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I. A. Khvostikov
Editor

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ANNOTATION

In this collection are given tables of rocket probes of the atmosphere, conducted in the USSR during the period of the IGY and IGC, and a series of articles based on the generalization and analysis of the data obtained. The features of the temperature field of the stratosphere, the vertical stratification, the characteristics of the annual path and several cases of the anomalous heating of the Arctic stratosphere are analyzed.

In addition, in one of the articles methods are described in detail for measuring and interpreting the meteorological parameters of the atmosphere.

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X Note: The article by Kurilova et al (pp. 53-59) (JPRS-28384) and the article by Ryazanova (pp. 60-66) (JPRS-28382) have been translated by the U.S. Joint Publications Research Service; the article by Petrov et al (pp. 67-74) (NLL-9022.551) has been translated by the National Lending Library for Science and Technology, Boston SPA, Yorkshire, England.

INVESTIGATION OF THE STRATOSPHERE USING METEOROLOGICAL ROCKETS IN THE USSR DURING THE INTERNATIONAL GEOPHYSICAL YEAR AND THE INTERNATIONAL GEOPHYSICAL COOPERATION

I.A. Khvostikov

ABSTRACT: This article is an introduction to the data contained in the other articles in the collection. The results of analyzing data which have been published previously are cited.

During the period of the IGY (July 1957 - December 1959) in the USSR, in cooperation with International Programs, regular launchings were carried out of meteorological rockets for the purpose of studying the thermal and wind regimes of the stratosphere and the pressure field. The probes were accomplished in different geographical regions: In Zapolyar'ye (Franz-Josef Land), in the middle latitudes of the European part of the USSR and also on weather ships in the Pacific Ocean (in the northern and southern hemispheres). All told during the period of the IGY and the IGC, 88 rockets were launched including 35 from Franz-Josef Land (Hess Island), 26 from the middle latitudes of the USSR and 27 from ships.

The results of analyzing the data obtained from the rocket probes during the IGY have already been published in part. In the work of A.M. Borovikov, G.I. Golyshev and G.A. Kokin [2], new data were obtained concerning the structure of the atmosphere of the southern hemisphere. In the southeastern part of the Pacific Ocean in the lower stratosphere the horizontal temperature gradient was directed from south to north; even in late Fall (at the end of April) the signs of the summer thermal regime were still retained. In the upper stratosphere (21-38 km) the direction of the meridianal temperature gradient is opposite to that for the lower stratosphere. Above 38 km the temperature field is characterized by great irregularities.

In the central part of the Atlantic Ocean the thermal field in the stratosphere is characterized by an interesting feature, i.e., by the intrusion of a thermal stratosphere of the summer northern hemisphere deep into the winter southern hemisphere.

In the stratosphere over the southeastern part of the Pacific Ocean in late Fall, western winds prevail. The presence has been established of a region of weak winds up to a level of 24 - 26 km. Above this level the wind increases with altitude. Over the Central

* Numbers in the margin indicate pagination in the foreign text.

Atlantic an anticyclone summer type of circulation in the stratosphere encompasses not only the entire summer hemisphere, but also a considerable part (15-20° latitude) of the winter hemisphere. This process of intrusion may be one of the mechanisms for the exchange of air between the hemispheres in the stratosphere [2].

We must also cite the work of the large number of authors who are associated with the Central Aerological Observatory [1] and the article by M.N. Izakov, G.A. Kokin, Yu.V. Kurilova, N.S. Livshits and I.A. Khvostikov [3,4]. In these papers an analysis was made of the space and time variations of the temperature. The analysis showed that in the lower stratosphere, in the temperate and polar latitudes, the temperature is maximum at the beginning of July and minimum in December - January. Above 30 km there is a noticeable shift in the maximum in the temperate latitudes in Spring and in /4
the polar latitudes in June.

Over the Pacific Ocean in the upper stratosphere, in contrast to the lower stratosphere, the horizontal temperature gradient is positive (the north is colder than the south).

In the polar latitudes of the northern hemisphere, unlike the southern hemisphere, longitudinal differences in temperature are observed in the upper stratosphere, where a distinction exists in the temperature fields of the Arctic and the Antarctic. The zonality of the temperatures in the Antarctic and its breakdown in the Arctic can be explained by the stability of the circumpolar vortex of the southern hemisphere in winter and the instability of the vortex of the northern hemisphere with which the winter anomalous heating of the stratosphere is associated [3, 4]. Based on the rocket data, on Hess Island (Franz-Josef Land) the sudden heating was observed in January - February 1960 and 1961.

From the results of rocket launchings during the IGY the curves of the vertical temperature distribution were classified up to an altitude of 50 km for the polar, temperate and tropic latitudes of the northern and southern hemispheres. The existence of four typical curves of stratification has been established [3, 4].

The winter measurements of the temperature on Hess Island indicate the existence of a stable temperature inversion in the upper stratosphere during the entire polar night. Since the long-wave radiational balance of the stratosphere, 20-50 km thick at the polar latitudes, is negative, the air must be cooled at these altitudes during the polar night. The question arises as to possible reasons for the heating of the air in the upper stratosphere of the polar latitudes during the polar night. For this purpose we first looked at several circulation mechanisms and the possible influence of the corpuscular radiation from the Sun [4].

Data concerning the wind in the northern hemisphere show that the seasonal reorganization begins at several latitude zones at

high altitudes. In Spring this is the onset of easterly winds at high altitudes (about 50 km); with the passage of time they "creep" down. There simultaneously exists an increase in the frequency of the easterly winds at altitudes of 25-35 km. Thus the reorganization begins simultaneously upward and downward. In Fall the westerly wind "creeps" upward from below and the "ascent" of the westerly winds from the lower tropospheric levels is less distinctly visible. The seasonal change in circulation agrees well with the simultaneous rocket measurements of temperature [3,4].

The articles cited above [1-4] do not encompass all questions and problems arising in analyzing rocket measurements, carried out in the USSR during the IGY. This collection is intended to significantly supplement these results and to basically conclude the publication of materials obtained in connection with the fulfillment of the IGY.

The contents of this collection are divided into two parts. In the first part for the first time are published the complete tables of all rocket measurements conducted during the IGY (July 1957 - December 1959). In the tables are given the measured values of temperature and pressure every 1 km and also the values of the altitudes of the major isobar surfaces and temperatures on these surfaces. The articles are prefaced with an article by I.S. Skuratova containing a brief description of the pressure and temperature gauges, the radiotelemetric line and the calibration of the gauges prior to rocket launch. In addition, a method is discussed in this article for interpreting the rocket measurements of temperature and pressure and brief information is given concerning the accuracy of the method.

In the second part of the collection are published four articles. In one of these articles the problem discussed above concerning the temperature stratification of the atmosphere is analyzed /5
in greater detail (the article by Kurilova, Yu.V. and Khvostikov, I.A. "Classification of the Temperature Stratification of the Atmosphere up to Altitudes of 45 km").

In the article by L.A. Ryazanova, "Features of the Temperature Regime of the Layer at 25-50 km", the pecularities of the diurnal and annual temperature path are analyzed for the polar and the temperate zones with the selection of two layers: the lower from 25 to 35 km and the upper from 35 to 50 km. Certain data are given on the interdiurnal variability of the temperature.

Finally in the article by A.A. Petrov and L.A. Ryazanova, "Three Cases of Sudden Heating of the Arctic Stratosphere", cases of sudden heating of the stratosphere are analyzed from rocket data on Hess Island.

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METHODS OF MAKING MEASUREMENTS AND INTERPRETING THE METEOROLOGICAL PARAMETERS OF THE ATMOSPHERE USING ROCKETS

I.S. Skuratova

ABSTRACT: This article prefaces the tables of data from rocket probes of the atmosphere. Data are cited on the instruments employed in the investigation and the methods used to interpret these data. Formulas are given for computing the pressure and temperature.

Materials published in the tables of this collection have been /6* obtained as a result of measurements carried out by means of meteorological rockets, whose measuring apparatus, as well as the method of probing and interpreting the measurement results, have been developed in the Central Aerological Observatory of the Central Board of the Hydrometeorological Service. A detailed description of this method of rocket probes has been given in [1-6]. Below we cite brief data on the measuring instruments of the rocket and the method used to interpret the data.

The pressure was measured by a membrane rheostat counter in a range from 760 to 10 mm Hg and by a thermal manometer of Pirani type from 5 to 10 mm Hg. The thermal manometers possess a high stability of response. Their time lag, which is insignificant at low altitudes, was taken into account at high altitudes by introducing the proper corrections. The manometers were calibrated for temperature and pressure. During the flight the temperature of the manometer walls was measured. The drainage openings for the Pirani manometers were placed at a distance of 6.5 calibers from the end of the needle at diametrically opposed points of the rocket surface; the drainage openings for the MRD instruments were placed at a distance of 9.3 calibers from the end of the needle. The arrangement of the drainage openings of the manometers is such that the aerodynamic errors in measuring the pressure are minimal.

In the middle part of the needle are placed four tungsten resistance thermometers for measuring the temperature of the atmosphere. The thermometers are attached on insulated corner plates at a small distance from the surface of the needle. When the rocket moves, the thermometers are washed with a stream of air. They have stable characteristics, great strength and high sensitivity.

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* Numbers in the margin indicate pagination in the foreign text.

In addition, auxilliary resistance thermometers are installed which measure the temperature of the needle at the inner ends of the supporting corner plates; this measurement is essential in order to take into account the effect on the reading of the thermometers from radiation from the needle and the heat exchange through the supporting system.

The thermometers and the manometers were connected according to the circuit of an unbalanced Winston bridge and their readings were transmitted to Earth by means of a radiotelemetric line.

The radiotelemetric line consists of a mechanical commutator, a transmitter, a radar responder, an antenna system, power sources and a receiving instrument on Earth. The commutator has 60 commutator bars and a commutation interval of 5 sec. The voltage is taking from the commutator bars by a system of brushes and fed to the input of the radio transmitter whose frequency varies in accordance with the change in the voltage fed to it. In the radiotelemetric line a time resolution of channels is used, the transmission is carried out by means of frequency modulation. The receiving instrument of the radiotelemetric line consists of a short- /7
wave radio receiver and a wide-angle attachment, containing a system of automatic frequency tuning. The screen of the cathode-ray tube of the wide-angle attachment is photographed on motion picture film, moving perpendicular to the line of resolution of the tube.

At the beginning of each cycle of operation of the commutator, control signals are transmitted from a special bridge of highly stable resistors thus permitting the nonlinearity of the radiotelemetric line characteristics and the instability of its operation to be taken into account.

Before the beginning of the launch the entire measuring apparatus of the rocket in the chosen form goes through a control checkout. Using a PPTV-1 potentiometer the output voltages of the gauges, as well as the recording of signals through the radiotelemetric line, are measured. The values obtained are compared with the calibration curves. A discrepancy no greater than 1 mV from the calibration curves is allowable.

All the measuring apparatus are concentrated in the nose part of the rocket. At a given altitude the nose part of the rocket is separated and descends by parachute. The measurements of the thermodynamic parameters of the atmosphere are made both during ascent and during descent, but for the basic data the results of measurements obtained during descent are used.

The pressure in the free atmosphere was computed from the pressure measured by the manometers by means of the following equation:

$$P_\infty = P^0_\infty \frac{\left[\frac{T_\infty(1+0.22\,M^2_\infty)}{T_0}\right]^n}{1+0{,}7\,\overline{P}_\alpha\,M^2_\infty}, \qquad (1)$$

where $n = \frac{1{,}874\left(\frac{l}{r_0}\right)^2}{1+3{,}494\left(\frac{l}{r_0}\right)^2+3{,}748\left(\frac{l}{r_0}\right)^2}$; P_∞ is the pressure in the free atmosphere; P^0_∞ is the pressure inside the manometer; T_∞ is the temperature of the free atmosphere; T_0 is the temperature of the manometer walls; M_∞ is the Mach number; r is the thermal coefficient of restitution of the manometric attachment; $\overline{P}_\alpha$ is the coefficient of the pressure of the manometer; l is the length of the free path of the air molecules; r_0 is the radius of the intake tube of the manometer.

The values of M_∞, r, $\overline{P}_\alpha$ and l depend on the temperature of the free atmosphere. In computing the pressure we used the values of the temperature measured by the resistance thermometers. If temperature measurements for some reason were lacking, then in computing the pressure in the free atmosphere we used the method of successive approximations. If we assume that in zero approximation the pressure varies with altitude according to the barometric formula and if we use the formula,

$$T^0_\infty = \frac{M\,g\,dz}{R\,d\,l_n\,P^0_\infty},$$

(where M is the molecular weight of the air; g is the acceleration of the force of gravity; R is the universal gas constant; and z is the altitude) we find the temperature in zero approximation. If we use the zero approximation of the temperature we can compute the values of M_∞, r, $\overline{P}_\alpha$ and l. If we use these values according to (1), we can compute the pressure in first approximation, etc. The computations are made as long as the approximations do not converge. /8
The dependence of the thermal coefficient of restitution on the Mach number (M_∞) and the Reynolds number (R_∞) was studied experimentally and represented in the form of a family of curves according to which the computation was made. The coefficient of pressure of the thermal manometer depends on the number M_∞ and on the angle of attack α. This dependence was determined theoretically and experimentally.

The computation of the temperature environment according to the temperature measured by the thermometer, is made according to the following formula:

$$
\begin{aligned}
T_\infty = {} & T_f - r\,\frac{\gamma-1}{2\gamma R_a}V^2 + \frac{\rho_f C_f W}{hS}\frac{dT_f}{dt} - \\
& - \frac{1}{h}\left[\varepsilon_1 \Phi_S \frac{1+\omega_{sw}}{I_1} + \varepsilon_2 \Phi_E \frac{1+\omega_{lw}}{2}\,\varepsilon_3 \sigma_0 T_f^4 + \right. \\
& \left. + 0{,}15\,\varepsilon_3 \sigma_0 T_n^4\right] - \frac{Q_1}{hS} - \psi\, T_i\left(1 + \frac{4\varepsilon_3 \sigma_0 T_e^3}{h}\right) + \\
& + \left(T_f - \psi\, T_i\right)\frac{\pi^2 \varkappa_f d}{16\, l^2 h},
\end{aligned}
\tag{2}
$$

where T_∞ is the temperature of the environment; T_f is the temperature of the filament of the thermometer; r is the thermal coefficient of restitution; γ is the ratio of the heat capacities; R_a is the gas constant for the air; V is the velocity of the flight of the rocket; ρ_f is the density of the filament material of the thermometer; C_f is the specific heat capacity of the material of the thermometer; W is the size of the thermometer; h is the coefficient of heat capacity; S is the area of the thermometer surface; t is the time; ε_1 is the coefficient of absorption by the thermometer of the short-wave solar radiation; ε_2 is the coefficient of absorption by the thermometer of the long-wave radiation from the Earth and the atmosphere; ε_3 is the radiation coefficient from the thermometer; Φ_S is the stream of solar radiation; Φ_E is the current of long-wave radiation from the Earth and the atmosphere; ω_{sw} is the reflection coefficient of the short-wave radiation by the needle; ω_{lw} is the reflection coefficient of the long-wave radiation by the needle; σ_0 is the Stefan-Boltzmann constant; T_n is the temperature of the needle; Q_1 is the Joule heat, liberated by the current of the electrical measuring circuit in the thermometer; ψ is the function of heat exchange through the supporting system; T_i is the temperature of the inner end of the corner plates of the thermometer; T_e is the equilibrium temperature; κ_f is the coefficient of thermal conductivity of the thermometer filament; d is the diameter of the thermometer and l is the length of the thermometer.

To determine the coordinates of the rocket during flight either radar or motion picture theodolite tracking was employed.

As a result of launching the rocket and interpreting the results of the measurements, data have been obtained concerning the altitude distribution of air pressure and temperature. Since the measurements of the temperature and pressure are independent, the temperature may then be computed from the pressure and, vice versa, the pressure may be computed from the temperature. Consequently, the method permits carrying out mutual control of temperature and pressure, or computing one parameter from the other when no data from direct measurements are available.

A study was made of the accuracy of this method of rocket probing of the atmosphere. The mean square error in the determina-

tions of temperature was 2° in the altitude range from 10 to 30 km, for 40 km the error was 3°, for 50 km, 8° and for 70 km, 12°. The mean square error in determing the pressure is 4%.

In the tables published below, the following definitions are used:

H is the altitude (in km); *T* is the temperature (in degrees of absolute scale); *P* is the pressure (in mb).

The time of launching the rocket is given in standard time.

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TABLES OF DATA FROM ROCKET PROBES OF THE ATMOSPHERE

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TABLES

OF DATA FROM ROCKET PROBES ON FRANZ-JOSEF LAND (HESS ISLAND)

IN 1957 - 1959

November 4, 1957

Time of Rocket Launch 11 h 55 m

Standard Levels

H	T	P
2	257	767
3	250	668
4	245	582
5	238	507
6	232	441
7	228	384
8	222	327
9	222	278
10	225	237
11	225	202
12	225	176
13	224	150
14	224	127
15	223	111
16	220	92,2
17	219	80,4
18	218	68,4
19	218	58,1
20	216	49,6
21	217	43,2
22	215	35,8
23	214	31,2
24	216	26,7
25	215	22,1
26	216	19,2
27	213	16,4
28	213	14,0
29	214	11,9
30	213	10,1
31	214	8,61
32	215	7,33
33	221	6,38
34	226	5,42
35	226	4,62
36	226	4,02
37	231	3,51
38	234	2 98
39	234	2,60
40	236	2,21
41	238	1,92
42	242	1,68
43	243	1,49

Main Isobar Surfaces

P	H	T
500	5,1	233
400	6,6	230
300	8,6	224
200	11,1	226
150	13,0	224
100	15,5	222
70	17,9	218
50	20,0	216
30	23,2	214
25	24,3	216
20	25,7	216
15	27,5	213
10	30,0	213
5	34,5	227
2	40,7	237

December 16, 1957

Time of Rocket Launch 08 h 35 m

Standard Levels

H	T	P
2	239	785
3	238	684
4	237	595
5	233	507
6	233	431
7	227	376
8	217	320
9	213	272
10	213	232
11	214	197
12	212	160
13	214	133
14	209	111
15	209	94,4
16	207	80.3
17	204	66,8
18	205	56,9
19	204	47,3
20	202	39,3
21	196	32,7
22	198	27,8
23	197	23,7
24	199	20,2
25	201	17,2
26	203	14,6
27	199	12,4
28	199	10,3
29	204	8,81
30	204	7,49
31	205	6,38
32	209	5,43
33	215	4,52
34	220	3,84
35	221	3,27
36	228	2,78
37	230	2,43
38	234	2,11
39	240	1,84
40	247	1,61
41	251	1,40
42	257	1,24
43	267	1,10

Main Isobar Surfaces

P	H	T
700	2,8	240
500	5 1	232
400	6,5	229
300	8,4	216
200	10,8	214
150	12,4	214
100	14,6	211
70	16,8	206
50	18,7	205
30	21,6	196
25	22,8	197
20	24,0	199
15	27,5	199
10	28,2	204
5	32,5	212
2	38,3	236

December 21, 1957

Time of Rocket Launch 08 h 45 m

Standard Levels

H	T	P
10	220	254
11	220	221
12	218	176
13	216	153
14	214	127
15	213	111
16	213	94,4
17	213	80,4
18	213	66,8
19	212	56,9
20	212	48,4
21	211	41,2
22	211	35,1
23	211	29,9
24	211	25,3
25	211	22,1
26	211	18,4
27	212	15,7
28	214	13,3
29	216	11,3
30	213	9,88

Main Isobar Surfaces

P	H	T
200	11,2	219
150	13,1	215
100	15,5	213
70	17,8	213
50	19,8	211
30	23,0	211
25	24,0	211
20	25,4	211
15	27,3	213
10	29,8	213

January 19, 1958

Time of Rocket Launch
12 h 45 m

Standard Levels

H	T	P
10	206	232
11	208	197
12	211	164
13	208	136
14	209	122
15	206	101
16	206	86.1
17	205	71.6
18	204	62,3
19	203	53.1
20	203	43,1
21	206	35,9
22	207	31,2
23	209	27,2
24	210	23.2
25	214	18.8
26	215	16,0
27	215	13.6
28	215	11.9
29	223	9,9
30	237	8.41
31	237	7,32
32	240	6,38
33	240	5.42
34	240	4,84
35	244	4,21
36	252	3.68
37	260	3,26
38	266	2,78
39	273	2,48

Note: Data on the pressure above 31 km are not reliable

Main
Isobar Surfaces

P	H	T
200	10,8	208
150	12,5	208
100	15,0	206
70	17,2	205
50	19,3	203
30	22,3	208
25	23.5	210
20	24.7	214
15	26.5	215
10	28,3	216
5	33,8	242

February 10, 1958

Rocket Launch
12 h 45 m

Standard Levels

H	T	P
3	253	668
4	249	582
5	247	507
6	234	431
7	225	384
8	224	327
9	215	278
10	214	243
11	220	206
12	219	176
13	219	153
14	222	130
15	213	108
16	213	94.4
17	217	82.2
18	226	69,9
19	230	59,5
20	231	50,7
21	235	44,1
22	237	38,4
23	234	33,5
24	228	29,2
25	229	24,3
26	235	21,1
27	239	18.0
28	238	15,3
29	237	13.3
30	232	11,6
31	240	10,1
32	237	8,81
33	237	7,32
34	239	6,53
35	241	5,56
36	241	4,95
37	239	4.31
38	236	3,67

The thermometers were not operating with complete reliability.

Main
Isobar Surfaces

P	H	T
700	2.7	257
500	5.2	237
400	6,6	226
300	8,6	224
200	11,2	222
150	13.1	219
100	15.5	212
70	18,0	226
50	20,3	233
30	23,9	229
25	24,9	228
20	26.3	237
15	28,1	239
10	30.9	240
5	36,0	241

February 26, 1958

Rocket Launch
07 h 35 m

Standard Levels

H	T	P
10	213	237
11	211	202
12	209	167
13	213	143
14	215	126
15	216	104
16	220	88.1
17	212	73,2
18	220	62,3
19	220	51,9
20	216	44,1
21	226	37,6
22	220	32,0
23	221	27,8
24	219	23,7
25	223	20.2
26	224	17,2
27	224	14.6
28	222	12,4
29	221	10,8
30	224	9,44
31	231	8,03
32	231	7,16
33	230	6,09
34	234	5,31
35	231	4,52
36	230	3.84
37	228	3,35
38	228	2,85
39	227	2,48
40	227	2,16
41	230	1,84
42	237	1,60
43	245	1,43

Main
Isobar Surfaces

P	H	T
200	11,0	213
150	12.9	213
100	15.1	216
70	17,2	214
50	19,4	222
30	22,6	221
25	23,7	219

P	H	T
20	25,0	223
15	26,9	224
10	29,4	222
5	34,3	233
2	40,4	228

March 17, 1958
Time of Rocket Launch — 07 h 00 m

Standard Levels

H	T	P
8	216	
9	220	
10	223	
11	223	
12	223	
13	224	
14	224	
15	225	
16	225	
17	224	
18	221	
19	224	
20	222	
21	219	
22	218	
23	219	
24	219	
25	217	
26	217	
27	217	
28	217	
29	216	
30	218	

Note: The altitude was computed theoretically (approx.)

April 1, 1958
Time of Rocket Launch 16 h 00 m

Standard Levels

H	T	P
9	228	272
10	228	232
11	227	197
12	226	168
13	224	143
14	223	122
15	223	104
16	222	88,1
17	223	75,0
18	221	63,8

H	T	P
19	218	55,6
20	218	47,3
21	217	40,3
22	218	34,3
23	217	29,2
24	219	24,3
25	216	21,1
26	215	17,6
27	215	15,0
28	216	12,7
29	216	11,1
30	216	9,44
31	216	8,03
32	217	6,84
33	218	5,82
34	221	5,07
35	225	4,31
36	229	3,76
37	233	3,20

Main Isobar Surfaces

P	H	T
200	10,9	228
150	12,7	224
100	15,1	223
70	17,5	222
50	19,8	218
30	22,8	217
25	23,9	219
20	25,2	216
15	27,0	215
10	29,7	216
5	34,4	22

June 24, 1958
Time of Rocket Launch 04 h 45 m

Standard Levels

H	T	P
11	216	221
12	219	184
13	220	160
14	225	140
15	227	116
16	230	101
17	231	86,1
18	228	75,0
19	229	65,3
20	229	55,6
21	228	47,3
22	224	41,2
23	226	35,9
24	227	30,5
25	230	26,0
26	234	22,1

H	T	P
27	233	19,3
28	239	16,4
29	237	14,6
30	239	12,4
31	240	11,1
32	241	9,44
33	242	8,22
34	245	7,16
35	245	6,23
36	247	5,31
37	249	4,73
38	251	4,12
39	258	3,59
40	270	3,12
41	287	2,78

Main Isobar Surfaces

P	H	T
500	5,8	
400	7,2	
300	9,2	
200	11,6	218
150	13,5	223
100	16,0	230
70	18,5	228
50	20,7	228
30	24,1	227
25	25,4	230
20	26,7	231
15	28,8	237
10	31,6	239
5	36,6	248

July 16, 1958
Time of Rocket Launch 00 h 45 m

Standard Levels

H	T	P
4	265	
5	259	
6	253	
7	249	
8	239	
9	234	
10	228	
11	235	
12	238	188
13	239	160
14	238	143
15	238	124
16	238	106
17	237	92,2
18	238	78,5
19	238	73,2

H	T	P
20	238	55,6
21	237	48,4
22	239	43,1
23	240	38,4
24	239	32,7
25	237	28,5
26	242	25,4
27	241	22,1
28	241	19,2
29	244	16,8
30	246	14,0
31	249	12,7
32	250	11,3
33	250	9,66
34	251	8,41
35	253	7,32
36	256	6,38
37	259	5,56
38	264	4,84
39	267	4,41
40	271	3,76

Main Isobar Surfaces

P	H	T
200	11,5	238
150	13,6	238
100	16,3	237
70	18,8	238
50	20,7	236
30	24,5	239
25	26,2	242
20	27,5	241
15	29,6	245
10	32 7	250
5	37,9	263

July 17, 1958

Time of Rocket Launch 05 h 05 m

Standard Levels

H	T	P
11	230	226
12	234	194
13	234	168
14	235	149
15	236	127
16	233	108
17	235	92,2
18	235	80,3
19	236	66,8
20	236	59,5
21	236	51,9
22	236	44,1
23	235	39,3

H	T	P
24	237	33,5
25	238	29,8
26	238	25,4
27	241	21,6
28	243	19,3
29	243	16,8
30	244	14,3
31	246	12,4
32	250	10,8
33	253	9,44
34	255	8,41
35	255	7,32
36	258	6,38
37	259	5,56
38	262	4,84
39	265	4,31
40	268	3,84
41	275	3,35
42	278	2,98
43	284	2,66

Main Isobar Surfaces

P	H	T
200	11,7	234
150	14,0	235
100	16,4	236
70	19,0	236
50	21,3	236
30	24,9	238
25	26,2	238
20	27,6	242
15	29,7	245
10	32,6	252
5	37,7	261

July 27, 1958

Time of Rocket Launch 19 h 10 m

Standard Levels

H	T	P
11	227	243
12	218	206
13	229	176
14	229	150
15	228	133
16	231	111
17	228	96,6
18	230	84,1
19	232	71,6
20	230	60,9
21	232	53,1
22	232	46,2
23	233	39,3
24	233	35,1
25	236	29,8
26	235	25,4

H	T	P
27	236	22,1
28	242	19,3
29	241	16,8
30	241	14,6
31	241	12,7
32	241	10,8
33	241	9,44
34	242	8,22
35	244	7,16
36	248	6,23
37	253	5,43
38	255	4,84
39	257	4,21
40	262	3,67
41	266	3,20
42	273	2,78

Main Isobar Surfaces

P	H	T
200	12,1	220
150	14,0	229
100	16,7	230
70	19,1	233
50	21,5	232
30	25,0	236
25	26,3	233
20	27,6	240
15	29 9	241
10	32,4	241
5	37,7	255

August 7, 1958

Time of Rocket Launch 12 h 45 m

Standard Levels

H	T	P
9	232	298
10	230	260
11	237	221
12	236	188
13	236	164
14	239	140
15	240	122
16	238	106
17	240	92,2
18	238	80,3
19	240	70,0
20	239	59,5
21	239	53,1
22	239	46,2
23	237	40,3
24	238	35,1
25	238	29,2
26	239	25,4
27	244	22,1

H	T	P
28	247	19,7
29	248	16.8
30	249	14,6
31	251	13,0
32	245	10.8
33	245	9,88
34	249	8,41
35	251	7,32
36	251	6,53
37	254	5,56
38	260	4,95
39	265	4,41

Main Isobar Surfaces

P	H	T
300	9,0	232
200	11,6	239
150	13,5	238
100	16,4	239
70	19,0	240
50	21,4	239
30	24,9	238
25	26,1	239
20	27,9	247
15	29,9	249
10	32,6	245
5	38,0	260

August 14, 1958

Time of Rocket Launch 05 h 40 m

Standard Levels

H	T	P
4	261	595
5	254	531
6	247	484
7	243	472
8	238	393
9	231	335
10	228	298
11	231	254
12	237	216
13	236	176
14	241	164
15	237	140
16	237	122
17	239	108
18	239	94,4
19	239	80,4
20	238	66,8
21	239	56.7
22	244	49,5
23	240	43.1
24	238	37,6
25	241	32,7
26	239	27,8
27	239	24,3
28	242	20,6
29	244	18,0
30	246	16,4
31	245	14.3
32	244	12,7
33	244	11,1
34	245	9,88
35	245	8,61
36	246	7,67
37	248	6,53
38	251	5,69
39	253	4,73
40	257	4,12
41	266	3,67
42	269	3,35
43	268	3,12
44	270	2,78
45	273	2,43
46	280	2,16

Main Isobar Surfaces

P	H	T
400	7,9	239
300	10,0	228
200	12,5	237
150	14,7	237
100	17,4	239
70	19,8	237
50	22,0	243
30	25,5	240
25	26,8	239
20	28,2	242
15	30,8	246
10	33,8	245
5	38,8	253

October 1, 1958

Time of Rocket Launch 13 h 41 m

Standard Levels

H	T	P
18	210	68,4
19	211	58.2
20	206	49.5
21	204	42,2
22	203	35,9
23	213	31,2
24	213	26,0
25	213	22.1
26	214	19,3
27	213	16,4
28	213	14.0
29	215	11,9
30	219	10,3
31	217	8,61
32	216	7.32
33	216	6,24

Main Isobar Surfaces

P	H	T
200	11,4	214
150	13,3	217
100	15,6	215
70	17,9	210
50	20.0	207
30	23,2	213
25	24,3	213
20	25,7	214
15	27.5	215
10	30,0	219
5	34,5	217

October 23, 1958

Time of Rocket Launch 07 h 20 m

Standard Levels

H	T	P
2		785
3		684
4		569
5		519
6		473
7		421
8		351
9		299
10		260
11		221
12		171
13		168
14	220	147
15	219	127
16	217	108
17	216	88.1
18	214	80,2
19	219	66,8
20	219	55,6
21	216	48,4
22	211	41,2
23	208	35.1
24	208	29,8
25	207	25,4

H	T	P
26	206	22,1
27	206	18,8
28	206	16,0
29	207	13,3
30	208	10,8
31	209	8,81
32	210	7,32
33	211	6,68
34	211	5,95
35	213	5,31
36	222	4,41
37	227	3,67
38	237	3,05

Main Isobar Surfaces

P	H	T
700	2,9	
500	5,3	
400	7,2	
300	9,1	
200	11,6	
150	13,9	
100	16,5	214
70	18,8	218
50	20,9	216
30	24,0	208
25	25,3	206
20	26,5	206
15	28,3	206
10	30,4	208
5	35,3	213

October 25, 1958
Time of Rocket Launch — 12 h 00 m

Standard Levels

H	T	P
16	206	90,1
17	208	73,2
18	207	60,9
19	207	53,1
20	208	47,3
21	208	40,3
22	204	33,5
23	208	27,2
24	208	24,3
25	209	20,6
26	209	17,6
27	209	14,3
28	208	11,1
29	209	9,22
30	210	7,85
31	211	6,38

H	T	P
32	212	5,31
33	213	4,52
34	216	3,93
35	218	3,51
36	221	3,05
37	224	2,72
38	228	2,43
39	232	2,11
40	238	1,84
41	247	1,36
42	253	1,35

Main Isobar Surfaces

P	H	T
70	17,3	207
50	19,5	208
30	22,5	207
25	23,9	208
20	25,2	209
15	26,9	209
10	28,4	208
5	32,5	212
2	39,5	233

October 28, 1958
Time of Rocket Launch 24 h 00 m

Standard Levels

H	T	P
6	225	
7	223	
8	218	
9	215	278
10	215	232
11	214	184
12	215	160
13	217	
14	215	
15	216	
16	211	
17	213	
18	211	
19	210	
20	210	
21	211	
22	210	
23	210	
24	210	
25	209	
26	210	
27	211	
28	212	
29	212	
30	212	

H	T	P
31	213	
32	216	
33	219	
34	219	

Note: The altitude was computed from data of tracking the launching on October 25, 1958.

Main Isobar Surfaces

P	H	T
200	10,6	214
150	12,3	214

October 31, 1958
Time of Rocket Launch 13 h 00 m

Standard Levels

H	T	P
2		733
3		638
4		556
5		484
6		421
7	225	359
8	219	299
9	215	260
10	218	221
11	217	192
12	219	168
13	219	147
14	217	122
15	215	108
16	215	
17	211	
18	209	
19	208	
20	210	
21	208	
22	207	
23	207	
24	208	
25	210	
26	211	
27	206	
28	206	
29	205	

Main Isobar Surfaces

P	H	T
700	2,4	259
500	4,9	244
400	6,4	232
300	8,1	225
200	10,8	219
150	12,9	220

November 4, 1958

Time of Rocket Launch
16 h 20 m

Standard Levels

H	T	P
6	227	403
7	221	367
8	216	335
9	216	279
10	218	243
11	220	197
12	219	172
13	218	146
14	217	124
15	213	104
16	212	86,1
17	211	74,9
18	209	66,8
19	207	55,6
20	205	48,4
21	206	41,2
22	206	35,1
23	205	28,5
24	207	23,2
25	208	19,3
26	205	16,0
27	204	13,3
28	204	11,3
29	205	9,66
30	207	8,03
31	210	6,99
32	215	6,09
33	222	5,31
34	230	4,52
35	234	3,84
36	235	3,20
37	236	2,92
38	237	2,54
39	237	2,16
40	237	1,93
41	237	1,60
42	238	1,33
43	241	1,19

Main Isobar Surfaces

P	H	T
400	6,2	226
300	8,5	215
200	10,9	220
150	12,8	219
100	15,1	213
70	17,6	210
50	19,7	206
30	22,8	205
25	23,7	204
20	24,7	209
15	26,5	203
10	28,7	204
5	33,5	225
2	39,6	237

November 14, 1958

Time of Rocket Launch
12 h 00 m

Standard Levels

H	T	P
10		232
11		192
12		168
13		140
14		111
15		92,2
16		82,2
17		71,6
18		60,9
19		53,1
20		45,1
21		38,3
22		33,5
23		27,2
24		23,7
25		19,2
26		16,4
27		13,6
28		11,9
29		9,88
30		8,41
31		7,32
32		6,24
33		5,30
34		4,63
35		4,12
36		3,59
37		3,20
38		2,85
39		2,53
40		2,27
41		2,01
42		1,84
43		1,36
44		1,35

Main Isobar Surfaces

P	H	T
200	10,8	
150	12,7	
100	14,5	
70	17,1	
50	19,4	
30	22,6	
25	23,8	
20	24,9	
15	26,7	
10	28,9	
5	33,5	
2	41,1	

November 18, 1958

Time of Rocket Launch
12 h 45 m

Standard Levels

H	T	P
9		260
10		216
11		188
12		153
13		133
14		113
15		94,4
16		80,3
17		70,0
18	210	59,5
19	209	49,5
20	208	42,1
21	205	35,9
22	202	29,8
23	203	25,4
24	205	21,1
25	204	18,0
26	207	15,7
27	207	13,0
28	207	10,8
29	207	9,01
30	207	7,67
31	210	
32	213	

Main Isobar Surfaces

P	H	T
850	1,2	
700	2,6	
500	5,1	
400	6,4	
300	8,3	217

Main Isobar Surfaces

P	H	T
200	10,5	218
150	12,3	217
100	14,7	215
70	17,0	210
50	19,1	209
30	22,0	202
25	23,1	204
20	24,4	205
15	26,4	207
10	28,5	208

November 29, 1958

Time of Rocket Launch

00 h 06 min

Standard Levels

H	T	P
3	238	
4	232	
5	230	
6	225	
7	223	
8	216	
9	211	
10	210	243
11	214	201
12	216	176
13	214	143
14	211	122
15	212	104
16	211	88,1
17	210	73,2
18	210	60,9
19	211	51,9
20	208	44,1
21	208	36,7
22	209	30,5
23	210	26,6
24	210	22,6
25	209	18,8
26	208	15,7
27	208	13,3
28	208	11,1
29	212	9,44
30	213	7,85
31	213	6,68
32	210	5,69
33	208	4,84
34	208	4,21
35	212	3,59
36	212	3,12
37	215	2,66
38	219	2,26
39	222	1,97
40	224	1,67
41	230	1,46
42	233	1,24
43	232	1,08
44	229	0,965
45	225	0,841
46	217	0,716
47	210	0,668

Main Isobar Surfaces

P	H	T
200	11,0	214
150	12,9	214
100	15,1	212
70	17,2	210
50	19,2	210
30	22,2	209
25	23,5	210
20	24,7	209
15	26,4	208
10	28,5	209
5	32,9	208
2	38,7	222
1	43,7	230

December 8, 1958

Time of Rocket Launch

24 h 00 m

Standard Levels

H	T	P
3	240	
4	239	
5	234	
6	228	
7	224	
8	220	
9	217	
10	215	243
11	217	206
12	216	176
13	216	150
14	214	127
15	214	106
16	215	92,2
17	215	78,5
18	215	66,8
19	212	58,2
20	211	48,4
21	210	41,2
22	208	34,3
23	208	29,2
24	208	24,3
25	210	21,1
26	208	18,0
27	206	15,0
28	206	12,7
29	206	10,6
30	206	9,01
31	208	7,67
32	209	6,68
33	208	5,56
34	208	4,73
35	208	4,03
36	208	3,43
37	207	2,92
38	207	2,48
39	207	2,11
40	208	1,80

Main Isobar Surfaces

P	H	T
200	11,2	217
150	13,0	216
100	15,4	214
70	17,8	214
50	19,9	210
30	22,9	209
25	24,0	208
20	25,4	209
15	27,0	206
10	29,2	206
5	33,7	208
2	39,4	207

December 10, 1958

Time of Rocket Launch

15 h 00 m

Standard Levels

H	T	P
6	222	
7	216	
8	214	
9	215	
10	218	232
11	219	193
12	217	172
13	216	146
14	218	124
15	213	104
16	211	84,1
17	211	71,6
18	212	63,8
19	210	54,3
20	206	46,2
21	205	39,3
22	202	34,2
23	201	29,2
24	202	25,4
25	203	21,1
26	203	18,0
27	202	16,4
28	200	14,6
29	199	12,7
30	198	10,1
31	199	8,61
32	200	7,85
33	201	6,99
34	203	6,23
35	206	5,56
36	207	4,84
37	208	4,21
38	210	3,59
39	213	3,05

Main Isobar Surfaces

P	H	T
200	10,7	219
150	12,8	218
100	15,1	213
70	17,3	211
50	19,6	207
30	22,9	200
25	24,1	202
20	25,3	203
15	27,7	201
10	30,0	198
5	35,9	206

December 12, 1958

Time of Rocket Launch
16 h 00 m

Standard Levels

H	T	P
11	216	
12	214	
13	213	150
14	215	124
15	213	106
16	210	90,1
17	209	75,0
18	206	63,8
19	207	53,1
20	202	45,2
21	202	37,5
22	198	31,2
23	198	26,0
24	197	21,6
25	195	18,0
26	196	15,0
27	196	12,4
28	191	10,6
29	195	8,81
30	203	7,50
31	206	6,23
32	212	5,31
33	215	4,41
34	219	3,84
35	221	3,27

Main Isobar Surfaces

P	H	T
150	12,9	213
100	15,4	212
70	17,5	207
50	19,5	206
30	22,5	198
25	23,3	198
20	24,4	195
15	26,0	196
10	28,3	191
5	32,4	214

January 10, 1959

Time of Rocket Launch
16 h 00 m

Standard Levels

H	T	P
3	245	668
4	240	609
5	236	530
6	227	452
7	228	384
8	221	328
9	217	278
10	218	232
11	219	197
12	221	168
13	220	143
14	210	122
15	212	106
16	213	90,1
17	207	76,6
18	209	66,8
19	205	55,6
20	204	47,3
21	204	39,7
22	203	33,5
23	202	27,9
24	200	23,2
25	201	19,2
26	200	16,4
27	202	13,3
28	203	11,6
29	206	9,88
30	210	8,41
31	215	7,33
32	218	6,24
33	224	5,18
34	230	4,41
35	235	3,76
36	239	3,12

Main Isobar Surfaces

P	H	T
500	5.4	235
400	6.8	228
300	8,7	216
200	11,0	219
150	12,8	221
100	15.2	212
70	17,7	208
50	19,7	204
30	22,6	202
25	23.6	201
20	24.7	201
15	26,5	200
10	28,9	206
5	33,1	224

February 12, 1959

Time of Rocket Launch
04 h 00 m

Standard Levels

H	T	P
6	221	
7	221	
8	220	
9	221	
10	220	
11	219	
12	219	
13	217	
14	216	
15	215	
16	212	
17	207	
18	203	
19	201	
20	201	
21	199	
22	199	
23	204	
24	206	
25	204	
26	205	
27	206	
28	211	
29	218	
30	224	6.68
31	230	5.56
32	234	4.84
33	242	4,20
34	248	3,51
35	255	3,20
36	259	2,85
37	262	2.54
38	265	2,32
39	267	2,06
40	269	1.76
41	271	1,68
42	272	1,53
43	273	1,47
44	270	1,19
45	268	1,03
46	266	0,901
47	264	0,785
48	263	0.668
49	262	0.581
50	261	0,506

H	T	P
51		0,441
52		0,376
53		0,328
54		0.279
55		0.248
56		0,211
57		0,184
58		0,157
59		0.133
60		0.119
61		0,106
62		0.092
63		0.084
64		0,075
65		0.067
66		0.060
67		0.053
68		0.047
69		0,042
70		0,038
71		0.036

Main Isobar Surfaces

P	H	T
5	31.8	233
2	39.2	267
1	45,2	268

April 2, 1959

Time of Rocket Launch 12 h 00 m

Standard Levels

H	T	P
10	211	
11	215	
12	218	
13	220	
14	221	
15	221	
16	222	
17	222	
18	222	
19	223	
20	223	
21	224	
22	226	
23	228	
24	230	
25	228	
26	229	
27	230	
28	228	

H	T	P
29	226	
30	228	
31	233	7,00
32	237	5,82
33	240	4.95
34	243	4,21
35	243	3,67
36	244	3,20
37	245	2,78
38	246	2,48
39	249	2,16
40	252	1,93
41		1,68
42		1,50
43		1,33
44		1,16
45		1,06
46		0,922
47		0,841

Main Isobar Surfaces

P	H	T
5	33,0	240
2	39.6	250
1	45,3	

May 5, 1959

Time of Rocket Launch — 16 h 00 m

Standard Levels

H	T	P
6	238	
7	233	
8	228	
9	226	
10	224	
11	226	
12	226	
13	227	
14	227	
15	228	
16	227	
17	227	
18	227	
19	227	
20	228	
21	228	
22	230	
23	231	
24	231	
25	230	
26	230	

H	T	P
27	230	
28	231	
29	232	
30	235	
31	236	
32	237	
33	239	
34	240	
35	243	
36	245	
37	247	
38	249	
39	252	
40	254	
41	256	
42	258	
43	260	
44	261	
45	261	
46	260	

October 9, 1959

Time of Rocket Launch 01 h 00 m

Standard Levels

H	T	P
2	251	
3	246	
4	244	
5	234	
6	228	
7	220	
8	220	
9	221	
10	222	
11	222	
12	220	
13	219	
14	217	
15	217	
16	217	
17	215	
18	213	
19	213	
20	214	
21	212	
22	209	38,4
23	209	32 8
24	209	27,2
25	210	23,2
26	211	19,2
27	213	16,4
28	214	13,6
29	216	11,6
30	217	9.65
31	217	8,22
32	217	6,84
33	217	5 81
34	217	4,96

H	T	P
35	220	4,21
36	223	3,59
37	227	3,05
38	230	2,60
39	233	2,32
40	236	1,07
41	239	1,72
42	241	1,53
43	242	1,333
44	242	1,161

Note: The pressure has been interpolated from 22 to 36 km.

Main Isobar Surfaces

P	H	T
30	23.5	210
25	24,6	210
20	25,8	211
15	27,5	214
10	29,8	216
5	34,0	216
2	40,0	235
1	44,4	245

October 16, 1959

Time of Rocket Launch 01 h 00 m

Standard Levels

H	T	P
10	216	
11	210	
12	212	
13	213	
14	213	
15	214	106
16	212	88,1
17	213	73,3
18	211	62,4
19	209	53,0
20	210	45,2
21	209	37,6
22	208	32,8
23	208	27,9
24	206	24,3
25	207	21,1
26	207	18,0
27	207	15,3
28	205	13.3
29	205	11,6
30	204	9,88
31	207	8,41
32	208	7,16
33	209	5,96
34	209	5.31
35	207	4,41
36	206	3.84
37	211	3,35
38	215	3.05
39	216	2.66
40	222	2,26
41	227	1,93
42	229	1,64
43	235	1,40
44	237	1,19
45	236	1,01
46	237	0,881
47	238	0,785
48	243	
49	247	

Main Isobar Surfaces

P	H	T
100	15,3	214
70	17,5	212
50	19.4	210
30	22.5	208
25	23,8	206
20	25.2	207
15	27,2	206
10	29,9	204
5	34,3	209
2	40,8	226
1	45,0	236

October 23, 1959

Time of Rocket Launch 01 h 00 m

Standard Levels

H	T	P
4	250	
5	246	
6	240	
7	238	
8	234	
9	226	
10	220	
11	216	
18	221	
19	220	
20	220	
21	219	
22	218	
23	215	
24	215	
25	215	
26	215	
27	214	
28	213	
29	210	
30	208	

December 4, 1959

Time of Rocket Launch 01 h 00 m

Standard Levels

H	T	P
8	220	
9	209	
10	203	
11	205	
12	204	
13	204	
14	203	
15	204	113
16	201	94.4
17	199	78,5
18	198	66.8
19	194	54.3
20	192	44.1
21	192	37,6
22	192	31,2
23	195	24,8
24	194	20,7
25	194	16,8
26	197	13.3
27	200	10,8
28	199	8,61
29	198	6,84
30	200	5,56
31	204	4,52
32	206	3,67
33	208	3,12
34	211	2,67
35	212	2,32
36	218	2,01
37	222	1,76
38	227	1,57
39	231	1,40
40	232	1,27
41	238	1,13
42	246	1,012
43	253	0,922
44	262	0,841

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December 25, 1959

Time of Rocket Launch — 01 h 00 m

Main Isobar Surfaces

P	H	T
100	15,7	200
70	17,6	200
50	19,5	193
30	22,2	193
25	23,1	195
20	24,2	194
15	25,5	195
10	27,4	199
5	30,5	202
2	36,0	218
1	42,1	246

Standard Levels

H	T	P
7	200	
8	198	
9	201	
10	204	
11	206	
12	206	
13	203	
14	201	
15	200	
16	198	
17	195	
18	193	
19	192	
20	192	
21	191	
22	192	
23	190	
24	190	
25	192	
26	196	
27	199	
28	201	
29	204	
30	209	
31	212	
32	212	

Note: The altitude and the velocity have been taken from the launching of December 11, 1959 at 04 h 00 m.

TABLES

OF DATA FROM ROCKET PROBES IN THE MIDDLE LATITUDES OF THE USSR IN 1957 - 1959

July 11, 1957
Time of
Rocket Launch
04 h 05 m

Standard Levels

H	T	P
2	280	
3	278	716
4	275	638
5	269	556
6	255	490
7	245	422
8	239	376
9	233	320
10	228	272
11	224	232
12	223	197
13	223	168
14	223	140
15	223	120
16	222	101
17	223	85.0
18	223	73,3
19	223	62.4
20	224	53,1
21	224	44.1
22	225	38.4
23	226	32.8
24	226	27,8
25	228	24,5
26	230	21.6
27	233	19.2
28	235	16.8
29	236	14.7
30	239	12,7
31	241	11,3
32	244	10,1
33	246	9,12
34	248	8,22
35	250	7,49
36	253	6,84
37	255	

Main
Isobar Surfaces

P	H	T
700	3,2	286
500	5,9	256
400	7,4	243
300	9,5	230
200	11.8	223
150	13.7	223
100	16,0	222
70	18,2	223
50	20,4	224
30	23,6	226
25	24,9	228
20	26,5	231
15	28.8	236
10	32,0	244

July 27, 1957
Time of
Rocket Launch
04 h 20 m

Standard Levels

H	T	P
0	290	
1	286	
2	281	
3	276	
4	271	582
5	263	518
6	256	462
7	248	412
8	239	359
9	235	320
10	233	278
11	232	237
12	232	202
13	228	176
14	225	146
15	224	127
16	222	96,5
17	221	78,5
18	221	63.8
19	222	53,0
20	223	44,1
21	224	38.4
22	225	34,3
23	227	30,5
24	229	26.7
25	232	23.2
26	235	20,1
27	238	17.6
28	241	15,3
29	244	13.3
30	247	11,6
31	247	10.1
32	247	8,81
33	247	7,66
34	249	6,68
35	253	5,81
36	258	5,06
37	262	4,62
38	265	4.03
39	267	3,51
40	269	3,20
41	271	2,85
42	272	2.53
43	273	2,32
44	275	2,07
45	276	1,84
46	276	1,68
47	276	1,53
48	275	1,33
49	272	1,16
50	267	1,01
51	261	0,881
52	253	0,766
53	243	0,668
54	233	0,581
55	223	0,506
56	216	0,432
57	210	0,384
58	205	0,334
59	201	0,292
60	198	0.253

H	T	P
61	195	0,221
62	194	0,197
63	193	0,176
64	193	0,153
65	194	0,140
66	195	0,119
67	197	0,101
68	199	0,0841
69	202	0,0668
70	205	0,0531
71	208	0,0421
72	210	0,0320
73	213	0,0237
74	214	0,0184
75	216	0,0149
76	217	0,0122
77	218	0,0103
78	219	0,00901
79	220	
80	221	

Main
Isobar Surfaces

P	H	T
500	5.4	260
400	7,1	248
300	9,3	234
200	12.0	232
150	13,9	226
100	15,8	222
70	17,6	221
50	19,3	222
30	23,2	227
25	24,5	230
20	26,0	235
15	28,2	242
10	31,1	247
5	36,4	260
2	44,0	275

August 14, 1957
Time of
Rocket Launch
06 h 23 m

Standard Levels

H	T	P
2	277	
3	271	716
4	267	623
5	260	543
6	255	478
7	250	412
8	243	359
9	235	320
10	226	278
11	225	243

H	T	P
12	227	206
13	229	180
14	228	157
15	226	133
16	225	116
17	224	101
18	223	86,1
19	224	74,9
20	225	63,0
21	228	53,0
22	229	43,2
23	231	35,1
24	233	28,5
25	234	24,3
26	235	20,1
27	239	17,2
28	242	14,7
29	244	13,0
30	246	11,3
31	248	9,88
32	249	8,61
33	252	7,66
34	254	6,68
35	256	5,81
36	258	4,96
37	260	4,21
38	262	3,66
39	265	3,12
40	267	2,67
41	269	2,32
42	271	2,11
43	273	1,88
44	274	1,68
45	275	1,53
46	276	1,36
47	277	1,22
48	277	1,08
49	278	0,965
50	278	0,861
51	276	0,766
52	274	0,668
53	268	0,581
54	264	0,506
55	260	0,441
56	256	0,384
57	252	
58	250	
59	248	
60	246	
61	245	
62	244	
63	243	
64	243	
65	242	
66	242	
67	241	
68	241	
69	241	
70	241	

Main Isobar Surfaces

P	H	T
700	3,2	276
500	5,7	256
400	7,2	249
300	9,4	240
200	12,2	227
150	14,3	227
100	16,9	224
70	19,4	224
50	21,3	228
30	23,7	232
25	24,9	224
20	26,1	235
15	27,9	241
10	30,8	247
5	35,9	238
2	42,3	271
1	48,6	278

September 14, 1957
Time of Rocket Launch 05 h 17 m

Standard Levels

H	T	P
3	277	
4	270	473
5	264	436
6	256	407
7	249	380
8	242	351
9	235	324
10	228	295
11	222	266
12	218	232
13	216	197
14	215	168
15	213	143
16	213	124
17	213	106
18	214	89,0
19	214	74,9
20	215	61,6
21	217	51,8
22	219	42,1
23	220	35,1
24	221	29,8
25	223	24,8
26	224	20,9
27	225	18,4
28	228	16,4
29	232	14,6
30	236	12,9
31	240	11,3
32	241	9,88
33	243	8,81
34	244	7,85
35	245	6,92
36	248	5,95
37	251	5,07
38	252	4,26
39	252	3,67
40	252	3,20
41	253	2,82
42	256	2,43
43	261	2,14
44	269	

Main Isobar Surfaces

P	H	T
400	6,3	254
300	9,8	229
200	12,9	216
150	14,7	214
100	17,4	213
70	19,4	214
50	21,2	217
30	24,0	221
25	25,6	223
20	26,3	224
15	28,8	231
10	31,9	241
5	37,1	251

September 20, 1957
Time of Rocket Launch 05 h 35 m

Standard Levels

H	T	P
2	280	
3	275	732
4	270	645
5	264	562
6	256	484
7	247	417
8	239	367
9	233	316
10		278
11		240
12		206
13		180
14		155
15		133
16		116
17		97,7
18		82,2
19	225	70,0
20	224	59,6
21	223	50,6
22	223	43,2
23	226	36,6
24	230	32,0
25	232	27,8
26	233	24,3

H	T	P
27	234	21,1
28	234	18,4
29	235	16,0
30	237	14.0
31	241	12,2
32	244	10,6
33	246	9.22
34	249	8.04
35	251	6,70
36	253	5,82
37	255	4,95
38	258	4,21
39	259	3,59
40	261	2.98
41	263	2,54
42	264	2,21
43	265	1,84
44	266	1.63
45	266	1,47
46	266	1,35
47	266	1,22
48	264	1,08
49	263	0,965
50	262	0,861
51	261	0,732
52	259	0.609
53	255	0,518
54	250	0,441
55	237	0.384
56	225	0.320
57	218	0,272
58	212	0,232
59	209	0,193
60	207	0.168
61	206	0,140
62	206	0,122
63	205	0,101
64	205	0,0841
65	205	0,0716
66	205	0,0609
67	204	0.0537
68	204	0,0463
69	204	0,0393
70	205	0,0343
71	206	0,0292
72	208	0,0260
73	211	0,0221
74	216	0,0192
75	221	0,0168
76	226	

Note: The pressure from 34 to 42 and from 51 to 66 km has been interpolated.

Main Isobar Surfaces

P	H	T
700	3,4	273
500	5,8	258
400	7,3	245
300	9,4	232
200	12.1	
150	14,3	
100	16,8	
70	19,0	225
50	21,2	223
30	24.5	231
25	25,9	233
20	27,3	234
15	29,5	236
10	32,5	244
5	37,0	255
2	42,5	265
1	48,6	264

October 17, 1957
Time of
Rocket Launch
07 h 36 m

Standard Levels

H	T	P
7		384
8		347
9		305
10		263
11		224
12		190
13		162
14	219	136
15	219	116
16	219	97,7
17	218	83,2
18	218	70,0
19	218	59,6
20	218	50,6
21	219	42,1
22	221	35,8
23	222	30,5
24	224	25,4
25	226	21,6
26	227	18.4
27	228	16.0
28	230	13.6
29	232	11,6
30	234	9.88
31	236	8,41
32	238	7,16
33	239	5,96
34	241	5,06
35	243	4,32
36	244	3,66
37	247	3,20
38	249	2,78
39	252	2.37
40	256	2,07
41	261	1.76
42	265	1,53
43	269	1,35
44	271	1,19
45	274	1,06
46	276	0.922
47	278	0,804
48	280	0,732
49	281	0.653
50	280	0.581
51	278	0,506
52	272	0,452
53	262	0,384
54	243	0.351
55	228	0,305
56	219	0,267
57	216	0,232
58	213	0,201
59	212	0.176
60	212	0,149
61	214	0,132
62	216	0,113
63	219	0,0988
64	221	0.0861
65	224	0,0749
66	226	0,0653
67	230	0,0569
68	233	0,0496
69	237	0,0421
70	240	0.0376
71	244	0,0328
72	248	0,0285
73		0,0245
74		0.0207

Main
Isobar Surfaces

P	H	T
300	9,2	
200	11,7	
150	13,5	
100	15,9	219
70	18,0	218
50	20,1	218
30	23,1	222
25	24,1	224
20	25,5	226
15	27,4	229
10	28,9	234
5	34,2	242
2	40,1	257
1	45,3	274

December 21, 1957
Time of
Rocket Launch
07 h 45 m

Standard Levels

H	T	P
3	266	
4	261	
5	254	
6	250	

H	T	P
7	244	
8	238	
9	233	
10	226	
11	221	
12	221	
13	222	157
14	223	133
15	224	113
16	223	98,8
17	223	84,1
18	223	71,6
19	222	60,9
20	221	51,8
21	221	44,1
22	221	38,4
23	221	32,8
24	222	27,8
25	221	24,0
26	219	20,1
27	219	17,2
28	220	14,7
29	222	12,4
30	223	10,8
31	223	9,22
32	224	8,04
33	226	6,92
34	227	6,09
35	228	5 25
36	230	4,57
37	232	3,93
38	234	3,34
39	237	2,19
40	241	1,86

Main Isobar Surfaces

P	H	T
150	13,3	223
100	15,8	223
70	18,1	223
50	20,3	221
30	23,6	222
25	24,7	220
20	26,0	219
15	27,9	220
10	30,4	223
5	35,4	229

December 21, 1957
Time of Rocket Launch
11 h 44 m

Standard Levels

H	T	P
11	212	
12	212	
13	213	
14	211	
15	209	
16	207	
17	207	
18	208	
19	208	
20	208	
21	208	
22	205	
23	204	
24	203	
25	201	
26	202	
27	204	
28	207	
29	215	
30	219	
31	222	
32	224	
33	227	
34	231	
35	236	
36	240	

Note: The altitude is taken from the launching on December 21, 1957, 07 h 45 m.

January 19, 1958
Time of Rocket Launch
11 h 45 m

standard levels

H	T	P
11		221
12		192
13		164
14		143
15		122
16		106
17		94,4
18		82,2
19	217	71,6
20	218	60,9
21	214	49,6
22	214	43,2
23	216	36,6
24	215	30,5
25	214	26,7
26	216	22,1
27	217	
28	223	
29	225	
30	234	
31	238	
32	239	
33	241	
34	242	

H	T	P
35	243	
36	247	
37	253	
38	260	
39	264	
40	262	
41	251	
42	260	

Main Isobar Surfaces

P	H	T
200	11,7	
150	13,6	
100	16,4	
70	19,1	217
50	21,0	215
30	24,3	213
25	25,4	215

January 20, 1958
Time of Rocket Launch
01 h 23 m

Standard Levels

H	T	P
17	206	
18	208	
19	207	
20	205	
21	205	
22	206	
23	210	
24	213	
25	215	
26	215	
27	218	
28	221	
29	221	

April 20, 1958
Time of Rocket Launch
17 h 40 m

Standard Levels

H	T	P
5		530
6		473
7		421
8		376
9		328

H	T	P
10		292
11		253
12		221
13		188
14		164
15	222	140
16	223	122
17	224	103
18	222	90,1
19	222	73,3
20	224	66,8
21	223	56,9
22	225	48,4
23	227	42,1
24	229	36,6
25	229	31,2
26	230	27,2
27	231	23,7
28	231	20,7
29	231	17,6
30	235	15,3
31	236	13,3
32	239	11,3
33	241	9,88
34	244	8,41
35	251	7,33
36	257	6,38
37	254	5,56
38	256	4,73
39	260	4,12
40	263	3,58
41	261	3,05
42	261	2,67
43	261	2,32
44		1,97

Main Isobar Surfaces

P	H	T
500	5,7	
400	7,5	
300	9,8	
200	12,6	
150	14,6	
100	17,2	224
70	19,7	223
50	21,9	225
30	25,3	229
25	26,7	231
20	28,1	231
15	30,1	235
10	32,8	241
5	37,7	256
2	43,9	

May 18, 1958
Time of Rocket Launch 03 h 50 m

Standard Levels

H	T	P
10	222	
11	219	243
12	217	207
13	217	172
14	218	146
15	219	122
16	219	103
17	218	88,1
18	218	74,9
19	219	63,8
20	219	54,2
21	218	46,2
22	221	40,2
23	221	34,2
24	224	29,2
25	227	24,3
26	228	21,1
27	230	18,0
28	231	15,3
29	232	12,7
30	237	10,3
31	243	8,41
32		7,00
33		6,09
34		5,18
35		4,41

Note: The pressure has been interpolated in the range from 18,2 to 20 km.

Main Isobar Surfaces

P	H	T
200	12,2	217
150	13,9	218
100	16,1	219
70	18,4	218
50	20,6	219
30	23,9	223
25	24,8	226
20	26,3	228
15	28,1	231
10	30,1	237
5	34,3	

June 24, 1958
Time of Rocket Launch 05 h 45 m

Standard Levels

H	T	P
3		822
4	275	716
5	267	638
6	260	543
7	251	484
8	245	421
9	240	367
10	234	320
11	227	272
12	219	232
13	222	202
14	224	172
15	224	150
16	221	127
17	219	106
18	219	92,2
19	219	78,5
20	221	68,4
21	223	58,2
22	223	49,5
23	224	43,1
24	223	36,7
25	219	32,0
26	220	27,2
27	222	23,7
28	224	
29	225	
30	228	
31	232	
32	234	
33	234	
34	236	
35	240	
36	241	
37	241	
38	242	
39	244	
40	247	
41	250	
42	258	
43	264	
44	267	
45	268	
46	269	
47	268	
48	266	
49	265	
50	264	

Main Isobar Surfaces

P	H	T
700	4,2	274
500	6,7	254
400	8,3	244
300	10,5	230
200	13,0	222
150	15,0	224
100	17,4	219
70	19,8	220
50	22,0	223
30	25,4	219

June 29, 1958
Time of Rocket Launch
03 h 30 m

Standard Levels

H	T	P
8	243	
9	237	
10	228	
11	222	
12	220	
13	225	
14	225	
15	225	
16	225	
17	224	
18	223	
19	223	
20	223	
21	223	
22	223	
23	224	
24	225	
25	227	
26	231	
27	234	
28	236	
29	238	
30	239	
31	239	
32	239	
33	240	
34	240	
35	239	
36	239	
37	239	
38	238	
39	239	
40	239	
41	239	
42	238	
43	238	
44	236	
45	235	
46	233	
47	232	
48	230	
49	229	
50	231	

July 27, 1958
Time of Rocket Launch
04 h 20 m

Standard Levels

H	T	P
3	280	700
4	270	609
5	265	531
6	261	462
7	252	402
8	243	351
9	237	305
10	232	266
11	230	232
12	224	202
13	222	180
14	222	157
15	221	133
16	220	108
17	219	92,2
18	221	76,7
19	220	63,8
20	223	53,1
21	222	45,2
22	225	38,4
23	226	33,5
24	227	28,5
25	227	24,3
26	231	19,7
27	235	16,8
28	237	14,6
29	238	12,4
30	240	10,6
31	240	9,22
32	242	8,03
33	243	7,16
34	247	6,38
35	249	5,56
36	251	4,95
37	254	4,41
38	258	3,84
39	260	3,35
40	260	2,92
41	261	2,60
42	265	2,32
43	268	2,06
44	272	1,84
45	276	1,60
46	278	1,43
47	279	1,27
48	279	1,16
49	278	1,01
50	277	0,901
51	275	0,804
52	275	0,700
53	276	0,638
54	277	0,569
55	278	0,507
56	276	0,462
57	280	0,421
58	279	0,376
59	276	0,335
60	274	
61	277	
62	276	
63	274	
64	268	

Main Isobar Surfaces

P	H	T
700	3,0	280
500	5,5	263
400	7,0	252
300	9,2	242
200	12,1	224
150	14,3	222
100	16,4	220
70	18,5	220
50	20,4	223
30	23,7	227
25	24,9	226
20	25,9	231
15	27,7	236
10	30,4	240
5	36,0	251
2	43,2	268
1	49,1	278

July 31, 1958
Time of Rocket Launch
04 h 20 m

Standard Levels

H	T	P
2		767
3		668
4		556
5		495
6		421
7		367
8		320
9		272
10		237
11		197
12		164
13		136
14		119
15		98,8
16		84,1
17		73,2
18	220	60,9
19	215	51,8
20	221	44,1
21	218	37,6
22	216	32,0
23	218	27,2
24	223	23,2
25	222	19,3
26	225	16,4
27	227	14,3
28	230	12,7
29	232	10,8
30	234	9,22
31	235	8,03
32	239	7,32
33	243	6,23
34	246	5,31
35	247	4,62
36	249	4,02
37	250	3,51

H	T	P
38	253	3,05
39	256	2,66
40	259	2,32
41	262	2,02
42	265	1,76
43	267	1,53
44	272	1,33
45	273	1,16
46	273	1,01
47	271	0,881
48	269	0.767
49	266	0,668
50	262	0,569
51		0,495
52		0,431
53		0,376
54		0,320
55		0,278
56		0,243
57		0,216
58		0,188
59		0,163
60		0,146
61		0,130
62		0,116
63		0,106
64		0,0966
65		0,0881
66		0,0785
67		0,0684
68		0,0609
69		0,0531
70		0,0462
71		0,0421
72		0,0367
73		0,0320
74		0,0278
75		0,0243
76		0,0216

Main Isobar Surfaces

P	H	T
700	2,7	
500	4,9	
400	6,4	
300	8,5	
200	10,9	
150	12,6	
100	14,9	
70	17,2	
50	19,3	217
30	22,6	218
25	23,5	220
20	24,8	223
15	26,8	227
10	29,5	233
5	34,6	247
2	41,0	262
1	46,0	273

August 12, 1958
Time of Rocket Launch 05 h 10 m

Standard Levels

H	T	P
4	265	609
5	261	531
6	255	473
7	251	412
8	244	359
9	238	320
10	228	275
11	222	237
12	220	202
13	219	176
14	218	157
15	216	135
16	219	113
17	218	95,4
18	218	81,2
19	220	68,4
20	223	58,2
21	224	49,5
22	223	42,6
23	224	36,7
24	226	31,2
25	226	26,0
26	227	22,1
27	227	18,8
28	228	15,8
29	229	13,3
30	229	11,6
31	229	10,0
32	229	8,71
33	230	7,67
34	231	6,68
35	231	5,89
36	230	5,13

Main Isobar Surfaces

P	H	T
500	5,6	259
400	7,2	250
300	9,4	234
200	12,0	220
150	14,4	217
100	16,6	218
70	18,9	219
50	21,0	224
30	24,3	226
25	25,3	227
20	26,6	227
15	28,4	228
10	31,0	229
5	36,2	230

August 12, 1958
Time of Rocket Launch 06 h 40 m

Standard Levels

H	T	P
6	263	484
7	258	421
8	252	367
9	246	320
10	239	278
11	231	243
12	228	216
13	231	188
14	230	164
15	226	140
16	227	119
17	226	101
18	225	88,1
19	228	76,7
20	228	65,3
21	228	55,6
22	228	48.4
23	231	42,1
24	232	36,7
25	231	31,2
26	233	26,6
27	236	23,2
28	238	20,2
29	241	18,0
30	239	16,0

Main Isobar Surfaces

P	H	T
400	7,4	255
300	9,6	242
200	12,5	232
150	14,5	228
100	17 1	226
70	19,5	229
50	21,9	228
30	25,3	232
25	26,7	235
20	28,2	240

March 12, 1959
Time of Rocket Launch 13 h 09 m

Standard Levels

H	T	P
1		890
2		758
3		653
4		569

H	T	P
5		484
6		412
7		343
8		285
9		237
10		193
11		160
12	205	133
13	205	110
14	205	92,2
15	205	77,6
16	205	66,0
17	204	56,2
18	203	47,8
19	201	40,2
20	202	33,5
21	204	28,5
22	207	24,0
23	210	20,2
24	214	17,4
25	219	14,8
26	223	12,7
27	225	10,8
28	228	9,22
29	232	7,85
30	235	6,68
31	238	5,69
32	241	4,84
33	245	4,21
34	248	3,71
35	252	3,27
36	256	2,98
37	261	2,69
38	265	2,48
39	269	2,29
40	275	2,02
41	281	1,78
42	287	1,53
43		1,32
44		1,13
45		0,988
46		0,861
47		0,750
48		0,658
49		0,595
50		0,518
51		0,462
52		0,412
53		0,367
54		0,327
55		0,292
56		0,263
57		0,240
58		0,216
59		0,199
60		0,180
61		0,168
62		0,153
63		0,141
64		0,129
65		0,117
66		0,107
67		0,0966
68		0,0881
69		0,0767
70		0,0668

H	T	P
71		0,0582
72		0,0501
73		0,0431
74		0,0376
75		0,0327
76		0,0285
77		0,0248
78		0,0216
79		0,0188
80		0,0164

Main Isobar Surfaces

P	H	T
850	1,3	
700	2,6	
500	4,9	
400	6,1	
300	7,8	
200	9,8	
150	11,4	
100	13,5	205
70	15,7	205
50	17,8	203
30	20,7	204
25	21,8	206
20	23,1	211
15	24,9	219
10	27,5	227
5	31,9	241
2	40,1	275
1	44,8	

March 12, 1959
Time of Rocket Launch 17 h 40 m

Standard Levels

H	T	P
10	210	
11	211	
12	212	
13	210	
14	212	
15	209	
16	210	
17	210	
18	210	
19	209	
20	209	
21	209	
22	208	
23	206	
24	208	
25	212	

H	T	P
26	217	
27	221	14,3
28	226	12,2
29	230	10,1
30	235	8,41
31	238	7,00
32	243	5,69
33	250	4,62
34	256	3,84
35	259	3,35
36	262	2,92
37	266	2,60
38	271	2,43
39	274	2,11
40	278	2,06
41	282	1,76
42	284	1,53
43	284	1,40
44	283	1,22
45	280	1,11
46	277	0,944
47	276	0,841
48	279	0,750
49	280	0,653
50	280	0,556

Main Isobar Surfaces

P	H	T
10	29,0	230
5	32,6	247
2	40,0	278
1	45,6	278

October 20, 1959
Time of Rocket Launch 15 h 15 m

Standard Levels

H	T	P
6	243	
7	230	
8	225	
9	215	
10	207	
11	207	
12	213	
13	212	
14	212	
15	215	
16	214	
17	215	
18	215	
19	215	
20	215	
21	214	

H	T	P
22	213	
23	214	
24	219	
25	216	
26	218	
27	222	
28	222	
29	225	
30	225	
31	226	
32	227	
33	228	
34	230	
35	231	
36	232	
37	235	
38	237	
39	240	
40	240	
41	242	
42	243	
43	246	
44	251	
45	255	
46	257	
47	258	
48	258	
49	260	
50	260	
51	263	
52	263	

October 22, 1959
Time of Rocket Launch 11 h 55 m

Standard Levels

H	T	P
10	266	
11	216	
12	214	
13	215	
14	214	
15	214	
16	215	
17	217	
18	216	
19	216	
20	217	
21	219	
22	218	
23	218	
24	218	
25	219	
26	220	
27	222	
28	226	
29	226	
30	225	
31	225	

H	T	P
32	227	
33	233	
34	242	
35	249	
36	254	
37	259	
38	263	
39	267	
40	270	
41	271	
42	271	
43	272	
44	273	
45	273	
46	273	
47	272	
48	271	

October 22, 1959
Time of Rocket Launch 15 h 56 m

Standard Levels

H	T	P
7	225	
8	222	
9	218	
10	214	
11	215	
12	216	
13	216	
14	216	
15	213	
16	215	
17	215	
18	216	
19	214	
20	214	
21	218	
22	217	
23	218	
24	218	
25	218	
26	218	
27	218	
28	219	
29	221	
30	223	
31	222	
32	222	
33	225	
34	229	
35	232	
36	234	
37	234	
38	235	6,68
39	236	5,56
40	238	4,41
41	242	3,67
42	247	2,98
43	253	2,54
44	260	2,21
45	265	1,84

December 3, 1959
Time of Rocket Launch 10 h 00 m

Standard Levels

H	T	P
5	252	
6	242	
7	234	
8	225	
9	215	
10	210	
11	208	
12	212	
13	211	
14	210	
15	211	
16	211	
17	211	
18	213	
19	212	
20	213	54,3
21	213	47,3
22	211	40,2
23	215	35,1
24	218	29,8
25	221	25,4
26	221	22,1
27	221	18,8
28	225	16,0
29	228	14,0
30	229	12,2
31	231	10,4
32	232	8,81
33	232	7,67
34	235	6,68
35	240	5,69
36	242	4,84
37	236	4,02
38	230	3,35
39	227	2,78
40	225	2,32
41	226	1,88
42	231	1,53
43	237	1,27
44	241	1,04
45	245	0,861
46	246	0,716
47	247	0,609

Main Isobar Surfaces

P	H	T
50	20,7	214
30	24,0	218
25	25,2	221
20	26,6	221
15	28,5	227
10	31,2	231
5	35,9	243
2	40,7	226
1	44,1	242

December 3, 1959
Time of Rocket Launch 12 h 04 m

Standard Levels

H	T	P
2	261	
3	254	
4	246	
5	241	
6	236	
7	232	
8	223	
9	213	
10	206	
11	206	
12	210	
13	209	
14	209	
15	210	
16	208	
17	209	80,3
18	211	66,8
19	213	58,2
20	213	48,4
21	212	41,2
22	210	34,2
23	212	29,2
24	211	24,3
25	214	20,6
26	219	17,2
27	221	14,6
28	224	12,4
29	225	10,6
30	226	9,01
31	229	7,67
32	231	6,53
33	234	5,56
34	236	4,62
35	236	3,84
36	236	3,12
37	235	2,66
38	233	2,16
39	233	1,80
40	233	1,46
41	236	1,22
42	238	1,03
43	241	0,881
44	243	0,750
45	245	0,638
46	245	0,543
47	242	0,462

Main Isobar Surfaces

P	H	T
70	17,9	211
50	19,9	212
30	22,8	212
25	23,7	212
20	25,2	215
15	26,9	220
10	29,3	225
5	33,6	235
2	38,7	233
1	42,1	233

December 3, 1959
Time of Rocket Launch 14 h 28 m

Standard Levels

H	T	P
11	212	
12	212	
13	211	
14	211	
15	209	
16	211	
17	213	
18	211	
19	211	
20	212	
21	211	
22	213	
23	213	
24	214	
25	216	
26	217	
27	218	
28	219	
29	223	
30	224	
31	225	
32	223	
33	222	
34	224	
35	231	
36	236	
37	235	
38	232	
39	229	
40	227	
41	225	
42	225	
43	226	
44	228	
45	231	
46	236	
47		
48		
49		
50		
51		
52		0,206
53		0,176
54		0,153
55		0,127
56		0,106
57		0,0901
58		0,0785
59		0,0700
60		0,0609
61		0,0556
62		0,0481
63		0,0441
64		0,0395
65		0,0367
66		0,0327
67		0,0292
68		0,0260
69		0,0232
70		0,020[illegible]
71		0,018[illegible]

TABLES

OF DATA FROM ROCKET PROBES ON THE SHIP "OB"

1957 - 1958

December 31, 1957
Time of
Rocket Launch
12 h 10 m
Coordinates
of Launch Site
ϕ = 66°26'04"S
λ = 92°49'01"E

Standard Levels

H	T	P
27	240	32,0
28	242	24,3
29	242	20,2
30	242	16.8
31	245	14,0
32	247	12,2
33	248	10.6
34	250	9.22
35	250	8,03
36	250	7,16
37	253	6.31
38	257	5,56
39	260	4,95
40	263	4,36
41	266	3,84
42	268	3,46
43	271	3,12
44	273	2,78
45	275	2,45
46	277	2,16
47	276	1,93
48	278	1,72
49	280	1,50
50		1,19

Main
Isobar Surfaces

P	H	T
25	28,0	242
20	29,2	242
15	30.6	244
10	33,3	249
5	38,9	260
2	46,7	276

January 20, 1958
Time of
Rocket Launch
20 h 15 m
Coordinates
of Launch Site
ϕ = 65°26'S
λ = 120°32'E

Standard Levels

H	T	P
5	247	562
6	240	490
7	234	431
8	227	376
9	226	327
10	232	285
11	231	247
12	231	213
13	231	184
14	231	160
15	231	138
16	232	119
17	233	101
18	233	87.1
19	233	73,2
20	234	62.3
21	236	53,1
22	236	45,7
23	235	39,5
24	235	34.1
25	235	29,2
26	238	25,4
27	240	21,6
28	242	18.8
29	245	16,0
30	247	13,8
31	247	11,7
32	247	10.1
33	249	8.61
34	252	7.32
35	255	6,31
36	257	5.37
37	262	4,62
38	267	3,93
39	269	3,39
40	272	2,92
41	217	

Note: The launch has been computed from the altitude of the launch on January 19, 1958.

Main
Isobar Surfaces

P	H	T
500	6,0	240
400	7.5	229
300	9.7	231
200	12.4	231
150	14.4	231
100	17,0	233
70	19,3	233
50	21,5	236
30	24,9	235
25	26.1	238
20	27,5	241
15	29,5	246
10	32,0	247
5	36,5	260

February 2, 1958
Time of
Rocket Launch
00 h 26 m
Coordinates of
Launch Site
ϕ = 67°44'S
λ = 147°12'E

Standard Levels

H	T	P
4	248	645
5	245	556
6	237	484
7	229	424
8	222	367
9	219	320
10	228	278
11	234	243
12	233	211
13	233	184
14	233	157
15	235	135
16	234	117
17	234	101
18	237	85,0
19	241	72,0
20	240	60,9
21	240	51,3
22	240	44,4
23	240	38,4
24	240	33.1
25	237	28,8
26	238	24,9
27	240	21,6
28	242	18,7
29	243	16.0
30	244	13,6
31	244	11,7
32	244	10,1
33	245	8,50
34	248	7,29
35	250	6,14
36	252	5,31
37	253	4,52
38	254	3,89
39	256	3,35
40	257	2,88
41	260	2,48
42	263	2,11

Main
Isobar Surfaces

P	H	T
500	5,9	238
400	7.4	225
300	9,5	223
200	12.3	233
150	14.3	234
100	17,0	233
70	19,2	241

P	H	T
50	21.3	239
30	24.8	237
25	26,0	238
20	27,5	241
15	29.4	244
10	32,0	244
5	36,4	252

February 10,1958
Time of
Rocket Launch
00 h 47 m
Coordinates of
Launch Site
ϕ = 69°49'S
λ = 161°52'E

Standard Levels

H	T	P
2	258	
3	252	
4	248	
5	241	
6	237	
7	233	
8	230	
9	230	
10	233	
11	234	
12	235	
13	235	
14	233	
15	233	
16	235	
17	234	
18	234	
19	234	
20	234	
21	234	
22	233	
23	232	
24	233	
25	235	
26	236	
27	236	
2	237	
29	239	
30	242	
31	243	12,2
32	244	10,3
33	245	8,81
34	247	7,41
35	249	6,38
36	252	5,49
37	254	4,78
38	257	4,21
39	261	3,66
40	264	3,24
41	265	2,92
42	266	2.63
43	269	2,37
44	277	2,13
45		1,95

Main
Isobar Surfaces

P	H	T
10	32,1	244
5	36,8	253

February 16,1958
Time of
Rocket Launch
20 h 06 m
Coordinates of
Launch Site
ϕ = 48°01'S
λ = 171°06'E

Standard Levels

H	T	P
6		609
7	256	537
8	250	462
9	242	398
10	233	335
11	226	282
12	220	234
13	217	195
14	219	160
15	220	133
16	220	111
17	222	94,4
18	223	79,4
19	224	67,2
20	222	56,9
21	224	47,8
22	225	41,2
23	226	35,1
24	228	29,8
25	229	25,3
26	230	21,6
27	232	18,8
28	236	16,0
29	237	13,9
30	239	11,7
31	240	10,1
32	241	8,50
33	242	7,24
34	244	5,96
35	245	
36	248	
37	251	
38	256	

Main
Isobar Surfaces

P	H	T
500	7,6	252
400	8,9	243
300	10,7	228
200	12,8	217
150	14,4	223
110	16,6	223
70	18,8	224
50	20,8	224
30	24,0	228
25	25,2	229
20	26,6	231
15	28,5	236
10	30,9	240

March 9,1958
Time of
Rocket Launch
16 h 30 m
Coordinates of
Launch Site
ϕ = 38°53'S
λ = 142°08'E

Standard Levels

H	T	P
3	282	
4	277	
5	269	
6	262	
7	255	
8	247	
9	239	
10	230	
11	223	
12	222	
13	221	
14	216	
15	215	
16	214	
17	212	
18	212	
19	215	
20	219	
21	224	
22	225	
23	225	
24	227	
25	228	
26	228	
27	233	
28	233	
29	234	
30	238	
31	241	
32	243	
33	244	
34	244	
35	245	

March 15, 1958
Time of
Rocket Launch
04 h 54 m
Coordinates of
Launch Site
ϕ = 43°15'S
λ = 160°15'E

Standard Levels

H	T	P
3	260	692
4	256	616
5	255	549
6	250	484
7	242	422
8	234	371
9	225	324
10	223	282
11	225	243
12	225	209
13	226	182
14	224	155
15	223	133
16	224	113
17	223	96,5
18	222	82,2
19	222	70,0
20	222	59.6
21	226	50,6
22	226	43.3
23	228	37 6
24	229	32,8
25	228	28,5
26	232	24 8
27	234	21,7
28	235	19,1
29	238	16,5
30	238	14,4
31	239	12,7
32	240	11,1
33	240	9,65
34	243	8,41
35	245	7,33
36	244	6,38
37	245	5,62
38	247	4,96
39	250	4,46
40	254	3,97
41	256	3,59
42		3,28

Main
Isobar Surfaces

P	H	T
700	3,0	260
500	5,8	252
400	7,4	239
300	9,6	222
200	12,3	225
150	14,3	224
100	16,7	224
70	19,0	222
50	21,2	226
30	24,6	229
25	26.0	231
20	27,6	234
15	29.8	238
10	32.7	240
5	38,0	247

March 18, 1958
Time of
Rocket Launch
03 h 29 m
Coordinates of
Launch Site
ϕ = 47°53'S
λ = 166°24'E

Standard Levels

H	T	P
29		13,5
30		12,3
31		11,1
32		9,73
33		8,50
34		7,41
35		6,42
36		5 56
37		4,73
38		4,08
39		3,51
40		2,97
41		2,53

Main
Isobar Surfaces

P	H	T
10	31,7	
5	36,8	

March 27, 1958
Time of
Rocket Launch
17 h 00 m
Coordinates of
Launch Site
ϕ = 67°26'S
λ = 165°40'E

Standard Levels

H	T	P
10		237
11		206
12		178
13		151
14		130
15		111
16		94,4
17		79,4
18		67,6
19		59,6
20		51,8
21		44,6
22		38,4
23		32,8
24		28,1
25		24.3
26		20,7
27		17,7
28		15,5
29		13,5
30		11,9
31		10,3
32		9,01
33		7,85
34		6,84
35		5,96
36		5,18
37		4,44
38		3 84
39		3,39
40		2,98
41		2.67
42		2,37
43		2,13
44		1,92
45		1,73

Main
Isobar Surfaces

P	H	T
200	11,1	
150	13,1	
100	15,5	
70	17,9	
50	20,2	
30	23,6	
25	24,9	
20	26,2	
15	28,3	
10	31,1	
5	36,3	
2	43,6	

/44

March 31, 1958
Time of Rocket Launch
14 h 41 m
Coordinates of Launch Site
ϕ = 67°17'S
λ = 173°30'E
Standard Levels

H	T	P
9		253
10		217
11		188
12		163
13		141
14		119
15		102
16		86,1
17		74.1
18		63.0
19		53.7
20		45,7
21		38.9
22		33,4
23		29,2
24		25,1
25		21,6
26		18,8
27		16,3
28		14,0
29		12,2
30		10,5
31		9,01
32		7,85
33		6,84
34		5.98
35		4,84
36		4,68
37		4,12
38		3,66
39		3,31
40		2,94
41		2,67

Main Isobar Surfaces

P	H	T
200	10,5	
150	12.6	
100	15,0	
70	17,4	
50	19,5	
30	22,8	
25	24.1	
20	25,5	
15	27,6	
10	30,2	
5	35,5	

April 1, 1958
Time of Rocket Launch
11 h 41 m
Coordinates of Launch Site
ϕ = 67°26'S
λ = 180°W
Standard Levels

H	T	P
4	248	
5	244	
6	241	
7	233	
8	229	
9	229	260
10	229	224
11	239	193
12	228	168
13	228	144
14	226	126
15	226	108
16	225	92.2
17	225	78.5
18	226	66.8
19	225	57,6
20	225	48.9
21	224	41,7
22	221	35.5
23	221	30.5
24	221	26.3
25	219	22.7
26	220	19,2
27	220	16,5
28	221	14,0
29	221	12.0
30	220	10,2
31	221	8,70
32	221	7.41
33	222	6,31
34	224	5.42
35	228	4,68
36	229	4,02
37	230	3,51
38	231	3,09
39	232	2,72
40	233	2.43
41	234	2,13
42	234	
43	238	

Main Isobar Surfaces

P	H	T
200	10.7	230
150	12,8	228
100	15.4	226
70	17,8	225
50	19,9	225
30	23,2	221
25	24,4	220
20	25,8	220
15	27.6	220
10	30.1	220
5	34,6	227

April 2, 1958
Time of Rocket Launch
07 h 45 m
Coordinates of Launch Site
ϕ = 69°19'S
λ = 164°55'W
Standard Levels

H	T	P
2	266	
3	259	
4	255	
5	250	
6	243	
7	236	
8	230	
9	226	260
10	228	232
11	232	202
12	232	174
13	231	150
14	231	127
15	230	110
16	229	93.3
17	228	78.5
18	227	66,8
19	226	56.9
20	225	47,8
21	224	40.8
22	224	34,6
23	225	29.4
24	225	24.8
25	226	20,9
26	226	17,7
27	225	14.9
28	224	12,7
29	225	10,8
30	225	9,22
31	226	7,85
32	226	6,76
33	228	5,81
34	228	5,13
35	228	4,52
36	229	4.03
37	231	3,59
38	232	3,20
39	234	2,98
40	236	2,60
41	239	2,35
42		2,13

Main Isobar Surfaces

P	H	T
200	11,0	232
150	13.0	231
100	15,5	229
70	17,7	228
50	19,8	225

P	H	T
30	22,9	224
25	24,0	225
20	25.2	226
15	27.0	225
10	29,4	225
5	34,3	228

April 21, 1958
Time of
Rocket Launch
08 h 48 m
Coordinates of
Launch Site
ϕ = 66° 22' S
λ = 128° 03' W
Standard Levels

H	T	P
2	261	
3	257	
4	249	
5	246	
6	240	
7	233	
8	228	275
9	223	239
10	225	211
11	226	184
12	226	158
13	226	138
14	228	119
15	227	101
16	227	86.1
17	227	73,2
18	225	62,4
19	222	53.0
20	220	45.7
21	219	39,7
22	222	34,2
23	217	29,2
24	216	25,1
25	217	21,9
26	215	18,5
27	216	16,0
28	216	13,6
29	216	11,5
30	215	9.77
31	215	8,41
32	218	7,08
33	218	5,96
34	220	5,01
35	222	4.21
36	226	3,58
37	229	3,05
38	228	2,60
39	226	2,21
40	229	1,88
41	231	1,64
42	236	1,43
43	242	1,26
44	247	1,13
45	250	1,06

Main
Isobar Surfaces

P	H	T
200	10.3	225
150	12,4	226
100	15.0	227
70	17,3	226
50	19,5	221
30	22,9	217
25	24,1	216
20	25,5	215
15	27,4	216
10	29,8	215
5	34,1	220
2	39,6	228

April 23, 1958
Time of
Rocket Launch
09 h 24 m
Coordinates of
Launch Site
ϕ = 65°41'S
λ = 109°46'W
Standard Levels

H	T	P
3	254	668
4	250	595
5	244	518
6	238	452
7	230	384
8	225	331
9	221	278
10	219	237
11	221	202
12	225	172
13	225	148
14	225	126
15	224	107
16	223	91,2
17	223	78,5
18	221	68,4
19	220	59,6
20	219	51,3
21	218	44,1
22	218	38.0
23	218	32,8
24	217	28,1
25	216	24,5
26	214	20,9
27	212	17,7
28	210	15,2
29	210	12,9
30	212	10,8
31	214	9,16
32	214	7,66
33	216	6,42
34	217	5,42
35	217	4,63
36	219	3,89

H	T	P
37	219	3,28
38	220	2,79
39	223	2,40
40	228	2,07
41		1,80

Main
Isobar Surfaces

P	H	T
400	6,8	231
300	8 6	226
200	11,0	221
150	13,0	225
100	15,4	223
70	17,8	222
50	20,2	219
30	23,6	218
25	24,9	216
20	26,2	213
15	28,1	210
10	30,4	212
5	34,6	216
2	40,2	

April 24, 1958
Time of
Rocket Launch
09 h 58 m
Coordinates of
Launch Site
ϕ = 64°59'S
λ = 109°10'W
Standard Levels

H	T	P
3	253	
4	247	631
5	239	556
6	234	490
7	229	422
8	225	367
9	224	312
10	228	269
11	228	229
12	228	195
13	228	168
14	226	143
15	226	124
16	226	106
17	224	90,1
18	223	75,8
19	222	64,5
20	222	55,6
21	222	47,8

H	T	P
22	221	40,8
23	220	34,2
24	219	29,2
25	219	24,8
26	218	21,3
27	217	18,1
28	217	15,5
29	216	13,2
30	217	11,2
31	217	9,54
32	219	8,13
33	219	7,00
34	220	5,96
35	221	5,06
36	221	
37	223	
38	225	
39	226	
40	231	
41	237	
42	247	

Main Isobar Surfaces

P	H	T
400	7,4	227
300	9,3	225
200	11,8	228
150	13,8	226
100	16,3	225
70	18,5	223
50	20,8	222
30	23,9	219
25	25,0	219
20	26,4	217
15	28,2	217
10	30,7	218
5	35,2	221

April 26, 1958
Time of Rocket Launch
09 h 59 m
Coordinates of Launch Site
ϕ = 60°28'S
λ = 109°16'W

Standard Levels

H	T	P
3	252	
4	247	569
5	242	507
6	236	441
7	229	384

H	T	P
8	222	331
9	218	282
10	221	240
11	221	204
12	223	176
13	222	150
14	222	129
15	222	111
16	224	94,4
17	222	79,4
18	221	66,8
19	219	56,9
20	219	48,4
21	221	41,2
22	220	35,7
23	219	30,5
24	219	26,3
25	219	22,4
26	218	19,1
27	216	16,4
28	216	14,0
29	216	12,0
30	217	10,2
31	220	8,70
32	222	7,49
33	224	6,38
34	225	5,42
35	226	4,62
36	227	3,93
37	230	3,39
38	231	2,95
39	233	2,51
40	237	2,27
41	242	2,01

Main Isobar Surfaces

P	H	T
500	5,2	242
400	6,8	231
300	8,8	217
200	11,1	221
150	13,0	222
100	15,6	222
70	17,8	222
50	19,9	219
30	23,2	219
25	24,3	219
20	25,6	218
15	27,6	216
10	30,0	217
5	34,6	226
2	41,0	242

April 28, 1958
Time of Rocket Launch
10 h 00 m
Coordinates of Launch Site
ϕ = 55°00'S
λ = 109°37'W

Standard Levels

H	T	P
5	244	
6	234	
7	226	
8	219	
9	212	269
10	212	232
11	218	199
12	220	170
13	222	146
14	220	124
15	220	106
16	220	91,2
17	218	78,5
18	216	68,4
19	216	59,6
20	216	52,5
21	217	45,2
22	218	39,3
23	218	34,3
24	218	29,8
25	219	26,0
26	219	22,9
27	216	20,1
28	216	17,6
29	216	15,3
30	218	13,3
31	219	11,3
32	222	9,77
33	219	8,41
34	225	7,16
35	226	6,16
36	226	5,30
37	229	4,52
38	231	3,89
39	234	3,34
40	237	2,88
41	242	2,51
42	243	2,21

Main Isobar Surfaces

P	H	T
200	10,9	217
150	12,9	221
100	15,4	220
70	17,8	216
50	20,4	215
30	24,0	218
25	25,4	220
20	27,0	216
15	29,1	216
10	31,8	222
5	36,4	225

April 30, 1958
Time of
Rocket Launch
10 h 00 m
Coordinates of
Launch Site
ϕ = 49°12'S
λ = 109°20'W

Standard Levels

H	T	P
3	268	631
4	261	582
5	254	537
6	250	478
7	243	422
8	235	367
9	231	316
10	226	269
11	217	226
12	211	190
13	220	162
14	220	138
15	221	119
16	221	100
17	222	85,0
18	222	71.6
19	222	60.9
20	220	51,8
21	224	44,6
22	224	38,0
23	224	32,8
24	224	28,1
25	222	24,3
26	222	21,1
27	225	18,7
28	225	16,3
29	222	14,1
30	223	12,2
31	225	10.6
32	227	9,22
33	228	8,04
34	228	6,92
35	229	5,96
36	230	5,18
37	230	4,52
38	231	3,89
39	232	3,34
40	235	2,88
41	237	2,51
42	240	2,19
43	249	1,92

Main
Isobar Surfaces

P	H	T
500	5,7	251
400	7,4	242
300	9.4	230
200	11,7	212
150	13,6	220
100	16,0	221
70	18,4	222
50	20,3	221
30	23,6	224
25	24,9	222
20	26,4	224
15	28,6	223
10	31,4	226
5	36,3	230
2	42,6	243

May 3, 1958
Time of
Rocket Launch
10 h 42 m
Coordinates of
Launch Site
ϕ = 49°52'S
λ = 109°17'W

Standard Levels

H	T	P
10	231	
11	226	
12	226	
13	225	
14	223	
15	223	
16	223	
17	220	
18	219	88,1
19	218	74,1
20	218	63,8
21	215	54,2
22	219	46.8
23	218	39,7
24	216	34,2
25	217	29,2
26	214	25,1
27	220	21,6
28	224	18,8
29	226	16,3
30	227	14,1
31	226	12,0
32	227	10,3
33	229	8,81
34	232	7,49
35	235	6,38
36	240	5,42
37	242	4,62
38	246	3,93
39	252	3,38
40	256	2,88
41	260	2,48
42	263	2,16
43	266	1,88
44	271	1,68

Main
Isobar Surfaces

P	H	T
70	19,4	219
50	21,6	217
30	24,9	216
25	26,1	215
20	27,5	222
15	29,6	227
10	32,1	227
5	36,6	241
2	42,5	264

May 5, 1958
Time of
Rocket Launch
11 h 45 m
Coordinates of
Launch Site
ϕ = 32°46'S
λ = 109°18'W

Standard Levels

H	T	P
7	242	
8	239	
9	233	
10	227	
11	226	
12	222	
13	215	
14	215	
15	215	
16	216	
17	214	
18	214	
19	217	
20	220	
21	218	
22	217	
23	219	
24	224	
25	225	
26	227	
27	226	
28	227	
29	231	
30	233	13,6
31	233	11,9
32	233	10,1
33	236	8,70
34	239	7,41
35	243	6,30
36	247	5,37
37	249	4,62
38	250	3,93
39	251	3,38
40	254	2,92
41	257	2,51
42	263	2,16
43	271	1,88

Main Isobar Surfaces

P	H	T
10	34,0	239
5	36,6	248
2	42,5	256

May 7, 1958
Time of Rocket Launch
10 h 34 m
Coordinates of Launch Site
ϕ = 27°37'S
λ = 109°25'W

Standard Levels

H	T	P
3		684
4		609
5		543
6	244	478
7	237	422
8	234	367
9	240	320
10	235	278
11	229	240
12	225	206
13	216	170
14	211	138
15	209	111
16	209	88,1
17	213	71,6
18	214	58,9
19	210	50,6
20	208	43,6
21	211	38,0
22	214	33,4
23	218	29,8
24	226	26,9
25	229	24,3
26	231	21,6
27	230	19,5
28	233	17,6
29	232	16,0
30	229	14,4
31	230	13,0
32	231	11,9
33	233	10,7
34	232	9,65
35	238	8,61
36	238	7,76
37	239	6,92
38	240	
39	244	
40	245	

Main Isobar Surfaces

P	H	T
500	5,8	233
400	7,3	235
300	9,5	238
200	12,1	224
150	13,6	212
100	15,4	207
70	17,1	213
50	19,2	209
30	23,0	218
25	24,8	228
20	26,7	230
15	29,6	230
10	33,5	232

July 10, 1958
Time of Rocket Launch
08 h 53 m
Coordinates of Launch Site
ϕ = 32°10'S
λ = 47°50'W

Standard Levels

H	T	P
5	265	623
6	255	549
7	248	478
8	238	407
9	230	351
10	222	298
11	213	251
12	213	211
13	212	176
14	212	134
15	210	123
16	206	102
17	207	86,1
18	209	71,6
19	212	60,2
20	210	50,6
21	211	42,6
22	216	36,2
23	217	31,2
24	217	27,2
25	218	24,0
26	218	21,1
27	219	
28	220	
29	219	
30	220	
31	222	
32	228	
33	233	
34	238	
35	240	
36	241	
37	242	
38	244	

Main Isobar Surfaces

P	H	T
500	6,7	280
400	8,1	237
300	10,0	222
200	12,3	214
150	13,9	212
100	16,1	206
70	18,2	209
50	20,1	210
30	23,3	217
25	24,7	217

July 12, 1958
Time of Rocket Launch
08 h 30 m
Coordinates of Launch Site
ϕ = 24°41'S
λ = 39°06'W

Standard Levels

H	T	P
29	221	
30	221	
31	222	
32	233	
33	236	
34	236	
35	238	
36	240	
37	240	
38	240	
39	243	
40	246	

July 14, 1958
Time of Rocket Launch
09 h 30 m
Coordinates of Launch Site
ϕ = 16°13'S
λ = 33°02'W

Standard Levels

H	T	P
5	272	
6	265	
7	262	
8	258	
9	248	
10	242	
11	238	239
12	232	211

H	T	P
13	222	184
14	216	160
15	213	138
16	211	119
17	213	101
18	212	86.1
19	211	73.3
20	218	62.4
21	221	53.0
22	224	45,2
23	227	39.3
24	227	33.8
25	227	29.2
26	232	24.8
27	233	21,6
28	234	18,4
29	235	15.9
30	242	13,5
31	241	11,6
32	239	9,88
33	240	8.41
34	245	7.24
35	247	6.24
36	250	5.42
37	252	4,62
38	251	3,97
39	255	3,38
40	257	2,94
41	270	2,57
42		2,24

Main Isobar Surfaces

P	H	T
200	12.3	229
150	14,4	215
100	17,0	213
70	19,3	213
50	21,5	223
30	24.8	226
25	26.0	232
20	27.4	234
15	29,4	238
10	31.9	239
5	36,6	251

July 18, 1958
Time of
Rocket Launch
09 h 30 m
Coordinates of
Launch Site
ϕ = 03°45'N
λ = 28°15'W

Standard Levels

H	T	P
10	247	
11	239	256

H	T	P
12	230	216
13	230	182
14	212	153
15		126
16		105
17		85,0
18		70.8
19		59.6
20	219	50,1
21	221	42.6
22	222	36.2
23	222	30.5
24	222	25,7
25	225	21,9
26	229	18.7
27	233	16.0
28	235	14,0
29	239	12.2
30	243	10.5
31	246	9.22
32	245	8,04
33	244	7.08
34	244	
35	247	

Main Isobar Surfaces

P	H	T
200	12.4	227
150	14.1	
100	16,2	
70	18,1	
50	20,1	219
30	23,1	222
25	24,2	222
20	25,5	227
15	27.5	234
10	30,2	243

July 20, 1958
Time of
Rocket Launch
09 h 49 m
Coordinates of
Launch Site
ϕ = 14°01'N
λ = 25°26'W

Standard Levels

H	T	P
6	269	
7	261	

H	T	P
8	254	
9	246	
10	239	
11	231	
12	227	
13	220	
14	213	157
15	206	133
16	204	110
17	205	91,2
18	207	74,9
19	209	62,4
20	215	51,8
21	224	43,2
22	220	35,4
23	221	29,8
24	222	25,3
25	227	21,3
26	233	18,1
27	236	15,7
28	237	13,3
29	236	11,6
30	236	10,1
31	236	9,01
32	236	7,94
33	238	7,08
34	240	6 24
35	246	5,49
36	250	4,73
37	252	4,12

Main Isobar Surfaces

P	H	T
150	14,4	210
100	16,4	204
70	18,4	208
50	20,3	219
30	23,0	221
25	24,1	222
20	25,4	230
15	27,3	236
10	30,1	235
5	35,8	249

/50

July 21, 1958
Time of
Rocket Launch
09 h 30 m
Coordinates of
Launch Site
ϕ = 18°45'N
λ = 24°39'W

Standard Levels

H	T	P
5		556
6		490
7		431
8		376
9		327
10		282
11		243
12		206
13		176
14		148
15		124
16		105
17		88,1
18		74,1
19		62,4
20		51,8
21		43.2
22		36,6
23		30,9
24		26,0
25		21,3
26		17,7
27		14,8
28		12,2
29		10,1
30		8,22
31		6,84
32		5,81
33		5,01
34		4,41
35		3,93
36		3,54
37		3.24

Main
Isobar Surfaces

P	H	T
500	5,9	
400	7,5	
300	9,6	
200	12,2	
150	14,0	
100	16,2	
70	18,3	
50	20,3	
30	23,2	
25	24,2	
20	25,3	
15	26,9	
10	29,0	
5	33,1	