 1996 January 1, 0h UTC :

$$[\text{UTC} - \text{GPS time}] = -10\ \text{s} + \text{C0}.$$

from 1996 January 1, 0h UTC, until 1997 July 1, 0h UTC :

$$[\text{UTC} - \text{GPS time}] = -11\ \text{s} + \text{C0}.$$

from 1997 July 1, 0h UTC, until further notice :

$$[\text{UTC} - \text{GPS time}] = -12\ \text{s} + \text{C0}.$$

Here C0 is given at 0h UTC every day.

C0 is computed as follows: the GPS data taken at the Paris Observatory, from satellites with highest elevation, are first corrected for precise satellite ephemerides and for measured ionospheric delays, and then smoothed to obtain daily values of [UTC(OP) - GPS time] at 0h UTC. Daily values of C0 are derived from them using linear interpolation of [UTC - UTC(OP)] from Table 9.
For a given day, where N measurements are used for estimation of C0 :
- the dispersion of individual measurements is characterized by a standard deviation σ,
- the daily C0 value is characterized by the standard deviation of the mean $\sigma/\sqrt{N}$.

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Jan 1	50083	56	33	7
Jan 2	50084	55	39	8
Jan 3	50085	51	34	7
Jan 4	50086	49	37	8
Jan 5	50087	51	46	10
Jan 6	50088	48	45	11
Jan 7	50089	40	46	10
Jan 8	50090	36	52	12
Jan 9	50091	35	40	9
Jan 10	50092	36	48	10
Jan 11	50093	36	39	8
Jan 12	50094	34	45	10
Jan 13	50095	35	36	7
Jan 14	50096	37	37	8
Jan 15	50097	40	46	10
Jan 16	50098	41	50	11
Jan 17	50099	41	35	8
Jan 18	50100	40	41	9
Jan 19	50101	39	47	10
Jan 20	50102	40	43	10
Jan 21	50103	41	30	7
Jan 22	50104	42	42	9
Jan 23	50105	44	57	12
Jan 24	50106	50	36	7
Jan 25	50107	54	55	12
Jan 26	50108	56	33	7
Jan 27	50109	55	39	8
Jan 28	50110	59	62	13
Jan 29	50111	59	36	8
Jan 30	50112	53	50	11
Jan 31	50113	45	42	9

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	CO (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Feb 1	50114	44	46	10
Feb 2	50115	48	56	12
Feb 3	50116	44	42	9
Feb 4	50117	40	45	9
Feb 5	50118	44	50	10
Feb 6	50119	45	51	14
Feb 7	50120	38	39	8
Feb 8	50121	35	49	10
Feb 9	50122	37	44	9
Feb 10	50123	39	45	9
Feb 11	50124	42	53	11
Feb 12	50125	43	39	8
Feb 13	50126	44	40	8
Feb 14	50127	44	41	9
Feb 15	50128	44	40	8
Feb 16	50129	49	47	10
Feb 17	50130	56	34	7
Feb 18	50131	59	40	8
Feb 19	50132	55	37	8
Feb 20	50133	51	57	12
Feb 21	50134	47	32	7
Feb 22	50135	53	54	11
Feb 23	50136	57	36	8
Feb 24	50137	49	51	11
Feb 25	50138	33	45	9
Feb 26	50139	26	56	12
Feb 27	50140	30	43	9
Feb 28	50141	31	48	10
Feb 29	50142	34	40	9

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Mar 1	50143	42	35	7
Mar 2	50144	47	47	10
Mar 3	50145	46	58	12
Mar 4	50146	40	45	9
Mar 5	50147	37	44	9
Mar 6	50148	35	53	11
Mar 7	50149	31	47	10
Mar 8	50150	33	31	7
Mar 9	50151	41	51	11
Mar 10	50152	42	37	8
Mar 11	50153	38	37	8
Mar 12	50154	35	43	9
Mar 13	50155	37	55	12
Mar 14	50156	40	46	10
Mar 15	50157	40	44	9
Mar 16	50158	34	48	10
Mar 17	50159	35	38	8
Mar 18	50160	41	38	8
Mar 19	50161	45	57	12
Mar 20	50162	46	37	8
Mar 21	50163	45	53	11
Mar 22	50164	40	48	10
Mar 23	50165	36	34	7
Mar 24	50166	38	48	10
Mar 25	50167	38	40	9
Mar 26	50168	38	41	9
Mar 27	50169	38	34	7
Mar 28	50170	39	44	9
Mar 29	50171	37	51	11
Mar 30	50172	37	32	7
Mar 31	50173	42	43	9

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Apr 1	50174	43	60	12
Apr 2	50175	44	34	7
Apr 3	50176	47	49	10
Apr 4	50177	42	42	8
Apr 5	50178	37	42	9
Apr 6	50179	39	47	10
Apr 7	50180	45	42	9
Apr 8	50181	45	57	12
Apr 9	50182	39	48	11
Apr 10	50183	33	26	5
Apr 11	50184	29	39	8
Apr 12	50185	30	45	10
Apr 13	50186	38	61	13
Apr 14	50187	45	37	8
Apr 15	50188	42	40	8
Apr 16	50189	43	43	9
Apr 17	50190	52	51	11
Apr 18	50191	58	45	9
Apr 19	50192	49	36	8
Apr 20	50193	39	40	8
Apr 21	50194	36	53	11
Apr 22	50195	37	42	9
Apr 23	50196	32	52	11
Apr 24	50197	25	38	8
Apr 25	50198	25	33	7
Apr 26	50199	25	36	8
Apr 27	50200	21	39	8
Apr 28	50201	17	40	8
Apr 29	50202	17	32	7
Apr 30	50203	20	45	10

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
May 1	50204	23	56	11
May 2	50205	28	45	9
May 3	50206	30	49	10
May 4	50207	30	45	9
May 5	50208	30	47	10
May 6	50209	25	55	11
May 7	50210	20	62	13
May 8	50211	26	45	9
May 9	50212	32	79	17
May 10	50213	28	57	12
May 11	50214	24	30	6
May 12	50215	26	52	11
May 13	50216	29	31	6
May 14	50217	30	48	10
May 15	50218	26	55	11
May 16	50219	22	42	9
May 17	50220	21	45	9
May 18	50221	21	44	9
May 19	50222	23	34	7
May 20	50223	25	43	9
May 21	50224	26	51	10
May 22	50225	25	39	8
May 23	50226	24	43	9
May 24	50227	20	48	10
May 25	50228	13	40	8
May 26	50229	12	41	9
May 27	50230	17	54	11
May 28	50231	23	46	10
May 29	50232	21	48	10
May 30	50233	13	42	9
May 31	50234	10	41	9

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Jun 1	50235	16	40	8
Jun 2	50236	20	54	12
Jun 3	50237	21	60	13
Jun 4	50238	15	46	10
Jun 5	50239	11	45	10
Jun 6	50240	15	35	8
Jun 7	50241	20	41	9
Jun 8	50242	23	47	10
Jun 9	50243	16	50	11
Jun 10	50244	6	52	11
Jun 11	50245	5	46	10
Jun 12	50246	5	44	9
Jun 13	50247	7	50	11
Jun 14	50248	9	42	9
Jun 15	50249	12	41	9
Jun 16	50250	11	46	10
Jun 17	50251	5	49	10
Jun 18	50252	3	48	10
Jun 19	50253	3	41	9
Jun 20	50254	1	46	10
Jun 21	50255	-6	41	9
Jun 22	50256	-10	36	8
Jun 23	50257	-6	44	9
Jun 24	50258	2	45	10
Jun 25	50259	9	46	10
Jun 26	50260	14	51	11
Jun 27	50261	17	48	10
Jun 28	50262	18	39	8
Jun 29	50263	15	48	10
Jun 30	50264	15	47	10

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Jul 1	50265	18	43	9
Jul 2	50266	26	37	10
Jul 3	50267	25	44	13
Jul 4	50268	15	39	8
Jul 5	50269	15	44	9
Jul 6	50270	17	38	8
Jul 7	50271	13	38	8
Jul 8	50272	7	46	10
Jul 9	50273	-1	30	6
Jul 10	50274	-7	49	10
Jul 11	50275	-4	48	10
Jul 12	50276	-2	50	10
Jul 13	50277	-8	50	10
Jul 14	50278	-14	37	7
Jul 15	50279	-12	39	8
Jul 16	50280	-5	41	8
Jul 17	50281	1	34	7
Jul 18	50282	-2	49	10
Jul 19	50283	-5	42	8
Jul 20	50284	-3	27	6
Jul 21	50285	3	43	9
Jul 22	50286	8	44	9
Jul 23	50287	12	42	9
Jul 24	50288	13	33	7
Jul 25	50289	16	49	10
Jul 26	50290	21	38	8
Jul 27	50291	26	33	7
Jul 28	50292	22	47	10
Jul 29	50293	17	32	7
Jul 30	50294	19	38	8
Jul 31	50295	25	42	9

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Aug 1	50296	28	49	10
Aug 2	50297	27	33	7
Aug 3	50298	22	40	8
Aug 4	50299	12	42	9
Aug 5	50300	6	38	8
Aug 6	50301	8	37	8
Aug 7	50302	9	41	8
Aug 8	50303	6	34	7
Aug 9	50304	10	38	8
Aug 10	50305	14	40	8
Aug 11	50306	11	50	10
Aug 12	50307	7	42	9
Aug 13	50308	6	56	12
Aug 14	50309	4	36	7
Aug 15	50310	8	38	8
Aug 16	50311	15	57	12
Aug 17	50312	16	41	8
Aug 18	50313	7	71	14
Aug 19	50314	3	64	13
Aug 20	50315	8	46	10
Aug 21	50316	15	40	8
Aug 22	50317	18	48	10
Aug 23	50318	12	54	11
Aug 24	50319	12	46	9
Aug 25	50320	23	43	9
Aug 26	50321	34	41	8
Aug 27	50322	36	53	11
Aug 28	50323	34	46	9
Aug 29	50324	26	43	9
Aug 30	50325	18	51	10
Aug 31	50326	15	34	7

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Sep 1	50327	16	46	10
Sep 2	50328	14	33	7
Sep 3	50329	12	44	9
Sep 4	50330	10	43	9
Sep 5	50331	11	46	9
Sep 6	50332	14	43	9
Sep 7	50333	19	44	9
Sep 8	50334	24	45	9
Sep 9	50335	29	40	8
Sep 10	50336	30	36	7
Sep 11	50337	27	46	9
Sep 12	50338	25	43	9
Sep 13	50339	26	54	11
Sep 14	50340	26	51	10
Sep 15	50341	27	38	8
Sep 16	50342	31	54	11
Sep 17	50343	32	39	8
Sep 18	50344	32	42	9
Sep 19	50345	28	36	7
Sep 20	50346	19	52	11
Sep 21	50347	13	46	9
Sep 22	50348	12	50	10
Sep 23	50349	15	39	8
Sep 24	50350	15	48	10
Sep 25	50351	11	50	10
Sep 26	50352	8	41	8
Sep 27	50353	10	45	9
Sep 28	50354	16	56	11
Sep 29	50355	21	46	9
Sep 30	50356	24	40	8

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Oct 1	50357	28	42	9
Oct 2	50358	32	40	8
Oct 3	50359	36	52	11
Oct 4	50360	37	45	9
Oct 5	50361	39	62	13
Oct 6	50362	44	45	9
Oct 7	50363	47	44	9
Oct 8	50364	46	40	9
Oct 9	50365	42	42	9
Oct 10	50366	39	26	5
Oct 11	50367	38	39	8
Oct 12	50368	33	52	11
Oct 13	50369	30	40	8
Oct 14	50370	32	40	8
Oct 15	50371	37	56	12
Oct 16	50372	36	38	8
Oct 17	50373	32	40	8
Oct 18	50374	29	44	9
Oct 19	50375	26	37	8
Oct 20	50376	26	44	9
Oct 21	50377	23	50	10
Oct 22	50378	17	44	9
Oct 23	50379	16	46	9
Oct 24	50380	25	45	9
Oct 25	50381	39	41	8
Oct 26	50382	49	53	11
Oct 27	50383	52	38	8
Oct 28	50384	51	42	9
Oct 29	50385	47	47	10
Oct 30	50386	45	48	10
Oct 31	50387	47	38	8

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Nov 1	50388	48	32	7
Nov 2	50389	44	45	9
Nov 3	50390	39	45	9
Nov 4	50391	38	44	9
Nov 5	50392	38	44	9
Nov 6	50393	39	44	9
Nov 7	50394	44	31	6
Nov 8	50395	43	45	9
Nov 9	50396	38	48	10
Nov 10	50397	44	61	13
Nov 11	50398	57	44	13
Nov 12	50399	57	35	7
Nov 13	50400	55	46	10
Nov 14	50401	54	40	8
Nov 15	50402	59	54	11
Nov 16	50403	62	53	11
Nov 17	50404	62	57	12
Nov 18	50405	54	62	13
Nov 19	50406	41	36	8
Nov 20	50407	39	48	10
Nov 21	50408	43	53	11
Nov 22	50409	41	50	11
Nov 23	50410	45	45	10
Nov 24	50411	58	27	6
Nov 25	50412	65	43	9
Nov 26	50413	67	49	11
Nov 27	50414	68	43	9
Nov 28	50415	68	43	9
Nov 29	50416	62	41	9
Nov 30	50417	56	40	9

TABLE 12. (CONT.)

Date 1996 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Dec 1	50418	55	48	10
Dec 2	50419	55	48	10
Dec 3	50420	56	40	9
Dec 4	50421	59	43	9
Dec 5	50422	57	57	12
Dec 6	50423	54	43	9
Dec 7	50424	49	48	10
Dec 8	50425	40	48	10
Dec 9	50426	41	38	8
Dec 10	50427	53	35	7
Dec 11	50428	59	41	9
Dec 12	50429	55	46	10
Dec 13	50430	50	51	11
Dec 14	50431	49	48	10
Dec 15	50432	48	44	10
Dec 16	50433	45	42	9
Dec 17	50434	44	53	11
Dec 18	50435	40	46	10
Dec 19	50436	36	56	12
Dec 20	50437	43	36	8
Dec 21	50438	54	35	7
Dec 22	50439	51	55	12
Dec 23	50440	38	44	9
Dec 24	50441	38	31	7
Dec 25	50442	48	36	8
Dec 26	50443	57	47	10
Dec 27	50444	58	51	11
Dec 28	50445	54	55	12
Dec 29	50446	53	43	9
Dec 30	50447	54	30	6
Dec 31	50448	57	48	11

TABLE 13. INTERNATIONAL GLONASS TRACKING SCHEDULE NO 2 FOR MJD = 50267 (1996 JULY 3) AT 0H UTC

This is a suggested tracking schedule for international time comparisons using GLONASS satellites in common-view between ten areas of the globe.

Area		Participating laboratories
Europe	E	BIPM, DLR, LDS, SU, VSL, RIRT*
East North America	ENA	USNO
West North America	WNA	3S Navigation*
Hawaii	H	
East Asia	EA	
Australia and New Zealand	A	
India	I	
Middle East	ME	
South Africa	SAF	
South America	SAM	

* RIRT: Russian Institute of Radionavigation and Time, St Petersbourg, Russia.
3S Navigation, Laguna Hills, California.

Other laboratories are designated by their usual acronyms.

The start times of the tracks are referenced to UTC. The start time of a track is the date of the first observation. The receiver is required to lock-on to the signal in advance of this time so the first observation is made at the indicated time. The track length is 780 s. All the track times should be decremented by 4 minutes each day. Slot number should be increased by 1 each day, within each of 3 orbital planes. This is due to the motion of GLONASS satellites within the orbital planes. Each of these planes contains 8 almanac slots (plane 1: slots 1 to 8, plane 2: slots 9 to 16, plane 3: slots 17 to 24).

Table 13. Schedule no 2, 1996 July 3 (Cont.)

*** Europe ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
00 02	08	5	WNA,ENA	10	23	EA,I,ME
00 18	54	4	SAF,SAM	30	6	WNA,ENA,H
00 34	54	5	WNA,ENA,SAM	40	15	EA,I,ME
00 50	54	9	WNA,ENA,SAM	4C	17	I,ME,SAF
01 06	09	6	WNA,ENA	40	24	EA,I,ME
01 22	00	16	ENA,I,ME	49	15	ME
01 38	10	24	EA,I,ME	08	9	WNA,ENA
01 54	48	9	WNA,ENA,ME	00	7	WNA,ENA,H
02 10	49	24	EA,I,ME	00	9	WNA,ENA,ME
02 26	49	18	ME	40	16	I,ME
02 42	08	7	WNA,ENA,H	40	17	EA,I,ME
02 58	08	8	WNA,ENA,EA,H	48	17	EA,I,ME
03 14	09	10	WNA,ENA	10	17	EA,I,ME
03 30	08	10	WNA,ENA	4C	19	ME,SAF,SAM
03 46	11	17	EA,I,ME	01	10	WNA,ENA
04 02	4C	16	ME,SAF	48	18	ENA,I,ME
04 18	41	17	EA,I	00	10	WNA,ENA,ME
04 34	09	11	WNA,ENA,H	54	19	ME,SAM
04 50	40	18	EA,I,ME	30	11	WNA,ENA,H
05 06	01	11	WNA,ENA	10	2	EA,H,I
05 22	10	18	EA,I,ME	08	11	WNA,ENA
05 38	48	19	ME	11	18	EA,I,ME
05 54	00	11	WNA,ENA,ME	41	3	EA,I,ME
06 10	11	3	EA,I,ME	54	20	ME,SAM
06 26	10	3	EA,I,ME	30	12	WNA,ENA,H
06 42	48	11	ME,SAM	48	10	ME,SAF,SAM
06 58	01	12	WNA,ENA	40	19	EA,I,ME
07 14	10	19	EA,I,ME	08	12	WNA,ENA
07 30	10	4	EA,I,ME	00	12	WNA,ENA,ME
07 46	40	4	EA,I,ME	08	21	WNA,ENA,SAM
08 02	00	21	WNA,ENA,ME,SAM	11	4	EA,I,ME
08 18	30	13	WNA,ENA,H	54	12	ENA,ME,SAM
08 34	40	20	EA,I,ME	01	13	WNA,ENA,H
08 50	01	22	WNA,ENA,SAM	08	13	WNA,ENA
09 06	00	13	WNA,ENA	10	20	EA,I,ME
09 22	48	20	EA,I,ME	54	22	WNA,ENA,SAM
09 38	4C	20	EA,I,ME,SAF	08	22	WNA,ENA
09 54	00	14	WNA,ENA	49	7	ME
10 10	00	22	WNA,ENA,ME	40	5	EA,I,ME
10 26	10	5	EA,I,ME	08	14	WNA,ENA,H
10 42	30	14	WNA,ENA,H	48	5	EA,I,ME
10 58	48	22	I,ME	4C	8	ME,SAF,SAM
11 14	09	23	WNA,ENA	40	6	EA,I,ME
11 30	08	23	WNA,ENA	10	6	EA,I,ME
11 46	48	6	EA,I,ME	00	23	WNA,ENA,ME

Table 13. Schedule no 2, 1996 July 3 (Cont.)

*** Europe ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
12 02	54	8	ENA,ME,SAM	48	7	I,ME
12 18	40	22	I,ME,SAF	11	6	EA,I,ME
12 34	49	8	ME,SAM	01	23	ENA,ME
12 50	30	24	WNA,ENA,H	40	7	EA,I,ME
13 06	11	7	EA,I,ME	01	24	WNA,ENA
13 22	10	7	EA,I,ME	08	24	WNA,ENA
13 38	00	8	ENA,ME	10	9	WNA,EA,H,I
13 54	00	24	WNA,ENA,ME	40	10	EA,I,ME
14 10	10	10	EA,I,ME	48	23	ME,SAF,SAM
14 26	30	17	WNA,ENA,H	48	8	EA,I,ME
14 42	40	8	EA,I,ME	00	1	WNA,ENA,ME
14 58	10	8	EA,I,ME	01	17	WNA,ENA
15 14	4C	12	I,ME,SAF	08	17	WNA,ENA
15 30	10	11	EA,I,ME	00	17	WNA,ENA,ME
15 46	08	2	WNA,ENA,SAM	40	11	EA,I,ME
16 02	11	11	EA,I,ME	00	2	WNA,ENA,ME,SAM
16 18	48	12	I,ME	30	18	WNA,ENA,H
16 34	40	1	EA,I,ME	01	18	WNA,ENA,H
16 50	00	18	WNA,ENA	54	3	WNA,ENA,SAM
17 06	40	12	EA,I,ME	08	18	WNA,ENA
17 22	10	1	EA,I,ME	48	2	ENA,ME
17 38	10	12	EA,I,ME	08	3	WNA,ENA
17 54	01	3	WNA,ENA,ME	00	19	WNA,ENA,H
18 10	11	12	EA,I,ME	00	3	WNA,ENA,ME
18 26	41	12	EA,I,ME	08	19	WNA,ENA
18 42	40	13	EA,I,ME	30	19	WNA,ENA,H
18 58	48	13	EA,I,ME	02	3	ENA
19 14	10	13	EA,I,ME	09	4	WNA,ENA
19 30	4C	15	ME,SAF,SAM	08	4	WNA,ENA
19 46	00	4	WNA,ENA,ME	11	13	EA,I,ME
20 02	48	14	ENA,I,ME	48	3	ME,SAF
20 18	41	13	EA,I	01	4	WNA,ENA,ME
20 34	54	15	ME,SAM	40	3	I,ME
20 50	40	14	EA,I,ME	54	16	ENA,SAM
21 06	10	22	EA,H,I	10	14	EA,I,ME
21 22	30	5	WNA,ENA,H	11	14	EA,I,ME
21 38	48	15	I,ME	48	4	ME
21 54	41	23	EA,I,ME	44	5	WNA,ENA
22 10	01	5	WNA,ENA	40	23	EA,I,ME
22 26	11	23	EA,I,ME	00	5	WNA,ENA,ME
22 42	41	24	EA,I,ME	4C	4	ME,SAF,SAM
22 58	10	15	EA,I,ME	01	6	WNA,ENA
23 14	11	15	EA,I,ME	08	6	WNA,ENA
23 30	00	6	WNA,ENA,ME	48	24	EA,I,ME

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** E. North America ***

Start		Channel 1			Channel 2	
h m	Class	Slot	Connects	Class	Slot	Connects
00 02	08	5	WNA,E	68	16	ME,SAM
00 18	69	9	SAM	30	6	WNA,E,H
00 34	54	5	WNA,E,SAM	68	10	SAM
00 50	54	9	WNA,E,SAM	5C	7	ENA
01 06	09	6	WNA,E	58	16	I,ME
01 22	00	16	E,I,ME	32	10	WNA,H,SAM
01 38	68	5	SAM	08	9	WNA,E
01 54	48	9	WNA,E,ME	00	7	WNA,E,H
02 10	68	6	SAM	00	9	WNA,E,ME
02 26	20	8	WNA,EA	18	10	WNA,H,SAM
02 42	08	7	WNA,E,H	E7	11	ENA
02 58	08	8	WNA,E,EA,H	18	7	WNA,H,SAM
03 14	09	10	WNA,E	18	11	WNA,H
03 30	08	10	WNA,E	68	7	WNA,SAM
03 46	60	18	ME	01	10	WNA,E
04 02	18	8	WNA,H	48	18	E,I,ME
04 18	22	1	WNA,EA,H	00	10	WNA,E,ME
04 34	09	11	WNA,E,H	21	1	WNA,EA
04 50	20	1	WNA,EA,H	30	11	WNA,E,H
05 06	01	11	WNA,E	64	1	ENA
05 22	19	1	WNA,H	08	11	WNA,E
05 38	18	1	WNA	32	8	WNA,H,SAM
05 54	00	11	WNA,E,ME	32	1	H
06 10	18	12	WNA,H	18	2	WNA,EA,H
06 26	5C	1	ENA	30	12	WNA,E,H
06 42	1A	1	WNA	18	13	WNA,EA,H
06 58	01	12	WNA,E	33	1	H
07 14	33	1	H	08	12	WNA,E
07 30	E7	13	ENA	00	12	WNA,E,ME
07 46	60	11	ME,SAF	08	21	WNA,E,SAM
08 02	00	21	WNA,E,ME,SAM	18	3	WNA,EA,H
08 18	30	13	WNA,E,H	54	12	E,ME,SAM
08 34	68	23	SAM	01	13	WNA,E,H
08 50	01	22	WNA,E,SAM	08	13	WNA,E
09 06	00	13	WNA,E	58	21	I,ME
09 22	68	12	SAM	54	22	WNA,E,SAM
09 38	69	13	SAM	08	22	WNA,E
09 54	00	14	WNA,E	32	23	WNA,H,SAM
10 10	00	22	WNA,E,ME	33	24	H
10 26	18	23	WNA,H,SAM	08	14	WNA,E,H
10 42	30	14	WNA,E,H	68	13	SAM
10 58	18	14	WNA,H,SAM	20	15	WNA,EA
11 14	09	23	WNA,E	58	22	I,ME
11 30	08	23	WNA,E	32	24	WNA,H
11 46	68	8	SAF,SAM	00	23	WNA,E,ME

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** E. North America ***

Start		Channel 1			Channel 2	
h m	Class	Slot	Connects	Class	Slot	Connects
12 02	54	8	E,ME,SAM	18	24	WNA,H
12 18	32	16	WNA,EA,H	18	15	WNA,H
12 34	20	16	WNA,EA,H	01	23	E,ME
12 50	30	24	WNA,E,H	69	1	SAF,SAM
13 06	32	15	WNA,H,SAM	01	24	WNA,E
13 22	60	8	ME	08	24	WNA,E
13 38	00	8	E,ME	18	16	WNA,H
13 54	00	24	WNA,E,ME	68	1	SAM
14 10	68	15	WNA,H,SAM	18	17	WNA
14 26	30	17	WNA,E,H	E7	16	ENA
14 42	18	9	WNA,EA,H	00	1	WNA,E,ME
14 58	68	2	SAM	01	17	WNA,E
15 14	68	24	SAM	08	17	WNA,E
15 30	E7	1	ENA	00	17	WNA,E,ME
15 46	08	2	WNA,E,SAM	18	18	WNA,EA,H
16 02	69	24	SAF,SAM	00	2	WNA,E,ME,SAM
16 18	68	17	SAM	30	18	WNA,E,H
16 34	20	19	WNA,EA,H	01	18	WNA,E,H
16 50	00	18	WNA,E	54	3	WNA,E,SAM
17 06	E7	2	ENA	08	18	WNA,E
17 22	32	4	WNA,H,SAM	48	2	E,ME
17 38	6A	18	SAM	08	3	WNA,E
17 54	01	3	WNA,E,ME	00	19	WNA,E,H
18 10	68	18	SAM	00	3	WNA,E,ME
18 26	18	4	WNA,H,SAM	08	19	WNA,E
18 42	69	18	SAM	30	19	WNA,E,H
18 58	20	20	WNA,EA,H	02	3	E
19 14	18	19	WNA,H,SAM	09	4	WNA,E
19 30	18	5	WNA,H	08	4	WNA,E
19 46	00	4	WNA,E,ME	E7	14	ENA
20 02	48	14	E,I,ME	68	19	WNA,SAM
20 18	60	15	ME,SAM	01	4	WNA,E,ME
20 34	18	20	WNA,H	69	16	SAF,SAM
20 50	20	21	WNA,EA,H	54	16	E,SAM
21 06	19	6	WNA	60	4	ME
21 22	30	5	WNA,E,H	18	6	WNA,H
21 38	18	21	WNA	32	20	WNA,H,SAM
21 54	60	16	ME,SAM	44	5	WNA,E
22 10	01	5	WNA,E	18	22	WNA,EA,H
22 26	32	21	H	00	5	WNA,E,ME
22 42	68	9	WNA,SAM	64	7	H
22 58	32	22	H	01	6	WNA,E
23 14	60	5	ME,SAM	08	6	WNA,E
23 30	00	6	WNA,E,ME	5C	9	SAM

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** W. North America ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
00 02	08	5	ENA,E	28	22	EA,H
00 18	29	7	EA	30	6	ENA,E,H
00 34	54	5	ENA,E,SAM	28	7	EA,H
00 50	54	9	ENA,E,SAM	34	21	H,A
01 06	09	6	ENA,E	35	7	EA,H
01 22	6C	23	EA,I	32	10	ENA,H,SAM
01 38	28	23	EA,H	08	9	ENA,E
01 54	48	9	ENA,E,ME	00	7	ENA,E,H
02 10	28	8	EA,H	00	9	ENA,E,ME
02 26	20	8	ENA,EA	18	10	ENA,H,SAM
02 42	08	7	ENA,E,H	34	8	EA,H
02 58	08	8	ENA,E,EA,H	18	7	ENA,H,SAM
03 14	09	10	ENA,E	18	11	ENA,H
03 30	08	10	ENA,E	68	7	ENA,SAM
03 46	6C	1	EA,H,I	01	10	ENA,E
04 02	18	8	ENA,H	28	1	EA,H
04 18	22	1	ENA,EA,H	00	10	ENA,E,ME
04 34	09	11	ENA,E,H	21	1	ENA,EA
04 50	20	1	ENA,EA,H	30	11	ENA,E,H
05 06	01	11	ENA,E	80	13	A
05 22	19	1	ENA,H	08	11	ENA,E
05 38	18	1	ENA	32	8	ENA,H,SAM
05 54	00	11	ENA,E,ME	34	2	EA,H
06 10	18	12	ENA,H	18	2	ENA,EA,H
06 26	28	2	EA,H	30	12	ENA,E,H
06 42	1A	1	ENA	18	13	ENA,EA,H
06 58	01	12	ENA,E	28	13	EA,H
07 14	80	14	EA,H,A	08	12	ENA,E
07 30	34	14	EA,H	00	12	ENA,E,ME
07 46	34	1	H	08	21	ENA,E,SAM
08 02	00	21	ENA,E,ME,SAM	18	3	ENA,EA,H
08 18	30	13	ENA,E,H	28	3	EA,H
08 34	28	14	EA,H	01	13	ENA,E,H
08 50	01	22	ENA,E,SAM	08	13	ENA,E
09 06	00	13	ENA,E	34	3	EA,H
09 22	34	4	EA,H,I	54	22	ENA,E,SAM
09 38	28	4	EA,H	08	22	ENA,E
09 54	00	14	ENA,E	32	23	ENA,H,SAM
10 10	00	22	ENA,E,ME	29	15	EA,H
10 26	18	23	ENA,H,SAM	08	14	ENA,E,H
10 42	30	14	ENA,E,H	28	15	EA,H
10 58	18	14	ENA,H,SAM	20	15	ENA,EA
11 14	09	23	ENA,E	34	15	EA,H
11 30	08	23	ENA,E	32	24	ENA,H
11 46	34	16	EA,H,I	00	23	ENA,E,ME

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** W. North America ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
12 02	EA	14	WNA	18	24	ENA,H
12 18	32	16	ENA,EA,H	18	15	ENA,H
12 34	20	16	ENA,EA,H	34	17	H
12 50	30	24	ENA,E,H	28	16	EA,H
13 06	32	15	ENA,H,SAM	01	24	ENA,E
13 22	34	18	H,A	08	24	ENA,E
13 38	18	16	ENA,H	10	9	E,EA,H,I
13 54	00	24	ENA,E,ME	34	9	EA,H
14 10	68	15	ENA,H,SAM	18	17	ENA
14 26	30	17	ENA,E,H	28	9	EA,H
14 42	18	9	ENA,EA,H	00	1	ENA,E,ME
14 58	28	18	EA,H	01	17	ENA,E
15 14	34	19	EA,H,A	08	17	ENA,E
15 30	28	19	EA,H	00	17	ENA,E,ME
15 46	08	2	ENA,E,SAM	18	18	ENA,EA,H
16 02	29	10	EA,H	00	2	ENA,E,ME,SAM
16 18	28	10	EA	30	18	ENA,E,H
16 34	20	19	ENA,EA,H	01	18	ENA,E,H
16 50	00	18	ENA,E	54	3	ENA,E,SAM
17 06	34	10	EA,H	08	18	ENA,E
17 22	32	4	ENA,H,SAM	80	9	H,A
17 38	28	11	EA,H	08	3	ENA,E
17 54	01	3	ENA,E,ME	00	19	ENA,E,H
18 10	34	20	EA,H	00	3	ENA,E,ME
18 26	18	4	ENA,H,SAM	08	19	ENA,E
18 42	28	20	EA,H	30	19	ENA,E,H
18 58	20	20	ENA,EA,H	35	5	H
19 14	18	19	ENA,H,SAM	09	4	ENA,E
19 30	18	5	ENA,H	08	4	ENA,E
19 46	00	4	ENA,E,ME	6C	21	EA,H,I
20 02	34	5	H	68	19	ENA,SAM
20 18	28	21	EA,H	01	4	ENA,E,ME
20 34	18	20	ENA,H	29	21	EA
20 50	20	21	ENA,EA,H	34	6	H
21 06	19	6	ENA	80	7	H,A
21 22	30	5	ENA,E,H	18	6	ENA,H
21 38	18	21	ENA	32	20	ENA,H,SAM
21 54	29	22	EA,H	44	5	ENA,E
22 10	01	5	ENA,E	18	22	ENA,EA,H
22 26	34	22	EA,H	00	5	ENA,E,ME
22 42	68	9	ENA,SAM	80	8	EA,H,A
22 58	34	7	EA,H	01	6	ENA,E
23 14	34	23	H	08	6	ENA,E
23 30	00	6	ENA,E,ME	29	8	EA,H

Table 13. Schedule no 2, 1996 July 3 (Cont.)

*** East Asia ***

Start h m	Channel 1 Class	Channel 1 Slot	Channel 1 Connects	Channel 2 Class	Channel 2 Slot	Channel 2 Connects
00 02	28	22	WNA,H	10	23	E,I,ME
00 18	29	7	WNA	98	8	H,A
00 34	28	7	WNA,H	40	15	E,I,ME
00 50	36	8	H,A	8C	14	I,ME,SAF
01 06	35	7	WNA,H	40	24	E,I,ME
01 22	6C	23	WNA,I	98	1	A
01 38	10	24	E,I,ME	28	23	WNA,H
01 54	84	15	I,ME,SAF	86	16	I
02 10	49	24	E,I,ME	28	8	WNA,H
02 26	20	8	WNA,ENA	85	1	I
02 42	34	8	WNA,H	40	17	E,I,ME
02 58	08	8	WNA,ENA,E,H	48	17	E,I,ME
03 14	98	2	A,I	10	17	E,I,ME
03 30	36	23	H,A	36	1	H,I
03 46	11	17	E,I,ME	6C	1	WNA,H,I
04 02	98	3	A,I	28	1	WNA,H
04 18	41	17	E,I	22	1	WNA,ENA,H
04 34	84	2	I,ME	21	1	WNA,ENA
04 50	40	18	E,I,ME	20	1	WNA,ENA,H
05 06	36	24	H,A	10	2	E,H,I
05 22	10	18	E,I,ME	84	3	I,ME
05 38	84	17	A,I	11	18	E,I,ME
05 54	34	2	WNA,H	41	3	E,I,ME
06 10	11	3	E,I,ME	18	2	WNA,ENA,H
06 26	10	3	E,I,ME	28	2	WNA,H
06 42	36	14	H,A	18	13	WNA,ENA,H
06 58	28	13	WNA,H	40	19	E,I,ME
07 14	10	19	E,I,ME	80	14	WNA,H,A
07 30	10	4	E,I,ME	34	14	WNA,H
07 46	40	4	E,I,ME	37	15	H,A
08 02	18	3	WNA,ENA,H	11	4	E,I,ME
08 18	98	15	A	28	3	WNA,H
08 34	40	20	E,I,ME	28	14	WNA,H
08 50	84	19	I,ME	36	15	H,A
09 06	34	3	WNA,H	10	20	E,I,ME
09 22	48	20	E,I,ME	34	4	WNA,H,I
09 38	4C	20	E,I,ME,SAF	28	4	WNA,H
09 54	EF	4	EA	85	16	I
10 10	29	15	WNA,H	40	5	E,I,ME
10 26	10	5	E,I,ME	84	16	A,I
10 42	28	15	WNA,H	48	5	E,I,ME
10 58	85	9	I	20	15	WNA,ENA
11 14	34	15	WNA,H	40	6	E,I,ME
11 30	36	4	H,A	10	6	E,I,ME
11 46	48	6	E,I,ME	34	16	WNA,H,I

Table 13. Schedule no 2, 1996 July 3 (Cont.)

*** East Asia ***

Start h m	Channel 1 Class	Channel 1 Slot	Channel 1 Connects	Channel 2 Class	Channel 2 Slot	Channel 2 Connects
12 02	84	5	I	ED	10	EA
12 18	32	16	WNA,ENA,H	11	6	E,I,ME
12 34	20	16	WNA,ENA,H	84	9	I
12 50	28	16	WNA,H	40	7	E,I,ME
13 06	11	7	E,I,ME	84	10	I,ME
13 22	10	7	E,I,ME	36	5	H,A,I
13 38	84	6	A,I	10	9	WNA,E,H,I
13 54	34	9	WNA,H	40	10	E,I,ME
14 10	10	10	E,I,ME	84	11	I
14 26	28	9	WNA,H	48	8	E,I,ME
14 42	40	8	E,I,ME	18	9	WNA,ENA,H
14 58	10	8	E,I,ME	28	18	WNA,H
15 14	34	19	WNA,H,A	84	7	A,I
15 30	10	11	E,I,ME	28	19	WNA,H
15 46	18	18	WNA,ENA,H	40	11	E,I,ME
16 02	11	11	E,I,ME	29	10	WNA,H
16 18	28	10	WNA	98	20	H,A
16 34	40	1	E,I,ME	20	19	WNA,ENA,H
16 50	84	1	I,ME	36	20	H,A
17 06	40	12	E,I,ME	34	10	WNA,H
17 22	10	1	E,I,ME	84	8	A,I,SAF
17 38	10	12	E,I,ME	28	11	WNA,H
17 54	8C	1	I,ME,SAF	36	21	H,A,I
18 10	11	12	E,I,ME	34	20	WNA,H
18 26	41	12	E,I,ME	ED	11	EA
18 42	40	13	E,I,ME	28	20	WNA,H
18 58	48	13	E,I,ME	20	20	WNA,ENA,H
19 14	10	13	E,I,ME	36	11	H,A
19 30	ED	12	EA	98	11	H,A
19 46	6C	21	WNA,H,I	11	13	E,I,ME
20 02	ED	22	EA	84	23	A,I
20 18	41	13	E,I	28	21	WNA,H
20 34	EE	12	EA	29	21	WNA
20 50	40	14	E,I,ME	20	21	WNA,ENA,H
21 06	10	22	E,H,I	10	14	E,I,ME
21 22	98	12	A	11	14	E,I,ME
21 38	90	24	SAF	84	13	A,I
21 54	41	23	E,I,ME	29	22	WNA,H
22 10	18	22	WNA,ENA,H	40	23	E,I,ME
22 26	11	23	E,I,ME	34	22	WNA,H
22 42	41	24	E,I,ME	80	8	WNA,H,A
22 58	10	15	E,I,ME	34	7	WNA,H
23 14	11	15	E,I,ME	84	14	A,I
23 30	29	8	WNA,H	48	24	E,I,ME

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** Hawaii ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
00 02	F0	21	H	28	22	WNA,EA
00 18	98	8	EA,A	30	6	WNA,ENA,E
00 34	F0	22	H	28	7	WNA,EA
00 50	36	8	EA,A	34	21	WNA,A
01 06	F0	22	H	35	7	WNA,EA
01 22	3C	21	A	32	10	WNA,ENA,SAM
01 38	28	23	WNA,EA	3D	22	A
01 54	F0	1	H	00	7	WNA,ENA,E
02 10	28	8	WNA,EA	38	1	A,I
02 26	3C	22	A	18	10	WNA,ENA,SAM
02 42	08	7	WNA,ENA,E	34	8	WNA,EA
02 58	08	8	WNA,ENA,E,EA	18	7	WNA,ENA,SAM
03 14	F0	1	H	18	11	WNA,ENA
03 30	36	23	EA,A	36	1	EA,I
03 46	6C	1	WNA,EA,I	3C	23	A
04 02	18	8	WNA,ENA	28	1	WNA,EA
04 18	22	1	WNA,ENA,EA	3D	23	A
04 34	09	11	WNA,ENA,E	3C	13	A
04 50	20	1	WNA,ENA,EA	30	11	WNA,ENA,E
05 06	36	24	EA,A	10	2	E,EA,I
05 22	19	1	WNA,ENA	F0	13	H
05 38	3C	14	A	32	8	WNA,ENA,SAM
05 54	34	2	WNA,EA	32	1	ENA
06 10	18	12	WNA,ENA	18	2	WNA,ENA,EA
06 26	28	2	WNA,EA	30	12	WNA,ENA,E
06 42	36	14	EA,A	18	13	WNA,ENA,EA
06 58	28	13	WNA,EA	33	1	ENA
07 14	33	1	ENA	80	14	WNA,EA,A
07 30	34	14	WNA,EA	F0	1	H
07 46	34	1	WNA	37	15	EA,A
08 02	F0	1	H	18	3	WNA,ENA,EA
08 18	30	13	WNA,ENA,E	28	3	WNA,EA
08 34	28	14	WNA,EA	01	13	WNA,ENA,E
08 50	F0	2	H	36	15	EA,A
09 06	3C	2	A	34	3	WNA,EA
09 22	34	4	WNA,EA,I	F0	14	H
09 38	28	4	WNA,EA	F0	24	H
09 54	3D	3	A	32	23	WNA,ENA,SAM
10 10	29	15	WNA,EA	33	24	ENA
10 26	18	23	WNA,ENA,SAM	08	14	WNA,ENA,E
10 42	30	14	WNA,ENA,E	28	15	WNA,EA
10 58	18	14	WNA,ENA,SAM	3C	3	A
11 14	F0	24	H	34	15	WNA,EA
11 30	36	4	EA,A	32	24	WNA,ENA
11 46	34	16	WNA,EA,I	F0	5	H

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** Hawaii ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
12 02	3C	4	A	18	24	WNA,ENA
12 18	32	16	WNA,ENA,EA	18	15	WNA,ENA
12 34	20	16	WNA,ENA,EA	34	17	WNA
12 50	30	24	WNA,ENA,E	28	16	WNA,EA
13 06	32	15	WNA,ENA,SAM	3C	18	A
13 22	34	18	WNA,A	36	5	EA,A,I
13 38	18	16	WNA,ENA	10	9	WNA,E,EA,I
13 54	F0	17	H	34	9	WNA,EA
14 10	68	15	WNA,ENA,SAM	3C	19	A
14 26	30	17	WNA,ENA,E	28	9	WNA,EA
14 42	18	9	WNA,ENA,EA	F0	16	H
14 58	28	18	WNA,EA	F0	9	H
15 14	34	19	WNA,EA,A	F0	10	H
15 30	28	19	WNA,EA	3C	20	A
15 46	F0	9	H	18	18	WNA,ENA,EA
16 02	29	10	WNA,EA	F0	16	H
16 18	98	20	EA,A	30	18	WNA,ENA,E
16 34	20	19	WNA,ENA,EA	01	18	WNA,ENA,E
16 50	3C	9	A	36	20	EA,A
17 06	34	10	WNA,EA	F0	19	H
17 22	32	4	WNA,ENA,SAM	80	9	WNA,A
17 38	28	11	WNA,EA	3D	10	A
17 54	36	21	EA,A,I	00	19	WNA,ENA,E
18 10	34	20	WNA,EA	F0	11	H
18 26	18	4	WNA,ENA,SAM	3C	10	A
18 42	28	20	WNA,EA	30	19	WNA,ENA,E
18 58	20	20	WNA,ENA,EA	35	5	WNA
19 14	18	19	WNA,ENA,SAM	36	11	EA,A
19 30	18	5	WNA,ENA	98	11	EA,A
19 46	F0	20	H	6C	21	WNA,EA,I
20 02	34	5	WNA	F0	12	H
20 18	28	21	WNA,EA	3C	12	A
20 34	18	20	WNA,ENA	3C	7	A
20 50	20	21	WNA,ENA,EA	34	6	WNA
21 06	10	22	E,EA,I	80	7	WNA,A
21 22	30	5	WNA,ENA,E	18	6	WNA,ENA
21 38	3C	8	A	32	20	WNA,ENA,SAM
21 54	29	22	WNA,EA	F0	21	H
22 10	F0	7	H	18	22	WNA,ENA,EA
22 26	32	21	ENA	34	22	WNA,EA
22 42	80	8	WNA,EA,A	64	7	ENA
22 58	32	22	ENA	34	7	WNA,EA
23 14	34	23	WNA	3D	1	A
23 30	3C	1	A	29	8	WNA,EA

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** Australia ***

Start	Channel 1			Channel 2		
h m	Class	Slot	Connects	Class	Slot	Connects
00 02	AC	13	I	FA	1	A
00 18	CC	2	SAF	98	8	EA,H
00 34	FA	1	A	FA	12	A
00 50	36	8	EA,H	34	21	WNA,H
01 06	FA	1	A	CC	13	SAF
01 22	3C	21	H	98	1	EA
01 38	AC	1	I	3D	22	H
01 54	F9	2	A	CD	14	SAF
02 10	FA	13	A	38	1	H,I
02 26	3C	22	H	CC	3	SAF
02 42	FA	2	A	FA	23	A
02 58	CC	14	SAF	FA	12	A
03 14	98	2	EA,I	FA	22	A
03 30	36	23	EA,H	AC	3	I,SAF
03 46	CC	4	SAF	3C	23	H
04 02	98	3	EA,I	FA	24	A
04 18	FA	14	A	3D	23	H
04 34	CC	15	SAF	3C	13	H
04 50	F9	23	A	AC	4	I,SAF
05 06	36	24	EA,H	80	13	WNA
05 22	F9	14	A	FA	24	A
05 38	84	17	EA,I	3C	14	H
05 54	F9	24	A	FA	15	A
06 10	AC	17	I	FA	24	A
06 26	FA	24	A	FA	15	A
06 42	36	14	EA,H	CC	16	SAF
06 58	FA	17	A	F9	15	A
07 14	80	14	WNA,EA,H	AE	18	I
07 30	F9	17	A	FA	15	A
07 46	AC	18	I	37	15	EA,H
08 02	F9	16	A	CC	9	SAF
08 18	98	15	EA	AD	18	I
08 34	FA	1	A	FA	16	A
08 50	CD	9	SAF	36	15	EA,H
09 06	3C	2	H	FA	1	A
09 22	FA	1	A	FA	16	A
09 38	AC	19	I,SAF	F9	9	A
09 54	3D	3	H	CD	10	SAF
10 10	AD	9	I	CC	19	SAF
10 26	F9	18	A	84	16	EA,I
10 42	FA	4	A	AC	9	I
10 58	CC	10	SAF	3C	3	H
11 14	FA	9	A	CD	19	SAF
11 30	36	4	EA,H	AC	10	I
11 46	FA	4	A	FA	19	A

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** Australia ***

Start	Channel 1			Channel 2		
h m	Class	Slot	Connects	Class	Slot	Connects
12 02	3C	4	H	CC	11	SAF
12 18	FA	10	A	FA	18	A
12 34	FA	11	A	AC	5	I
12 50	F9	19	A	F9	4	A
13 06	CC	20	SAF	3C	18	H
13 22	34	18	WNA,H	36	5	EA,H,I
13 38	84	6	EA,I	FA	19	A
13 54	FA	5	A	FA	20	A
14 10	CC	21	SAF	3C	19	H
14 26	FA	6	A	FA	5	A
14 42	F9	5	A	F9	20	A
14 58	FA	20	A	CD	21	SAF
15 14	34	19	WNA,EA,H	84	7	EA,I
15 30	FA	6	A	3C	20	H
15 46	AC	7	I	F9	6	A
16 02	FA	6	A	FA	21	A
16 18	CC	22	SAF	98	20	EA,H
16 34	F9	21	A	AD	7	I
16 50	3C	9	H	36	20	EA,H
17 06	FA	7	A	FA	21	A
17 22	84	8	EA,I,SAF	80	9	WNA,H
17 38	CD	23	SAF	3D	10	H
17 54	CC	8	SAF	36	21	EA,H,I
18 10	F9	22	A	F9	7	A
18 26	CC	23	SAF	3C	10	H
18 42	CD	8	SAF	FA	22	A
18 58	FA	7	A	FA	6	A
19 14	F9	10	A	36	11	EA,H
19 30	AC	23	I,SAF	98	11	EA,H
19 46	CC	24	SAF	F9	8	A
20 02	CD	1	SAF	84	23	EA,I
20 18	CD	1	SAF	3C	12	H
20 34	CC	1	SAF	3C	7	H
20 50	AC	24	I,SAF	F9	11	A
21 06	CD	1	SAF	80	7	WNA,H
21 22	98	12	EA	FA	1	A
21 38	3C	8	H	84	13	EA,I
21 54	F9	12	A	FA	1	A
22 10	AD	13	I	FA	12	A
22 26	FA	1	A	FA	12	A
22 42	CD	2	SAF	80	8	WNA,EA,H
22 58	F9	1	A	FA	13	A
23 14	3D	1	H	84	14	EA,I
23 30	3C	1	H	F9	13	A

Table 13. Schedule no 2. 1996 July 3 (Cont.)

*** India ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
00 02	AC	13	A	10	23	E,EA,ME
00 18	A0	24	ME	A0	14	ME
00 34	A0	17	ME,SAF	40	15	E,EA,ME
00 50	8C	14	EA,ME,SAF	4C	17	E,ME,SAF
01 06	58	16	ENA,ME	40	24	E,EA,ME
01 22	00	16	ENA,E,ME	6C	23	WNA,EA
01 38	10	24	E,EA,ME	AC	1	A
01 54	84	15	EA,ME,SAF	86	16	EA
02 10	49	24	E,EA,ME	38	1	H,A
02 26	85	1	EA	40	16	E,ME
02 42	F1	1	I	40	17	E,EA,ME
02 58	A0	18	ME,SAF	48	17	E,EA,ME
03 14	98	2	EA,A	10	17	E,EA,ME
03 30	AC	3	A,SAF	36	1	EA,H
03 46	11	17	E,EA,ME	6C	1	WNA,EA,H
04 02	98	3	EA,A	48	18	ENA,E,ME
04 18	41	17	E,EA	A0	9	ME,SAF
04 34	84	2	EA,ME	F1	16	I
04 50	40	18	E,EA,ME	AC	4	A,SAF
05 06	A4	9	ME,SAF	10	2	E,EA,H
05 22	10	18	E,EA,ME	84	3	EA,ME
05 38	84	17	EA,A	11	18	E,EA,ME
05 54	A4	4	SAF	41	3	E,EA,ME
06 10	11	3	E,EA,ME	AC	17	A
06 26	10	3	E,EA,ME	A0	4	ME,SAF
06 42	F2	17	I	F1	18	I
06 58	F1	3	I	40	19	E,EA,ME
07 14	10	19	E,EA,ME	AE	18	A
07 30	10	4	E,EA,ME	F1	20	I
07 46	40	4	E,EA,ME	AC	18	A
08 02	F1	19	I	11	4	E,EA,ME
08 18	A4	5	ME,SAF	AD	18	A
08 34	40	20	E,EA,ME	A4	6	ME,SAF
08 50	84	19	EA,ME	A0	5	ME
09 06	58	21	ENA,ME	10	20	E,EA,ME
09 22	48	20	E,EA,ME	34	4	WNA,EA,H
09 38	4C	20	E,EA,ME,SAF	AC	19	A,SAF
09 54	A0	6	ME	85	16	EA
10 10	AD	9	A	40	5	E,EA,ME
10 26	10	5	E,EA,ME	84	16	EA,A
10 42	AC	9	A	48	5	E,EA,ME
10 58	48	22	E,ME	85	9	EA
11 14	58	22	ENA,ME	40	6	E,EA,ME
11 30	AC	10	A	10	6	E,EA,ME
11 46	48	6	E,EA,ME	34	16	WNA,EA,H

Table 13. Schedule no 2. 1996 July 3 (Cont.)

*** India ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
12 02	84	5	EA	48	7	E,ME
12 18	40	22	E,ME,SAF	11	6	E,EA,ME
12 34	AC	5	A	84	9	EA
12 50	A0	10	ME	40	7	E,EA,ME
13 06	11	7	E,EA,ME	84	10	EA,ME
13 22	10	7	E,EA,ME	36	5	EA,H,A
13 38	84	6	EA,A	10	9	WNA,E,EA,H
13 54	A4	11	SAF	40	10	E,EA,ME
14 10	10	10	E,EA,ME	84	11	EA
14 26	A1	12	ME,SAF	48	8	E,EA,ME
14 42	40	8	E,EA,ME	F1	6	I
14 58	10	8	E,EA,ME	A0	12	ME,SAF
15 14	4C	12	E,ME,SAF	84	7	EA,A
15 30	10	11	E,EA,ME	A4	12	SAF
15 46	AC	7	A	40	11	E,EA,ME
16 02	11	11	E,EA,ME	A5	12	SAF
16 18	48	12	E,ME	A2	1	ME
16 34	40	1	E,EA,ME	AD	7	A
16 50	84	1	EA,ME	A0	13	ME,SAF
17 06	40	12	E,EA,ME	A0	1	ME
17 22	10	1	E,EA,ME	84	8	EA,A,SAF
17 38	10	12	E,EA,ME	A1	1	ME,SAF
17 54	8C	1	EA,ME,SAF	36	21	EA,H,A
18 10	11	12	E,EA,ME	A6	1	SAF
18 26	41	12	E,EA,ME	A3	1	ME
18 42	40	13	E,EA,ME	A4	1	ME,SAF
18 58	48	13	E,EA,ME	A5	1	ME,SAF
19 14	10	13	E,EA,ME	A7	1	ME,SAF
19 30	AC	23	A,SAF	F2	1	I
19 46	6C	21	WNA,EA,H	11	13	E,EA,ME
20 02	48	14	ENA,E,ME	84	23	EA,A
20 18	41	13	E,EA	A4	3	SAF
20 34	F1	2	I	40	3	E,ME
20 50	40	14	E,EA,ME	AC	24	A,SAF
21 06	10	22	E,EA,H	10	14	E,EA,ME
21 22	A0	15	ME	11	14	E,EA,ME
21 38	48	15	E,ME	84	13	EA,A
21 54	41	23	E,EA,ME	A4	24	SAF
22 10	AD	13	A	40	23	E,EA,ME
22 26	11	23	E,EA,ME	F1	14	I
22 42	41	24	E,EA,ME	F1	17	I
22 58	10	15	E,EA,ME	F1	23	I
23 14	11	15	E,EA,ME	84	14	EA,A
23 30	A4	17	SAF	48	24	E,EA,ME

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** Middle East ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
00 02	68	16	ENA,SAM	10	23	E,EA,I
00 18	A0	24	I	A0	14	I
00 34	A0	17	I,SAF	40	15	E,EA,I
00 50	8C	14	EA,I,SAF	4C	17	E,I,SAF
01 06	58	16	ENA,I	40	24	E,EA,I
01 22	00	16	ENA,E,I	49	15	E
01 38	10	24	E,EA,I	BD	15	SAF
01 54	48	9	WNA,ENA,E	84	15	EA,I,SAF
02 10	49	24	E,EA,I	00	9	WNA,ENA,E
02 26	49	18	E	40	16	E,I
02 42	BC	16	SAF	40	17	E,EA,I
02 58	A0	18	I,SAF	48	17	E,EA,I
03 14	BC	15	SAF	10	17	E,EA,I
03 30	F4	16	ME	4C	19	E,SAF,SAM
03 46	11	17	E,EA,I	60	18	ENA
04 02	4C	16	E,SAF	48	18	ENA,E,I
04 18	A0	9	I,SAF	00	10	WNA,ENA,E
04 34	84	2	EA,I	54	19	E,SAM
04 50	40	18	E,EA,I	BD	16	SAF
05 06	A4	9	I,SAF	F4	10	ME
05 22	10	18	E,EA,I	84	3	EA,I
05 38	48	19	E	11	18	E,EA,I
05 54	00	11	WNA,ENA,E	41	3	E,EA,I
06 10	11	3	E,EA,I	54	20	E,SAM
06 26	10	3	E,EA,I	A0	4	I,SAF
06 42	48	11	E,SAM	48	10	E,SAF,SAM
06 58	BC	5	SAF	40	19	E,EA,I
07 14	10	19	E,EA,I	C2	11	SAM
07 30	10	4	E,EA,I	00	12	WNA,ENA,E
07 46	40	4	E,EA,I	60	11	ENA,SAF
08 02	00	21	WNA,ENA,E,SAM	11	4	E,EA,I
08 18	A4	5	I,SAF	54	12	ENA,E,SAM
08 34	40	20	E,EA,I	A4	6	I,SAF
08 50	84	19	EA,I	A0	5	I
09 06	58	21	ENA,I	10	20	E,EA,I
09 22	48	20	E,EA,I	BC	6	SAF
09 38	4C	20	E,EA,I,SAF	F4	7	ME
09 54	A0	6	I	49	7	E
10 10	00	22	WNA,ENA,E	40	5	E,EA,I
10 26	10	5	E,EA,I	BC	20	SAF
10 42	F4	21	ME	48	5	E,EA,I
10 58	48	22	E,I	4C	8	E,SAF,SAM
11 14	58	22	ENA,I	40	6	E,EA,I
11 30	F4	7	ME	10	6	E,EA,I
11 46	48	6	E,EA,I	00	23	WNA,ENA,E

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** Middle East ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
12 02	54	8	ENA,E,SAM	48	7	E,I
12 18	40	22	E,I,SAF	11	6	E,EA,I
12 34	49	8	E,SAM	01	23	ENA,E
12 50	A0	10	I	40	7	E,EA,I
13 06	11	7	E,EA,I	84	10	EA,I
13 22	10	7	E,EA,I	60	8	ENA
13 38	00	8	ENA,E	C2	1	SAM
13 54	00	24	WNA,ENA,E	40	10	E,EA,I
14 10	10	10	E,EA,I	48	23	E,SAF,SAM
14 26	A1	12	I,SAF	48	8	E,EA,I
14 42	40	8	E,EA,I	00	1	WNA,ENA,E
14 58	10	8	E,EA,I	A0	12	I,SAF
15 14	4C	12	E,I,SAF	BC	23	SAF,SAM
15 30	10	11	E,EA,I	00	17	WNA,ENA,E
15 46	F4	1	ME	40	11	E,EA,I
16 02	11	11	E,EA,I	00	2	WNA,ENA,E,SAM
16 18	48	12	E,I	A2	1	I
16 34	40	1	E,EA,I	F4	12	ME
16 50	84	1	EA,I	A0	13	I,SAF
17 06	40	12	E,EA,I	A0	1	I
17 22	10	1	E,EA,I	48	2	ENA,E
17 38	10	12	E,EA,I	A1	1	I,SAF
17 54	01	3	WNA,ENA,E	8C	1	EA,I,SAF
18 10	11	12	E,EA,I	00	3	WNA,ENA,E
18 26	41	12	E,EA,I	A3	1	I
18 42	40	13	E,EA,I	A4	1	I,SAF
18 58	48	13	E,EA,I	A5	1	I,SAF
19 14	10	13	E,EA,I	A7	1	I,SAF
19 30	4C	15	E,SAF,SAM	F4	14	ME
19 46	00	4	WNA,ENA,E	11	13	E,EA,I
20 02	48	14	ENA,E,I	48	3	E,SAF
20 18	60	15	ENA,SAM	01	4	WNA,ENA,E
20 34	54	15	E,SAM	40	3	E,I
20 50	40	14	E,EA,I	F4	23	ME
21 06	60	4	ENA	10	14	E,EA,I
21 22	A0	15	I	11	14	E,EA,I
21 38	48	15	E,I	48	4	E
21 54	41	23	E,EA,I	60	16	ENA,SAM
22 10	BC	17	SAF	40	23	E,EA,I
22 26	11	23	E,EA,I	00	5	WNA,ENA,E
22 42	41	24	E,EA,I	4C	4	E,SAF,SAM
22 58	10	15	E,EA,I	C2	5	SAM
23 14	11	15	E,EA,I	60	5	ENA,SAM
23 30	00	6	WNA,ENA,E	48	24	E,EA,I

Table 13. Schedule no 2, 1996 July 3 (Cont.)

*** South Africa ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
00 02	F5	17	SAF	F5	24	SAF
00 18	54	4	E,SAM	CC	2	A
00 34	A0	17	I,ME	F5	18	SAF
00 50	8C	14	EA,I,ME	4C	17	E,I,ME
01 06	CA	18	SAM	CC	13	A
01 22	CA	4	SAM	F5	17	SAF
01 38	F5	14	SAF	BD	15	ME
01 54	84	15	EA,I,ME	CD	14	A
02 10	CB	4	SAM	F5	18	SAF
02 26	CA	19	SAM	CC	3	A
02 42	BC	16	ME	F5	15	SAF
02 58	CC	14	A	A0	18	I,ME
03 14	BC	15	ME	F5	16	SAF
03 30	AC	3	A,I	4C	19	E,ME,SAM
03 46	CC	4	A	CA	20	SAM
04 02	4C	16	E,ME	CB	19	SAM
04 18	CB	20	SAM	A0	9	I,ME
04 34	CC	15	A	CA	5	SAM
04 50	BD	16	ME	AC	4	A,I
05 06	A4	9	I,ME	F5	16	SAF
05 22	F5	4	SAF	F5	16	SAF
05 38	F5	9	SAF	CA	6	SAM
05 54	A4	4	I	CB	10	SAM
06 10	F5	5	SAF	F5	9	SAF
06 26	F5	9	SAF	A0	4	I,ME
06 42	CC	16	A	48	10	E,ME,SAM
06 58	BC	5	ME	F5	9	SAF
07 14	CA	7	SAM	F5	6	SAF
07 30	F5	5	SAF	F5	6	SAF
07 46	60	11	ENA,ME	CA	10	SAM
08 02	CB	11	SAM	CC	9	A
08 18	A4	5	I,ME	F5	6	SAF
08 34	F5	7	SAF	A4	6	I,ME
08 50	CD	9	A	CA	11	SAM
09 06	F5	19	SAF	CB	7	SAM
09 22	F5	7	SAF	BC	6	ME
09 38	4C	20	E,EA,I,ME	AC	19	A,I
09 54	CA	8	SAM	CD	10	A
10 10	F5	7	SAF	CC	19	A
10 26	F5	11	SAF	BC	20	ME
10 42	F5	1	SAF	CB	12	SAM
10 58	CC	10	A	4C	8	E,ME,SAM
11 14	CB	12	SAM	CD	19	A
11 30	CA	12	SAM	CA	1	SAM
11 46	68	8	ENA,SAM	CB	12	SAM

Table 13. Schedule no 2, 1996 July 3 (Cont.)

*** South Africa ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
12 02	CB	1	SAM	CC	11	A
12 18	40	22	E,I,ME	CB	1	SAM
12 34	F5	12	SAF	CB	1	SAM
12 50	F5	12	SAF	69	1	ENA,SAM
13 06	CC	20	A	CA	13	SAM
13 22	F5	12	SAF	F5	22	SAF
13 38	CA	23	SAM	F5	12	SAF
13 54	A4	11	I	F5	12	SAF
14 10	CC	21	A	48	23	E,ME,SAM
14 26	A1	12	I,ME	F5	11	SAF
14 42	F5	12	SAF	F5	22	SAF
14 58	A0	12	I,ME	CD	21	A
15 14	4C	12	E,I,ME	BC	23	ME,SAM
15 30	CB	24	SAM	A4	12	I
15 46	F5	12	SAF	F5	13	SAF
16 02	69	24	ENA,SAM	A5	12	I
16 18	CC	22	A	CB	24	SAM
16 34	F5	13	SAF	CA	14	SAM
16 50	F5	15	SAF	A0	13	I,ME
17 06	CB	14	SAM	CB	15	SAM
17 22	CA	24	SAM	84	8	EA,A,I
17 38	CD	23	A	A1	1	I,ME
17 54	8C	1	EA,I,ME	CC	8	A
18 10	CB	24	SAM	A6	1	I
18 26	CC	23	A	CA	15	SAM
18 42	CD	8	A	A4	1	I,ME
18 58	CA	16	SAM	A5	1	I,ME
19 14	F5	2	SAF	A7	1	I,ME
19 30	4C	15	E,ME,SAM	AC	23	A,I
19 46	CC	24	A	F5	1	SAF
20 02	CD	1	A	48	3	E,ME
20 18	CD	1	A	A4	3	I
20 34	CC	1	A	69	16	ENA,SAM
20 50	AC	24	A,I	F5	1	SAF
21 06	CD	1	A	F5	3	SAF
21 22	F5	2	SAF	F5	24	SAF
21 38	90	24	EA	CB	18	SAM
21 54	CB	4	SAM	A4	24	I
22 10	BC	17	ME	F5	3	SAF
22 26	F5	3	SAF	F5	17	SAF
22 42	CD	2	A	4C	4	E,ME,SAM
22 58	F5	19	SAF	F5	17	SAF
23 14	F5	4	SAF	F5	18	SAF
23 30	A4	17	I	F5	18	SAF

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** South America ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
00 02	F8	9	SAM	68	16	ENA,ME
00 18	54	4	E,SAF	69	9	ENA
00 34	54	5	WNA,ENA,E	68	10	ENA
00 50	54	9	WNA,ENA,E	F8	19	SAM
01 06	CA	18	SAF	F8	5	SAM
01 22	CA	4	SAF	32	10	WNA,ENA,H
01 38	68	5	ENA	F8	6	SAM
01 54	F8	11	SAM	F8	18	SAM
02 10	68	6	ENA	CB	4	SAF
02 26	CA	19	SAF	18	10	WNA,ENA,H
02 42	F8	5	SAM	F8	6	SAM
02 58	F8	20	SAM	18	7	WNA,ENA,H
03 14	F8	6	SAM	F8	5	SAM
03 30	68	7	WNA,ENA	4C	19	E,ME,SAF
03 46	F8	5	SAM	CA	20	SAF
04 02	F8	7	SAM	CB	19	SAF
04 18	CB	20	SAF	F8	6	SAM
04 34	CA	5	SAF	54	19	E,ME
04 50	F8	8	SAM	F8	7	SAM
05 06	F8	20	SAM	F8	21	SAM
05 22	F8	20	SAM	F8	21	SAM
05 38	CA	6	SAF	32	8	WNA,ENA,H
05 54	F8	20	SAM	CB	10	SAF
06 10	F8	21	SAM	54	20	E,ME
06 26	F8	8	SAM	F8	11	SAM
06 42	48	11	E,ME	48	10	E,ME,SAF
06 58	F8	21	SAM	F8	22	SAM
07 14	CA	7	SAF	C2	11	ME
07 30	F8	11	SAM	F8	22	SAM
07 46	CA	10	SAF	08	21	WNA,ENA,E
08 02	00	21	WNA,ENA,E,ME	CB	11	SAF
08 18	F8	22	SAM	54	12	ENA,E,ME
08 34	68	23	ENA	F8	12	SAM
08 50	01	22	WNA,ENA,E	CA	11	SAF
09 06	F8	12	SAM	CB	7	SAF
09 22	68	12	ENA	54	22	WNA,ENA,E
09 38	69	13	ENA	F8	12	SAM
09 54	CA	8	SAF	32	23	WNA,ENA,H
10 10	F8	1	SAM	F8	12	SAM
10 26	18	23	WNA,ENA,H	F8	1	SAM
10 42	CB	12	SAF	68	13	ENA
10 58	18	14	WNA,ENA,H	4C	8	E,ME,SAF
11 14	CB	12	SAF	F8	1	SAM
11 30	CA	12	SAF	CA	1	SAF
11 46	68	8	ENA,SAF	CB	12	SAF

TABLE 13. SCHEDULE NO 2, 1996 JULY 3 (CONT.)

*** South America ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
12 02	54	8	ENA,E,ME	CB	1	SAF
12 18	F8	14	SAM	CB	1	SAF
12 34	49	8	E,ME	CB	1	SAF
12 50	F8	14	SAM	69	1	ENA,SAF
13 06	32	15	WNA,ENA,H	CA	13	SAF
13 22	F8	1	SAM	F8	2	SAM
13 38	CA	23	SAF	C2	1	ME
13 54	F8	13	SAM	68	1	ENA
14 10	68	15	WNA,ENA,H	48	23	E,ME,SAF
14 26	F8	24	SAM	F8	2	SAM
14 42	F8	2	SAM	F8	3	SAM
14 58	68	2	ENA	F8	3	SAM
15 14	68	24	ENA	BC	23	ME,SAF
15 30	CB	24	SAF	F8	3	SAM
15 46	08	2	WNA,ENA,E	F8	17	SAM
16 02	69	24	ENA,SAF	00	2	WNA,ENA,E,ME
16 18	68	17	ENA	CB	24	SAF
16 34	F8	4	SAM	CA	14	SAF
16 50	F8	17	SAM	54	3	WNA,ENA,E
17 06	CB	14	SAF	CB	15	SAF
17 22	32	4	WNA,ENA,H	CA	24	SAF
17 38	6A	18	ENA	F8	17	SAM
17 54	F8	14	SAM	F8	17	SAM
18 10	68	18	ENA	CB	24	SAF
18 26	18	4	WNA,ENA,H	CA	15	SAF
18 42	69	18	ENA	F8	17	SAM
18 58	CA	16	SAF	F8	19	SAM
19 14	18	19	WNA,ENA,H	F8	18	SAM
19 30	4C	15	E,ME,SAF	F8	17	SAM
19 46	F8	19	SAM	F8	16	SAM
20 02	F8	15	SAM	68	19	WNA,ENA
20 18	60	15	ENA,ME	F8	16	SAM
20 34	54	15	E,ME	69	16	ENA,SAF
20 50	F8	19	SAM	54	16	ENA,E
21 06	F8	20	SAM	F8	9	SAM
21 22	F8	9	SAM	F8	16	SAM
21 38	CB	18	SAF	32	20	WNA,ENA,H
21 54	60	16	ENA,ME	CB	4	SAF
22 10	F8	9	SAM	F8	20	SAM
22 26	F8	16	SAM	F8	9	SAM
22 42	68	9	WNA,ENA	4C	4	E,ME,SAF
22 58	F8	10	SAM	C2	5	ME
23 14	60	5	ENA,ME	F8	9	SAM
23 30	F8	10	SAM	5C	9	ENA

TABLE 14. INTERNATIONAL GLONASS TRACKING SCHEDULE NO 3 FOR MJD = 50451 (1997 JANUARY 3) AT 0H UTC

This is a suggested tracking schedule for international time comparisons using GLONASS satellites in common-view between ten areas of the globe.

Area		Participating laboratories
Europe	E	BIPM, DLR, LDS, SU, VSL, RIRT*
East North America	ENA	USNO
West North America	WNA	NIST, 3S Navigation*
Hawaii	H	
East Asia	EA	BIRM
Australia and New Zealand	A	
India	I	
Middle East	ME	
South Africa	SAF	
South America	SAM	

* RIRT: Russian Institute of Radionavigation and Time, St Petersbourg, Russia.
3S Navigation, Laguna Hills, California.

Other laboratories are designated by their usual acronyms.

The start times of the tracks are referenced to UTC. The start time of track is the date of the first observation. The receiver is required to lock-on to the signal in advance of this time so the first observation is made at the indicated time. The track length is 780 s. All the track timesshould be decremented by 4 minutes each day. Slot number should be increased by 1 each day, within each of 3 orbital planes. This is due to the motion of GLONASS satellites within the orbital planes. Each of these planes contains 8 almanac slots (plane 1: slots 1 to 8, plane 2: slots 9 to 16, plane 3: slots 17 to 24).

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** Europe ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
00 02	48	7	EA,I,ME	54	8	ME,SAM
00 18	49	23	ENA,ME	48	22	I,ME
00 34	41	7	EA,I,ME	54	1	ENA,SAM
00 50	10	7	EA,I,ME	10	9	EA,H,I
01 06	30	9	WNA,EA,H,I	49	7	EA,I,ME
01 22	54	23	ME,SAF,SAM	00	1	ENA,ME
01 38	00	24	ENA,ME	48	10	EA,I,ME
01 54	10	10	EA,I,ME	40	8	EA,I,ME
02 10	10	8	EA,I,ME	30	17	WNA,ENA,H
02 26	01	17	WNA,ENA	4C	23	ME,SAF,SAM
02 42	11	11	EA,I,ME	08	17	WNA,ENA
02 58	54	2	WNA,ENA,SAM	40	11	EA,I,ME
03 14	10	11	EA,I,ME	08	2	WNA,ENA,SAM
03 30	01	1	ENA,I,ME	00	17	WNA,ENA,ME,SAM
03 46	41	11	EA,I,ME	00	2	WNA,ENA,ME
04 02	48	1	EA,I,ME	30	18	WNA,ENA,H
04 18	00	18	WNA,ENA	40	1	EA,I,ME
04 34	10	1	EA,I,ME	40	12	EA,I,ME
04 50	48	12	EA,I,ME	08	18	WNA,ENA,SAM
05 06	54	18	WNA,ENA,SAM	01	3	WNA,ENA
05 22	08	3	WNA,ENA	10	12	EA,I,ME
05 38	10	2	EA,I,ME	00	19	WNA,ENA
05 54	11	12	EA,I	00	3	WNA,ENA,ME
06 10	48	14	ME,SAF	08	19	WNA,ENA,H
06 26	30	4	WNA,ENA,H	40	13	EA,I,ME
06 42	4C	15	ME,SAF,SAM	00	20	WNA,ENA,EA
06 58	10	13	EA,I,ME	09	4	WNA,ENA
07 14	08	4	WNA,ENA,ME	48	13	EA,I,ME
07 30	00	4	WNA,ENA,ME	11	13	EA,I,ME
07 46	40	3	I,ME	00	15	ENA,ME,SAM
08 02	41	14	EA,I,ME	01	4	ENA,ME
08 18	4C	16	ENA,SAF,SAM	E4	5	E
08 34	48	3	I,ME,SAF	40	14	EA,I,ME
08 50	10	22	EA,I	10	14	EA,I,ME
09 06	11	14	EA,I,ME	11	14	EA,I,ME
09 22	48	15	ENA,ME	11	23	EA,I,ME
09 38	00	16	ENA,ME,SAM	10	23	EA,I,ME
09 54	48	4	ME,SAF,SAM	30	6	WNA,ENA,H
10 10	40	15	EA,I,ME	44	6	WNA,ENA,H
10 26	01	6	WNA,ENA	11	15	EA,I,ME
10 42	08	6	WNA,ENA	10	15	EA,I,ME
10 58	10	24	EA,I,ME	54	9	WNA,ENA,SAM
11 14	08	9	WNA,ENA,SAM	40	24	EA,I,ME
11 30	00	5	ENA,ME,SAF,SAM	00	6	ENA,ME,SAM
11 46	11	24	EA,I,ME	00	9	WNA,ENA,ME

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** Europe ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
12 02	40	16	EA,I,ME	30	7	WNA,ENA,H
12 18	08	7	WNA,ENA	10	16	EA,I,ME
12 34	00	7	WNA,ENA	08	10	WNA,ENA,SAM
12 50	54	7	WNA,ENA,SAM	40	17	EA,I,ME
13 06	10	17	EA,I,ME	08	8	WNA,ENA
13 22	48	17	EA,I,ME	00	10	WNA,ENA
13 38	4C	19	ME,SAF,SAM	00	8	WNA,ENA,H
13 54	11	17	EA,I	30	8	WNA,ENA,H
14 10	01	8	WNA,ENA,H,SAM	40	9	I,ME
14 26	40	18	EA,I,ME	30	11	WNA,ENA,H
14 42	48	18	EA,I,ME	08	1	WNA,ENA,EA,H
14 58	10	18	EA,I,ME	08	11	WNA,ENA
15 14	48	19	I,ME	01	11	WNA,ENA,ME
15 30	11	18	EA,I,ME	00	11	WNA,ENA,ME
15 46	4C	20	ME,SAF,SAM	40	10	I,ME,SAF
16 02	41	19	EA,I,ME	49	11	ME
16 18	40	19	EA,I,ME	00	21	ENA,SAM
16 34	10	19	EA,I,ME	09	12	WNA,ENA
16 50	10	3	EA,H,I	08	12	WNA,ENA
17 06	11	19	EA,I,ME	01	12	WNA,ENA,ME
17 22	48	11	ME,SAF,SAM	48	20	I,ME
17 38	40	4	EA,I,ME	00	12	WNA,ENA,ME
17 54	30	13	WNA,ENA,H	10	4	EA,I,ME
18 10	44	13	WNA,ENA,H	40	20	EA,I,ME
18 26	4C	11	ME,SAF,SAM	01	13	WNA,ENA
18 42	10	20	EA,I,ME	08	13	WNA,ENA
18 58	54	22	WNA,ENA,SAM	10	5	EA,I,ME
19 14	40	5	EA,I,ME	08	22	WNA,ENA,SAM
19 30	00	13	WNA,ENA,ME	48	5	WNA,EA,I,ME
19 46	08	5	WNA,EA,I,ME	08	5	WNA,EA,I,ME
20 02	30	14	WNA,ENA,H	00	22	ENA,ME
20 18	10	21	EA,I,ME	00	14	WNA,ENA
20 34	09	23	WNA,ENA	40	21	EA,I,ME
20 50	40	6	EA,I,ME	08	14	WNA,ENA,SAM
21 06	10	6	EA,I,ME	08	23	WNA,ENA
21 22	48	6	EA,I,ME	00	23	WNA,ENA
21 38	49	8	I,ME	08	15	WNA,ENA
21 54	30	15	WNA,ENA,H	11	6	EA,I,ME
22 10	01	23	ENA,ME	40	22	I,ME,SAF
22 26	40	7	EA,I,ME	48	8	I,ME,SAF
22 42	49	1	ME,SAF,SAM	08	16	WNA,ENA,EA
22 58	11	7	EA,I,ME	48	23	ENA,I,ME
23 14	41	8	ENA,I,ME	4C	22	I,ME,SAF
23 30	4C	1	ENA,ME,SAF,SAM	12	7	EA,I,ME

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** E. North America ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
00 02	20	16	WNA,EA,H	18	15	WNA,H
00 18	49	23	E,ME	6B	1	SAF,SAM
00 34	32	16	WNA,EA,H	54	1	E,SAM
00 50	69	15	WNA,SAM	33	17	WNA,H
01 06	60	8	ME	69	23	SAM
01 22	32	15	WNA,H,SAM	00	1	E,ME
01 38	00	24	E,ME	18	9	WNA,EA,H
01 54	68	1	SAM	19	16	WNA,H
02 10	68	2	SAM	30	17	WNA,E,H
02 26	01	17	WNA,E	18	18	WNA,EA,H
02 42	68	24	SAM	08	17	WNA,E
02 58	54	2	WNA,E,SAM	E7	1	ENA
03 14	32	18	H	08	2	WNA,E,SAM
03 30	01	1	E,I,ME	00	17	WNA,E,ME,SAM
03 46	69	17	SAM	00	2	WNA,E,ME
04 02	18	3	WNA,SAM	30	18	WNA,E,H
04 18	00	18	WNA,E	20	19	WNA,EA,H
04 34	32	4	WNA,H,SAM	E7	2	ENA
04 50	68	17	SAM	08	18	WNA,E,SAM
05 06	54	18	WNA,E,SAM	01	3	WNA,E
05 22	08	3	WNA,E	69	18	SAM
05 38	18	4	WNA,H,SAM	00	19	WNA,E
05 54	32	5	H	00	3	WNA,E,ME
06 10	20	20	WNA,EA,H	08	19	WNA,E,H
06 26	30	4	WNA,E,H	68	18	SAM
06 42	18	19	WNA,H,SAM	00	20	WNA,E,EA
06 58	18	5	WNA,H	09	4	WNA,E
07 14	08	4	WNA,E,ME	E7	14	ENA
07 30	00	4	WNA,E,ME	6A	15	SAF,SAM
07 46	18	20	WNA,H	00	15	E,ME,SAM
08 02	19	21	WNA,EA,H	01	4	E,ME
08 18	4C	16	E,SAF,SAM	20	21	WNA,EA,H
08 34	32	21	WNA,EA,H	E7	6	ENA
08 50	32	20	WNA,H,SAM	18	6	WNA
09 06	60	16	ME,SAM	E7	15	ENA
09 22	48	15	E,ME	18	21	WNA,H
09 38	00	16	E,ME,SAM	20	22	WNA,EA,H
09 54	18	22	WNA,EA	30	6	WNA,E,H
10 10	68	9	SAM	44	6	WNA,E,H
10 26	01	6	WNA,E	18	7	WNA,EA,H
10 42	08	6	WNA,E	58	16	I,ME
10 58	32	22	WNA,H	54	9	WNA,E,SAM
11 14	08	9	WNA,E,SAM	60	5	ME,SAF,SAM
11 30	00	5	E,ME,SAF,SAM	00	6	E,ME,SAM
11 46	68	10	SAM	00	9	WNA,E,ME

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** E. North America ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
12 02	68	6	WNA,SAM	30	7	WNA,E,H
12 18	08	7	WNA,E	E7	8	ENA
12 34	00	7	WNA,E	08	10	WNA,E,SAM
12 50	54	7	WNA,E,SAM	58	9	I,ME
13 06	32	11	WNA,H,SAM	08	8	WNA,E
13 22	68	7	SAM	00	10	WNA,E
13 38	18	11	WNA,H,SAM	00	8	WNA,E,H
13 54	E7	12	ENA	30	8	WNA,E,H
14 10	01	8	WNA,E,H,SAM	21	1	WNA,EA
14 26	20	1	WNA,EA,H	30	11	WNA,E,H
14 42	32	12	WNA,H	08	1	WNA,E,EA,H
14 58	32	1	WNA,H	08	11	WNA,E
15 14	34	1	WNA,H	01	11	WNA,E,ME
15 30	33	1	H	00	11	WNA,E,ME
15 46	32	2	WNA,EA,H	18	12	WNA,H
16 02	18	1	WNA,H	20	2	WNA,EA,H
16 18	19	1	WNA,H	00	21	E,SAM
16 34	33	1	H,SAM	09	12	WNA,E
16 50	6B	1	SAM	08	12	WNA,E
17 06	5C	1	H,SAM	01	12	WNA,E,ME
17 22	69	1	WNA,H,SAM	18	2	WNA
17 38	6A	1	H,SAM	00	12	WNA,E,ME
17 54	30	13	WNA,E,H	20	3	WNA,EA,H
18 10	44	13	WNA,E,H	60	21	ME
18 26	18	14	WNA,EA,H	01	13	WNA,E
18 42	60	12	ME,SAM	08	13	WNA,E
18 58	54	22	WNA,E,SAM	58	21	I,ME
19 14	32	14	H	08	22	WNA,E,SAM
19 30	00	13	WNA,E,ME	E8	12	ENA
19 46	60	13	ME,SAM	68	23	SAM
20 02	30	14	WNA,E,H	00	22	E,ME
20 18	33	15	H	00	14	WNA,E
20 34	09	23	WNA,E	18	24	WNA,H,SAM
20 50	60	22	ME	08	14	WNA,E,SAM
21 06	19	24	WNA,H,SAM	08	23	WNA,E
21 22	69	14	SAM	00	23	WNA,E
21 38	32	24	WNA,H,SAM	08	15	WNA,E
21 54	30	15	WNA,E,H	E7	17	ENA
22 10	01	23	E,ME	20	16	WNA,EA,H
22 26	68	14	WNA,SAM	21	16	WNA,EA,H
22 42	19	15	WNA,H,SAM	08	16	WNA,E,EA
22 58	32	17	WNA,H	48	23	E,I,ME
23 14	41	8	E,I,ME	68	15	WNA,SAM
23 30	4C	1	E,ME,SAF,SAM	19	17	WNA,H

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** W. North America ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
00 02	20	16	ENA,EA,H	18	15	ENA,H
00 18	7C	14	SAM	34	17	H
00 34	32	16	ENA,EA,H	80	18	H,A
00 50	69	15	ENA,SAM	33	17	ENA,H
01 06	30	9	E,EA,H,I	30	9	E,EA,H,I
01 22	32	15	ENA,H,SAM	29	9	EA
01 38	34	16	H	18	9	ENA,EA,H
01 54	34	18	H	19	16	ENA,H
02 10	28	9	EA,H	30	17	ENA,E,H
02 26	01	17	ENA,E	18	18	ENA,EA,H
02 42	28	18	EA,H	08	17	ENA,E
02 58	54	2	ENA,E,SAM	28	19	EA,H
03 14	29	10	EA,H	08	2	ENA,E,SAM
03 30	34	10	EA,H	00	17	ENA,E,ME,SAM
03 46	28	10	EA,H	00	2	ENA,E,ME
04 02	18	3	ENA,SAM	30	18	ENA,E,H
04 18	00	18	ENA,E	20	19	ENA,EA,H
04 34	32	4	ENA,H,SAM	7C	24	SAF,SAM
04 50	35	10	EA,H	08	18	ENA,E,SAM
05 06	54	18	ENA,E,SAM	01	3	ENA,E
05 22	08	3	ENA,E	28	11	EA,H
05 38	18	4	ENA,H,SAM	00	19	ENA,E
05 54	28	20	EA,H	00	3	ENA,E,ME
06 10	20	20	ENA,EA,H	08	19	ENA,E,H
06 26	30	4	ENA,E,H	34	20	EA,H
06 42	18	19	ENA,H,SAM	00	20	ENA,E,EA
06 58	18	5	ENA,H	09	4	ENA,E
07 14	08	4	ENA,E,ME	81	24	A,SAF
07 30	00	4	ENA,E,ME	28	21	EA,H,I
07 46	18	20	ENA,H	80	24	A,SAF
08 02	19	21	ENA,EA,H	34	6	H
08 18	7C	19	SAM	20	21	ENA,EA,H
08 34	32	21	ENA,EA,H	80	7	H,A
08 50	32	20	ENA,H,SAM	18	6	ENA
09 06	30	22	E,EA,H,I	30	22	E,EA,H,I
09 22	7C	20	H,SAM	18	21	ENA,H
09 38	34	7	H	20	22	ENA,EA,H
09 54	18	22	ENA,EA	30	6	ENA,E,H
10 10	28	22	EA,H	44	6	ENA,E,H
10 26	01	6	ENA,E	18	7	ENA,EA,H
10 42	08	6	ENA,E	35	8	EA,H
10 58	32	22	ENA,H	54	9	ENA,E,SAM
11 14	08	9	ENA,E,SAM	29	8	EA,H
11 30	28	23	EA,H	28	8	EA,H
11 46	34	8	EA,H	00	9	ENA,E,ME

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** W. North America ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
12 02	68	6	ENA,SAM	30	7	ENA,E,H
12 18	08	7	ENA,E	34	23	EA,H
12 34	00	7	ENA,E	08	10	ENA,E,SAM
12 50	54	7	ENA,E,SAM	29	23	EA,H
13 06	32	11	ENA,H,SAM	08	8	ENA,E
13 22	34	1	EA,H	00	10	ENA,E
13 38	18	11	ENA,H,SAM	00	8	ENA,E,H
13 54	28	1	EA,H	30	8	ENA,E,H
14 10	01	8	ENA,E,H,SAM	21	1	ENA,EA
14 26	20	1	ENA,EA,H	30	11	ENA,E,H
14 42	32	12	ENA,H	08	1	ENA,E,EA,H
14 58	32	1	ENA,H	08	11	ENA,E
15 14	34	1	ENA,H	01	11	ENA,E,ME
15 30	28	2	EA,H	00	11	ENA,E,ME
15 46	32	2	ENA,EA,H	18	12	ENA,H
16 02	18	1	ENA,H	20	2	ENA,EA,H
16 18	19	1	ENA,H	EA	13	WNA
16 34	34	2	EA,H	09	12	ENA,E
16 50	34	14	H,A	08	12	ENA,E
17 06	6C	3	EA,H,I	01	12	ENA,E,ME
17 22	69	1	ENA,H,SAM	18	2	ENA
17 38	28	3	EA,H	00	12	ENA,E,ME
17 54	30	13	ENA,E,H	20	3	ENA,EA,H
18 10	44	13	ENA,E,H	34	3	EA,H
18 26	18	14	ENA,EA,H	01	13	ENA,E
18 42	28	14	EA,H	08	13	ENA,E
18 58	54	22	ENA,E,SAM	34	15	EA,H
19 14	28	15	EA,H	08	22	ENA,E,SAM
19 30	00	13	ENA,E,ME	48	5	E,EA,I,ME
19 46	08	5	E,EA,I,ME	28	4	EA,H
20 02	30	14	ENA,E,H	34	4	EA,H
20 18	28	5	EA,H,I	00	14	ENA,E
20 34	09	23	ENA,E	18	24	ENA,H,SAM
20 50	34	5	EA,H,I	08	14	ENA,E,SAM
21 06	19	24	ENA,H,SAM	08	23	ENA,E
21 22	29	5	EA,H	00	23	ENA,E
21 38	32	24	ENA,H,SAM	08	15	ENA,E
21 54	30	15	ENA,E,H	28	16	EA,H
22 10	34	17	H	20	16	ENA,EA,H
22 26	68	14	ENA,SAM	21	16	ENA,EA,H
22 42	19	15	ENA,H,SAM	08	16	ENA,E,EA
22 58	32	17	ENA,H	EA	18	WNA
23 14	35	17	H	68	15	ENA,SAM
23 30	34	9	EA,H	19	17	ENA,H

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** East Asia ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
00 02	48	7	E,I,ME	20	16	WNA,ENA,H
00 18	ED	5	EA	84	10	I
00 34	41	7	E,I,ME	32	16	WNA,ENA,H
00 50	10	7	E,I,ME	10	9	E,H,I
01 06	30	9	WNA,E,H,I	49	7	E,I,ME
01 22	84	6	A,I	29	9	WNA
01 38	18	9	WNA,ENA,H	48	10	E,I,ME
01 54	10	10	E,I,ME	40	8	E,I,ME
02 10	10	8	E,I,ME	28	9	WNA,H
02 26	36	19	H,A	18	18	WNA,ENA,H
02 42	11	11	E,I,ME	28	18	WNA,H
02 58	28	19	WNA,H	40	11	E,I,ME
03 14	10	11	E,I,ME	29	10	WNA,H
03 30	34	10	WNA,H	98	20	H,A
03 46	41	11	E,I,ME	28	10	WNA,H
04 02	48	1	E,I,ME	36	20	H,A
04 18	20	19	WNA,ENA,H	40	1	E,I,ME
04 34	10	1	E,I,ME	40	12	E,I,ME
04 50	48	12	E,I,ME	35	10	WNA,H
05 06	84	1	I,ME,SAF	84	21	A,I
05 22	28	11	WNA,H	10	12	E,I,ME
05 38	10	2	E,I,ME	8C	1	I,ME
05 54	11	12	E,I	28	20	WNA,H
06 10	20	20	WNA,ENA,H	98	22	A,I
06 26	34	20	WNA,H	40	13	E,I,ME
06 42	36	11	H,A	00	20	WNA,ENA,E
06 58	10	13	E,I,ME	98	11	H,A
07 14	84	23	A,I,SAF	48	13	E,I,ME
07 30	28	21	WNA,H,I	11	13	E,I,ME
07 46	84	22	I	ED	12	EA
08 02	41	14	E,I,ME	19	21	WNA,ENA,H
08 18	36	12	H,A	20	21	WNA,ENA,H
08 34	32	21	WNA,ENA,H	40	14	E,I,ME
08 50	10	22	E,I	10	14	E,I,ME
09 06	30	22	WNA,E,H,I	11	14	E,I,ME
09 22	84	13	A,I	11	23	E,I,ME
09 38	20	22	WNA,ENA,H	10	23	E,I,ME
09 54	18	22	WNA,ENA	84	24	I,ME
10 10	40	15	E,I,ME	28	22	WNA,H
10 26	18	7	WNA,ENA,H	11	15	E,I,ME
10 42	35	8	WNA,H	10	15	E,I,ME
10 58	10	24	E,I,ME	84	14	A,I
11 14	29	8	WNA,H	40	24	E,I,ME
11 30	28	23	WNA,H	28	8	WNA,H
11 46	11	24	E,I,ME	34	8	WNA,H

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** East Asia ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
12 02	40	16	E,I,ME	98	1	H,A
12 18	34	23	WNA,H	10	16	E,I,ME
12 34	36	1	H,A	98	2	A
12 50	29	23	WNA,H	40	17	E,I,ME
13 06	10	17	E,I,ME	8C	16	ME
13 22	48	17	E,I,ME	34	1	WNA,H
13 38	ED	1	EA	98	3	A
13 54	11	17	E,I	28	1	WNA,H
14 10	84	2	I	21	1	WNA,ENA
14 26	40	18	E,I,ME	20	1	WNA,ENA,H
14 42	48	18	E,I,ME	08	1	WNA,ENA,E,H
14 58	10	18	E,I,ME	36	24	H,A
15 14	84	17	I	98	24	H,A
15 30	11	18	E,I,ME	28	2	WNA,H
15 46	32	2	WNA,ENA,H	84	4	A,I
16 02	41	19	E,I,ME	20	2	WNA,ENA,H
16 18	40	19	E,I,ME	84	18	I
16 34	10	19	E,I,ME	34	2	WNA,H
16 50	10	3	E,H,I	98	17	A
17 06	11	19	E,I,ME	6C	3	WNA,H,I
17 22	98	18	A,I	90	5	SAF
17 38	40	4	E,I,ME	28	3	WNA,H
17 54	20	3	WNA,ENA,H	10	4	E,I,ME
18 10	34	3	WNA,H	40	20	E,I,ME
18 26	18	14	WNA,ENA,H	36	15	H,A
18 42	10	20	E,I,ME	28	14	WNA,H
18 58	34	15	WNA,H	10	5	E,I,ME
19 14	40	5	E,I,ME	28	15	WNA,H
19 30	36	16	H,A	48	5	WNA,E,I,ME
19 46	08	5	WNA,E,I,ME	28	4	WNA,H
20 02	98	16	A	34	4	WNA,H
20 18	10	21	E,I,ME	28	5	WNA,H,I
20 34	ED	15	EA	40	21	E,I,ME
20 50	40	6	E,I,ME	34	5	WNA,H,I
21 06	10	6	E,I,ME	98	9	A,I
21 22	48	6	E,I,ME	29	5	WNA,H
21 38	EF	5	EA	84	9	I
21 54	28	16	WNA,H	11	6	E,I,ME
22 10	98	10	A,I	20	16	WNA,ENA,H
22 26	40	7	E,I,ME	21	16	WNA,ENA,H
22 42	36	5	H,A	08	16	WNA,ENA,E
22 58	11	7	E,I,ME	98	5	H,A
23 14	90	11	A,SAF	36	6	H
23 30	34	9	WNA,H	12	7	E,I,ME

Table 14. Schedule no 3, 1997 January 3 (Cont.)

*** Hawaii ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
00 02	20	16	WNA,ENA,EA	18	15	WNA,ENA
00 18	3C	18	A	34	17	WNA
00 34	32	16	WNA,ENA,EA	80	18	WNA,A
00 50	33	17	WNA,ENA	10	9	E,EA,I
01 06	30	9	WNA,E,EA,I	F0	16	H
01 22	32	15	WNA,ENA,SAM	3D	19	A
01 38	34	16	WNA	18	9	WNA,ENA,EA
01 54	34	18	WNA	19	16	WNA,ENA
02 10	28	9	WNA,EA	30	17	WNA,ENA,E
02 26	36	19	EA,A	18	18	WNA,ENA,EA
02 42	28	18	WNA,EA	3C	20	A
02 58	F0	9	H	28	19	WNA,EA
03 14	32	18	ENA	29	10	WNA,EA
03 30	34	10	WNA,EA	98	20	EA,A
03 46	28	10	WNA,EA	F0	9	H
04 02	36	20	EA,A	30	18	WNA,ENA,E
04 18	F0	10	H	20	19	WNA,ENA,EA
04 34	32	4	WNA,ENA,SAM	3C	9	A
04 50	35	10	WNA,EA	F0	20	H
05 06	F0	19	H	3B	5	SAM
05 22	3D	9	A	28	11	WNA,EA
05 38	18	4	WNA,ENA,SAM	3C	10	A
05 54	32	5	ENA	28	20	WNA,EA
06 10	20	20	WNA,ENA,EA	08	19	WNA,ENA,E
06 26	30	4	WNA,ENA,E	34	20	WNA,EA
06 42	18	19	WNA,ENA,SAM	36	11	EA,A
06 58	18	5	WNA,ENA	98	11	EA,A
07 14	F0	12	H	F0	6	H
07 30	3C	12	A	28	21	WNA,EA,I
07 46	18	20	WNA,ENA	3C	7	A
08 02	19	21	WNA,ENA,EA	34	6	WNA
08 18	36	12	EA,A	20	21	WNA,ENA,EA
08 34	32	21	WNA,ENA,EA	80	7	WNA,A
08 50	32	20	WNA,ENA,SAM	3D	7	A
09 06	30	22	WNA,E,EA,I	3D	8	A
09 22	7C	20	WNA,SAM	18	21	WNA,ENA
09 38	34	7	WNA	20	22	WNA,ENA,EA
09 54	3C	8	A	30	6	WNA,ENA,E
10 10	28	22	WNA,EA	44	6	WNA,ENA,E
10 26	3D	8	A	18	7	WNA,ENA,EA
10 42	F0	23	H	35	8	WNA,EA
10 58	32	22	WNA,ENA	30	1	A
11 14	3D	1	A	29	8	WNA,EA
11 30	28	23	WNA,EA	28	8	WNA,EA
11 46	34	8	WNA,EA	3C	1	A

Table 14. Schedule no 3, 1997 January 3 (Cont.)

*** Hawaii ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
12 02	98	1	EA,A	30	7	WNA,ENA,E
12 18	3D	1	A	34	23	WNA,EA
12 34	36	1	EA,A	F0	8	H
12 50	F0	1	H	29	23	WNA,EA
13 06	32	11	WNA,ENA,SAM	3C	22	A
13 22	34	1	WNA,EA	38	2	A,I
13 38	18	11	WNA,ENA,SAM	00	8	WNA,ENA,E
13 54	28	1	WNA,EA	30	8	WNA,ENA,E
14 10	01	8	WNA,ENA,E,SAM	3C	23	A
14 26	20	1	WNA,ENA,EA	30	11	WNA,ENA,E
14 42	32	12	WNA,ENA	08	1	WNA,ENA,E,EA
14 58	32	1	WNA,ENA	36	24	EA,A
15 14	34	1	WNA,ENA	98	24	EA,A
15 30	33	1	ENA	28	2	WNA,EA
15 46	32	2	WNA,ENA,EA	18	12	WNA,ENA
16 02	18	1	WNA,ENA	20	2	WNA,ENA,EA
16 18	19	1	WNA,ENA	3C	14	A
16 34	33	1	ENA,SAM	34	2	WNA,EA
16 50	10	3	E,EA,I	34	14	WNA,A
17 06	5C	1	ENA,SAM	6C	3	WNA,EA,I
17 22	69	1	WNA,ENA,SAM	3C	15	A
17 38	6A	1	ENA,SAM	28	3	WNA,EA
17 54	30	13	WNA,ENA,E	20	3	WNA,ENA,EA
18 10	44	13	WNA,ENA,E	34	3	WNA,EA
18 26	18	14	WNA,ENA,EA	36	15	EA,A
18 42	28	14	WNA,EA	F0	4	H
18 58	3C	16	A	34	15	WNA,EA
19 14	32	14	ENA	28	15	WNA,EA
19 30	36	16	EA,A	F0	3	H
19 46	F0	15	H	28	4	WNA,EA
20 02	30	14	WNA,ENA,E	34	4	WNA,EA
20 18	33	15	ENA	28	5	WNA,EA,I
20 34	3C	3	A	18	24	WNA,ENA,SAM
20 50	34	5	WNA,EA,I	F0	4	H
21 06	19	24	WNA,ENA,SAM	3D	4	A
21 22	29	5	WNA,EA	3D	3	A
21 38	32	24	WNA,ENA,SAM	3C	4	A
21 54	30	15	WNA,ENA,E	28	16	WNA,EA
22 10	34	17	WNA	20	16	WNA,ENA,EA
22 26	3D	4	A	21	16	WNA,ENA,EA
22 42	19	15	WNA,ENA,SAM	36	5	EA,A
22 58	32	17	WNA,ENA	98	5	EA,A
23 14	35	17	WNA	36	6	EA
23 30	34	9	WNA,EA	19	17	WNA,ENA

Table 14. Schedule no 3. 1997 January 3 (Cont.)

*** Australia ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
00 02	FA	5	A	F9	4	A
00 18	3C	18	H	CC	20	SAF
00 34	FA	5	A	80	18	WNA,H
00 50	FA	5	A	FA	19	A
01 06	FA	5	A	FA	19	A
01 22	84	6	EA,I	3D	19	H
01 38	F9	5	A	CD	21	SAF
01 54	FA	6	A	FA	5	A
02 10	F9	20	A	FA	5	A
02 26	36	19	EA,H	CC	21	SAF
02 42	FA	6	A	3C	20	H
02 58	FA	7	A	FA	6	A
03 14	F9	6	A	FA	21	A
03 30	CC	22	SAF	98	20	EA,H
03 46	FA	7	A	F9	21	A
04 02	FA	21	A	36	20	EA,H
04 18	FA	6	A	FA	21	A
04 34	CD	22	SAF	3C	9	H
04 50	F9	7	A	CD	8	SAF
05 06	CD	23	SAF	84	21	EA,I
05 22	3D	9	H	F9	22	A
05 38	CC	8	SAF	3C	10	H
05 54	FA	21	A	CC	23	SAF
06 10	FA	6	A	98	22	EA,I
06 26	CD	8	SAF	FA	10	A
06 42	36	11	EA,H	CD	23	SAF
06 58	FA	22	A	98	11	EA,H
07 14	84	23	EA,I,SAF	81	24	WNA,SAF
07 30	3C	12	H	FA	11	A
07 46	3C	7	H	80	24	WNA,SAF
08 02	F9	11	A	CD	1	SAF
08 18	36	12	EA,H	CC	1	SAF
08 34	CD	1	SAF	80	7	WNA,H
08 50	CD	1	SAF	3D	7	H
09 06	FA	12	A	3D	8	H
09 22	84	13	EA,I	FA	1	A
09 38	FA	1	A	F9	12	A
09 54	3C	8	H	CC	2	SAF
10 10	FA	1	A	AC	13	I
10 26	3D	8	H	F9	1	A
10 42	FA	13	A	FA	1	A
10 58	3D	1	H	84	14	EA,I
11 14	3D	1	H	F9	13	A
11 30	FA	2	A	AC	14	I
11 46	F9	2	A	3C	1	H

Table 14. Schedule no 3. 1997 January 3 (Cont.)

*** Australia ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
12 02	CC	3	SAF	98	1	EA,H
12 18	3D	1	H	FA	2	A
12 34	36	1	EA,H	98	2	EA
12 50	F9	3	A	FA	14	A
13 06	AC	15	I,SAF	3C	22	H
13 22	FA	23	A	38	2	H,I
13 38	CC	4	SAF	98	3	EA
13 54	F9	14	A	AC	2	I
14 10	CC	15	SAF	3C	23	H
14 26	CD	4	SAF	AC	3	I
14 42	F9	23	A	FA	14	A
14 58	AC	4	I,SAF	36	24	EA,H
15 14	CC	5	SAF	98	24	EA,H
15 30	AC	17	I	FA	14	A
15 46	F9	24	A	84	4	EA,I
16 02	FA	17	A	CD	5	SAF
16 18	CC	16	SAF	3C	14	H
16 34	FA	24	A	F9	15	A
16 50	34	14	WNA,H	98	17	EA
17 06	FA	17	A	FA	15	A
17 22	98	18	EA,I	3C	15	H
17 38	CC	9	SAF	F9	17	A
17 54	FA	16	A	AC	18	I
18 10	F9	16	A	FA	17	A
18 26	CD	9	SAF	36	15	EA,H
18 42	AE	19	I	FA	18	A
18 58	3C	16	H	FA	18	A
19 14	AC	19	I	F9	18	A
19 30	36	16	EA,H	CC	10	SAF
19 46	F9	9	A	AD	19	I
20 02	98	16	EA	FA	9	A
20 18	FA	9	A	CD	10	SAF
20 34	3C	3	H	FA	9	A
20 50	F9	10	A	CD	20	SAF
21 06	3D	4	H	98	9	EA,I
21 22	AC	20	I,SAF	3D	3	H
21 38	CC	11	SAF	3C	4	H
21 54	F9	19	A	AC	10	I
22 10	98	10	EA,I	FA	20	A
22 26	3D	4	H	FA	18	A
22 42	36	5	EA,H	CD	11	SAF
22 58	FA	10	A	98	5	EA,H
23 14	90	11	EA,SAF	FA	5	A
23 30	AC	6	I	CD	21	SAF

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** India ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
00 02	48	7	E,EA,ME	A4	22	SAF
00 18	84	10	EA	48	22	E,ME
00 34	41	7	E,EA,ME	A1	8	ME
00 50	10	7	E,EA,ME	10	9	E,EA,H
01 06	30	9	WNA,E,EA,H	49	7	E,EA,ME
01 22	84	6	EA,A	F1	11	I
01 38	F1	7	I	48	10	E,EA,ME
01 54	10	10	E,EA,ME	40	8	E,EA,ME
02 10	10	8	E,EA,ME	A5	12	ME,SAF
02 26	A0	7	ME	F1	10	I
02 42	11	11	E,EA,ME	A4	12	ME,SAF
02 58	A1	12	ME,SAF	40	11	E,EA,ME
03 14	10	11	E,EA,ME	A0	12	ME,SAF
03 30	01	1	ENA,E,ME	F1	8	I
03 46	41	11	E,EA,ME	F1	1	I
04 02	48	1	E,EA,ME	A0	13	ME,SAF
04 18	A0	8	ME	40	1	E,EA,ME
04 34	10	1	E,EA,ME	40	12	E,EA,ME
04 50	48	12	E,EA,ME	A0	1	ME
05 06	84	1	EA,ME,SAF	84	21	EA,A
05 22	A1	1	ME,SAF	10	12	E,EA,ME
05 38	10	2	E,EA,ME	8C	1	EA,ME
05 54	11	12	E,EA	A2	1	ME,SAF
06 10	A4	1	ME,SAF	98	22	EA,A
06 26	A5	1	ME,SAF	40	13	E,EA,ME
06 42	F2	3	I	A0	2	ME
06 58	10	13	E,EA,ME	F1	12	I
07 14	84	23	EA,A,SAF	48	13	E,EA,ME
07 30	28	21	WNA,EA,H	11	13	E,EA,ME
07 46	40	3	E,ME	84	22	EA
08 02	41	14	E,EA,ME	F1	23	I
08 18	F1	13	I	F1	24	I
08 34	48	3	E,ME,SAF	40	14	E,EA,ME
08 50	10	22	E,EA	10	14	E,EA,ME
09 06	30	22	WNA,E,EA,H	11	14	E,EA,ME
09 22	84	13	EA,A	11	23	E,EA,ME
09 38	A4	24	SAF	10	23	E,EA,ME
09 54	F1	14	I	84	24	EA,ME
10 10	40	15	E,EA,ME	AC	13	A
10 26	A1	23	ME	11	15	E,EA,ME
10 42	58	16	ENA,ME	10	15	E,EA,ME
10 58	10	24	E,EA,ME	84	14	EA,A
11 14	A4	17	SAF	40	24	E,EA,ME
11 30	F1	15	I	AC	14	A
11 46	11	24	E,EA,ME	A4	18	SAF

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** India ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
12 02	40	16	E,EA,ME	A0	17	ME
12 18	A0	15	ME	10	16	E,EA,ME
12 34	A0	18	ME,SAF	A0	9	ME
12 50	58	9	ENA,ME	40	17	E,EA,ME
13 06	10	17	E,EA,ME	AC	15	A,SAF
13 22	48	17	E,EA,ME	38	2	H,A
13 38	A0	16	ME	F1	18	I
13 54	11	17	E,EA	AC	2	A
14 10	84	2	EA	40	9	E,ME
14 26	40	18	E,EA,ME	AC	3	A
14 42	48	18	E,EA,ME	A0	19	ME,SAF
14 58	10	18	E,EA,ME	AC	4	A,SAF
15 14	48	19	E,ME	84	17	EA
15 30	11	18	E,EA,ME	AC	17	A
15 46	84	4	EA,A	40	10	E,ME,SAF
16 02	41	19	E,EA,ME	F1	3	I
16 18	40	19	E,EA,ME	84	18	EA
16 34	10	19	E,EA,ME	A0	10	ME,SAF
16 50	10	3	E,EA,H	A1	20	ME
17 06	11	19	E,EA,ME	6C	3	WNA,EA,H
17 22	98	18	EA,A	48	20	E,ME
17 38	40	4	E,EA,ME	A4	5	SAF
17 54	AC	18	A	10	4	E,EA,ME
18 10	F1	19	I	40	20	E,EA,ME
18 26	F1	5	I	A1	6	ME
18 42	10	20	E,EA,ME	AE	19	A
18 58	58	21	ENA,ME	10	5	E,EA,ME
19 14	40	5	E,EA,ME	AC	19	A
19 30	F1	20	I	48	5	WNA,E,EA,ME
19 46	08	5	WNA,E,EA,ME	AD	19	A
20 02	A4	7	SAF	A0	6	ME
20 18	10	21	E,EA,ME	28	5	WNA,EA,H
20 34	A0	20	ME	40	21	E,EA,ME
20 50	40	6	E,EA,ME	34	5	WNA,EA,H
21 06	10	6	E,EA,ME	98	9	EA,A
21 22	48	6	E,EA,ME	AC	20	A,SAF
21 38	49	8	E,ME	84	9	EA
21 54	AC	10	A	11	6	E,EA,ME
22 10	98	10	EA,A	40	22	E,ME,SAF
22 26	40	7	E,EA,ME	48	8	E,ME,SAF
22 42	A0	23	ME	F1	9	I
22 58	11	7	E,EA,ME	48	23	ENA,E,ME
23 14	41	8	ENA,E,ME	4C	22	E,ME,SAF
23 30	AC	6	A	12	7	E,EA,ME

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** Middle East ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
00 02	48	7	E,EA,I	54	8	E,SAM
00 18	49	23	ENA,E	48	22	E,I
00 34	41	7	E,EA,I	A1	8	I
00 50	10	7	E,EA,I	F4	10	ME
01 06	60	8	ENA	49	7	E,EA,I
01 22	54	23	E,SAF,SAM	00	1	ENA,E
01 38	00	24	ENA,E	48	10	E,EA,I
01 54	10	10	E,EA,I	40	8	E,EA,I
02 10	10	8	E,EA,I	A5	12	I,SAF
02 26	A0	7	I	4C	23	E,SAF,SAM
02 42	11	11	E,EA,I	A4	12	I,SAF
02 58	A1	12	I,SAF	40	11	E,EA,I
03 14	10	11	E,EA,I	A0	12	I,SAF
03 30	01	1	ENA,E,I	00	17	WNA,ENA,E,SAM
03 46	41	11	E,EA,I	00	2	WNA,ENA,E
04 02	48	1	E,EA,I	A0	13	I,SAF
04 18	A0	8	I	40	1	E,EA,I
04 34	10	1	E,EA,I	40	12	E,EA,I
04 50	48	12	E,EA,I	A0	1	I
05 06	84	1	EA,I,SAF	F4	13	ME
05 22	A1	1	I,SAF	10	12	E,EA,I
05 38	10	2	E,EA,I	8C	1	EA,I
05 54	A2	1	I,SAF	00	3	WNA,ENA,E
06 10	48	14	E,SAF	A4	1	I,SAF
06 26	A5	1	I,SAF	40	13	E,EA,I
06 42	4C	15	E,SAF,SAM	A0	2	I
06 58	10	13	E,EA,I	F4	3	ME
07 14	08	4	WNA,ENA,E	48	13	E,EA,I
07 30	00	4	WNA,ENA,E	11	13	E,EA,I
07 46	40	3	E,I	00	15	ENA,E,SAM
08 02	41	14	E,EA,I	01	4	ENA,E
08 18	F4	23	ME	F4	22	ME
08 34	48	3	E,I,SAF	40	14	E,EA,I
08 50	F4	4	ME	10	14	E,EA,I
09 06	60	16	ENA,SAM	11	14	E,EA,I
09 22	48	15	ENA,E	11	23	E,EA,I
09 38	00	16	ENA,E,SAM	10	23	E,EA,I
09 54	48	4	E,SAF,SAM	84	24	EA,I
10 10	40	15	E,EA,I	BC	17	SAF
10 26	A1	23	I	11	15	E,EA,I
10 42	58	16	ENA,I	10	15	E,EA,I
10 58	10	24	E,EA,I	F4	17	ME
11 14	60	5	ENA,SAF,SAM	40	24	E,EA,I
11 30	00	5	ENA,E,SAF,SAM	00	6	ENA,E,SAM
11 46	11	24	E,EA,I	00	9	WNA,ENA,E

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** Middle East ***

Start h m	Channel 1 Class	Slot	Connects	Channel 2 Class	Slot	Connects
12 02	40	16	E,EA,I	A0	17	I
12 18	A0	15	I	10	16	E,EA,I
12 34	A0	18	I,SAF	A0	9	I
12 50	58	9	ENA,I	40	17	E,EA,I
13 06	10	17	E,EA,I	8C	16	EA
13 22	48	17	E,EA,I	BC	19	SAF,SAM
13 38	4C	19	E,SAF,SAM	A0	16	I
13 54	F4	10	ME	F4	9	ME
14 10	F4	19	ME	40	9	E,I
14 26	40	18	E,EA,I	F4	16	ME
14 42	48	18	E,EA,I	A0	19	I,SAF
14 58	10	18	E,EA,I	BC	9	SAF
15 14	48	19	E,I	01	11	WNA,ENA,E
15 30	11	18	E,EA,I	00	11	WNA,ENA,E
15 46	4C	20	E,SAF,SAM	40	10	E,I,SAF
16 02	41	19	E,EA,I	49	11	E
16 18	40	19	E,EA,I	BD	9	SAF
16 34	10	19	E,EA,I	A0	10	I,SAF
16 50	BC	5	SAF	A1	20	I
17 06	11	19	E,EA,I	01	12	WNA,ENA,E
17 22	48	11	E,SAF,SAM	48	20	E,I
17 38	40	4	E,EA,I	00	12	WNA,ENA,E
17 54	C2	12	SAM	10	4	E,EA,I
18 10	60	21	ENA	40	20	E,EA,I
18 26	4C	11	E,SAF,SAM	A1	6	I
18 42	10	20	E,EA,I	60	12	ENA,SAM
18 58	58	21	ENA,I	10	5	E,EA,I
19 14	40	5	E,EA,I	BC	12	SAF
19 30	00	13	WNA,ENA,E	48	5	WNA,E,EA,I
19 46	08	5	WNA,E,EA,I	60	13	ENA,SAM
20 02	A0	6	I	00	22	ENA,E
20 18	10	21	E,EA,I	F4	7	ME
20 34	A0	20	I	40	21	E,EA,I
20 50	40	6	E,EA,I	60	22	ENA
21 06	10	6	E,EA,I	BC	21	SAF
21 22	48	6	E,EA,I	F4	7	ME
21 38	49	8	E,I	F4	23	ME
21 54	F4	22	ME	11	6	E,EA,I
22 10	01	23	ENA,E	40	22	E,I,SAF
22 26	40	7	E,EA,I	48	8	E,I,SAF
22 42	49	1	E,SAF,SAM	A0	23	I
22 58	11	7	E,EA,I	48	23	ENA,E,I
23 14	41	8	ENA,E,I	4C	22	E,I,SAF
23 30	4C	1	ENA,E,SAF,SAM	12	7	E,EA,I

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** South Africa ***

Start	Channel 1			Channel 2		
h m	Class	Slot	Connects	Class	Slot	Connects
00 02	CB	1	SAM	A4	22	I
00 18	CC	20	A	6B	1	ENA,SAM
00 34	F5	11	SAF	F5	22	SAF
00 50	F5	21	SAF	F5	13	SAF
01 06	F5	22	SAF	F5	11	SAF
01 22	54	23	E,ME,SAM	F5	12	SAF
01 38	F5	11	SAF	CD	21	A
01 54	F5	11	SAF	F5	12	SAF
02 10	F5	22	SAF	A5	12	I,ME
02 26	CC	21	A	4C	23	E,ME,SAM
02 42	CB	14	SAM	A4	12	I,ME
02 58	A1	12	I,ME	F5	13	SAF
03 14	F5	24	SAF	A0	12	I,ME
03 30	CC	22	A	CA	23	SAM
03 46	CA	24	SAM	F5	12	SAF
04 02	F5	14	SAF	A0	13	I,ME
04 18	F5	14	SAF	CB	15	SAM
04 34	CD	22	A	7C	24	WNA,SAM
04 50	F5	13	SAF	CD	8	A
05 06	84	1	EA,I,ME	CD	23	A
05 22	A1	1	I,ME	CA	14	SAM
05 38	CC	8	A	CA	15	SAM
05 54	A2	1	I,ME	CC	23	A
06 10	48	14	E,ME	A4	1	I,ME
06 26	CD	8	A	A5	1	I,ME
06 42	4C	15	E,ME,SAM	CD	23	A
06 58	CA	16	SAM	CA	17	SAM
07 14	84	23	EA,A,I	81	24	WNA,A
07 30	F5	1	SAF	6A	15	ENA,SAM
07 46	CB	16	SAM	80	24	WNA,A
08 02	CB	16	SAM	CD	1	A
08 18	4C	16	ENA,E,SAM	CC	1	A
08 34	48	3	E,I,ME	CD	1	A
08 50	CD	1	A	CA	18	SAM
09 06	F5	3	SAF	F5	24	SAF
09 22	F5	3	SAF	F5	4	SAF
09 38	A4	24	I	F5	3	SAF
09 54	48	4	E,ME,SAM	CC	2	A
10 10	F5	3	SAF	BC	17	ME
10 26	F5	3	SAF	F5	19	SAF
10 42	CA	19	SAM	F5	17	SAF
10 58	CA	4	SAM	F5	18	SAF
11 14	A4	17	I	60	5	ENA,ME,SAM
11 30	00	5	ENA,E,ME,SAM	F5	18	SAF
11 46	F5	17	SAF	A4	18	I

TABLE 14. SCHEDULE NO 3, 1997 JANUARY 3 (CONT.)

*** South Africa ***

Start	Channel 1			Channel 2		
h m	Class	Slot	Connects	Class	Slot	Connects
12 02	CC	3	A	CB	5	SAM
12 18	CB	20	SAM	F5	19	SAF
12 34	A0	18	I,ME	CB	19	SAM
12 50	F5	19	SAF	F5	4	SAF
13 06	AC	15	A,I	CA	5	SAM
13 22	F5	16	SAF	BC	19	ME,SAM
13 38	4C	19	E,ME,SAM	CC	4	A
13 54	F5	5	SAF	CA	6	SAM
14 10	CC	15	A	CA	20	SAM
14 26	CD	4	A	CB	21	SAM
14 42	CB	20	SAM	A0	19	I,ME
14 58	AC	4	A,I	BC	9	ME
15 14	CC	5	A	CA	21	SAM
15 30	F5	10	SAF	CB	20	SAM
15 46	4C	20	E,ME,SAM	40	10	E,I,ME
16 02	CB	21	SAM	CD	5	A
16 18	CC	16	A	BD	9	ME
16 34	CA	7	SAM	A0	10	I,ME
16 50	BC	5	ME	F5	9	SAF
17 06	F5	10	SAF	F5	6	SAF
17 22	48	11	E,ME,SAM	90	5	EA
17 38	CC	9	A	A4	5	I
17 54	F5	10	SAF	F5	6	SAF
18 10	F5	10	SAF	CA	8	SAM
18 26	4C	11	E,ME,SAM	CD	9	A
18 42	F5	6	SAF	F5	7	SAF
18 58	F5	8	SAF	F5	7	SAF
19 14	F5	6	SAF	BC	12	ME
19 30	CA	11	SAM	CC	10	A
19 46	F5	7	SAF	F5	6	SAF
20 02	A4	7	I	CB	12	SAM
20 18	CB	12	SAM	CD	10	A
20 34	CB	12	SAM	F5	1	SAF
20 50	CA	12	SAM	CD	20	A
21 06	CB	1	SAM	BC	21	ME
21 22	AC	20	A,I	CB	12	SAM
21 38	CC	11	A	CB	1	SAM
21 54	CA	13	SAM	F5	12	SAF
22 10	CA	1	SAM	40	22	E,I,ME
22 26	CB	1	SAM	48	8	E,I,ME
22 42	49	1	E,ME,SAM	CD	11	A
22 58	CB	1	SAM	CA	2	SAM
23 14	90	11	EA,A	4C	22	E,I,ME
23 30	4C	1	ENA,E,ME,SAM	CD	21	A

Table 14. Schedule no 3, 1997 January 3 (Cont.)

*** South America ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
00 02	CB	1	SAF	54	8	E,ME
00 18	7C	14	WNA	6B	1	ENA,SAF
00 34	F8	15	SAM	54	1	ENA,E
00 50	69	15	WNA,ENA	F8	1	SAM
01 06	F8	1	SAM	69	23	ENA
01 22	54	23	E,ME,SAF	32	15	WNA,ENA,H
01 38	F8	2	SAM	F8	1	SAM
01 54	68	1	ENA	F8	24	SAM
02 10	68	2	ENA	F8	15	SAM
02 26	F8	3	SAM	4C	23	E,ME,SAF
02 42	68	24	ENA	CB	14	SAF
02 58	54	2	WNA,ENA,E	F8	3	SAM
03 14	F8	17	SAM	08	2	WNA,ENA,E
03 30	CA	23	SAF	00	17	WNA,ENA,E,ME
03 46	69	17	ENA	CA	24	SAF
04 02	18	3	WNA,ENA	F8	4	SAM
04 18	F8	17	SAM	CB	15	SAF
04 34	32	4	WNA,ENA,H	7C	24	WNA,SAF
04 50	68	17	ENA	08	18	WNA,ENA,E
05 06	54	18	WNA,ENA,E	3B	5	H
05 22	CA	14	SAF	69	18	ENA
05 38	18	4	WNA,ENA,H	CA	15	SAF
05 54	F8	24	SAM	F8	17	SAM
06 10	F8	18	SAM	F8	16	SAM
06 26	F8	17	SAM	68	18	ENA
06 42	4C	15	E,ME,SAF	18	19	WNA,ENA,H
06 58	CA	16	SAF	CA	17	SAF
07 14	F8	19	SAM	F8	15	SAM
07 30	F8	16	SAM	6A	15	ENA,SAF
07 46	CB	16	SAF	00	15	ENA,E,ME
08 02	CB	16	SAF	F8	19	SAM
08 18	4C	16	ENA,E,SAF	7C	19	WNA
08 34	F8	9	SAM	F8	16	SAM
08 50	32	20	WNA,ENA,H	CA	18	SAF
09 06	60	16	ENA,ME	F8	4	SAM
09 22	7C	20	WNA,H	F8	9	SAM
09 38	00	16	ENA,E,ME	F8	9	SAM
09 54	48	4	E,ME,SAF	F8	5	SAM
10 10	68	9	ENA	F8	20	SAM
10 26	F8	10	SAM	F8	5	SAM
10 42	CA	19	SAF	F8	10	SAM
10 58	CA	4	SAF	54	9	WNA,ENA,E
11 14	08	9	WNA,ENA,E	60	5	ENA,ME,SAF
11 30	00	5	ENA,E,ME,SAF	00	6	ENA,E,ME
11 46	68	10	ENA	F8	11	SAM

Table 14. Schedule no 3, 1997 January 3 (Cont.)

*** South America ***

Start	Channel 1			Channel 2		
	Class	Slot	Connects	Class	Slot	Connects
h m						
12 02	68	6	WNA,ENA	CB	5	SAF
12 18	CB	20	SAF	F8	11	SAM
12 34	CB	19	SAF	08	10	WNA,ENA,E
12 50	54	7	WNA,ENA,E	F8	6	SAM
13 06	32	11	WNA,ENA,H	CA	5	SAF
13 22	68	7	ENA	BC	19	ME,SAF
13 38	4C	19	E,ME,SAF	18	11	WNA,ENA,H
13 54	F8	7	SAM	CA	6	SAF
14 10	01	8	WNA,ENA,E,H	CA	20	SAF
14 26	F8	7	SAM	CB	21	SAF
14 42	CB	20	SAF	F8	6	SAM
14 58	F8	8	SAM	F8	7	SAM
15 14	F8	20	SAM	CA	21	SAF
15 30	F8	8	SAM	CB	20	SAF
15 46	4C	20	E,ME,SAF	F8	21	SAM
16 02	CB	21	SAF	F8	8	SAM
16 18	F8	8	SAM	00	21	ENA,E
16 34	33	1	ENA,H	CA	7	SAF
16 50	6B	1	ENA	F8	21	SAM
17 06	5C	1	ENA,H	F8	22	SAM
17 22	48	11	E,ME,SAF	69	1	WNA,ENA,H
17 38	6A	1	ENA,H	F8	21	SAM
17 54	C2	12	ME	F8	22	SAM
18 10	F8	1	SAM	CA	8	SAF
18 26	4C	11	E,ME,SAF	F8	1	SAM
18 42	60	12	ENA,ME	F8	1	SAM
18 58	54	22	WNA,ENA,E	F8	1	SAM
19 14	F8	1	SAM	08	22	WNA,ENA,E
19 30	CA	11	SAF	F8	1	SAM
19 46	60	13	ENA,ME	68	23	ENA
20 02	F8	1	SAM	CB	12	SAF
20 18	CB	12	SAF	F8	13	SAM
20 34	CB	12	SAF	18	24	WNA,ENA,H
20 50	CA	12	SAF	08	14	WNA,ENA,E
21 06	19	24	WNA,ENA,H	CB	1	SAF
21 22	69	14	ENA	CB	12	SAF
21 38	32	24	WNA,ENA,H	CB	1	SAF
21 54	CA	13	SAF	F8	14	SAM
22 10	CA	1	SAF	F8	2	SAM
22 26	68	14	WNA,ENA	CB	1	SAF
22 42	49	1	E,ME,SAF	19	15	WNA,ENA,H
22 58	CB	1	SAF	CA	2	SAF
23 14	F8	1	SAM	68	15	WNA,ENA
23 30	4C	1	ENA,E,ME,SAF	F8	13	SAM

(File available via INTERNET under the name UTCGLO96.AR)

The GLONASS satellites disseminate a common time scale designated as 'GLONASS time'. The relation between UTC and GLONASS time is :

$$[\text{UTC - GLONASS time}] = 0\ \text{s} + C1$$

From his current observation of both the GPS and GLONASS satellite systems Prof. P. Daly, University of Leeds, establishes and reports [GPS time - GLONASS time] at five-day intervals, together with the standard deviation σ of the daily measurements. C1 is then derived using [UTC - GPS time] of Table 12.

Date 1996 0h UTC	MJD	C1 (ns)	σ (ns)
Jan 2	50084	-24677	38
Jan 7	50089	-24812	37
Jan 12	50094	-24959	45
Jan 17	50099	-25087	42
Jan 22	50104	-25264	46
Jan 27	50109	-25389	45
Feb 1	50114	-25579	45
Feb 6	50119	-25728	45
Feb 11	50124	-25887	44
Feb 16	50129	-26034	42
Feb 21	50134	-26172	59
Feb 26	50139	-26300	46
Mar 2	50144	-26454	52
Mar 7	50149	-26628	45
Mar 12	50154	-26777	47
Mar 17	50159	-26916	37
Mar 22	50164	-27046	50
Mar 27	50169	-27192	47
Apr 1	50174	-27345	40
Apr 6	50179	-27502	52
Apr 11	50184	-27655	38
Apr 16	50189	-27781	42
Apr 21	50194	-27918	50
Apr 26	50199	-28046	41
May 1	50204	-28194	44
May 6	50209	-28328	38
May 11	50214	-28455	44
May 16	50219	-28569	35
May 21	50224	-28722	39
May 26	50229	-28851	41
May 31	50234	-28975	42
Jun 5	50239	-29108	46
Jun 10	50244	-29261	39
Jun 15	50249	-29380	47
Jun 20	50254	-29506	42
Jun 25	50259	-29630	50
Jun 30	50264	-29780	50

TABLE 15. (CONT.)

Date 1996 0h UTC	MJD	C1 (ns)	σ (ns)
Jul 5	50269	-29913	51
Jul 10	50274	-30050	45
Jul 15	50279	-30200	49
Jul 20	50284	-30326	42
Jul 25	50289	-30452	35
Jul 30	50294	-30591	38
Aug 4	50299	-30744	50
Aug 9	50304	-30868	44
Aug 14	50309	-31002	48
Aug 19	50314	-31135	40
Aug 24	50319	-31258	49
Aug 29	50324	-31404	42
Sep 3	50329	-31543	35
Sep 8	50334	-31669	36
Sep 13	50339	-31820	38
Sep 18	50344	-31955	43
Sep 23	50349	-32081	41
Sep 28	50354	-32241	41
Oct 3	50359	-32342	42
Oct 8	50364	-32474	48
Oct 13	50369	-32628	47
Oct 18	50374	-32735	39
Oct 23	50379	-32899	47
Oct 28	50384	-33078	46
Nov 2	50389	-33194	44
Nov 7	50394	-33308	42
Nov 12	50399	-33452	45
Nov 17	50404	-33586	48
Nov 22	50409	-33715	43
Nov 27	50414	-33829	43
Dec 2	50419	-34001	51
Dec 7	50424	-34153	48
Dec 12	50429	-34286	47
Dec 17	50434	-34402	44
Dec 22	50439	-34543	42
Dec 27	50444	-34683	54

TABLE 16A. RATES RELATIVE TO TAI OF CONTRIBUTING CLOCKS IN 1996

(File available via INTERNET under the name RTAI96.AR)

Mean clock rates relative to TAI are computed for two-month intervals ending at the dates given in the table.
When an intentional frequency adjustment has been applied to a clock, the data prior to this adjustment are corrected, so that Table 16A gives homogeneous rates for the whole year 1996. For studies including the clock rates of previous years, corrections must be brought to the data published in the Annual Reports for 1988, 1989, 1990, 1991, 1992, 1993, 1994 and 1995, and in the BIH Annual Reports for the previous years.
These corrections are given in Table 16B.
Unit is ns/day, *** denotes that the clock was not used.

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
AOS	23	67	11.72	-0.76	-3.41	-6.98	2.23	12.13
APL	14	793	***	***	***	-8.12	***	***
APL	40	3101	***	-0.86	-9.54	-1.45	***	***
APL	40	3102	***	***	***	-0.44	***	***
APL	40	3106	***	***	***	-10.26	***	***
AUS	36	207	-3.08	2.62	6.11	0.69	-2.92	0.41
AUS	36	249	-4.85	-5.26	-4.02	-6.83	-6.17	-8.24
AUS	36	340	-1.87	-1.72	-1.30	0.58	2.91	0.95
AUS	36	379	15.73	18.51	21.58	18.24	16.97	15.87
AUS	36	424	-0.92	1.00	1.14	1.50	0.50	-0.22
AUS	36	654	-45.26	-44.17	-42.37	***	***	***
AUS	40	5401	42.73	***	***	25.83	24.90	23.96
AUS	44	2	62.69	64.71	63.76	62.74	63.81	65.79
BEV	16	71	-36.29	-31.51	***	***	***	***
CAO	16	183	***	***	***	***	***	-21.55
CH	16	69	-145.69	-144.26	-151.67	-156.31	-185.66	-170.98
CH	16	77	-91.13	-93.64	-100.18	-101.89	-151.21	-147.63
CH	16	140	123.34	140.43	125.89	131.24	130.40	138.00
CH	17	206	3.98	7.21	7.27	0.46	5.58	2.30
CH	21	179	113.53	***	***	***	-13.80	-12.03
CH	21	194	-34.05	-31.72	-21.02	-13.05	-5.48	***
CH	21	217	81.03	83.95	76.98	79.79	79.75	89.78
CH	21	243	20.33	2.01	-15.74	-22.72	-9.85	3.83
CH	21	265	25.34	12.08	7.53	25.74	4.01	3.88
CH	31	403	***	***	***	-16.63	-16.19	-14.30
CH	35	413	2.90	5.78	8.05	11.13	12.42	13.65
CH	35	771	***	18.00	18.46	14.99	17.41	17.05
CH	36	354	42.04	44.98	41.97	41.43	43.37	44.23
CNM	35	236	***	***	-22.13	-22.67	***	***
CNM	35	237	***	***	-20.02	-20.77	***	***
CNM	35	238	***	***	-18.50	-3.82	***	9.45
CNM	35	378	***	***	-23.20	-23.76	***	***
CNM	35	381	***	***	***	-20.92	***	***
CRL	14	932	-180.58	-180.88	-177.92	-173.63	***	***
CRL	14	2456	-7.28	-7.00	-4.71	-3.10	***	***

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
CRL	35	112	-9.73	-10.33	-10.52	-12.35	-12.60	-14.62
CRL	35	144	3.26	3.02	3.44	3.66	3.84	4.33
CRL	35	332	24.79	24.84	24.38	24.56	24.78	24.89
CRL	35	342	13.62	13.08	13.12	12.85	13.58	13.44
CRL	35	343	8.34	8.18	8.44	8.42	9.30	10.12
CRL	35	715	***	***	16.64	15.75	15.99	15.72
CRL	35	732	***	***	-8.56	-9.43	-9.32	-10.25
CSAO	12	1646	388.68	379.11	***	551.29	536.06	458.07
CSAO	12	1648	60.19	63.69	***	86.13	81.72	75.73
CSAO	12	2068	137.43	129.99	***	85.71	89.34	105.58
CSAO	30	152	490.61	521.42	***	522.63	538.34	582.75
CSAO	40	4902	***	***	***	1088.47	1086.69	***
DLR	40	7416	***	***	-4.28	-5.90	-5.89	-7.01
DLR	40	7424	***	***	-1.45	-1.07	0.60	2.50
DTAG	14	1217	***	23.27	47.10	51.93	***	***
DTAG	36	136	***	7.48	6.62	7.80	6.00	8.08
DTAG	36	345	***	-0.86	-1.01	-1.01	-0.89	-1.22
F	14	51	-119.58	-111.23	-100.83	-101.13	-104.75	***
F	14	134	31.60	44.55	24.07	55.66	76.44	67.93
F	14	475	***	***	***	-46.25	***	***
F	14	500	0.78	***	***	***	***	***
F	14	1120	-52.43	-53.89	-50.28	-49.35	-50.25	-52.24
F	14	1645	67.31	70.56	73.64	75.21	74.30	70.96
F	16	106	-19.29	-15.77	-10.99	-10.89	-8.00	-22.81
F	16	187	-70.44	-61.63	-52.83	-47.76	-36.76	-36.95
F	17	489	22.07	17.31	26.25	18.05	25.40	17.01
F	35	122	-21.94	-21.67	-20.65	-21.47	-19.97	-19.74
F	35	124	-4.79	-4.72	-4.77	-4.35	-4.36	-3.49
F	35	131	12.07	11.54	11.80	11.30	11.04	15.23
F	35	158	10.05	10.94	10.67	10.91	11.83	12.40
F	35	172	0.38	0.32	-0.28	0.19	-0.25	0.20
F	35	198	-0.07	-0.59	-0.86	-0.62	-0.11	-0.17
F	35	385	0.01	-0.72	-0.11	-0.29	-1.67	-2.24
F	35	396	6.09	5.95	6.17	5.32	6.46	6.44
F	35	536	-7.48	-7.35	-7.41	-7.33	-7.55	-7.41
F	35	609	***	10.13	10.16	9.18	9.07	10.72
F	35	770	***	***	***	***	9.72	8.99
F	40	816	***	19.91	18.63	17.28	16.17	16.03
GUM	14	1144	-0.99	-0.07	-2.72	-3.39	1.24	0.05
GUM	31	652	***	***	***	***	1.67	1.26
GUM	35	441	-0.27	0.08	1.12	0.83	1.61	2.10
IEN	31	659	-58.30	***	-37.68	-39.45	-37.32	-45.27
IEN	35	219	2.10	***	20.70	22.82	22.22	21.74
IEN	35	505	1.10	-0.72	-2.05	-0.32	0.43	0.97
IFAG	14	1105	-61.52	-58.83	***	***	-29.54	-49.12

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
IFAG	16	131	-61.53	***	***	***	4.51	8.34
IFAG	16	138	192.91	198.29	***	***	-68.09	***
IFAG	16	173	192.47	153.54	***	***	166.48	215.93
IFAG	16	274	11.81	10.66	***	***	59.59	49.51
IFAG	40	4401	8.69	26.25	***	***	77.79	105.28
IFAG	40	4413	-58.06	-86.24	***	***	-53.39	-76.63
IGMA	14	2403	***	15.39	-4.13	-13.75	37.02	-0.96
IGMA	16	112	***	45.34	44.48	49.57	38.43	32.82
IGMA	35	645	***	***	***	***	***	9.20
IGMA	35	647	***	18.38	18.70	18.20	16.99	17.65
INPL	14	2308	44.25	***	***	***	***	***
INPL	14	2426	23.18	25.70	32.69	46.06	46.84	35.80
INPL	31	145	20.11	20.15	14.53	-7.91	-5.44	-22.13
INPL	31	619	-36.90	-37.94	-36.80	-38.02	-45.27	-45.90
IPQ	31	606	***	21.83	***	-4.60	***	***
IPQ	35	125	-10.47	-10.97	***	0.70	0.70	0.63
IPQ	35	615	3.72	4.52	***	2.16	2.83	4.14
KRIS	12	1406	14.17	18.80	20.43	15.04	24.58	29.54
KRIS	12	1902	98.36	103.20	109.16	108.35	110.93	107.54
KRIS	12	1903	22.79	23.69	28.02	21.52	27.62	***
KRIS	36	321	5.32	6.20	6.00	5.17	5.20	4.72
KRIS	36	739	***	-17.44	-17.27	-16.82	-16.52	-15.27
KRIS	40	5623	***	***	2.27	***	***	***
LDS	35	289	-1.08	-0.69	0.13	0.12	-0.79	-1.32
MSL	12	933	3.40	1.56	0.81	-3.86	-5.51	-3.03
MSL	12	1770	12.28	18.18	19.91	***	***	***
MSL	36	274	-8.84	-1.93	2.21	-0.13	1.29	1.79
NAOM	14	885	***	17.61	***	***	***	***
NAOM	14	1315	-50.19	-48.37	-48.44	-46.16	-44.34	-45.50
NAOM	34	1075	***	***	***	***	***	-14.23
NAOM	34	2146	-75.20	-74.23	-73.19	-69.15	-72.85	-74.51
NAOM	35	779	***	***	***	***	***	19.07
NAOT	31	284	-237.73	-232.14	***	***	***	***
NAOT	34	1075	-14.47	-16.64	-17.11	-17.00	***	***
NAOT	34	1498	-72.76	-72.93	-70.74	-68.35	-68.92	-67.43
NAOT	34	2494	-59.77	-56.75	-48.66	-56.56	-60.02	-59.46
NIM	12	1633	9.85	8.85	12.20	14.51	16.85	***
NIM	12	1640	-0.21	-1.58	-1.11	-0.55	-3.45	***
NIST	14	1316	-24.55	-23.36	-29.55	-28.27	-35.19	-27.41
NIST	16	217	40.40	***	***	***	***	***
NIST	18	1007	-221.56	***	***	***	***	***
NIST	31	569	-126.18	-128.39	-111.00	***	***	***
NIST	34	493	-85.46	-127.86	***	***	***	***
NIST	35	132	-8.61	-8.99	-9.13	-8.83	-9.05	-8.06
NIST	35	182	-7.55	-7.10	-7.25	-7.43	-7.82	-7.44

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
NIST	35	408	-10.07	-10.28	-10.16	***	***	***
NIST	40	201	8.66	9.33	***	13.30	***	13.50
NIST	40	203	***	***	***	***	***	35.02
NIST	40	222	-737.85	-737.99	-738.13	-738.25	-738.26	-738.19
NIST	50	2008	***	***	***	-28.29	-33.37	-39.88
NPL	14	418	-3.55	-5.82	-6.97	-7.14	3.21	5.02
NPL	14	1334	-136.27	-128.38	-126.22	-135.04	-128.46	-135.83
NPL	14	1813	-20.39	-24.49	-15.67	-12.71	-14.17	-27.39
NPL	35	123	-0.29	-0.37	-0.30	-0.14	-0.38	0.53
NPL	35	784	***	***	0.95	0.49	1.15	0.83
NPL	36	404	0.85	0.05	-0.45	0.99	-1.21	1.19
NPL	40	1701	-0.21	-0.09	-0.20	-0.18	0.38	0.77
NPL	40	1708	***	***	***	***	-1.22	-1.22
NRC	35	234	2.64	2.54	2.52	3.13	2.81	3.75
NRC	35	372	14.20	16.69	***	11.40	11.80	13.14
NRC	40	303	15.15	19.35	18.91	21.62	27.07	24.11
NRC	40	304	10.25	11.64	10.63	11.93	13.39	13.72
NRC	90	61	12.61	14.22	12.44	12.51	10.85	9.82
NRC	90	63	6.14	5.27	4.13	5.67	1.18	3.60
NRLM	35	224	13.73	13.75	13.13	12.70	12.49	13.28
NRLM	35	459	***	***	***	-0.09	-0.07	0.45
NRLM	35	523	0.06	-0.13	-0.01	0.31	0.28	0.69
OMH	12	1067	35.35	***	***	***	***	***
ORB	35	201	-2.10	-1.88	-1.59	-0.12	-0.31	-0.47
ORB	35	202	2.74	1.65	3.75	4.50	4.67	4.64
ORB	35	593	31.17	29.63	31.27	32.73	32.29	32.05
ORB	40	2601	-147.08	-154.12	-159.53	-166.43	-173.62	-178.04
PTB	14	2379	-61.67	-64.42	-56.63	-52.38	-54.09	-60.83
PTB	35	128	14.90	15.03	14.63	14.47	14.27	15.01
PTB	35	271	3.71	3.95	4.22	4.31	5.14	4.81
PTB	35	415	-0.26	-1.15	-0.95	-0.89	0.49	0.41
PTB	40	502	-28.39	-28.96	-30.24	-31.17	-31.66	-32.26
PTB	40	505	***	***	***	-2.34	0.43	3.53
PTB	40	537	14.79	6.11	1.34	3.12	1.68	-0.14
PTB	92	2	-1.21	-0.93	-0.75	-1.06	-0.47	-1.08
PTB	92	3	***	***	***	-3.24	-0.65	-2.71
ROA	12	1223	-79.94	-87.19	-77.74	-67.96	-73.55	-87.21
ROA	14	896	7.84	2.80	3.51	7.50	10.29	11.00
ROA	14	1569	0.69	-9.63	-6.04	4.14	6.02	-0.81
ROA	16	113	69.14	65.14	65.19	64.00	70.59	80.18
ROA	31	422	-1.97	-1.72	0.14	-3.09	-7.30	-4.13
ROA	35	583	0.07	-0.46	-0.60	0.06	0.03	-1.19
ROA	35	718	2.11	2.09	1.82	2.02	2.45	2.96
SCL	14	2127	89.31	85.87	***	88.43	104.27	100.02
SCL	31	838	-146.32	-149.25	***	-155.01	-150.05	-149.57

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
SCL	35	764	***	***	***	8.20	6.78	5.95
SO	12	2067	-84.77	-86.35	-88.86	-93.57	-101.65	-116.36
SO	40	5101	-80.73	-78.88	-75.40	-74.28	-74.86	-73.03
SO	40	5102	***	***	-6.96	***	***	***
SP	14	1376	***	***	***	***	***	13.43
SP	16	137	***	***	36.47	30.24	45.67	46.60
SP	35	641	***	***	-18.03	-17.80	-17.48	-17.62
SU	40	3802	0.07	***	***	-0.79	0.02	0.12
SU	40	3805	-28.85	***	***	-28.85	-28.49	-28.32
SU	40	3806	-1.91	***	***	-1.68	-0.93	-0.54
SU	40	3807	-6.45	***	***	-8.56	-7.97	-7.20
SU	40	3808	-29.48	***	***	-33.86	-34.69	-35.63
SU	40	3811	-19.40	***	***	-18.55	-19.07	-18.78
SU	40	3812	-9.26	***	***	-17.50	-17.91	-20.18
TL	11	2276	***	***	-82.25	***	***	***
TL	16	283	53.54	47.56	56.81	53.12	***	***
TL	31	317	-32.76	-33.82	-12.70	***	***	***
TL	35	160	***	6.95	8.59	***	***	***
TL	35	300	12.06	11.20	13.02	9.41	***	***
TL	35	474	-5.02	-4.84	-1.45	-4.67	***	***
TL	35	809	***	***	***	-9.21	***	***
TP	12	335	-91.66	-87.42	-89.80	-99.51	-96.78	-90.67
TP	36	154	8.12	8.92	8.77	***	***	12.72
TP	36	163	6.08	6.17	3.40	2.52	2.36	1.38
TP	36	326	11.07	12.63	11.95	***	-7.55	-8.55
TUG	14	1654	30.96	29.99	27.33	31.56	31.15	***
TUG	18	108	42.21	62.30	-9.52	***	245.30	***
TUG	35	107	2.53	2.63	3.61	4.11	4.50	5.30
TUG	35	247	***	***	***	***	1.88	***
UME	35	251	16.42	15.74	***	15.89	16.01	15.63
UME	35	252	1.08	1.80	***	2.19	1.30	1.27
USNO	14	654	-73.23	***	***	***	***	***
USNO	14	862	-17.54	-46.98	***	***	***	***
USNO	14	1423	-32.89	-39.86	***	***	***	***
USNO	14	2314	-12.26	-19.02	***	***	***	***
USNO	34	651	-98.15	-104.07	-108.36	-113.06	***	***
USNO	34	1094	-99.77	-97.48	-93.69	***	***	***
USNO	34	1452	-435.27	-449.86	***	***	***	***
USNO	34	1710	-36.43	-41.03	-42.78	-43.30	-42.28	-41.27
USNO	34	2081	-33.83	-39.84	***	***	***	***
USNO	34	2314	***	***	***	***	29.60	27.04
USNO	34	2487	***	-16.82	-16.33	-16.09	***	***
USNO	35	101	17.18	17.35	17.81	17.80	18.88	17.68
USNO	35	104	13.89	15.23	***	13.57	13.67	14.12
USNO	35	106	11.52	11.49	***	13.42	13.45	14.25

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
USNO	35	108	14.98	15.51	14.89	15.09	14.99	16.86
USNO	35	114	21.62	22.20	21.49	21.69	21.60	22.59
USNO	35	120	1.25	1.00	0.21	2.37	0.49	***
USNO	35	142	6.27	5.83	6.66	3.02	1.75	1.62
USNO	35	146	5.24	4.67	4.18	3.79	3.45	4.11
USNO	35	148	-19.83	-20.41	-21.32	-22.35	-22.94	-23.97
USNO	35	150	22.49	21.86	22.25	22.30	22.05	22.22
USNO	35	152	1.09	-0.46	***	-1.11	-1.27	-1.10
USNO	35	153	19.90	19.89	20.38	20.02	20.30	20.24
USNO	35	156	6.02	5.46	***	***	5.65	12.23
USNO	35	161	3.25	3.21	3.02	3.34	3.95	3.84
USNO	35	164	6.43	5.87	6.04	7.01	8.46	8.92
USNO	35	165	20.32	20.72	20.72	20.71	***	***
USNO	35	166	5.47	6.62	6.43	6.50	6.67	7.59
USNO	35	167	10.59	10.72	10.25	9.64	9.04	9.94
USNO	35	169	-7.80	-7.50	-7.43	-6.59	-6.65	-5.81
USNO	35	171	23.56	22.91	22.55	23.11	23.90	23.03
USNO	35	213	-9.98	-9.28	-9.69	-7.30	-6.74	-7.49
USNO	35	217	-6.43	-6.42	-6.70	-6.28	-5.65	-5.46
USNO	35	225	8.65	8.73	9.61	8.89	9.14	9.20
USNO	35	226	2.42	2.61	2.31	2.77	2.68	2.74
USNO	35	227	9.68	9.75	9.53	9.97	10.25	10.80
USNO	35	229	12.38	12.94	11.88	11.81	11.53	13.32
USNO	35	233	3.23	3.72	3.82	4.50	3.93	5.10
USNO	35	242	17.84	16.95	17.12	17.10	16.83	16.70
USNO	35	244	13.92	13.69	13.95	14.34	14.11	15.00
USNO	35	249	-4.95	-4.55	-4.48	-4.13	-3.90	-3.87
USNO	35	253	-9.18	-8.75	-9.22	-9.20	-9.06	-8.27
USNO	35	254	-2.76	-3.17	-2.89	-2.77	-2.65	-2.07
USNO	35	255	***	***	***	-13.11	-12.25	-12.57
USNO	35	256	-13.56	-14.72	-14.63	-14.11	-13.88	-13.89
USNO	35	260	3.65	3.91	4.07	4.47	4.94	5.11
USNO	35	270	5.97	5.51	4.72	4.78	5.21	5.40
USNO	35	279	-13.43	-13.35	-13.93	-12.78	-12.82	-12.18
USNO	35	392	-2.27	-1.94	-1.13	-0.05	0.47	1.93
USNO	35	394	11.32	10.87	10.89	11.39	10.83	10.69
USNO	35	416	-0.87	2.33	***	***	***	***
USNO	35	417	9.98	10.42	10.07	10.27	10.96	10.47
USNO	35	496	-15.81	-16.03	-15.82	-16.31	-16.43	-16.69
USNO	40	702	-5.29	-5.45	-5.62	-5.83	-5.77	-5.76
USNO	40	703	-4.78	-5.42	***	-3.84	-3.55	-3.15
USNO	40	704	-54.73	-54.64	-54.36	-54.14	-54.50	-53.29
USNO	40	705	-31.95	-31.99	-31.97	-31.91	-32.21	-32.03
USNO	40	708	-35.08	-36.03	***	-0.82	-0.75	-0.50
USNO	40	709	-51.22	-51.16	-51.84	-51.74	-51.21	-50.52

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
USNO	40	710	-17.20	-14.96	-13.71	-12.11	-10.47	-8.65
USNO	40	711	***	17.21	19.11	21.07	23.17	25.35
USNO	40	712	-2.56	-3.63	-4.60	-5.31	-5.85	-6.09
USNO	40	715	***	***	***	***	***	-6.21
USNO	40	718	***	***	-26.62	-30.89	***	***
USNO	40	719	-8.17	***	***	***	***	***
USNO	40	723	-47.09	-50.99	-55.81	-59.14	-62.44	-65.63
USNO	40	6201	-16.16	-17.41	***	***	***	***
VSL	35	179	18.83	18.43	17.42	17.96	17.47	17.28
VSL	35	456	8.79	***	***	***	***	***
VSL	35	548	2.81	2.74	3.46	3.30	2.90	2.61
VSL	35	731	9.13	9.26	9.68	10.16	10.71	11.06

The clocks are designated by their type (2 digits) and serial number in the type. The codes for the types are:

12 HEWLETT-PACKARD 5061A
13 EBAUCHES, OSCILLATOM B5000
14 HEWLETT-PACKARD 5061A OPT. 4
16 OSCILLOQUARTZ 3200
17 OSCILLOQUARTZ 3000
18 FREQ. AND TIME SYSTEMS INC. 4000
4x HYDROGEN MASERS
9x PRIMARY CLOCKS AND PROTOTYPES
21 OSCILLOQUARTZ 3210
23 OSCILLOQUARTZ EUDICS 3020
30 HEWLETT-PACKARD 5061B
31 HEWLETT-PACKARD 5061B OPT. 4
34 H-P 5061A/B with 5071A tube
35 HEWLETT-PACKARD 5071A High perf.
36 HEWLETT-PACKARD 5071A Low perf.
50 FREQ. AND TIME SYSTEMS INC. 4065A

TABLE 16B. CORRECTIONS FOR AN HOMOGENEOUS USE OF THE CLOCK RATES PUBLISHED IN THE CURRENT AND PREVIOUS ANNUAL REPORTS.

Each line refers to the same clock working without interruption.

	1996	1995		1994		1993	
	clock nø	clock nø	corr. (ns/d)	clock nø	corr. (ns/d)	clock nø	corr. (ns/d)
AUS	36 340	36 340	-11.49	36 340	-11.49		
CH	16 69	16 69		16 69		16 69(1)	
	17 206	17 206		17 206	+78.00	17 206(2)	+78.00
CSAO	12 1648	12 1648		12 1648		12 1648(3)	
	30 152	30 152(4)	-237.00				
IEN	35 219	35 219		35 219	-2.19	35 219	-2.19
	35 505	35 505	-3.83				
NIST	14 1316	14 1316		14 1316		14 1316(5)	
NPL	14 418	14 418		14 418	+22.00	14 418(6)	+22.00
	14 1334	14 1334	+29.00	14 1334	+29.00	14 1334(7)	+29.00
	14 1813	14 1813	+19.20	14 1813	+19.20	14 1813(8)	-20.80
	36 404	35 404	-13.70	35 404	-13.70		
	35 123	35 123	-3.30	35 123	-3.30	35 123	-3.30
	40 1701	40 1701	+3.65	40 1701	+3.65	40 1701(9)	+3.65
NRC	40 303	40 303	-19.87				
NRLM	35 523	35 523	+2.76				
ROA	12 1223	12 1223		12 1223	+124.00		
	24 896	14 896		14 896	-31.00		
	14 1569	14 1569		14 1569	-6.00		
SU	40 3806	40 3806		40 3806	-1.00	40 3806(10)	-1.00
	40 3808	40 3808	-1.00	40 3808	-1.00		
UME	35 252	35 252		35 252	+8.72		

(1) A correction of -28.00 ns/d has to be applied in 1992, 1991, 1990 and in 1989.
(2) A correction of +78.00 ns/d has to be applied in 1992.
(3) A correction of +98.60 ns/d has to be applied in 1990, 1989, 1988, 1987, 1986 and 1985.
(4) A correction of -237.00 ns/d has to be applied for the last two two-month intervals of 1995.
(5) A correction of +10.70 ns/d has to be applied in 1990. A correction of +27.63 ns/d has to be applied in 1989, 1988, 1987, 1986, 1985 and for the last three two-month intervals of 1984.

(6) A correction of +22.00 ns/d has to be applied in 1992 and 1991.

(7) A correction of +29.00 ns/d has to be applied in 1992, 1991, 1990, 1989, 1988 and 1987.

(8) A correction of -20.80 ns/d has to be applied in 1992, 1991, 1990 and for the last four two-month intervals of 1989.

(9) A correction of +3.65 ns/d has to be applied in 1992 and a correction of +30.65 ns/d has to be applied in 1991.

(10) A correction of -1 ns/d has to be applied in 1992 and a correction of -14.00 ns/d has to be applied in 1991.

TABLE 17A. WEIGHTS OF CONTRIBUTING CLOCKS IN 1996

(File available via INTERNET under the name WTAI96.AR)

Clock weights are computed for two-month intervals ending at the dates given in the table. Since 1995 May 2, the absolute weight of a given clock cannot exceed the value 2500. For the year 1996, it corresponds to a maximum relative weight of about 0.8 % .

**** denotes that the clock was not used

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
AOS	23	67	33	33	41	37	39	161
APL	14	793	****	****	****	0	****	****
APL	40	3101	****	0	0	212	****	****
APL	40	3102	****	****	****	0	****	****
APL	40	3106	****	****	****	0	****	****
AUS	36	207	2094	2231	972	1163	818	816
AUS	36	249	2500	2500	2500	2500	2500	2500
AUS	36	340	2500	2500	2500	2500	2500	2500
AUS	36	379	2500	2500	2091	2500	2376	2011
AUS	36	424	2500	2500	2500	2500	2500	2500
AUS	36	654	2500	2500	2500	****	****	****
AUS	40	5401	2500	****	****	0	0	2500
AUS	44	2	2500	2500	2500	2500	2500	2500
BEV	16	71	65	71	****	****	****	****
CAO	16	183	****	****	****	****	****	0
CH	16	69	204	158	283	321	0	37
CH	16	77	198	842	806	501	0	13
CH	16	140	0	0	65	72	105	231
CH	17	206	71	659	844	602	629	1257
CH	21	179	0	****	****	****	0	0
CH	21	194	145	304	0	124	70	****
CH	21	217	895	503	606	688	1869	0
CH	21	243	0	0	15	18	29	41
CH	21	265	0	54	89	87	104	96
CH	31	403	****	****	****	0	0	2500
CH	35	413	960	624	529	478	508	634
CH	35	771	****	0	0	1309	2500	2500
CH	36	354	2500	2500	2500	2500	2500	2500
CNM	35	236	****	****	0	0	****	****
CNM	35	237	****	****	0	0	****	****
CNM	35	238	****	****	0	0	****	0
CNM	35	378	****	****	0	0	****	****
CNM	35	381	****	****	****	0	****	****
CRL	14	932	2500	2500	2500	0	****	****
CRL	14	2456	1500	1975	1531	1276	****	****

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
CRL	35	112	2500	2500	2500	2500	2500	2435
CRL	35	144	2500	2500	2500	2500	2500	2500
CRL	35	332	2500	2500	2500	2500	2500	2500
CRL	35	342	2500	2500	2500	2500	2500	2500
CRL	35	343	2500	2500	2500	2500	2500	2500
CRL	35	715	****	****	0	0	2500	2500
CRL	35	732	****	****	0	0	2500	2500
CSAO	12	1646	0	1	****	0	0	0
CSAO	12	1648	188	173	****	0	0	175
CSAO	12	2068	0	21	****	0	0	0
CSAO	30	152	5	4	****	0	0	5
CSAO	40	4902	****	****	****	0	0	****
DLR	40	7416	****	****	0	0	2500	2500
DLR	40	7424	****	****	0	0	2500	2427
DTAG	14	1217	****	0	0	21	****	****
DTAG	36	136	****	0	0	2500	2500	2500
DTAG	36	345	****	0	0	2500	2500	2500
F	14	51	348	210	0	119	119	****
F	14	134	0	0	46	34	20	24
F	14	475	****	****	****	0	****	****
F	14	500	2500	****	****	****	****	****
F	14	1120	935	1334	1961	1866	2500	2500
F	14	1645	495	513	766	517	533	1223
F	16	106	2410	2500	1104	768	556	309
F	16	187	58	165	85	61	46	57
F	17	489	27	39	94	304	429	571
F	35	122	2500	2500	2500	2500	2500	2500
F	35	124	2500	2500	2500	2500	2500	2500
F	35	131	2500	2500	2500	2500	2500	2500
F	35	158	2500	2500	2500	2500	2500	2500
F	35	172	2500	2500	2500	2500	2500	2500
F	35	198	2500	2500	2500	2500	2500	2500
F	35	385	1671	2203	2500	2500	2500	2500
F	35	396	2500	2500	2500	2500	2500	2500
F	35	536	0	0	2500	2500	2500	2500
F	35	609	****	0	0	2500	2500	2500
F	35	770	****	****	****	****	0	0
F	40	816	****	0	0	2500	2179	2500
GUM	14	1144	72	393	2500	2500	2500	2500
GUM	31	652	****	****	****	****	0	0
GUM	35	441	2500	2500	2500	2500	2500	2500
IEN	31	659	1225	****	0	0	2500	0
IEN	35	219	2500	****	0	0	2500	2500
IEN	35	505	1394	1331	1536	2500	2500	2500
IFAG	14	1105	9	12	****	****	0	0

TABLE 17A. (CONT.)

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
IFAG	16	131	21	****	****	****	0	0
IFAG	16	138	4	3	****	****	0	****
IFAG	16	173	4	4	****	****	0	0
IFAG	16	274	11	15	****	****	0	0
IFAG	40	4401	60	28	****	****	0	0
IFAG	40	4413	4	4	****	****	0	0
IGMA	14	2403	****	0	0	22	13	21
IGMA	16	112	****	0	0	705	307	186
IGMA	35	645	****	****	****	****	****	0
IGMA	35	647	****	0	0	2500	2500	2500
INPL	14	2308	0	****	****	****	****	****
INPL	14	2426	70	85	88	88	100	104
INPL	31	145	0	240	199	0	42	32
INPL	31	619	57	71	95	179	0	510
IPQ	31	606	****	0	****	0	****	****
IPQ	35	125	0	0	****	0	0	2500
IPQ	35	615	0	0	****	0	0	2500
KRIS	12	1406	238	200	232	565	653	309
KRIS	12	1902	0	43	44	54	80	492
KRIS	12	1903	560	606	332	417	563	****
KRIS	36	321	2500	2500	2500	2500	2500	2500
KRIS	36	739	****	0	0	2500	2500	2500
KRIS	40	5623	****	****	0	****	****	****
LDS	35	289	0	2500	2500	2500	2500	2500
MSL	12	933	190	170	186	235	687	739
MSL	12	1770	114	141	97	****	****	****
MSL	36	274	99	89	89	87	87	620
NAOM	14	885	****	0	****	****	****	****
NAOM	14	1315	454	520	876	2500	2500	2451
NAOM	34	1075	2022	1784	1766	1907	****	0
NAOM	34	2146	2218	2276	2500	1863	1905	2205
NAOM	35	779	****	****	****	****	****	0
NAOT	31	284	65	112	****	****	****	****
NAOT	34	1075	2022	1784	1766	1907	****	****
NAOT	34	1498	28	113	810	2500	2500	2166
NAOT	34	2494	199	250	426	706	529	528
NIM	12	1633	2500	2500	2500	2285	1246	****
NIM	12	1640	2500	2500	2500	2500	2500	****
NIST	14	1316	584	748	1570	1744	0	539
NIST	16	217	0	****	****	****	****	****
NIST	18	1007	10	****	****	****	****	****
NIST	31	569	751	648	0	****	****	****
NIST	34	493	2500	0	****	****	****	****
NIST	35	132	2500	2500	2500	2500	2500	2500
NIST	35	182	2500	2500	2500	2500	2500	2500

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
NIST	35	408	2500	2500	2500	****	****	****
NIST	40	201	2500	2500	****	0	****	0
NIST	40	203	****	****	****	****	****	0
NIST	40	222	0	2500	2500	2500	2500	2500
NIST	50	2008	****	****	****	0	0	142
NPL	14	418	205	199	212	316	633	370
NPL	14	1334	0	143	159	129	227	491
NPL	14	1813	38	57	254	241	545	282
NPL	35	123	2500	2500	2500	2500	2500	2500
NPL	35	784	****	****	0	0	2500	2500
NPL	36	404	2500	2500	2500	2500	2500	2500
NPL	40	1701	2500	2500	2500	2500	2500	2500
NPL	40	1708	****	****	****	****	0	0
NRC	35	234	2500	2500	2500	2500	2500	2500
NRC	35	372	2500	2500	****	0	0	2500
NRC	40	303	0	396	355	393	359	616
NRC	40	304	2500	2500	2500	2500	2500	2500
NRC	90	61	1931	1389	1373	1405	1678	2500
NRC	90	63	2500	2500	2500	2500	2500	2500
NRLM	35	224	2500	2500	2500	2500	2500	2500
NRLM	35	459	****	****	****	0	0	2500
NRLM	35	523	2500	2500	2500	2500	2500	2500
OMH	12	1067	83	****	****	****	****	****
ORB	35	201	2500	2500	2500	2500	2500	2500
ORB	35	202	2500	2500	2500	2500	2500	2500
ORB	35	593	2500	2500	2500	2500	2500	2500
ORB	40	2601	30	33	40	52	61	70
PTB	14	2379	394	273	293	419	479	465
PTB	35	128	2111	2103	2381	2500	2500	2500
PTB	35	271	2500	2500	2500	2500	2500	2500
PTB	35	415	2500	2500	2500	2500	2500	2500
PTB	40	502	2500	2500	2500	2500	2226	2500
PTB	40	505	****	****	****	0	0	635
PTB	40	537	562	0	109	103	157	315
PTB	92	2	2500	2500	2500	2500	2500	2500
PTB	92	3	****	****	****	0	0	2500
ROA	12	1223	1	1	1	2	91	173
ROA	14	896	84	716	1078	2084	1119	941
ROA	14	1569	63	158	220	262	270	288
ROA	16	113	94	98	213	213	310	0
ROA	31	422	2063	2500	2500	2500	1465	1400
ROA	35	583	2500	2500	2500	2500	2500	2500
ROA	35	718	0	2500	2500	2500	2500	2500
SCL	14	2127	0	370	****	0	0	76
SCL	31	838	0	1313	****	0	0	596

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
SCL	35	764	****	****	****	0	0	2500
SO	12	2067	269	183	188	196	157	0
SO	40	5101	618	613	661	684	1098	1285
SO	40	5102	****	****	0	****	****	****
SP	14	1376	****	****	****	****	****	0
SP	16	137	****	****	0	0	85	113
SP	35	641	****	****	0	0	2500	2500
SU	40	3802	0	****	****	0	0	2500
SU	40	3805	2500	****	****	0	0	2500
SU	40	3806	2500	****	****	0	0	2500
SU	40	3807	2500	****	****	0	0	2500
SU	40	3808	799	****	****	0	0	2500
SU	40	3811	2500	****	****	0	0	2500
SU	40	3812	381	****	****	0	0	2042
TL	11	2276	****	****	0	****	****	****
TL	16	283	65	68	114	775	****	****
TL	31	317	10	12	18	****	****	****
TL	35	160	****	0	0	****	****	****
TL	35	300	2500	2500	2500	2500	****	****
TL	35	474	0	2500	1792	2500	****	****
TL	35	809	****	****	****	0	****	****
TP	12	335	339	288	310	484	426	465
TP	36	154	2500	2500	2500	****	****	0
TP	36	163	1819	1370	1070	1228	1734	2066
TP	36	326	2500	2500	2500	****	0	0
TUG	14	1654	2500	2500	2500	2500	2500	****
TUG	18	108	16	11	12	****	0	****
TUG	35	107	2500	2500	2500	2500	2500	2500
TUG	35	247	****	****	****	****	0	****
UME	35	251	2500	2500	****	0	0	2500
UME	35	252	2500	2500	****	0	0	2500
USNO	14	654	2500	****	****	****	****	****
USNO	14	862	49	56	****	****	****	****
USNO	14	1423	527	706	****	****	****	****
USNO	14	2314	156	108	****	****	****	****
USNO	34	651	0	0	257	189	****	****
USNO	34	1094	0	1218	600	****	****	****
USNO	34	1452	86	54	****	****	****	****
USNO	34	1710	0	794	687	779	1051	1486
USNO	34	2081	76	108	****	****	****	****
USNO	34	2314	****	****	****	****	0	0
USNO	34	2487	****	0	0	2500	****	****
USNO	35	101	2500	2500	2500	2500	2500	2500
USNO	35	104	2500	2500	****	0	0	2500
USNO	35	106	2500	2500	****	0	0	2500

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
USNO	35	108	2500	2500	2500	2500	2500	2500
USNO	35	114	2500	2500	2500	2500	2500	2500
USNO	35	120	0	0	2500	2500	2500	****
USNO	35	142	2500	2500	2500	2500	2163	1600
USNO	35	146	2500	2500	2500	2500	2500	2500
USNO	35	148	2500	2500	2500	2500	2500	2500
USNO	35	150	2500	2500	2500	2500	2500	2500
USNO	35	152	2500	2500	****	0	0	2500
USNO	35	153	2500	2500	2500	2500	2500	2500
USNO	35	156	2500	2500	****	****	0	0
USNO	35	161	2500	2500	2500	2500	2500	2500
USNO	35	164	2500	2500	2500	2500	2500	2500
USNO	35	165	2500	2500	2500	2500	****	****
USNO	35	166	2217	1928	2500	2500	2500	2500
USNO	35	167	2500	2500	2500	2500	2500	2500
USNO	35	169	2500	2500	2500	2500	2500	2500
USNO	35	171	2500	2500	2500	2500	2500	2500
USNO	35	213	2500	2500	2500	2500	2500	2500
USNO	35	217	2500	2500	2500	2500	2500	2500
USNO	35	225	2500	2500	2500	2500	2500	2500
USNO	35	226	2500	2500	2500	2500	2500	2500
USNO	35	227	2500	2500	2500	2500	2500	2500
USNO	35	229	2500	2500	2500	2500	2500	2500
USNO	35	233	2500	2500	2500	2500	2500	2500
USNO	35	242	2500	2500	2500	2500	2500	2500
USNO	35	244	2500	2500	2500	2500	2500	2500
USNO	35	249	2500	2500	2500	2500	2500	2500
USNO	35	253	2500	2500	2500	2500	2500	2500
USNO	35	254	2500	2500	2500	2500	2500	2500
USNO	35	255	****	****	****	0	0	2500
USNO	35	256	2500	2500	2500	2500	2500	2500
USNO	35	260	2500	2500	2500	2500	2500	2500
USNO	35	270	2500	2500	2500	2500	2500	2500
USNO	35	279	2500	2500	2500	2500	2500	2500
USNO	35	392	2500	2500	2500	2500	2500	2500
USNO	35	394	2500	2500	2500	2500	2500	2500
USNO	35	416	2500	2500	****	****	****	****
USNO	35	417	2500	2500	2500	2500	2500	2500
USNO	35	496	2500	2500	2500	2500	2500	2500
USNO	40	702	2500	2500	2500	2500	2500	2500
USNO	40	703	2500	2500	****	0	0	2500
USNO	40	704	2500	2500	2500	2500	2500	2500
USNO	40	705	2500	2500	2500	2500	2500	2500
USNO	40	708	2500	2500	****	0	0	2500
USNO	40	709	2500	2500	2500	2500	2500	2500

LAB.	CLOCK		50139	50199	50264	50324	50384	50444
USNO	40	710	873	794	823	813	1119	1184
USNO	40	711	****	0	0	1466	1124	897
USNO	40	712	0	2500	2500	2500	2500	2500
USNO	40	715	****	****	****	****	****	0
USNO	40	718	****	****	0	0	****	****
USNO	40	719	0	****	****	****	****	****
USNO	40	723	313	259	200	201	187	194
USNO	40	6201	2500	2500	****	****	****	****
VSL	35	179	2500	2500	2500	2500	2500	2500
VSL	35	456	2500	****	****	****	****	****
VSL	35	548	2500	2500	2500	2500	2500	2500
VSL	35	731	0	0	2500	2500	2500	2500

The clocks are designated by their type (2 digits) and serial number in the type. The codes for the types are:

12 HEWLETT-PACKARD 5061A
13 EBAUCHES, OSCILLATOM B5000
14 HEWLETT-PACKARD 5061A OPT. 4
16 OSCILLOQUARTZ 3200
17 OSCILLOQUARTZ 3000
18 FREQ. AND TIME SYSTEMS INC. 4000
4x HYDROGEN MASERS
9x PRIMARY CLOCKS AND PROTOTYPES
21 OSCILLOQUARTZ 3210
23 OSCILLOQUARTZ EUDICS 3020
30 HEWLETT-PACKARD 5061B
31 HEWLETT-PACKARD 5061B OPT. 4
34 H-P 5061A/B with 5071A tube
35 HEWLETT-PACKARD 5071A High perf.
36 HEWLETT-PACKARD 5071A Low perf.
50 FREQ. AND TIME SYSTEMS INC. 4065A

TABLE 17B. STATISTICAL DATA ON THE WEIGHTS ATTRIBUTED TO THE CLOCKS IN 1996

Interval	Number of clocks			Number of clock with a given weight								
				0* weight			0** weight			maximum weight		
1996	HM	5071A	total	HM	5071A	total	HM	5071A	total	HM	5071A	total
Jan-Feb	31	87	215	4	8	21	1	0	9	17	74	110
Mar-Apr	25	89	211	3	9	23	1	0	4	14	75	107
May-Jun	24	88	192	8	13	31	0	0	3	10	71	99
Jul-Aug	37	99	219	18	22	54	0	0	2	11	75	105
Sep-Oct	35	93	211	15	14	48	0	0	4	11	77	106
Nov-Dec	37	94	210	6	5	23	0	0	6	21	86	123

* A priori null weight (test interval of new clocks).
** Null weight resulting from the statistics.
HM designates hydrogen masers and 5071A designates Hewlett-Packard 5071A units with high performance tube.
Clocks with missing data during a two-month interval of computation are excluded.

Access to the BIPM Time section data via anonymous FTP

The BIPM Time section is making available several publications and data files via anonymous ftp. To access it, one should use the following procedure (precise syntax may depend on the machine one is running):

```
ftp 145.238.2.2         ! to connect
user anonymous          ! system requests that you enter your identity as a
                        ! password
cd [anonymous.tai]      ! to access the [.tai] subdirectory
get read.me             ! the read.me file is listed below
cd [.subdirectory]      ! to go to one of the subdirectories
```

Of course, when logged on, one can go directly to the proper subdirectory by issuing the command : cd [anonymous.tai.subdirectory] or just : cd [.tai.subdirectory] and get the files needed.

Listing of the READ.ME file:

last update : 16 July 1996

BUREAU INTERNATIONAL DES POIDS ET MESURES
TIME SECTION

The [.tai] subdirectory offers via ANONYMOUS FTP (node 145.238.2.2) informations of interest for the time & frequency community. This service presently contains 4 subdirectories:

[.tai.gps] A selection of recent GPS time data (presently upon request)

[.tai.glonass] Recent GLONASS time data taken at the BIPM

[.tai.publication] Latest issue of Time section publications
- Circular T#xxx in file cirt.xxx
- GPS schedule #xx in file schgps.xx
- GLONASS schedule #xx in file schglo.xx
- Results after the computation of TAI over the two-month interval in the file TAI.xyz (xy for the year 19xy, z for the two-month period : 1 for Jan-Feb, 2 for Mar-Apr, etc...)

[.tai.scale] Time scales data
- TT(BIPMxx) in file TTBIPM.xx
- For year xx until 92:
  - UTC-UTC(labs) in file UTC.xx
  - TAI-TA(labs) in file TA.xx
- For year xx starting with 93 : files issued from tables of the Annual Report
  - Frequency difference of EAL and TAI in file EALTAIxx.AR
  - TAI frequency in file FTAIxx.AR (for 1993 and 1994)
  - Measurements of TAI scale interval in file UTAI**.AR (starting 1995)
  - Mean duration of TAI scale interval in file SITAIxx.AR
  - TAI-TA(labs) in file TAIxx.AR
  - UTC-UTC(labs) in file UTCxx.AR
  - UTC-GPS time in file UTCGPSxx.AR
  - UTC-GLONASS time in file UTCGLOxx.AR
  - Rates of clocks in file RTAIxx.AR
  - Weights of clocks in file WTAIxx.AR

For any comment or query send a message to: bipm@mesiob.obspm.fr or tai@bipm.fr

TIME SIGNALS

The time signal emissions reported here follow the UTC system, in accordance with the Recommendation 460-4 of the Radiocommunication Bureau (RB) of the International Telecommunication Union (ITU) unless otherwise stated.

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

The following tables are based on information received at the BIPM in January and February 1997.

AUTHORITIES RESPONSIBLE FOR THE TIME SIGNAL EMISSIONS

Signal	Authority
ATA	National Physical Laboratory Dr. K.S. Krishnan Road New Delhi - 110012, India
BPM	Shaanxi Astronomical Observatory Chinese Academy of Sciences P.O. Box 18 - Lintong Shaanxi, China
BSF	National Standard Time and Frequency Laboratory Telecommunication Laboratories Chunghwa Telecom. Co., Ltd. P.O. Box 71 - Chung-Li 320 Taiwan, Rep. of China
CHU	National Research Council of Canada Institute for National Measurement Standards - Time Standards Ottawa, Ontario, K1A OR6, Canada
DCF77	Physikalisch-Technische Bundesanstalt, Lab. Zeiteinheit Bundesallee 100 D-38116 Braunschweig Germany
EBC	Real Instituto y Observatorio de la Armada - 11100 San Fernando Cadiz, Spain
HBG	Service horaire HBG Observatoire Cantonal CH - 2000 Neuchâtel, Suisse
HLA	Time and Frequency Laboratory Korea Research Institute of Standards and Science Yusong P.O. Box 102, Taejon 305-600 Republic of Korea

Signal	Authority
IAM	Istituto Superiore delle Poste e delle Telecomunicazioni Viale Europa 190 00144 - Roma, Italia
JG2AS, JJY	Standards and Measurements Division Communications Research Laboratory 2-1, Nukui-kitamachi 4-chome Koganei-shi, Tokyo 184 Japan
LOL	Servicio de Hidrografia Naval Observatorio Naval Av. España 2099 1107 - Buenos-Aires, Argentina
MSF	National Physical Laboratory Centre for Electromagnetic and Time Metrology Teddington, Middlesex TW11 0LW United Kingdom
PPE, PPR	Departemento Serviço da hora Observatorio Nacional (CNPq) Rua General Bruce, 586, Sao Cristovao 20921-030 - Rio de Janeiro, Brasil
RAB-99, RBU, RID, RJH-63, RJH-69, RJH-77, RJH-86, RJH-90 RTZ, RWM, ULA-4	Institute of Metrology for Time and Space (IMVP), GP "VNIIFTRI" Mendeleevo, Moscow Region 141570 Russia
TDF	France Telecom Centre National d'Etudes des Télécommunications - PAB - STC Etalons de fréquence et de temps 196 avenue Henri Ravera 92220 - Bagneux, France

Signal	Authority
VNG	National Standards Commission P.O. Box 282 North Ryde NSW 2113 Australia
WWV, WWVB, WWVH	Time and Frequency Division, 847.00 National Institute of Standards and Technology - 325 Broadway Boulder, Colorado 80303, U.S.A.
YVTO	Direccion de Hidrografia y Navegacion Observatorio Cagigal Apartado Postal No 6745 Caracas, Venezuela

TIME SIGNALS EMITTED IN THE UTC SYSTEM

Station	Location Latitude Longitude	Frequency (kHz)	Schedule (UTC)	Form of the signal
ATA (1)	Greater Kailash New Delhi India 28° 34'N 77° 19'E	10 000	continuous	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 109° 31'E	2 500 5 000 10 000 15 000	7 h 30 m to 1 h continuous continuous 1 h to 9 h	Signals emitted in advance on UTC by 20 ms. Second pulses of 10 ms duration with 1 kHz modulation. Minute pulses of 300 ms duration with 1 kHz modulation. UTC time signals are emitted from minute 0 to 10, 15 to 25, 30 to 40, 45 to 55. UT1 time signals are emitted from minute 25 to 29, 55 to 59.
BSF	Chung-Li Taiwan Rep. of China 24° 57'N 121° 09'E	5 000 15 000	continuous except interruption between minutes 35 and 40	From minute 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. From minute 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. Minute pulses are extended to 300 ms duration. DUT1: ITU-R code by pulse lengthening.
CHU	Ottawa Canada 45° 18'N 75° 45'W	3 330 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 (UTC) is made each minute following the 50th second pulse. FSK code (300 bps, Bell 103) after 10 cycles of 1 kHz on seconds 31 to 39. Year, DUT1, leap second information, TAI-UTC and Canadian summer time format on 31, and time code on 32-39. Broadcast is single sideband; upper sideband with carrier reinsert. DUT1 : ITU-R code by double pulse.

(1) Information based on the Annual Report for 1995, not confirmed by the laboratory.

Station	Location Latitude Longitude	Frequency (kHz)	Schedule (UTC)	Form of the signal
DCF77	Mainflingen Germany 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. Coded transmission of year, month, day, hour, minute and day of the week in a BCD code from second marker No 21 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). The coded time information is related to legal time of Germany and second markers 17 and 18 indicate if the transmitted time refers to UTC(PTB) + 2 h (summer time) or UTC(PTB) + 1 h (winter time). Second marker No 15 is prolonged to 0.2 s if the reserve antenna is in use. To achieve a more accurate time transfer and better use of the frequency spectrum available, an additional pseudo-random phase-shift keying of the carrier is superimposed to the AM second markers. No transmission of DUT1.
EBC (1)	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: ITU-R code by double pulse.
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.
HLA	Taedok Science Town Rep. of Korea 36° 23'N 127° 22'E	5 000	continuous	Pulses of 9 cycles of 1 800 Hz modulation. 29th and 59th second pulses omitted. Hour identified by 0.8 s long 1 500 Hz tone. Beginning of each minute identified by a 0.8 s long 1 800 Hz tone. Voice announcement of hours and minutes each minute following the 52nd second pulse. BCD time code given on 100 Hz subcarrier. DUT1: ITU-R code by double pulse.
IAM	Roma Italy 41° 47'N 12° 27'E	5 000	7 h 30 m to 8 h 30 m 10h 30 m to 11 h 30 m except Sunday 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 minutes beginning at 0 h 0 m. DUT1: ITU-R code by double pulse.

(1) EBC. Probable change of transmitting frequencies in 1997: 15 006 kHz instead of 12 008 kHz and 4 998 kHz instead of 6 840 kHz.

Station	Location Latitude Longitude	Frequency (kHz)	Schedule (UTC)	Form of the signal
JG2AS	Sanwa Ibaraki Japan 36° 11'N 139° 51'E	40	continuous, except interruption during communications.	During experimental coded transmission of the total day, hour, minute and DUT1, second pulses are 0.2 s, 0.5 s and 0.8 s long. In case of no coded transmission, A1A type second pulses of 0.5 s duration.
JJY	Sanwa Ibaraki Japan 36° 11'N 139° 51'E	5 000 8 000 10 000	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: ITU-R code by lengthening.
LOL1 (1)	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 ms of 1 000 Hz or 440 Hz modulation. DUT1: ITU-R code by lengthening.
MSF	Rugby United Kingdom 52° 22'N 1° 11'W	60	continuous, except interruption for maintenance from 10 h 0 m to 14 h 0 m on the first Tuesday of each month. A longer perod of maintenance during summer is announced annually.	Interruptions of the carrier of 100 ms for the second pulses and of 500 ms for the minute pulses. The signal is given by the beginning of the interruption. BCD NRZ code, 1 bit/s (year, month, day of the month, day of the week, hour, minute) from second 17 to 59 in each minute, following the seconds interruption. The 100 bit/s BCD NRZ code during the minutes interruption may be discontinued. DUT1: ITU-R code by double pulse.
PPE (2) PPR	Rio de Janeiro Brazil 22° 59'S 43° 11'W	435 4 244 8 634 13 105 17 194.4	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.
RAB-99	Khabarovsk Russia 48° 30'N 134° 50'E	25	Winter schedule 2 h 13 m to 2 h 22 m 8 h 13 m to 8 h 22 m 14 h 13 m to 14 h 22 m Summer schedule 1 h 13 m to 1 h 22 m 7 h 13 m to 7 h 22 m 13 h 13 m to 13 h 22 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.

(1) Information based on the Annual Report for 1995, not confirmed by the laboratory.
(2) PPE. Momentary stop of emission.

Station	Location Latitude Longitude	Frequency (KHz)	Schedule (UTC)	Form of the signal
RBU	Moscow Russia 55° 44'N 38° 12'E	200/3	continuous	DXXXW type 0.1 signals. The numbers of the minute, hour, day of the month, day of the week, month, year of the century, difference between the universal time and the local time, TJD and DUT1+dUT1 are transmitted each minute from the 1st to the 59th second. NON type signals from 9 h to 11 h and 19 h to 23 h.
RID (1)	Irkutsk Russia 52° 32'N 103° 52'E	5 004 10 004 15 004	The station operates simultaneously on the three frequencies.	A1X type second pulses are transmitted between minutes 20 and 30, 50 and 60. The pulses at the beginning of the minute are prolonged to 0.5 s. A1N type 0.1 second pulses of 0.02 s duration are transmitted between 0 and 10, 30 and 40. The pulses at the beginning of the second are prolonged to 0.04 s, and of the minute to 0.5 s. DUT1+dUT1: by double pulses.
RJH-63	Krasnodar Russia 44° 46'N 39° 34'E	25	Winter schedule 9 h 13 m to 9 h 22 m 17 h 13 m to 17 h 22 m Summer schedule 8 h 13 m to 8 h 22 m 20 h 13 m to 20 h 22 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.
RJH-69	Molodechno Belarus 54° 28'N 26° 47'E	25	Winter schedule 7 h 13 m to 7 h 22 m 13 h 13 m to 13 h 22 m Summer schedule 6 h 13 m to 6 h 22 m 12 h 13 m to 12 h 22 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.
RJH-77	Arkhangelsk Russia 64° 22'N 41° 35'E	25	Winter schedule 11 h 13 m to 11 h 22 m 21 h 13 m to 21 h 22 m Summer schedule 2 h 13 m to 2 h 22 m 20 h 13 m to 10 h 22 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.

(1) RID. CIS radiostation emitting DUT1 information in accordance with the ITU-R code and also giving an additional information, dUT1, which specifies 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 21st and 24th second so that dUT1 = +px0.02 s.

Negative values of dUT1 are transmitted by the marking of q second markers within the range between the 31st and 34th second, so that dUT1 = -qx0.02 s.

Station	Location Latitude Longitude	Frequency (kHz)	Schedule (UTC)	Form of the signal
RJH-86	Bishkek Kirgizstan 43° 03'N 73° 37'E	25	Winter schedule 4 h 13 m to 4 h 22 m 10 h 13 m to 10 h 22 m 16 h 13 m to 16 h 22 m Summer schedule 3 h 13 m to 3 h 22 m 9 h 13 m to 9 h 22 m 19 h 13 m to 19 h 22 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.
RJH-90	Nizhni Novgorod Russia 56° 11'N 43° 57'E	25	Winter schedule 5 h 13 m to 5 h 22 m 19 h 13 m to 19 h 22 m Summer schedule 4 h 13 m to 4 h 22 m 18 h 13 m to 18 h 22 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.
RTZ (1)	Irkutzk Russia 52° 32'N 103° 52'E	50	between minutes 0 and 5 0 h to 21 h 05 m 23 h to 23 h 05 m	A1X type second pulses. The pulses at the beginning of the minute are prolonged to 0.5 s.
RWM (1)	Moscow Russia 55° 44'N 38° 12'E	4 996 9 996 14 996	The station operates simultaneously on the three frequencies.	A1X type second pulses are transmitted between minutes 10 and 20, 40 and 50. The pulses at the beginning of the minute are prolonged to 0.5 s. DXXXW type 0.1 s signals. The numbers of the minute, hour, day of the month, day of the week, month, year of the century, difference between the universal time and the local time, TJD and DUT1+dUT1 are transmitted each minute from the 1st to the 59th second. DUT1+dUT1: by double pulse.
ULA-4 (1)	Tashkent Uzbekistan 41° 19'N 69° 15'E	2 500 5 000 10 000	0 h to 3 h 50 m 5 h to 23 h 50 m 0 h to 3 h 50 m 14 h to 23 h 50 m 5 h to 13 h 20 m	A1X type second pulses are transmitted between minutes 0 and 10, 30 and 40. The pulses at the beginning of the minute are prolonged to 0.5 s. A1N type 0.1 second pulses of 0.02 s duration are transmitted between minutes 10 and 20, 40 and 50. The pulses at the beginning of the second are prolonged to 0.04 s and of the minute to 0.5 s. DUT1+dUT1: by double pulse.

(1) RTZ, RMW, ULA-4. CIS radiostation emitting DUT1 information in accordance with the ITU-R code and also giving an additional information, dUT1, which specifies 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 21st and 24th second so that dUT1 = +px0.02 s.

Negative values of dUT1 are transmitted by the marking of q second markers within the range between the 31st and 34th second, so that dUT1 = -qx0.02 s.

Station	Location Latitude Longitude	Frequency (kHz)	Schedule (UTC)	Form of the signal
TDF (1)	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 +1 and -1 rd 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 that the local time is 1 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...); a binary 1 at the 13th second indicates that the current day is a day before a public holiday.
VNG	Llandilo New South Wales Australia 33° 43'S 150° 48'E	2 500 5 000 8 638 12 984 16 000	continuous continuous continuous continuous 22 h to 10 h	Second pulses of 50 ms of 1 kHz modulation. Second pulses 55 to 58 of 5 ms of 1 kHz modulation. Minute pulses of 0.5 s of 1 kHz modulation. During minutes 5, 10, 15, ..., second pulses 50 to 58 are 5 ms long with 1 kHz modulation. BCD time code giving day of the year, hour and minute at the next minute is given between seconds 20 and 46. Voice announcement on 2 500, 5 000 and 16 000 kHz during minutes 15, 30, 45 and 60. Morse station identification on 8 638 and 12 984 kHz during minutes 15, 30, 45 and 60. DUT1: ITU-R code by double pulse.
WWV	Fort-Collins CO, 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. 29th and 59th 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: ITU-R code by double pulse. BCD time code given on 100 Hz subcarrier, includes DUT1 correction.
WWVB	Fort-Collins CO, 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, DUT1 correction, daylight saving time in effect, leap year and leap second.

(1) Information based on the Annual Report for 1995, not confirmed by the laboratory.

Station	Location Latitude Longitude	Frequency (kHz)	Schedule (UTC)	Form of the signal
WWVH	Kauai HI, 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. 29th and 59 th 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 1 200 Hz tone. DUT1: ITU-R code by double pulse. BCD time code given on 100 Hz subcarrier, includes DUT1 correction.
YVTO	Caracas Venezuela 10° 30'N 66° 56'W	5 000	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.

ACCURACY OF THE CARRIER FREQUENCY

Station	Relative uncertainty of the carrier frequency in 10^{-10}
ATA	0.1
BPM	0.1
BSF	0.1
CHU	0.05
DCF77	0.005 (10d-mean)
EBC	0.1
HBG	0.005
HLA	0.1
IAM	0.5
JG2AS, JJY	0.1
LOL	0.1
MSF	0.02
RAB-99, RBU	0.05
RID, RWM, ULA-4	0.5
RJH-63, RTZ	0.05
RJH-69, RJH-77	0.05
RJH-86, RJH-90	0.05
TDF	0.02
VNG	0.1
WWV	0.1
WWVB	0.1
WWVH	0.1

November 1996

COMITE INTERNATIONAL DES POIDS ET MESURES

REPORT OF THE 85TH MEETING, 1996, TOME 64
(BIPM Publications)

Director's Report on the scientific work of the BIPM
October 1995-September 1996

TIME

1 International Atomic Time (TAI) and Coordinated Universal Time (UTC)

Reference time scales TAI and UTC have been regularly computed and published in the monthly *Circular T.* The definitive results for 1995 have been available, in the form of computer-readable files on the BIPM Time section Internet anonymous FTP, since 22 February 1996 and printed volumes of the *Annual Report of the BIPM Time Section* for 1995 (Volume 8) were distributed in April 1996.

Since January 1996, access to TAI and UTC has been provided for the MJDs ending in 4 and 9, which corresponds to an update period of 5 days for these reference time scales instead of 10 days as previously. This new procedure, suggested by the CCDS working group on TAI in 1995, is well appreciated by time laboratories which can now base their local real-time predictions of UTC on a larger number of data. This also facilitates comparison of the frequencies of primary standards, evaluated over intervals ranging from several hours to several days, with the frequency of TAI.

2 Algorithms for time scales (J. Azoubib, C. Thomas)

Research concerning time scale algorithms includes studies which aim to improve the long-term stability of EAL and the accuracy of TAI.

2.1 EAL stability

Since the end of 1992, the quality of the timing data received at the BIPM has evolved rapidly thanks to the wide use of GPS time transfer and to the extensive replacement of older designs of commercial clocks by the new HP 5071A clocks. Consequently, the stability of the free atomic time scale EAL, the first step in the calculation of TAI, has improved significantly [1,2]. Values for the stability were estimated by application of the N-cornered hat technique to data obtained from April 1993 to December 1995 in comparisons between EAL and the best independent time scales of the world (maintained at the NIST, the VNIIFTRI, the USNO, the PTB and the BNM-LPTF). They lead to the following values for the Allan standard deviation $\sigma_y(\tau)$ [3,4]:

$$\sigma_y(\tau = 10\ \mathrm{d}) = 3{,}7 \times 10^{-15}$$
$$\sigma_y(\tau = 20\ \mathrm{d}) = 2{,}9 \times 10^{-15}$$
$$\sigma_y(\tau = 40\ \mathrm{d}) = 2{,}6 \times 10^{-15}$$
$$\sigma_y(\tau = 80\ \mathrm{d}) = 3{,}0 \times 10^{-15}$$
$$\sigma_y(\tau = 160\ \mathrm{d}) = 4{,}3 \times 10^{-15}.$$

The excellent medium-term stability ($\tau \approx 40$ d) of EAL results in a high predictability of UTC for averaging times of between 1 and 2 months, which is often considered as one of the fundamental attributes of the scale for institutions responsible for the dissemination of real-time scales [5].

For further improvement, the stability algorithm which produces EAL may need to be revised. Given this prospect, a change in the upper limit of weights attributed to contributing clocks has been the subject of experiments on real clock data collected at the BIPM. Tests over the period 1993-1995 show the advantage of using an upper limit of relative weights, rather than one of absolute weights, for improving the stability of EAL [6,7]. This criterion is not yet implemented in the current computation.

2.2 TAI accuracy

The accuracy of TAI is characterized by estimates of the departure, and of its relative uncertainty, of the duration of the TAI scale interval from the SI second as produced on the rotating geoid by primary frequency standards. The estimates published since January 1995 have been reprocessed through a global treatment of individual measurements of the TAI frequency provided by six of the best primary standards built and evaluated in different timing laboratories:

— PTB CS1, PTB CS2 and PTB CS3, which are classical primary frequency standards operating continuously as clocks at the PTB, Braunschweig, Germany. Frequency measurements are taken over two-month periods and the standard type B uncertainties (1 σ) are respectively 3×10^{-14}, $1{,}5 \times 10^{-14}$ and $1{,}4 \times 10^{-14}$ (PTB CS1 ceased operation in September 1995).

— SU MCsR 102, which is a classical primary frequency standard operated at the VNIIFTRI, Moscow, Russia. It has delivered five measurements of the TAI frequency, averaged over one- or two-month periods, since August 1995. The type B uncertainty of this standard is 5×10^{-14} (1 σ).

— NIST-7, which is the optically pumped primary frequency standard developed at the NIST, Boulder, Colorado, USA. It has provided 18 measurements of the TAI frequency since June 1994, all realized over periods of a few days. The type B uncertainty of NIST-7 of 1×10^{-14} (1 σ) was updated to 5×10^{-15} (1 σ) starting August 1996.

— LPTF-FO1, which is a caesium fountain developed at the BNM-LPTF, Paris, France. The preliminary evaluation of its accuracy led to a type B uncertainty of 3×10^{-15} (1 σ), a value never reached before. About 50 measurements of the TAI frequency, most of them averaged over periods of about 10 hours, were sent to the BIPM. They cover the periods September-December 1995 and May 1996.

The results delivered by all of these primary standards, when uniformly corrected for the gravitational frequency shift and also the black-body radiation frequency shift, as recommended by the CCDS in its 13th session, are in agreement within the stated uncertainties of the standards. Their global treatment leads to an averaged departure, for the year 1995, of the TAI scale unit from the SI second on the geoid, estimated as 2×10^{-14} s with a relative uncertainty of $0{,}5 \times 10^{-14}$. Compensation of this discrepancy has already been initiated: it takes the form of cumulative frequency steering corrections, each of relative amplitude 1×10^{-15}, which are applied on dates separated by 60 day intervals, a procedure which should not degrade the stability of the time scale.

3 Time links (J. Azoubib, W. Lewandowski, G. Petit, C. Thomas)

Since the beginning of 1995, the GPS common-view technique has been the sole means of time transfer used for TAI computation. Nevertheless, the BIPM Time section is interested in any other time comparison method which has the potential for nanosecond accuracy, in particular GLONASS common views and two-way time transfer via geostationary satellites.

3.1 Global Positioning System (GPS)

The BIPM still issues, twice a year, GPS international common-view schedules. Schedule No 26 was implemented in GPS time receivers on 4 January 1996 and Schedule No 27 on 3 July 1996. The collection and treatment of rough GPS data are effected regularly according to well-known procedures. The international network of GPS time links used by the BIPM is organized to follow a pattern of local stars within a continent, together with two long-distance links, NIST-OP and CRL-OP, for which data is corrected to take account of on-site ionospheric measurements and post-processed precise satellite ephemerides. Only strict common-views are used in order to overcome effects due to the implementation of Selective Availability on satellite signals.

The BIPM also publishes an evaluation of the daily time differences [*UTC – GPS time*] in its monthly *Circular T*. These differences are obtained by smoothing data taken from a selection of satellites observed with an angle of elevation greater than 30°. The standard deviation of the daily results is about 12 ns, as Selective Availability is not completely eliminated in this procedure.

An important part of our current work is to check the differential delays between GPS receivers which operate on a regular basis in collaborating timing centres or, on special request, in other laboratories. A one-year exercise in the differential calibration of the USNO GPS time receiver with respect to the OP receiver approaches its end. Some receiver delay changes correlated with external temperature variations were observed at the USNO. New differential calibrations started in September 1996 in Australia and East Asia.

Work continues on testing the closure condition through a combination of three links, OP-NIST, NIST-CRL and CRL-OP, using precise GPS satellite ephemerides and ionospheric delays measured at the three sites. The closure condition still shows a residual error of a few nanoseconds on daily averages, which are determined with an uncertainty of less than 1 ns. This bias probably originates from errors in the coordinates of one station and errors in ionospheric measurements. Work is under way to evaluate these errors.

GPS time and frequency transfer may be carried out using dual-frequency carrier-phase measurements. It is expected that 10^{-15} accuracy in frequency transfer will be obtained over a period of one day and subnanosecond accuracy in time transfer [9,10]. Such data are obtained from the Allen Osborne Associates TTR-4P receiver in operation at the BIPM, but a first comparison experiment has revealed some defects which are being fixed. We are also contacting outside laboratories equipped with similar receivers with a view to continuing experimental work on this subject.

The implementation of technical directives for the standardization of GPS time receiver software, designed in 1993, is now taking place. In May 1996, 18 of the 49 timing centres contributing to TAI were already providing data according to the new data format, in particular the NIST and the OP. This has provided the opportunity, since March 1996, to compute a long-distance GPS link using the new procedure on both sites: it results an improvement of the precision of one single measurement [*UTC*(NIST) - *UTC*(OP)] from 3,4 ns to 2 ns. Within the CCDS group on GPS and GLONASS time transfer standards, the BIPM is now studying the possibility of using standardized hardware, with the aim of reducing, in particular, the variation with outside temperature of some types of receiver currently in operation.

3.2 Global Navigation Satellite System (GLONASS)

Values of [*UTC – GLONASS time*], provided from observations of GLONASS satellites by Prof. P. Daly, University of Leeds (United Kingdom), are currently published in the *BIPM Circular T*.

The BIPM is equipped with two 3S Navigation receivers: one of single-frequency type on loan from the company and one of double-frequency type purchased by the BIPM in December 1995. The software in these receivers, which is designed specifically for fully automatic GLONASS common-view observations, is the first of its kind and was developed with the help of the BIPM: in particular, the results are provided in the new format defined by the CCDS group on GPS and GLONASS time transfer standards. In January 1996 the Russian Institute of Radionavigation and Time, RIRT, St Petersburg, Russia, began to provide GLONASS common-view data on a regular basis using a Russian-built GLONASS time receiver following the software recommended by the BIPM.

The first official international GLONASS common-view schedule was published by the BIPM in December 1995 and implemented on 4 January 1996 in several time laboratories around the world. The second GLONASS schedule was implemented on 3 July 1996. During summer 1996 seven time laboratories observed GLONASS in common view; this number is expected to increase rapidly.

A GLONASS common-view time transfer between California, the East Coast of the United States and the BIPM has been under way since the end of June 1995. Results show a precision similar to that obtained with the GPS common-view method [12, 13], but the internal delays of GLONASS time receivers are not yet calibrated.

3.3 Two-way time transfer

The CCDS working group on two-way satellite time transfer met for the fifth time in Braunschweig, Germany, on 28-29 September 1995. In addition, a more technical meeting of the active stations was held on 8 March 1996 at the NPL, Teddington, United Kingdom.

These meetings were devoted mainly to discussions of a field-trial, the use of an INTELSAT satellite in 1996, and the state of available modems.

The field-trial was an international two-way time transfer experiment through the INTELSAT V-A(F13) satellite and, since July 1995, through INTELSAT 706. It involved both European and North-American laboratories, began in January 1994 and ended in December 1995. Regular time transfer sessions occurred three times per week, on Mondays, Wednesdays and Fridays. The field-trial was a major success in terms of putting into permanent operation an international network of eight stations. However, sub-nanosecond time transfer was not obtained. The BIPM is involved in the comparison of two-way time transfer with GPS common-view time transfer [14, 15].

It is expected that two-way time transfer operational links will start in October 1996, with three weekly sessions, using satellite INTELSAT 706 on a commercial basis. The participating stations are likely to be those which took part in the field-trial.

4 Application of general relativity to time metrology (G. Petit, C. Thomas, P. Wolf)

A draft report of the CCDS working group on the application of general relativity to metrology was presented to the CCDS during its 13th meeting in March 1996 by Prof. B. Guinot. Members of the Time section contributed to this report and are currently continuing research on some of the topics concerned [16].

A summary of the research on general relativity and the metrology of time carried out over the last three years at the BIPM Time section is being prepared in the form of a Ph.D. thesis by P. Wolf. It will be presented at Queen Mary and Westfield College (University of London) later this year.

A novel test of the second postulate of special relativity (the universality of the speed of light) has been performed using hydrogen masers and caesium clocks on the ground and on board two GPS satellites (PRN 15 and 28) not affected by Selective Availability. The clocks were compared via carrier phase measurements of the GPS signal using an Allen Osborne Associates TTR-4P time receiver at the BIPM and Allen Osborne Associates Turbo-Rogue geodetic receivers, spread world-wide, at stations of the International GPS Service for Geodynamics (IGS). This is the first test of special relativity that is sensitive to a possible anisotropy of the speed of light in any spatial direction and also the first such test using space-borne clocks (providing a baseline ≥ 20000 km). Results of this experiment [17] set an upper limit of 9×10^{-9} on the relative variation of the speed of light $\delta c/c$, which presents an improvement by a factor of about 40 on previous direct measurements[1]. A laboratory experiment[2] testing the isotropy of the first order Doppler shift yielded an upper limit of $\delta c/c$ of 3×10^{-9} but was insensitive in the North-South direction, while the GP-A experiment[3] can

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be interpreted as setting an upper limit of $\delta c/c$ of 3,2 $\times$ 10^{-9} in one particular spatial direction. The results obtained should be considered as preliminary to a more complete data set using a larger number of stations and, more importantly, all 24 GPS satellites when the signals are no longer degraded by Selective Availability.

5 Pulsars (G. Petit, B. Rougeaux*)

Millisecond pulsars can be used as stable clocks to realize a time scale by means of a stability algorithm. The work carried out over recent years to understand how such a pulsar time scale could be realized and what implications it would have for atomic time has been summarized and published [18]. An important feature of this work is that a pulsar time scale could allow the transfer of the accuracy of the atomic second from one epoch to another, thus overcoming some of the consequences of failures in atomic standards.

Collaboration is under way with radio-astronomy groups observing pulsars in order to obtain real pulsar data. The Time section provided these groups with the latest version of its post-processed realization of Terrestrial Time TT(BIPM96) in April 1996. This collaboration will continue through the working group on pulsar timing of the IAU Commission 31 (Time), which is chaired by G. Petit.

Studies of a new technique which could be used at radio observatories to obtain more pulsar data are being carried out in collaboration with the Centre National d'Études Spatiales (CNES, Toulouse, France) and with the Paris Observatory (Meudon, France). The possibility of using this technique to discover new pulsars is also under study in the framework of the doctoral work undertaken by B. Rougeaux.

6 Very Long Baseline Interferometry (G. Petit)

Very Long Baseline Interferometry (VLBI) is one of the most precise techniques for the realization of reference frames in geodesy and astrometry. It is also an application which demands the highest stability of atomic clocks when operating with averaging times of 1 minute to 1 day. We maintain contact with this technique by collaborating with the Paris Observatory and the CNES, particularly through VLBI observations on millisecond pulsars.

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