

第1次南極地域観測隊気象部門報告

守田康太郎* · 清野善兵衛* · 安井 正** ·

久我雄四郎*** · 田島成昌*** · 村越 望****

METEOROLOGICAL RESEARCH DURING ANTARCTIC SUMMER,
1956-7Yasutaro MORITA*, Zembei SEINO*, Masashi YASUI**,
Yushiro KUGA***, Narimasa TAJIMA***, and
Nozomi MURAKOSHI******Abstract**

1. Surface observations Three-hourly synoptic observations were made on board *M/s "Soya"* throughout the voyage from 10th November, 1956, to 23rd April, 1957. Those which were made during the operation at the Antarctic coast are given in Table 1. Daily mean values are given in Table 2 and Fig. 1, including those for the voyage across the polar frontal zone. Summarized data are given in Table 3, the period being divided according to operations stages.

2. Upper wind observations Upper wind observations were made aboard *M/s "Soya"* only at the Antarctic coast when the ship stayed among the drift ice or was anchored at the edge of fast ice in the Lützow-Holm Bay. PIBAL method was used, the ascending velocity of the balloon being 300 m/min. The maximum height reached was 21 km. The results are given in Table 4.

3. Meteorological equipment on board the "Soya"

Instruments	Number of instruments	
	in routine use	reserve
Mercury barometer (marine type)	1	1
Aneroid barometer	1	1
Aneroid barograph (one-day clock)	1	—
Dry and wet bulb thermometer	2	4
Psychrometer (Assman type)	1	1
Remote recording thermometer	1	—
Self recording thermometer (bimetal)	—	1
Thermometer screen	1	—
Remote recording thermometer (for water temperature)	1	—
Combination wind vane and windmill anemometer	1	—
Three cup anemometer	1	1
Theodorite (for pilot balloon)	1	—

* 気象庁, 第1次及び第2次南極地域観測隊員. Japan Meteorological Agency. Member of the Japanese Antarctic Research Expeditions, 1956-57 and 1957-58.

** 気象庁, 第1次南極地域観測隊員. Japan Meteorological Agency. Member of Japanese Antarctic Research Expedition, 1956-57.

*** 気象庁, 第1次南極地域観測隊員, 第2次南極地域観測船宗谷航海士. Japan Meteorological Agency. Member of the Japanese Antarctic Research Expedition, 1956-57. Officer of the ice-breaker "Soya" for the Japanese Antarctic Research Expedition, 1957-58.

**** 気象庁, 第1次南極地域観測隊越冬隊員. Japan Meteorological Agency. Member of the Wintering Party, the Japanese Antarctic Research Expedition, 1956-57.

4. Meteorological equipment of Syowa Base (1956-57)

Instruments	Number of instruments	
	in routine use	reserve
Mercury barometer (Fortin type)	1	1
Aneroid barograph (seven day clock)	1	—
Dry and wet bulb Thermometer (thallium mercury)	2	4
Maximum thermometer (thallium mercury)	1	1
Minimum thermometer (spirit)	1	3
Psychrometer (electric ventilating Assman)	1	1
Sling thermometer	1	1
Recording thermometer (one-day clock)	1	—
Recording hygrometer (seven-day clock)	1	1
Thermometer screen	1	—
Three cup anemometer	1	1
Wind run counting recorder	1	1
Snow sampler	1	1
Snow stake	6	—
Automatic climatological station*	1	—

* Details are given in the next paragraph.

5. Automatic climatological station

A. INTRODUCTION The installation of the Automatic climatological station was one of the most important works of this expedition. It is originally prepared for obtaining climatological data on the Antarctica throughout the year without the use of man's hands. When we commenced to set up the Syowa Base, it was not certain whether we should succeed in completing the equipment of the base sufficient for the wintering party to be left there, and therefore the installation of the automatic climatological station was considered an urgent matter to provide against the possible worst case. Fortunately we were able to complete the minimum equipment for wintering, and the automatic climatological

station lost its original purpose. Still it played an important role, for it provided an excellent aid to surface observations. In the coming second expedition, 1957-58, an automatic station of a revised type will be set up at the inland of the Antarctica for investigation of the climatological gradient around Syowa Base.

B. GENERAL LAYOUT OF THE EQUIPMENT On the top and branches of a mast of steel pipe are mounted a combination wind vane and windmill-anemometer, a three-cup anemometer, a biplane wind vane, two sunshine recorders, a time checker, and two thermometers, each housed in a shelter (Figs. 2 and 3). All the instruments are electrically operated and connected by leads to the recorders housed within the recorder chamber. All sensing elements and recorders are cautiously duplicated except that a pair of less vulnerable sunshine receivers are set in series to avoid the shadow of the mast and then are connected to the recorders in parallel, whereas a single time checker is set in parallel to them.

C. SENSING ELEMENTS (1) *Combination wind vane and anemometer* The instrument is composed of an aeroplane-like fuselage with a vertical stabilizer and a windmill of anti-corrosive aluminium alloy. The incorporated setup is, however, modified according to antarctic requirements, namely, each wind run of 1,800 m closes an electric contact furnishing a pulse to the recorder. The wind-direction pulse is generated by eight segments and a pair of sweeping brush housed within the fuselage. Sixteen cardinal points can be discriminated by the contact of one or two segments simultaneously.

(2) *Three-cup anemometer* A standard three-cup type with beaded hemi-spherical cups of 10 cm diameter and arm length of 10 cm is employed.

(3) *Biplane wind vane* A similar construction to the wind direction element of the

instrument is applied. Instruments (2) and (3) in combination are a counterpart of (1) (Fig. 4).

(4) *Sunshine receivers* A bimetallic system is employed to generate signal pulse by making an electric contact which is closed when sunshine exceeds $0.3 \text{ cal/cm}^2/\text{min}$. The receiver is composed of three sets of black and white strips, each set arranged at the periphery inside a transparent hard glass globe as is seen in Fig. 5.

(5) *Time checker* As the recorders are in action for more than one year, some considerable errors might arise in the feed of roll charts, which can be checked by means of the present time checker. It is composed of a sun beam receiver with a cylindrical lens of length 150 mm and width of 70 mm and a bimetallic quick cutting switch, which is put in action by the collimated sunbeam. The contact is kept for about forty minutes at the solar culmination by means of specially designed lens and properly adjusted slit construction. The time checking naturally fails when the sunshine disappears or weakens (Fig. 6).

(6) *Thermometers and shelters* Specially designed shelters house each one mercury-in-glass thermometer with sealed carbon filament suspended between two platinum terminals. The range of the electrical resistance of the thermometer amounts to $400\text{--}1,820 \Omega$ for the temperature change $+8^\circ\text{--}-60^\circ\text{C}$. The shelter is double-walled and incorporates an inner cylinder, within which the said telemetering thermometer is suspended. The outside of the shelter is painted silver gray and inside white, except that the inside of the inner cylinder is black. By these precaution the radiation is fairly well insulated and a reasonable ventilation is to be expected (Fig. 7).

(7) *Aneroid barometers* A pair of aneroid capsules are employed to obtain ample torque of the recording pen-arm. The mea-

suring range covers $920\text{--}1,040 \text{ mb}$, one millimeter pen deflection corresponding to one millibar pressure change. Owing to the well compensated bimetallic link the temperature coefficient is about $-0.01 \text{ mb}/^\circ\text{C}$ for the range of the room temperature to 35°C , and the overall accuracy is within $\pm 0.1 \text{ mb}$.

D. RECORDERS (1) *Clock systems* The clock system is composed of master clock and follower clock work. The operating principle of the master clock is pictured schematically in Fig. 8. A chronometer escapement is incorporated in the present clock to secure the highest accuracy, and the rate of fluctuation is less than 0.5 sec/day , and the temperature coefficient is well below $0.1 \text{ sec}/^\circ\text{C/day}$.

The operating principle of the follower clock is given in Fig. 9. It controls the feed of the roll charts and the hammering mechanism by means of three cams and micro-switches.

(2) *Hammering mechanism* All the elements are punched on a roll chart which feeds at the rate of 2 mm/hour by means of the hammering system. The hammer frame is raised for every thirty minutes by electromagnets, and after one minute the electromagnets are released dropping the hammer frame, which punches the roll chart with the pen arms pointer.

(3) *Records of wind speeds, wind direction, sunshine duration and time checking* The records of wind direction, sunshine duration and time check are obtainable respectively from the punching of the relevant one or ones of the pen arms, which are ten in number arranged in the recorder and are actuated by electromagnets in three stacks.

(4) *Record of barometric pressure and air temperatures* The record of the barometric pressure is read off from the punched trace of the pen arm coupled to the aneroid barometer directly attached to the recorder.

The records of air temperatures are effect-

ed by the pen arms of two ohmmeters of cross coil type, which are specially designed for Antarctic use to be practically temperaturecompensated at low temperatures.

(5) *Batteries* Air wet cells utilizing electrolytic solution of potassium hydroxide were prepared. The characteristics at low temperatures are tested as shown in Fig. 10, from which the electromotive force of a

single unit may be cautiously estimated at nearly 1 volt at -40°C , and the total delivering 6V-1000 Ah. For the thermometer circuit only, an extra battery stack of ten similar cells with the capacity of 10V-60 Ah is attached.

E. *LUBRICANTS* The types of lubricant and places of application are listed as follows, including oiles category.

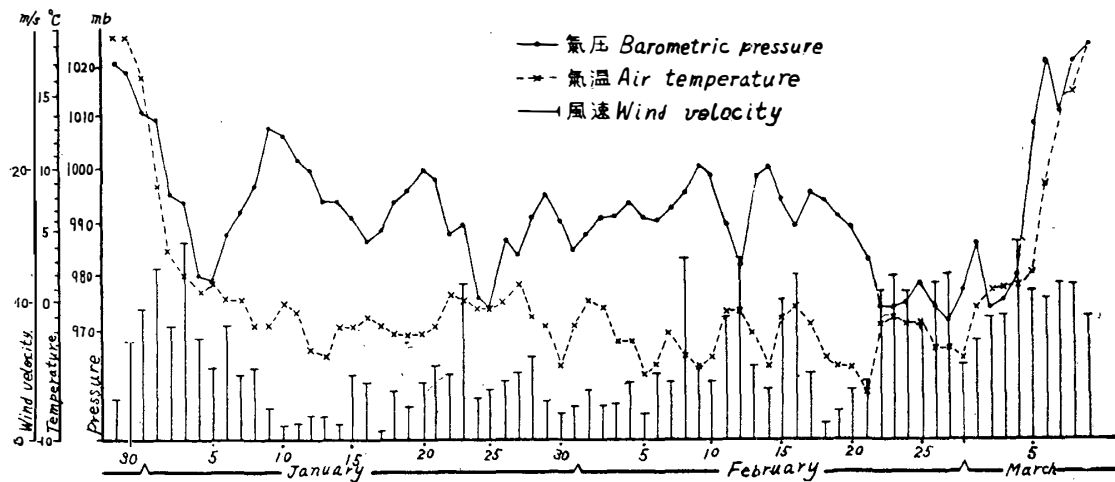
Lubricant	Congelation point	Applications	Remarks
Minera a	-35°C	Master clock escapement and gear shafts	indoor use
Minera aa	-51°C	Spring clock governor	outdoor use
D. C. 33 F (grease)	-70°C	Heavily loaded bearings	outdoor use
Dry bearing (Tetrafluoroethylene)		Pen-drive mechanism and windmill gears	outdoor use

6. Monthly statistics of the surface observation at Syowa Base Meteorological observation has been made at Syowa Base by

the wintering party. Brief results obtained hitherto are given in Table 8.

1. 海上気象観測の結果

観測船宗谷船上において 1956 年 11 月 10 日より 1957 年 4 月 23 日まで、3 時間ごとの定時気象観測が行われた。このうち、南極地域行動中の観測値を第 1 表 (論文末尾) に掲げる。暴風圏通過をも含めた日平均値を第 2 表 (論文末尾) および第 1 図に示す。また極地行動の各段階ごとにまとめた概況を第 3 表に掲げておいた。



第 1 図 気圧・気温・風速の日平均値変化図

Fig. 1. Variation of daily mean pressure, temperature and wind velocity.

第3表 総括

Table 3. Summarized data

期 間 Period	行 動 Operation	気 温 Temperature (°C)			最大風速とその方向 Maximum wind velocity and its direction	天 気 日 数 Number of day				
		平均 mean	最高 max.	最低 min.		快晴 clear	曇 cloudy	暴風 gale	霧 fog	雪 snow
Jan. 8-15	バックアイスラインに沿って偵察 Survey along the pack-ice line.	-1.9	+3.8	-4.7	8.5 m/s (SW)	1	7	0	2	6
Jan. 16-23	リュッツォホルム湾へ突入 Break into the Lützow-Holm Bay.	-1.4	+4.3	-6.4	14.8 m/s (NE)	1	5	1	0	5
Jan. 24-31	定着氷に接岸 Anchored at the edge of fast ice.	-1.1	+2.7	-9.2	9.2 m/s (NNE)	0	6	0	1	6
Feb. 1-14	昭和基地の建設 Construction of Syowa Base.	-2.8	+5.9	-11.6	19.5 m/s (NE)	1	5	4	1	8
Feb. 15-28	帰途(群水中) Returning way (among the closed pack-ice).	-3.0	+1.9	-10.4	17.7 m/s (ENE)	1	12	9	0	12

2. 上層気流観測

上層気流観測は船が氷海において停船中または定着氷に接岸中にのみ行われた。気球の上昇速度は 300 m/min. で、経緯儀による目視追跡を行つた。観測最高到達高度は 21 km であつた。観測資料は第4表(論文末尾)に掲げておく。

第5表 宗谷の気象施設

器 材 名 称	常用 数量	予備 数量
水銀気圧計(マリン型)	1	1
アネロイド指示気圧計	1	1
アネロイド自記気圧計(日捲)	1	1
乾湿球温度計	2	4
乾湿計(アスマン型)	1	1
隔測自記温度計	1	
自記温度計(バイメタル)		1
百葉箱	1	
隔測指示温度計(水温用)	1	
隔測自記風向風速計(エエロベン型)	1	
三杯風速計	1	1
経緯儀(測風用)	1	

第6表 昭和基地の気象施設(1956~57)

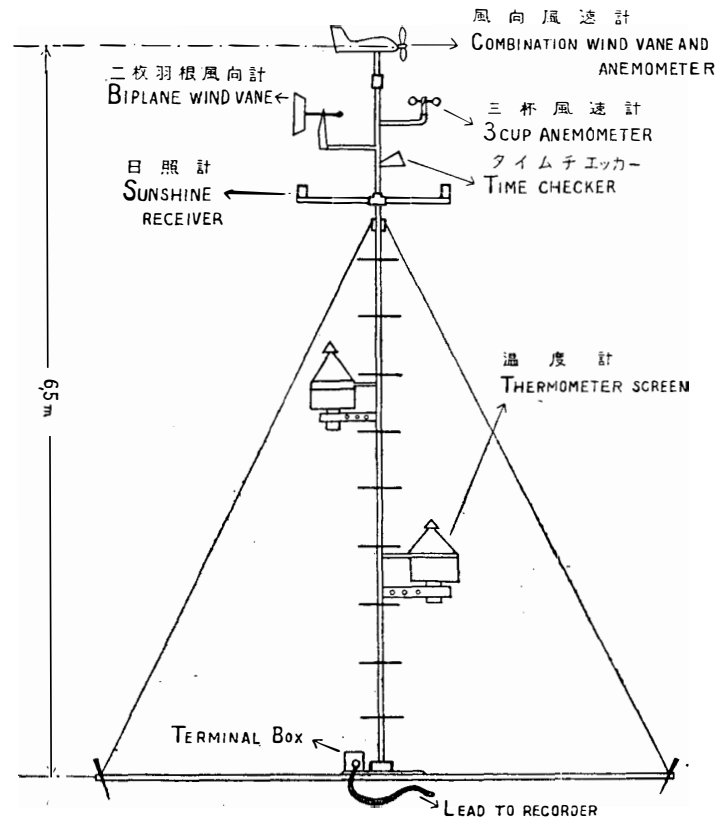
器 材 名 称	常用 数量	予備 数量
水銀気圧計(フォルタン型)	1	1
アネロイド自記気圧計(7日捲)	1	
乾湿球温度計(タリウム水銀入り)	2	4
最高温度計(タリウム水銀入り)	1	1
最低温度計(アルコール)	1	3
乾湿計(電動アスマン型)	1	1
振廻し温度計	1	1
自記温度計(日捲, バイメタル)	1	
自記湿度計(週捲, 毛髮)	1	1
百葉箱	1	
三杯風速計	1	1
風程回数自記器	1	1
スノーサンプラー	1	1
雪 尺	6	
長期自記気象計*	1	

* 次章に詳述する。

3. 長期自記気象計

A. 長期自記気象計設置の経緯 長期自記気象計の設置は、予備観測における最重要事のひとつであつた。元来、この器械は南極大陸に設置して1ケ年間人手を借りずに気候観測を行わせるために用意されたものである。昭和基地の建設が開始された当時は、越冬隊を残し得るだけの施設ができるかどうか不明であつたため、最悪時を考慮して、長期自記気象計の設置を急いだのであつた。幸に、越冬隊を置き得る事となつて、長期自記気象計本来の意義は薄くなつたが、昭和基地における一般気象観測のための補助施設として極めて有用である。また、1957～58年の本観測においては大陸上に設置して、昭和基地附近の気候調査に使用される予定である。

B. 器械の概略 鉄パイプ製高さ5米のマストに、第2図および第3図のごとく風向風速計、三杯風速計、二枚羽根風向計、日照計2基、タイムチェッカー、温度計およびその覆い各2基が取付けてある。すべての測器は電氣的に作動し、リード線によつて収容箱内の記録計2台に接続されている。感部および記録計がすべて2組にしてあるのは、故障による記録中断率を少くするためであるが、日照計感部は1組（2基で1組を構成する）のみとし、2つの記録計に



第2図 長期自記気象計の塔

Fig. 2. Sketch of the mast of automatic climatological station.

パラレルに接続されている。タイムチェックも同様である。気圧計感部は記録計収容箱内におさめてある。

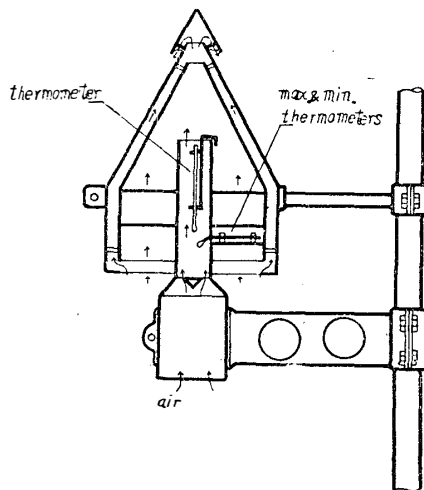
C. 感部 (1) 風向風速計 エエロペイン型であるが、内部構造は南極用として若干変更してある。すなわち、風速は風程 1800 米ごとに接点を閉じてパルスを送るようになっており、風向は 8 個の接点を 2 個のブラシで摺動し、接触数が 1 であるか 2 であるかによつて、16 方位が判別出来るようになっていいる。

(2) 三杯風速計 風杯の径 10 cm, 腕の長さ 10 cm の標準型を使用した。

(3) 二枚羽根風向計 (第 4 図) 風向風速計の風向感部と同一機構であるが、形状は異つている。(2) および (3) を合せて (1) と同等の働きをなす。

(4) 日照計 (第 5 図) $0.3 \text{ cal/cm}^2/\text{min}$. 以上の日射を受けると、バイメタルの作用によつて信号が送られるようになっていいる。感部は黒白板が硬質ガラス製グローブの内面に三方向に向けて取り付けられている。南極では、夏季には太陽が全方向から照射するので、柱の影になるのを防ぐため、2 基の感部を互に 180° 向きを変えて取付け、1 組を構成させてある。

(5) タイムチェック (第 6 図) 記録計は 1 年間放置して作動させるので、自記紙の送り時計が狂うことは避けられぬ。その対策として、日光によるタイムチェックが考案された。長さ 150 mm, 巾 70 cm のシリンダーレンズとスリットを通じて北中時の日光を集光し、バイメタルに受けて、真太陽時正午の前後約 40 分間だけ接点が閉じるようになっていいる。日射がなくなり、若しくは弱まると接点が閉じる。温度変化による影響を殺すために、接点機構に工夫が施されている。



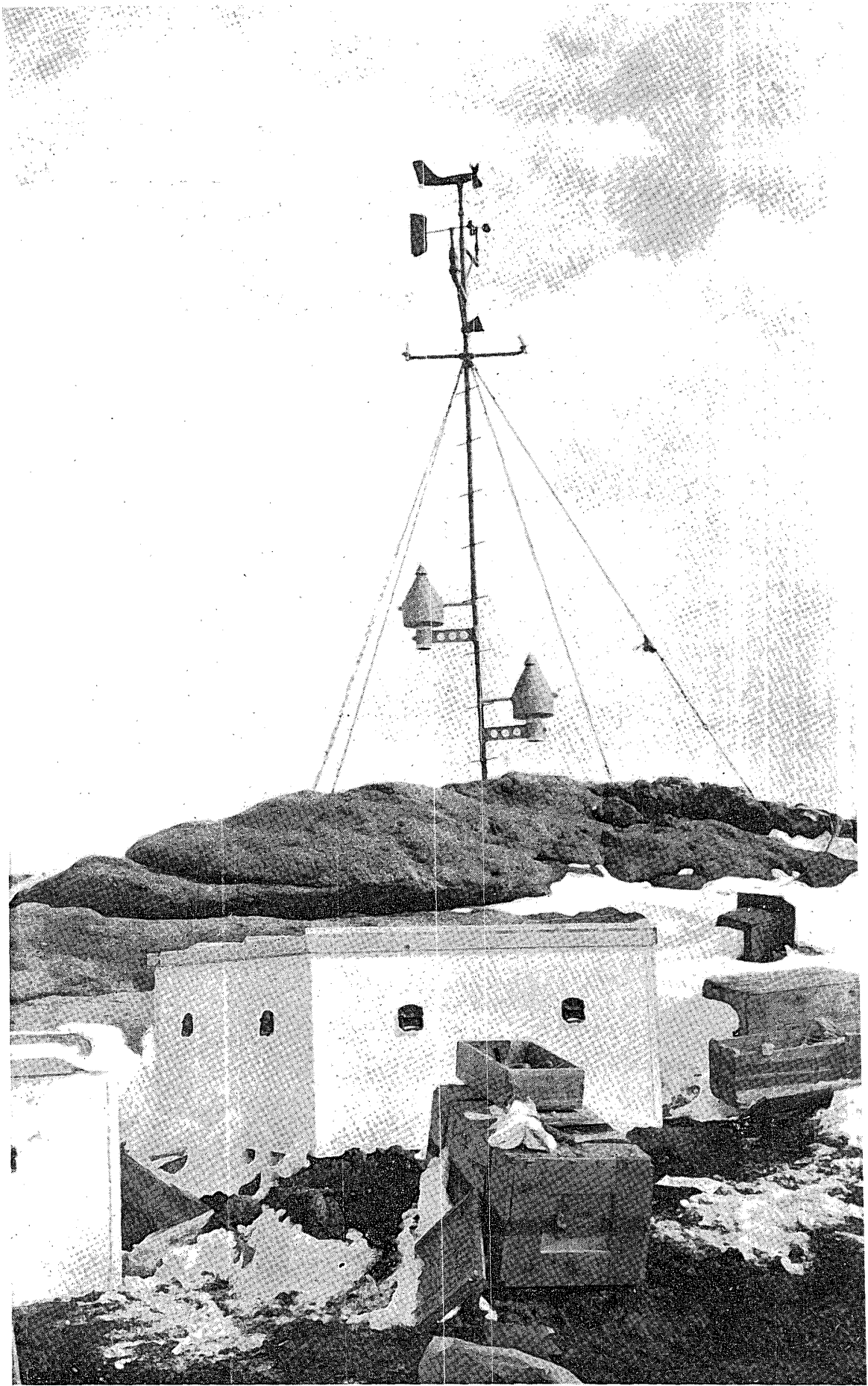
第 7 図 温度計覆いの断面

Fig. 7. Cross section of thermometer screen.

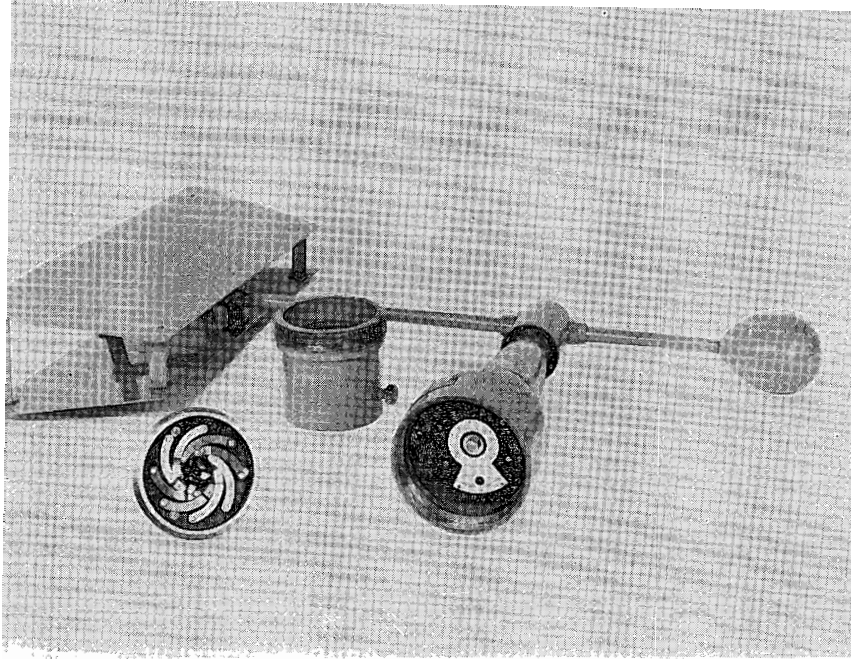
(6) 温度計およびその覆い 水銀温度計に炭素棒を封入した抵抗温度計が、特別に設計された覆いの中に納められている。温度計の電気抵抗変化範囲は $400 \sim 1820 \Omega$ で、 $+8^\circ \sim -60^\circ \text{C}$ に対応させてある。覆いは第 7 図に示すように 2 重円筒になっていいて、外側は銀灰色、内側は白色、内筒の内側壁は黒色に塗装されていいて、輻射の遮断と同時に自然通風が与えられるようになっていいる。

(7) アネロイド気圧計 二重空盒によりトルクを強めてある。測定範囲は $920 \sim 1040 \text{ mb}$ で、ペン先の動き 1 耗が気圧 1 mb に対応する。バイメタルを応用した補正装置により、温度係数は箱内温度の変化範囲 35° について $-0.01 \text{ mb}/^\circ \text{C}$ 以下となつており、総合精度は $\pm 0.1 \text{ mb}$ 以内である。

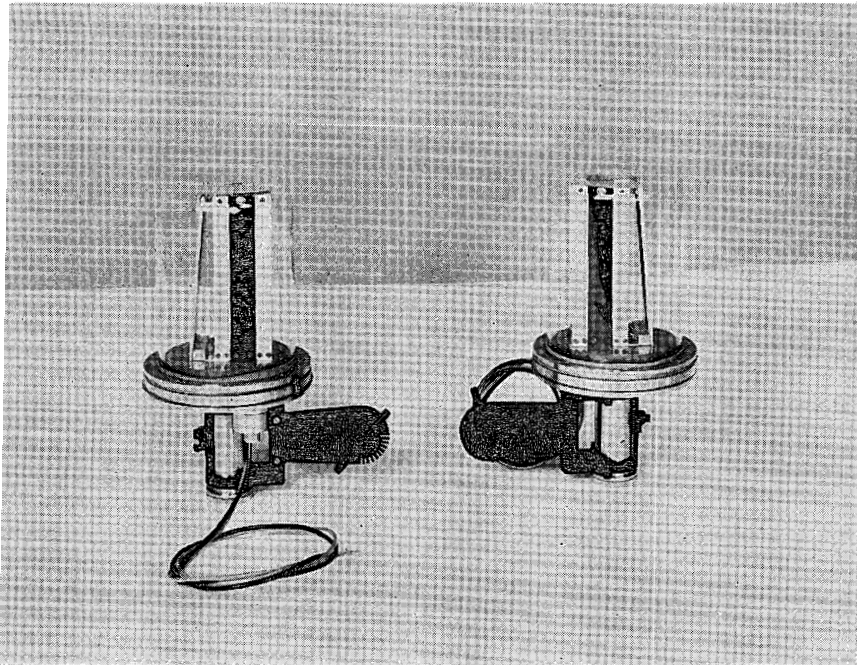
D. 記録計 (1) 時計装置 時計装置は親時計および制御仕掛より成る。親時計の作動原



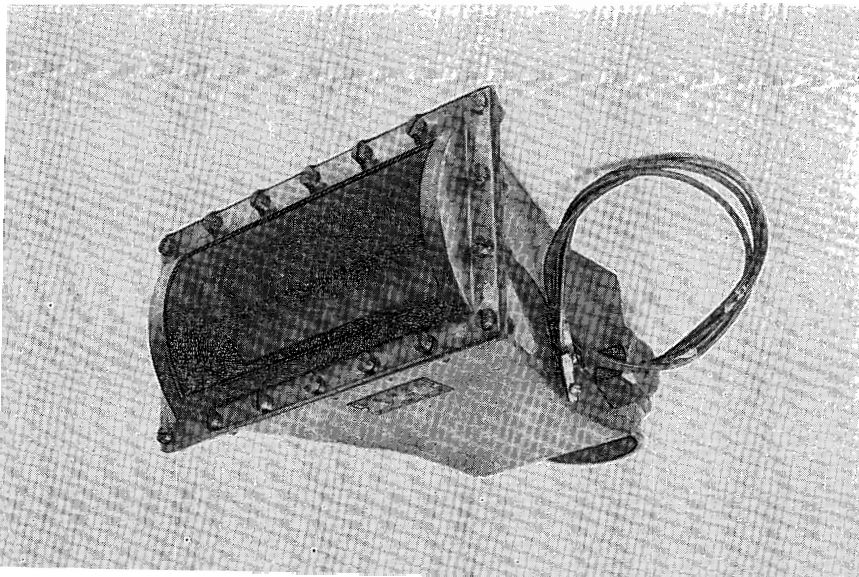
第3図 昭和基地に設置した長期自記気象計
Fig. 3. Automatic climatological station
installed at Syowa Base.



第4図 二枚羽根風向計
Fig. 4. Biplane wind
vane.

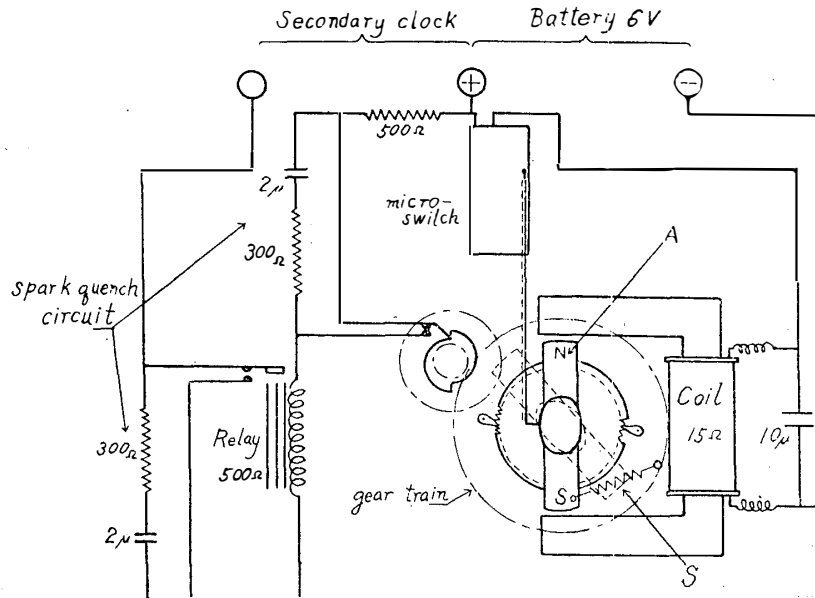


第5図 日照計
Fig. 5. Sunshine
recorder.



第6図 タイム・チェック
Fig. 6. Time check.

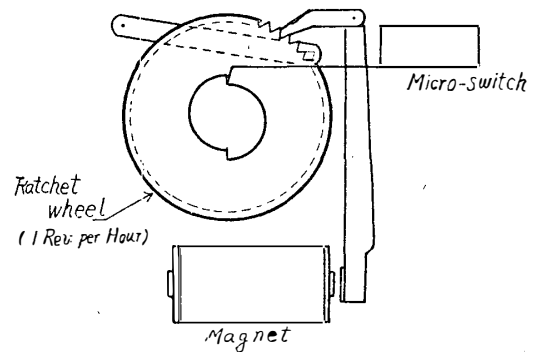
理は模式的に第8図のようになっている。これにはクロノメーターのエスケープメントが使用されていて、遅速変化率は 0.5 sec/day 以下であり、温度係数は $0.1 \text{ sec/}^\circ\text{C/day}$ 以下である。



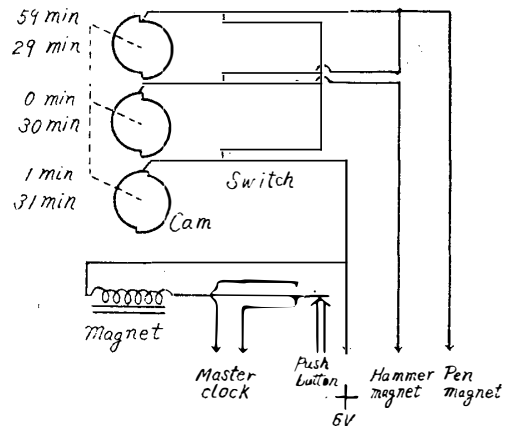
第8図 親時計の作動原理
Fig. 8. Operating principle of master clock.

制御仕掛の作動原理は第9図に示す通りであつて、自記紙の送りおよび打点機構は、3ケのカムとマイクロスイッチにより制御される。

(2) 打点機構 すべての要素は、打点機構により 2 mm/hour の送りになつている自記紙の上に穿孔される。打点ハンマーの枠は、電磁石により30分ごとに持上げられて、1分後に磁石が切れて自記紙上のペンの上に落下して穿孔する仕掛である。



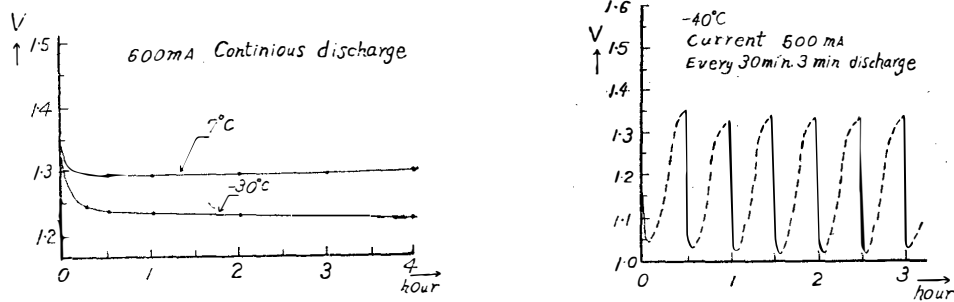
(3) 風向風速 日照およびタイムチェックの記録、風向、風速、日照、タイムチェックの記録は、それぞれ1ケまたは数ケのペンの穿孔によつて得られ、ペンの数は全部で10ケあつて、3ケの電磁石によつて作動する。



(4) 気圧・気温の記録 気圧指示のペンは気圧計(空盒)に直結し打点される。気温はクロスコイル型抵抗計のペンアームにより打点される。これらは南極用として特に製作されたものである。

第9図 制御仕掛の作動原理
Fig. 9. Operating principle of follower clock work.

(5) 電池 苛性加里電解液を応用した空気湿電池が用意されている。その低温特性は、試験の末、第10図のような結果を得た。電池の起電力は(単槽として) -40°C において約 1 volt あることになっている。全容量は 6 V-100 Ah であるが、温度計用としては容量 10 V-60 Ah のものが別に備えてある。



第10図 空気湿電池の低温特性

Fig. 10. Low-temperature characteristics of the wet air cell.

E. 潤滑油類 油の種類と使用箇所は第7表の如くである。

第7表 油類一覽表

種 類	凝固点	使 用 個 所	註
ミネラ a	-35°C	親時計のエスケープメントおよびギヤの軸	箱内におく
ミネラ aa	-51°C	ばね時計のガバナー	外気に曝す
D. C. 33 F (ゲリース)	-70°C	力のかかるベアリング	外気に曝す
油なしのベアリング (三沸化エチレン)		ペンの駆動機構および風速計のギヤ	外気に曝す

4. 昭和基地における地上気象観測結果

昭和基地においては、越冬隊によつて気象観測が行われている。今までに得られた結果をまとめると、第8表のとおりである。

第8表 昭和基地における地上観測結果の概略

Table 8. Brief results of surface observation at Syowa Base from April to August, 1957.

月 Month	海面気圧 Pressure at sea level (mb)		気 温 Temperature ($^{\circ}\text{C}$)			湿 度 Humidity (%)	風 速 Wind velocity (m/s)		雲 量 Amount of cloud
	平均 mean	最低 min.	平均 mean	最高 max.	最低 min.	平均 mean	平均 最高 max.		
Apr.	998.2	964.0	-9.5	-2.2	-20.3	79	7.1 28.8	ENE	7.1
May	992.6	978.7	-14.7	-5.7	-30.0	73	6.9 21.3	ENE	6.2
Jun.	995.6	984.1	-12.9	-4.8	-26.0	72	8.8 31.4	NE	5.1
Jul.	986.2	977.7	-17.7	-5.9	-30.9	80	7.9 30.7	NE	6.6
Aug.	991.7	968.8	-18.3	-4.5	-36.0	78	6.4 31.8	NNE	5.8

第1表 船上定時観測結果 (国際通報式 F 21 A による)

Table 1. Results of surface observation (International code F21A).

Date	G.M.T.	YQL _a L _a L _a	L ₀ L ₀ L ₀ GG	N d d f f	V V w w W	P P P T T	N _h C _L hC _M C _H	D _s V _s a p p	$\begin{matrix} 7RRT_xT_x \\ (T_N T_N) \end{matrix}$	O T _s T _s T _d T _d	1d _w d _w P _w H _w	1d _w d _w P _w H _w
1. 8	3	3 8 6 5 2	5 1 2 0 3	8 0 0 0 0	9 2 4 5 4	9 1 7 5 4	9 × 0 × ×	2 2 2 0 3		0 0 8 5 5	1 0 7 5 1	
	6	3 8 6 5 3	5 0 9 0 6	1 2 2 0 7	9 8 0 2 4	9 2 3 5 1	1 0 8 5 9	5 1 2 0 6	7 0 0 5 4	0 5 2 5 3	1 0 6 7 4	
	9	3 8 6 5 4	5 0 0 0 9	8 2 4 1 0	9 8 0 2 4	9 3 3 5 2	8 6 3 × ×	6 3 2 1 0		0 5 3 5 3	1 0 6 7 4	
	12	3 8 6 5 5	4 9 3 1 2	8 2 5 1 0	9 8 0 2 4	9 4 3 5 1	8 6 4 × ×	6 2 3 1 0		0 5 3 5 3	1 0 6 7 4	
	15	3 8 6 5 4	4 8 6 1 5	7 2 2 1 2	9 8 0 2 2	9 5 6 5 2	7 5 3 × ×	6 2 2 1 3		0 5 2 5 4	1 0 7 7 4	1 2 7 3 1
	18	3 8 6 5 5	4 8 2 1 8	7 2 2 1 7	9 8 0 2 2	9 7 2 5 1	7 5 4 × ×	6 3 2 1 6	7 0 0 5 1	0 5 1 5 4	1 2 7 2 3	
	21	3 8 6 5 6	4 7 7 2 1	7 2 3 1 5	9 8 0 2 2	9 9 2 5 2	7 5 4 × ×	5 1 2 2 0		0 5 3 5 4	1 2 7 2 2	
24	4 8 6 5 6	4 7 1 0 0	7 2 3 1 1	9 8 0 2 2	0 1 5 5 2	7 5 4 × ×	6 2 2 2 3		0 5 2 5 5	1 2 6 2 1		
1. 9	3	4 8 6 5 7	4 6 3 0 3	7 2 7 0 6	9 8 0 2 2	0 3 0 5 3	7 5 4 × ×	6 2 2 1 5		0 5 4 5 4	1 3 0 4 1	1 2 7 2 1
	6	4 8 6 5 7	4 6 0 0 6	8 1 9 0 7	9 8 0 2 2	0 4 6 5 1	8 5 4 × ×	6 1 2 1 6	7 0 0 5 3	0 0 0 5 4	1 2 5 2 1	
	9	4 8 6 5 9	4 5 7 0 9	8 1 8 0 5	9 8 0 2 2	0 5 1 5 2	8 5 4 × ×	5 2 2 0 5		0 5 3 5 5	1 2 7 2 1	
	12	4 8 6 6 1	4 5 0 1 2	8 2 1 0 6	9 8 0 2 2	0 6 3 5 2	8 5 4 × ×	5 2 2 1 2		0 5 2 5 5	1 3 1 3 0	
	15	4 8 6 6 0	4 4 4 1 5	8 2 0 0 4	9 8 0 2 2	0 7 3 5 2	8 5 4 × ×	7 2 2 1 0		0 5 2 5 6	1 3 0 2 0	
	18	4 8 6 6 1	4 3 8 1 8	7 2 4 6 3	9 8 0 2 2	0 7 7 5 2	7 5 4 × ×	6 2 2 0 4	7 0 0 9 9	0 5 4 5 4	1 3 0 2 0	
	21	4 8 6 6 4	4 3 5 2 1	7 2 2 0 3	9 8 0 2 2	0 7 9 5 2	7 5 4 × ×	4 2 2 0 2		0 5 2 5 5	1 2 2 0 2	
24	5 8 6 6 1	4 3 4 0 0	7 2 2 0 3	9 8 0 2 2	0 8 2 5 2	7 5 4 × ×	8 2 2 0 3		0 5 3 5 4	1 0 0 × 0		
1. 10	3	5 8 6 6 1	4 2 7 0 3	7 2 0 0 2	9 8 0 1 2	0 7 9 5 1	7 2 4 0 0	6 2 8 0 3		0 0 0 5 4	1 0 0 × 0	
	6	5 8 6 6 2	4 2 1 0 6	1 2 4 0 4	9 8 0 2 1	0 7 4 5 1	1 1 4 4 1	6 2 7 0 5	7 0 0 5 2	0 5 1 5 3	1 3 2 7 1	
	9	5 8 6 6 2	4 1 9 0 9	6 2 7 0 2	9 8 0 3 1	0 7 2 0 2	3 0 9 5 1	6 2 7 0 2		0 0 4 5 2	1 3 0 6 0	
	12	5 8 6 6 4	4 1 5 1 2	7 2 5 0 4	9 7 0 3 2	0 6 1 0 0	1 1 4 5 ×	5 3 7 1 1		0 5 0 5 2	1 3 0 6 0	
	15	5 8 6 6 7	4 1 1 1 5	7 2 7 0 2	9 8 0 2 2	0 4 3 5 0	1 6 4 7 ×	5 2 7 1 8		0 5 1 5 2	1 3 2 5 0	
	18	5 8 6 6 9	4 1 2 1 8	7 2 7 0 1	9 8 0 2 2	0 2 8 5 1	1 6 3 7 ×	4 2 7 1 5	7 0 0 0 2	0 5 1 5 1	1 0 0 × 0	
	21	5 8 6 6 7	4 0 7 2 1	7 3 1 0 1	9 7 7 1 7	0 1 7 5 0	5 5 5 2 ×	7 2 7 1 1		0 5 0 5 1	1 0 0 × 0	
24	6 8 6 6 5	4 0 2 0 0	8 3 2 0 1	9 8 0 2 7	0 1 0 5 0	6 6 4 2 ×	7 2 7 0 7		0 0 1 5 1	1 3 1 4 1		
1. 11	3	6 8 6 6 6	3 9 7 0 3	8 0 0 0 0	9 8 0 2 7	0 0 0 5 1	5 5 4 2 ×	5 2 7 1 0		0 0 1 5 2	1 3 3 5 1	
	6	6 8 6 6 9	3 9 1 0 6	8 0 9 0 2	9 7 7 1 7	9 9 4 5 0	8 7 3 2 ×	5 3 7 0 6	7 9 7 5 1	0 0 3 5 1	1 3 1 3 1	
	9	6 8 6 7 1	3 9 3 0 9	9 0 0 0 0	9 3 4 3 7	9 9 4 5 1	9 × 0 × ×	4 2 5 0 0		0 0 1 5 1	1 0 0 × 0	
	12	6 8 6 6 9	3 9 2 1 2	8 3 6 0 1	9 7 7 1 4	9 9 3 5 1	7 7 3 2 ×	8 1 7 0 1		0 5 3 5 1	1 2 8 4 1	
	15	6 8 6 6 9	3 8 6 1 5	8 1 0 0 4	9 8 2 2 7	9 8 8 5 1	7 8 4 2 ×	6 2 7 0 5		0 5 1 5 2	1 3 2 4 3	
	18	6 8 6 7 2	3 8 2 1 8	8 0 7 0 4	9 4 2 8 7	9 8 9 5 1	8 6 2 × ×	5 2 3 0 1	7 9 7 5 0	0 5 1 5 2	1 3 2 4 2	1 3 4 3 1
	21	6 8 6 7 4	3 7 4 2 1	9 0 9 0 2	9 3 4 5 7	9 9 4 5 1	9 × 0 × ×	5 2 2 0 5		0 5 1 5 2	1 0 0 × 0	
24	7 8 6 7 2	3 7 1 0 0	9 0 7 0 6	9 3 4 5 4	9 9 2 5 0	9 × 0 × ×	7 1 7 0 2		0 0 2 5 1	1 3 2 4 1		

Date	G.M.T.	YQL _a L _a L _a	L ₀ L ₀ L ₀ GG	N d d f f	V V w w W	P P P T T	N _h C _L hC _M C _H	D _s V _s a p p	7RR T _X T _X (T _N T _N)	● T _s T _s T _d T _d	1d _w d _w P _w H _w	1d _w d _w P _w H _w
1.12	3	7 8 6 7 3	3 6 6 0 3	8 1 2 0 9	9 5 4 0 4	9 8 0 5 2	8 6 3 × ×	6 2 7 0 4		0 5 2 5 3	1 0 0 × 0	
	6	7 8 6 7 4	3 6 0 0 6	8 1 2 0 6	9 7 7 1 4	9 8 6 5 3	8 6 2 × ×	5 1 5 0 2	7 9 7 5 3	0 5 3 5 4	1 3 2 4 1	
	9	7 8 6 7 7	3 5 7 0 9	8 1 2 0 6	9 8 7 1 7	9 8 9 5 4	8 6 3 × ×	4 3 3 0 3		0 5 5 5 5	1 3 2 4 1	
	12	7 8 6 7 9	3 5 3 1 2	8 1 8 0 7	9 8 0 2 7	9 8 5 5 3	8 6 4 × ×	5 2 7 0 4		0 5 5 5 6	1 3 2 4 1	
	15	7 8 6 7 7	3 4 6 1 5	7 1 6 0 1	9 8 0 2 2	9 7 9 5 3	7 5 4 2 ×	6 2 7 0 6		0 5 4 5 5	1 0 2 4 1	
	18	7 8 6 7 5	3 4 2 1 8	7 1 2 0 1	9 8 0 1 2	9 7 3 5 4	7 5 5 × ×	7 2 7 0 6	7 9 7 5 2	0 5 6 5 6	1 3 6 4 1	
	21	7 8 6 7 4	3 3 6 2 1	8 0 0 0 0	9 8 0 2 2	9 7 1 5 2	8 5 4 × ×	6 2 7 0 2		0 5 2 5 5	1 3 6 2 1	
	24	1 8 6 7 6	3 2 9 0 0	8 1 8 0 1	9 8 0 2 2	9 6 3 5 4	8 6 4 × ×	6 2 7 0 8		0 5 6 5 6	1 3 6 3 1	
1.13	3	1 8 6 7 4	3 3 0 0 3	8 1 7 0 3	9 8 0 2 2	9 5 4 5 4	7 5 4 2 ×	8 2 7 0 9		0 5 7 5 6	1 3 6 3 1	
	6	1 8 6 7 4	3 3 9 0 6	8 1 9 0 4	9 8 0 2 2	9 4 1 5 4	7 5 4 2 ×	2 3 7 1 3	7 9 7 5 4	0 5 6 5 6	1 3 4 3 1	
	9	1 8 6 7 7	3 4 7 0 9	8 1 8 0 3	9 8 0 2 2	9 3 6 5 4	8 5 4 × ×	3 3 7 0 5		0 5 5 5 6	1 3 6 4 1	
	12	1 8 6 7 9	3 5 0 1 2	8 2 5 0 2	9 6 1 5 2	9 3 0 5 4	8 6 3 × ×	4 2 7 0 6		0 5 6 5 6	1 3 4 4 1	
	15	1 8 6 7 9	3 5 0 1 5	8 2 5 0 1	9 6 7 7 7	9 2 2 5 4	8 6 3 × ×	0 0 7 0 8		0 5 5 5 7	1 0 1 4 1	
	18	1 8 6 7 9	3 4 8 1 8	7 2 7 0 1	9 8 7 7 7	9 1 7 5 4	7 5 3 × ×	0 0 7 0 5	7 9 7 5 4	0 5 5 5 6	1 3 6 5 1	
	21	1 8 6 7 9	3 4 8 2 1	7 3 4 0 6	9 8 7 7 7	9 1 4 5 4	6 5 3 × ×	0 0 7 0 3		0 5 5 5 7	1 3 6 4 1	
	24	2 8 6 7 9	3 4 8 0 0	8 2 8 0 9	9 8 0 2 7	9 1 7 5 4	8 5 4 × ×	0 0 2 0 3		0 5 5 5 6	1 3 5 4 1	
1.14	3	2 8 6 7 9	3 4 8 0 0	8 2 8 0 6	9 7 7 1 7	9 2 0 5 3	5 7 3 2 ×	0 0 2 0 3		0 5 5 5 6	1 3 5 4 1	
	6	2 8 6 7 9	3 4 8 0 6	6 2 8 0 2	9 8 0 1 7	9 2 6 5 2	2 5 4 5 0	0 0 2 0 6	7 9 7 5 4	0 5 2 5 8	1 3 3 2 0	
	9	2 8 6 7 9	3 4 8 0 9	2 3 2 0 2	9 8 0 2 1	9 3 0 5 2	1 5 4 5 ×	0 0 2 0 4		0 5 1 5 7	1 3 4 4 1	
	12	2 8 6 7 9	3 4 8 1 2	5 0 0 0 0	9 8 0 3 1	9 2 8 5 1	3 1 4 6 0	0 0 8 0 2		0 5 1 5 9	1 3 5 4 1	
	15	2 8 6 7 9	3 4 8 1 5	6 0 0 0 0	9 8 0 2 1	9 2 6 5 1	1 5 5 3 9	0 0 8 0 2		0 5 1 5 7	1 3 4 5 1	
	13	2 8 6 7 9	3 4 8 1 8	7 0 5 0 1	9 8 0 2 2	9 2 4 5 2	1 5 4 3 0	0 0 5 0 2	7 0 0 5 1	0 5 3 5 6	1 0 2 5 1	
	21	2 8 6 7 8	3 5 1 2 1	7 0 0 0 0	9 8 0 3 2	9 2 6 5 2	6 8 4 2 ×	1 2 2 0 2		0 5 2 5 4	1 3 4 5 1	
	24	3 8 6 7 6	3 5 8 0 0	7 0 3 0 4	9 8 0 2 2	9 2 2 5 1	7 8 4 1 ×	1 2 7 0 4		0 5 1 5 3	1 3 5 4 1	
1.15	3	3 8 6 7 4	3 6 3 0 3	7 0 3 1 0	9 8 0 1 2	9 1 7 5 1	3 2 4 5 ×	1 3 7 0 5		0 0 0 5 3	1 3 5 4 1	
	6	3 8 6 7 4	3 7 1 0 6	6 0 9 0 8	9 8 0 2 2	9 1 7 5 1	1 2 4 3 0	2 2 5 0 0	7 0 0 5 2	0 5 3 5 4	1 3 3 2 1	
	9	3 8 6 7 3	3 7 7 0 9	2 1 1 0 5	9 8 0 2 1	9 1 4 5 2	1 2 4 5 5	2 2 7 0 3		0 5 3 5 6	1 3 6 2 1	
	12	3 8 6 7 4	3 8 5 1 2	2 1 7 0 9	9 8 0 2 0	9 0 3 5 2	1 1 4 3 0	1 2 6 1 1		0 5 5 5 5	1 3 6 3 1	
	15	3 8 6 6 9	3 9 0 1 5	7 1 6 1 0	9 8 0 3 1	8 8 6 5 2	7 6 4 × ×	1 3 8 1 7		0 5 7 5 4	1 3 6 4 1	
	18	3 8 6 6 6	3 9 4 1 8	8 0 9 1 8	9 6 7 1 7	8 7 6 5 3	7 6 4 × ×	1 2 6 1 0	7 9 7 5 1	0 5 6 5 4	1 3 6 5 1	
	21	3 8 6 6 6	3 9 8 2 1	8 0 9 0 7	9 8 2 2 7	8 7 6 5 2	8 4 4 × ×	0 0 4 0 0		0 5 2 5 4	1 3 6 5 1	
	24	4 8 6 6 6	3 9 8 0 0	7 1 4 1 1	9 8 0 2 7	8 6 6 5 2	7 8 4 3 ×	0 0 6 1 0		0 5 2 5 3	1 3 5 5 1	1 0 5 4 1
1.16	3	4 8 6 6 6	3 9 8 0 3	7 1 1 1 8	9 8 0 2 2	8 5 7 5 1	7 6 3 3 ×	0 0 7 0 9		0 5 2 5 5	1 0 5 4 1	1 3 5 5 1
	6	4 8 6 6 6	3 9 8 0 6	7 1 0 1 2	9 8 0 2 2	8 5 5 5 1	1 2 4 3 9	4 1 5 0 2	7 9 7 5 6	0 5 2 5 4	1 0 6 2 1	
	9	4 8 6 6 9	3 9 9 0 9	7 0 9 1 3	9 8 0 2 2	8 6 1 5 1	6 5 4 5 ×	3 2 2 0 6		0 0 0 5 4	1 0 6 3 1	
	12	4 8 6 7 1	4 0 2 1 5	1 0 8 0 9	9 8 0 1 1	8 6 6 5 1	1 1 4 5 0	3 2 3 0 5		0 0 2 5 4	1 0 3 4 1	
	15	4 8 6 7 1	4 0 2 1 5	7 0 9 0 3	9 8 0 3 1	8 6 5 5 0	1 2 4 5 ×	3 1 2 0 1		0 0 3 5 3	1 0 0 × 0	
	18	4 8 6 7 3	4 0 3 1 8	7 1 1 0 2	9 8 2 6 8	8 6 9 5 1	1 3 6 7 ×	5 2 2 0 4	7 9 7 5 0	0 0 0 5 3	1 0 0 × 0	
	21	4 8 6 7 3	4 0 3 2 1	6 0 8 0 6	9 8 0 1 2	8 7 2 5 1	1 5 5 7 ×	0 0 2 0 3		0 5 0 5 1	1 0 0 × 0	
	24	5 8 6 7 3	4 0 3 0 0	2 1 1 0 4	9 8 0 1 1	8 7 2 5 2	1 0 7 7 4	0 0 4 0 0		0 5 1 5 5	1 0 0 × 0	

1.17	3	58673	40303	10000	98010	86850	10770	00704		00355	100×0
	6	58673	40312	10000	98020	86652	10870	00502	79752	05154	13371
	9	58674	40109	02203	99020	86850	00900	51302		00253	13271
	12	58675	39912	12202	99020	86950	10950	51201		00353	136×—
	15	58676	39915	02502	99020	87050	00900	41201		00252	100×0
	18	58678	40118	12202	99020	87651	00901	32206	70050	00053	13671
	21	58678	40121	12502	94100	88854	10770	00112		05657	1×—71
	24	68678	40200	10000	98004	89755	10879	00209		05758	1×—71
1.18	3	68677	40103	22602	98034	90454	20851	00207		05656	1×—71
	6	68677	40106	61704	98031	91052	60850	00306	70055	05154	1×—70
	9	68680	40409	51708	98011	91751	10831	32207		05257	1×—60
	12	68680	40312	22108	98011	92051	16451	71203		00056	100×0
	15	68680	40515	72409	98031	92350	75400	21203		00054	13250
	19	68682	40718	12209	98011	92352	18431	41400	79750	05254	13350
	21	68684	39921	12513	97020	92854	18431	32205		05556	100×—
	24	78683	39800	22705	96020	93554	15430	00007		05456	100×0
1.19	3	78683	39803	70902	98031	93251	755××	00803		00155	100×0
	6	78683	39806	82503	98711	93351	7732×	00301	79754	05254	100×0
	9	78684	39309	72510	98027	93553	18430	52302		05356	100×0
	12	78684	38812	72811	98027	93352	755××	62702		05155	100×—
	15	78685	38615	22603	98011	93052	21400	51803		0×—55	1×—×—
	18	78685	38618	72306	98031	93153	754××	00201	79751	05355	1×—×—
	21	78685	38621	62605	98022	93655	654××	00205		05657	1×—×—
	24	18685	38600	73001	98022	94054	754××	00204		05457	1×—×—
1.20	3	18685	38603	81202	98032	94653	563××	00106		05256	1×—×—
	6	18685	38606	83502	98022	95453	854××	00308	79755	05355	100×0
	9	18687	38409	80407	98022	96752	854××	42313		05656	100×0
	12	18689	38812	70209	98022	97652	754××	32109		05356	100×0
	15	18689	38815	70507	98022	97952	754××	00203		05255	100×0
	18	18689	38818	70510	97152	97952	754××	00500	70052	05355	100×0
	21	18689	38821	70513	96152	98453	693××	00205		05454	100×0
	24	28689	38800	70514	96157	98852	9633×	00204		05454	100×0
1.21	3	28689	38803	70711	98012	98853	5543×	00000		05657	100×0
	6	28689	38906	60614	98022	98152	1547×	00707	79753	05456	10420
	9	28690	39009	30610	98021	97551	15445	00706		00058	100×0
	12	28690	39012	70514	98032	95751	756××	00718		00255	100×0
	15	28690	39015	70809	98022	94051	75501	00717		05155	100×0
	19	28690	39018	61311	98012	92253	15532	00718	70051	05656	100×0
	21	28690	39021	71006	98022	90653	1631×	00716		05455	100×0
	24	38690	39000	81314	96717	88600	8732×	00720		00151	100×0

Date	G.M.T.	YQL _a L _a L _a	L ₀ L ₀ L ₀ GG	N d d f f	V V w w W	P P P T T	N _h C _L hC _M C _H	D _s V _s a p p	$7RRT_xT_x$ ($T_N T_N$)	OT _s T _s T _d T _d	1d _w d _w P _w H _w	1d _w d _w P _w H _w
1.22	3	3 8 6 9 0	3 9 0 0 0	8 1 1 1 2	9 6 7 1 7	8 6 9 0 0	8 7 3 2 ×	0 0 7 1 7		0 0 2 5 1	1 0 0 × 0	
	6	3 8 6 9 0	3 9 0 0 9	8 1 0 1 0	9 6 1 5 7	8 5 7 0 1	2 5 4 2 ×	0 0 7 1 2	7 9 3 5 4	0 0 3 5 3	1 0 0 × 0	
	9	3 8 6 9 0	3 9 0 0 9	8 0 6 1 1	9 6 7 1 7	8 5 3 0 0	8 7 3 × ×	0 0 7 0 4		0 0 3 5 2	1 0 0 × 0	
	12	3 8 6 9 0	3 9 0 1 2	8 0 7 0 9	9 7 2 2 7	8 5 0 0 1	7 7 3 7 ×	0 0 5 0 3		0 0 3 5 4	1 0 0 × 0	
	15	3 8 6 9 0	3 9 0 1 5	7 1 4 0 8	9 5 7 1 2	8 5 0 0 1	6 7 3 2 ×	0 0 4 0 0		0 0 1 5 2	1 0 0 × 0	
	18	3 8 6 9 0	3 9 0 1 8	7 1 0 0 5	9 8 7 1 7	8 5 5 0 1	6 7 4 7 ×	0 0 2 0 3	7 9 1 0 1	0 0 1 5 3	1 0 0 × 0	
	21	3 8 6 9 0	3 9 0 2 1	8 0 5 1 1	9 8 7 1 7	8 5 9 0 0	6 7 3 × ×	0 0 2 0 4		0 0 0 5 1	1 × - × -	
24	4 8 6 9 0	3 9 0 0 0	8 0 8 0 6	9 8 7 1 7	8 6 6 0 0	8 7 4 × ×	0 0 2 0 7		0 0 1 5 2	1 × - × -		
1.23	3	4 8 6 9 0	3 9 0 0 3	8 0 7 1 6	9 7 7 1 7	8 6 9 5 0	8 7 4 2 ×	0 0 2 0 3		0 5 0 5 1	1 × - × -	
	6	4 8 6 9 0	3 9 0 0 6	8 0 6 2 0	9 6 7 1 7	8 6 8 5 0	8 7 3 × ×	0 0 7 0 1	7 9 1 5 0	0 5 1 5 2	1 × - × -	
	9	4 8 6 9 0	3 9 0 0 9	8 0 4 2 9	9 5 7 1 7	8 7 0 0 0	8 7 3 × ×	0 0 2 0 2		0 0 1 5 0	1 0 0 × 0	
	12	4 8 6 9 0	3 9 0 1 2	8 0 4 2 8	9 7 2 2 7	8 8 2 0 1	8 7 3 × ×	0 0 3 1 2		0 0 3 5 1	1 × - × -	
	15	4 8 6 9 0	3 9 1 1 5	9 0 3 2 8	9 3 7 3 7	8 8 8 0 0	9 × 0 × ×	0 0 2 0 6		0 0 3 5 0	1 × - × -	
	18	4 8 6 9 0	3 9 2 1 8	9 0 4 2 7	9 3 7 1 7	8 9 5 5 0	9 × 0 × ×	0 0 3 0 7	7 9 7 0 1	0 0 2 5 1	1 × - × -	
	21	5 8 6 9 0	3 9 2 0 0	8 0 2 1 2	9 8 7 1 7	8 9 2 5 1	8 7 4 2 ×	0 0 7 1 2		0 0 2 5 1	1 × - × -	
24	5 8 6 9 0	3 9 2 0 0	8 0 2 1 2	9 8 7 1 7	8 9 2 5 1	8 7 4 2 ×	0 0 7 1 2		0 5 2 5 3	1 × - × -		
1.24	3	5 8 6 9 0	3 9 2 0 3	7 1 5 0 5	9 8 0 1 7	8 6 8 5 1	2 5 4 2 ×	0 0 7 2 4		0 5 2 5 3	1 × - × -	
	6	5 8 6 9 0	3 9 2 0 6	7 2 4 0 1	9 8 0 2 7	8 3 7 5 1	5 5 7 1 ×	0 0 7 3 1	7 9 1 5 1	0 5 1 5 3	1 × - × -	
	9	5 8 6 9 0	3 9 1 0 9	7 1 1 0 5	9 8 0 2 2	8 0 0 0 1	2 0 9 7 7	0 0 7 3 7		0 0 4 5 6	1 × - × -	
	12	5 8 6 9 0	3 9 1 1 2	7 1 8 0 7	9 8 0 2 2	7 6 2 0 0	3 0 9 4 8	0 0 7 3 8		0 0 3 5 6	1 × - × -	
	15	5 8 6 9 0	3 9 1 1 5	7 1 7 0 4	9 8 0 3 2	7 3 1 0 1	5 0 7 5 8	0 0 7 3 1		0 0 2 5 4	1 × - × -	
	18	5 8 6 9 0	3 9 1 1 8	7 1 7 0 1	9 8 0 2 2	7 0 9 5 3	1 5 6 4 7	0 0 7 2 2	7 0 0 0 1	0 5 4 5 6	1 × - × -	
	21	5 8 6 9 0	3 9 1 2 1	7 0 7 1 0	9 8 0 2 2	6 8 8 5 1	2 8 5 2 7	0 0 6 2 1		0 0 0 5 8	1 × - × -	
24	6 8 6 9 0	3 9 1 0 0	7 0 4 1 1	9 7 0 3 2	6 7 7 5 1	7 6 3 2 ×	0 0 6 1 1		0 5 1 5 4	1 × - × -		
1.25	3	6 8 6 9 0	3 9 1 0 3	7 0 4 1 0	9 7 7 1 7	6 9 0 5 1	7 7 3 2 ×	0 0 3 1 3		0 5 0 5 1	1 × - × -	
	6	6 8 6 9 0	3 9 1 0 6	8 1 6 0 2	9 7 1 5 7	6 9 9 5 1	2 7 3 1 ×	0 0 2 0 9	7 9 7 5 3	0 × - 5 2	1 × - × -	
	9	6 8 6 9 0	3 9 1 0 9	8 0 4 1 0	9 6 7 1 7	7 1 2 0 1	3 7 4 1 ×	0 0 3 1 3		0 × - 5 3	1 × - × -	
	12	6 8 6 9 0	3 9 1 1 2	7 0 7 0 5	9 8 0 2 7	7 1 7 0 1	2 7 5 4 8	0 0 3 0 5		0 0 2 5 2	1 × - × -	
	15	6 8 6 9 0	3 9 1 1 5	7 0 1 0 7	9 7 1 5 2	7 3 6 5 0	2 8 4 2 ×	0 0 3 1 9		0 × - 5 3	1 × - × -	
	18	6 8 6 9 0	3 9 1 1 8	8 0 3 0 6	9 4 7 1 7	7 6 6 5 1	8 7 4 × ×	0 0 2 3 0	7 9 7 0 1	0 × - 5 4	1 × - × -	
	21	6 8 6 9 0	3 9 1 2 1	8 0 7 0 7	9 4 7 1 7	7 9 6 5 2	5 7 4 2 ×	0 0 2 3 0		0 × - 5 4	1 × - × -	
24	7 8 6 9 0	3 9 1 0 0	8 0 5 1 0	9 5 7 1 7	8 2 0 5 1	8 7 4 2 ×	0 0 2 2 4		0 5 1 5 2	1 × - × -		
1.26	3	7 8 6 9 0	3 9 1 0 3	8 0 4 1 6	9 5 7 1 7	8 3 7 5 1	3 7 3 1 ×	0 0 2 1 7		0 × - 5 1	1 × - × -	
	6	7 8 6 9 0	3 9 1 0 6	8 0 4 1 4	9 7 1 5 7	8 5 3 5 0	2 7 3 1 ×	0 0 2 1 6	7 9 4 5 2	0 × - 5 3	1 × - × -	
	9	7 8 6 9 0	3 9 1 0 9	8 0 5 0 8	9 8 0 2 7	8 6 3 0 1	2 7 3 1 ×	0 0 3 1 0		0 × - 5 2	1 × - × -	
	12	7 8 6 9 0	3 9 1 1 2	8 0 6 0 5	9 8 0 2 7	8 6 5 0 2	2 5 4 5 7	0 0 2 0 2		0 0 5 5 1	1 × - × -	
	15	7 8 6 9 0	3 9 1 1 5	7 1 7 0 6	9 8 0 1 2	8 5 9 0 1	1 0 9 3 7	0 0 6 0 6		0 × - 5 2	1 × - × -	
	18	7 8 6 9 0	3 9 1 1 8	7 1 6 0 1	9 8 0 2 2	8 5 9 5 1	2 0 9 1 7	0 0 4 0 0	7 9 7 0 2	0 × - 5 3	1 × - × -	
	21	7 8 6 9 0	3 9 1 2 1	7 1 5 0 7	9 8 0 2 2	8 5 6 5 2	5 6 3 3 8	0 0 8 0 3		0 × - 5 4	1 × - × -	
24	1 8 6 9 0	3 9 1 0 0	6 0 9 0 6	9 8 0 1 2	8 5 0 5 1	1 6 3 3 0	0 0 7 0 6		0 5 0 5 7	1 × - × -		

1.27	3	18690	39103	31701	98011	84000	30870	00710		0x-56	1x-x--
	6	18690	39106	30902	98021	81903	10945	00721	79752	0x-55	1x-x--
	9	18690	39109	81106	98032	81102	25547	00708		0x-54	1x-x--
	12	18690	39112	80304	98021	81203	25537	00301		00653	1x-x--
	15	18690	39115	70918	98032	81703	7081x	00205		0x-54	1x-x--
	18	18690	39118	70611	98032	82501	7042x	00308	79754	0x-03	1x-x--
	24	18690	39121	70407	98022	82450	70898	00701		0x-55	1x-x--
	21	28690	39100	70415	98012	82953	20977	00205		05557	1x-x--
1.28	3	28690	39103	70511	98022	83650	10977	00207		0x-56	1x-x--
	6	28690	39106	60318	98022	84701	28435	00311	70053	0x-54	1x-x--
	9	28690	39109	73512	98022	87051	21446	00223		0x-53	1x-x--
	12	28690	39112	80215	98022	89151	2642x	00121		05053	1x-x--
	15	28690	39115	80116	97157	91451	1342x	00223		0x-54	1x-x--
	18	28690	39118	80111	97232	93952	1342x	00225	79701	0x-53	1x-x--
	21	28690	39121	80308	97717	95952	2332x	00220		0x-54	1x-x--
	24	38690	39100	81005	97027	96752	1542x	00208		05354	1x-x--
1.29	3	38690	39103	81202	97717	97152	2732x	00104		0x-54	1x-x--
	6	38690	39106	81903	96717	96851	7732x	00703	79752	0x-53	1x-x--
	9	38690	39109	82204	97227	96600	2731x	00702		0x-52	1x-x--
	12	38690	39112	72504	97157	95400	6731x	00712		00152	1x-x--
	15	38690	39115	72006	95857	94351	734xx	00711		0x-53	1x-x--
	19	38690	39118	72306	96158	92852	35434	00715	79700	0x-54	1x-x--
	21	38690	39121	92310	92454	91954	9x0xx	00709		0x-55	1x-x--
	24	48690	39100	92307	91454	90455	9x0xx	00715		06056	1x-x--
1.30	3	48690	39103	92003	91454	89603	9x0xx	00708		0x-54	1x-x--
	6	48690	39106	33004	94014	89055	36240	00706	79755	0x-57	1x-x--
	9	48690	39109	83302	96024	89552	864xx	00105		0x-55	1x-x--
	12	48690	39112	83305	92774	89554	863xx	00400		05855	1x-x--
	15	48690	39115	13501	97017	89153	163xx	00804		0x-55	1x-x--
	18	48690	39118	11502	97027	88656	15450	00705	79752	0x-57	1x-x--
	21	48690	39121	11401	98284	87959	15400	00707		0x-60	1x-x--
	24	58690	39100	10909	98010	86455	10970	00715		06061	1x-x--
1.31	3	58690	39103	10710	98400	85155	16030	00713		0x-60	1x-x--
	6	58690	39106	21401	98020	84654	16305	00605			
	9	58690	39106	51401	98031	84251	11546	00704		0x-59	1x-x--
	12	58690	39112	61501	98031	83050	00906	00712		05055	1x-x--
	15	58690	39115	60807	98032	82400	10682	00706		0x-56	1x-x--
	18	58690	39118	40507	98141	82852	15582	00304	70000	0x-56	1x-x--
	21	58690	39121	71006	98155	84453	25471	00216		0x-56	1x-x--
	24	68690	39100	80911	98717	85550	7722x	00209		05053	1x-x--

Date	G.M.T.	YQL _a L _a L _a	L ₀ L ₀ L ₀ GG	Nd d f f	VV w wW	PPPTT	N _h C _L hC _M C _H	D _s V _s a p p	7RRTxTx (TN TN)	OT _s T _s T _s T _s	1d _w d _w P _w H _w	1d _w d _w P _w H _w
2. 1	3	6 8 6 9 0	3 9 1 0 3	7 0 7 1 3	9 8 0 2 7	8 5 6 0 0	2 5 4 9 ×	0 0 3 0 3		0 × - 5 2	1 × - × -	
	6	6 8 6 9 0	3 9 1 0 6	2 0 7 1 0	9 8 0 2 1	8 5 9 0 1	1 5 4 4 5	0 0 3 0 3	7 9 7 5 3	0 × - 5 2	1 × - × -	
	9	6 8 6 9 0	3 9 1 0 7	3 0 5 0 9	9 8 0 3 0	8 6 5 5 1	1 5 4 0 5	0 0 2 0 6		0 × - 5 4	1 × - × -	
	12	6 8 6 9 0	3 9 1 1 2	5 0 0 0 0	9 8 0 3 1	8 6 5 0 2	1 5 4 8 6	0 0 3 0 3		0 0 4 5 4	1 × - × -	
	15	6 8 6 9 0	3 9 1 1 5	7 1 8 0 8	9 8 0 3 2	8 6 8 0 1	6 0 9 1 7	0 0 4 0 0		0 × - 5 4	1 × - × -	
	18	6 8 6 9 0	3 9 1 1 8	7 1 5 0 9	9 8 0 2 2	8 7 0 5 0	7 0 9 2 7	0 0 3 0 2	7 0 0 0 2	0 × - 5 4	1 × - × -	
	21	6 8 6 9 0	3 9 1 2 1	7 0 0 0 0	9 8 0 2 2	8 8 8 5 1	7 0 9 2 7	0 0 2 1 8		0 × - 5 4	1 × - × -	
	24	7 8 6 9 0	3 9 1 0 0	7 0 3 0 5	9 8 0 2 2	8 9 9 5 1	1 5 6 2 ×	0 0 2 1 1		0 5 1 5 5	1 × - × -	
2. 2	3	7 8 6 9 0	3 9 1 0 3	7 0 5 0 3	9 8 0 2 2	9 0 9 0 0	1 5 6 2 ×	0 0 2 1 0		0 × - 5 6	1 × - × -	
	6	7 8 6 9 0	3 9 1 0 6	7 2 8 0 2	9 8 0 1 2	9 1 0 0 0	1 5 5 1 5	0 0 3 0 1	7 0 0 5 1	0 × - 5 3	1 × - × -	
	9	7 8 6 9 0	3 9 1 0 9	1 1 0 0 1	9 8 0 2 1	9 1 2 0 2	1 5 6 5 8	0 0 2 0 2		0 × - 5 3	1 × - × -	
	12	7 8 6 9 0	3 9 1 1 2	1 0 5 0 2	9 8 0 2 1	9 1 4 0 3	0 0 9 0 8	0 0 2 0 2		0 0 5 5 4	1 × - × -	
	15	7 8 6 9 0	3 9 1 1 5	1 1 5 0 6	9 8 0 2 0	9 0 8 0 0	1 0 9 4 0	0 0 8 1 6		0 × - 5 2	1 × - × -	
	18	7 8 6 9 0	3 9 1 1 8	2 2 0 0 8	9 8 0 3 0	9 0 4 5 1	2 0 9 5 0	0 0 7 0 4	7 0 0 0 3	0 × - 5 4	1 × - × -	
	21	7 8 6 9 0	3 9 1 2 1	1 1 6 0 9	9 8 0 1 0	9 0 3 5 3	1 0 9 5 0	0 0 7 0 1		0 × - 5 5	1 × - × -	
	24	1 8 6 9 0	3 9 1 0 0	1 0 4 0 7	9 8 0 1 0	9 0 0 5 2	1 0 9 5 0	0 0 7 0 3		0 5 4 5 8	1 × - × -	
2. 3	3	1 8 6 9 0	3 9 1 0 3	1 0 3 0 8	9 8 0 2 0	8 9 7 5 3	1 0 9 5 0	0 0 7 0 3		0 × - 5 7	1 × - × -	
	6	1 8 6 9 0	3 9 1 0 6	1 0 4 0 4	9 8 0 2 0	9 0 0 5 0	1 0 9 5 0	0 0 3 0 3	7 0 0 5 4	0 × - 5 4	1 × - × -	
	9	1 8 6 9 0	3 9 1 0 9	1 0 7 0 7	9 8 0 2 0	9 0 8 5 1	1 6 3 0 1	0 0 2 0 8		0 × - 5 7	1 × - × -	
	12	1 8 6 9 0	3 9 1 1 2	2 0 7 0 5	9 7 0 3 0	9 0 5 5 2	1 6 2 4 4	0 0 8 0 3		0 5 3 5 5	1 × - × -	
	15	1 8 6 9 0	3 9 1 1 5	6 1 8 0 2	9 8 0 3 1	8 9 9 5 2	1 6 2 0 6	0 0 8 0 6		0 × - 5 4	1 × - × -	
	18	1 8 6 9 0	3 9 1 1 8	6 1 7 0 4	9 3 4 0 2	8 9 9 5 3	0 0 9 0 6	0 0 4 0 0	7 0 0 5 0	0 × - 5 5	1 × - × -	
	21	1 8 6 9 0	3 9 1 2 1	1 2 8 0 2	9 1 4 4 4	9 1 0 5 5	0 0 9 0 1	0 0 2 1 1		0 × - 5 8	1 × - × -	
	24	2 8 6 9 0	3 9 1 0 0	1 0 1 0 8	9 7 0 1 4	9 1 9 5 7	1 6 2 0 4	0 0 2 0 9		0 6 4 5 8	1 × - × -	
2. 4	3	2 8 6 9 0	3 9 1 0 3	1 0 5 1 6	9 8 0 1 0	9 2 6 5 4	0 0 9 0 4	0 0 2 0 7		0 × - 5 8	1 × - × -	
	6	2 8 6 9 0	3 9 1 0 6	1 1 5 0 3	9 8 0 2 0	9 3 1 5 1	0 0 9 0 1	0 0 3 0 5	7 0 0 5 7	0 × - 5 7	1 × - × -	
	9	2 8 6 9 0	3 9 1 0 9	2 0 3 0 9	9 8 0 3 0	9 3 3 0 1	1 0 9 3 5	0 0 2 0 2		0 × - 5 9	1 × - × -	
	12	2 8 6 9 0	3 9 1 1 2	5 0 0 0 0	9 8 0 3 1	9 3 1 0 0	0 0 9 0 5	0 0 7 0 2		0 5 0 5 5	1 × - × -	
	15	2 8 6 9 0	3 9 1 1 5	2 1 5 1 0	9 8 0 1 1	9 2 3 5 1	0 0 9 0 2	0 0 8 0 8		0 × - 5 5	1 × - × -	
	18	2 8 6 9 0	3 9 1 1 8	3 1 1 0 2	9 8 0 3 1	9 2 0 5 2	0 0 9 0 2	0 0 7 0 3	7 0 0 0 1	0 × - 5 9	1 × - × -	
	21	2 8 6 9 0	3 9 1 2 1	1 0 6 1 1	9 8 0 1 0	9 2 4 5 6	0 0 9 0 1	0 0 2 0 4		0 × - 6 0	1 × - × -	
	24	3 8 6 9 0	3 9 1 0 0	1 0 4 0 9	9 8 0 2 0	9 2 0 5 8	0 0 9 0 1	0 0 7 0 4		0 6 6 6 1	1 × - × -	
2. 5	3	3 8 6 9 0	3 9 1 0 3	1 0 8 0 2	9 7 4 0 0	9 0 9 5 6	1 6 0 0 1	0 0 7 1 1		0 × - 6 1	1 × - × -	
	6	3 8 6 9 0	3 9 1 0 1	1 1 7 0 1	9 7 4 0 0	8 9 6 5 6	1 6 0 0 1	0 0 7 1 3	7 0 0 5 8	0 × - 5 9	1 × - × -	
	9	3 8 6 9 0	3 9 1 0 9	1 1 8 0 2	9 7 4 0 0	8 8 7 5 2	1 6 0 0 1	0 0 7 0 9		0 × - 5 7	1 × - × -	
	12	3 8 6 9 0	3 9 1 1 2	1 0 2 0 8	9 7 4 0 0	8 8 0 5 3	1 6 2 0 1	0 0 7 0 7		0 5 6 5 9	1 × - × -	
	15	3 8 6 9 0	3 9 1 1 5	1 3 4 0 3	9 8 0 2 0	8 7 7 5 5	1 6 2 3 0	0 0 8 0 3		0 × - 5 6	1 × - × -	
	18	3 8 6 9 0	3 9 1 1 8	1 0 0 0 0	9 7 1 5 0	8 8 3 5 5	1 6 3 3 0	0 0 2 0 6	7 0 0 5 2	0 × - 5 7	1 × - × -	
	21	3 8 6 9 0	3 9 1 2 1	1 0 7 0 2	9 7 1 5 0	8 8 6 5 8	1 6 3 3 0	0 0 2 0 3		0 × - 6 0	1 × - × -	
	24	4 8 6 9 0	3 9 1 0 0	1 0 5 0 6	9 8 0 2 2	8 8 6 5 9	1 5 3 0 0	0 0 4 0 0		0 6 8 6 2	1 × - × -	

2. 6	3	4 8 6 9 0	3 9 1 0 3	2 0 4 0 3	9 8 0 3 0	8 8 2 5 9	1 5 4 3 0	0 0 8 0 4	7 0 0 5 9	0 x - 6 4	1 x - x -
	6	4 8 6 9 0	3 9 1 0 6	2 1 6 0 1	9 8 0 2 0	8 7 6 5 7	1 5 4 3 0	0 0 7 0 6		0 x - 6 3	1 x - x -
	9	4 8 6 9 0	3 9 1 0 9	1 0 2 0 6	9 8 0 2 0	8 7 3 5 4	1 8 4 8 1	0 0 7 0 3		0 x - 6 2	1 x - x -
	12	4 8 6 9 0	3 9 1 1 2	7 0 2 1 2	9 8 0 3 1	8 7 6 5 4	7 5 5 0 0	0 0 3 0 3		0 5 7 6 0	1 x - x -
	15	4 8 6 9 0	3 9 1 1 5	7 0 4 1 6	9 8 0 3 2	8 8 2 5 4	7 5 4 x x	0 0 2 0 6		0 x - 5 8	1 x - x -
	18	4 8 6 9 0	3 9 1 1 8	7 0 3 1 3	9 7 1 4 2	8 9 3 5 4	7 0 5 9 x	0 0 2 1 1		0 x - 5 8	1 x - x -
	21	4 8 6 9 0	3 9 1 2 1	7 1 4 1 2	9 7 1 5 2	9 0 8 5 3	2 3 3 9 x	0 0 2 1 5		0 x - 5 8	1 x - x -
	24	5 8 6 9 0	3 9 1 0 0	8 1 6 0 9	9 7 7 1 7	9 0 9 5 5	5 3 3 2 x	0 0 1 0 1		0 5 8 5 6	1 x - x -
2. 7	3	5 8 6 9 0	3 9 1 0 3	7 1 1 0 7	9 8 7 1 7	9 0 3 5 4	6 3 4 2 x	0 0 7 0 6	7 9 7 5 5	0 x - 6 0	1 x - x -
	6	5 8 6 9 0	3 9 1 0 6	8 0 9 0 3	9 8 0 2 7	9 0 5 5 3	1 5 3 2 x	0 0 3 0 2		0 x - 6 0	1 x - x -
	9	5 8 6 9 0	3 9 1 0 9	7 0 6 0 3	9 8 0 1 2	9 1 2 5 2	2 8 4 7 2	0 0 3 0 7		0 x - 5 8	1 x - x -
	12	5 8 6 9 0	3 9 1 1 2	7 1 8 0 6	9 8 0 2 2	9 1 4 5 1	3 5 5 5 5	0 0 2 0 2		0 5 3 5 7	1 x - x -
	15	5 8 6 9 0	3 9 1 1 5	7 1 9 0 4	9 8 8 7 2	9 1 4 5 2	2 3 5 7 x	0 0 4 0 0		0 x - 5 5	1 x - x -
	18	5 8 6 9 0	3 9 1 1 8	7 1 7 0 3	9 7 8 7 8	9 1 4 5 2	7 0 5 7 x	0 0 5 0 0		0 x - 5 5	1 x - x -
	21	5 8 6 9 0	3 9 1 2 1	8 1 6 0 8	9 3 8 6 7	9 2 0 5 3	8 7 3 2 x	0 0 2 0 6		0 x - 5 3	1 x - x -
	24	6 8 6 9 0	3 9 1 0 0	8 0 5 3 2	9 3 3 7 7	9 1 2 5 3	8 0 5 2 x	0 0 6 0 8		0 5 5 5 5	1 x - x -
2. 8	3	6 8 6 9 0	3 9 1 0 3	8 0 4 3 1	9 3 3 8 3	9 1 6 5 4	8 0 5 2 x	0 0 2 0 4	7 0 2 5 4	0 x - 5 4	1 x - x -
	6	6 8 6 9 0	3 9 1 0 6	7 0 4 2 9	9 3 3 8 7	9 2 3 5 4	5 7 4 2 x	0 0 2 0 7		0 5 7 5 6	1 x - x -
	9	6 8 6 9 0	3 9 1 0 9	7 0 4 2 8	9 3 3 8 3	9 3 0 5 4	2 7 2 9 x	0 0 3 0 7		0 x - 5 6	1 x - x -
	12	6 8 6 9 0	3 9 1 1 2	8 0 6 2 4	9 3 7 1 3	9 3 3 5 4	7 7 2 2 x	0 0 2 0 3		0 5 7 5 5	1 x - x -
	15	6 8 6 9 0	3 9 1 1 5	8 0 4 2 5	9 4 3 8 7	9 3 3 5 4	7 7 2 2 x	0 0 4 0 0		0 x - 5 5	1 x - x -
	18	6 8 6 9 0	3 9 1 1 8	8 0 4 2 4	9 5 3 8 7	9 4 0 5 4	8 0 5 7 x	0 0 2 0 7		0 5 7 5 5	1 x - x -
	21	6 8 6 9 0	3 9 1 2 1	7 0 4 2 4	9 6 3 6 7	9 5 4 5 5	7 0 6 7 x	0 0 2 1 4		0 x - 5 6	1 x - x -
	24	7 8 6 9 0	3 9 1 0 0	7 0 4 1 9	8 8 0 2 3	9 6 4 5 4	7 0 6 7 x	0 0 2 1 0		0 5 5 5 6	1 x - x -
2. 9	3	7 8 6 9 0	3 9 1 0 3	7 0 5 1 6	9 8 1 5 7	9 7 0 5 4	7 0 8 7 x	0 0 2 0 6	7 9 7 5 5	0 x - 5 7	1 x - x -
	6	7 8 6 9 0	3 9 1 0 6	7 0 4 1 8	9 7 1 5 8	9 8 0 5 3	1 5 4 7 x	0 0 3 1 0		0 5 5 5 8	1 x - x -
	9	7 8 6 9 0	3 9 1 0 9	7 0 3 1 4	9 8 0 2 2	9 8 9 5 2	7 0 9 7 x	0 0 2 0 9		0 x - 5 7	1 x - x -
	12	7 8 6 9 0	3 9 1 1 2	4 0 7 0 6	9 8 0 1 2	9 9 6 5 3	1 5 5 7 5	0 0 2 0 7		0 5 5 5 7	1 x - x -
	15	7 8 6 9 0	3 9 1 1 5	6 0 8 0 2	9 8 0 3 1	9 9 6 5 3	6 0 9 5 3	0 0 4 0 0		0 x - 5 7	1 x - x -
	18	7 8 6 9 0	3 9 1 1 8	7 1 1 0 1	9 8 0 3 1	9 9 7 5 5	7 0 9 5 1	0 0 2 0 1		0 5 9 5 1	1 x - x -
	21	7 8 6 9 0	3 9 1 2 1	2 1 2 0 8	9 8 0 1 1	9 9 9 5 7	2 0 9 4 0	0 0 0 0 2		0 x - 6 2	1 x - x -
	24	1 8 6 9 0	3 9 1 0 0	6 1 4 1 1	9 8 0 3 1	9 9 2 5 9	3 0 9 4 4	0 0 7 0 7		0 6 7 6 4	1 x - x -
2. 10	3	1 8 6 9 0	3 9 1 0 3	6 0 8 0 5	9 8 0 2 1	9 8 4 5 8	5 0 9 5 3	0 0 7 0 8	7 0 0 5 9	0 x - 6 3	1 x - x -
	6	1 8 6 9 0	3 9 1 0 6	5 1 1 0 3	9 8 0 2 2	9 7 7 5 6	3 0 7 7 5	0 0 6 0 7		0 6 0 6 3	1 x - x -
	9	1 8 6 9 0	3 9 1 0 9	5 0 6 1 0	9 7 0 2 2	9 7 5 5 4	1 6 5 7 1	0 0 7 0 2		0 x - 6 2	1 x - x -
	12	1 8 6 9 0	3 9 1 1 2	7 1 4 0 2	9 7 0 3 2	9 7 5 5 4	7 0 7 2 x	0 0 5 0 0		0 5 5 5 8	1 x - x -
	15	1 8 6 9 0	3 9 1 1 5	7 1 6 1 0	9 7 0 2 2	9 6 4 5 4	1 3 6 7 x	0 0 8 1 1		0 x - 5 9	1 x - x -
	18	1 8 6 9 0	3 9 1 1 8	7 1 6 0 9	9 7 0 2 2	9 6 0 5 3	7 0 7 7 x	0 0 8 0 4		0 5 4 5 8	1 2 2 2 0
	21	1 8 6 9 0	3 9 1 2 1	7 1 1 1 0	9 7 0 2 2	9 6 0 5 2	7 0 7 7 x	0 0 4 0 0		0 x - 5 6	1 2 2 2 0
	24	2 8 6 9 0	3 9 1 0 0	8 0 5 1 7	9 6 7 1 2	9 5 2 5 2	8 0 7 7 x	0 0 7 0 8		0 5 1 5 5	1 0 5 x -

Date	G.M.T.	YQL _a L _a L _a	L ₀ L ₀ L ₀ GG	N d d f f	V V z w z w W	P P P T T	N _k C _L hC _M C _H	D _s V _s a p p	7RR _{T_N} T _X T _X (T _N T _N)	O T _s T _s T _d T _d	1d _w d _w P _w H _w	1d _w d _w P _w H _w
2.11	3	2 8 6 9 0	3 9 1 0 3	8 0 4 2 7	9 4 7 1 7	9 4 0 5 2	8 7 2 2 ×	0 0 6 1 2		0 × - 5 3	1 0 4 2 0	
	6	2 8 6 9 0	3 9 1 0 6	8 0 4 2 7	9 2 7 1 7	9 3 3 5 2	7 7 4 2 ×	0 0 7 0 7	7 9 7 5 4	0 5 1 5 2	1 0 4 2 0	
	9	2 8 6 9 0	3 9 1 0 9	8 0 4 2 4	9 4 2 2 7	9 2 4 5 1	7 7 2 2 ×	0 0 7 0 9		0 0 0 5 2	1 3 2 3 1	
	12	2 8 6 9 0	3 9 1 1 2	7 0 8 0 6	9 8 1 5 7	8 9 9 0 0	7 7 3 2 ×	0 0 7 2 5		0 0 2 5 4	1 3 1 3 0	1 3 6 2 0
	15	2 8 6 9 0	3 9 1 1 5	7 1 2 1 0	9 8 0 1 2	8 6 9 0 1	7 6 4 7 ×	0 0 7 3 0		0 × - 5 7	1 4 9 2 0	
	18	2 8 6 9 0	3 9 1 1 8	7 1 3 1 2	9 8 0 1 2	8 3 6 5 0	7 0 6 7 ×	0 0 7 3 3	7 9 7 0 1	0 0 2 5 7	1 2 2 2 0	
	21	2 8 6 9 0	3 9 1 2 1	7 0 8 1 8	9 8 0 2 2	8 1 1 5 1	7 0 6 7 ×	0 0 7 2 5		0 5 1 5 5	1 × - × -	
24	3 8 6 9 0	3 9 1 0 0	7 0 9 1 4	9 8 1 4 2	7 8 9 5 1	7 0 5 2 ×	0 0 7 2 2		0 5 0 5 6	1 3 2 2 0		
2.12	3	3 8 6 9 0	3 9 1 0 3	7 0 4 2 9	9 7 3 6 2	7 7 1 5 1	7 0 5 7 1	0 0 6 1 8		0 5 1 5 5	1 3 2 2 0	
	6	3 8 6 9 0	3 9 1 0 8	6 0 5 2 9	9 6 3 6 8	7 7 6 0 0	5 0 6 7 5	0 0 3 0 5	7 5 1 9 7	0 0 1 5 2	1 3 2 3 1	
	9	3 8 6 9 0	3 9 1 0 9	7 0 5 3 4	9 2 8 5 8	7 8 9 5 0	6 7 1 1 ×	0 0 2 1 3		0 5 1 5 1	1 3 3 2 1	
	12	3 8 6 9 0	3 9 1 1 2	7 0 3 3 8	9 2 8 5 8	8 0 3 5 0	6 7 1 1 ×	0 0 3 1 4		0 0 1 5 1	1 3 3 2 1	
	15	3 8 6 9 0	3 9 1 1 5	7 0 4 3 3	9 7 3 6 8	8 1 5 5 1	1 1 4 7 ×	0 0 2 1 2		0 0 0 5 2	1 3 3 2 1	
	18	3 8 6 9 0	3 9 1 1 8	7 0 3 2 7	9 7 1 5 8	8 3 4 5 0	7 5 5 7 ×	0 0 3 1 9	7 9 7 0 0	0 0 1 5 2	1 3 3 3 0	1 3 6 4 1
	21	3 8 6 9 0	3 9 1 2 1	8 0 3 1 4	9 6 1 5 7	8 5 6 5 1	3 7 4 7 ×	0 0 2 2 2		0 0 0 5 3	1 3 3 6 1	
24	4 8 6 9 0	3 9 1 0 0	8 1 0 0 4	9 8 0 2 7	8 7 4 5 2	3 5 4 7 ×	0 0 2 1 8		0 5 2 5 4	1 × - 2 1		
1.13	3	4 8 6 9 0	3 9 1 0 3	7 0 4 1 8	9 8 1 5 2	8 9 6 5 1	3 5 4 7 ×	0 0 2 2 2		0 5 1 5 5	1 3 3 2 1	
	6	4 8 6 9 0	3 9 1 0 6	7 0 6 1 6	9 8 0 1 2	9 2 2 5 0	4 5 5 3 ×	0 0 2 2 6	7 9 7 5 2	0 0 2 5 4	1 3 3 2 1	
	9	4 8 6 9 0	3 9 1 0 9	7 0 5 0 6	9 8 0 2 2	9 4 4 0 2	7 0 9 3 0	0 0 2 2 2		0 0 6 5 1	1 3 3 2 1	
	12	4 8 6 9 0	3 9 1 1 2	1 1 7 0 7	9 8 0 1 1	9 6 6 0 0	1 1 5 4 0	0 0 2 2 2		0 0 2 5 2	1 3 1 2 0	
	15	4 8 6 9 0	3 9 1 1 5	1 1 6 0 7	9 8 0 1 0	9 7 6 5 1	1 1 4 4 1	0 0 2 1 0		0 0 0 5 3	1 4 9 × -	
	18	4 8 6 9 0	3 9 1 1 8	1 1 7 0 8	9 8 0 1 0	9 8 9 5 3	1 0 9 4 0	0 0 2 2 2	7 0 0 0 2	0 5 5 5 5	1 4 9 2 0	
	21	4 8 6 9 0	3 9 1 2 1	1 1 5 0 8	9 8 0 1 0	0 0 2 5 6	0 0 9 0 1	0 0 2 1 4		0 6 0 5 7	1 1 7 × -	
24	5 8 6 9 0	3 9 1 0 0	0 1 6 0 9	9 8 0 0 0	0 0 4 5 9	0 0 9 0 0	0 0 1 0 2		0 6 6 6 1	1 1 7 2 1		
2.14	3	5 8 6 9 0	3 9 1 0 3	0 1 6 0 5	9 8 0 2 0	0 0 0 5 9	0 0 9 0 0	0 0 8 0 4		0 6 1 6 1	1 1 7 × -	
	6	5 8 6 9 0	3 9 1 0 6	1 1 6 0 6	9 8 0 3 0	9 8 5 5 8	0 0 9 0 1	0 0 2 1 5	7 0 0 5 9	0 6 4 6 0	1 2 1 2 0	1 1 6 2 0
	9	5 8 6 9 0	3 9 1 0 9	4 1 5 0 5	9 8 0 3 0	9 7 5 5 2	0 0 9 0 5	0 0 7 1 0		0 5 3 5 8	1 2 2 2 0	
	12	5 8 6 9 0	3 9 1 1 2	2 1 7 0 9	9 8 0 2 0	9 5 2 5 3	1 0 9 3 5	0 0 7 2 3		0 5 4 5 7	1 2 3 2 1	1 1 5 2 0
	15	5 8 6 9 0	3 9 1 1 5	2 1 5 0 7	9 8 0 2 0	9 2 7 5 4	0 0 9 0 5	0 0 7 2 5		0 5 6 5 7	1 2 1 2 0	
	18	5 8 6 9 0	3 9 1 1 8	7 0 5 0 6	9 8 0 3 1	9 1 4 5 6	1 0 9 4 6	0 0 6 1 3	7 0 0 5 2	0 5 9 5 8	1 2 0 2 0	
	21	5 8 6 9 0	3 9 1 2 1	7 1 3 0 6	9 8 0 3 2	9 2 2 5 4	6 0 9 5 6	0 0 2 0 8		0 5 8 5 7	1 × - × -	
24	6 8 6 9 0	3 9 1 0 0	7 0 8 0 9	9 8 0 3 2	9 2 8 5 3	7 0 9 7 ×	0 0 2 0 6		0 5 4 5 9	1 × - × -		
2.15	3	6 8 6 9 0	3 9 1 0 3	8 0 6 1 0	9 7 1 5 2	9 3 9 5 2	2 3 2 7 ×	0 0 2 1 1		0 5 2 5 9	1 × - × -	
	6	6 8 6 9 0	3 9 1 0 6	8 0 5 2 4	9 7 7 1 2	9 5 2 5 2	1 3 2 2 ×	0 0 2 1 3	7 9 7 5 4	0 5 2 5 5	1 3 2 × -	
	9	6 8 6 9 0	3 9 1 0 9	8 0 5 1 6	9 7 1 5 7	9 6 0 5 0	1 3 6 2 7	0 0 1 0 8		0 0 1 5 4	1 3 3 3 0	
	12	6 8 6 8 8	3 9 0 1 2	8 0 5 2 7	9 8 1 5 7	9 6 4 5 1	1 1 4 2 ×	8 1 1 0 4		0 5 0 5 4	1 0 5 2 3	
	15	6 8 6 8 6	3 8 8 1 5	8 0 6 3 2	9 8 0 1 2	9 3 3 5 1	6 0 7 7 7	8 2 8 3 1		0 0 1 5 5	1 0 6 2 2	
	18	6 8 6 8 5	3 8 8 1 8	7 0 9 1 8	9 8 0 1 2	9 2 2 5 2	7 0 7 7 ×	8 1 8 1 1	7 9 7 5 0	0 5 0 5 4	1 × - × -	
	21	6 8 6 8 4	3 8 9 2 1	7 1 3 1 6	9 8 0 1 2	9 0 1 5 3	7 0 7 7 ×	8 1 7 2 1		0 5 2 5 4	1 1 3 × -	
24	7 8 6 8 4	3 8 8 0 0	6 1 1 1 9	9 8 0 1 2	8 6 8 5 2	6 0 7 7 0	0 0 7 3 3		0 0 0 5 7	1 1 2 × -		

44 宇田慶太郎・清野章兵衛・安井 正・久我雄四郎・田島成昌・村邊 望 (88) 〔南航資料〕

2.16	3	78684	38803	70919	98032	85351	7097x	00715	70053	00256	113x-
	6	78684	38806	80735	97022	85101	8092x	00502		00554	107x-
	9	78684	38809	80632	97022	86000	1752x	00209		00452	107x-
	12	78684	38812	80626	96022	87350	5742x	00313		00353	108x1
	15	78684	38815	80719	96022	88750	6632x	00214		00253	149x1
	18	78684	38818	80719	96717	90451	7732x	00217		00152	108x0
	21	78684	38821	80618	96717	91651	7732x	00212		00052	107x-
	24	18684	38800	80716	96717	92652	7732x	00210		00053	107x-
2.17	3	18684	38803	80816	96717	93152	5731x	00205	79552	05154	108x-
	6	18684	38806	80815	98027	94052	3631x	00209		05053	108x-
	9	18684	38709	70912	98022	94351	2631x	81203		0x-52	1x-x-
	12	18684	38712	81005	97022	94651	16317	00203		05054	1x-x-
	15	18684	38715	81108	98022	94451	2632x	00702		00053	1x-x-
	18	18684	38718	70908	98022	94452	1632x	00400		05154	1x-x-
	21	18684	38721	71007	98022	94452	3631x	00400		05155	1x-x-
	24	28684	38700	61307	98012	94053	35312	00804		05357	1x-x-
2.18	3	28684	38703	71204	98022	93553	30952	00705	70054	05358	1x-x-
	6	28684	38706	70000	98022	93152	10942	00604		05056	1x-x-
	9	28684	38709	20000	98011	92852	10942	00703		05155	1x-x-
	12	28684	38712	30000	98030	92752	15542	00701		00159	1x-x-
	15	28684	38715	30903	96400	91954	16002	00708		05457	1x-x-
	18	28684	38718	30802	98010	92356	16202	00204		05857	1x-x-
	21	28684	38721	30806	98011	92257	15301	00701		06159	1x-x-
	24	38684	38700	71106	98021	92357	354xx	00201		06058	1x-x-
2.19	3	38684	38703	70803	98022	91955	763xx	00804	70057	05757	1x-x-
	6	38684	38706	73304	98022	91454	763xx	00505		05454	1x-x-
	9	38684	38609	62902	98012	90653	55441	00708		05357	1x-x-
	12	38684	38612	53004	98022	89753	58461	00709		05357	1x-x-
	15	38684	38615	72503	98032	88854	1355x	00709		05557	1x-x-
	18	38684	38618	72203	98858	88855	733xx	00400		05657	1x-x-
	21	38684	38621	72511	97718	89156	5732x	00203		05957	1x-x-
	24	48684	38600	72302	97717	89257	5742x	00201		06058	1x-x-
2.20	3	48684	38603	72705	98717	89259	764xx	00500	79759	06559	1x-x-
	6	48683	38606	70000	98027	89355	76484	00201		05656	1x-x-
	9	48683	38609	70607	98022	89053	7554x	00703		05555	1x-x-
	12	48683	38612	80812	98858	88853	1842x	00702		05355	1x-x-
	15	48683	38615	71009	97228	88354	7062x	00805		05556	1x-x-
	18	48683	38618	71206	98027	87756	7062x	00706		05557	1x-x-
	21	48683	38621	71107	98018	87355	43370	00704		05657	1x-x-
	24	58683	38600	71508	98028	86155	7067x	00712		05656	1x-x-

Date	G.M.T.	YQL _a L _a L _a	L ₀ L ₀ L ₀ GG	N d d f f	V V w w W	P P P T T	N _h C _L hC _M C _H	D _s V _s a p p	7RR _N T _N ^x T _N ^x	OT _s T _s T _d T _d	1d _w d _w P _w H _w	1d _w d _w P _w H _w
2.21	3	5 8 6 8 3	3 8 6 0 3	3 2 0 0 8	9 8 0 1 2	8 4 7 5 6	1 5 4 8 0	0 0 7 1 4			0 5 9 5 8	1 × - × -
	6	5 8 6 8 3	3 8 6 0 6	1 2 2 0 8	9 8 0 1 0	8 3 0 5 7	1 6 3 0 0	0 0 7 1 7	7 9 7 5 7	0 6 1 5 9	1 × - × -	
	9	5 8 6 8 3	3 8 5 0 6	1 2 4 1 0	9 8 0 2 0	8 1 6 5 5	1 6 3 0 0	0 0 7 1 4		0 5 7 5 7	1 × - × -	
	12	5 8 6 8 3	3 8 5 1 2	1 2 5 1 0	9 8 0 2 0	8 0 8 5 5	1 6 0 5 0	0 0 7 0 8		0 5 7 5 9	1 × - × -	
	15	5 8 6 8 3	3 8 4 1 5	1 2 3 0 9	9 8 0 2 0	8 0 2 5 6	1 4 5 0 0	0 0 7 0 6		0 5 7 5 8	1 × - × -	
	18	5 8 6 8 3	3 8 3 1 8	1 2 6 0 5	9 8 0 2 0	8 0 0 5 8	1 4 4 0 0	0 0 6 0 2	7 0 0 5 5	0 6 2 5 9	1 × - × -	
	21	5 8 6 8 3	3 8 2 2 1	1 0 7 0 7	9 8 0 2 0	8 0 6 6 0	1 4 4 0 0	0 0 1 0 6		0 6 6 6 1	1 × - × -	
24	6 8 6 8 3	3 8 2 0 0	5 0 8 0 9	9 8 0 3 1	8 0 6 5 7	5 5 4 0 0	0 0 4 0 0		0 6 1 5 9	1 × - × -		
1.22	3	6 8 6 8 3	3 8 1 0 3	7 0 8 1 6	9 7 7 1 2	7 9 0 5 4	7 7 4 × ×	0 0 7 1 6		0 5 5 5 7	1 × - × -	
	6	6 8 6 8 3	3 7 0 0 6	8 0 9 2 0	9 5 7 1 7	7 4 3 5 1	6 7 3 2 ×	0 0 7 2 4		0 0 1 5 1	1 × - × -	
	9	6 8 6 8 3	3 7 9 0 9	8 0 8 1 3	9 5 7 1 7	7 4 3 5 1	6 7 3 2 ×	0 0 7 2 4		0 0 1 5 1	1 × - × -	
	12	6 8 6 8 3	3 7 8 1 2	8 0 8 2 0	9 3 7 1 7	7 2 8 5 1	7 7 3 1 ×	0 0 7 1 5		0 0 2 5 2	1 × - × -	
	15	6 8 6 8 3	3 7 8 1 5	8 0 8 2 4	9 4 7 1 7	7 1 4 5 1	8 7 2 × ×	0 0 7 1 4		0 0 1 5 3	1 × - × -	
	18	6 8 6 8 3	3 7 7 1 8	8 0 7 2 4	9 4 7 1 7	7 0 9 5 2	8 7 2 × ×	0 0 6 0 5	7 0 1 5 1	0 5 0 5 3	1 × - × -	
	21	6 8 6 8 3	3 7 6 2 1	8 0 9 2 5	9 4 7 1 7	7 0 9 5 2	8 7 2 × ×	0 0 4 0 0		0 0 0 5 2	1 × - × -	
24	7 8 6 8 3	3 7 5 0 0	8 0 8 2 5	9 4 7 1 7	7 1 3 5 2	8 7 2 × ×	0 0 3 0 4		0 5 0 5 3	1 × - × -		
2.23	3	7 8 6 8 3	3 7 4 0 3	7 0 9 3 0	9 7 2 2 7	7 1 0 5 2	6 7 3 8 ×	0 0 7 0 3		0 × - 5 4	1 × - × -	
	6	7 8 6 8 3	3 7 4 0 6	8 0 9 2 7	9 7 0 2 7	7 2 0 5 1	8 7 3 × ×	0 0 3 1 0	7 0 1 5 3	0 0 2 5 4	1 × - × -	
	9	7 8 6 8 3	3 7 3 0 9	8 0 9 2 4	9 7 0 2 2	7 2 3 5 0	8 7 3 × ×	0 0 1 0 3		0 0 3 5 4	1 × - × -	
	12	7 8 6 8 2	3 7 2 1 2	8 0 8 2 1	9 7 0 2 2	7 2 0 5 1	8 7 3 × ×	0 0 7 0 3		0 0 2 5 4	1 × - × -	
	15	7 8 6 8 2	3 7 2 1 5	7 0 9 2 0	9 8 0 1 2	7 2 4 5 1	6 6 3 8 ×	0 0 3 0 4		0 0 1 5 4	1 × - × -	
	18	7 8 6 8 2	3 7 1 1 8	8 0 8 2 1	9 8 0 3 2	7 3 1 5 1	8 0 5 2 ×	0 0 2 0 7		0 0 2 5 4	1 × - × -	
	21	7 8 6 8 2	3 7 0 2 1	8 1 0 1 8	9 8 0 1 2	7 3 3 5 1	7 6 4 2 ×	0 0 2 0 2		0 × - 5 4	1 × - × -	
24	1 8 6 8 2	3 6 9 0 0	8 1 0 1 9	9 8 0 2 2	7 3 3 5 2	7 6 4 2 ×	0 0 4 0 0		0 5 1 5 4	1 × - × -		
2.24	3	1 8 6 8 2	3 6 8 0 3	8 1 0 2 0	9 8 0 2 2	7 3 6 5 2	8 6 4 × ×	0 0 2 0 3		0 5 1 5 5	1 × - × -	
	6	1 8 6 8 2	3 6 8 0 6	8 1 0 2 1	9 6 7 1 7	7 3 5 5 1	6 7 4 2 ×	0 0 5 0 1	7 9 1 5 2	0 0 1 5 4	1 × - × -	
	9	1 8 6 8 2	3 6 7 0 9	8 0 9 2 3	9 5 7 1 7	7 3 3 5 1	7 7 4 2 ×	0 0 7 0 2		0 0 1 5 5	1 × - × -	
	12	1 8 6 8 2	3 6 6 1 2	8 0 8 2 7	9 4 7 1 7	7 3 6 5 2	7 7 3 1 ×	0 0 2 0 3		0 0 0 5 4	1 × - × -	
	15	1 8 6 8 2	3 6 5 1 5	7 0 8 2 5	9 5 7 1 7	7 4 1 5 2	7 7 3 × ×	0 0 3 0 5		0 5 1 5 4	1 × - × -	
	18	1 8 6 8 2	3 6 4 1 8	8 0 8 2 1	9 4 7 1 7	7 5 0 5 2	7 7 3 1 ×	0 0 2 0 9	7 9 2 5 1	0 5 1 5 4	1 × - × -	
	21	1 8 6 8 2	3 6 4 2 1	8 0 8 1 5	9 4 7 1 7	7 6 6 5 2	7 7 3 1 ×	0 0 2 1 6		0 5 1 5 4	1 × - × -	
24	2 8 6 8 2	3 6 3 0 0	7 1 1 1 7	9 6 7 1 7	7 7 5 5 3	7 7 3 1 ×	0 0 2 0 9		0 5 3 5 5	1 × - × -		
2.25	3	2 8 6 8 2	3 6 2 0 3	7 1 2 1 3	9 4 7 1 7	7 7 7 5 4	6 7 3 8 ×	0 0 2 0 2		0 5 4 5 5	1 × - × -	
	6	2 8 6 8 2	3 6 1 0 6	8 1 3 1 2	9 3 7 3 7	7 7 7 5 3	8 7 3 × ×	0 0 4 0 0	7 9 5 5 4	0 × - 5 4	1 × - × -	
	9	2 8 6 8 2	3 6 1 0 9	8 1 2 1 1	9 4 7 1 7	7 7 9 5 1	8 7 3 × ×	0 0 2 0 2		0 × - 5 2	1 × - × -	
	12	2 8 6 8 2	3 6 0 1 2	8 0 8 1 4	9 8 7 1 7	7 8 1 5 1	8 7 3 × ×	0 0 2 0 2		0 0 1 5 1	1 × - × -	
	15	2 8 6 8 2	3 5 9 1 5	8 0 8 1 9	9 4 7 1 7	7 8 4 5 2	8 7 2 × ×	0 0 2 0 3		0 × - 5 3	1 × - × -	
	18	2 8 6 8 2	3 5 8 1 8	8 0 8 2 0	9 4 7 1 7	7 8 5 5 2	8 7 2 × ×	0 0 2 0 1	7 0 1 5 1	0 × - 5 3	1 × - × -	
	21	2 8 6 8 2	3 5 7 2 1	8 0 7 2 0	9 4 7 1 7	7 8 8 5 1	8 7 2 × ×	0 0 2 0 3		0 × - 5 1	1 × - × -	
24	3 8 6 8 2	3 5 7 0 0	8 0 4 2 1	9 8 0 2 7	7 9 2 5 1	3 6 3 2 ×	0 0 3 0 4		0 × - 5 1	1 × - × -		

2.26	3	3 8 6 8 2	3 5 6 0 3	8 0 7 1 7	9 3 7 3 7	7 9 6 5 1	8 7 3 × ×	0 0 2 0 4	7 0 4 5 2	0 × - 5 2	1 × - - × -	
	6	3 8 6 8 2	3 5 5 0 6	8 0 8 2 8	9 3 7 3 7	7 9 5 5 2	8 7 3 × ×	0 0 6 0 6		0 × - 5 3	1 × - - × -	
	8	3 8 6 8 2	3 5 4 0 9	8 0 8 2 8	9 3 7 3 7	7 8 3 5 2	8 7 3 × ×	0 0 7 0 7		0 × - 5 4	1 × - - × -	
	12	3 8 6 8 2	3 5 4 1 2	8 0 9 2 0	9 4 7 1 7	7 5 9 5 3	8 7 3 × ×	0 0 7 2 4		0 × - 5 4	1 × - - × -	
	15	3 8 6 8 2	3 5 3 1 5	8 1 0 2 0	9 6 0 2 7	7 3 2 5 4	8 7 3 × ×	0 0 7 2 7		0 × - 5 7	1 × - - × -	
	18	3 8 6 8 2	3 5 2 1 8	8 0 9 1 8	9 8 0 2 8	7 0 3 5 5	8 0 6 7 ×	0 0 7 2 9		7 0 2 5 1	0 5 7 6 0	1 × - - × -
	21	3 8 6 8 2	3 5 1 2 1	8 1 2 2 0	9 6 3 8 2	6 8 0 5 5	3 0 6 7 7	0 0 7 2 3		0 × - 5 8	1 × - - × -	
	24	4 8 6 8 2	3 5 0 0 0	8 1 3 2 5	9 5 7 1 2	6 5 6 5 5	8 7 2 × ×	0 0 7 1 4		0 5 7 5 7	1 × - - × -	
2.27	3	4 8 6 8 2	3 5 0 0 3	6 1 3 2 3	9 6 3 8 7	6 5 1 5 5	2 6 3 3 2	9 0 7 0 4	7 9 3 5 5	0 5 7 5 8	1 × - - × -	
	6	4 8 6 8 1	3 4 9 0 6	8 1 3 2 6	9 8 0 2 7	6 5 1 5 4	8 7 3 × ×	0 0 5 0 0		0 5 5 7 7	1 × - - × -	
	9	4 8 6 8 1	3 4 8 0 9	8 1 3 2 1	9 6 7 1 7	6 5 7 5 4	3 7 2 2 ×	0 0 2 0 6		0 5 4 5 6	1 × - - × -	
	12	4 8 6 8 1	3 4 8 1 2	7 1 3 2 1	9 8 2 2 7	6 5 9 5 3	7 0 6 7 0	0 0 2 0 2		0 5 2 5 7	1 × - 4 -	
	15	4 8 6 8 2	3 4 7 1 5	7 1 4 1 8	9 8 0 2 2	6 5 9 5 3	7 0 6 7 ×	6 1 0 0 0		0 5 2 5 6	1 4 9 3 1	
	18	4 8 6 8 1	3 5 1 1 8	7 1 4 2 2	9 8 0 2 2	6 6 4 5 3	6 5 4 2 ×	9 × 3 0 5		7 9 7 5 3	0 5 2 5 5	1 1 4 2 1
	21	4 8 6 8 2	3 4 8 2 1	8 1 1 3 3	9 8 0 2 2	6 7 4 5 3	8 0 6 2 ×	2 1 1 1 0		0 5 2 5 5	1 1 1 2 2	
	24	5 8 6 8 2	3 5 1 0 0	8 1 3 2 2	9 5 7 1 7	6 8 4 5 3	6 7 4 2 ×	2 1 3 1 0		0 5 3 5 5	1 1 3 2 2	
2.28	3	5 8 6 8 2	3 5 5 0 3	8 1 2 2 5	9 7 2 2 7	7 0 0 5 2	6 7 3 2 ×	2 1 2 1 6	7 9 7 5 3	0 5 3 5 4	1 1 2 × 1	
	6	5 8 6 8 2	3 5 4 0 6	8 1 0 1 7	9 7 7 1 7	7 3 3 5 3	8 7 3 × ×	0 0 2 3 3		0 5 3 5 5	1 1 0 2 1	
	9	5 8 6 8 1	3 5 3 0 9	7 1 1 1 3	9 7 7 1 7	7 5 6 5 3	6 7 3 2 ×	7 1 2 2 3		0 5 3 5 5	1 × - - × -	
	12	5 8 6 8 1	3 5 3 1 2	7 1 3 0 3	9 8 2 2 7	7 7 3 5 4	3 7 3 7 ×	0 0 2 1 7		0 5 3 5 7	1 × - - × -	
	15	5 8 6 8 1	3 5 3 1 5	7 1 2 0 6	9 8 0 1 2	7 8 9 5 5	7 0 9 4 0	0 0 3 1 6		0 5 7 5 7	1 × - - × -	
	18	5 8 6 8 1	3 5 3 1 8	3 1 4 0 6	9 8 0 1 1	8 0 7 5 6	3 0 9 7 0	9 0 2 1 8		7 9 2 5 3	0 5 9 5 8	1 × - - × -
	21	5 8 6 8 0	5 3 0 2 1	5 0 6 0 9	9 8 0 2 1	8 2 5 5 5	5 0 9 4 0	0 0 2 1 8		0 5 7 5 7	1 3 5 6 3	
	24	6 8 6 7 6	3 4 7 0 0	8 0 2 0 4	9 8 7 1 2	8 3 6 5 2	5 7 4 2 ×	8 3 2 1 1		0 5 1 5 5	1 0 7 5 3	

第2表 日平均值

Table 2. Daily mean values.

月日 Date	緯度 Lat. (S)	經度 Long. (E)	海面氣圧 Pressure at sea level (mb)	氣温 Tempe- rature (°C)	露点 Dew point (°C)	風速 Wind velocity (m/s)	最多風向 Frequent wind direction	雲量 Total amount of cloud
1956								
Dec. 29	34°42'	18°37'	1018.0	19.1	13.7	3.2	S	6.3
30	38 01	20 25	1015.5	19.2	14.7	7.2	W	4.6
31	42 02	22 13	1008.5	15.7	14.0	9.6	WNW	0.0
1957								
Jan. 1	45 05	26 22	1005.1	8.0	4.2	12.5	WSW	9.4
2	48 03	30 54	993.1	3.7	2.3	8.3	WNW	9.5
3	50 48	32 51	991.7	1.9	-2.2	14.4	SW	9.3
4	53 56	35 37	979.5	0.8	-2.8	7.6	W	10.0
5	57 40	40 29	979.1	1.4	-0.4	5.3	SE	10.0
6	61 15	45 42	987.8	0.3	-2.3	8.7	ESE	9.5
7	64 15	51 51	992.5	0.3	-1.8	4.6	SE	2.8
8	65 30	49 15	995.6	-1.9	-3.9	5.2	SW	8.9
9	66 05	45 00	1006.3	-1.9	-4.8	2.3	SW	10.0
10	66 25	41 27	1004.8	0.0	-0.8	1.1	W	8.4
11	66 56	39 09	999.3	-0.7	-1.4	1.2	E	10.0
12	67 52	35 18	997.9	-3.1	-4.9	2.0	ESE	10.0
13	67 55	35 00	992.9	-3.8	-6.5	1.8	S	10.0
14	67 54	34 48	992.5	-1.9	-6.3	1.0	W	8.0
15	67 26	38 29	989.4	-1.8	-4.1	4.5	E	7.6
16	67 04	40 13	985.2	-0.9	-3.9	4.3	E	7.5
17	67 29	39 55	987.5	-1.7	-4.3	0.8	SW	0.1
18	68 01	40 19	992.0	-2.3	-5.3	3.7	WSW	4.1
19	68 24	38 50	993.4	-2.4	-5.5	2.6	W	8.6
20	68 52	38 45	997.2	-2.3	-5.1	4.1	NE	10.0
21	68 57	39 02	994.4	-2.0	-5.3	5.3	NE	8.6
22	68 57	39 02	985.7	0.5	-2.0	4.6	E	10.0
23	68 59	39 04	988.4	-0.2	-1.1	11.6	NE	10.0
24	69 00	39 09	975.9	-0.6	-4.9	2.8	S	10.0
25	"	"	974.2	-0.5	-2.6	3.7	NE	10.0
26	"	"	985.5	-0.2	-2.9	4.0	NE	9.6
27	"	"	982.2	1.0	-4.7	4.7	NE	8.5
28	"	"	990.3	-0.9	-3.9	6.2	NNE	9.6
29	"	"	994.4	-1.8	-3.5	2.7	SW	10.0
30	"	"	988.7	-4.6	-6.7	1.6	SE	4.4
31	"	"	984.0	-1.9	-6.7	2.4	SE	5.9
Feb. 1	69 00	39 09	987.2	0.3	-3.7	3.4	ENE	7.9
2	"	"	990.3	-0.1	-4.3	2.5	SSE	3.0
3	"	"	990.5	-3.0	-6.0	2.6	ENE	2.4
4	"	"	992.6	-2.7	-8.1	3.8	NE	2.3
5	"	"	988.8	-5.6	-8.9	1.7	—	0.1
6	"	"	988.7	-5.0	-9.6	4.5	NE	6.9
7	"	"	991.2	-2.5	-6.7	4.2	S	10.0
8	"	"	993.7	-4.1	-5.5	13.2	NE	10.0
9	"	"	999.0	-4.6	-8.7	5.3	NNE	7.9
10	"	"	996.8	-4.1	-9.7	4.1	—	8.6
11	"	"	987.5	-0.6	-4.6	8.9	NE	10.0
12	"	"	981.5	-0.7	-2.5	13.3	NE	9.7
13	"	"	996.2	-2.3	-4.9	5.1	SSE	3.8
14	"	"	995.2	-4.9	-8.4	3.3	SSE	5.1
15	68 52	38 52	993.0	-1.5	-5.2	10.4	NE	9.6

月 日 Date	緯 度 Lat. (S)	經 度 Long. (E)	海面氣压 Pressure at sea level (mb)	氣 温 Tempe- rature (°C)	露 点 Dew point (°C)	風 速 Wind velocity (m/s)	最多風向 Frequent wind direction	雲 量 Total amount of cloud
Feb. 16	68 52	38 49	988.4	-0.6	-3.4	11.8	E NE	10.0
17	68 23	38 44	994.2	-1.8	-3.7	4.9	E	9.6
18	68 22	38 42	992.6	-4.1	-7.4	1.3	E	5.8
19	68 22	38 38	989.9	-4.6	-6.9	2.0	WSW	9.1
20	68 19	38 35	988.2	-4.8	-6.6	3.4	E	9.8
21	68 18	38 27	981.4	-6.7	-8.8	4.1	SW	0.5
22	68 16	37 50	973.4	-2.0	-3.5	10.8	E	10.0
23	68 15	37 12	972.4	-1.1	-3.9	11.8	E	10.0
24	68 13	36 36	974.7	-2.0	-4.4	10.9	E	10.0
25	68 11	35 58	978.3	-1.7	-2.7	8.4	E NE	10.0
26	68 10	35 21	973.7	-3.4	-5.7	11.3	E SE	10.0
27	68 08	34 47	966.2	-3.5	-5.5	12.0	SE	9.6
28	68 08	35 17	977.7	-3.8	-6.0	5.7	E SE	8.5
Mar. 1	65 46	33 09	984.9	-0.2	-3.2	7.5	N NE	9.9
2	61 59	30 13	974.2	1.2	-1.8	9.2	WSW	9.6
3	58 14	26 30	975.8	1.4	-1.7	9.5	W	9.8
4	54 38	24 53	980.1	1.7	0.9	14.2	WNW	8.1
5	51 28	23 32	1010.6	2.5	-1.2	11.0	WSW	9.0
6	46 51	22 55	1017.8	8.1	5.5	10.4	NW	6.9
7	42 34	21 37	1010.2	15.1	12.5	11.2	NW	8.8
8	38 06	19 55	1017.6	15.5	11.2	11.1	S	9.8
9	34 32	18 06	1021.0	18.7	10.1	8.8	SE	5.0

第4表 測風氣球觀測結果
Table 4. Results of pilot balloon observations.

0056 GMT 18th Jan.	0938 GMT 18th Jan.	1600 GMT 21st Jan.	1100 GMT 25th Jan.	1640 GMT 26th Jan.	0325 GMT 27th Jan.	0000 GMT 28th Jan.
H dd ff	H dd ff	H dd ff	H dd ff	H dd ff	H dd ff	H dd ff
1 18 08	1 ? ?	1 07 11	1 06 07	1 15 12	1 07 09	1 05 22
2 19 11	2 ? ?	2 05 09	2 06 08	2 ? ?	2 06 07	2 04 35
3 20 11	3 ? ?	3 05 23	3 05 09	3 ? ?	3 08 09	3 04 32
4 20 11	4 ? ?	4 06 15	4 04 14	4 05 16	4 13 09	4 05 24
5 20 07	5 22 09	5 07 14	5 05 16	5 04 19	5 13 10	5 05 22
6 22 08	6 23 09	6 05 14	6 05 21	6 05 26	6 13 18	6 05 26
7 26 04	7 12 02	7 05 15	7 06 13	7 06 25	7 12 14	7 05 24
8 33 05	8 03 05	8 02 12		8 05 25	8 14 14	8 04 23
9 30 11	9 01 04	9 03 07		9 06 18	9 13 10	9 03 18
10 32 12	10 01 04	10 01 09		10 09 20	10 13 05	10 03 19
12 32 10	12 36 06	12 01 11		12 08 20	12 08 17	12 09 11
15 30 12	15 29 10			15 06 18	15 12 15	15 02 18
20 30 15	20 26 17				20 07 12	20 04 20
25 30 23	25 26 16				25 05 24	25 02 12
30 31 24	30 30 22				30 02 15	30 31 12
35 27 07	35 24 09				33 03 37	33 33 04
40 21 07	40 34 04					
45 26 02	45 35 23					
50 16 03	50 08 01					
55 30 02	55 25 01					
60 16 03	60 05 08					
65 18 01	65 02 23					
70 09 07	67 05 15					
0530 GMT 31st Jan.	0600 GMT 1st Feb.	0600 GMT 3rd Feb.	0540 GMT 4th Feb.	0550 GMT 5th Feb.	0535 GMT 6th Feb.	
H dd ff	H dd ff	H dd ff	H dd ff	H dd ff	H dd ff	
1 05 13	1 05 14	1 03 13	1 08 09	1 10 06	1 03 06	
2 05 34	2 05 29	2 04 12	2 05 15	2 10 08	2 04 07	
3 05 33	3 05 32	3 05 07	3 05 17	3 07 05	3 35 04	
4 05 26	4 05 25	4 07 07	4 06 16	4 07 05	4 36 02	
5 05 23	5 05 16	5 07 08	5 07 18	5 11 07	5 22 03	
6 05 20	6 08 23	6 03 04	6 07 16	6 13 04	6 08 08	
7 08 16	7 08 27	7 03 10	7 07 23	7 13 09	7 13 12	
8 07 14	8 09 27	8 03 10	8 06 08	8 13 10	8 15 10	
9 06 22	9 09 28	9 03 18	9 07 13	9 12 11	9 15 10	
10 04 18	10 09 31	10 03 26	10 07 18	10 14 14	10 15 13	
12 05 09	12 07 33	12 04 33	12 06 18	12 17 15	12 15 14	
15 03 11		15 02 45	15 08 28	15 20 12	15 17 20	
20 02 11		20 02 53	20 07 16	20 22 22	20 17 31	
25 02 16		25 01 53	25 02 18	25 23 24	25 17 37	
30 03 27		30 35 43	30 36 18	30 22 25	30 17 24	
31 03 21			33 01 14	33 21 21	33 16 24	

Note: The meaning of symbols depends on WMO meteorological code. The units are as follows:
H...1 corresponds 300 meters. dd...1 corresponds 10 degrees. ff...1 corresponds 1 knot.