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INTERRELATED STRUCTURE OF HIGH ALTITUDE ATMOSPHERIC PROFILES

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16. ABSTRACT

A preliminary development of a mathematical model to compute probabilities of thermodynamic profiles is presented. The model assumes an exponential expression for pressure and utilizes the hydrostatic law and equation of state in the determination of density and temperature. It is shown that each thermodynamic variable can be factored into the produce of steady state and perturbation functions. The steady state functions have profiles similar to those of the 1962 standard atmosphere while the perturbation functions oscillate about 1. Limitations of the model and recommendations for future work are presented.

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FOREWORD

For flight simulation of the Space Shuttle, involving aerodynamic heating, performance and trajectory dispersion studies, it is important the atmospheric model used reflect properly the type atmosphere the space vehicle will actually sense, with respect to changing altitude.

Therefore, this study does provide a mathematical model to compute realistic vertical profiles of pressure, temperature and density. Each parameter is given as a product of a steady state function and a perturbation factor. The model shows the interrelationship of the thermodynamic perturbations. Probabilities of profiles can be ascertained from the maximum and minimum deviation from steady state. Also, density and temperature perturbations are completely specified if the structure of the pressure perturbation is known. This reported model is valid from 90 km down to ~ 45 km altitude.

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1. INTRODUCTION

Simulated space shuttle trajectories through model atmospheres permit computation of important reentry parameters such as dynamic pressure and stagnation heating rate. Since these parameters are direct functions of the thermodynamic properties of the atmosphere, it is highly important that the model atmosphere reflect properly the type atmosphere the space shuttle will see. Density, pressure, and temperature as a function of altitude must be known since the shuttle's dynamic pressure and stagnation heating rate at any altitude are functions of the altitude history of the atmospheric variable as well as the immediate value. Therein lies the complexity of the problem. It also turns out, as this report will show, that the atmospheric variables are not only dependent upon each altitude, but also their altitude history. This report will discuss primarily this feature of the atmosphere.

The atmospheric model presented in this report is described in a different manner from previous models. Each thermodynamic variable, pressure, temperature, and density, is given as the product of a steady state function and a perturbation factor. The perturbation factor is described such that maximum and minimum deviation from the steady state can be determined and hence probability of profiles can be ascertained once an adequate sample has been determined.

The model also gives a true picture of the interrelationship of the perturbations of the thermodynamic variables.

2. METHODOLOGY

2.1 Data Storage

Processed thermodynamic and wind data from 67 high altitude ROBIN flights was keypunched onto cards and transferred to magnetic tape. The data was processed by the May 1970 high altitude ROBIN program. (See Luers, July 1970.) Data for the 67 soundings was acquired from four different sources which cover essentially the central portion of the Western Hemisphere.

Table I is a log of the individual flights. Δh is the altitude range for which the data is available.

In the appendix are tab print-outs of density, pressure, temperature, density ratio, and wind speed and direction at each altitude (km intervals) for the 67 soundings. The data has been included in this report for those readers interested in further development of the model. Missing data for several of the flights was due to loss of radar tracking or to the Mach-Reynolds number being out of the drag table. Flight 56 was eliminated from the data bank due to an insufficient number of data points.

2.2 Method of Approach

Logs of the pressure data listed in the appendix were fitted by a polynomial of degree k. Coefficients of the polynomial were determined by a least squares program for $k = 2, 3, \ldots, 6$. The coefficients of the resulting collection of data were then paired and linearly correlated for each k.

The rationale for correlating coefficients as discussed above is based on the fact that the resulting linear relations provide a convenient tool for computing probabilities of various profiles. It will be shown (Section 3) that one parameter is sufficient to describe the behavior of each profile.

TABLE I

FLIGHT LOG

Flight No.	Date	Time Zulu	Latitude	Station	Mass (Kg)	Diameters (Meters)	Time Local	Δh	Source
1	25 Nov 69	1755	37.84	Wallops	.0922	1.00	1255	100-44	1
2	25 Nov 69	2117	37.84	Wallops	.0944	1.00	1617	100-32	1
3	18 Jun 70	1800	37.84	Wallops	.0951	1.00	1300	100-38	1
4	01 Oct 69	1622	34.10	Pt. Mugu	.1168	1.00	0822	100-31	1
5	12 Nov 69	1959	34.10	Pt. Mugu	.1094	1.00	1159	60-37	1
6	15 Apr 70	2006	34.10	Pt. Mugu	.1137	1.00	1206	100-44	1
7	09 Sep 70	1559	34.10	Pt. Mugu	.1145	1.00	0759	100-40	1
8	23 Sep 70	1845	34.10	Pt. Mugu	.1161	1.00	1045	87-37	1
9	21 Oct 70	1542	34.10	Pt. Mugu	.1159	1.00	0742	100-42	1
10	02 Feb 69	?	32.49	White Sands	.0478	0.66	?	100-48	1
11	09 Feb 69	2034	32.49	White Sands	.0940	1.00	1334	100-46	1
12	09 Feb 69	1803	32.49	White Sands	.1001	1.00	1103	100-38	1
13	18 Feb 68	1810	29.60	Eglin	.1196	1.00	1310	100-37	1
14	18 Feb 68	1900	29.60	Eglin	.1151	1.00	1400	100-38	1
15	18 Feb 68	2010	29.60	Eglin	.1175	1.00	1510	95-35	1
16	19 Oct 68	1249	28.25	Patrick	.1177	1.00	0749	100-52	1
17	19 Nov 68	1833	28.25	Patrick	.1103	1.00	1333	100-41	1
18	20 Nov 68	2140	28.25	Patrick	.1109	1.00	1640	100-32	1
19	20 Nov 68	2100	28.25	Patrick	.1128	1.00	1600	100-49	1
20	14 Jul 69	1300	28.25	Patrick	.1180	1.00	0800	100-43	1
21	09 Sep 70	1500	28.25	Patrick	.1157	1.00	1000	75-36	1
22	04 Nov 70	1600	28.25	Patrick	.1156	1.00	1100	100-43	1
23	13 Nov 70	1600	28.25	Patrick	.1152	1.00	1100	92-53	1
24	18 Nov 70	1600	28.25	Patrick	.1142	1.00	1100	100-49	1
25	09 Dec 70	1700	28.25	Patrick	.1128	1.00	1200	100-42	1
26	13 Nov 69	2100	22.00	Kauai	.1128	1.00	1100	98-54	1
27	02 Sep 70	1000	-7.97	Ascension	.1150	1.00	0900	100-49	1
28	21 Sep 70	2219	32.35	Wallops	.0972	1.00	1819	100-44	2
29	30 Nov 70	1847	37.84	Wallops	.0989	1.00	1347	100-33	2
30	19 Jan 71	1943	37.84	Wallops	.1136	1.00	1443	96-38	2
31	21 Jan 71	1818	37.84	Wallops	.1146	1.00	1318	100-32	2
32	21 Jan 71	1902	37.84	Wallops	.1116	1.00	1402	100-38	2

TABLE I (Continued)

FLIGHT LOG

Flight No.	Date	Time Zulu	Latitude	Station	Mass (Kg.)	Diameter (Meters)	Time Local	Δh	Source
33	21 Jan 71	1938	37.84	Wallops	.1132	1.00	1438	100-31	2
34	21 Jan 71	2049	37.84	Wallops	.0931	1.00	1549	84-36	2
35	28 Jul 71	1538	28.25	Cape Kennedy	.1146	1.00	1038	100-44	3
36	22 Sep 71	1533	28.25	Cape Kennedy	.1149	1.00	1033	100-45	3
37	09 Jun 71	1003	-7.97	Ascension	.1137	1.00	0903	100-49	3
38	28 Jul 71	1003	-7.97	Ascension	.1143	1.00	0903	100-44	3
39	06 Oct 71	1103	-7.97	Ascension	.1188	1.00	1003	100-42	3
40	20 Nov 70	1536	34.10	Pt. Mugu	.1154	1.00	0736	70-37	3
41	23 Dec 70	1709	34.10	Pt. Mugu	.1159	1.00	0909	100-31	3
42	08 Jan 71	1614	34.10	Pt. Mugu	.1159	1.00	0814	100-45	3
43	29 Jan 71	1556	34.10	Pt. Mugu	.1145	1.00	0756	67-51	3
44	04 Mar 71	1833	34.10	Pt. Mugu	.1151	1.00	1033	100-44	3
45	13 Nov 69	2134	22.00	Barking Sands	.1128	1.00	1134	98-54	3
46	16 Sep 70	2104	22.00	Barking Sands	.1142	1.00	1104	90-52	3
47	23 Sep 70	2209	22.00	Barking Sands	.1079	1.00	1209	100-54	3
48	07 Oct 70	2221	22.00	Barking Sands	.1113	1.00	1221	100-56	3
49	21 Oct 70	2103	22.00	Barking Sands	.1156	1.00	1103	100-35	3
50	23 Jan 71	0031	22.00	Barking Sands	.1163	1.00	1431	100-30	3
51	03 Feb 71	2129	22.00	Barking Sands	.1185	1.00	1129	100-30	3
52	16 Nov 71	1433	28.25	Cape Kennedy	.1649	1.00	0933	95-40	4
53	18 Nov 71	1658	28.25	Cape Kennedy	.1643	1.00	1158	90-32	4
54	15 Dec 71	1637	28.25	Cape Kennedy	.1660	1.00	1137	92-38	4
55	15 Dec 71	1733	28.25	Cape Kennedy	.1148	1.00	1233	100-45	4
56	15 Dec 71	1833	28.25	Cape Kennedy	.1682	1.00	1333	97-58	4
57	11 Jan 72	1433	28.25	Cape Kennedy	.1670	1.00	0933	79-30	4
58	12 Jan 72	1633	28.25	Cape Kennedy	.1650	1.00	1133	92-33	4
59	15 Feb 72	1433	28.25	Cape Kennedy	.1616	1.00	0933	95-31	4
60	15 Feb 72	1703	28.25	Cape Kennedy	.1629	1.00	1203	94-45	4
61	15 Feb 72	1833	28.25	Cape Kennedy	.1629	1.00	1333	92-39	4
62	16 Feb 72	1833	28.25	Cape Kennedy	.1629	1.00	1333	93-42	4
63	17 Feb 72	1639	28.25	Cape Kennedy	.1616	1.00	1139	89-40	4
64	18 Feb 72	1433	28.25	Cape Kennedy	.1615	1.00	0933	94-44	4
65	18 Feb 72	1603	28.25	Cape Kennedy	.1624	1.00	1103	94-41	4
66	23 Feb 72	1503	28.25	Cape Kennedy	.1620	1.00	1003	93-32	4
67	08 Mar 72	1633	28.25	Cape Kennedy	.1628	1.00	1133	88-37	4

3. DEVELOPMENT OF MODEL

3.1 Introduction

Development of thermodynamic profiles can be based entirely on the functional representation of one variable, for example, pressure, and the others following by application of the hydrostatic law and the equation of state. Ideally, density should be the fitted variable since the ROBIN program first computes density and later pressure and temperature. Therefore, any daily and seasonal trends associated with the earth's atmosphere would most likely appear as perturbations in density. Numerical integration of density introduces "smoothed" pressure data and any trends that were observed in the former are partially suppressed. It is for this reason that density should be the primary variable investigated in the determination of daily and seasonal trends within the earth's atmosphere. However, it turned out that the function needed to fit density adequately could not be integrated analytically (hydrostatic law) to determine pressure. But the function needed to fit pressure adequately could be differentiated (hydrostatic law) to determine density. (In both cases the gas law could be used to determine temperature.) Thus, a model based on pressure data has been developed which is discussed in the sections that follow.

Section 3.2 is concerned with the derivation of atmospheric equations needed for development of the model. The particular set of equations used in the final model will be of a somewhat different nature but the methodology employed in this section is necessary for their derivation. Since the atmospheric equations are in terms of unknown parameters a technique must be developed for their specification. This topic is discussed in Section 3.3. Probably the most important section of this report and the one that led to the development of the model is Section 3.4. The properties of the coefficients are discussed briefly and then used in the derivation of the model (Section 3.5). Properties of the model are presented in Section 3.6.

3.2 Derivation of Atmospheric Equations

Mathematical equations describing the behavior of thermodynamic variables must be compatible with the physical laws which relate these variables. These laws impose a major constraint in the mathematics in that once one variable is specified by a particular equation, the others are uniquely determined. However, this fact can be used to advantage since only one variable need be expressed in terms of a function.

The laws which govern the interrelationships of the variables pressure, density, and temperature are the hydrostatic and gas laws (equation of state). The hydrostatic law is used to express density as a function of pressure while the equation of state relates temperature to pressure and density as their ratio. Therefore, the three basic equations needed for development of the model are derived as follows.

3.2.1 Pressure

Pressure is assumed to be of the form

$$P = \exp\left[\beta_0 + \beta_1 z + \ldots + \beta_k z^k\right] \quad (1)$$

where P is pressure in millibars and 100-z is geometric altitude.

3.2.2 Density

The hydrostatic law is used to express density in terms of the derivative of pressure with respect to z. Thus,

$$\rho = \frac{100}{g(z)}\frac{dP}{dz} = \frac{100}{g(z)}\left[\beta_1 + 2\beta_2 z + \ldots + k\beta_k z^{k-1}\right]\exp\left[\beta_0 + \beta_1 z + \ldots + \beta_k z^k\right] \quad (2)$$

where

$$g(z) = \frac{g_s}{[1 + (h/r)]^2} = \frac{9.7803}{\{1 + [(100-z)/6372.8988]\}^2}$$

is the acceleration due to gravity; g_s is the gravitational constant at sea level in meters per sec^2; h is geometric altitude in kilometers; r is the radius of the earth in kilometers; ρ is density in grams per cubic meter; and the factor of 100 is the conversion from millibars per kilometer to gram meters per sec^2 per cubic meter.

3.2.3 Temperature

The equation of state now relates temperature to pressure and density as

$$T = 348.385 \frac{P}{\rho} = \frac{3.48385\, g(z)}{\beta_1 + 2\beta_2 z + \ldots + k\beta_k z^{k-1}} \qquad (3)$$

where T is temperature in $^{\circ}K$.

Now that the necessary equations for building the model are at hand the problem of determining the β's still remains. This topic will now be discussed.

3.3 Determination of β's

Pressure data from each flight was fitted by an exponential of the form given in Equation (1). Coefficients of Equation (1) were calculated for each flight using a least squares fitting program on the log pressure,

$$\log P = \beta_0 + \beta_1 z + \ldots + \beta_k z^k \quad . \qquad (4)$$

The coefficients of the associated polynomials (Equation (4)) for $k = 2, 3, \ldots, 6$ are listed in Tables II through VI. The large coefficients observed for Flights 5, 34, 40, 43, and 57 are due to missing data at either the high altitudes, low altitudes, or both. Data in these regions control the tailing off of the polynomials and, hence, affect considerably the resulting β's. Standard errors of estimate are included to illustrate the goodness of fit for each of the polynomials. β

TABLE II

POLYNOMIAL COEFFICIENTS FOR THE SECOND DEGREE

FLIGHT NO.	β_0	β_1	β_2	STANDARD ERROR OF ESTIMATE
1	-8.12471	0.18282	-0.00051334	0.04324
2	-8.05348	0.17695	-0.00042348	0.06502
3	-8.40256	0.21065	-0.00085854	0.04661
4	-8.33824	0.19536	-0.00061598	0.06616
5	-7.47391	0.16481	-0.00038991	0.04330
6	-8.21276	0.19600	-0.00072226	0.06784
7	-8.36383	0.19877	-0.00068798	0.04767
8	-8.24857	0.19371	-0.00063229	0.05127
9	-8.32785	0.19587	-0.00070052	0.03977
10	-8.27462	0.19597	-0.00072163	0.03926
11	-8.15785	0.19528	-0.00070827	0.01890
12	-8.22003	0.19335	-0.00066042	0.04387
13	-8.25296	0.19100	-0.00059909	0.05980
14	-8.21710	0.18725	-0.00054446	0.05496
15	-8.34522	0.19328	-0.00060478	0.04457
16	-8.32353	0.21071	-0.00095915	0.06160
17	-8.25261	0.19267	-0.00061472	0.02089
18	-8.27526	0.19160	-0.00059764	0.04785
19	-8.19623	0.19733	-0.00071707	0.02090
20	-8.20854	0.20047	-0.00073731	0.03012
21	-7.64680	0.16441	-0.00030203	0.02054
22	-8.19361	0.19264	-0.00065993	0.03994
23	-8.44420	0.20912	-0.00090403	0.02228
24	-7.93187	0.17094	-0.00030589	0.06039
25	-8.06619	0.18080	-0.00048883	0.03394
26	-8.59139	0.22538	-0.00118690	0.07933
27	-8.25783	0.19542	-0.00067208	0.03520
28	-8.21245	0.19815	-0.00072891	0.01832
29	-8.01403	0.17428	-0.00038922	0.04103
30	-8.13331	0.18053	-0.00045106	0.01396
31	-7.98065	0.16874	-0.00029860	0.03684
32	-8.02432	0.17139	-0.00034352	0.03828
33	-7.92963	0..16499	-0.00025491	0.04037
34	-8.84573	0.19838	-0.00056994	0.06188
35	-8.54030	0.21061	-0.00086091	0.02530
36	-8.38349	0.20628	-0.00082931	0.03215
37	-8.27600	0.19989	-0.00076264	0.03796
38	-8.39017	0.20550	-0.00080354	0.03069
39	-8.38614	0.20550	-0.00080104	0.03137
40	-7.70396	0.16501	-0.00030903	0.01413
41	-8.35169	0.19045	-0.00056509	0.08209
42	-8.11182	0.19323	-0.00070559	0.06500
43	-8.50959	0.19585	-0.00062355	0.00612
44	-8.30665	0.20266	-0.00083664	0.05120
45	-8.57042	0.22430	-0.00116930	0.06295
46	-8.49977	0.21158	-0.00089328	0.01693
47	-8.25388	0.19494	-0.00064960	0.04150
48	-8.21772	0.19296	-0.00060946	0.05410
49	-7.94802	0.17887	-0.00045035	0.04384
50	-8.22031	0.19170	-0.00060193	0.06592
51	-8.07256	0.18578	-0.00053655	0.05463
52	-8.51436	0.20988	-0.00085903	0.05240
53	-8.07836	0.18008	-0.00045090	0.03560
54	-8.45551	0.20439	-0.00077983	0.06486
55	-7.91244	0.17333	-0.00037606	0.08324
56	-8.09522	0.17755	-0.00023551	0.05607
57	-7.93997	0.17008	-0.00031990	0.02849
58	-8.41788	0.19005	-0.00052232	0.03272
59	-8.24288	0.18850	-0.00055150	0.06078
60	-8.28778	0.19920	-0.00076395	0.01891
61	-8.08772	0.18572	-0.00056983	0.02794
62	-8.24843	0.19767	-0.00074026	0.02383
63	-8.32545	0.20184	-0.00078373	0.03482
64	-8.07918	0.18802	-0.00061957	0.03480
65	-8.37411	0.20590	-0.00084575	0.03358
66	-8.17056	0.18837	-0.00058039	0.08728
67	-8.33351	0.19863	-0.00070285	0.03250

TABLE III

POLYNOMIAL COEFFICIENTS FOR THE THIRD DEGREE

FLIGHT NO.	β_0	β_1	β_2	β_3	STANDARD ERROR OF ESTIMATE
1	-8.042229	0.1643246	0.00031985	-0.00000991891	0.02587240
2	-8.112371	0.1877381	-0.00082299	0.00000391672	0.06031915
3	-8.426510	0.2154843	-0.00105489	0.00000211134	0.04553572
4	-8.429127	0.2117578	-0.00121444	0.00000578225	0.05456262
5	-1.144247	-0.2251876	0.00755328	-0.00005348949	0.04256370
6	-8.256495	0.2058112	-0.00116398	0.00000525861	0.06531323
7	-8.351914	0.1962848	-0.00058348	-0.00000116111	0.04740940
8	-8.983369	0.2660244	-0.00272337	0.00001834276	0.02292984
9	-8.339646	0.1984170	-0.00081134	0.00000127381	0.03946556
10	-8.271891	0.1953128	-0.00068950	-0.00000041186	0.03924819
11	-8.131840	0.1892177	-0.00042518	-0.00000349485	0.01539622
12	-8.226835	0.1947474	-0.00071807	0.00000063006	0.04377834
13	-8.203751	0.1812392	-0.00020878	-0.00000413026	0.05620558
14	-8.199216	0.1836403	-0.00039787	-0.00000157621	0.05445362
15	-8.412737	0.2022927	-0.00090838	-0.00000289143	0.04281689
16	-8.268406	0.1961699	-0.00019425	-0.00001062354	0.05691862
17	-8.266519	0.1956232	-0.00074095	0.00000142633	0.02006531
18	-8.378507	0.2105161	-0.00129810	0.00000686726	0.02185582
19	-8.210257	0.2008673	-0.00089595	0.00000238505	0.02002853
20	-8.250962	0.2098073	-0.00115048	0.00000483245	0.02431444
21	-8.871900	0.2545835	-0.00241355	0.00001581660	0.00768885
22	-8.160122	0.1853056	-0.00033737	-0.00000376163	0.03718745
23	-8.465879	0.2122194	-0.00102992	0.00000152586	0.02220533
24	-7.821230	0.1435682	0.00104893	-0.00001771008	0.03800036
25	-8.008142	0.1682531	0.00005669	-0.00000627038	0.02370014
26	-8.729509	0.2554501	-0.00270690	0.00002111103	0.07057039
27	-8.225112	0.1873277	-0.00027142	-0.00000523741	0.03234969
28	-8.192782	0.1933294	-0.00051237	-0.00000255593	0.01614304
29	-8.050149	0.1810018	-0.00064180	0.00000251327	0.03822576
30	-8.133439	0.1805473	-0.00045174	0.00000000689	0.01396127
31	-7.969798	0.1667530	-0.00022495	-0.00000072202	0.03657059
32	-7.994626	0.1648009	-0.00007371	-0.00000289395	0.03584775
33	-7.939727	0.1668100	-0.00032138	-0.00000064220	0.04015656
34	-8.342692	0.1533551	0.00064689	-0.00001014024	0.05764908
35	-8.515565	0.2060408	-0.00066818	-0.00000221713	0.02432815
36	-8.333467	0.1982395	-0.00050658	-0.00000364669	0.03066660
37	-8.280911	0.2011014	-0.00082284	0.00000078686	0.03790310
38	-8.422417	0.2127331	-0.00112924	0.00000387743	0.02753891
39	-8.347606	0.1986191	-0.00052116	-0.00000310974	0.02943360
40	-9.412742	0.2816499	-0.00288612	0.00001847380	0.00371011
41	-8.599390	0.2284481	-0.00187566	0.00001230579	0.03751611
42	-8.244085	0.2234569	-0.00209199	0.00001680482	0.03358382
43	-8.612957	0.2035429	-0.00081287	0.00000153917	0.00612183
44	-8.339464	0.2100147	-0.00116812	0.00000394615	0.04930782
45	-8.705358	0.2536844	-0.00265425	0.00002062440	0.05205976
46	-8.459366	0.2061446	-0.00068158	-0.00000247595	0.01666817
47	-8.138918	0.1670785	0.00081674	-0.00002079915	0.01636263
48	-8.089436	0.1639701	0.00091770	-0.00002213272	0.04276608
49	-7.935640	0.1764902	-0.00035822	-0.00000094494	0.04353522
50	-8.373675	0.2189627	-0.00158256	0.00000933928	0.01913767
51	-8.172163	0.2034845	-0.00117338	0.00000606505	0.03614183
52	-8.807382	0.2456055	-0.00205504	0.00001172554	0.04077614
53	-8.370456	0.2103686	-0.00132751	0.00000748481	0.02003007
54	-8.897025	0.2570627	-0.00249645	0.00001634878	0.03971226
55	-7.774537	0.1418134	0.00106948	-0.00001752165	0.05968714
56	-	-	-	-	-
57	-8.812108	0.2360510	-0.00186296	0.00001130449	0.01013397
58	-8.599733	0.2106347	-0.00115186	0.00000559592	0.02346729
59	-8.520740	0.2239589	-0.00168469	0.00001020890	0.02993843
60	-8.376140	0.2118022	-0.00124106	0.00000521453	0.01437523
61	-8.052038	0.1814186	-0.00042770	-0.00000137323	0.02764148
62	-8.355115	0.2116005	-0.00123191	0.00000504255	0.01973364
63	-8.764022	0.2493538	-0.00226941	0.00001395010	0.01150004
64	-8.043036	0.1829320	-0.00042974	-0.00000204118	0.03442616
65	-8.585769	0.2346363	-0.00187124	0.00001051777	0.01235391
66	-8.724858	0.2572674	-0.00284977	0.00002089420	0.01739950
67	-8.766315	0.2426032	-0.00199998	0.00001152999	0.01107606

TABLE IV

POLYNOMIAL COEFFICIENTS FOR THE FOURTH DEGREE

FLIGHT NO.	β_0	β_1	$\beta_2 \times 10^2$	$\beta_3 \times 10^4$	$\beta_4 \times 10^6$	STANDARD ERROR OF ESTIMATE
1	-7.98906	0.14369	0.20123	-0.57205	0.42220	0.01494
2	-7.96458	0.14121	0.23087	-0.68068	0.52930	0.01987
3	-8.33937	0.18519	0.11850	-0.54382	0.45559	0.03024
4	-8.30026	0.17182	0.14344	-0.54216	0.43477	0.02283
5	-240.18430	19.43453	-59.51882	81.11329	-41.23646	0.02995
6	-8.13842	0.15999	0.25946	-0.99753	0.93760	0.04544
7	-8.26595	0.16532	0.17835	-0.62861	0.51417	0.03328
8	-9.16251	0.29011	-0.38255	0.39006	-0.13594	0.02251
9	-8.24927	0.16465	0.18609	-0.70797	0.62130	0.01683
10	-8.24019	0.18198	0.04904	-0.35928	0.34150	0.03712
11	-8.10563	0.17864	0.04756	-0.29599	0.24171	0.01128
12	-8.13673	0.16287	0.16783	-0.60807	0.50358	0.02590
13	-8.08142	0.13944	0.28322	-0.79604	0.59900	0.02976
14	-8.07936	0.14197	0.26830	-0.79281	0.62665	0.02779
15	-8.09304	0.14051	0.25895	-0.71832	0.53374	0.02459
16	-8.16517	0.14875	0.43589	-1.59176	1.54742	0.03818
17	-8.24511	0.18777	-0.01304	-0.14760	0.13717	0.01821
18	-8.33432	0.19660	-0.03617	-0.14657	0.15826	0.01370
19	-8.21605	0.20341	-0.11300	0.09715	-0.07330	0.01989
20	-8.22929	0.20156	-0.04859	-0.13407	0.15999	0.02275
21	-8.18985	0.18716	0.00023	-0.21448	0.20935	0.00726
22	-8.08651	0.15728	0.19202	-0.65724	0.54353	0.02308
23	-7.97648	0.11585	0.52501	-1.63124	1.49682	0.01290
24	-7.79707	0.13319	0.19859	-0.46470	0.28196	0.03672
25	-8.01073	0.16922	-0.00199	-0.04204	-0.01781	0.02368
26	-8.92970	0.32174	-0.85132	2.05498	-1.92070	0.05995
27	-8.18177	0.16870	0.14094	-0.56831	0.50582	0.02720
28	-8.15536	0.17858	0.06707	-0.35067	0.28699	0.00686
29	-7.96110	0.15252	0.13046	-0.42896	0.33888	0.01669
30	-8.16812	0.18801	-0.09087	0.10427	-0.07894	0.01320
31	-7.90762	0.14718	0.10926	-0.31007	0.22268	0.02763
32	-7.99895	0.16638	-0.01879	-0.00071	-0.02244	0.03581
33	-7.90601	0.15636	0.03716	-0.15055	0.11375	0.03801
34	-5.22960	-0.22484	1.66369	-2.91702	1.75976	0.03192
35	-8.43498	0.18315	0.10141	-0.46711	0.38449	0.01770
36	-8.09129	0.14156	0.33322	-1.01207	0.82678	0.01100
37	-8.24350	0.18502	0.06280	-0.43747	0.43661	0.03476
38	-8.41796	0.21100	-0.09872	-0.00090	0.03542	0.02748
39	-8.21833	0.16301	0.20065	-0.67582	0.53727	0.01199
40	-11.22771	0.44755	-0.84536	0.99842	-0.43747	0.00249
41	-8.55927	0.21887	-0.12962	-0.00216	0.08818	0.03643
42	-8.32082	0.25383	-0.46292	0.88989	-0.65622	0.01387
43	-21.95636	1.52964	-4.99262	8.04989	-4.89909	0.00584
44	-8.24077	0.17171	0.19737	-0.83833	0.78374	0.02989
45	-8.88603	0.31351	-0.78944	1.87034	-1.73343	0.03977
46	-8.52742	0.21872	-0.14610	0.17132	-0.17200	0.01654
47	-8.09823	0.15129	0.22908	-0.69232	0.51524	0.01220
48	-7.98812	0.12925	0.40829	-1.26927	1.13907	0.03861
49	-7.82981	0.14152	0.21060	-0.60214	0.45591	0.01449
50	-8.32985	0.20559	-0.07083	-0.10180	0.13942	0.00913
51	-8.09251	0.17917	0.04156	-0.29410	0.25339	0.01928
52	-8.50246	0.19372	0.07703	-0.48928	0.44598	0.03721
53	-8.01289	0.15878	0.10927	-0.37670	0.28985	0.01133
54	-8.71522	0.22674	-0.08858	-0.17293	0.24030	0.03832
55	-7.65170	0.09320	0.51310	-1.33072	1.05046	0.03414
56	-	-	-	-	-	-
57	-7.86109	0.13890	0.16564	-0.42580	0.29607	0.00510
58	-8.29927	0.16286	0.12397	-0.41193	0.31193	0.01354
59	-8.33514	0.18953	0.01702	-0.27348	0.25376	0.02084
60	-8.30914	0.19830	-0.03983	-0.15159	0.16700	0.01350
61	-7.62236	0.10903	0.34648	-0.83790	0.59723	0.01361
62	-8.15769	0.17539	0.08594	-0.42166	0.36315	0.01521
63	-8.61543	0.22725	-0.11676	-0.08317	0.15681	0.01052
64	-7.65916	0.10644	0.42769	-1.14070	0.90346	0.01865
65	-8.55410	0.22853	-0.15108	0.02317	0.06308	0.01209
66	-8.78404	0.26716	-0.33581	0.30947	-0.06713	0.01664
67	-8.78894	0.24575	-0.21478	0.14351	-0.01881	0.01106

TABLE V

POLYNOMIAL COEFFICIENTS FOR THE FIFTH DEGREE

FLIGHT NO.	β_0	β_1	$\beta_2 \times 10^2$	$\beta_3 \times 10^4$	$\beta_4 \times 10^6$	$\beta_5 \times 10^8$	STANDARD ERROR OF ESTIMATE
1	-7.99234	0.14569	0.17531	-0.44700	0.16991	0.18021	0.01488
2	-7.97383	0.14575	0.18276	-0.48998	0.21268	0.18624	0.01957
3	-8.29961	0.16353	0.37088	-1.64203	2.45600	-1.29058	0.02613
4	-8.26276	0.15369	0.33261	-1.28096	1.64353	-0.70073	0.01802
5	-1496.55600	148.66640	-588.79720	1160.01900	-1135.91800	442.29540	0.02545
6	-8.06538	0.11535	0.83722	-3.78426	6.55969	-4.01578	0.03526
7	-8.25110	0.15693	0.27954	-1.08375	1.37094	-0.57118	0.03278
8	-8.57488	0.19009	0.24773	-1.46327	2.43072	-1.35088	0.02183
9	-8.22720	0.15169	0.34788	-1.46111	2.08814	-1.01161	0.01448
10	-8.17862	0.14102	0.62146	-3.33542	6.80956	-4.97543	0.02775
11	-8.10836	0.18037	0.02425	-0.17932	-0.00242	0.18084	0.01123
12	-8.08590	0.13468	0.50192	-2.08591	3.23977	-1.79422	0.01701
13	-8.03676	0.11555	0.55703	-1.96838	2.70041	-1.33423	0.02441
14	-8.05503	0.12872	0.42273	-1.46478	1.85065	-0.78968	0.02618
15	-7.96704	0.10861	0.51991	-1.63196	1.95896	-0.81441	0.02320
16	-8.16740	0.15037	0.41127	-1.45292	1.22042	0.27250	0.03817
17	-8.25462	0.19325	-0.08021	0.15971	-0.45116	0.39887	0.01783
18	-8.34091	0.19984	-0.07047	-0.01063	-0.06742	0.13276	0.01348
19	-8.19871	0.19135	0.06257	-0.85271	2.07398	-1.71783	0.01861
20	-8.19068	0.17843	0.24531	-1.52646	2.91961	-1.93657	0.01703
21	-5.49759	-0.14677	1.61365	-4.01383	4.57585	-1.96247	0.00687
22	-8.07585	0.15090	0.27313	-1.04151	1.30512	-0.53445	0.02270
23	-7.89993	0.09669	0.69857	-2.35195	2.88863	-1.01223	0.01284
24	-7.84630	0.16667	-0.27893	2.06734	-5.32931	4.40099	0.03092
25	-8.02145	0.17551	-0.08051	0.32347	-0.72970	0.49095	0.02331
26	-9.09794	0.39751	-1.83920	7.30270	-14.03210	10.09284	0.05578
27	-8.13008	0.13354	0.64235	-3.22701	6.39778	-4.62115	0.01752
28	-8.16122	0.18225	0.01810	-0.11095	-0.20024	0.34939	0.00637
29	-7.95638	0.15016	0.15577	-0.53081	0.51050	-0.10246	0.01659
30	-8.31682	0.23036	-0.46881	1.52602	-2.44255	1.43250	0.00515
31	-7.94824	0.16713	-0.10216	0.52788	-1.16853	0.81836	0.02305
32	-8.05086	0.19475	-0.34889	1.43360	-2.63212	1.68222	0.02931
33	-7.96082	0.18285	-0.23933	0.92930	-1.65301	1.02421	0.03202
34	-6.71738	0.00316	0.34596	0.69013	-2.94470	2.35223	0.03094
35	-8.49455	0.20637	-0.15356	0.66187	-1.77681	1.48998	0.01526
36	-8.02308	0.12057	0.53936	-1.87308	2.42359	-1.08258	0.00986
37	-8.18059	0.14223	0.67305	-3.67331	7.60756	-5.62428	0.02381
38	-8.38259	0.18939	0.18101	-1.35014	2.75745	-1.94431	0.02372
39	-8.25063	0.17527	0.07013	-0.11631	-0.49893	0.69080	0.01093
40	-16.83738	1.08995	-3.73997	7.41567	-7.44111	3.01232	0.00191
41	-8.51917	0.20554	-0.00818	-0.44444	0.78169	-0.39071	0.03580
42	-8.35120	0.27278	-0.71285	2.11755	-3.17818	1.83415	0.00700
43	-74.10129	8.01082	-37.06011	87.00254	-101.63360	47.18756	0.00579
44	-8.18420	0.13715	0.64477	-2.99631	5.13736	-3.10973	0.02002
45	-9.05186	0.38820	-1.76320	7.04300	-13.67162	9.94849	0.03335
46	-8.69710	0.25849	-0.48716	1.52389	-2.68165	1.76116	0.01640
47	-8.13966	0.17427	-0.09858	1.13590	-3.83620	3.70336	0.00822
48	-7.87200	0.07525	1.13958	-5.31532	10.87668	-8.46749	0.03571
49	-7.79806	0.12512	0.39261	-1.35721	1.76758	-0.80718	0.00810
50	-8.32501	0.20328	-0.04717	-0.19287	0.28628	-0.08392	0.00895
51	-8.06775	0.16739	0.16268	-0.76030	1.00522	-0.42962	0.01693
52	-7.37051	-0.05291	1.96409	-6.97602	10.67394	-6.01645	0.02228
53	-7.85407	0.12950	0.30165	-0.95015	1.07875	-0.40642	0.01081
54	-7.79585	0.03020	1.38071	-5.09391	7.78671	-4.31223	0.02840
55	-7.59033	0.05491	1.01798	-3.81074	6.14512	-3.70521	0.02408
56	-	-	-	-	-	-	-
57	-8.97916	0.28261	-0.54153	1.24399	-1.60237	0.83448	0.00406
58	-8.15076	0.13252	0.33854	-1.08731	1.28123	-0.51696	0.01267
59	-8.28522	0.17736	0.11200	-0.58929	0.72047	-0.25228	0.02055
60	-8.38159	0.21713	-0.20675	0.50059	-0.98815	0.75747	0.01321
61	-7.36711	0.05395	0.76305	-2.25124	2.79473	-1.27392	0.01171
62	-7.95165	0.12684	0.48204	-1.86003	2.74494	-1.46572	0.01370
63	-8.04739	0.12000	0.62322	-2.44191	3.67216	-1.98048	0.00756
64	-7.30613	0.01564	1.22174	-4.19775	6.23386	-3.43897	0.01227
65	-8.62282	0.24566	-0.29521	0.55471	-0.82241	0.54492	0.01172
66	-8.97999	0.31048	-0.66063	1.37208	-1.62121	0.83238	0.01469
67	-9.30320	0.33657	-0.80341	1.91226	-2.50985	1.32856	0.00930

TABLE VI

POLYNOMIAL COEFFICIENTS FOR THE SIXTH DEGREE

FLIGHT NO.	β_0	β_1	$\beta_2 \times 10^2$	$\beta_3 \times 10^3$	$\beta_4 \times 10^5$	$\beta_5 \times 10^7$	$\beta_6 \times 10^9$	STANDARD ERROR OF ESTIMATE
1	-8.00661	0.15866	-0.06861	0.13320	-0.58409	0.96569	-0.56409	0.01374
2	-8.01817	0.17777	-0.30868	0.24517	-0.79602	1.07920	-0.51989	0.01023
3	-8.25233	0.12549	1.01396	-0.58705	1.53499	-1.96463	0.98687	0.01864
4	-8.28174	0.16717	0.12890	-0.00796	-0.16456	0.35054	-0.20320	0.01656
5	15618.67000	-1964.47400	10241.56000	-2833.45600	4387.94100	-3606.56800	1229.22500	0.01439
6	-8.11679	0.16207	-0.04136	0.26238	-1.50914	3.01192	-2.03184	0.02860
7	-8.26650	0.16982	0.05413	0.04187	-0.34589	0.65344	-0.39476	0.03223
8	-6.32897	-0.27206	3.96555	-1.64995	3.48649	-3.69434	1.56108	0.02027
9	-8.24348	0.16588	0.09073	0.03486	-0.38138	0.79716	-0.51628	0.01296
10	-8.18255	0.14493	0.54204	-0.27107	0.45349	-0.11126	-0.24762	0.02770
11	-8.10018	0.17261	0.17590	-0.13272	0.40210	-0.63981	0.40611	0.01072
12	-8.06928	0.12104	0.73645	-0.36538	0.80996	-0.88264	0.38427	0.01573
13	-8.01322	0.09696	0.86609	-0.39677	0.86995	-0.97386	0.44468	0.02266
14	-8.07133	0.14184	0.20097	-0.00066	-0.25958	0.55402	-0.34032	0.02541
15	-7.67871	0.01850	1.49623	-0.65155	1.42395	-1.58870	0.71774	0.02044
16	-8.22857	0.21753	-1.07433	1.12289	-4.88376	9.23921	-6.39719	0.02787
17	-8.24862	0.18813	0.01097	-0.04709	0.15702	-0.26255	0.17087	0.01767
18	-8.32936	0.19150	0.05754	-0.07768	0.20613	-0.26297	0.13541	0.01276
19	-8.18678	0.17889	0.32640	-0.30129	1.02565	-1.61714	0.96357	0.01793
20	-8.17947	0.16846	0.42945	-0.28456	0.72976	-0.87175	0.39654	0.01643
21	7.79714	-2.13003	13.67678	-4.23271	7.16414	-6.33664	2.29977	0.00629
22	-8.08797	0.16168	0.07415	0.03839	-0.34257	0.67929	-0.42850	0.02218
23	-8.72855	0.34806	-2.22534	1.44755	-4.81231	7.69092	-4.72251	0.01153
24	-7.86227	0.18294	-0.61650	0.47759	-1.53862	2.18161	-1.13824	0.03020
25	-7.97756	0.13728	0.61250	-0.45536	1.51758	-2.37182	1.39133	0.01552
26	-9.13891	0.42091	-2.25400	1.05156	-2.61686	3.20671	-1.52599	0.05565
27	-8.10893	0.11199	1.08943	-0.68143	1.97175	-2.76863	1.50753	0.01515
28	-8.15633	0.17751	0.11079	-0.07914	0.20905	-0.32386	0.21209	0.00603
29	-7.95409	0.14848	0.18204	-0.06904	0.09606	-0.06953	0.02949	0.01657
30	-8.29118	0.22129	-0.36073	0.09413	-0.08678	-0.06253	0.10393	0.00499
31	-7.94230	0.16284	-0.03631	0.01338	-0.00735	-0.06026	0.06966	0.02295
32	-8.02554	0.17318	0.03437	-0.11342	0.52506	-0.95603	0.60429	0.02717
33	-7.94867	0.17422	-0.10888	0.01599	0.04534	-0.16695	0.13013	0.03169
34	-22.01576	2.83192	-20.41888	7.83499	-15.95680	16.44811	-6.75537	0.01410
35	-8.51332	0.21575	-0.29489	0.15803	-0.46678	0.58347	-0.24979	0.01513
36	-8.07634	0.14084	0.27483	-0.02905	-0.23175	0.58325	-0.39069	0.00959
37	-8.13253	0.09328	1.68862	-1.18221	3.78637	-5.80177	3.42441	0.01294
38	-8.34008	0.15075	0.90763	-0.66498	2.06637	-3.01751	1.68040	0.01648
39	-8.33936	0.21846	-0.56035	0.38451	-1.25489	1.81885	-0.97209	0.00469
40	-11.87002	0.40643	0.12668	-0.40966	1.15911	-1.35590	0.59395	0.00189
41	-8.31124	0.11623	1.11423	-0.64567	1.63003	-1.94634	0.89543	0.02428
42	-8.34227	0.26448	-0.55376	0.09357	0.08882	-0.46937	0.39563	0.00599
43	-1516.69800	223.21890	-1369.56700	447.02380	-818.08550	795.91640	-321.62510	0.00544
44	-8.19942	0.15097	0.38477	-0.10999	-0.12699	0.69920	-0.60129	0.01907
45	-9.15587	0.44759	-2.81625	1.51996	-4.44825	6.57346	-3.87403	0.03198
46	-7.18513	-0.17036	4.22189	-2.42618	7.21414	-10.81422	6.42710	0.01449
47	-8.16049	0.18957	-0.40344	0.36578	-1.37698	2.22158	-1.31294	0.00737
48	-7.59005	-0.09058	4.18980	-2.98955	10.76254	-19.11576	13.23842	0.02598
49	-7.79538	0.12308	0.42541	-0.15627	0.23651	-0.16185	0.04161	0.00803
50	-8.31060	0.19323	0.10262	-0.10635	0.26355	-0.30451	0.14101	0.00715
51	-8.03193	0.14239	0.53508	-0.29247	0.68457	-0.77915	0.35057	0.01040
52	-6.04227	-0.40506	5.45391	-2.37561	5.25673	-5.81726	2.55667	0.01470
53	-7.69763	0.09453	0.59732	-0.21747	0.37299	-0.32824	0.12326	0.01070
54	-6.15905	-0.39586	5.51090	-2.44672	5.48810	-6.13230	2.71480	0.01769
55	-7.59053	0.05510	1.01441	-0.37842	0.60539	-0.35587	-0.00888	0.02408
56	-	-	-	-	-	-	-	-
57	-11.97017	0.74576	-3.42445	1.04904	-1.77512	1.54302	-0.53464	0.00322
58	-8.05038	0.10751	0.56855	-0.21042	0.36007	-0.31435	0.11673	0.01256
59	-8.14865	0.13618	0.53865	-0.26202	0.55664	-0.58852	0.25374	0.01975
60	-8.56831	0.27646	-0.89311	0.42825	-1.16719	1.56764	-0.81524	0.01266
61	-7.25729	0.02510	1.04577	-0.35938	0.61018	-0.53334	0.19611	0.01163
62	-8.04751	0.15438	0.18990	-0.03701	-0.11757	0.36565	-0.26268	0.01362
63	-7.47614	-0.01058	1.77746	-0.75249	1.55252	-1.59639	0.65650	0.00693
64	-6.95765	-0.09395	2.47379	-1.10001	2.51620	-2.94565	1.39879	0.00989
65	-8.85787	0.31740	-1.08534	0.46748	-1.17937	1.49486	-0.73865	0.01040
66	-9.19575	0.36857	-1.22987	0.40247	-0.79357	0.82204	-0.33619	0.01369
67	-10.28907	0.54723	-2.55078	0.91553	-1.84467	1.91016	-0.78991	0.00808

coefficients within each column are determined by dividing the coefficients by the factor heading that column. Plots of standard error of estimate versus the degree of each polynomial for seven flights are illustrated in Figure 1. In general, the standard errors for the 6th degree polynomials are at least half those of the 2nd degree polynomials. Pressure calculated by Equation (1) for polynomials of degrees 3 and 5 is compared to data from Flights 1, 2, 12, 32, 50, and 63. These flights were chosen for several reasons. First, temperature profiles determined from the data of Flights 1, 50, and 63 appear to be quadratic. This data can, therefore, be used for comparison with calculated data using a 3rd degree polynomial (any polynomial of degree less than 3 would not explain the quadratic behavior of temperature). The profiles for Flights 2, 12, and 32 appear quartic. The data from these flights can be compared to that calculated using a 5th degree polynomial. The second reason for choosing these flights was to illustrate the improvement in goodness of fit with increasing degree polynomial. Results are tabulated in Tables VII through XVIII including percent differences and standard errors of estimate. Percent differences show deviations of observed data from Equation (1) at various altitudes while the standard error indicates the goodness of fit over the entire altitude range. The goodness of fit improved considerably with increasing degree polynomial.

3.4 Properties of β's

This section is concerned with the distribution of the β's as well as their interrelationship. The distributions are needed to compute probabilities of profiles while the latter provides information to build a realistic model. The results of this section form the final basis for the model.

The coefficients tabulated in Table III for the 3rd degree were plotted for each pair of β's. These plots can be found in Figures 2 through 7. It is obvious that the β's are highly correlated and this fact will be used to advantage

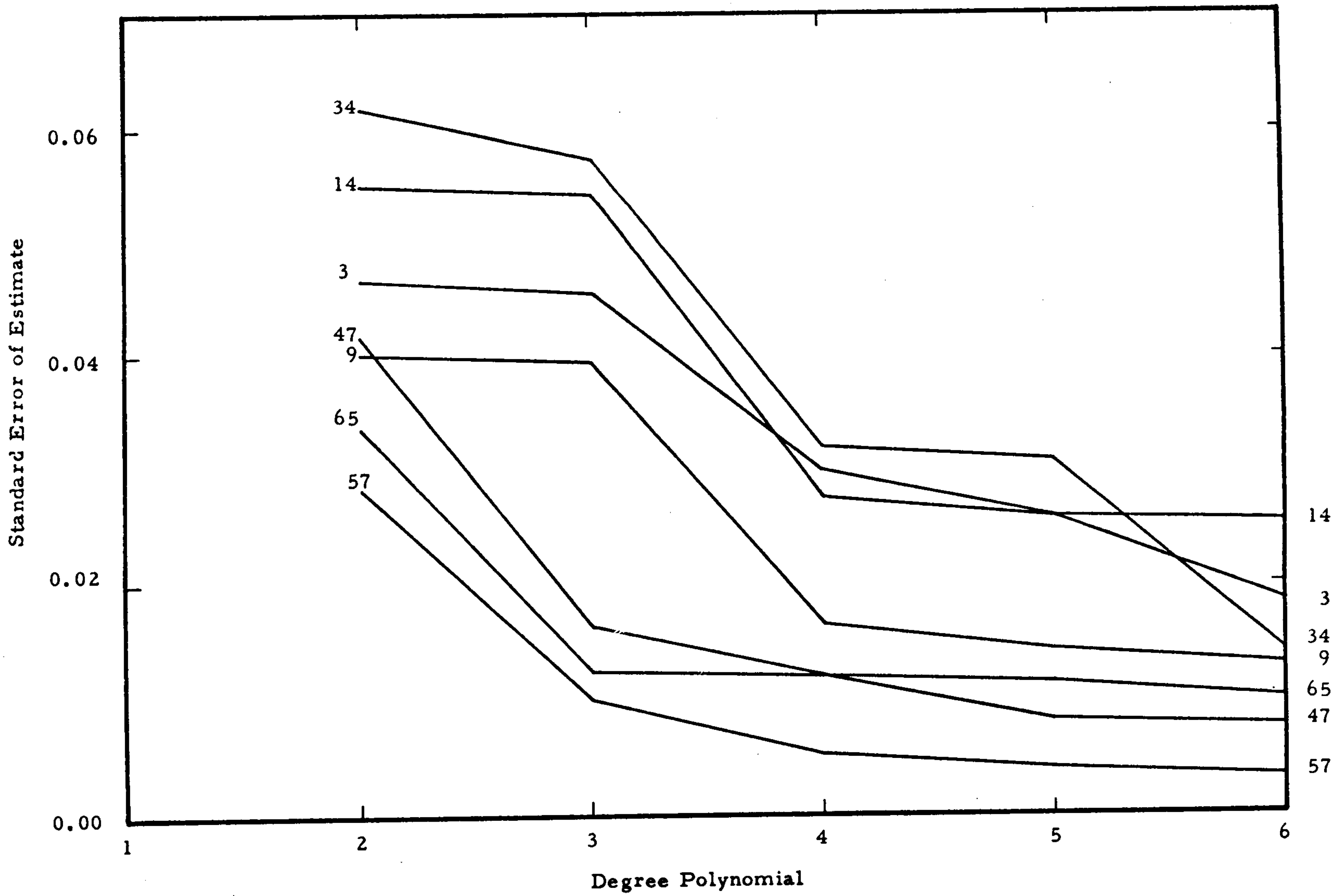

Figure 1. Standard Error of Estimate Versus Degree Polynomial for Flights 3, 9, 14, 34, 47, 57, and 65.

TABLE VII

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE THIRD DEGREE POLYNOMIAL FOR FLIGHT 1

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
0	.00074	.00032	-4.48	.0139	.00055	.00056	1.33	.0750	212.	201.	-5.47	14.3071
5	.00074	.00074	-.23		.00125	.00129	3.35		206.	19[illegible].	-3.86	
10	.00165	.00170	2.84		.00282	.00300	5.98		204.	19[illegible].	-3.28	
15	.00390	.00393	3.23		.00576	.00590	2.05		196.	198.	1.23	
20	.00897	.00903	.73		.01579	.01564	-7.35		186.	201.	7.54	
25	.02133	.02046	-4.22		.03555	.03463	-2.64		209.	206.	-1.54	
30	.04713	.04573	-3.[illegible]		.07265	.07435	2.28		226.	213.	-6.25	
35	.09550	.09785	2.40		.15332	.15741	.06		217.	222.	2.35	
40	.20528	.20346	-.89		.29674	.30163	1.62		241.	235.	-2.55	
45	.38227	.40503	5.62		.53271	.55972	4.93		250.	252.	.84	
50	.75196	.76625	1.87		.99609	.97023	-2.67		263.	275.	4.42	
55	1.42089	1.36740	-3.91		1.86799	1.55254	-20.32		265.	307.	13.64	

TABLE VIII

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE FIFTH DEGREE POLYNOMIAL FOR FLIGHT 1

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
0	.00074	.00074	.60	.0030	.00055	.00052	-5.87	.0158	212.	227.	6.49	8.7254
5	.00074	.00073	-1.41		.00125	.00123	-1.95		206.	207.	.39	
10	.00165	.00166	.28		.00282	.00293	3.71		204.	197.	-3.51	
15	.00380	.00387	1.81		.00576	.00695	2.74		196.	194.	-.92	
20	.00897	.00908	1.25		.01579	.01609	-4.35		186.	197.	5.39	
25	.02133	.02088	-2.11		.03555	.03578	.63		209.	203.	-2.77	
30	.04713	.04646	-1.45		.07255	.07566	3.97		226.	214.	-5.64	
35	.09550	.09902	3.56		.15332	.15157	-1.09		217.	227.	4.60	
40	.20528	.20170	-1.77		.29674	.28986	-2.37		241.	242.	.59	
45	.38227	.39449	3.09		.53271	.53670	.74		250.	256.	2.37	
50	.75196	.75021	-.23		.99609	.98966	-.65		263.	264.	.42	
55	1.42089	1.41710	-.27		1.86798	1.88684	1.00		265.	262.	-1.28	

TABLE IX

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE THIRD DEGREE POLYNOMIAL FOR FLIGHT 2

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
0	.00033	.00030	-11.07	.1580	.00060	.00059	-1.06	.5830	193.	176.	-9.70	19.0697
5	.00077	.00075	-1.95		.00130	.00142	8.62		206.	184.	-11.96	
10	.00171	.00181	5.68		.00295	.00329	10.22		202.	192.	-5.14	
15	.00390	.00422	7.53		.00676	.00734	7.89		201.	200.	-.36	
20	.00888	.00951	6.65		.01619	.01590	-1.81		191.	208.	8.33	
25	.02165	.02081	-4.02		.03771	.03354	-12.45		200.	216.	7.51	
30	.04763	.04437	-7.34		.07440	.06906	-7.73		223.	224.	.38	
35	.09959	.09239	-6.71		.14998	.13932	-7.65		229.	231.	.88	
40	.20171	.18844	-7.04		.28451	.27622	-3.00		247.	238.	-3.92	
45	.37790	.37765	-.07		.48224	.53998	10.69		273.	244.	-12.04	
50	.69776	.74576	6.44		.90367	1.04416	13.46		269.	249.	-8.10	
55	1.32739	1.45546	8.76		1.82856	2.00357	8.73		253.	253.	.04	
60	2.68152	2.81557	4.76		4.11557	3.82687	-7.54		227.	256.	11.44	
65	5.69094	5.41462	-5.10		8.97120	7.29839	-22.92		221.	258.	14.50	

TABLE X

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE FIFTH DEGREE POLYNOMIAL FOR FLIGHT 2

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
0	.00033	.00034	3.30	.0662	.00060	.00053	-13.33	.5689	193.	227.	14.84	12.0447
5	.00077	.00074	-3.15		.00130	.00125	-3.59		206.	206.	.08	
10	.00171	.00169	-.84		.00295	.00300	1.78		202.	197.	-2.76	
15	.00390	.00397	1.68		.00676	.00712	5.02		201.	194.	-3.49	
20	.00888	.00928	4.36		.01619	.01638	1.16		191.	197.	3.25	
25	.02165	.02123	-1.96		.03771	.03605	-4.61		200.	205.	2.55	
30	.04763	.04680	-1.77		.07440	.07513	.98		223.	217.	-2.76	
35	.09959	.09851	-.07		.14998	.14809	-1.28		229.	232.	1.20	
40	.20171	.19784	-1.96		.28451	.27835	-2.21		247.	248.	.25	
45	.37790	.38164	.98		.48224	.50924	5.30		273.	261.	-4.56	
50	.69776	.71939	2.87		.90367	.93637	3.54		269.	267.	-.69	
55	1.32739	1.35317	1.86		1.82856	1.80847	-1.12		253.	261.	2.95	
60	2.68152	2.64229	-1.49		4.11557	3.83897	-7.21		227.	240.	5.34	
65	5.69094	5.60158	-1.60		8.97120	9.38941	4.45		221.	208.	-6.33	

TABLE XI

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE THIRD DEGREE POLYNOMIAL FOR FLIGHT 12

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
0	.00030	.00027	-12.57	.0308	.00053	.00055	3.50	.1486	197.	170.	-16.15	16.7823
5	.00067	[illegible]	7.56		.00115	.00137	16.31		203.	176.	-15.13	
10	.00160	.00175	9.58		.00311	.00331	6.18		179.	183.	2.44	
15	.00412	.00423	2.74		.00819	.00771	-6.16		175.	191.	8.43	
20	.01035	.00991	-4.40		.01959	.01733	-13.05		184.	199.	7.67	
25	.02394	.02234	-6.69		.03641	.03758	3.11		229.	208.	-10.09	
30	.04930	.04911	-.38		.07878	.07871	-.09		218.	217.	-.28	
35	.10522	.10401	-1.15		.15665	.15931	1.67		234.	227.	-2.88	
40	.21385	.21320	-.31		.30286	.31168	2.93		246.	238.	-3.22	
45	.40906	.42221	3.35		.54393	.58967	7.76		262.	250.	-4.78	
50	.79232	.81343	2.65		1.07824	1.07918	.09		256.	263.	2.58	
55	1.50256	1.51731	.37		2.00563	1.91129	-4.94		261.	277.	5.63	
60	2.85698	2.74300	-4.15		3.75596	3.27679	-14.62		265.	292.	9.14	

TABLE XII

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE FIFTH DEGREE POLYNOMIAL FOR FLIGHT 12

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
0	.00030	.00031	2.22	.0099	.00053	.00044	-21.19	.0849	197.	245.	19.68	12.6648
5	.00067	.00067	-.29		.00115	.00120	4.30		203.	194.	-4.80	
10	.00160	.00164	2.47		.00311	.00318	2.07		179.	180.	.30	
15	.00412	.00413	.28		.00819	.00796	-2.90		175.	181.	3.15	
20	.01035	.01013	-2.16		.01959	.01852	-5.77		184.	191.	3.42	
25	.02394	.02350	-1.87		.03641	.03953	8.50		229.	206.	-11.43	
30	.04930	.05120	3.71		.07878	.08018	1.75		218.	222.	2.00	
35	.10522	.10564	.40		.15665	.15481	-1.19		234.	238.	1.57	
40	.21385	.20985	-1.91		.30296	.29447	-2.85		246.	248.	.92	
45	.40906	.40854	-.13		.54393	.56197	3.21		262.	253.	-3.44	
50	.79232	.78956	-.35		1.07824	1.07714	-.10		256.	255.	-.24	
55	1.50256	1.51589	.88		2.00563	2.02747	1.08		251.	260.	-.20	
60	2.85698	2.83393	-.60		3.75596	3.54908	-5.83		265.	279.	4.94	

TABLE XIII

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE THIRD DEGREE POLYNOMIAL FOR FLIGHT 32

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
0	.00032	.00034	3.93	.0256	.00062	.00059	-5.75	.1567	182.	200.	9.19	17.6280
5	.00078	.00077	-1.41		.00133	.00132	-.47		204.	202.	-1.04	
10	.00175	.00173	-.98		.00306	.00296	-3.26		198.	204.	2.91	
20	.00889	.00864	-2.88		.01422	.01435	.98		217.	210.	-3.41	
25	.01815	.01895	4.24		.02497	.03066	19.14		253.	214.	-18.33	
30	.03841	.04096	6.23		.06965	.06521	-6.64		192.	219.	12.14	
35	.09074	.08709	-4.21		.14934	.13536	-10.31		211.	224.	5.84	
40	.19121	.18164	-5.27		.26812	.27441	2.29		248.	231.	-7.54	
45	.37656	.37106	-1.50		.53154	.54253	2.03		246.	238.	-3.25	
50	.72013	.74037	2.73		.96656	1.04362	7.38		259.	247.	-4.79	
55	1.40152	1.44047	2.70		1.93911	1.94822	.47		252.	258.	2.17	
60	2.76519	2.72639	-1.42		3.99021	3.51994	-13.36		241.	270.	10.69	

TABLE XIV

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE FIFTH DEGREE POLYNOMIAL FOR FLIGHT 32

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
0	.00032	.00032	-1.62	.0078	.00062	.00065	5.34	.0632	182.	170.	-7.31	14.2456
5	.00078	.00079	1.07		.00133	.00140	5.18		204.	195.	-4.43	
10	.00175	.00178	1.45		.00316	.00296	-3.52		198.	209.	5.40	
20	.00889	.00847	-5.02		.01422	.01388	-2.42		217.	212.	-2.16	
25	.01915	.01956	2.24		.02497	.03059	18.38		253.	211.	-19.68	
30	.03841	.04073	5.69		.06965	.06655	-4.66		192.	213.	9.95	
35	.09074	.08820	-2.88		.14934	.14005	-6.63		211.	219.	3.83	
40	.19121	.18571	-2.96		.26812	.28106	4.60		248.	230.	-7.73	
45	.37656	.37626	-.08		.53154	.53633	.89		246.	244.	-.74	
50	.72013	.73399	1.89		.96656	.99631	2.99		259.	257.	-.91	
55	1.40152	1.40352	.14		1.93911	1.89143	-2.52		252.	259.	2.52	
60	2.76519	2.74217	-.84		3.99021	3.98333	-.17		241.	240.	-.48	

TABLE XV

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE THIRD DEGREE POLYNOMIAL FOR FLIGHT 50

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
0	.00025	.00023	-7.29	.0766	.00046	.00053	13.73	.5344	190.	151.	-25.95	10.9285
5	.00065	.00066	2.11		.00134	.00143	6.99		168.	162.	-3.52	
10	.00174	.00179	2.07		.00358	.00355	-.79		169.	174.	3.03	
15	.00443	.00440	.59		.00819	.00832	1.51		188.	187.	-.73	
20	.01045	.01054	.84		.01858	.01847	-.79		195.	199.	2.09	
25	.02394	.02359	-1.06		.03984	.03901	-2.12		209.	212.	1.21	
30	.05107	.05095	-.24		.08342	.07945	-4.99		213.	223.	4.66	
35	.10812	.10553	-2.40		.15968	.15701	-1.70		235.	234.	-.30	
40	.21443	.21234	-1.01		.30544	.30349	-.64		244.	244.	-.09	
45	.41944	.41728	-.52		.57019	.57845	1.43		256.	251.	-1.86	
50	.80570	.80697	.15		1.06408	1.09576	2.99		263.	257.	-2.51	
55	1.52259	1.54420	1.53		1.92320	2.07660	7.48		275.	259.	-6.10	
60	2.85543	2.91097	2.40		4.00923	3.97743	-.80		250.	259.	3.48	
65	5.67027	5.68253	.22		8.16357	7.73069	-5.60		241.	256.	5.89	
70	11.59617	11.05140	-4.93		19.03610	15.36725	-23.91		212.	251.	15.41	

TABLE XVI

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE FIFTH DEGREE POLYNOMIAL FOR FLIGHT 50

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
0	.00025	.00024	-3.14	.0142	.00046	.00052	11.49	.2287	190.	162.	-16.94	7.1374
5	.00065	.00066	1.58		.00134	.00137	2.34		168.	168.	-.18	
10	.00174	.00174	-.20		.00358	.00345	-3.64		169.	175.	3.51	
15	.00443	.00437	-1.38		.00819	.00825	.69		188.	185.	-1.85	
20	.01045	.01047	.20		.01858	.01853	.29		195.	196.	.40	
25	.02394	.02386	-.32		.03984	.03991	.18		209.	208.	-.33	
30	.05107	.05181	1.42		.08342	.08144	-2.43		213.	222.	3.89	
35	.10812	.10761	-.47		.15968	.15965	-.02		235.	235.	-.07	
40	.21448	.21530	.38		.30544	.30397	-.48		244.	247.	1.12	
45	.41944	.41863	-.19		.57019	.56961	-.10		256.	256.	.02	
50	.80570	.79947	-.78		1.06409	1.06597	.18		263.	261.	-.65	
55	1.52259	1.51785	-.31		1.92320	2.02247	4.91		275.	261.	-5.17	
60	2.88599	2.90302	.59		4.00923	3.94799	-1.55		250.	256.	2.41	
65	5.67027	5.67257	.04		8.16357	8.03861	-1.55		241.	246.	1.97	
70	11.59617	11.49394	-.92		19.03610	17.28788	-10.11		212.	232.	8.45	

TABLE XVII

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE THIRD DEGREE POLYNOMIAL FOR FLIGHT 63

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
15	.00434	.00414	2.40	.0024	.00792	.00829	4.43	.0425	177.	174.	-1.71	8.5365
20	.01029	.01033	.35		.01849	.01898	2.57		193.	190.	-1.81	
25	.02410	.02398	-.51		.04235	.04067	-4.14		198.	205.	3.61	
30	.05271	.05238	-.63		.08531	.08258	-3.31		215.	221.	2.71	
35	.11037	.10877	-1.48		.15566	.16088	3.25		247.	236.	-4.87	
40	.21282	.21694	1.90		.29531	.30457	3.04		251.	248.	-1.15	
45	.41956	.42002	.11		.57858	.56732	-1.98		252.	258.	2.30	
50	.79948	.79764	-.23		1.04294	1.05238	.90		267.	264.	-1.11	
55	1.50162	1.50142	-.01		1.89328	1.96659	3.73		276.	266.	-3.76	
60	2.84297	2.83075	-.43		3.98668	3.74215	-6.53		248.	264.	5.90	

TABLE XVIII

COMPARISON OF OBSERVED DATA TO THAT CALCULATED BY EQUATIONS (1), (2), AND (3) FOR THE FIFTH DEGREE POLYNOMIAL FOR FLIGHT 63

100-ALT	OBSERVED PRESSURE	CALCULATED PRESSURE	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED DENSITY	CALCULATED DENSITY	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE	OBSERVED TEMP.	CALCULATED TEMP.	PERCENT DIFFERENCE	STANDARD ERROR OF ESTIMATE
15	.00434	.00409	1.29	.0059	.00792	.00802	1.28	.0825	177.	178.	.42	8.9229
20	.01029	.01021	-.74		.01849	.01905	2.94		193.	187.	-3.32	
25	.02410	.02407	-.13		.04235	.04146	-2.15		198.	202.	2.10	
30	.05271	.05294	.44		.08531	.08355	-2.11		215.	221.	2.62	
35	.11037	.10943	-.86		.15566	.15989	2.64		247.	238.	-3.58	
40	.21282	.21620	1.56		.29531	.29962	1.44		251.	251.	.16	
45	.41956	.41658	-.72		.57859	.56276	-2.81		252.	258.	2.29	
50	.79948	.79533	-.52		1.04294	1.06522	2.09		267.	260.	-2.64	
55	1.50162	1.51071	.60		1.89328	1.99251	4.98		276.	264.	-4.48	
60	2.84297	2.81215	-1.10		3.98669	3.49346	-14.12		248.	280.	11.57	

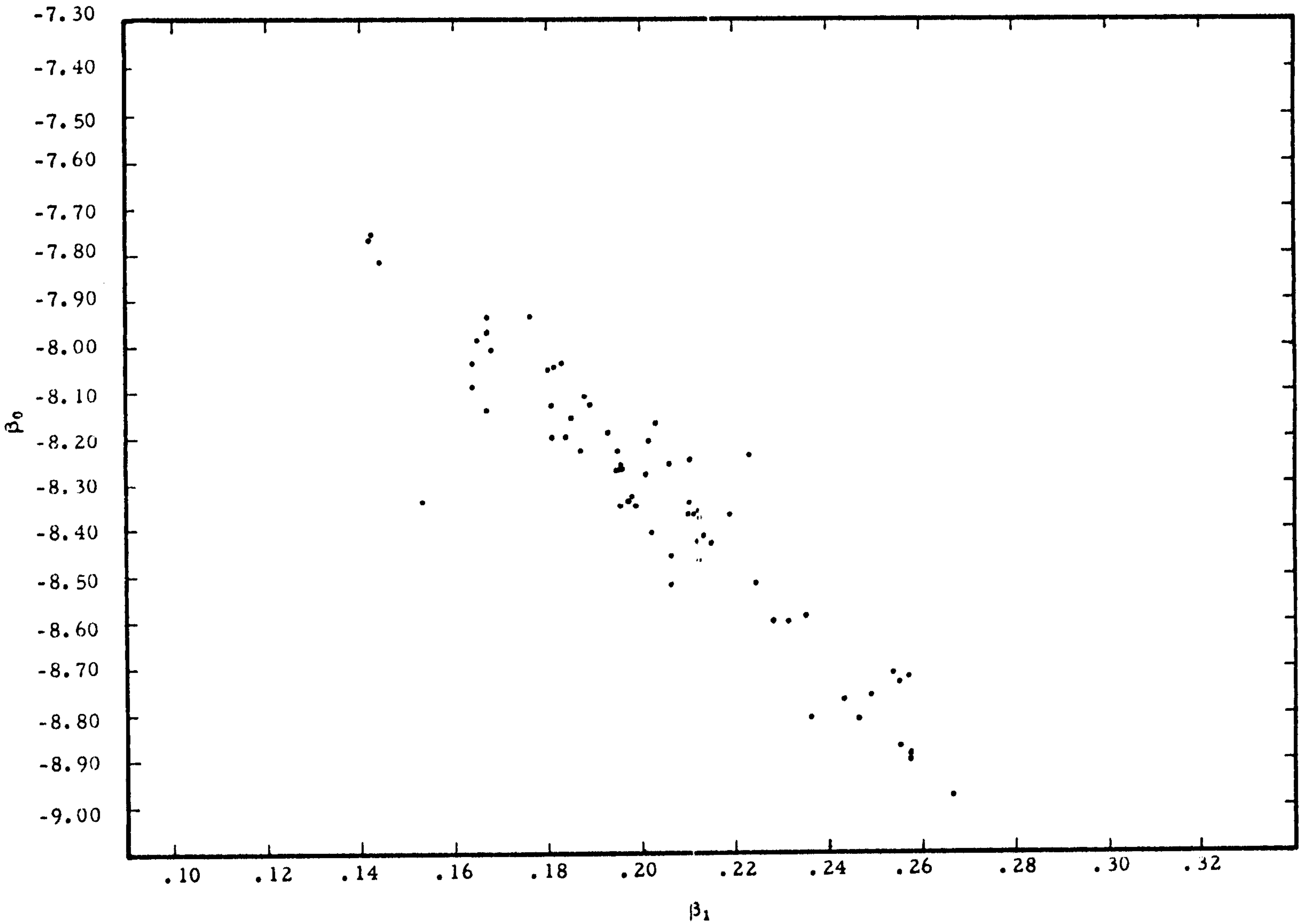

Figure 2. Correlation of Third Degree Coefficients β_0, β_1 .

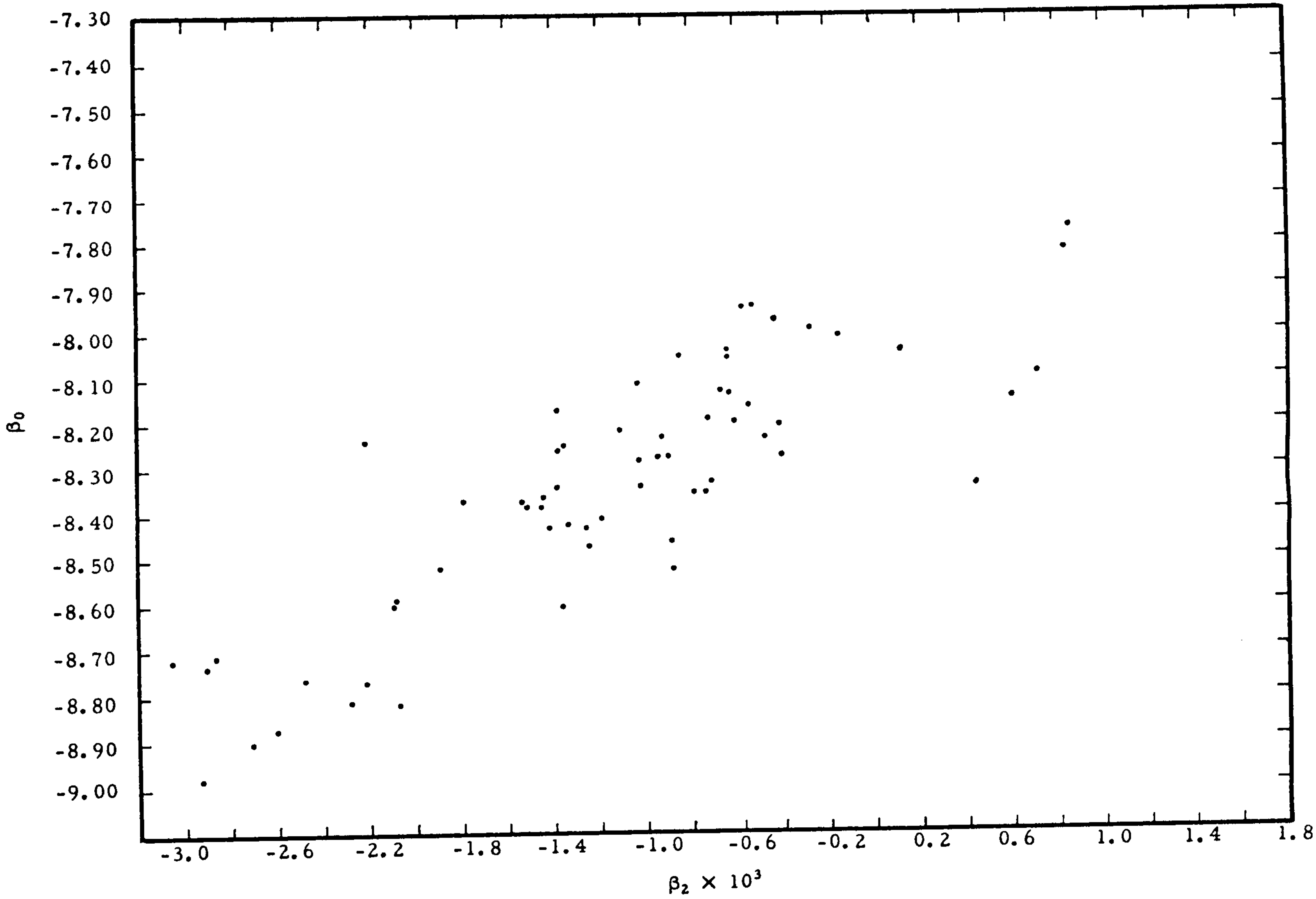

Figure 3. Correlation of Third Degree Coefficients β_0, β_2.

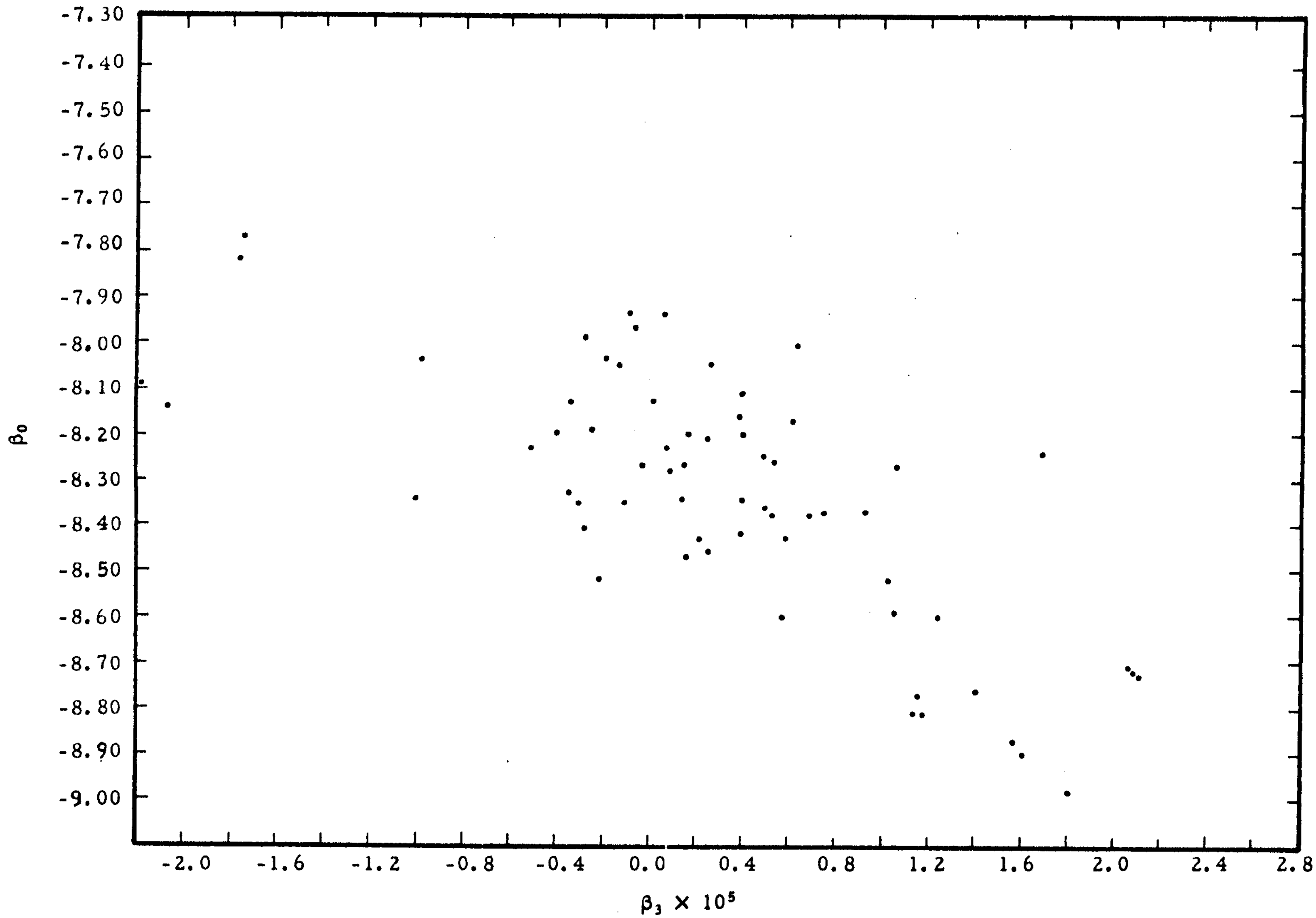

Figure 4. Correlation of Third Degree Coefficients β_0, β_3 .

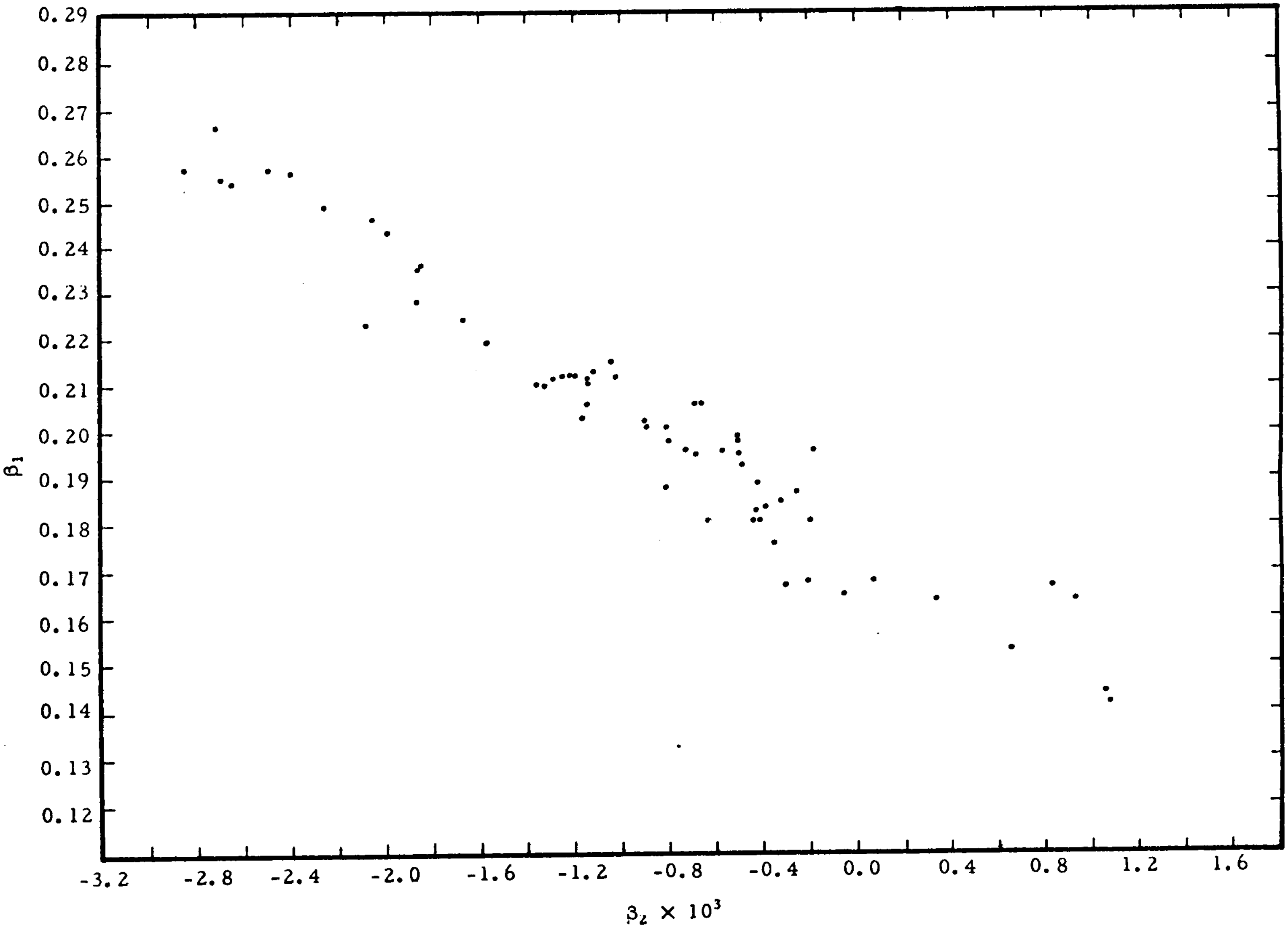

Figure 5. Correlation of Third Degree Coefficients β_1, β_2.

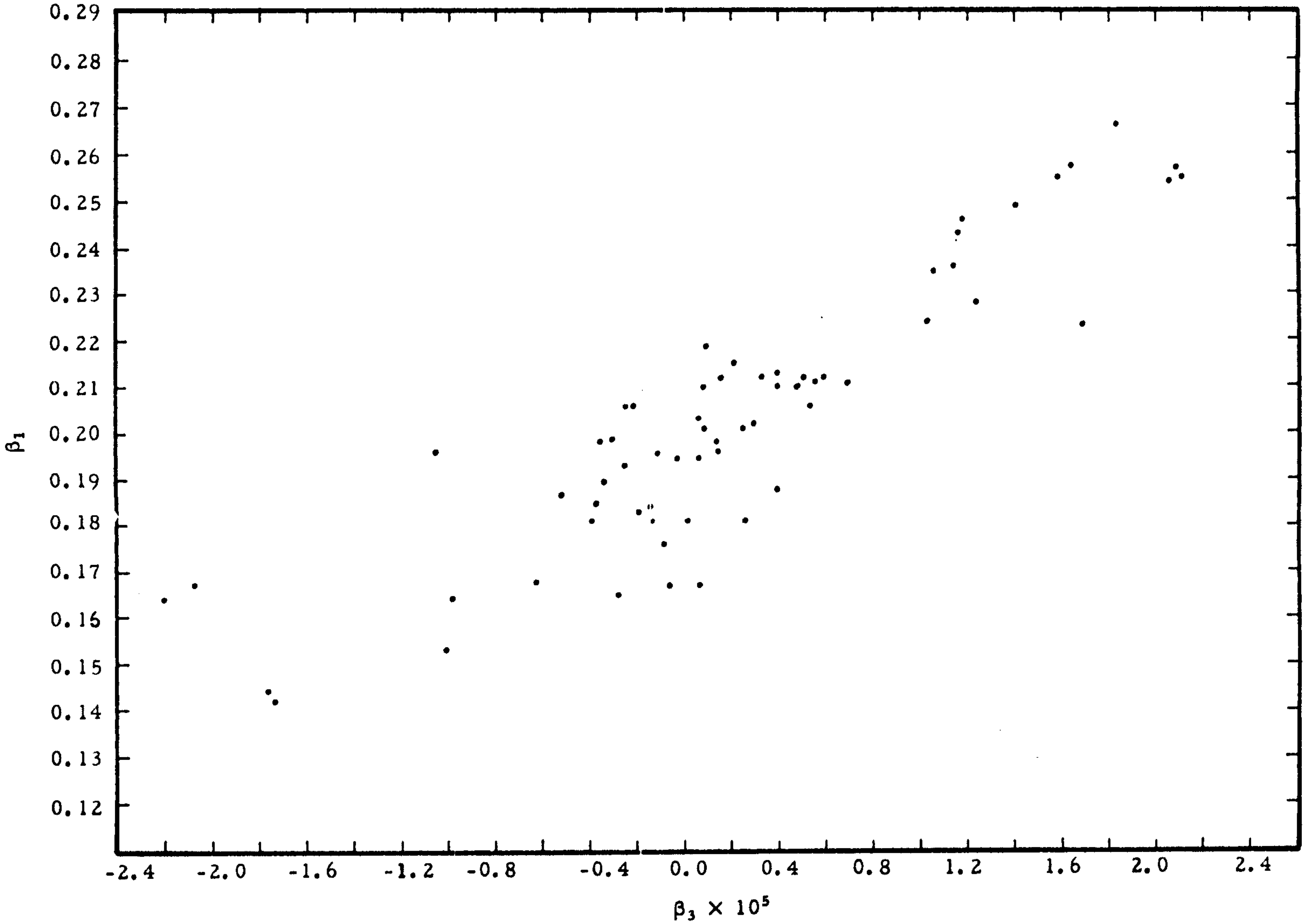

Figure 6. Correlation of Third Degree Coefficients β_1, β_3 .

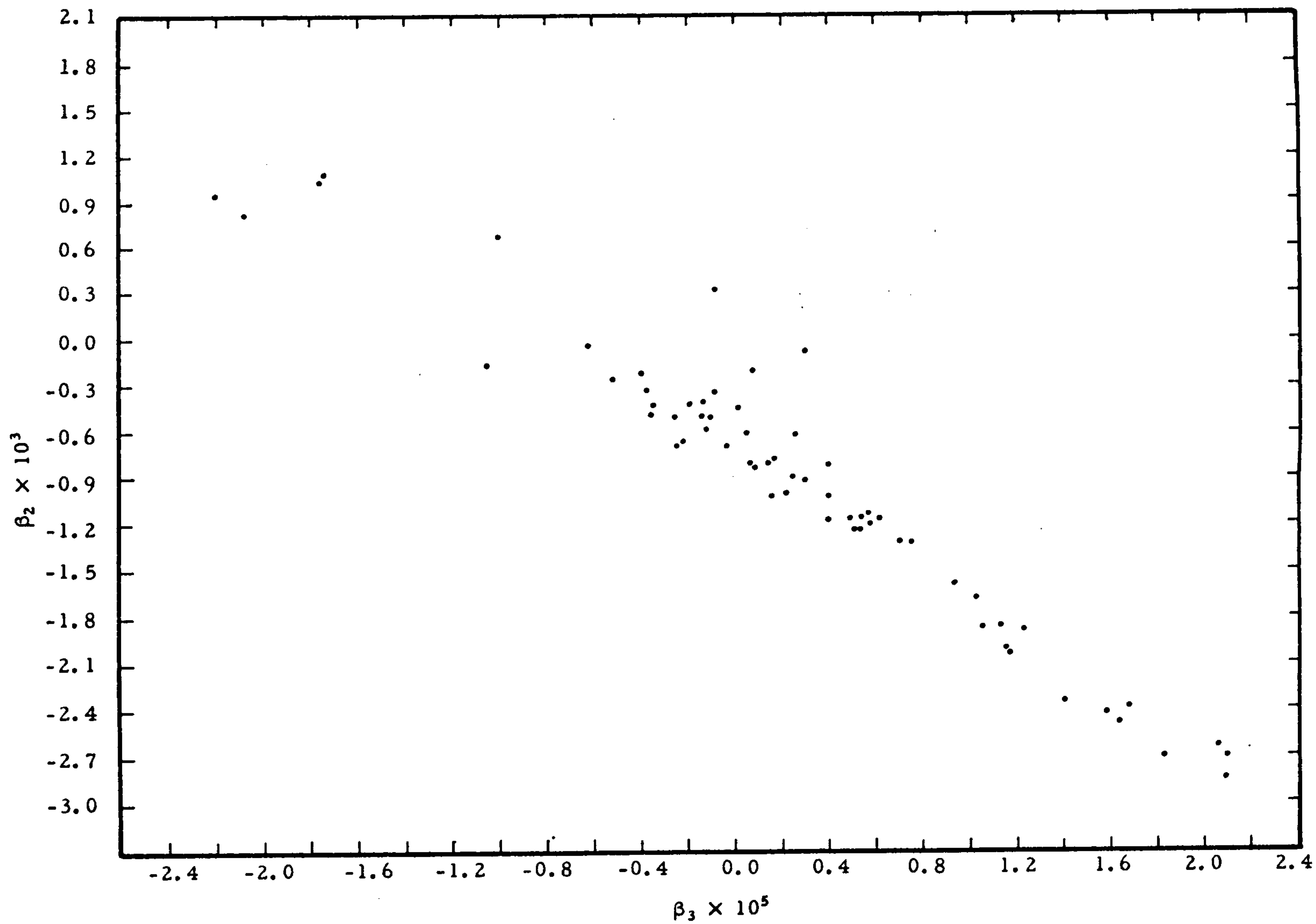

Figure 7. Correlation of Third Degree Coefficients β_2, β_3.

in construction of the model. Linear equations best representing the points of each figure were derived through a linear least squares program. The set of linear functions used in the fitting procedure were:

$$
\begin{aligned}
\beta_0 &= m_{0,1}\beta_1 + b_{0,1} \\
\beta_0 &= m_{0,2}\beta_2 + b_{0,2} \\
\beta_0 &= m_{0,3}\beta_3 + b_{0,3} \\
\beta_1 &= m_{1,2}\beta_2 + b_{1,2} \\
\beta_1 &= m_{1,3}\beta_3 + b_{1,3} \\
\beta_2 &= m_{2,3}\beta_3 + b_{2,3} \quad .
\end{aligned}
\tag{5}
$$

A tabulation of slopes ($m_{i,j}$), intercepts ($b_{i,j}$) and linear correlation coefficients (l. c. c.) for each of the fits are included in Table XIX. Similar data are included for degrees 2, 4, 5, and 6. Standard deviations for the slopes and intercepts are provided. The β_i versus β_j entry in the leftmost column denotes the relation

$$\beta_i = m_{i,j}\beta_j + b_{i,j} \quad .$$

These relationships provide the means of computing probabilities of profiles. Without them the joint distribution of the β's must be known. However, even if this distribution were determined it is doubtful that it would have much meaning due to the insufficient number of data points. Therefore, the profiles will be characterized by the one parameter, β_3.

Before anything can be said about the probabilities of various profiles the distribution of β_3 parameters must be known. The histogram of Figure 8 indicates the relative frequencies of the β_3 parameters observed in this study. If it is assumed that this sample of parameters comes from a normal population,

TABLE XIX

CORRELATION AND LINEAR DATA FOR THE COEFFICIENTS OBTAINED FROM THE DIFFERENT DEGREE POLYNOMIALS

	$b_{i,j}$	σ_b	$m_{i,j}$	σ_m	L. C. C.	DEGREE
BETA0 VS BETA1	-.57815E+01	.19756E+00	-.12722E+02	.96871E+00	-.859	2
BETA0 VS BETA2	-.77422E+01	.56084E-01	.76898E+03	.87161E+02	.764	2
BETA1 VS BETA2	.15008E+00	.11409E-02	-.66598E+02	.17039E+01	-.991	2
BETA0 VS BETA1	-.66668E+01	.93949E-01	-.87114E+01	.45839E+00	-.925	3
BETA0 VS BETA2	-.81049E+01	.26540E-01	.24840E+03	.20761E+02	.842	3
BETA0 VS BETA3	-.82849E+01	.27573E-01	-.21594E+05	.24305E+04	-.753	3
BETA1 VS BETA2	.17431E+00	.13229E-02	-.30299E+02	.10179E+01	-.967	3
BETA1 VS BETA3	.19656E+00	.15914E-02	.27797E+04	.17472E+03	.895	3
BETA2 VS BETA3	-.70616E-03	.25749E-04	-.95304E+02	.26597E+01	-.977	3
BETA0 VS BETA1	-.69909E+01	.44737E-01	-.68406E+01	.24059E+00	-.964	4
BETA0 VS BETA2	-.82878E+01	.31939E-01	.12911E+03	.95690E+01	.855	4
BETA0 VS BETA3	-.83737E+01	.48337E-01	-.50491E+04	.60933E+03	-.728	4
BETA0 VS BETA4	-.83399E+01	.56757E-01	.50921E+05	.87712E+05	.599	4
BETA1 VS BETA2	.19034E+00	.24828E-02	-.20206E+02	.74620E+00	-.961	4
BETA1 VS BETA3	.20597E+00	.50153E-02	.84426E+03	.63227E+02	.863	4
BETA1 VS BETA4	.20243E+00	.65609E-02	-.90435E+05	.10093E+05	-.754	4
BETA2 VS BETA3	-.80927E-03	.11870E-03	-.45918E+02	.14965E+01	-.968	4
BETA2 VS BETA4	-.81229E-03	.20641E-03	.51376E+04	.31756E+03	.901	4
BETA3 VS BETA4	.47324E-07	.20191E-05	-.12024E+03	.31063E+01	-.980	4
BETA0 VS BETA1	-.72710E+01	.58251E-01	-.35398E+01	.31997E+00	-.912	5
BETA0 VS BETA2	-.92741E+01	.49950E-01	.59596E+02	.74524E+01	.715	5
BETA0 VS BETA3	-.92166E+01	.60124E-01	-.12385E+04	.23883E+03	-.553	5
BETA0 VS BETA4	-.91740E+01	.62797E-01	.56157E+05	.14307E+05	.449	5
BETA0 VS BETA5	-.91459E+01	.63773E-01	-.60436E+07	.21522E+07	-.382	5
BETA1 VS BETA2	.18507E+00	.43127E-02	-.12752E+02	.64339E+00	-.930	5
BETA1 VS BETA3	.19436E+00	.67999E-02	.30207E+03	.27007E+02	.820	5
BETA1 VS BETA4	.17932E+00	.79253E-02	-.14994E+05	.18059E+04	-.728	5
BETA1 VS BETA5	.15870E+00	.85748E-02	.19620E+07	.28938E+06	.655	5
BETA2 VS BETA3	-.13970E-03	.21150E-03	-.26257E+02	.94013E+00	-.970	5
BETA2 VS BETA4	.55437E-03	.33918E-03	.17747E+04	.77297E+02	.915	5
BETA2 VS BETA5	.11639E-02	.42552E-03	-.18720E+06	.14394E+05	-.957	5
BETA3 VS BETA4	-.24257E-04	.55101E-05	-.54998E+02	.12556E+01	-.984	5
BETA3 VS BETA5	-.47637E-04	.96156E-05	.77190E+04	.32450E+03	.950	5
BETA4 VS BETA5	.41026E-06	.79885E-07	-.14391E+03	.26959E+01	-.989	5
BETA0 VS BETA1	-.72125E+01	.71653E-01	-.57215E+01	.14294E+00	-.931	6
BETA0 VS BETA2	-.83324E+01	.13351E+00	.73397E+02	.37894E+01	.927	6
BETA0 VS BETA3	-.83209E+01	.19552E+00	-.16598E+04	.13876E+03	-.837	6
BETA0 VS BETA4	-.82624E+01	.25384E+00	.59609E+05	.77070E+04	.704	6
BETA0 VS BETA5	-.82055E+01	.29990E+00	-.34610E+07	.56686E+06	-.542	6
BETA0 VS BETA6	-.91674E+01	.32826E+00	.43137E+09	.12993E+09	.391	6
BETA1 VS BETA2	.19149E+00	.12017E-01	-.13312E+02	.34098E+00	-.981	6
BETA1 VS BETA3	.19671E+00	.24353E-01	.31210E+03	.17283E+02	.918	6
BETA1 VS BETA4	.18693E+00	.36665E-01	-.11644E+05	.11132E+04	-.801	6
BETA1 VS BETA5	.17675E+00	.45808E-01	.70390E+06	.10720E+06	.645	6
BETA1 VS BETA6	.15974E+00	.53358E-01	-.92532E+08	.21104E+09	-.490	6
BETA2 VS BETA3	-.52789E-03	.98457E-03	-.24446E+02	.69874E+00	-.975	6
BETA2 VS BETA4	.11542E-03	.20305E-02	.95608E+03	.61647E+02	.893	6
BETA2 VS BETA5	.84930E-03	.29385E-02	-.61107E+05	.57330E+04	-.759	6
BETA2 VS BETA6	.13716E-02	.35613E-02	.85365E+07	.14096E+07	.513	6
BETA3 VS BETA4	-.19946E-04	.44925E-04	-.41387E+02	.13640E+01	-.969	6
BETA3 VS BETA5	-.46156E-04	.96622E-04	.29235E+04	.19839E+03	.877	6
BETA3 VS BETA6	-.65712E-04	.11734E-03	-.42151E+05	.46408E+05	-.759	6
BETA4 VS BETA5	.49259E-06	.10525E-05	-.72972E+02	.24104E+01	-.959	6
BETA4 VS BETA6	.96578E-06	.18867E-05	.11579E+05	.74622E+03	.894	6
BETA5 VS BETA6	-.37044E-10	.11951E-07	-.16968E+03	.46873E+01	-.977	6

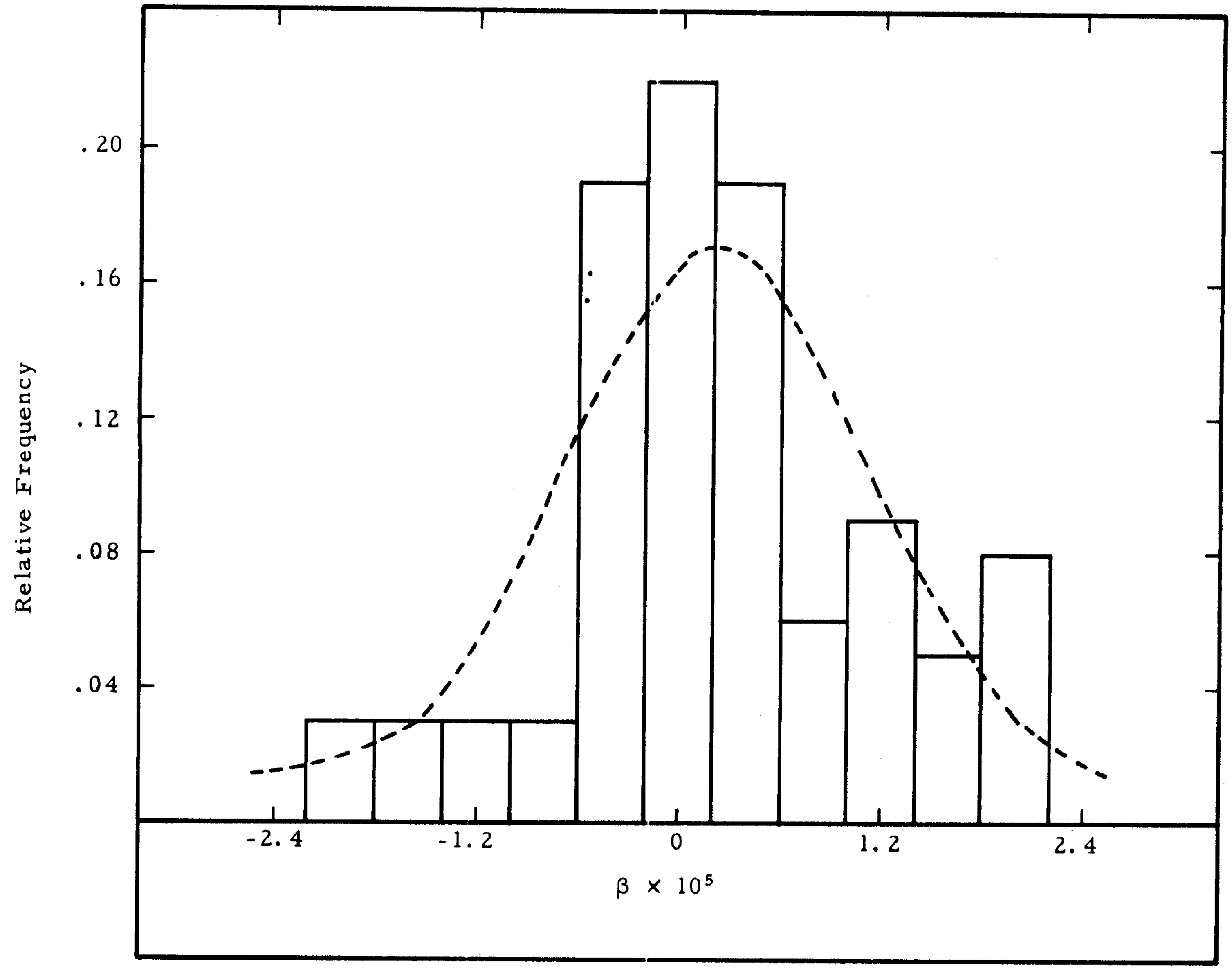

Figure 8. Histogram of β_3 Parameters.

then the maximum likelihood estimators of u and σ are given by $\hat{u} = \overline{\beta}$ and $\hat{\sigma} = S$ where $\overline{\beta}$ is the sample mean and S is the sample standard deviation. The dashed curve of Figure 8 represents the normal distribution that the parameters would have if $u = \overline{\beta}$ and $\sigma = S$. The chi-square test was used to determine the goodness of fit of the normal curve to the sample distribution. Essentially, the test compares the differences of the observed (n_i) and theoretical (e_i) frequencies to some limiting value χ_0^2. Specification of the critical region and degrees of freedom k then determines χ_0^2. If

$$\chi^2 = \sum_{i=1}^{N} \frac{(n_i - e_i)^2}{e_i} > \chi_0^2 \quad ,$$

the hypothesis that the parameters were sampled from a normal population is rejected. The degrees of freedom are found from $k = N-1-\ell$ where N is the number of cells used in constructing the histogram and ℓ is the number of unknowns (i.e., u and σ). Hence, $\chi_0^2 = 15.5$ for 8 degrees of freedom (11 cells) and critical region 0.05. The particular values used in computing χ^2 are listed in Table XX. Calculations show $\chi^2 = 15.1$ indicating that the sample data might well come from a normal population. It is therefore assumed that the β's are normally distributed with maximum likelihood estimators $\hat{u} = \overline{\beta}$ and $\hat{\sigma} = S$.

3.5 Derivation of Model

The results of the previous section can now be utilized to derive the equation necessary to complete the atmospheric model. The final model was based on the hi linear correlation existing between all pairs of β's. Each β of Equation (1) was replaced by the corresponding linear relation in β_3. The particular choice of using a third degree polynomial in fitting the data was based on the quadratic appearance of the log profiles for pressure. It turns out, as will be shown, that

TABLE XX

CHI-SQUARE TEST FOR NORMALITY OF β'S

Cell Boundries β	$\frac{\beta - 0.20}{0.94}$ t	Accumulative Cell Area Left of t A	Cell Area Left of t ΔA	Theoretical Frequency e_i	Observed Frequency n_i
-1.8	-2.13	0.0166	0.0166	1.1	2
-1.4	-1.70	0.0446	0.0280	1.8	2
-1.0	-1.28	0.1003	0.0557	3.6	2
-0.6	-0.85	0.1977	0.0974	6.2	2
-0.2	-0.43	0.3336	0.1359	8.7	12
0.2	0.00	0.5000	0.1664	10.7	14
0.6	0.43	0.6664	0.1664	10.7	12
1.0	0.85	0.8023	0.1359	8.7	4
1.4	1.28	0.8997	0.0974	6.2	6
1.8	1.70	0.9554	0.0557	3.6	3
2.2	2.13	0.9834	0.0280	1.1	5

Equation (1) can be factored into two components, one of the components containing a quadratic. Any polynomial of degree different from 3 cannot provide a quadratic component.

The two fundamental components of the model will now be derived and each discussed in the following two sections. To do this Equation (1) must first be rewritten in a form consisting of two factors. The linear relations given by Equation (5) for β_0, β_1, and β_2 as functions of β_3 are first substituted into Equation (1). All terms in β_3 are grouped together and expressed as one factor. Thus,

$$P = \exp[b_{0,3} + m_{0,3}\beta_3 + (b_{1,3} + m_{1,3}\beta_3)z + (b_{2,3} + m_{2,3}\beta_3)z^2 + \beta_3 z^3]$$

$$= \exp[b_{0,3} + b_{1,3}z + b_{2,3}z^2 + \beta_3(m_{0,3} + m_{1,3}z + m_{2,3}z^2 + z^3)]$$

$$= \exp[b_{0,3} + b_{1,3}z + b_{2,3}z^2] \cdot \exp[\beta_3(m_{0,3} + m_{1,3} + m_{2,3}z^2 + z^3)] \qquad (6)$$

The two components on the right hand side of Equation (6) form the basis of the model. The unit for β_3 is km^{-3}.

3.5.1 Steady State Model

The first factor on the right hand side of Equation (6) consists only of the constants $b_{0,3}$, $b_{1,3}$, and $b_{2,3}$. Hence, it is time invariant and will hereafter be referred to as steady state pressure, denoted P(z). The particular values of the b's can be found in Table XIX under degree 3. It is interesting to note that the functional values of P(z) are very close to those of the 1962 standard pressure. This fact will be discussed later in Section 3.6.

The above definition of steady state pressure provides the means for deriving density and temperature steady states. This is accomplished by assuming that the hydrostatic and gas laws are applicable under steady state conditions (i.e., quiet atmosphere). Therefore, the following three equations define a steady state atmosphere. The steady state pressure is given by

$$P(z) = \exp[b_{0,3} + b_{1,3}z + b_{2,3}z^2] \quad ; \tag{7}$$

steady state density by

$$\rho(z) = \frac{100}{g(z)} [b_{1,3} + 2b_{2,3}z] \exp[b_{0,3} + b_{1,3}z + b_{2,3}z^2] \quad ; \tag{8}$$

and steady state temperature by

$$T(z) = \frac{3.48385g(z)}{b_{1,3} + 2b_{2,3}z} \quad . \tag{9}$$

The units are the same as those defined in Sections 3.2.1, 3.2.2, and 3.2.3.

3.5.2 Perturbation Model

The second factor on the right hand side of Equation (6) is defined to be the pressure perturbation function, denoted $P(\beta_3, z)$. The function describes deviations from steady state in terms of the one parameter β_3. The corresponding values of the slopes $m_{0,3}$, $m_{1,3}$, and $m_{2,3}$ are listed in Table XIX under degree 3. The behavior of this function is discussed in Section 3.6.

The definitions of steady state functions combined with the hydrostatic and gas laws provide the means of deriving perturbation functions for density and temperature. The hydrostatic law is first applied to Equation (6) after which the steady state density is factored out. The factor that remains is defined to be the density perturbation function. These definitions then imply that the temperature perturbation must be the ratio of the pressure and density perturbations. This is easily proved by noting that both pressure and density are factorable into the product of steady state and perturbation functions. The equation of state then produces the desired result. Therefore, the density factorization is accomplished as follows

$$\rho = \frac{100}{g(z)} \frac{dP}{dz} = \frac{100}{g(z)} \left[P(\beta_3, z) \frac{dP(z)}{dz} + P(z) \frac{dP(\beta_3, z)}{dz} \right]$$

$$= \frac{100}{g(z)} \frac{dP(z)}{dz} \left\{ P(\beta_3, z) + \left[\frac{P(z)}{dP(z)/dz} \right] \left[\frac{dP(\beta_3, z)}{dz} \right] \right\}$$

$$= \rho(z) \left[P(\beta_3, z) + \frac{\beta_3 (m_{1,3} + 2m_{2,3} z + 3z^2)}{b_{1,3} + 2b_{2,3} z} P(\beta_3, z) \right]$$

$$= \rho(z) \left[1 + \frac{\beta_3 (m_{1,3} + 2m_{2,3} z + 3z^2)}{b_{1,3} + 2b_{2,3} z} \right] P(\beta_3, z)$$

$$= \rho(z)\, \rho(\beta_3, z) \quad .$$

The temperature factorization is immediate.

$$T = 348.385 \frac{P}{\rho} = 348.385 \frac{P(z) \cdot P(\beta_3, z)}{\rho(z) \cdot \rho(\beta_3, z)}$$

$$= T(z) \cdot \frac{P(\beta_3, z)}{\rho(\beta_3, z)} = T(z) \cdot T(\beta_3, z)$$

The perturbation functions are therefore defined by the following equations. The pressure perturbation is given by

$$P(\beta_3, z) = \exp[\beta_3 (m_{0,3} + m_{1,3} z + m_{2,3} z^2 + z^3] \quad ; \tag{10}$$

the density perturbation by

$$\rho(\beta_3, z) = \left[1 + \frac{\beta_3 (m_{1,3} + 2m_{2,3} z + 3z^2)}{b_{1,3} + 2b_{2,3} z} \right] \exp[\beta_3 (m_{0,3} + m_{1,3} z + m_{2,3} z^2 + z^3] \quad ; \tag{11}$$

and the temperature perturbation by

$$T(\beta_3, z) = \frac{1}{\left[1 + \dfrac{\beta_3(m_{1,3} + 2m_{2,3}z + 3z^2)}{b_{1,3} + 2b_{2,3}z}\right]} \quad . \qquad (12)$$

The perturbations have no units. The model is now complete and consists entirely of the steady state and perturbation functions along with the distribution of β_3 parameters.

3.6 Properties of Model

The perturbation profiles defined by the largest positive and negative β_3 parameters (Flights 26 and 48) observed in this study are shown in Figure 9. The general perturbation function is denoted by the symbol λ. The parameters define envelopes which contain all perturbations determined from the β_3's. This fact is easily verified since the cubic argument of $P(\beta_3, z)$ has three real roots independent of β. These roots correspond to the altitudes at which $P(\beta, z) = 1$. The maxima and minima points of the perturbation are identical to those of its argument but are not independent of β in the sense that negative β's reverse the roles of these points. Therefore, the maximum point for positive β's becomes the minimum point for negative β's and vice versa. As β approaches zero the profiles tend to flatten out and approach a limiting value of 1.

The density envelope is similar in some respects to that of the pressure envelope but differs both in the maximum and minimum amplitudes and the length of the overlapping profiles (i.e., the distance between the two extreme points at which $\lambda(\beta_3, z) = 1$). Also, the envelope lags the pressure envelope by 8 kilometers. The structure of the temperature envelope is entirely different from that of the other envelopes but this is to be expected since it is determined by the ratio of pressure and density perturbation.

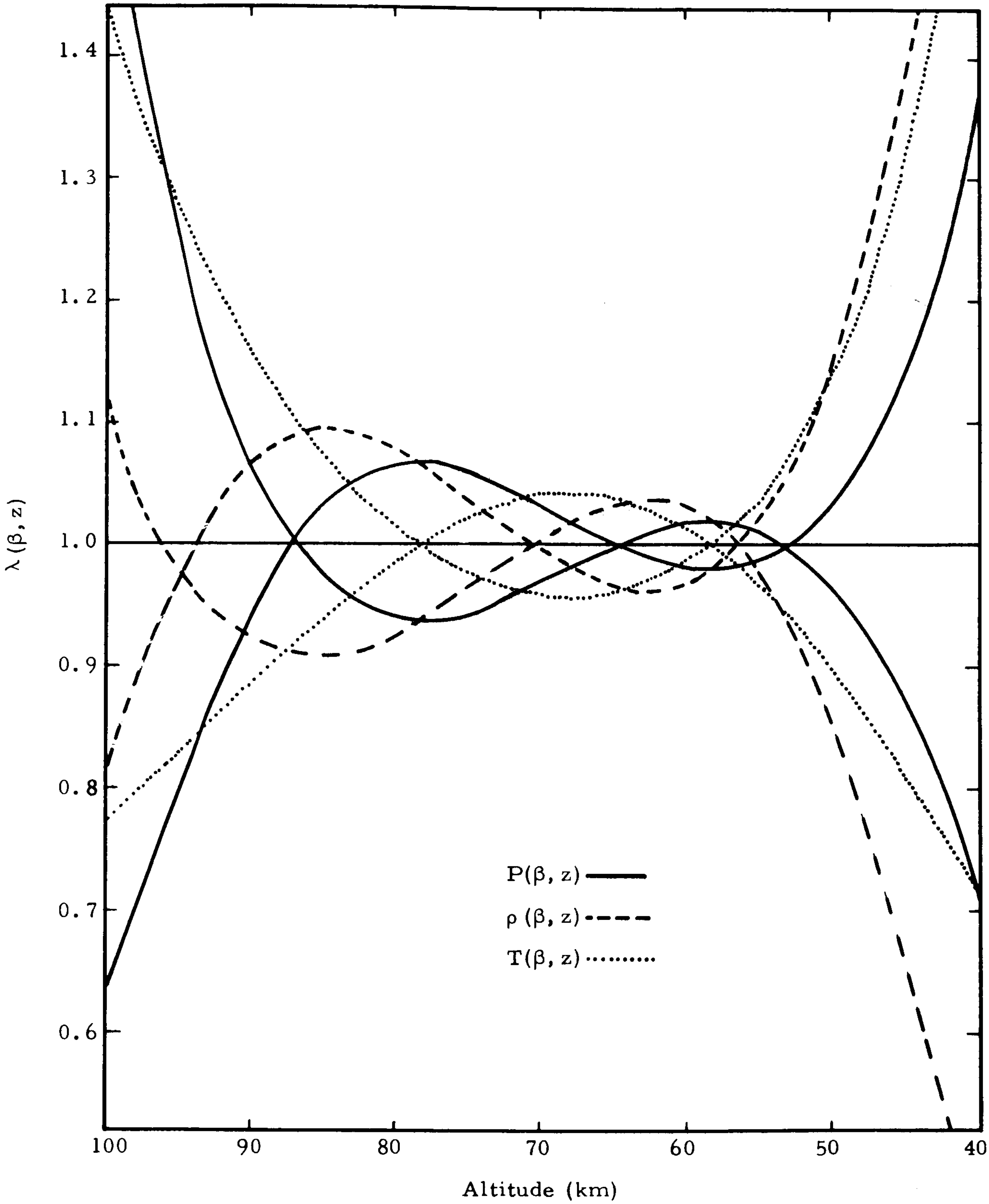

Figure 9. Perturbation Envelopes for Largest Positive and Negative β Parameters.

It is interesting to note that the perturbation model controls the behavior of the atmosphere. The model shows that the upper atmosphere is highly dependent on the perturbations occurring in the lower regions. The central portion is affected to a much lesser extent. The deviations in this range are within 10% of the steady state.

The effects of the perturbations on the steady state atmosphere are best illustrated by the plots shown in Figures 10 through 24. The ratio of steady state pressure to that of the 1962 standard pressure is plotted in Figure 10 for Flight 1. This profile is represented by the dotted curve. The dashed curve shows the effects of the pressure perturbation on steady state. This profile is determined by the product of steady state ratio and pressure perturbation. The observed ratio (pressure values are listed in the appendix) is represented by the solid curve. Similar plots for density are shown in Figure 11. Temperature profiles are plotted in Figure 12. The remaining figures are similar plots for Flights 26, 48, 50, and 63. The rationale for choosing Flights 1, 50, and 63 in illustrating the effects of perturbations on steady state has been explained in Section 3.3. Flights 26 and 48 were included since the largest and smallest β_3's were observed for these flights. In general, the agreement between observed and calculated profiles is quite encouraging.

Probabilities of profiles are computed by specifying β_3. The most likely profiles corresponding to the parameter $\overline{\beta}_3 = 0.0000023$ are within 1% of steady state. Sixty-eight percent of the parameters are expected to lie within one standard deviation ($S = 0.0000092$) of the mean. The perturbation envelopes defined over this range are plotted in Figure 25. The question of whether or not the observed profiles actually fall within these envelopes is partially answered by inspection of Table XXI. The model predicts that when β_3 is within 1σ of the mean $\overline{\beta}_3$ then the other parameters β_0, β_1, and β_2 are also within 1σ of their means.

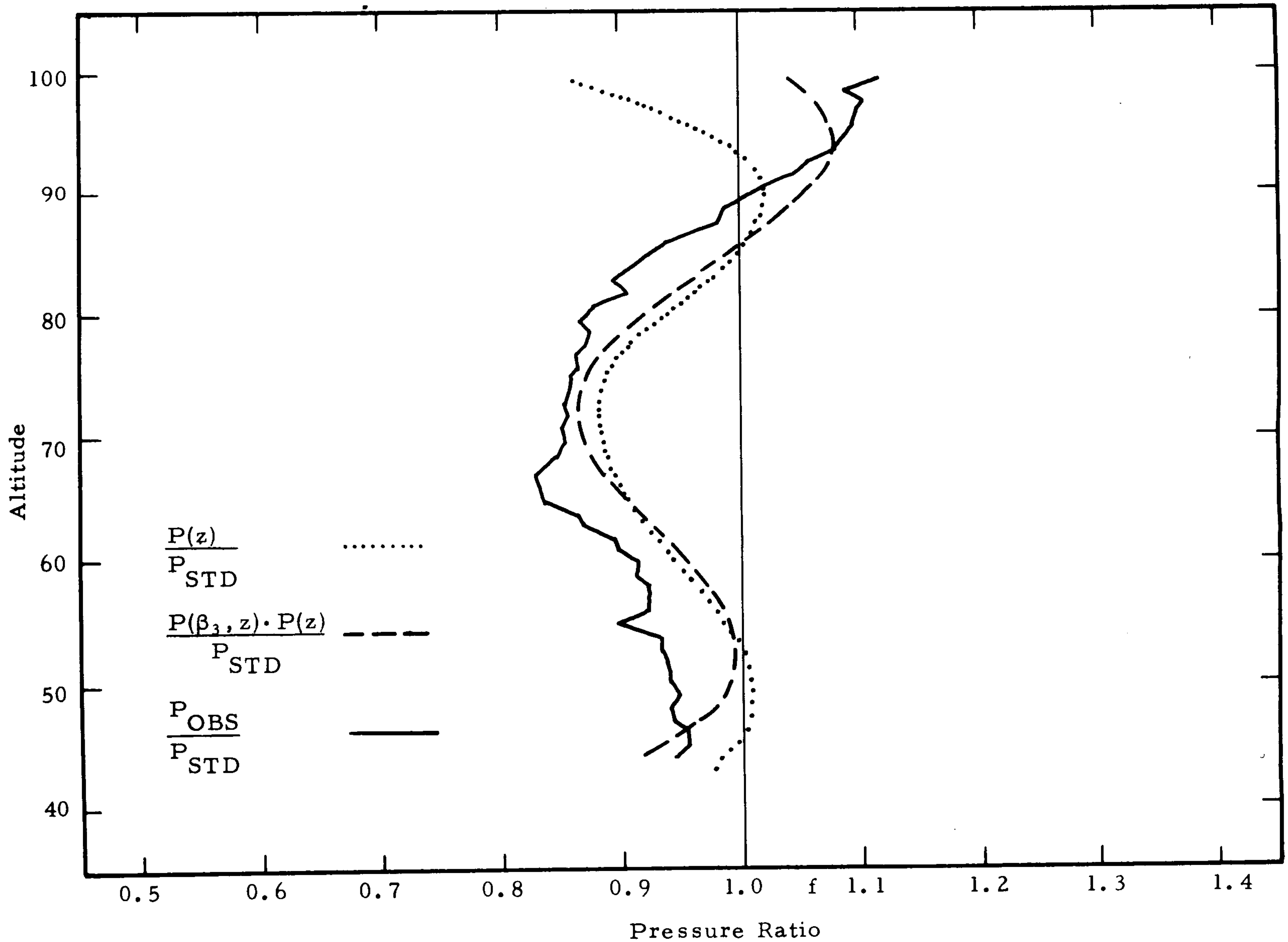

Figure 10. Observed, Calculated, and Steady State Pressure Ratios for Flight 1.

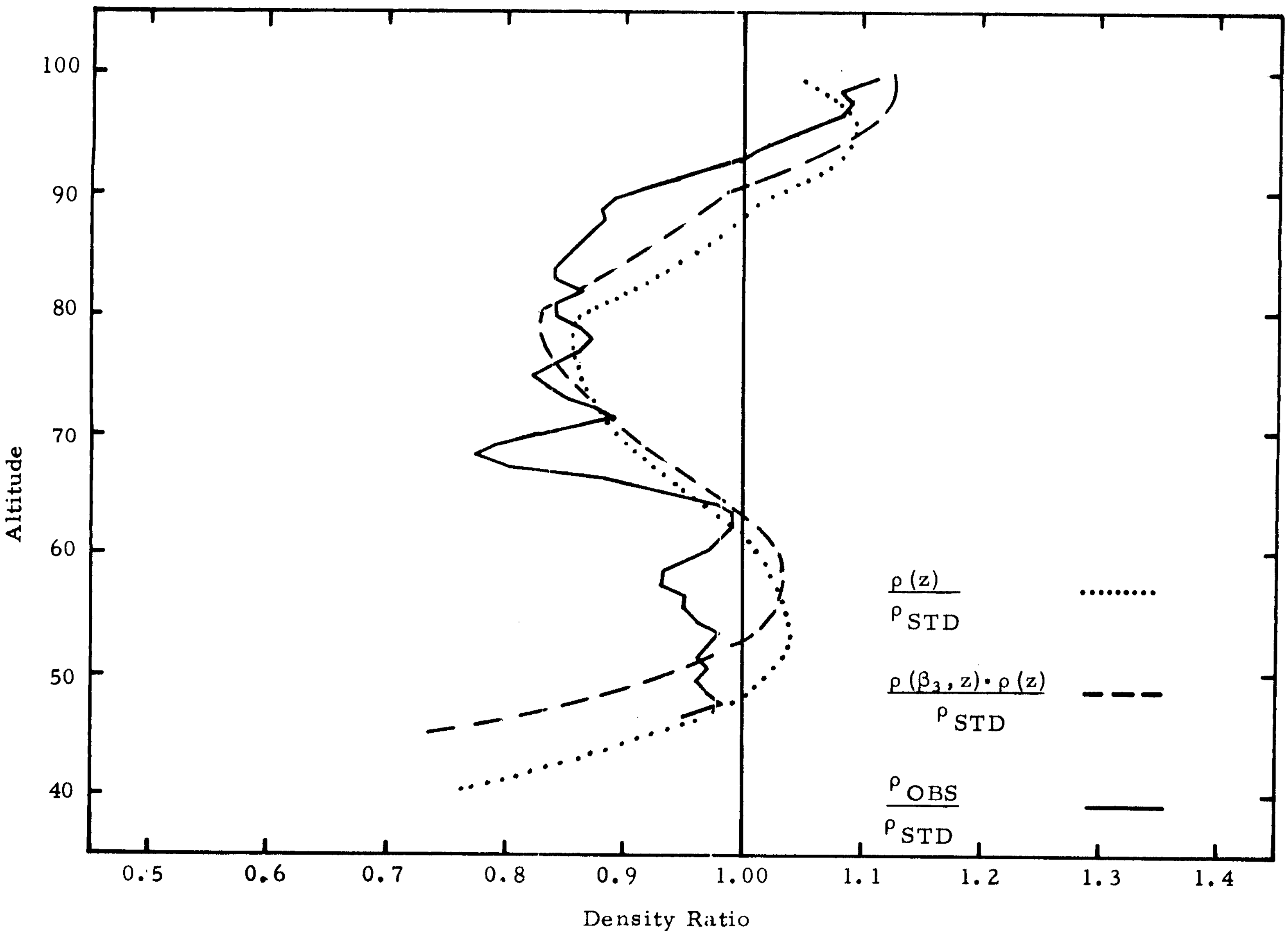

Figure 11. Observed, Calculated, and Steady State Density Ratios for Flight 1.

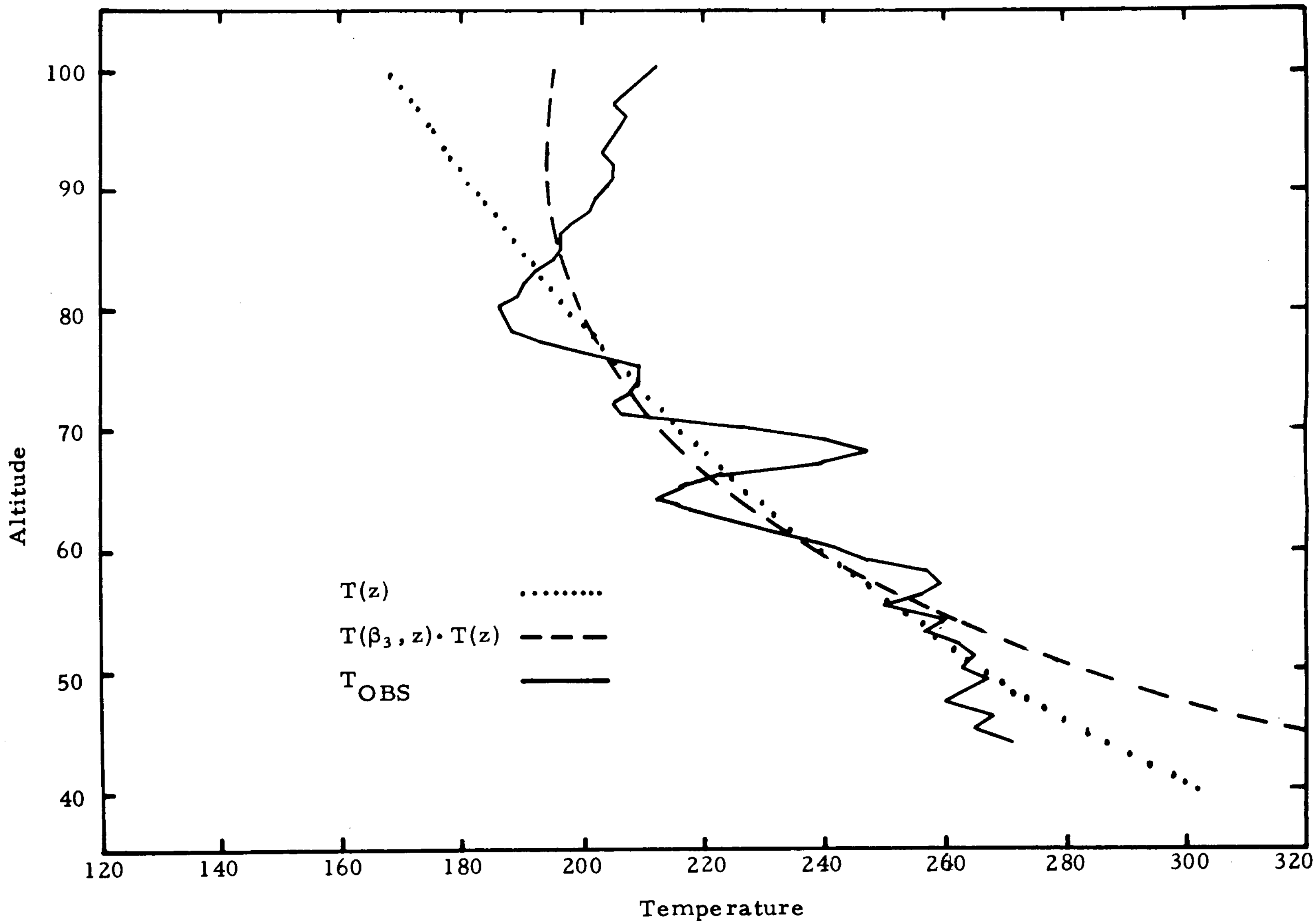

Figure 12. Observed, Calculated, and Steady State Temperature For Flight 1.

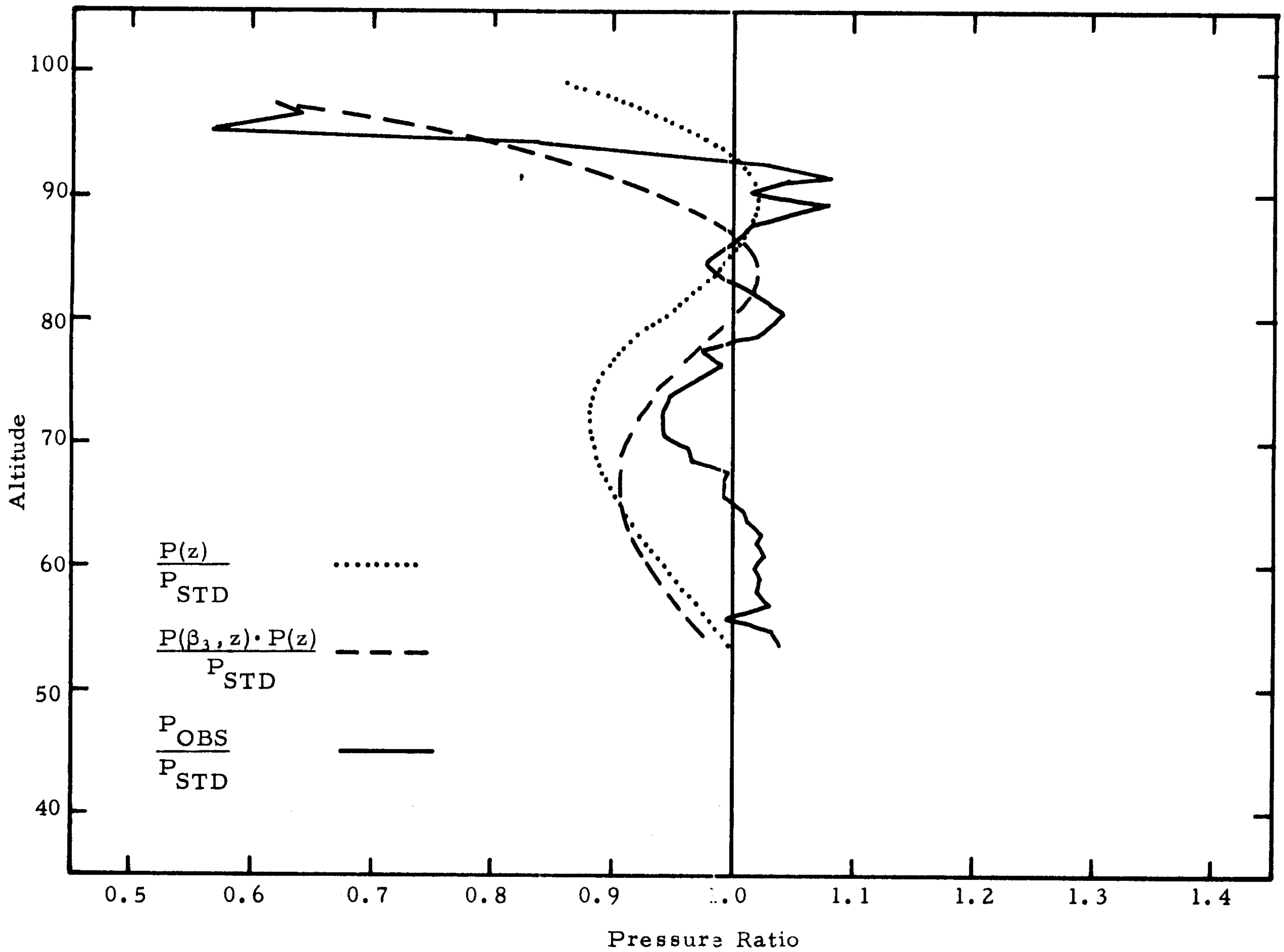

Figure 13. Observed, Calculated, and Steady State Pressure Ratios for Flight 26.

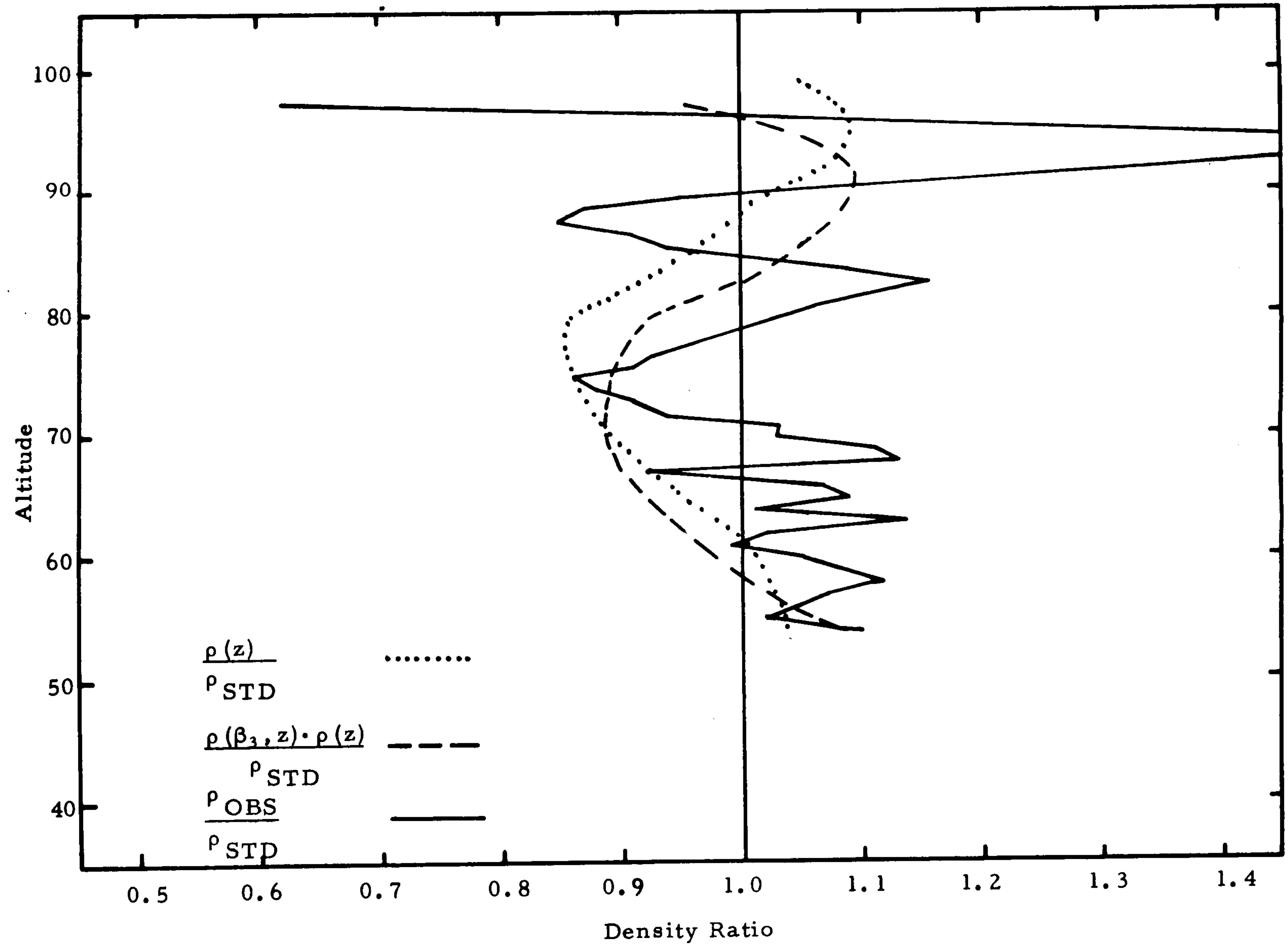

Figure 14. Observed, Calculated, and Steady State Density Ratios for Flight 26.

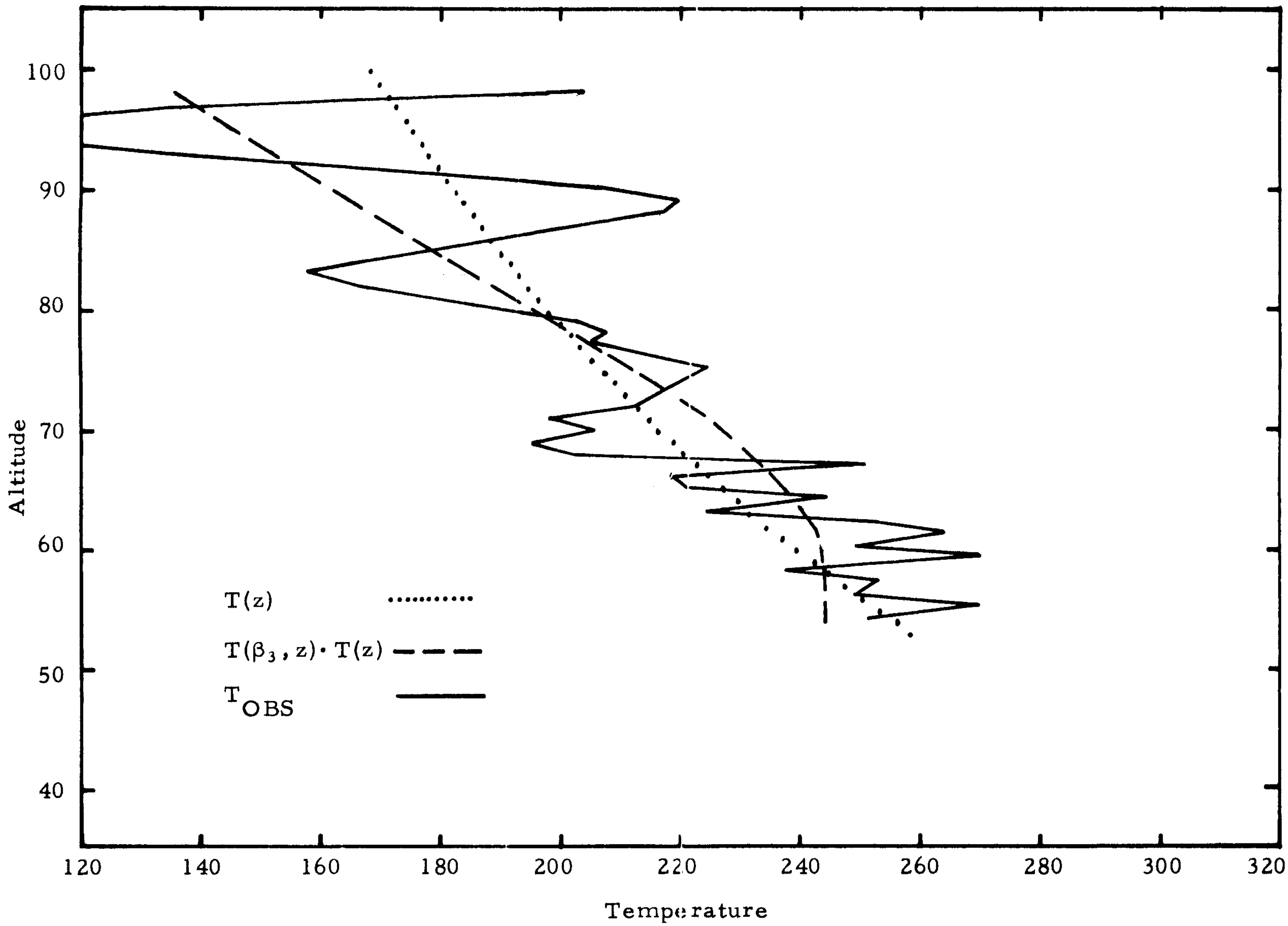

Figure 15. Observed, Calculated, and Steady State Temperature For Flight 26.

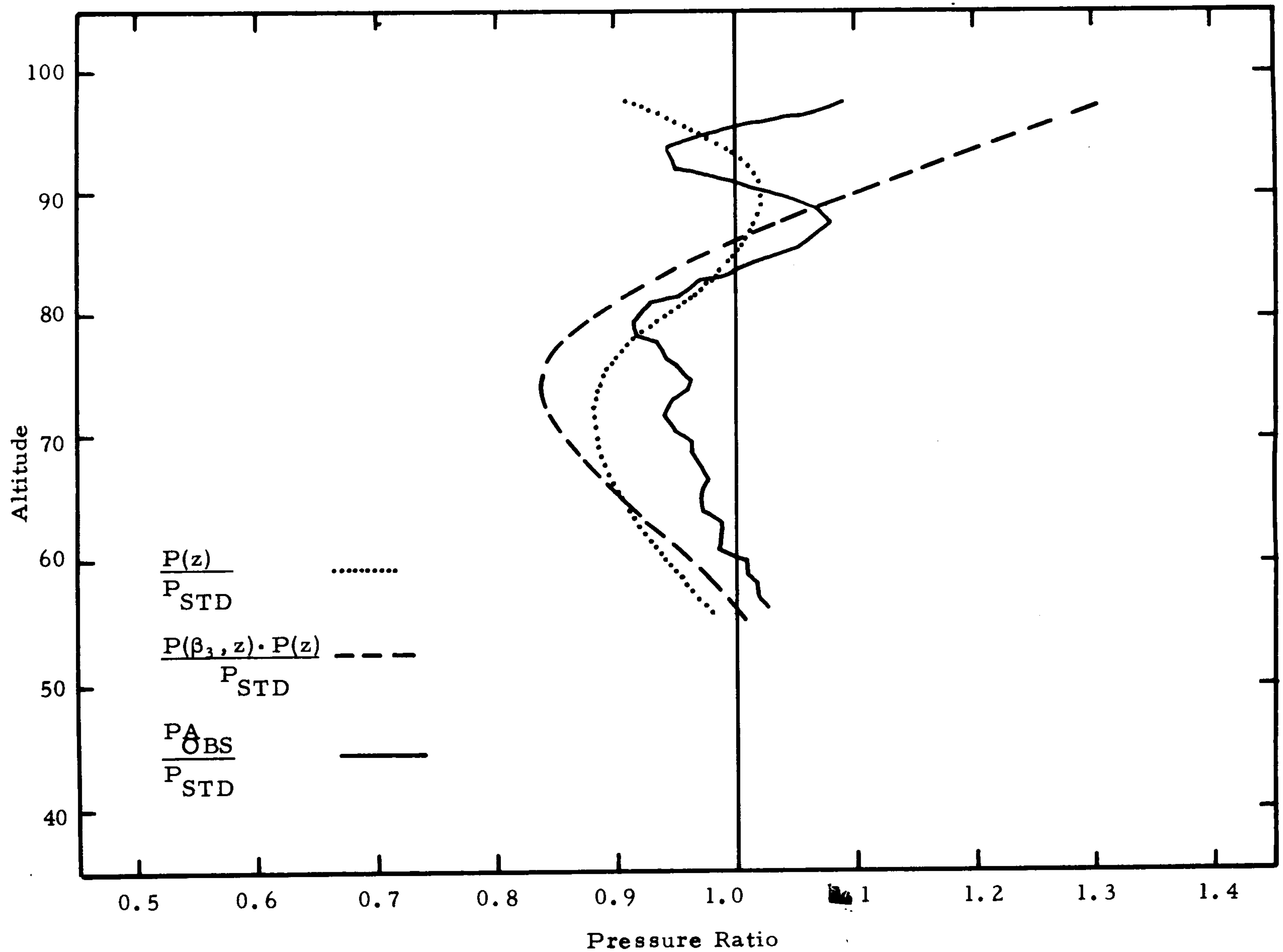

Figure 16. **Observed, Calculated, and Steady State Pressure Ratios for Flight 48.**

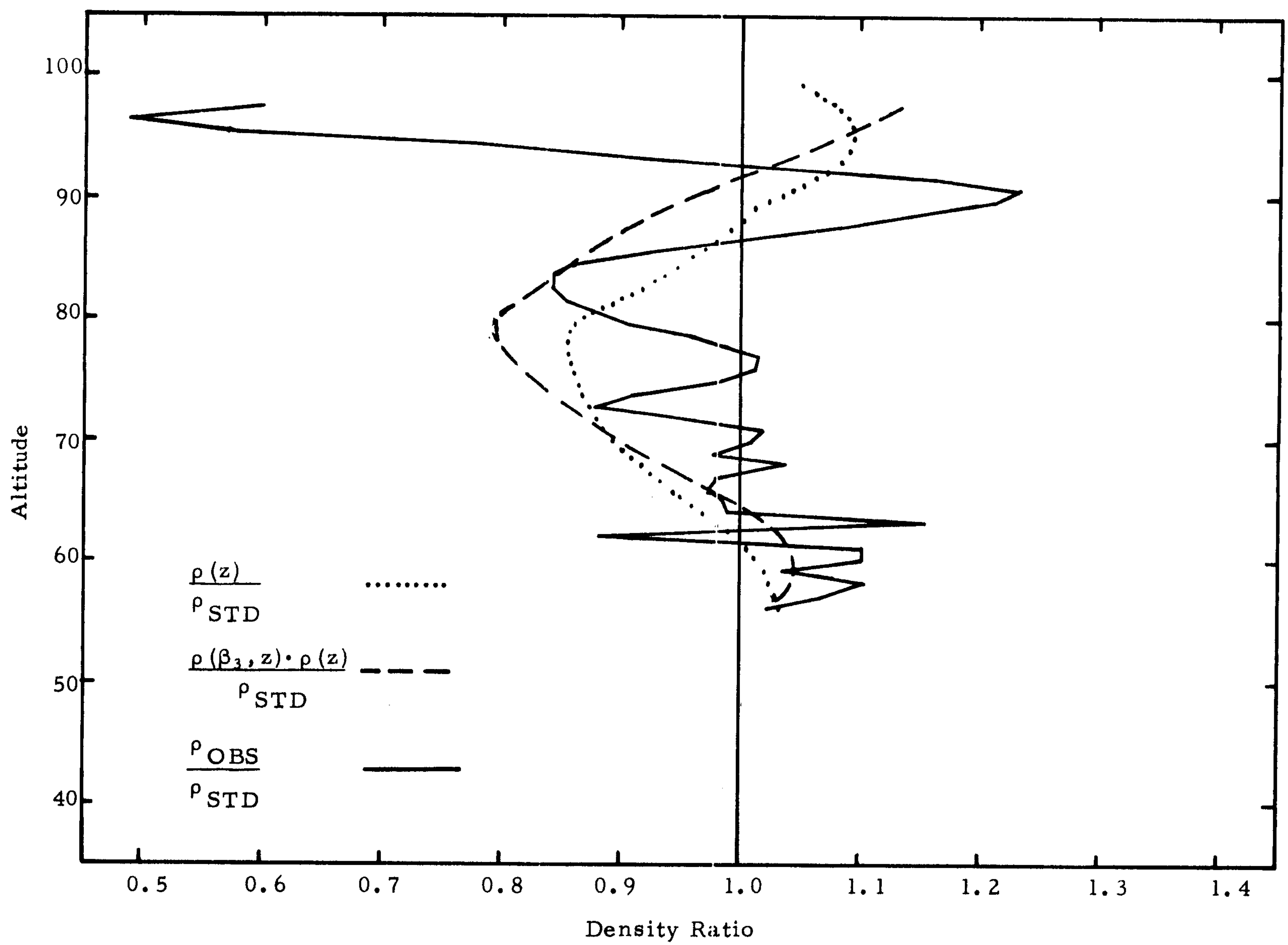

Figure 17. Observed, Calculated, and Steady State Density Ratios for Flight 48.

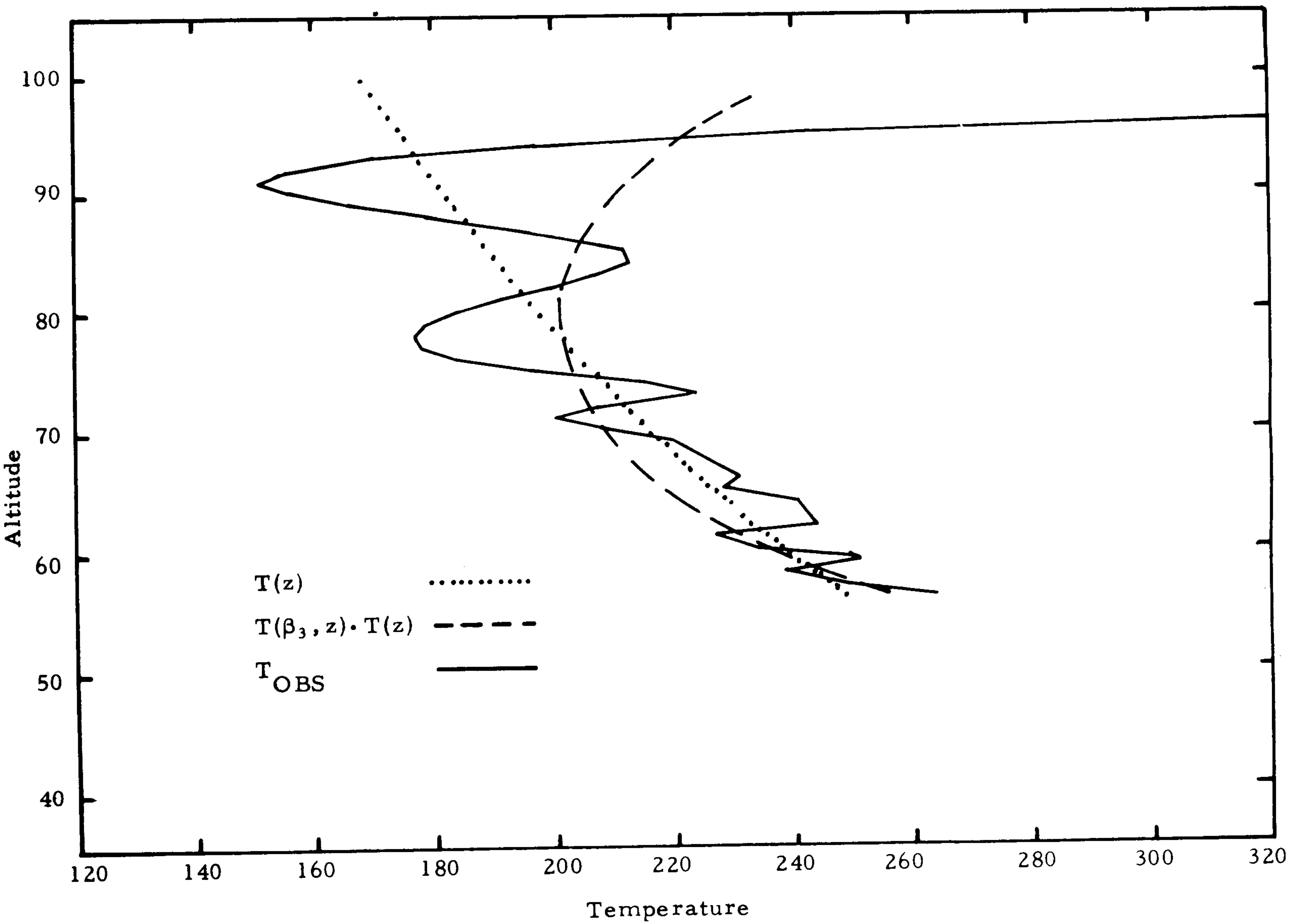

Figure 18. Observed, Calculated, and Steady State Temperature For Flight 48.

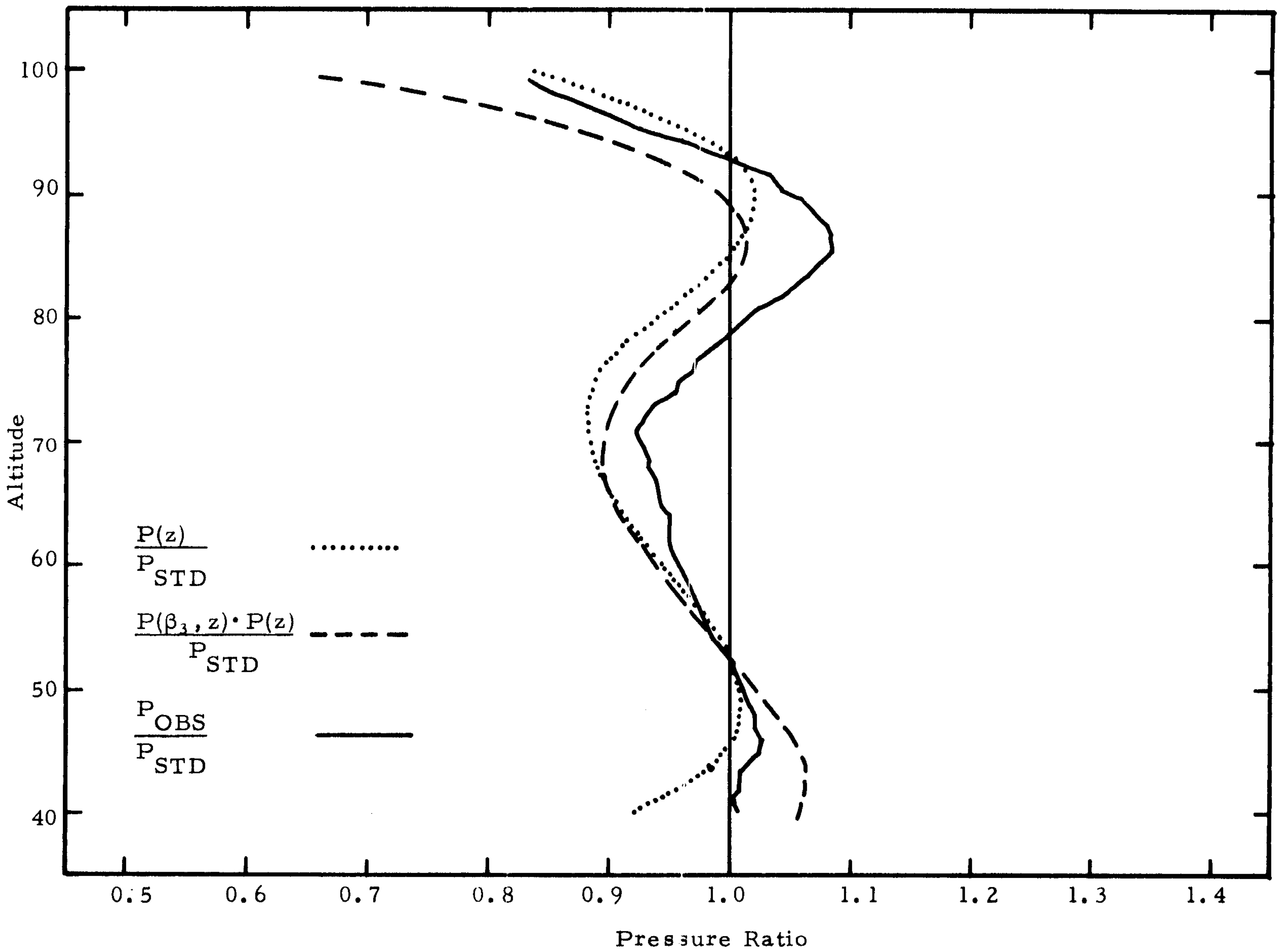

Figure 19. Observed, Calculated, and Steady State Pressure Ratios for Flight 50.

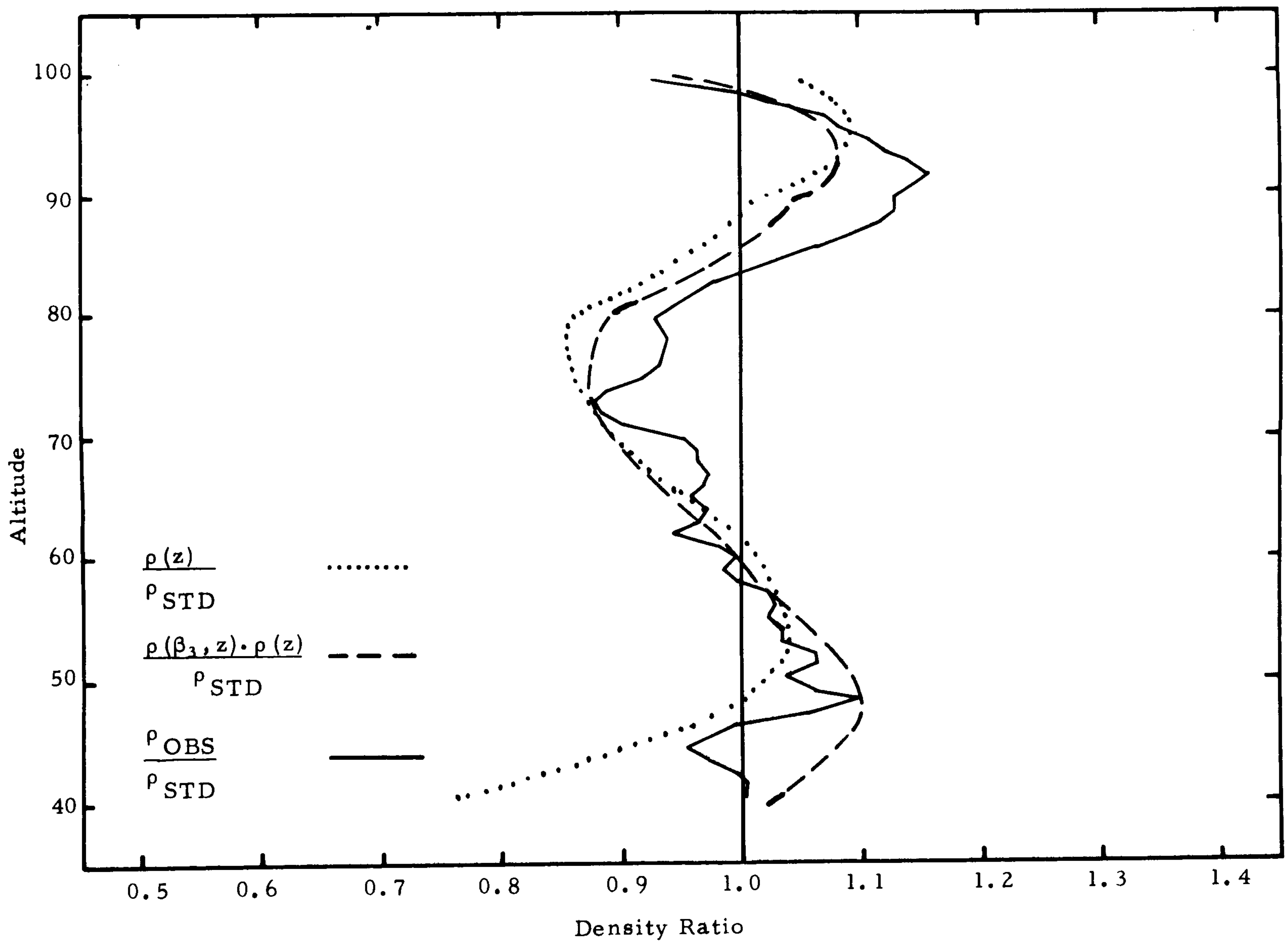

Figure 20. Observed, Calculated, and Steady State Density Ratios for Flight 50.

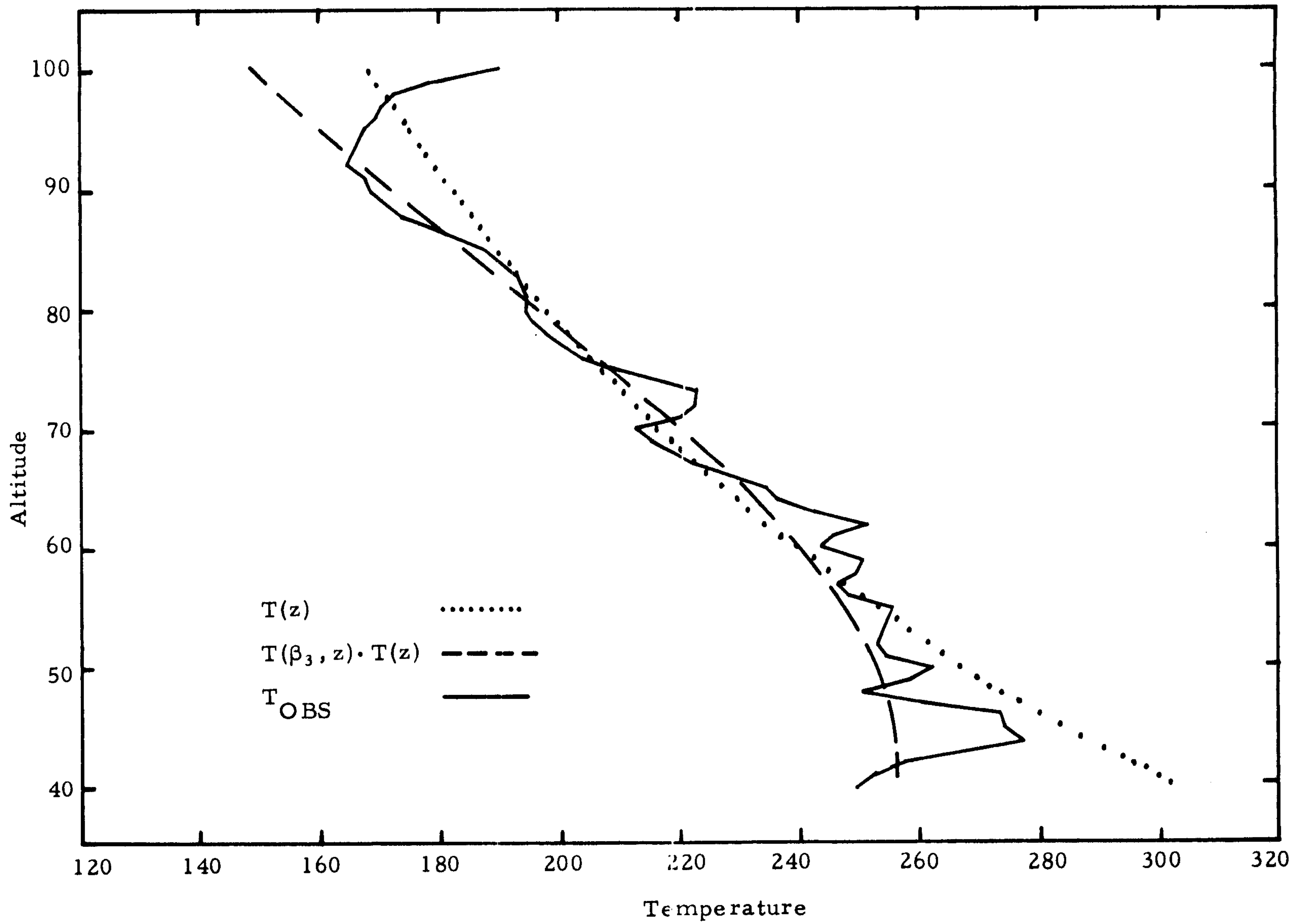

Figure 21. Observed, Calculated, and Steady State Temperature For Flight 50.

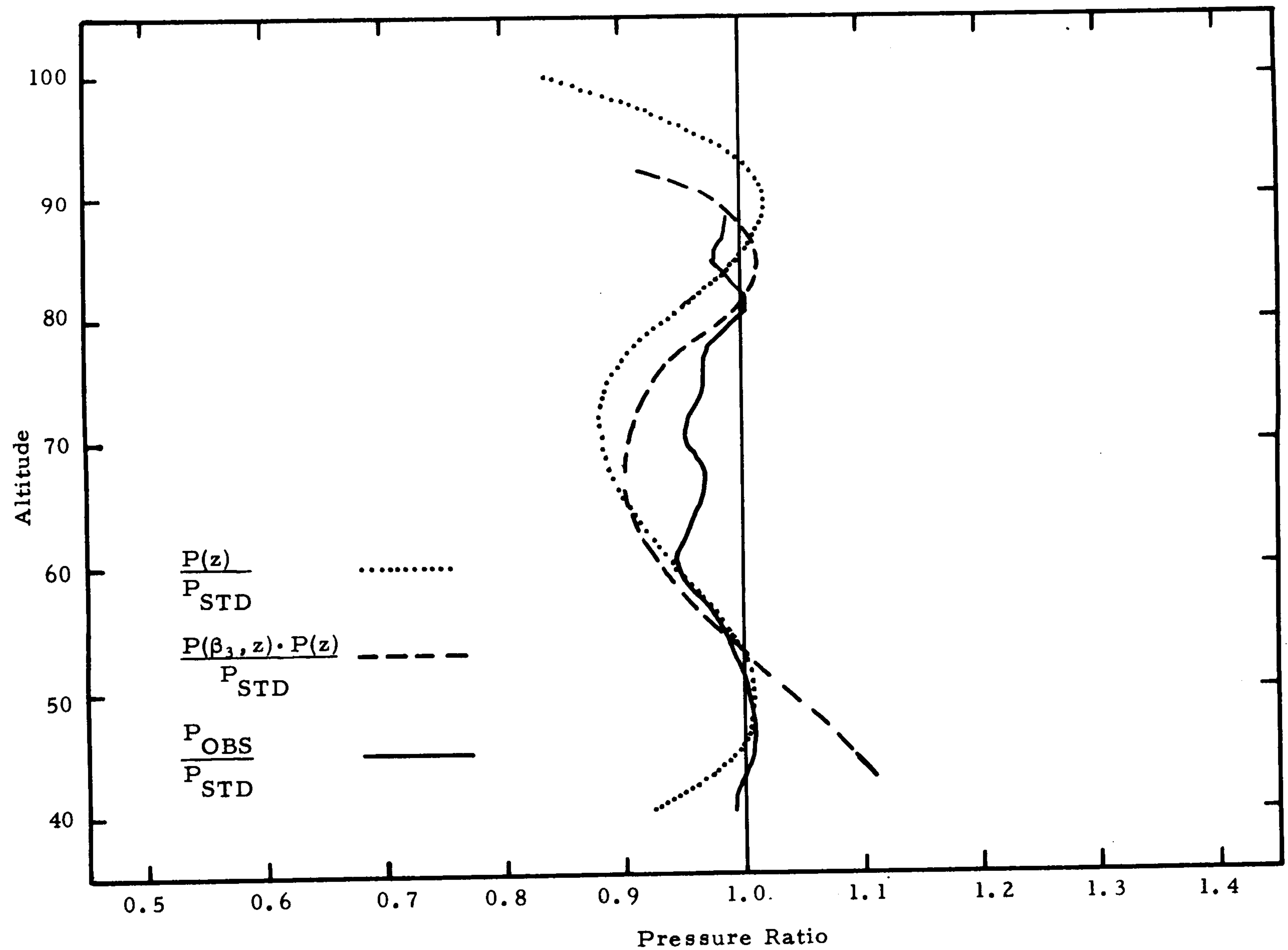

Figure 22. Observed, Calculated, and Steady State Pressure Ratios for Flight 63.

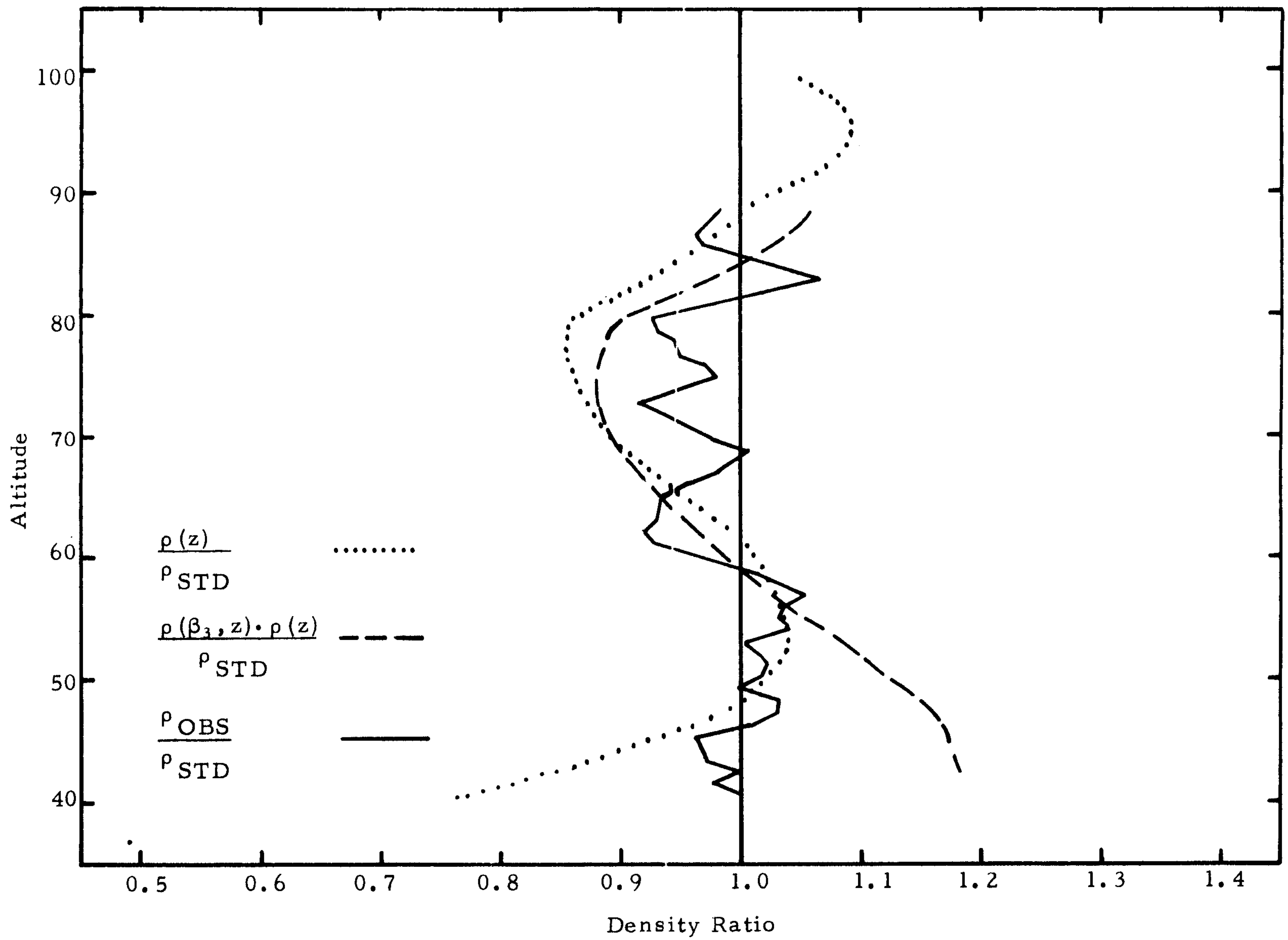

Figure 23. Observed, Calculated, and Steady State Density Ratios for Flight 63.

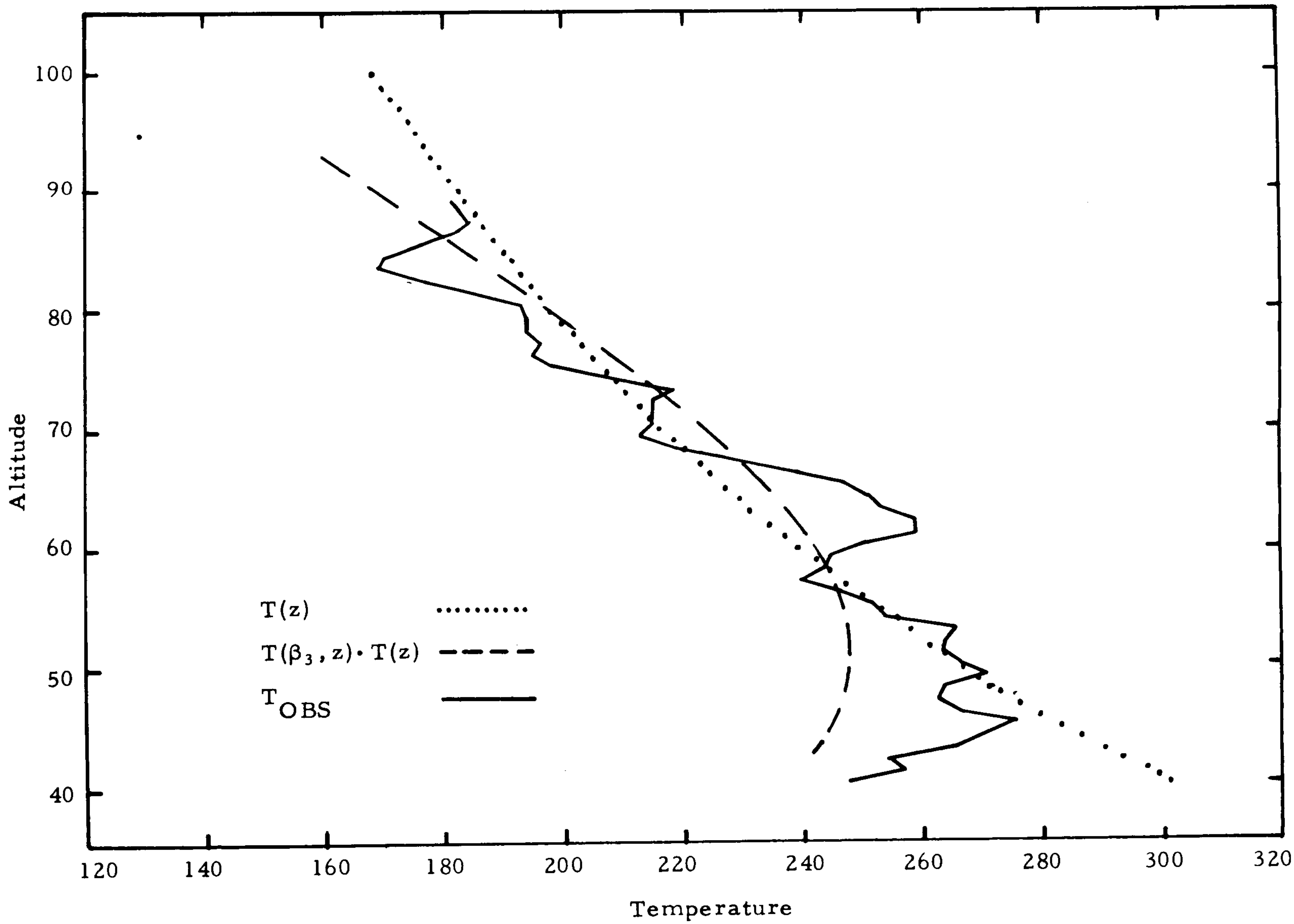

Figure 24. Observed, Calculated, and Steady State Temperature For Flight 63.

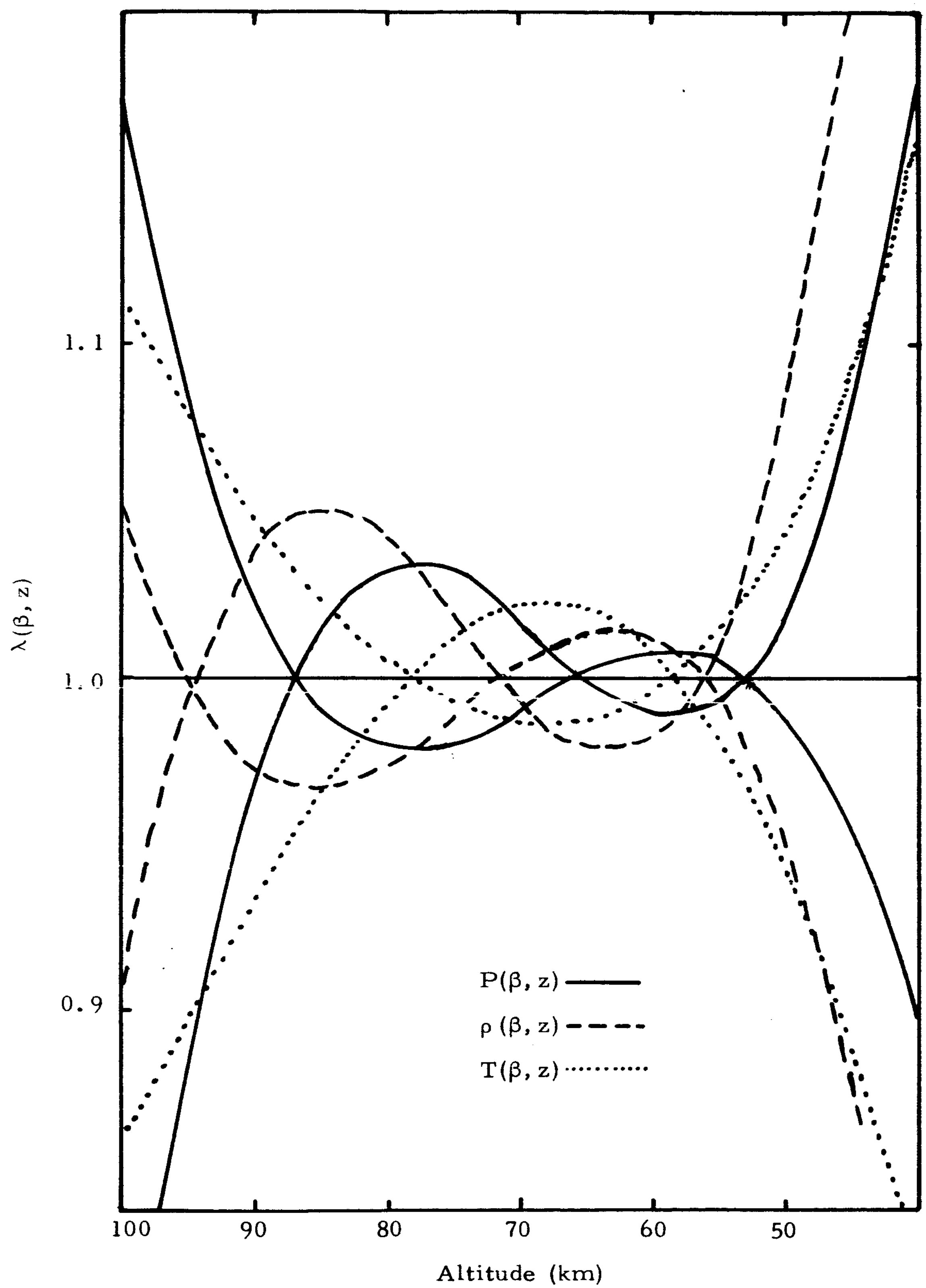

Figure 25. Perturbation Envelopes for β Parameters Within 1σ of Mean.

The sample means and standard deviations are computed as

$$\overline{\beta} = \frac{1}{N} \sum_{i=1}^{N} \beta_i$$

and

$$S^2 = \frac{1}{N-1} \sum_{i=1}^{N} (\beta_i - \overline{\beta})^2 ,$$

respectively, where N is the sample size and S^2 is the standard deviation squared. The functional means and standard deviations are computed through Equations (5) as $\overline{\beta}_i = b_{i,3} + m_{i,3}\overline{\beta}_3$ and $\sigma_{\beta_i} = m_{i,3}\sigma_{\beta_3}$, respectively. The standard deviations predicted by the model are in general lower than those of the samples. Certain of the flights are therefore expected to have profiles lying partially or totally outside the 1σ envelope of Figure 25. However, the percent deviations in these cases are expected to be very low (i.e., the relative deviations from the envelope).

TABLE XXI

COMPARISON OF SAMPLE AND FUNCTIONAL MEANS AND STANDARD DEVIATIONS

Parameter	Sample Mean	Functional Mean	Sample Standard Deviation	Functional Standard Deviation
β_0	-8.33451	-8.33480	0.26793	0.19958
β_1	0.20294	0.20296	0.02857	0.02520
β_2	-0.000924	-0.000926	0.000908	0.000879
β_3	0.0000023	0.0000023	0.0000092	0.0000092

4. MODEL CONSTRUCTION*

The construction of an atmospheric model based on the findings of this report is easily and quickly accomplished. The first step is to generate a data base containing all the necessary information needed to build the model. To do this one would have to keypunch the data (e.g., the data listed in the appendix) onto cards and code a program that transfers this information to magnetic tape. Now that the data is stored on tape it is a relatively simple task to code a program for generating β coefficients. The program would first compute the logs of all pressure data for each flight and then use a least squares routine to fit a polynomial to the data.

Once the β's are determined a linear least squares program computes the slopes and intercepts of all pairs of coefficients. The model is then developed as described in Section 3.5.

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* The computer program that performs all the necessary operations is located at Huntsville, Alabama.

5. CONCLUSIONS AND RECOMMENDATIONS

Atmospheric models are described in this report as the product of steady state and perturbation functions. This concept is very useful both for analysis and computer purposes. It allows one to compute the probability of a given profile where each profile of pressure, density, and temperature is completely specified by one parameter. The parameters are normally distributed with mean 0.0000020 and standard deviation 0.0000094.

The perturbation profiles indicate that large fluctuations from steady state at high altitudes greatly affect what happens at the lower altitudes. For example, positive deviations from steady state pressure at altitudes greater than 87 kilometers correspond to negative deviations in the region less than 53 kilometers. The central region is effected to a much lesser extent. The magnitudes of such deviations are controlled entirely by the distribution of parameters used in the development of the model. The fact that 68% of the parameters are within one standard deviation of the mean indicates that the atmosphere over the altitude range 90 to 50 kilometers is close to a steady state condition most of the time.

A useful feature of the model lies in the fact that if the structure of the pressure perturbation is known then the density and temperature perturbations are completely specified. Therefore, expected deviations from the steady state model can be computed at each altitude.

The limitations of the model depend heavily on the results of Section 3.4. The distributions and interrelationships of the parameters were determined regardless of location or time of year. This fact might well have been the controlling factor in the resulting correlation of β's. For example, if the sample data had been obtained from one location only the correlation coefficients would be expected to increase. Furthermore an additional increase in correlation is expected for those β's taken from the same months or seasons. If these changes do occur it is quite possible that the b's and m's of Equation (5) will change accordingly. Therefore, it is highly important that extreme care be taken in correlating parameters.

One further comment on the model is in order. The particular choice of the third degree polynomial in constructing the model is not necessarily the optimum. In fact, some of the profiles are better explained by polynomials of higher degree. However, as Table XIX shows, the correlation coefficients are generally lower in these cases.

It is recommended that future work be concerned with modifications of the existing model. Specifically, updating of the model should include:

(1) Updating the data base to include more data from specific locations such as Cape Kennedy and Vandenberg.

(2) Extending the model to describe the atmosphere in the altitude range from 40 kilometers to the ground.

(3) Validating the mathematics of the model. In particular, investigating the effects of fitting data in terms of the variable z = 80-Z instead of 100-Z. If appreciable changes are noted, it might be feasible to generalize the fitting variable to arrive at the optimum solution.

(4) Investigating the possibilities of using polynomials of degree higher than three.

6. REFERENCE

Luers, James K., "A Method of Computing Winds, Density, Temperature, Pressure, and their Associated Errors From the High Altitude ROBIN Sphere Using an Optimum Filter", Final Report, Contract No. F19628-67-C-0102, University of Dayton Research Institute, Dayton, Ohio, July 1970.

APPENDIX A

TABLE XXII

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	1	2	3	4	5	6	7	8	9	10	11	12
100	.00055	.00060	.00047	.00042		.00054	.00031		.00045	.00053	.00051	.00053
99	.00064	.00070	.00057	.00051		.00066	.00038		.00055	.00063	.00063	.00062
98	.00077	.00082	.00068	.00063		.00077	.00049		.00069	.00075	.00078	.00072
97	.00091	.00096	.00080	.00080		.00090	.00065		.00082	.00087	.00099	.00082
96	.00106	.00111	.00097	.00099		.00104	.00083		.00097	.00101	.00122	.00098
95	.00125	.00130	.00115	.00122		.00120	.00105		.00116	.00120	.00148	.00115
94	.00147	.00152	.00140	.00147		.00140	.00131		.00139	.00142	.00178	.00139
93	.00175	.00178	.00171	.00175		.00167	.00162		.00166	.00171	.00212	.00167
92	.00203	.00209	.00207	.00207		.00207	.00199		.00199	.00207	.00250	.00203
91	.00239	.00247	.00260	.00242		.00260	.00242		.00236	.00252	.00299	.00255
90	.00282	.00295	.00327	.00285		.00323	.00292		.00282	.00311	.00349	.00311
89	.00335	.00351	.00409	.00335		.00396	.00351		.00335	.00381	.00411	.00385
88	.00403	.00412	.00504	.00398		.00490	.00421		.00403	.00462	.00481	.00467
87	.00479	.00484	.00622	.00479		.00600	.00506	.00512	.00490	.00561	.00561	.00567
86	.00569	.00576	.00761	.00582		.00774	.00662	.00622	.00642	.00675	.00675	.00682
85	.00676	.00676	.00931	.00708		.00859	.00740	.00756	.00724	.00811	.00803	.00819
84	.00803	.00794	.01128	.00870		.01033	.00889	.00918	.00880	.00966	.00966	.00985
83	.00966	.00989	.01357	.01058		.01231	.01081	.01115	.01069	.01150	.01173	.01173
82	.01189	.01133	.01631	.01299		.01465	.01285	.01354	.01285	.01368	.01410	.01396
81	.01396	.01363	.01911	.01579		.01762	.01529	.01629	.01529	.01612	.01679	.01662
80	.01679	.01619	.02239	.01879		.02059	.01819	.01959	.01819	.01899	.01999	.01959
79	.02020	.01973	.02584	.02255		.02419	.02138	.02326	.02138	.02208	.02372	.02302
78	.02392	.02365	.02942	.02667		.02805	.02502	.02750	.02475	.02530	.02777	.02667
77	.02761	.02825	.03338	.03178		.03210	.02889	.03210	.02857	.02889	.03146	.02985
76	.03138	.03288	.03661	.03736		.03587	.03362	.03661	.03213	.03176	.03437	.03325
75	.03555	.03771	.04292	.04378		.03988	.03901	.04118	.03641	.03425	.03815	.03641
74	.04163	.04263	.05015	.04865		.04564	.04915	.04514	.04112	.03611	.04463	.04163
73	.04919	.04919	.05902	.05439		.05382	.05092	.05150	.04687	.04051	.05208	.04745
72	.05860	.05727	.07059	.06260		.06260	.05993	.06060	.05461	.04728	.06193	.05594
71	.06803	.06727	.08103	.07415		.07415	.07033	.07033	.06498	.05657	.07568	.06650
70	.07265	.07440	.09366	.08841		.08403	.08316	.08491	.07703	.06653	.08929	.07878
69	.07900	.08400	.10700	.09800		.09400	.09500	.09500	.08800	.07500	.10300	.09200
68	.08777	.09689	.12425	.11171		.10829	.10829	.10715	.09689	.09347	.10829	.10373
67	.10371	.11279	.14779	.12705		.12575	.12575	.12316	.11149	.11668	.13612	.12316
66	.12947	.12947	.17067	.14419		.14566	.14713	.13830	.12653	.14419	.15890	.13977
65	.15332	.14998	.19498	.16498		.16665	.17165	.15998	.14165	.16665	.17165	.15665
64	.18460	.17330	.22228	.18272		.16765	.19025	.18084	.16011	.18460	.19214	.18084
63	.21039	.19977	.25077	.20614		.18277	.22102	.20614	.18064	.21252	.23377	.21677
62	.23692	.22734	.29196	.23213		.21059	.25128	.22974	.20581	.24170	.24649	.23931

TABLE XXII (Continued)

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	1	2	3	4	5	6	7	8	9	10	11	12
61	.26487	.25406	.32974	.26758		.24866	.27569	.26758	.23785	.27569	.29731	.27839
60	.29674	.28451	.38852	.30898	.29980	.28145	.32122	.30898	.27533	.31204	.32733	.30286
59	.32864	.31135	.42551	.35286	.34940	.31481	.35632	.35978	.30789	.34940	.37016	.33902
58	.36350	.33614	.49467	.40259	.40649	.35959	.40649	.40259	.35568	.37132	.39086	.39086
57	.41033	.37944	.55151	.46327	.45886	.40150	.46327	.46327	.40591	.42356	.46327	.41474
56	.47274	.44288	.62700	.53743	.52250	.47772	.51752	.53245	.45781	.47274	.50260	.47274
55	.53271	.48224	.70094	.60561	.58318	.52710	.59439	.58318	.52150	.52150	.55514	.54393
54	.60612	.56823	.78921	.68188	.64400	.66294	.69451	.64400	.59349	.59980	.68819	.65662
53	.69608	.63216	.88786	.76711	.73870	.73160	.77422	.73870	.70319	.66057	.77422	.75291
52	.77694	.71286	.96917	.85704	.82500	.82500	.88107	.86505	.77694	.76893	.87306	.82500
51	.87062	.76180	1.07014	.96131	.94318	.94318	1.00666	.99759	.90690	.87062	.99759	.93411
50	.99609	.90367	1.17067	1.08851	1.06798	1.06798	1.16040	1.19120	.99609	.98582	1.10905	1.07824
49	1.11629	1.03489	1.27908	1.27908	1.25582	1.20931	1.29071	1.31396	1.08140	1.11629	1.22094	1.19768
48	1.27720	1.18503	1.40887	1.40887	1.43520	1.40887	1.43520	1.48787	1.26403	1.18503	1.36937	1.31670
47	1.46657	1.36181	1.61622	1.64615	1.63119	1.63119	1.69104	1.69104	1.51146		1.69104	1.48153
46	1.62839	1.57697	1.83409	1.86837	1.93693	1.83409	1.95407	1.83409	1.73124		1.85123	1.71410
45	1.86798	1.82866	2.14327	2.14327	2.18259	2.12360	2.18259	2.14327	1.96630			2.00563
44	2.05560	2.16854	2.55256	2.41702	2.46220	2.37184	2.48479	2.52997	2.30408			2.23631
43		2.46895	3.04071	2.72884	2.72884		2.80681	2.88478	2.62489			2.65088
42		2.99480	3.50392	3.20444	3.02475		3.35418	3.35418	3.08464			3.05470
41		3.52553	4.00942	3.76748	3.56009		3.69835	3.76748				3.42184
40		4.11557	4.63501	4.27540	4.23544		4.55510	4.27540				3.75596
39		4.85803	5.36697	4.90430	4.99684			5.18190				4.44163
38		5.79593	6.22526	5.68860	5.84959			6.11792				5.58126
37		6.36021		6.60963	6.73434			6.92140				
36		7.40306		7.91111								
35		8.97120		9.14047								
34		10.28290		10.77727								
33		11.57300		12.26738								
32		13.82610		13.82610								
31				16.73952								
30												

TABLE XXII (Continued)

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	13	14	15	16	17	18	19	20	21	22	23	24
100	.00050	.00049		.00050	.00050	.00040	.00050	.00050		.00034		.00066
99	.00054	.00060		.00060	.00060	.00050	.00060	.00065		.00052		.00074
98	.00063	.00073		.00070	.00070	.00060	.00080	.00081		.00071		.00087
97	.00077	.00088		.00090	.00090	.00080	.00100	.00098		.00090		.00102
96	.00094	.00103		.00100	.00110	.00100	.00120	.00121		.00112		.00120
95	.00109	.00119	.00116	.00130	.00140	.00120	.00150	.00147		.00139		.00139
94	.00125	.00133	.00139	.00150	.00160	.00160	.00190	.00175		.00168		.00163
93	.00146	.00157	.00164	.00180	.00190	.00190	.00229	.00212		.00192		.00190
92	.00173	.00175	.00182	.00209	.00231	.00231	.00269	.00254		.00224	.00203	.00224
91	.00208	.00208	.00200	.00239	.00270	.00281	.00320	.00307		.00260	.00244	.00262
90	.00254	.00250	.00231	.00288	.00320	.00330	.00371	.00365		.00301	.00298	.00307
89	.00324	.00309	.00278	.00358	.00377	.00389	.00419	.00438		.00358	.00362	.00354
88	.00417	.00389	.00348	.00449	.00449	.00458	.00499	.00527		.00426	.00435	.00412
87	.00523	.00490	.00457	.00572	.00528	.00539	.00578	.00638		.00517	.00517	.00473
86	.00648	.00609	.00589	.00728	.00629	.00642	.00682	.00768		.00662	.00668	.00589
85	.00795	.00756	.00732	.00931	.00740	.00740	.00811	.00923		.00756	.00748	.00636
84	.00947	.00918	.00908	.01167	.00880	.00880	.00956	.01119		.00899	.00899	.00755
83	.01115	.01115	.01092	.01461	.01047	.01035	.01150	.01345		.01069	.01069	.00897
82	.01327	.01327	.01285	.01783	.01244	.01230	.01368	.01603		.01285	.01299	.01092
81	.01546	.01562	.01496	.02144	.01463	.01463	.01662	.01911		.01546	.01546	.01330
80	.01799	.01819	.01739	.02539	.01719	.01739	.01999	.02259		.01839	.01839	.01619
79	.02114	.02114	.02020	.02889	.02044	.02067	.02349	.02631		.02208	.02185	.01973
78	.02447	.02365	.02310	.03245	.02392	.02420	.02750	.03025		.02640	.02585	.02392
77	.02857	.02729	.02632	.03531	.02793	.02825	.03210	.03370		.03146	.03049	.02889
76	.03285	.03138	.02989	.03773	.03250	.03288	.03661	.03661		.03773	.03587	.03437
75	.03685	.03598	.03381	.04118	.03728	.03771	.04075	.03945	.03988	.04292	.04205	.04075
74	.04012	.04062	.03711	.04814	.04163	.04213	.04564	.04463	.04413	.04564	.04764	.04564
73	.04629	.04629	.04398	.05613	.04687	.04861	.05208	.05208	.04919	.05092	.05324	.05092
72	.05194	.05128	.05327	.06593	.05594	.05594	.05993	.06260	.05794	.05927	.06193	.05993
71	.06039	.05886	.06650	.07797	.06727	.06574	.07186	.07797	.06880	.07186	.07186	.07033
70	.07440	.07178	.08316	.08753	.08316	.07703	.08316	.09541	.08403	.08578	.08491	.08666
69	.09200	.09200	.09800	.09900	.09600	.08700	.09500	.10800	.09700	.09300	.09300	.09900
68	.11057	.11285	.10487	.11399	.10943	.09917	.11057	.12083	.10601	.10259	.10031	.10715
67	.12575	.12316	.12057	.13094	.12964	.11408	.13094	.13742	.12316	.11797	.11408	.12057
66	.14566	.14419	.13683	.15154	.14566	.13095	.15596	.15449	.13977	.13242	.13389	.13977
65	.16498	.16498	.15998	.17332	.16832	.15332	.18165	.17832	.15998	.14665	.15498	.15332
64	.19214	.18272	.18649	.19779	.19779	.17895	.21286	.20721	.18272	.16765	.17518	.17330
63	.21252	.20827	.20614	.22740	.21890	.20402	.23377	.25077	.21252	.18489	.20402	.20827
62	.24649	.22256	.23452	.25367	.24410	.23452	.26803	.29674	.23692	.21777	.23692	.21538

TABLE XXII (Continued)

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	13	14	15	16	17	18	19	20	21	22	23	24
61	.27839	.25136	.27028	.29461	.27028	.26217	.31082	.33785	.27569	.25677	.27028	.26217
60	.31816	.27533	.31204	.32733	.31510	.30898	.35487	.38240	.31510	.31204	.31510	.30286
59	.33902	.31326	.35285	.36324	.34248	.35286	.38745	.43243	.34940	.36324	.34248	.30789
58	.39868	.36350	.40259	.39868	.39477	.39086	.47294	.47294	.39477	.41040	.42213	.42213
57	.45003	.41474	.45445	.48533	.45003	.45003	.48974	.56034	.45003	.46768	.46327	.47209
56	.52748	.47772	.50260	.55733	.51752	.49264	.55236	.58719	.51255	.51752	.53743	.53245
55	.56075	.52710	.57757	.62243	.58318	.56075	.62243	.66729	.60000	.61122	.60561	.56636
54	.65031	.63137	.62506	.69451	.68188	.61874	.71976	.75764	.65031	.69451	.68819	.66294
53	.69608	.68898	.71029	.78842	.80263	.71029	.78132	.88786	.77422	.74580	.76001	.76001
52	.82500	.83301	.76893	.92913	.92112	.83301	.92913	1.03325	.82500	.82500		.85704
51	.92504	.97038	.94318		1.01573	.96131	1.12456	1.17897	.93411	.94318		.96131
50	1.02690	1.05771	1.05771		1.19120	1.07824	1.32470	1.35551	1.09878	1.09878		1.06798
49	1.15117	1.26745	1.23257		1.36048	1.19768	1.65118	1.55815	1.29071	1.18606		1.22094
48	1.32987	1.40887	1.38253		1.54054	1.32987		1.69854	1.47470	1.35620		
47	1.48153	1.61622	1.55636		1.75090	1.48153		1.91552	1.69104	1.51146		
46	1.71410	1.86837	1.74838		1.93693	1.66268		2.15977	1.93693	1.67982		
45	2.04495	2.08428	1.96630		2.18259	1.86798		2.37922	2.28091	1.90731		
44	2.30408	2.32667	2.25890		2.52997	2.12337		2.71068	2.55256	2.23631		
43	2.59890	2.67687	2.49494		2.88478	2.46895		3.11868	2.88478	2.59890		
42	3.02475	3.14454	3.02475		3.29428	2.87501			3.32423			
41	3.42184	3.80204	3.66378		4.00942	3.28358			3.62922			
40	3.79591	4.55510	4.15553			4.11557			4.27540			
39	4.30283	5.13564	4.76550			4.90430			4.99684			
38	5.15194	6.17159	5.52760			5.58126			5.95693			
37	5.92372		6.67198			6.17314			7.10847			
36			7.18532			6.74985			8.41916			
35			7.87096			7.70169						
34						8.89866						
33						10.87862						
32						14.36830						
31												
30												

TABLE XXII (Continued)

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	25	26	27	28	29	30	31	32	33	34	35	36
100	.00060		.00047	.00055	.00065		.00060	.00062	.00062			
99	.00070		.00057	.00066	.00076		.00071	.00075	.00073			
98	.00081	.00044	.00068	.00079	.00087		.00083	.00089	.00085		.00062	
97	.00096	.00082	.00081	.00094	.00098		.00096	.00102	.00099		.00086	
96	.00113	.00104	.00097	.00113	.00111	.00117	.00111	.00116	.00117		.00108	.00105
95	.00134	.00188	.00116	.00137	.00125	.00138	.00128	.00133	.00138		.00127	.00125
94	.00160	.00226	.00142	.00165	.00144	.00164	.00149	.00154	.00162		.00144	.00148
93	.00189	.00256	.00171	.00199	.00170	.00194	.00176	.00180	.00187		.00162	.00174
92	.00224	.00274	.00209	.00239	.00203	.00230	.00209	.00214	.00220		.00183	.00205
91	.00265	.00286	.00262	.00289	.00244	.00272	.00250	.00256	.00261		.00215	.00245
90	.00317	.00301	.00327	.00343	.00297	.00318	.00300	.00306	.00311		.00264	.00294
89	.00373	.00331	.00400	.00406	.00365	.00374	.00358	.00363	.00367		.00330	.00352
88	.00444	.00389	.00490	.00482	.00440	.00440	.00427		.00436		.00406	.00431
87	.00528	.00501	.00589		.00532	.00515	.00505		.00515		.00499	.00523
86	.00662	.00622	.00708		.00631	.00600	.00593		.00607		.00612	.00637
85	.00732	.00795	.00843		.00745	.00698	.00698		.00709		.00745	.00775
84	.00870	.01042	.00995		.00882	.00810	.00816		.00824	.00608	.00900	.00937
83	.01023	.01334	.01161		.01037	.00942	.00945	.00925	.00951	.00694	.01075	.01141
82	.01202	.01548	.01354	.01386	.01224	.01096	.01089	.01074	.01093	.00782	.01280	.01379
81	.01413	.01762	.01562	.01647	.01434	.01287	.01243	.01240	.01245	.00888	.01513	.01656
80	.01539	.01939	.01799	.01965	.01686	.01503	.01419	.01422	.01414	.01014	.01781	.01984
79	.01926	.02185	.02067	.03625	.01953	.01754	.01618	.01624	.01599	.01155	.02107	.02340
78	.02227	.02420	.02365	.02674	.02217	.02055	.01840	.01835	.01800	.01323	.02473	.02746
77	.02536	.02985	.02729	.03025	.02443	.02391	.02088	.02031	.02007	.01507	.02871	.03216
76	.02877	.03400	.03101	.03366	.02644	.02785	.02360	.02246	.02227	.01744	.03298	.03746
75	.03251	.03728	.03598	.03899	.02930	.03239	.02730	.02497	.02465	.02019	.03817	.04290
74	.03661	.04413	.04213	.04714	.03488	.03769	.03252	.02864	.02774	.02388	.04432	.04733
73	.04166	.05266	.04919	.05660	.04326	.04376	.03915	.03535	.03302	.02933	.05239	.05352
72	.04994	.06260	.05794	.06867	.05351	.05009	.04737	.04485	.04162	.03686	.06232	.06189
71	.05962	.07874	.06803	.07923	.06559	.05909	.05853	.05656	.05352	.04585	.07324	.07454
70	.07265	.09016	.08141	.09107	.07800	.07015	.06912	.06965	.06686	.05688	.08859	.09191
69	.09000	.11100	.09700	.10607	.08604	.08538	.08456	.08481	.08209	.07176	.10116	.10431
68	.10373	.12881	.10943	.12066	.09757	.09787	.10159	.10026	.10079	.08939	.11537	.11806
67	.11927	.11927	.12834	.13721	.11295	.10931	.11374	.11581	.11408	.10544	.13379	.13682
66	.13536	.15743	.14713	.15918	.12783	.12803	.13018	.13521	.13042	.12394	.14593	.15846
65	.15832	.18165	.16998	.17284	.14402	.14976	.15295	.14934	.15167	.14742	.16653	.17759
64	.19402	.19025	.19967	.19287	.16315	.17300	.17326	.17329	.17357	.16956	.18560	.19590
63	.22102	.24015	.22102	.22821	.18228	.20048	.19652	.19488	.19494	.19312	.22993	.22238
62	.25128	.24410	.25367	.25425	.21334	.23295	.22606	.22130	.21534	.22017	.26436	.25251

TABLE XXII (Continued)

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	25	26	27	28	29	30	31	32	33	34	35	36
61	.28920	.26758	.28650	.30050	.24016	.26307	.24354	.25172	.23876	.24284	.30941	.28707
60	.32428	.32122	.32428	.32212	.26804	.30297	.27845	.26812	.26524	.27242	.34358	.32922
59	.35632	.33902	.38053	.38552	.30971	.33558	.31850	.32484	.30544	.30720	.38034	.37458
58	.39086	.43776	.41822	.43904	.34762	.38922	.36389	.35611	.34736	.34694	.40479	.40926
57	.45445	.47209	.47651	.47144	.38914	.43991	.40317	.39711	.39511	.39702		.46787
56	.49762	.52250	.52748	.58297	.45198	.50759	.45602	.45608	.46314	.45607	.50680	.53198
55	.55514	.57196	.58318	.55073	.51237	.57317	.52989	.53154	.51012	.50574	.57427	.60864
54	.61374	.69451	.66294	.71194	.58649	.64841	.59911	.58587	.57585	.58039	.64035	.67157
53	.67478		.76711	.79984	.67007	.74986	.69734	.64574	.65217	.62901	.70369	.77656
52	.75291		.86505	.91877	.78825	.83438	.73512	.75663	.74750	.72008	.80313	.87756
51	.86155		.97038	.93857	.88638	.94448	.86743	.84720	.85367	.83458	.96123	1.01027
50	.98582		1.16040	1.11816	1.01901	1.08352	.97208	.96656	.97648	.92814	1.09804	1.14701
49	1.09303		1.31396	1.26126	1.14235	1.20973	1.15498	1.12191	1.10737	1.05890	1.26690	1.36896
48	1.25086			1.47633	1.27758	1.42198	1.34803	1.34708	1.29758	1.21838	1.45428	1.50837
47	1.51146			1.64753	1.46139	1.59683	1.58904	1.50592	1.48421	1.41907	1.68261	1.65378
46	1.66268			1.86875	1.67083	1.85257	1.73994	1.67821	1.67857	1.63439	1.96492	1.85139
45	1.92697			2.22621	1.90025	2.09146	1.99590	1.93911	1.97327	1.89812	2.27789	2.18582
44	2.19113			2.61802	2.12617	2.35795	2.26625	2.25938	2.23662	2.21127	2.60882	
43	2.62489				2.47127	2.66541	2.59267	2.55555	2.62836	2.51178		
42	3.17449				2.87174	2.97463	3.01084	3.02924	2.93480	2.85738		
41					3.42512	3.46454	3.51067	3.40418	3.37455	3.42128		
40					3.91296	3.92870	4.07164	3.99021	3.97129	3.91291		
39					4.64674	4.69253	4.61199	4.51380	4.57667	4.50359		
38					5.51468	5.30539	5.31370	5.26096	5.30437	5.26167		
37					6.60912		6.25703		6.03867	6.13555		
36					7.72383		7.39527		7.22885	6.99457		
35					8.53238		8.73858		8.25016			
34					9.63381		10.08260		9.98449			
33					10.76467		11.91097		11.53350			
32							13.88157		13.51058			
31									15.67040			
30												

TABLE XXII (Continued)

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	37	38	39	40	41	42	43	44	45	46	47	48
100	.00028	.00042				.00054		.00056				
99	.00035	.00057				.00077		.00068			.00071	
98	.00052	.00071	.00080		.00061	.00103		.00077	.00046		.00082	.00042
97	.00073	.00085	.00094		.00075	.00127		.00087	.00080		.00095	.00041
96	.00099	.00102	.00108		.00090	.00155		.00096	.00130		.00108	.00058
95	.00132	.00121	.00125		.00106	.00185		.00108	.00183		.00120	.00094
94	.00171	.00146	.00143		.00126	.00214		.00130	.00224		.00138	.00134
93	.00217	.00175	.00175		.00152	.00252		.00162	.00256		.00165	.00186
92	.00260	.00216	.00209		.00186	.00292		.00209	.00277		.00200	.00248
91	.00306	.00273	.00252		.00233	.00347		.00267	.00292	.00239	.00246	.00320
90	.00363	.00340	.00305		.00294	.00409		.00330	.00314	.00269	.00301	.00384
89	.00423	.00426	.00367		.00374	.00478		.00405	.00341	.00330	.00367	.00441
88	.00494	.00514	.00441		.00463	.00560		.00496	.00403	.00438	.00447	.00496
87	.00583	.00622	.00527		.00567	.00652		.00604	.00507	.00579	.00540	.00549
86	.00689	.00739	.00629		.00685	.00753		.00729	.00626	.00714	.00642	.00613
85	.00820	.00871	.00755		.00822	.00868		.00872	.00795	.00854	.00751	.00692
84	.00976	.01018	.00902		.00968	.00997		.01037	.01030	.01007	.00894	.00806
83	.01158	.01177	.01079		.01135	.01152		.01236	.01321	.01147	.01057	.00969
82	.01372	.01373	.01300		.01326	.01325		.01462	.01551	.01261	.01262	.01181
81	.01616	.01595	.01552		.01530	.01534		.01726	.01771	.01392	.01508	.01461
80	.01889	.01862	.01864		.01756	.01780		.02032	.01963	.01609	.01802	.01813
79	.02207	.02178	.02227		.02007	.02067		.02350	.02197	.01898	.02152	.02233
78	.02545	.02561	.02648		.02281	.02406		.02768	.02541	.02284	.02547	.02722
77	.02900	.02944	.03149		.02564	.02783		.03160	.03058	.02910	.03040	.03257
76	.03256	.03307	.03753		.02872	.03193		.03595	.03448	.03692	.03609	.03780
75	.03643	.03689	.04406		.03160	.03635		.04122	.03755	.04286	.04234	.04251
74	.04100	.04107	.05173		.03512	.04104		.04470	.04408	.04975	.04934	.04566
73	.04881	.04800	.05869		.03991	.04816		.05082	.05252	.05484	.05479	.05086
72	.05873	.05672	.06779		.04718	.05674		.05758	.06262	.06294	.06276	.06410
71	.07120	.06748	.07890		.05484	.06738		.06624	.07887	.07829	.07244	.07799
70	.08439	.08140	.09492	.07696	.06426	.08213		.07757	.09057	.08304	.08828	.08829
69	.09733	.09692	.10587	.09140	.07715	.09382		.08892	.11128	.09725	.10278	.09774
68	.11140	.11544	.12003	.10454	.08776	.10612		.09349	.12801	.11060	.11394	.11851
67	.12876	.13331	.13715	.11976	.10056	.12230	.11164	.10952	.11990	.14708	.12995	.12751
66	.14980	.15511	.15592	.13689	.11917	.13805	.13645	.13085	.15820	.14501	.15633	.14338
65	.16582	.18353	.17677	.15795	.14340	.15585	.11862	.14571	.18141	.18070	.17077	.16440
64	.18472	.20919	.19949	.17850	.16992	.18133	.14276	.16805	.19011	.20028	.17512	.18644
63	.21859	.24502	.22562	.20081	.19341	.20394	.21634	.20142	.23999	.24626	.21518	.24541
62	.24062	.27385	.25384	.22670	.22143	.23483	.20722	.22033	.24513	.26053	.24135	.21105

TABLE XXII (Continued)

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	37	38	39	40	41	42	43	44	45	46	47	48
61	.28256	.30366	.29683	.25769	.25749	.26501	.26303	.27472	.26645	.28444	.26024	.29726
60	.34354	.35965	.32757	.28833	.28792	.30254	.26637	.27279	.32156	.35110	.31465	.33692
59	.35689	.38661	.38026	.32996	.31591	.35213	.31399	.33859	.33840	.37984	.35190	.35870
58	.42940	.45062	.43184	.38425	.37140	.39700	.37363	.36401	.43804	.42577	.42230	.43138
57	.48828	.50048	.49033	.43516	.41327	.45043	.41345	.40790	.47367	.49940	.44682	.47157
56	.54375	.54093	.56547	.51254	.45545	.52583	.50673	.48214	.52013	.59261	.53202	.50899
55	.55736	.62266	.60910	.56935	.53046	.59521	.59827	.54598	.57285	.57423	.58036	
54	.69709	.68970	.69909	.66561	.59369	.66569	.64890	.57583	.69297	.72285	.69919	
53	.76971	.76443	.80397	.70704	.67729	.76243	.70808	.69020		.78728		
52	.88687	.85218	.88538	.83169	.74406	.87235	.77747	.78539		.93142		
51	.95265	1.03285	.99189	.94738	.85798	.99320	.95757	.90781				
50	1.11598	1.12782	1.12885	1.09987	.94088	1.15603		1.00567				
49	1.15464	1.32517	1.28186	1.25309	1.06500	1.27633		1.16816				
48		1.45362	1.49087	1.37371	1.29695	1.45745		1.28135				
47		1.68893	1.66885	1.63288	1.45722	1.67533		1.44315				
46		1.93384	1.88949	1.80089	1.67072	1.89083		1.76255				
45		2.21233	2.18193	2.09728	1.91308	2.26553		1.91705				
44		2.46806	2.45113	2.44831	2.11596			2.09053				
43			2.76411	2.69859	2.50707							
42			3.18900	3.16458	2.79425							
41				3.59017	3.27488							
40				4.14029	3.78595							
39				4.70232	4.36824							
38				5.32777	5.15514							
37				6.41225	6.29662							
36					7.04429							
35					8.39012							
34					9.79734							
33					11.42127							
32					13.72520							
31					16.26224							
30												

TABLE XXII (Continued)

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	49	50	51	52	53	54	55	56	57	58	59	60
100	.00063	.00046	.00049				.00062					
99	.00073	.00059	.00058				.00065					
98	.00084	.00073	.00071				.00071					
97	.00096	.00090	.00087				.00079	.00097				
96	.00112	.00109	.00109				.00090	.00110				
95	.00134	.00134	.00136				.00107	.00127			.00124	
94	.00160	.00164	.00169				.00127	.00151			.00161	.00138
93	.00190	.00201	.00209				.00156	.00176			.00197	.00164
92	.00226	.00247	.00255	.00203		.00182	.00192	.00192		.00179	.00231	.00217
91	.00272	.00297	.00305	.00231		.00196	.00238	.00215		.00238	.00263	.00294
90	.00329	.00358	.00362	.00261	.00318	.00223	.00294	.00246		.00288	.00290	.00373
89	.00400	.00430	.00432	.00302	.00378	.00263	.00358	.00296		.00328	.00326	.00451
88	.00483	.00511	.00510	.00356	.00460	.00345	.00443	.00376		.00345	.00384	.00514
87	.00575	.00501	.00606	.00451	.00541	.00495	.00540	.00494		.00364	.00465	.00574
86	.00692	.00704	.00719	.00579	.00624	.00665	.00651	.00632		.00440	.00583	.00637
85	.00823	.00819	.00854	.00730	.00718	.00838	.00799	.00786		.00561	.00718	.00727
84	.00975	.00960	.01013	.00908	.00821	.01031	.00966	.00966		.00731	.00891	.00863
83	.01153	.01127	.01213	.01138	.00958	.01249	.01162	.01171		.00900	.01090	.01020
82	.01360	.01333	.01435	.01418	.01137	.01475	.01393	.01404		.01090	.01326	.01236
81	.01602	.01569	.01702	.01734	.01359	.01741	.01651	.01653		.01287	.01615	.01495
80	.01886	.01858	.01992	.02079	.01614	.02029	.01946	.01945		.01520	.01916	.01802
79	.02211	.02191	.02327	.02460	.01930	.02316	.02282	.02284	.01921	.01784	.02246	.02133
78	.02589	.02573	.02678	.02830	.02387	.02630	.02625	.02664	.02219	.02085	.02590	.02514
77	.03055	.02995	.03049	.03244	.02749	.03006	.02975	.03064	.02571	.02438	.02949	.02931
76	.03571	.03478	.03448	.03751	.03298	.03404	.03295	.03567	.02972	.02840	.03295	.03419
75	.04104	.03984	.03858	.04291	.03986	.03855	.03537	.04122	.03443	.03307	.03682	.03972
74	.04644	.04451	.04310	.04817	.04637	.04341	.03811	.04681	.03996	.03837	.04098	.04544
73	.05321	.05069	.04994	.05393	.05226	.04868	.04372	.05256	.04596	.04484	.04580	.05175
72	.06308	.05886	.05999	.06111	.05718	.05599	.05197	.05864	.05243	.05266	.05239	.05901
71	.07498	.06878	.07129	.06964	.06449	.06582	.06396	.06840	.06049	.06074	.06194	.06842
70	.08851	.08342	.08422	.07923	.07333	.07881	.07828	.08030	.07070	.07130	.07358	.07961
69	.09386	.09618	.09697	.09095	.08538	.09270	.09582	.09518	.08241	.08367	.08714	.09339
68	.10782	.10975	.11276	.10343	.10024	.10753	.10760	.11012	.09580	.09544	.10419	.10995
67	.12537	.12580	.13248	.11471	.11409	.12214	.12024	.12472	.11245	.11263	.11989	.12318
66	.14374	.14238	.14645	.13066	.12968	.13606	.13787	.14249	.12927	.12512	.13319	.13618
65	.16716	.15968	.16642	.14600	.14655	.15274	.16556	.17248	.14752	.14048	.15205	.15609
64	.18318	.18284	.19233	.17240	.17077	.17468	.18667	.21376	.17051	.16264	.17369	.17627
63	.20937	.20487	.21441	.20707	.19909	.19997	.21006	.26492	.19708	.18890	.19842	.19907
62	.23843	.22565	.23526	.24872	.23210	.22893	.24910	.32832	.22779	.21940	.22677	.22282

TABLE XXII (Continued)

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	49	50	51	52	53	54	55	56	57	58	59	60
61	.27249	.26476	.27199	.27625	.26502	.25778	.27490	.40841	.26260	.25419	.26112	.26191
60	.32066	.30544	.32904	.31806	.30057	.29163	.32951	.47433	.29945	.28595	.28888	.29259
59	.37923	.34071	.36221	.37243	.34041	.32843	.34619	.57258	.34455	.32537	.33691	.32992
58	.43060	.38981	.41670	.41221	.38741	.36620	.40111	.72765	.39077	.38158	.39234	.39335
57	.47895	.45203	.48277	.45272	.44031	.41651	.46555		.43486	.44183	.43198	.44085
56	.54585	.51208	.51257	.51864	.50464	.48160	.50392		.48759	.51322	.49309	.50784
55	.61494	.57019	.61191	.57880	.56927	.54647	.56546		.54871	.57033	.56057	.57932
54	.69136	.65312	.66868	.65933	.64201	.63370	.63709		.62530	.66814	.64222	.63968
53	.79838	.73347	.74259	.78284	.73779	.73761	.70472		.74409	.74503	.68462	.72407
52	.90236	.85175	.83896	.84424	.84623	.85245	.81723		.85806	.83889	.78896	.81717
51	1.01283	.96507	.96818	1.02316	.95629	.98350	.96192		.97450	.96330	.90161	.90093
50	1.16860	1.06408	1.13293	1.09150	1.07002	1.09717	1.07606		1.09898	1.07767	.99078	1.05208
49	1.34160	1.23239	1.28437	1.23725	1.20045	1.27345	1.21163		1.26588	1.23603	1.12369	1.22431
48	1.48090	1.44861	1.41243	1.41939	1.41921	1.42579	1.41042		1.40653	1.42455	1.35818	1.32400
47	1.64961	1.57821	1.60109	1.57919	1.60094	1.62510	1.57729		1.60290	1.59349	1.52960	1.49118
46	1.90843	1.70547	1.84006	1.80114	1.78261	1.81781	1.68396		1.81296	1.77966	1.77291	1.66239
45	2.15263	1.92320	2.00748	1.98623	1.95289	1.96084	2.04106		1.99604	2.02549	1.98722	1.92041
44	2.62500	2.15205	2.39529	2.25218	2.20353	2.25743			2.26262	2.36077	2.19405	
43	2.83947	2.52390	2.63932	2.55928	2.59271	2.64293			2.62537	2.77540	2.47219	
42	3.36075	2.97724	3.07321	3.04590	3.01032	3.04609			3.04108	3.08290	2.77824	
41	3.98419	3.46869	3.63870	3.56952	3.51029	3.47703			3.56194	3.46683	3.17758	
40	4.40066	4.00923	3.97697	4.15445		3.93829			4.12806	4.12329	3.77347	
39	5.20536	4.62255	4.57292			4.72300			4.71595	5.05090	4.47602	
38	5.91527	5.26727	5.29844		5.55233	5.63198			5.33728	5.95823	5.20898	
37	6.84979	6.03997	6.32886		6.57571				6.23301	6.48128	6.28538	
36	8.20566	6.84006	6.99033		7.70988				7.08983	7.38399	7.45728	
35	9.80424	8.16357	8.64619		8.11850				8.49938	8.17269	8.81468	
34		9.15689	9.64284		9.75617				9.74270	9.46557	9.81410	
33		10.80267	11.06260		11.21229				11.66522	11.48515	11.23769	
32		12.92738	13.05556		13.23664				13.51626		12.78394	
31		15.42297	14.81796						15.66470		14.93433	
30		19.03610	19.92613						18.60927			

TABLE XXII (Continued)

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	61	62	63	64	65	66	67
100							
99							
98							
97							
96							
95							
94				.00170	.00134		
93		.00178		.00191	.00196	.00167	
92	.00262	.00203		.00214	.00266	.00234	
91	.00320	.00235		.00241	.00334	.00314	
90	.00334	.00293		.00270	.00374	.00385	
89	.00326	.00401	.00374	.00303	.00401	.00453	
88	.00371	.00521	.00445	.00428	.00439	.00531	.00413
87	.00437	.00617	.00530	.00582	.00528	.00606	.00522
86	.00569	.00732	.00639	.00715	.00645	.00705	.00689
85	.00737	.00838	.00792	.00858	.00803	.00842	.00853
84	.00921	.00937	.00998	.00990	.00980	.01019	.01027
83	.01120	.01054	.01225	.01129	.01194	.01195	.01189
82	.01296	.01221	.01412	.01321	.01433	.01411	.01336
81	.01492	.01435	.01611	.01596	.01691	.01643	.01498
80	.01703	.01741	.01849	.01896	.01950	.01898	.01723
79	.02000	.02107	.02184	.02229	.02217	.02179	.02047
78	.02378	.02479	.02599	.02569	.02538	.02503	.02419
77	.02805	.02958	.03041	.02960	.02964	.02822	.02857
76	.03285	.03578	.03624	.03363	.03460	.03170	.03374
75	.03857	.04247	.04235	.03859	.04102	.03566	.03880
74	.04454	.04959	.04738	.04426	.04785	.04012	.04386
73	.05112	.05787	.05287	.05165	.05524	.04543	.05030
72	.05832	.06359	.06253	.06008	.06273	.05272	.06015
71	.06874	.06959	.07297	.07008	.07096	.06165	.07070
70	.08023	.07996	.08531	.07855	.08166	.07183	.08416
69	.09156	.09571	.10036	.09143	.09526	.08380	.09890
68	.10845	.11193	.11393	.10871	.11143	.10014	.11393
67	.12518	.12005	.12665	.12172	.12694	.11506	.12855
66	.13407	.13406	.14046	.13693	.14457	.13149	.14486
65	.15315	.15741	.15566	.15720	.16557	.14467	.16580
64	.17629	.17576	.17501	.18200	.18962	.16386	.18977
63	.20296	.19625	.19749	.21070	.21716	.18913	.21719
62	.22863	.22026	.22020	.24173	.24283	.21830	.24323

TABLE XXII (Concluded)

TAB PRINT-OUT OF DENSITY

DENSITY IN GRAMS PER CUBIC METERS

FLIGHT NO. ALTITUDE	61	62	63	64	65	66	67
61	.25889	.25920	.25015	.25866	.26812	.24765	.28175
60	.29733	.29950	.29531	.29803	.30348	.28059	.30820
59	.34037	.34171	.34528	.33811	.34836		.34667
58	.39729	.39136	.39789	.36825	.37484		.39144
57	.44317	.46235	.46364	.41903	.42717		.44856
56	.49689	.48538	.51733	.49510	.48464		.49657
55	.55530	.56962	.57853	.53779	.56165		.57752
54	.63397	.65693	.65599	.63445	.66479		.69735
53	.72595	.72608	.71230	.70061	.74392		.72716
52	.82845	.81076	.81570	.81546	.85746		.87461
51	.90363	.94712	.92794	.90687	.91578		.99134
50	1.04635	1.02511	1.04294	1.08292	1.08390		1.09700
49	1.11376	1.17819	1.16262	1.19319	1.21080		1.22079
48	1.33504	1.37621	1.35753	1.35376	1.37815		1.44102
47	1.51144	1.53305	1.54412	1.60568	1.53789		1.67412
46	1.72496	1.71220	1.72732	1.86696	1.73338		1.88862
45	1.96039	1.96133	1.89328	2.09510	1.92667	1.95525	2.08818
44	2.13931	2.12222	2.18724	2.23993	2.17427	2.28724	2.33979
43	2.44639	2.47245	2.52406		2.52284	2.52015	2.59062
42	2.84474	2.80450	2.99142		2.82454	2.89541	2.99240
41	3.39322		3.37310		3.35490	3.42789	3.41567
40	3.93526		3.98668			3.99753	3.77027
39	4.42210					4.58518	4.43046
38						5.31123	5.50887
37						6.16768	6.25514
36						7.26621	
35						8.47842	
34						9.70786	
33						11.23915	
32						12.72767	
31							
30							

TABLE XXIII

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. ALTITUDE	1	2	3	4	5	6	7	8	9	10	11	12
100	.00034	.00033	.00025	.00025		.00029	.00022		.00025	.00027	.00031	.00030
99	.00038	.00039	.00030	.00030		.00035	.00034		.00031	.00032	.00035	.00035
98	.00046	.00046	.00035	.00035		.00041	.00039		.00037	.00039	.00043	.00042
97	.00054	.00055	.00042	.00042		.00050	.00045		.00044	.00046	.00051	.00049
96	.00063	.00065	.00051	.00050		.00058	.00051		.00052	.00055	.00061	.00057
95	.00074	.00077	.00060	.00061		.00069	.00061		.00063	.00066	.00074	.00067
94	.00087	.00090	.00073	.00073		.00081	.00071		.00074	.00078	.00089	.00080
93	.00102	.00105	.00088	.00088		.00095	.00085		.00089	.00093	.00107	.00094
92	.00120	.00123	.00103	.00107		.00114	.00103		.00107	.00111	.00129	.00111
91	.00141	.00144	.00127	.00127		.00136	.00123		.00127	.00132	.00155	.00134
90	.00165	.00171	.00158	.00152		.00164	.00148		.00151	.00159	.00186	.00160
89	.00194	.00202	.00191	.00182		.00197	.00179		.00180	.00193	.00223	.00193
88	.00232	.00238	.00234	.00217		.00238	.00214		.00214	.00232	.00265	.00233
87	.00272	.00278	.00287	.00258		.00291	.00257	.00269	.00257	.00282	.00314	.00283
86	.00320	.00331	.00352	.00309		.00380	.00334	.00323	.00332	.00339	.00372	.00340
85	.00380	.00390	.00433	.00368		.00427	.00376	.00386	.00370	.00410	.00440	.00412
84	.00450	.00458	.00528	.00445		.00519	.00452	.00466	.00445	.00491	.00527	.00500
83	.00532	.00565	.00647	.00531		.00625	.00549	.00560	.00543	.00594	.00630	.00599
82	.00648	.00641	.00796	.00645		.00753	.00657	.00680	.00653	.00711	.00753	.00721
81	.00757	.00763	.00955	.00794		.00920	.00790	.00818	.00781	.00851	.00891	.00859
80	.00897	.00888	.01157	.00944		.01087	.00955	.00990	.00940	.01019	.01073	.01035
79	.01084	.01070	.01387	.01146		.01299	.01135	.01195	.01129	.01217	.01280	.01242
78	.01291	.01276	.01638	.01378		.01554	.01358	.01444	.01350	.01438	.01531	.01478
77	.01529	.01524	.01945	.01669		.01834	.01609	.01732	.01616	.01700	.01797	.01740
76	.01820	.01812	.02270	.01995		.02152	.01911	.02039	.01891	.01987	.02111	.02043
75	.02133	.02165	.02673	.02388		.02519	.02262	.02411	.02216	.02310	.02464	.02394
74	.02497	.02521	.03095	.02807		.02908	.02934	.02850	.02585	.02643	.02870	.02760
73	.02937	.02979	.03642	.03279		.03383	.03113	.03282	.03014	.03000	.03304	.03160
72	.03448	.03485	.04235	.03845		.03953	.03654	.03827	.03480	.03420	.03840	.03677
71	.04023	.04093	.04977	.04512		.04597	.04279	.04461	.04095	.03897	.04540	.04257
70	.04713	.04763	.05807	.05279		.05355	.04965	.05167	.04732	.04526	.05305	.04930
69	.05442	.05497	.06665	.06189		.06206	.05863	.06081	.05557	.05188	.06238	.05757
68	.06223	.05769	.07775	.07215		.07211	.06807	.07012	.05397	.05983	.07274	.06699
67	.07115	.07381	.09205	.08351		.08302	.07941	.08095	.07424	.07000	.08440	.07813
66	.08298	.08548	.10690	.09643		.09574	.09249	.09409	.08535	.08236	.09852	.09027
65	.09550	.09859	.12425	.11082		.11050	.10741	.10792	.09840	.09710	.11431	.10522
64	.11287	.11391	.14419	.12745		.11742	.12451	.12250	.11250	.11498	.13126	.12146
63	.13105	.13131	.16772	.14556		.12748	.14528	.14438	.12911	.13298	.15232	.13938
62	.15369	.15205	.19275	.16724		.14266	.16661	.15958	.14651	.15541	.17476	.16143

TABLE XXIII (Continued)

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. / ALTITUDE	1	2	3	4	5	6	7	8	9	10	11	12
61	.17715	.17721	.22148	.19125		.17058	.19229	.19587	.15931	.17963	.20225	.18619
60	.20528	.20171	.25984	.21729	.21256	.19793	.22035	.21019	.19362	.20780	.23114	.21385
59	.23390	.22268	.29557	.25017	.25273	.22319	.25365	.25095	.22192	.24070	.26562	.24425
58	.26815	.26148	.33836	.28437	.30337	.26011	.29053	.29196	.25217	.27498	.30068	.27924
57	.30595	.29298	.38947	.32579	.33981	.27890	.33244	.32313	.28895	.31367	.34441	.31785
56	.34778	.33434	.44814	.37486	.39294	.34692	.37880	.38820	.32984	.35552	.38951	.36230
55	.38227	.37790	.50903	.43285	.43858	.38581	.43336	.43523	.37572	.40416	.43821	.40906
54	.45234	.43386	.58446	.49519	.48246	.49285	.49439	.48062	.42929	.45624	.49780	.46931
53	.51349	.49174	.66516	.56369	.54069	.56279	.56224	.53433	.49451	.51574	.57113	.53380
52	.58429	.55452	.75111	.64207	.60149	.63227	.64490	.62324	.55422	.58710	.65156	.60859
51	.66224	.62101	.84472	.73571	.68765	.72284	.73104	.69010	.64558	.66224	.73591	.69712
50	.75196	.69776	.95768	.87111	.75105	.81849	.83603	.85139	.73767	.75270	.84042	.79232
49	.85552	.79398	1.07574	.93622	.89757	.93028	.95595	.94567	.82878	.85552	.95324	.90071
48	.96417	.89800	1.20107	1.07166	1.04226	1.05144	1.08345	1.08051	.94335	.96262	1.08092	1.02801
47	1.09450	1.02805	1.35928	1.21907	1.22204	1.20331	1.24261	1.30086	1.07595		1.22320	1.15670
46	1.25267	1.17237	1.51619	1.38364	1.47333	1.36878	1.41346	1.36878	1.23239		1.38689	1.30876
45	1.42089	1.32799	1.71026	1.58107	1.61008	1.56047	1.61008	1.55646	1.41666			1.50256
44	1.59900	1.53124	1.94151	1.79689	1.73869	1.77692	1.84727	1.83728	1.61372			1.70106
43		1.74337	2.20819	2.04437	1.88772		2.08667	2.06183	1.85348			1.92509
42		2.00292	2.51440	2.33629	2.05768		2.39732	2.45509	2.12499			2.20958
41		2.31740	2.88866	2.67109	2.40143		2.74947	2.76842				2.53408
40		2.68162	3.29946	3.06802			3.12490	2.96984				2.85698
39		3.13750	3.77430	3.49116				3.51028				3.25105
38		3.64341	4.36001	4.00048				4.21460				
37		4.25371		4.59127				4.62904				
36		4.92932		5.26925								
35		5.69094		6.13939								
34		6.58205		7.05317								
33		7.67359		8.16922								
32		8.92942		9.40565								
31				10.85906								
30												

TABLE XXIII (Continued)

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. ALTITUDE	13	14	15	16	17	18	19	20	21	22	23	24
100	.00032	.00030		.00027	.00028	.00025	.00029	.00028		.00032		.00040
99	.00036	.00036		.00033	.00031	.00029	.00032	.00033		.00036		.00046
98	.00042	.00042		.00037	.00035	.00034	.00041	.00040		.00042		.00054
97	.00048	.00049		.00049	.00044	.00043	.00049	.00048		.00049		.00062
96	.00057	.00058		.00055	.00054	.00052	.00056	.00059		.00058		.00073
95	.00067	.00073	.00056	.00071	.00070	.00061	.00070	.00072		.00070		.00085
94	.00077	.00081	.00078	.00083	.00081	.00079	.00088	.00086		.00085		.00099
93	.00090	.00098	.00094	.00100	.00097	.00093	.00107	.00104		.00101		.00116
92	.00106	.00109	.00109	.00118	.00119	.00112	.00128	.00126		.00122	.00113	.00136
91	.00123	.00128	.00127	.00136	.00140	.00137	.00161	.00154		.00145	.00133	.00159
90	.00146	.00149	.00147	.00163	.00170	.00164	.00194	.00185		.00170	.00159	.00187
89	.00172	.00174	.00172	.00197	.00201	.00199	.00225	.00223		.00202	.00190	.00217
88	.00207	.00208	.00201	.00232	.00242	.00238	.00272	.00269		.00240	.00227	.00254
87	.00251	.00250	.00240	.00281	.00287	.00288	.00324	.00324		.00285	.00273	.00295
86	.00305	.00302	.00289	.00345	.00345	.00346	.00381	.00390		.00359	.00351	.00368
85	.00374	.00369	.00351	.00428	.00406	.00404	.00454	.00469		.00404	.00391	.00398
84	.00454	.00443	.00430	.00519	.00485	.00485	.00532	.00568		.00477	.00470	.00466
83	.00554	.00544	.00524	.00646	.00577	.00573	.00637	.00684		.00571	.00562	.00541
82	.00674	.00655	.00638	.00798	.00685	.00685	.00750	.00819		.00686	.00679	.00639
81	.00807	.00794	.00768	.00978	.00814	.00810	.00902	.00988		.00821	.00812	.00756
80	.00960	.00955	.00923	.01202	.00957	.00959	.01079	.01187		.00977	.00977	.00897
79	.01153	.01147	.01102	.01460	.01144	.01145	.01274	.01420		.01172	.01166	.01059
78	.01363	.01371	.01306	.01751	.01346	.01348	.01516	.01702		.01402	.01388	.01264
77	.01624	.01598	.01541	.02068	.01595	.01597	.01797	.02003		.01670	.01654	.01526
76	.01916	.01883	.01802	.02426	.01875	.01897	.02112	.02323		.02015	.01966	.01825
75	.02242	.02210	.02145	.02802	.02204	.02230	.02491	.02684	.02335	.02390	.02354	.02187
74	.02591	.02565	.02461	.03234	.02593	.02600	.02908	.03088	.02749	.02816	.02749	.02581
73	.03030	.02977	.02840	.03705	.03000	.03028	.03364	.03528	.03177	.03274	.03240	.03040
72	.03474	.03429	.03288	.04296	.03532	.03532	.03888	.04079	.03592	.03777	.03804	.03595
71	.04021	.03987	.03856	.04991	.04113	.04114	.04558	.04767	.04305	.04414	.04434	.04199
70	.04699	.04574	.04593	.05779	.04822	.04798	.05299	.05587	.05017	.05195	.05167	.04950
69	.05466	.05361	.05457	.06650	.05676	.05619	.06081	.06572	.05903	.06006	.06060	.05825
68	.06443	.06381	.06382	.07656	.06659	.06462	.07078	.07665	.06877	.06950	.06939	.06828
67	.07580	.07459	.07475	.08832	.07815	.07499	.08268	.08914	.07954	.07992	.07957	.07890
66	.08854	.08733	.08719	.10179	.09073	.08645	.09580	.10288	.09228	.09198	.09185	.09107
65	.10371	.10229	.10103	.11741	.10677	.10034	.11252	.11823	.10654	.10566	.10588	.10606
64	.12078	.11906	.11830	.13512	.12263	.11609	.13136	.13739	.12273	.12127	.12119	.12088
63	.13969	.13809	.13609	.15600	.14326	.13469	.15299	.15908	.14213	.13374	.13879	.13929
62	.16132	.15843	.15820	.17912	.16605	.15550	.17695	.18483	.15253	.16377	.16049	.16012

TABLE XXIII (Continued)

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. ALTITUDE	13	14	15	16	17	18	19	20	21	22	23	24
61	.18598	.19192	.17939	.20380	.19163	.17835	.20520	.21529	.18754	.18647	.18464	.18362
60	.21451	.20627	.21048	.23583	.21707	.20753	.23733	.24916	.21526	.21944	.21255	.21038
59	.24717	.23397	.24136	.26796	.24970	.23802	.27136	.28796	.24872	.24085	.24478	.20592
58	.28151	.26711	.27734	.30440	.28555	.27263	.31902	.33259	.28442	.27094	.28111	.27990
57	.32423	.30476	.31928	.34827	.32682	.31390	.35706	.38280	.32234	.31547	.32180	.32251
56	.36943	.34555	.36355	.39674	.37286	.35776	.40747	.43822	.37075	.35206	.37332	.37139
55	.42171	.39499	.41612	.44944	.42351	.40722	.46631	.49800	.42367	.43334	.42589	.42267
54	.47973	.45126	.47724	.51831	.48540	.46710	.52889	.56761	.48533	.47645	.48792	.48333
53	.54347	.51617	.53417	.58840	.55753	.53213	.60104	.64987	.55335	.55017	.56065	.55193
52	.62043	.58742	.60917	.67207	.63984	.60255	.68007	.74146	.63227	.60623		.63223
51	.70363	.67128	.69577		.72305	.68432	.77793	.84264	.69712	.71202		.71467
50	.79201	.76812	.79937		.83429	.78613	.89737	.96493	.81056	.82318		.81236
49	.90538	.88042	.89854		.96055	.89040		1.10471	.93362	.86813		.91820
48	1.02332	1.01100	1.01998		1.10106	1.01157		1.26275	1.05571	1.04328		
47	1.15670	1.15052	1.16151		1.27152	1.16096		1.44055	1.21834	1.14970		
46	1.31358	1.31392	1.31988		1.47998	1.29813		1.63043	1.33550	1.29705		
45	1.49033	1.51352	1.49557		1.63514	1.48523		1.84391	1.58440	1.48913		
44	1.69959	1.73639	1.71176		1.85181	1.67000		2.10079	1.82438	1.74599		
43	1.93210	1.93933	1.93359		2.11151	1.87093		2.37223	2.07839	1.95448		
42	2.20528	2.24749	2.20528		2.42070	2.14552			2.36637			
41	2.52425	2.55463	2.52396		2.75056	2.45054			2.69807			
40	2.86558	2.95800	2.88657			2.78794			3.09256			
39	3.23591	3.43472	3.33764			3.23777			3.51400			
38	3.72659	3.95042	3.82379			3.73275			4.05239			
37	4.26785		4.42393			4.28808			4.67253			
36			5.11492			4.90180			5.43741			
35			5.85152			5.63725						
34						6.36011						
33						7.33809						
32						8.53722						
31												
30												

TABLE XXIII (Continued)

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. ALTITUDE	25	25	27	28	29	30	31	32	33	34	35	36
100	.00034		.00029	.00029	.00034		.00036	.00032	.00036			
99	.00040		.00034	.00034	.00041		.00042	.00039	.00043			
98	.00047	.00025	.00040	.00041	.00049		.00049	.00047	.00050		.00030	
97	.00055	.00032	.00047	.00049	.00057		.00058	.00056	.00058		.00037	
96	.00065	.00032	.00055	.00059	.00057	.00058	.00068	.00066	.00069		.00046	.00056
95	.00077	.00057	.00065	.00071	.00079	.00070	.00079	.00078	.00081		.00057	.00067
94	.00091	.00077	.00078	.00086	.00091	.00084	.00093	.00091	.00096		.00070	.00080
93	.00107	.00093	.00092	.00102	.00106	.00101	.00108	.00107	.00112		.00085	.00095
92	.00126	.00124	.00109	.00123	.00123	.00121	.00126	.00127	.00131		.00101	.00113
91	.00149	.00151	.00133	.00148	.00144	.00145	.00147	.00149	.00154		.00120	.00135
90	.00177	.00178	.00151	.00179	.00170	.00174	.00174	.00175	.00182		.00142	.00160
89	.00210	.00208	.00194	.00214	.00202	.00207	.00205	.00207	.00214		.00170	.00191
88	.00249	.00241	.00238	.00256	.00240	.00245	.00242		.00251		.00205	.00228
87	.00296	.00286	.00287		.00286	.00291	.00286		.00297		.00248	.00273
86	.00372	.00339	.00350		.00342	.00344	.00339		.00351		.00301	.00328
85	.00412	.00404	.00424		.00407	.00405	.00401		.00413		.00365	.00395
84	.00490	.00494	.00511		.00485	.00477	.00473		.00485	.00325	.00443	.00476
83	.00579	.00605	.00610		.00575	.00560	.00556	.00555	.00571	.00388	.00537	.00575
82	.00687	.00737	.00731	.00741	.00684	.00658	.00653	.00651	.00668	.00458	.00649	.00694
81	.00811	.00900	.00870	.00885	.00809	.00771	.00764	.00761	.00779	.00538	.00782	.00838
80	.00946	.01059	.01028	.01058	.00959	.00904	.00892	.00889	.00905	.00528	.00938	.01012
79	.01128	.01267	.01210	.01261	.01133	.01059	.01036	.01033	.01049	.00732	.01123	.01217
78	.01323	.01438	.01419	.01500	.01331	.01241	.01201	.01199	.01212	.00850	.01342	.01459
77	.01550	.01757	.01676	.01772	.01555	.01451	.01389	.01384	.01394	.00986	.01596	.01743
76	.01800	.02059	.01940	.02078	.01798	.01701	.01601	.01588	.01596	.01141	.01890	.02075
75	.02030	.02397	.02251	.02422	.02064	.01987	.01843	.01815	.01821	.01321	.02229	.02459
74	.02417	.02787	.02636	.02834	.02369	.02322	.02129	.02070	.02071	.01530	.02623	.02892
73	.02787	.03253	.03050	.03330	.02740	.02711	.02471	.02374	.02358	.01783	.03082	.03370
72	.03226	.03809	.03559	.03927	.03202	.03159	.02884	.02753	.02714	.02100	.03629	.03919
71	.03748	.04476	.04199	.04643	.03770	.03681	.03388	.03235	.03166	.02494	.04278	.04566
70	.04380	.05305	.04884	.05455	.04461	.04298	.04001	.03841	.03743	.02985	.05050	.05361
69	.05192	.06213	.05764	.06398	.05248	.05039	.04733	.04578	.04455	.03598	.05958	.06303
68	.06074	.07432	.06722	.07483	.06126	.05926	.05630	.05463	.05332	.04370	.06986	.07364
67	.07155	.08559	.07884	.08714	.07136	.06914	.06661	.06496	.06354	.05305	.08177	.06580
66	.08353	.09851	.09207	.10133	.08291	.08047	.07827	.07699	.07532	.06398	.09520	.09992
65	.09770	.11523	.10685	.11729	.09594	.09383	.09187	.09074	.08886	.07702	.11018	.11603
64	.11528	.13325	.12494	.13472	.11074	.10932	.10759	.10610	.10453	.09229	.12710	.13386
63	.13450	.15441	.14528	.15491	.12726	.12714	.12519	.12394	.12227	.10966	.14700	.15386
62	.15723	.17656	.16747	.17812	.14626	.14807	.14558	.14366	.14199	.12953	.17076	.17658

TABLE XXIII (Continued)

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. ALTITUDE	25	26	27	28	29	30	31	32	33	34	35	36
61	.18346	.20200	.19325	.20459	.15809	.17177	.16806	.16623	.15376	.15171	.19808	.20236
60	.21222	.22958	.22153	.23462	.19241	.19893	.19294	.19121	.18787	.17643	.22975	.23180
59	.24444	.26177	.25559	.26853	.22024	.22961	.22172	.21937	.21526	.20430	.26457	.25562
58	.28048	.29780	.29411	.30763	.25178	.26432	.25459	.25181	.24665	.23578	.30191	.30337
57	.32099	.34148	.33647	.35253	.28739	.30467	.29166	.28817	.28226	.27167		.34560
56	.36556	.37345	.38609	.40278	.32759	.35014	.33312	.32897	.32365	.31251	.38989	.39373
55	.41749	.44163	.43690	.45902	.37431	.40206	.38065	.37656	.37033	.35908	.44145	.44867
54	.47420	.50236	.49666	.52013	.42687	.46152	.43406	.42962	.42280	.41100	.50032	.50872
53	.53264		.56369	.59300	.48779	.52857	.49481	.48872	.48200	.46932	.56423	.57803
52	.60080		.64310	.67172	.55781	.60474	.56378	.55569	.54986	.53469	.63694	.65731
51	.68007		.73255	.76391	.63828	.69123	.64280	.63323	.62751	.60932	.72257	.74589
50	.77251		.83936	.86635	.73028	.78700	.73110	.72013	.71538	.69409	.82169	.85042
49	.86593		.95044	.98407	.83433	.89718	.83481	.82086	.81455	.79010	.93567	.97086
48	.98379			1.11582	.95155	1.02373	.95453	.93837	.93086	.89949	1.06627	1.10839
47	1.11499			1.26238	1.08341	1.17054	1.09250	1.07303	1.05414	1.02756	1.21851	1.26116
46	1.25472			1.43365	1.23492	1.33670	1.25110	1.22715	1.21617	1.17596	1.39234	1.43100
45	1.43810			1.63238	1.40704	1.52343	1.42674	1.40152	1.39300	1.34618	1.59240	1.62415
44	1.62896			1.86338	1.60270	1.73694	1.63043	1.60280	1.59713	1.54427	1.82357	
43	1.86101				1.82442	1.98119	1.86452	1.83673	1.83128	1.77199		
42	2.14132				2.08184	2.25455	2.13128	2.10260	2.09592	2.03111		
41					2.38777	2.56791	2.43838	2.41133	2.40240	2.33351		
40					2.74321	2.93058	2.80811	2.76519	2.75769	2.68880		
39					3.15828	3.34462	3.22586	3.16697	3.16972	3.09489		
38					3.63963	3.82211	3.70432	3.63359	3.64998	3.57163		
37					4.22755		4.25493		4.20041	4.11871		
36					4.92025		4.91344		4.83635	4.74857		
35					5.70672		5.69697		5.58303			
34					6.59144		6.62538		6.45964			
33					7.59685		7.68078		7.52058			
32							8.90383		8.74600			
31									10.19653			
30												

TABLE XXIII (Continued)

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. / ALTITUDE	37	38	39	40	41	42	43	44	45	46	47	48
100	.00030	.00023				.00024		.00026				
99	.00033	.00028				.00031		.00032			.00034	
98	.00037	.00034	.00036		.00032	.00039		.00039	.00025		.00041	.00049
97	.00043	.00041	.00044		.00038	.00050		.00047	.00031		.00050	.00054
96	.00051	.00050	.00054		.00046	.00063		.00055	.00041		.00059	.00058
95	.00062	.00061	.00065		.00055	.00079		.00065	.00055		.00070	.00065
94	.00076	.00073	.00078		.00066	.00098		.00076	.00075		.00082	.00076
93	.00095	.00089	.00093		.00080	.00120		.00090	.00098		.00097	.00091
92	.00117	.00107	.00111		.00096	.00146		.00108	.00123		.00114	.00112
91	.00144	.00130	.00133		.00115	.00176		.00130	.00150	.00131	.00135	.00139
90	.00176	.00159	.00159		.00140	.00212		.00158	.00179	.00155	.00161	.00172
89	.00213	.00195	.00191		.00172	.00255		.00193	.00210	.00183	.00192	.00211
88	.00256	.00240	.00229		.00211	.00304		.00236	.00245	.00219	.00231	.00256
87	.00307	.00294	.00275		.00260	.00361		.00288	.00288	.00268	.00278	.00305
86	.00368	.00358	.00330		.00320	.00428		.00351	.00342	.00329	.00334	.00361
85	.00439	.00435	.00396		.00391	.00505		.00427	.00409	.00404	.00400	.00423
84	.00525	.00524	.00474		.00476	.00594		.00518	.00495	.00492	.00478	.00494
83	.00626	.00629	.00568		.00576	.00696		.00626	.00607	.00595	.00571	.00578
82	.00746	.00750	.00681		.00694	.00814		.00755	.00744	.00710	.00681	.00680
81	.00888	.00891	.00817		.00830	.00950		.00906	.00902	.00836	.00812	.00805
80	.01055	.01056	.00979		.00986	.01108		.01085	.01080	.00978	.00970	.00960
79	.01250	.01248	.01174		.01166	.01291		.01294	.01278	.01146	.01158	.01153
78	.01477	.01473	.01405		.01370	.01504		.01537	.01503	.01344	.01382	.01388
77	.01736	.01735	.01681		.01601	.01752		.01819	.01768	.01590	.01647	.01671
76	.02030	.02034	.02009		.01851	.02037		.02142	.02077	.01904	.01964	.02007
75	.02359	.02368	.02393		.02149	.02363		.02510	.02422	.02277	.02335	.02393
74	.02728	.02739	.02849		.02468	.02733		.02922	.02811	.02722	.02773	.02818
73	.03152	.03162	.03378		.02825	.03157		.03378	.03273	.03220	.03266	.03273
72	.03665	.03662	.03981		.03240	.03657		.03900	.03819	.03780	.03829	.03820
71	.04284	.04254	.04680		.03729	.04250		.04490	.04495	.04452	.04473	.04497
70	.05023	.04969	.05512	.04646	.04297	.04963		.05176	.05314	.05231	.05242	.05302
69	.05897	.05823	.06475	.05455	.04971	.05811		.05981	.05254	.06078	.06156	.06186
68	.06896	.06937	.07552	.06390	.05762	.06768		.06857	.07429	.07076	.07189	.07226
67	.08029	.08028	.08783	.07464	.06660	.07853	.06434	.07806	.08503	.08332	.08347	.08411
66	.09350	.09402	.10179	.08690	.07715	.09115	.07711	.08944	.09894	.09722	.09719	.09693
65	.10878	.11022	.11774	.10191	.08965	.10517	.08997	.10263	.11566	.11359	.11303	.11136
64	.12563	.12902	.13570	.11707	.10470	.12131	.10261	.11751	.13328	.13089	.12938	.12818
63	.14504	.15049	.15607	.13530	.12215	.13975	.11935	.13559	.15407	.15206	.14789	.14922
62	.16699	.17573	.17894	.15572	.14192	.16076	.14100	.15556	.17733	.17635	.16990	.17061

TABLE XXIII (Continued)

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. ALTITUDE	37	38	39	40	41	42	43	44	45	46	47	48
61	.19209	.20319	.20535	.17399	.16493	.18476	.16264	.17957	.20193	.20179	.19337	.19435
60	.22201	.23513	.23536	.20518	.19112	.21104	.18783	.20591	.23058	.23140	.22146	.22690
59	.25595	.27048	.26894	.23496	.22002	.24373	.21542	.23538	.25178	.26647	.25349	.25871
58	.29271	.31064	.30821	.26385	.25279	.27925	.24950	.26884	.29899	.30558	.29028	.29673
57	.33640	.35593	.35233	.30953	.29034	.32009	.29003	.30639	.34258	.34656	.33232	.33836
56	.38279	.40575	.40316	.35342	.33235	.36678	.33223	.34881	.38955	.39575	.37785	.38660
55	.43789	.46215	.45945	.40634	.37926	.41979	.38400	.39727	.44311	.45103	.43138	
54	.49984	.52489	.52204	.46527	.43345	.48131	.44151	.45292	.50351	.51353	.49308	
53	.56785	.59651	.59464	.53100	.49473	.55078	.50600	.51254		.59143		
52	.54804	.67810	.67593	.60568	.56347	.62858	.58031	.58366		.66653		
51	.73731	.77102	.76567	.69016	.64071	.71743	.66170	.66529				
50	.83729	.87599	.86833	.78924	.72641	.82182		.75860				
49	.94944	.93437	.98421	.90140	.82384	.94094		.86692				
48		1.12970	1.11703	1.02885	.93560	1.07314		.98831				
47		1.28290	1.26900	1.17325	1.06679	1.22446		1.12360				
46		1.45828	1.44070	1.33750	1.21834	1.39516		1.27817				
45		1.65388	1.53645	1.52741	1.39126	1.59739		1.44720				
44		1.83362	1.86061	1.74293	1.58339			1.64623				
43			2.11357	1.98938	1.80577							
42			2.40242	2.27309	2.05931							
41				2.59523	2.35081							
40				2.96299	2.69588							
39				3.38940	3.08869							
38				3.87782	3.55279							
37				4.45116	4.10856							
36					4.74993							
35					5.48382							
34					6.36095							
33					7.38620							
32					8.61054							
31					10.08563							
30												

TABLE XXIII (Continued)

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. ALTITUDE	49	50	51	52	53	54	55	56	57	58	59	60
100	.00040	.00025	.00033				.00048					
99	.00047	.00030	.00038				.00054					
98	.00054	.00035	.00044				.00050					
97	.00063	.00044	.00051				.00067	.00057				
96	.00072	.00053	.00061				.00075	.00066				
95	.00084	.00065	.00072				.00084	.00078			.00061	
94	.00098	.00079	.00087				.00095	.00091			.00075	.00081
93	.00115	.00096	.00104				.00109	.00106			.00092	.00095
92	.00134	.00118	.00126	.00105		.00106	.00125	.00124		.00096	.00112	.00113
91	.00158	.00143	.00153	.00126		.00124	.00145	.00143		.00116	.00136	.00137
90	.00186	.00174	.00185	.00149	.00174	.00144	.00171	.00165		.00141	.00162	.00169
89	.00221	.00212	.00222	.00176	.00207	.00167	.00202	.00191		.00170	.00191	.00208
88	.00263	.00256	.00267	.00207	.00247	.00195	.00239	.00222		.00202	.00225	.00254
87	.00313	.00309	.00320	.00245	.00295	.00235	.00286	.00263		.00236	.00265	.00306
86	.00373	.00371	.00383	.00294	.00350	.00290	.00342	.00317		.00274	.00315	.00363
85	.00445	.00443	.00457	.00356	.00413	.00361	.00411	.00384		.00321	.00376	.00428
84	.00530	.00528	.00546	.00434	.00486	.00450	.00495	.00467		.00383	.00453	.00503
83	.00632	.00627	.00652	.00531	.00571	.00558	.00535	.00569		.00460	.00547	.00593
82	.00751	.00744	.00778	.00652	.00670	.00688	.00717	.00691		.00555	.00661	.00700
81	.00892	.00882	.00927	.00802	.00789	.00841	.00852	.00837		.00688	.00801	.00829
80	.01058	.01045	.01102	.00983	.00930	.01020	.01033	.01008		.00801	.00969	.00986
79	.01253	.01237	.01308	.01200	.01099	.01227	.01235	.01209	.01041	.00959	.01167	.01174
78	.01481	.01464	.01547	.01452	.01300	.01463	.01469	.01445	.01238	.01143	.01398	.01395
77	.01749	.01729	.01820	.01741	.01541	.01732	.01736	.01718	.01466	.01358	.01662	.01554
76	.02065	.02038	.02130	.02075	.01829	.02077	.02036	.02034	.01730	.01610	.01960	.01957
75	.02432	.02394	.02479	.02458	.02176	.02383	.02364	.02400	.02036	.01902	.02293	.02309
74	.02850	.02798	.02868	.02885	.02586	.02775	.02713	.02815	.02391	.02244	.02665	.02716
73	.03323	.03250	.03309	.03380	.03060	.03215	.03102	.03293	.02801	.02640	.03078	.03181
72	.03879	.03773	.03831	.03929	.03582	.03714	.03558	.03827	.03271	.03105	.03546	.03709
71	.04536	.04391	.04455	.04555	.04165	.04294	.04110	.04431	.03809	.03545	.04091	.04316
70	.05319	.05107	.05196	.05269	.04822	.04985	.04788	.05141	.04437	.04276	.04736	.05021
69	.06189	.05970	.06072	.06080	.05579	.05807	.05621	.05977	.05169	.05018	.05502	.05847
68	.07152	.06952	.07072	.07011	.06471	.06754	.06535	.06959	.05019	.05875	.06419	.06819
67	.08257	.08078	.08242	.08055	.07494	.07863	.07689	.08088	.07015	.06875	.07495	.07933
66	.09550	.03365	.09586	.09231	.08660	.09100	.08916	.09365	.08173	.08021	.08694	.09172
65	.11034	.10812	.11070	.10555	.09978	.10485	.10356	.10946	.03486	.09291	.10048	.10574
64	.12715	.12449	.12798	.12105	.11501	.12037	.12048	.12843	.10982	.10737	.11582	.12138
63	.14581	.14312	.14751	.13933	.13256	.13818	.13935	.15070	.12715	.12407	.13350	.13935
62	.16735	.16369	.16891	.16038	.15284	.15862	.16130	.17682	.14721	.14337	.15388	.15965

TABLE XXIII (Continued)

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. ALTITUDE	49	50	51	52	53	54	55	56	57	58	59	60
61	.19155	.18709	.19335	.18538	.17659	.18186	.18655	.21010	.17049	.16578	.17735	.18280
60	.22008	.21448	.22199	.21373	.20395	.20826	.21540	.25251	.19748	.19173	.20385	.20941
59	.25350	.24550	.25550	.24676	.23451	.23795	.24793	.30337	.22830	.22110	.23374	.23899
58	.29238	.28023	.29278	.28468	.26937	.27144	.28282	.36443	.26368	.25513	.26893	.27404
57	.33579	.32093	.33606	.32623	.30927	.30872	.32446		.30336	.29455	.30870	.31380
56	.38505	.36703	.38332	.37256	.35496	.35207	.37170		.34762	.34015	.35297	.35917
55	.44057	.41944	.43814	.42575	.40631	.40121	.42326		.39730	.39208	.40380	.41143
54	.50358	.47854	.49917	.48394	.46421	.45727	.48001		.45351	.45202	.46176	.46932
53	.57650	.54451	.56608	.55313	.53116	.52311	.54533		.51917	.51842	.52606	.53430
52	.65858	.62109	.64427	.63183	.60677	.59960	.61764		.59625	.59333	.59728	.60793
51	.75013	.70801	.73125	.72190	.69383	.68740	.70590		.68437	.68067	.67859	.69156
50	.85508	.80570	.82931	.82377	.79078	.78925	.80653		.78423	.77713	.76931	.78568
49	.97391	.91658	.94302	.93609	.90089	.90292	.92011		.89741	.88576	.87164	.89317
48	1.10546	1.04795	1.07331	1.06412	1.02551	1.03259	1.04683		1.02652	1.01443	.99047	1.01931
47	1.25675	1.19515	1.22079	1.20874	1.16371	1.17697	1.18750		1.17154	1.15949	1.12831	1.15509
46	1.42923	1.34438	1.38403	1.36925	1.33060	1.33952	1.34716		1.33541	1.32252	1.28836	1.30963
45	1.63106	1.52259	1.56727	1.54915	1.51099	1.52019	1.52841		1.51951	1.50781	1.46730	1.48839
44	1.85701	1.72049	1.77740	1.74958	1.71130	1.72608			1.72456	1.71806	1.67081	
43	2.11823	1.94673	2.01944	1.98547	1.94644	1.95811			1.95003	1.96169	1.89591	
42	2.41929	2.21175	2.29292	2.25332	2.21434	2.23091			2.23547	2.24306	2.15355	
41	2.76969	2.52226	2.61049	2.56396	2.52981	2.55174			2.53234	2.55902	2.43832	
40	3.17206	2.88599	2.97184	2.92565		2.91207			2.92120	2.92960	2.77544	
39	3.63389	3.30274	3.38143			3.33096			3.34571	3.37870	3.17405	
38	4.16579	3.77785	3.84858		3.81108	3.82803			3.82920	3.91330	3.64149	
37	4.78431	4.32412	4.39550		4.38671				4.39378	4.51632	4.19618	
36	5.49921	4.94573	5.03366		5.06124				5.03118	5.18319	4.85698	
35	6.32589	5.67027	5.78553		5.80737				5.78519	5.95175	5.62837	
34		6.51936	6.68129		6.66399				5.65904	6.81234	6.53990	
33		7.47049	7.69345		7.65912				7.69835	7.83783	7.56938	
32		8.53636	8.86547		8.85568				8.91602		8.73016	
31		9.95077	10.22201						10.31734		10.08049	
30		11.59617	11.87964						11.98770			

TABLE XXIII (Continued)

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. ALTITUDE	61	62	63	64	65	66	67
100							
99							
98							
97							
96							
95							
94				.00105	.00071		
93		.00104		.00121	.00086	.00085	
92	.00138	.00122		.00140	.00108	.00104	
91	.00166	.00143		.00161	.00137	.00130	
90	.00198	.00168		.00185	.00170	.00163	
89	.00229	.00201	.00195	.00213	.00207	.00203	
88	.00252	.00245	.00234	.00248	.00247	.00250	.00217
87	.00300	.00299	.00281	.00296	.00293	.00304	.00262
86	.00347	.00363	.00336	.00357	.00349	.00366	.00319
85	.00410	.00438	.00404	.00432	.00418	.00439	.00393
84	.00488	.00522	.00489	.00520	.00502	.00527	.00482
83	.00585	.00517	.00594	.00621	.00606	.00632	.00588
82	.00700	.00725	.00720	.00737	.00730	.00756	.00708
81	.00833	.00851	.00854	.00876	.00879	.00902	.00843
80	.00985	.01002	.01029	.01042	.01053	.01070	.00996
79	.01161	.01185	.01221	.01238	.01251	.01264	.01176
78	.01369	.01403	.01447	.01467	.01477	.01488	.01388
77	.01616	.01562	.01716	.01731	.01739	.01742	.01639
76	.01906	.01973	.02034	.02032	.02045	.02027	.01936
75	.02247	.02342	.02410	.02376	.02406	.02349	.02284
74	.02643	.02776	.02838	.02772	.02830	.02711	.02678
73	.03100	.03291	.03316	.03228	.03323	.03119	.03125
72	.03623	.03870	.03866	.03762	.03885	.03587	.03652
71	.04230	.04504	.04515	.04383	.04526	.04132	.04275
70	.04979	.05218	.05271	.05095	.05252	.04770	.05015
69	.05766	.06051	.06163	.05899	.06095	.05513	.05893
68	.06721	.07044	.07191	.06858	.07091	.06392	.06913
67	.07836	.08157	.08342	.07973	.08225	.07422	.08072
66	.09055	.09374	.09621	.09200	.09517	.08607	.09365
65	.10442	.10755	.11037	.10600	.10975	.09933	.10820
64	.12013	.12326	.12612	.12215	.12655	.11402	.12502
63	.13818	.14127	.14395	.14076	.14593	.13087	.14445
62	.15891	.16138	.16401	.16224	.16814	.15021	.16666

TABLE XXIII (Concluded)

TAB PRINT-OUT OF PRESSURE

PRESSURE IN MILLIBARS

FLIGHT NO. ALTITUDE	61	62	63	64	65	56	67
61	.18206	.18472	.18657	.18629	.19253	.17251	.19170
60	.20878	.21129	.21282	.21264	.21932	.19790	.22023
59	.23913	.24195	.24340	.24327	.25121		.25145
58	.27462	.27720	.27924	.27711	.28593		.28678
57	.31496	.31822	.32027	.31445	.32418		.32705
56	.36018	.35369	.36721	.35951	.36824		.37225
55	.41108	.41506	.41956	.40749	.41908		.42464
54	.46871	.47386	.47874	.46374	.47725		.48544
53	.53543	.54004	.54432	.52825	.54433		.55744
52	.60970	.61534	.61937	.60212	.62010		.63472
51	.69238	.69903	.70447	.68644	.70710		.72502
50	.78323	.79353	.79948	.78388	.80272		.82609
49	.88825	.89880	.90618	.89446	.91223		.93904
48	1.00642	1.01956	1.03034	1.01849	1.03541		1.06481
47	1.14189	1.16146	1.16790	1.16081	1.17487		1.21093
46	1.29900	1.31858	1.32474	1.32442	1.32847		1.37254
45	1.47309	1.49556	1.50162	1.50982	1.50371	1.29303	1.56054
44	1.68973	1.69091	1.70123	1.71637	1.70208	1.49580	1.76933
43	1.89031	1.91162	1.92974		1.92924	1.72477	2.00333
42	2.14756	2.16262	2.19388		2.19131	1.98376	2.27372
41	2.44661		2.49542		2.48958	2.28939	2.58376
40	2.79970		2.84297			2.64363	2.93506
39	3.20038					3.06056	3.33471
38						3.53424	3.80511
37						4.07391	4.36744
36						4.71635	
35						5.47898	
34						6.35506	
33						7.36909	
32						8.52089	
31							
30							

TABLE XXIV

TAB PRINT-OUT OF TEMPERATURE

TEMPERATURE IN DEGREES KELVIN

FLIGHT NO. ALTITUDE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
100	212	193	185	212		189	251		205	176	209	197	224	215		191	194
99	209	194	183	203		184	317		194	178	199	199	235	208		189	182
98	207	197	183	192		188	276		186	181	190	203	231	199		187	177
97	205	200	184	183		192	240		186	186	179	207	218	196		188	172
96	207	203	184	177		196	215		188	190	175	205	212	198		191	172
95	206	206	183	174		201	200		188	192	175	203	213	204	199	192	173
94	206	206	182	173		202	189		187	191	175	200	214	212	197	192	176
93	203	206	179	176		198	183		186	189	177	196	215	217	199	194	178
92	205	205	173	179		191	180		187	186	180	191	213	217	210	196	180
91	205	203	171	183		183	177		187	182	181	183	207	214	222	199	181
90	204	202	168	186		177	177		187	178	186	179	200	207	222	197	185
89	202	201	163	189		173	178		187	176	189	175	185	197	216	192	186
88	201	201	162	190		169	177		185	175	192	174	173	186	201	180	188
87	198	200	161	188		169	177	183	183	175	195	174	167	178	183	171	189
86	196	200	161	185		171	176	181	180	175	192	174	164	173	171	165	191
85	196	201	162	181		173	177	178	178	176	191	175	164	170	167	160	191
84	195	201	163	178		175	177	177	176	177	190	177	167	168	165	155	192
83	192	199	166	175		177	177	175	177	180	187	178	173	170	167	154	192
82	190	197	170	173		179	178	175	177	181	186	180	177	172	173	156	192
81	189	195	174	173		182	180	175	178	184	185	182	182	177	179	159	194
80	186	191	180	175		184	183	176	180	187	187	184	186	183	185	165	194
79	187	189	187	177		187	185	179	184	192	188	188	190	189	190	176	195
78	188	188	194	180		193	189	183	190	198	192	193	194	196	197	188	196
77	193	198	203	183		199	194	188	197	205	199	203	198	204	204	204	199
76	202	192	216	186		209	198	194	205	218	214	214	203	209	210	224	201
75	209	200	217	190		220	202	204	212	235	225	229	212	214	221	237	206
74	209	206	215	201		222	208	220	219	255	224	231	225	220	231	234	217
73	208	211	215	210		219	213	222	224	258	221	232	228	224	225	230	223
72	205	212	209	214		220	213	220	222	252	216	229	233	233	215	227	220
71	206	212	214	212		216	212	221	219	240	209	223	232	236	202	223	213
70	226	223	216	208		222	208	212	214	237	207	218	220	222	192	230	202
69	240	228	217	220		230	215	223	220	241	211	218	207	203	194	234	206
68	247	229	218	225		232	219	228	230	223	234	225	203	197	212	234	212
67	239	228	217	229		230	220	229	232	209	216	221	210	211	216	235	210
66	223	230	218	233		229	219	237	235	199	216	225	212	211	222	234	217
65	217	229	222	234		231	218	235	242	203	232	234	219	216	220	236	221
64	213	229	226	243	249	244	228	236	245	217	238	234	219	227	221	238	216
63	217	229	233	246	243	243	229	244	249	218	227	224	229	231	230	239	228
62	226	233	230	251	240	236	231	242	248	224	247	235	228	248	235	246	237

TABLE XXIV (Continued)

TAB PRINT-OUT OF TEMPERATURE

TEMPERATURE IN DEGREES KELVIN

FLIGHT NO. / ALTITUDE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
61	233	243	234	249	244	239	243	242	248	227	237	233	234	252	232	241	247
60	241	247	233	245	247	245	239	237	245	232	246	246	235	261	235	251	240
59	247	257	242	247	252	247	248	243	251	240	250	251	254	256	238	257	254
58	257	271	243	246	260	252	249	244	247	258	268	248	246	256	240	266	252
57	259	269	246	245	258	242	250	243	248	258	259	267	251	256	244	250	253
56	256	263	249	243	262	253	255	254	251	262	270	267	244	252	252	248	251
55	250	273	253	249	262	255	254	260	251	270	275	262	262	261	251	251	253
54	260	266	258	253	261	259	248	260	252	265	252	249	257	249	266	260	248
53	257	271	261	256	255	268	253	252	245	272	257	247	272	261	262	260	242
52	262	271	270	261	254	267	255	251	253	266	260	257	262	244	276	252	242
51	265	284	275	263	254	267	253	241	248	265	257	260	265	241	257	237	248
50	263	269	285	266	245	267	251	249	258	266	264	256	269	253	260		244
49	267	269	293	255	249	268	258	251	267	267	272	262	274	242	254		246
48	263	264	297	265	253	260	263	253	260	283	275	272	268	250	257		249
47	260	263	293	258	261	257	256	268	248		252	272	272	248	260		253
46	268	259	288	258	265	260	252	260	248		261	266	267	245	263		259
45	265	253	278	257	257	256	257	253	251			261	254	253	265		261
44	271	246	265	259	246	261	259	253	244			265	257	260	264		255
43		246	253	261	241		259	249	246			253	259	255	270		255
42		233	250	254	237		249	255	240			252	254	249	254		256
41		229	251	247	235		259	256				258	257	235	240		239
40		227	248	250			239	242				265	263	227	242		
39		225	245	248				236				255	262	233	244		
38		219	244	245				240					252	223	241		
37		233		242				233					251		231		
36		232		232											248		
35		221		234											259		
34		223		228													
33		231		232													
32		225		237													
31				226													
30																	

TABLE XXIV (Continued)

TAB PRINT-OUT OF TEMPERATURE

TEMPERATURE IN DEGREES KELVIN

FLIGHT NO. ALTITUDE	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
100	218	201	194		329		209	194		216	178	181		208	182	203	
99	206	186	177		239		216	198		210	178	185		205	180	205	
98	196	177	172		203		215	200	203	206	182	193		206	183	206	
97	188	170	171		189		213	201	135	201	183	202		211	190	205	
96	182	164	169		181		213	200	108	199	181	211	172	213	198	204	
95	177	162	170		176		213	199	106	196	180	219	176	214	204	204	
94	172	161	172		176		212	197	118	191	180	220	178	214	207	205	
93	170	162	172		183		212	197	135	187	179	217	181	212	207	207	
92	169	166	173		189	193	212	196	158	182	179	212	183	209	205	207	
91	170	175	175		194	190	211	196	184	176	178	205	186	206	201	205	
90	173	182	177		197	186	212	195	206	172	181	199	190	202	198	203	
89	178	187	177		197	183	213	196	219	169	183	193	191	199	198	202	
88	181	190	178		196	182	215	195	216	169	185	190	193	197		201	
87	186	195	177		192	184	217	195	199	170		187	196	197		200	
86	188	195	177		189	183	218	196	190	172		188	199	199		200	
85	190	195	177		186	182	218	196	177	175		190	202	200		202	
84	192	194	177		185	182	215	196	165	179		191	205	201		205	186
83	193	193	177		186	183	210	197	158	183		193	206	204	208	208	195
82	194	191	178		186	182	204	199	166	188	186	194	208	209	211	212	204
81	193	189	180		185	183	198	200	178	194	187	196	209	213	213	217	211
80	192	188	183		185	185	193	201	192	199	187	198	209	218	217	223	215
79	193	189	188		185	186	187	204	202	204	190	201	210	222	221	228	220
78	194	192	196		185	187	184	207	207	209	195	209	210	227	227	234	223
77	197	195	207		185	189	184	213	205	214	203	222	211	231	237	242	227
76	201	201	221		186	191	185	218	211	218	215	236	213	235	246	249	228
75	206	213	237	204	194	195	187	224	224	218	216	245	213	235	253	257	227
74	215	222	241	217	215	201	197	230	220	218	209	236	214	227	252	260	223
73	217	225	236	225	224	212	208	233	215	216	205	220	215	219	234	248	211
72	220	226	227	222	222	214	209	225	212	214	198	208	219	211	213	227	198
71	218	221	213	218	214	215	208	219	198	215	204	199	216	201	199	206	189
70	217	222	234	208	211	212	199	210	205	209	208	198	213	201	192	195	182
69	225	223	212	212	225	227	205	201	195	207	210	212	205	195	188	188	174
68	227	223	221	226	236	241	222	204	201	214	216	218	211	193	190	184	170
67	229	220	226	225	236	243	228	209	250	214	221	220	220	203	195	194	175
66	230	214	232	230	242	239	227	215	218	218	221	225	218	209	198	201	179
65	228	216	231	232	251	238	241	215	221	219	236	232	218	209	211	204	182
64	226	215	231	234	252	241	243	207	244	218	243	236	220	216	213	210	189
63	230	228	221	233	252	237	233	212	224	229	236	243	221	222	221	218	197
62	231	230	217	239	262	236	259	218	252	230	244	238	221	224	226	229	204

TABLE XXIV (Continued)

TAB PRINT-OUT OF TEMPERATURE

TEMPERATURE IN DEGREES KELVIN

FLIGHT NO. ALTITUDE	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
61	237	230	222	237	253	238	244	221	263	235	237	243	227	240	230	238	217
60	234	233	227	238	245	235	242	228	249	238	253	250	229	241	248	246	225
59	235	244	232	248	231	249	233	239	269	234	242	247	238	242	235	245	231
58	243	235	245	251	230	232	231	250	237	245	243	252	236	244	246	247	236
57	243	254	238	250	235	242	238	246	252	246	260	257	241	252	252	248	238
56	253	257	260	252	237	242	243	256	249	255	240	252	240	254	251	243	238
55	253	261	260	246	247	245	260	262	269	261	290	254	244	250	246	252	247
54	263	256	261	260	239	247	254	267	252	261	254	253	248	252	255	255	246
53	261	268	255	249	257	257	253	275		256	258	253	245	247	263	257	259
52	252	255	250	267	256		257	278		259	254	246	252	266	255	256	258
51	248	241	249	260	263		259	275		263	283	251	254	258	260	255	253
50	254	236	248	257	261		265	273		252	269	249	252	262	259	255	260
49	259		247	252	255		262	276		252	272	254	258	251	254	256	259
48	265		259	252	268			274			263	259	250	246	242	249	257
47	273		262	251	265			257			267	258	255	239	248	249	252
46	272		263	251	259			265			267	257	251	250	254	252	250
45	277		270	242	272			260			255	257	253	248	252	245	246
44	274		270	249	272			259			247	262	256	250	246	248	243
43	264		265	251	262			247				257	258	250	250	242	245
42	260			248	257			235				252	264	246	242	249	247
41	260			259								242	258	242	246	248	237
40	236			252								244	259	239	241	241	239
39	230			245								236	247	243	244	241	239
38	233			237								230	250	242	240	239	236
37	242			229								222		236		242	233
36	253			225								221		231		233	236
35	255											233		227		235	
34	249											238		229		225	
33	235											245		224		227	
32	207													223		225	
31	212															226	
30																	

TABLE XXIV (Continued)

TAB PRINT-OUT OF TEMPERATURE

TEMPERATURE IN DEGREES KELVIN

FLIGHT NO. ALTITUDE	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
100			373	195				156		163					222	190	236
99			329	172				138		165			165		221	179	225
98	169		252	167	156		180	132		175	190		174	413	223	173	215
97	149		205	169	164		176	137		186	135		181	464	227	171	206
96	149	186	180	172	173		177	141		201	108		191	349	224	170	193
95	157	138	163	174	179		181	149		210	105		203	243	218	168	184
94	169	189	155	175	183		183	159		205	116		207	197	213	167	178
93	182	191	152	176	185		181	166		193	132		204	170	210	166	174
92	191	192	156	172	184		179	174		179	154		198	156	206	165	172
91	194	131	163	166	183		172	177		170	179	191	191	151	202	168	174
90	188	189	168	163	181		166	180		167	198	200	186	156	197	169	177
89	179	188	175	159	181		160	185		166	214	193	182	166	192	171	179
88	176	183	190	162	181		158	188		165	211	174	179	179	189	174	182
87	173	181	183	164	181		159	193		166	197	161	179	193	189	179	183
86	171	179	185	169	182		162	198		168	190	160	181	205	187	183	185
85	170	177	186	173	182		165	202		170	179	164	185	212	188	188	186
84	171	177	187	179	183		171	207		174	167	170	186	213	189	191	187
83	174	175	188	186	183		176	210		176	160	180	188	207	190	193	187
82	176	175	189	190	182		182	213		179	167	196	187	200	192	194	188
81	179	176	191	194	183		188	215		182	177	209	187	191	193	195	189
80	183	177	194	197	182		195	216		186	191	211	187	184	195	195	192
79	185	181	197	199	183		202	217		191	202	210	187	179	197	196	195
78	188	185	202	200	184		209	217		193	206	205	189	177	199	198	201
77	193	188	208	205	186		217	219		200	201	190	188	178	199	201	207
76	199	192	217	214	186		225	222		207	209	179	189	184	201	204	215
75	203	199	225	223	189		236	226		212	224	185	192	196	206	209	223
74	206	212	231	232	191		244	231		227	222	190	195	215	213	218	231
73	204	219	225	229	200		246	228		231	217	204	207	224	217	223	230
72	202	220	217	224	204		239	224		235	212	209	212	207	214	223	222
71	203	213	209	219	206		236	219		236	198	198	215	200	210	221	217
70	198	203	207	212	202	210	232	210		232	204	219	206	209	209	213	214
69	205	210	211	209	213	207	224	215		234	195	217	208	220	229	216	218
68	210	217	215	206	219	212	228	222		255	202	222	219	212	231	220	218
67	212	218	217	209	223	217	230	223	202	248	249	197	223	229	229	223	216
66	227	219	217	211	227	221	225	230	196	238	217	233	216	235	231	229	228
65	230	227	228	209	232	222	217	235	264	245	222	219	230	235	229	235	231
64	238	238	236	214	236	228	214	233	250	243	244	227	257	239	241	237	231
63	222	241	231	213	240	234	220	238	192	234	223	215	239	211	242	243	239
62	225	243	241	223	245	239	223	238	237	245	252	235	245	281	244	252	250

TABLE XXIV (Continued)

TAB PRINT-OUT OF TEMPERATURE

TEMPERATURE IN DEGREES KELVIN

FLIGHT NO. ALTITUDE	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
61	223	245	236	233	241	242	223	242	215	227	264	247	258	227	244	246	247
60	232	245	225	228	250	247	231	243	245	262	249	229	245	234	239	244	235
59	242	247	249	243	246	248	242	240	239	242	259	244	250	251	232	251	245
58	259	258	237	240	248	243	237	244	232	257	237	250	239	239	236	250	244
57		257	240	247	250	247	244	247	244	261	251	241	259	249	244	247	242
56	268	257	245	261	248	240	254	242	228	252	260	232	247	264	245	249	260
55	267	256	273	258	252	248	249	245	223	253	269	273	258		249	256	249
54	272	263	249	265	260	243	254	251	237	274	253	247	245		253	255	260
53	279	259	257	271	257	261	254	251	248	258		261			251	258	265
52	276	260	254	277	265	253	263	251	260	258		249			254	254	267
51	261	257	269	260	268	253	260	251	240	255					258	255	263
50	260	258	261	270	267	249	268	247		262					254	263	255
49	257	247	286	261	267	250	269	256		258					252	259	255
48	255	256		270	261	260	253	256		268					260	251	264
47	252	265		264	264	250	255	254		271					265	261	265
46	246	269		262	265	258	254	257		252					260	274	262
45	243	258		262	261	253	253	245		262					263	275	271
44	243			267	264	248	260			274					246	278	258
43					266	256	250								259	268	266
42					262	250	256								250	258	259
41						251	250								242	253	249
40						249	248								251	250	260
39						251	246								243	248	257
38						253	240								245	249	253
37						241	227								243	249	241
36							234								233	251	250
35							227								224	241	233
34							226									247	241
33							225									240	242
32							218									231	236
31							216									224	240
30																212	207

TABLE XXIV (Continued)

TAB PRINT-OUT OF TEMPERATURE

TEMPERATURE IN DEGREES KELVIN

FLIGHT NO. ALTITUDE	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67
100				269												
99				286												
98				294												
97				296	203											
96				291	210											
95				275	212			173								
94				261	209			162	203				216	183		
93				243	211			162	201		204		221	153	177	
92	181		204	226	224		187	169	181	183	209		227	141	154	
91	190		220	213	232		169	180	162	180	212		233	142	144	
90	199	191	225	202	233		170	194	157	206	199		239	158	147	
89	202	131	221	196	224		180	203	160	244	174	181	245	180	156	
88	202	187	197	188	206		204	203	172	245	163	183	202	196	163	183
87	189	189	165	184	185		225	198	185	239	168	184	176	193	174	174
86	177	195	152	183	174		216	188	198	212	172	182	174	188	180	161
85	170	203	150	179	170		199	182	204	193	182	177	175	181	181	160
84	166	206	152	178	168		182	177	203	184	194	170	183	178	180	163
83	162	207	155	178	169		178	174	202	182	203	169	191	176	184	172
82	160	205	162	179	171		177	173	197	188	206	177	194	177	186	184
81	161	202	168	181	176		180	172	193	194	206	186	191	181	191	196
80	164	200	175	185	180		183	176	190	201	200	193	191	198	196	201
79	169	198	184	188	184	188	187	181	191	202	195	194	193	196	202	200
78	178	196	193	194	188	194	190	189	193	200	197	194	198	202	207	199
77	186	195	200	203	195	198	194	196	196	200	195	196	203	204	215	199
76	192	193	208	215	198	202	197	207	199	202	192	195	210	205	222	199
75	199	190	215	232	202	205	200	216	202	202	192	198	214	204	229	205
74	208	194	222	247	209	208	203	226	208	206	195	208	218	206	235	212
73	218	204	230	247	218	212	205	234	214	211	198	218	217	209	239	216
72	223	218	231	238	227	217	205	235	218	216	212	215	218	215	237	211
71	227	224	227	223	225	219	209	230	219	214	225	215	217	222	233	210
70	231	229	220	213	223	218	208	224	219	214	227	215	225	224	231	207
69	232	227	218	204	218	218	208	219	218	219	220	213	224	222	229	207
68	236	224	219	213	220	218	212	214	216	215	219	219	219	221	222	211
67	244	228	224	222	225	217	212	217	224	218	236	229	228	225	224	218
66	246	232	233	225	228	220	223	227	234	235	243	238	234	229	228	225
65	251	237	239	218	221	224	230	230	236	237	238	247	234	230	239	227
64	244	234	240	224	210	224	230	232	239	237	244	251	233	232	242	229
63	234	232	240	231	199	224	228	234	243	237	250	253	232	234	241	231
62	224	229	241	225	188	225	227	236	249	242	255	259	233	241	239	238

TABLE XXIV (Concluded)

TAB PRINT-OUT OF TEMPERATURE

TEMPERATURE IN DEGREES KELVIN

FLIGHT NO. ALTITUDE	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67
61	233	229	245	236	179	226	227	236	243	245	247	259	250	250	242	237
60	234	236	248	227	185	229	233	245	249	244	245	251	248	252	245	248
59	230	240	252	249	184	230	236	241	252	244	246	245	250	251		252
58	240	242	258	245	174	235	232	238	242	240	246	244	262	265		255
57	251	241	258	242		243	232	248	247	247	239	240	261	264		254
56	250	244	254	256		248	230	249	246	252	261	247	252	264		261
55	256	248	255	260		252	239	250	247	257	253	252	263	259		256
54	255	251	249	262		252	235	250	255	257	251	254	254	250		242
53	246	250	247	269		243	242	267	257	256	259	266	262	254		267
52	260	249	245	263		242	246	263	259	256	264	264	257	251		252
51	245	252	243	255		244	246	262	267	266	257	264	263	268		254
50	262	257	250	261		248	251	270	260	260	269	267	252	258		262
49	263	261	245	264		246	249	270	254	277	265	271	261	262		267
48	261	251	252	258		254	248	254	268	262	258	264	262	261		257
47	266	254	252	262		254	253	256	269	263	263	263	251	266		251
46	264	260	256	278		256	258	253	274	262	268	267	247	267		253
45	271	268	270	260		265	259	257	270	261	265	276	251	271	230	262
44	270	270	266			265	253	265		271	277	270	266	272	227	263
43	270	261	258			260	246	267		269	269	266		266	238	269
42	257	256	255			256	253	270		263	268	255		270	238	264
41	250	251	255			249	257	267		251		257		258	232	263
40	245		257			246	247	256		247		248			230	271
39			245			247	233	247		252					232	262
38		239	236			249	228	243							231	240
37		235				245	242	232							230	243
36		228				247	244	226							226	
35		249				237	253	222							225	
34		239				238	250	232							228	
33		239				229	237	234							228	
32		233				229		237							233	
31						229		235								
30						224										

TABLE XXV

TAB PRINT-OUT OF DENSITY RATIO

DENSITY RATIO

FLIGHT NO. ALTITUDE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
100	1.110	1.210	.940	.840		1.090	.620		.900	1.070	1.030	1.070	1.000	.990		1.000	1.000
99	1.080	1.180	.960	.860		1.120	.540		.930	1.070	1.070	1.050	.910	1.010		1.020	1.020
98	1.090	1.160	.960	.900		1.090	.700		.980	1.060	1.110	1.020	.900	1.040		.990	.990
97	1.080	1.140	.950	.950		1.070	.770		.970	1.030	1.180	.980	.910	1.040		1.070	1.070
96	1.050	1.100	.960	.980		1.030	.820		.960	1.000	1.210	.970	.930	1.020		.990	1.090
95	1.030	1.070	.950	1.010		.990	.870		.960	.990	1.220	.950	.900	.980	.960	1.070	1.160
94	1.010	1.040	.960	1.010		.960	.900		.950	.970	1.220	.950	.860	.910	.950	1.030	1.100
93	.990	1.010	.970	.990		.950	.920		.940	.970	1.200	.950	.830	.890	.930	1.020	1.080
92	.950	.980	.970	.970		.970	.930		.930	.970	1.170	.950	.810	.820	.850	.980	1.080
91	.920	.950	1.000	.930		1.000	.930		.910	.970	1.150	.980	.800	.800	.770	.920	1.040
90	.890	.930	1.030	.900		1.020	.920		.890	.980	1.100	.980	.800	.790	.730	.910	1.010
89	.860	.920	1.070	.880		1.040	.920		.880	1.000	1.080	1.010	.850	.810	.730	.940	.990
88	.880	.900	1.100	.870		1.070	.920		.880	1.010	1.050	1.020	.910	.850	.760	.980	.980
87	.870	.880	1.130	.870		1.090	.920	.930	.890	1.020	1.020	1.030	.950	.890	.830	1.040	.960
86	.860	.870	1.150	.880		1.170	1.000	.940	.970	1.020	1.020	1.030	.980	.920	.890	1.100	.950
85	.850	.850	1.170	.890		1.080	.930	.950	.910	1.020	1.010	1.030	1.000	.950	.920	1.170	.930
84	.840	.830	1.180	.910		1.080	.930	.960	.920	1.010	1.010	1.030	.990	.960	.950	1.220	.920
83	.840	.860	1.180	.920		1.070	.940	.970	.930	1.000	1.020	1.020	.970	.970	.950	1.270	.910
82	.860	.820	1.180	.940		1.060	.930	.980	.930	.990	1.020	1.010	.960	.960	.930	1.290	.900
81	.840	.820	1.150	.950		1.060	.920	.980	.920	.970	1.010	1.000	.930	.940	.900	1.290	.880
80	.840	.810	1.120	.940		1.030	.910	.980	.910	.950	1.000	.980	.900	.910	.870	1.270	.860
79	.860	.840	1.100	.960		1.030	.910	.990	.910	.940	1.010	.980	.900	.900	.860	1.230	.870
78	.870	.860	1.070	.970		1.020	.910	1.000	.900	.920	1.010	.970	.890	.860	.840	1.180	.870
77	.860	.880	1.040	.990		1.000	.900	1.000	.890	.900	.980	.930	.890	.850	.820	1.100	.870
76	.840	.880	.980	1.000		.960	.900	.980	.860	.850	.920	.890	.880	.840	.800	1.010	.870
75	.820	.870	.990	1.010		.920	.900	.950	.840	.790	.880	.840	.850	.830	.760	.950	.860
74	.830	.850	1.000	.970		.910	.980	.900	.820	.720	.890	.830	.800	.810	.740	.960	.830
73	.850	.850	1.020	.940		.930	.880	.890	.810	.700	.900	.820	.800	.800	.760	.970	.810
72	.880	.860	1.060	.940		.940	.900	.910	.820	.710	.930	.840	.780	.770	.800	.990	.840
71	.890	.880	1.060	.970		.970	.920	.920	.850	.740	.990	.870	.790	.770	.870	1.020	.880
70	.830	.850	1.070	1.010		.960	.950	.970	.880	.760	1.020	.900	.850	.820	.950	1.000	.950
69	.790	.840	1.070	.980		.940	.950	.950	.880	.750	1.030	.920	.920	.920	.980	.990	.960
68	.770	.850	1.090	.980		.950	.950	.940	.850	.820	.950	.910	.970	.990	.920	1.000	.960
67	.800	.870	1.140	.980		.970	.970	.930	.860	.900	1.050	.950	.970	.950	.930	1.010	1.000
66	.880	.880	1.160	.980		.990	1.000	.940	.860	.980	1.080	.950	.990	.980	.930	1.030	.990
65	.920	.900	1.170	.990		1.000	1.030	.960	.850	1.000	1.030	.940	.990	.990	.960	1.040	1.010
64	.980	.920	1.160	.970		.890	1.010	.960	.850	.990	1.020	.960	1.020	.970	.990	1.050	1.050
63	.990	.940	1.180	.970		.860	1.040	.970	.850	1.000	1.100	1.020	1.000	.980	.970	1.070	1.030
62	.990	.950	1.220	.970		.880	1.050	.960	.860	1.010	1.030	1.000	1.030	.930	.980	1.060	1.020

TABLE XXV (Continued)

TAB PRINT-OUT OF DENSITY RATIO

DENSITY RATIO

FLIGHT NO. ALTITUDE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
61	.980	.940	1.220	.990		.920	1.020	.990	.880	1.020	1.100	1.030	1.030	.930	1.000	1.090	1.000
60	.970	.930	1.270	1.010	.980	.920	1.050	1.010	.900	1.020	1.070	.990	1.040	.900	1.020	1.070	1.030
59	.950	.900	1.230	1.020	1.010	.910	1.030	1.040	.890	1.010	1.070	.980	.980	.920	1.020	1.050	.990
58	.930	.860	1.240	1.030	1.040	.920	1.040	1.030	.910	.950	1.000	1.000	1.020	.930	1.030	1.020	1.010
57	.930	.860	1.250	1.050	1.040	.910	1.050	1.050	.920	.960	1.050	.940	1.020	.940	1.030	1.100	1.020
56	.950	.890	1.260	1.080	1.050	.960	1.040	1.070	.920	.950	1.010	.950	1.060	.960	1.010	1.120	1.040
55	.950	.860	1.250	1.080	1.040	.940	1.060	1.040	.930	.930	.990	.970	1.000	.940	1.030	1.110	1.040
54	.960	.900	1.250	1.030	1.020	1.050	1.100	1.020	.940	.950	1.090	1.040	1.030	1.000	.990	1.100	1.080
53	.930	.890	1.250	1.080	1.040	1.030	1.090	1.040	.990	.930	1.090	1.060	.980	.970	1.000	1.110	1.130
52	.970	.890	1.210	1.070	1.030	1.030	1.100	1.080	.970	.960	1.090	1.030	1.030	1.040	.960	1.160	1.150
51	.960	.840	1.180	1.060	1.040	1.040	1.110	1.100	1.000	.960	1.100	1.030	1.020	1.070	1.040		1.120
50	.970	.880	1.140	1.060	1.040	1.040	1.130	1.150	.970	.960	1.080	1.050	1.000	1.030	1.030		1.160
49	.960	.890	1.100	1.100	1.080	1.040	1.110	1.130	.930	.960	1.050	1.030	.990	1.090	1.060		1.170
48	.970	.900	1.070	1.070	1.090	1.070	1.090	1.130	.960	.900	1.040	1.000	1.010	1.070	1.050		1.170
47	.980	.910	1.080	1.100	1.090	1.090	1.130	1.130	1.010		1.130	.990	.990	1.080	1.040		1.170
46	.950	.920	1.070	1.090	1.130	1.070	1.140	1.070	1.010		1.080	1.000	1.000	1.090	1.020		1.130
45	.950	.930	1.090	1.090	1.110	1.080	1.110	1.090	1.000			1.020	1.040	1.060	1.000		1.110
44	.910	.960	1.130	1.070	1.090	1.050	1.100	1.120	1.020			.990	1.020	1.030	1.000		1.120
43		.950	1.170	1.050	1.050		1.080	1.110	1.010			1.020	1.000	1.030	.960		1.110
42		1.000	1.170	1.070	1.010		1.120	1.120	1.030			1.020	1.010	1.050	1.010		1.100
41		1.020	1.160	1.090	1.030		1.070	1.090				.990	.990	1.100	1.060		1.160
40		1.030	1.160	1.070	1.060		1.140	1.070				.940	.950	1.140	1.040		
39		1.050	1.160	1.060	1.080			1.120				.960	.930	1.110	1.030		
38		1.080	1.160	1.060	1.090			1.140				1.040	.960	1.150	1.030		
37		1.020		1.060	1.080			1.110					.950		1.070		
36		1.020		1.090											.990		
35		1.060		1.080											.930		
34		1.040		1.090													
33		1.000		1.060													
32		1.020		1.020													
31				1.060													
30																	

TABLE XXV (Continued)

TAB PRINT-OUT OF DENSITY RATIO

DENSITY RATIO

FLIGHT NO. ALTITUDE	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
100	.800	1.000	1.000		.680		1.330	1.210		.940	1.114	1.308		1.206	1.244	1.245	
99	.840	1.020	1.100		.880		1.250	1.180		.960	1.122	1.285		1.207	1.274	1.230	
98	.850	1.140	1.150		1.010		1.240	1.150	.620	.960	1.116	1.236		1.183	1.257	1.203	
97	.950	1.190	1.170		1.070		1.210	1.140	.980	.950	1.116	1.170		1.135	1.210	1.181	
96	.990	1.190	1.200		1.110		1.190	1.120	1.030	.960	1.124	1.097	1.159	1.097	1.150	1.161	
95	.990	1.240	1.210		1.150		1.150	1.110	1.550	.960	1.135	1.032	1.139	1.058	1.096	1.142	
94	1.100	1.300	1.200		1.150		1.120	1.100	1.550	.970	1.131	.985	1.123	1.024	1.054	1.107	
93	1.080	1.300	1.200		1.090		1.080	1.070	1.450	.970	1.127	.962	1.101	.999	1.023	1.062	
92	1.080	1.260	1.190		1.050	.950	1.050	1.050	1.280	.990	1.121	.948	1.079	.979	1.003	1.032	
91	1.080	1.230	1.180		1.000	.940	1.010	1.020	1.100	1.010	1.113	.938	1.048	.961	.987	1.006	
90	1.040	1.170	1.150		.950	.940	.970	1.000	.950	1.030	1.083	.938	1.004	.946	.965	.981	
89	1.020	1.100	1.150		.940	.950	.930	.980	.870	1.050	1.066	.958	.983	.941	.953	.964	
88	1.000	1.090	1.150		.930	.950	.900	.970	.850	1.070	1.052	.961	.962	.933		.952	
87	.980	1.050	1.160		.940	.940	.860	.960	.910	1.070		.966	.936	.918		.936	
86	.970	1.030	1.160		1.000	1.010	.890	1.000	.940	1.070		.954	.907	.897		.917	
85	.930	1.020	1.160		.950	.940	.800	.920	1.000	1.060		.937	.878	.877		.892	
84	.920	1.000	1.170		.940	.940	.790	.910	1.090	1.040		.922	.847	.853		.862	.636
83	.900	1.000	1.170		.930	.930	.780	.890	1.160	1.010		.901	.819	.822	.805	.827	.603
82	.890	.990	1.160		.930	.940	.790	.870	1.120	.980	1.003	.886	.793	.788	.777	.791	.566
81	.880	1.000	1.150		.930	.930	.800	.850	1.060	.940	.991	.863	.774	.748	.746	.749	.534
80	.870	1.000	1.130		.920	.920	.810	.820	.970	.900	.983	.843	.752	.710	.711	.707	.507
79	.680	1.000	1.120		.940	.930	.840	.820	.930	.880	1.543	.832	.747	.689	.691	.681	.492
78	.880	1.000	1.100		.960	.940	.870	.810	.880	.860	.972	.806	.747	.669	.667	.654	.481
77	.680	1.000	1.050		.980	.950	.900	.790	.930	.850	.942	.761	.745	.650	.633	.625	.470
76	.880	.980	.980		1.010	.960	.920	.770	.910	.830	.901	.708	.746	.632	.601	.596	.467
75	.870	.940	.910	.920	.990	.970	.940	.750	.860	.830	.899	.676	.747	.630	.576	.569	.466
74	.840	.910	.890	.880	.910	.950	.910	.730	.880	.840	.940	.695	.752	.649	.571	.553	.476
73	.840	.900	.900	.850	.880	.920	.980	.720	.910	.850	.978	.748	.756	.677	.611	.571	.507
72	.840	.900	.940	.870	.890	.930	.900	.750	.940	.870	1.031	.804	.752	.711	.673	.625	.554
71	.860	.940	1.020	.900	.940	.940	.920	.780	1.030	.890	1.036	.858	.773	.766	.740	.700	.600
70	.880	.950	1.090	.960	.980	.970	.990	.830	1.030	.930	1.040	.891	.801	.790	.796	.764	.650
69	.870	.950	1.080	.970	.930	.930	.990	.900	1.110	.970	1.061	.860	.854	.846	.848	.821	.718
68	.870	.970	1.060	.930	.900	.880	.940	.910	1.130	.960	1.058	.856	.859	.891	.880	.884	.784
67	.830	1.010	1.060	.950	.910	.880	.930	.920	.920	.990	1.058	.871	.843	.877	.893	.880	.813
66	.890	1.060	1.050	.950	.900	.910	.950	.920	1.070	1.000	1.082	.869	.870	.885	.919	.886	.842
65	.920	1.090	1.070	.960	.880	.930	.920	.950	1.090	1.020	1.037	.864	.899	.918	.896	.910	.885
64	.950	1.130	1.100	.970	.890	.930	.920	1.030	1.010	1.060	1.024	.866	.918	.920	.920	.921	.900
63	.960	1.100	1.180	1.000	.870	.960	.980	1.040	1.130	1.040	1.074	.858	.943	.925	.917	.917	.909
62	.980	1.120	1.240	.990	.910	.990	.900	1.050	1.020	1.060	1.062	.891	.973	.945	.925	.900	.928

TABLE XXV (Continued)

TAB PRINT-OUT OF DENSITY RATIO

DENSITY RATIO

FLIGHT NO. ALTITUDE	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
61	.970	1.150	1.250	1.020	.950	1.000	.970	1.070	.990	1.060	1.112	.889	.973	.901	.931	.883	.898
60	1.010	1.160	1.250	1.030	1.020	1.030	.990	1.060	1.050	1.060	1.053	.876	.990	.910	.876	.867	.890
59	1.020	1.120	1.250	1.010	1.050	.990	.990	1.030	.980	1.100	1.114	.895	.970	.921	.939	.883	.888
58	1.000	1.210	1.210	1.010	1.050	1.080	1.080	1.000	1.120	1.070	1.123	.889	.996	.931	.911	.889	.888
57	1.020	1.110	1.270	1.020	1.060	1.050	1.070	1.030	1.070	1.080	1.069	.882	.997	.914	.900	.896	.900
56	.990	1.110	1.180	1.030	1.040	1.080	1.070	1.000	1.050	1.060	1.172	.908	1.020	.916	.917	.931	.917
55	1.000	1.110	1.190	1.070	1.090	1.090	1.010	.990	1.020	1.040	.982	.914	1.022	.945	.948	.910	.902
54	.980	1.140	1.200	1.030	1.100	1.090	1.050	.980	1.100	1.050	1.128	.929	1.027	.949	.928	.912	.919
53	1.000	1.100	1.250	1.090	1.050	1.070	1.070	.950		1.090	1.126	.943	1.056	.982	.909	.918	.886
52	1.040	1.160	1.290	1.030	1.030		1.070	.940		1.080	1.147	.984	1.042	.918	.945	.933	.899
51	1.060	1.240	1.300	1.030	1.040		1.060	.950		1.070	1.035	.977	1.041	.956	.934	.941	.920
50	1.050	1.290	1.320	1.070	1.070		1.040	.960		1.130	1.089	.992	1.055	.947	.941	.951	.904
49	1.030	1.420	1.340	1.110	1.020		1.050	.940		1.130	1.085	.982	1.040	.993	.965	.952	.911
48	1.010		1.290	1.120	1.030			.950			1.121	.970	1.080	1.024	1.023	.985	.925
47	.990		1.280	1.130	1.010			1.010			1.101	.977	1.067	1.062	1.006	.992	.948
46	.970		1.260	1.130	.980			.970			1.090	.975	1.081	1.015	.979	.979	.953
45	.950		1.210	1.160	.970			.980			1.132	.966	1.064	1.015	.986	1.004	.965
44	.940		1.200	1.130	.990			.970			1.159	.941	1.044	1.003	1.000	.990	.979
43	.950		1.200	1.110	1.000			1.010				.951	1.026	.998	.983	1.011	.966
42	.960			1.110				1.060				.959	.993	1.005	1.011	.980	.954
41	.950			1.050								.991	1.002	1.016	.985	.976	.990
40	1.030			1.070								.979	.983	1.019	.999	.994	.979
39	1.060			1.080								1.004	1.014	.997	.976	.989	.973
38	1.040			1.110								1.028	.989	.990	.980	.988	.980
37	.990			1.140								1.060		1.003		.968	.984
36	.930			1.160								1.064		1.019		.996	.964
35	.910											1.008		1.033		.975	
34	.900											.974		1.020		1.010	
33	.940											.930		1.029		.997	
32	1.060													1.024		.997	
31																.992	
30																	

TABLE XXV (Continued)

TAB PRINT-OUT OF DENSITY RATIO

DENSITY RATIO

FLIGHT NO. ALTITUDE	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
100			.563	.844				1.086		1.126					1.267	.925	.965
99			.592	.964				1.303		1.150			1.201		1.235	.998	.981
98	.880		.738	1.008	1.136		.866	1.462		1.093	.653		1.164	.596	1.193	1.036	1.008
97	1.022		.867	1.010	1.117		.891	1.509		1.034	.951		1.129	.487	1.141	1.070	1.034
96	1.071	1.042	.982	1.012	1.071		.893	1.538		.952	1.290		1.071	.575	1.111	1.081	1.081
95	1.049	1.032	1.090	.999	1.032		.875	1.528		.892	1.511		.991	.776	1.107	1.107	1.123
94	.987	1.014	1.172	1.001	1.014		.864	1.467		.891	1.535		.946	.918	1.097	1.124	1.158
93	.919	.987	1.231	.993	.993		.862	1.429		.919	1.452		.936	1.055	1.078	1.140	1.185
92	.856	.959	1.217	1.011	.978		.870	1.366		.978	1.296		.936	1.161	1.058	1.156	1.193
91	.828	.943	1.178	1.051	.970		.937	1.336		1.028	1.124	.920	.947	1.232	1.047	1.143	1.174
90	.833	.927	1.145	1.073	.962		.927	1.290		1.041	.991	.849	.950	1.211	1.038	1.129	1.142
89	.866	.924	1.110	1.118	.963		.982	1.255		1.063	.895	.866	.963	1.157	1.050	1.129	1.134
88	.887	.941	1.070	1.123	.963		1.011	1.223		1.083	.880	.957	.976	1.083	1.055	1.116	1.114
87	.907	.950	1.059	1.130	.957		1.030	1.185		1.097	.921	1.052	.981	.997	1.045	1.092	1.101
86	.925	.963	1.041	1.117	.951		1.035	1.138		1.102	.946	1.079	.970	.926	1.046	1.064	1.087
85	.937	.974	1.031	1.095	.949		1.033	1.091		1.096	.999	1.074	.944	.870	1.035	1.030	1.074
84	.941	.980	1.021	1.065	.943		1.012	1.043		1.084	1.077	1.053	.935	.843	1.020	1.004	1.059
83	.935	.992	1.007	1.023	.938		.987	1.002		1.075	1.149	.997	.919	.843	1.003	.980	1.055
82	.926	.998	.993	.933	.941		.959	.959		1.058	1.122	.912	.913	.855	.984	.965	1.038
81	.910	.996	.972	.960	.934		.921	.923		1.039	1.066	.838	.907	.879	.964	.944	1.024
80	.891	.992	.945	.931	.932		.878	.890		1.017	.982	.805	.901	.907	.943	.929	.996
79	.897	.995	.940	.927	.948		.854	.880		1.000	.935	.808	.916	.951	.941	.933	.991
78	.893	.999	.925	.931	.963		.829	.975		1.007	.924	.831	.926	.990	.941	.936	.974
77	.894	1.002	.903	.917	.981		.799	.867		.984	.953	.907	.947	1.015	.952	.933	.950
76	.883	1.003	.872	.885	1.005		.769	.855		.962	.923	.988	.966	1.012	.956	.931	.923
75	.881	.990	.840	.851	1.016		.729	.839		.951	.866	.989	.977	.981	.947	.919	.890
74	.884	.944	.818	.819	1.031		.700	.818		.891	.879	.992	.984	.910	.926	.888	.859
73	.905	.925	.844	.830	1.014		.690	.832		.878	.908	.948	.947	.879	.920	.876	.863
72	.936	.929	.882	.852	1.018		.708	.852		.865	.940	.945	.942	.963	.947	.884	.901
71	.958	.975	.931	.883	1.032		.717	.881		.867	1.032	1.024	.948	1.020	.981	.900	.933
70	1.012	1.050	.964	.930	1.084	.879	.734	.938		.886	1.035	.949	1.009	1.009	1.011	.953	.962
69	1.012	1.043	.973	.969	1.059	.914	.771	.938		.889	1.113	.972	1.028	.977	.939	.962	.970
68	1.012	1.035	.977	1.013	1.053	.917	.770	.931		.820	1.123	.970	1.000	1.040	.946	.963	.989
67	1.032	1.055	.993	1.028	1.058	.924	.776	.943	.861	.845	.925	1.135	1.002	.984	.967	.970	1.022
66	.992	1.077	1.018	1.054	1.060	.930	.810	.938	.927	.889	1.075	.986	1.063	.975	.977	.968	.995
65	.999	1.066	.995	1.101	1.061	.948	.860	.935	.712	.874	1.089	1.084	1.025	.986	1.003	.958	.999
64	.985	1.040	.981	1.111	1.059	.946	.902	.963	.758	.892	1.009	1.063	.930	.990	.972	.971	1.021
63	1.082	1.046	1.029	1.153	1.062	.945	.910	.960	1.018	.948	1.129	1.159	1.013	1.155	.965	.964	1.009
62	1.105	1.055	1.005	1.144	1.061	.947	.925	.981	.866	.921	1.024	1.089	1.009	.882	.996	.943	.983

TABLE XXV (Continued)

TAB PRINT-OUT OF DENSITY RATIO

DENSITY RATIO

FLIGHT NO. ALTITUDE	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
61	1.145	1.062	1.045	1.124	1.098	.953	.953	.981	.973	1.016	.986	1.052	.963	1.100	1.008	.980	1.006
60	1.123	1.076	1.123	1.172	1.071	.943	.341	.989	.871	.832	1.051	1.148	1.029	1.101	1.048	.998	1.076
59	1.093	1.083	1.032	1.118	1.099	.954	.913	1.018	.908	.979	.978	1.098	1.017	1.037	1.096	.985	1.047
58	1.036	1.047	1.099	1.153	1.105	.983	.950	1.016	.956	.931	1.121	1.089	1.080	1.104	1.102	.997	1.066
57		1.060	1.107	1.134	1.111	.986	.937	1.021	.937	.925	1.074	1.132	1.013	1.069	1.086	1.025	1.094
56	1.018	1.063	1.093	1.087	1.136	1.030	.915	1.057	1.018	.969	1.045	1.191	1.069	1.023	1.097	1.029	1.030
55	1.024	1.085	.994	1.110	1.086	1.015	.946	1.061	1.067	.974	1.022	1.024	1.035		1.097	1.017	1.091
54	1.014	1.064	1.104	1.092	1.107	1.054	.940	1.054	1.028	.912	1.098	1.145	1.107		1.095	1.034	1.059
53	.991	1.093	1.084	1.076	1.132	.995	.954	1.073	.997	.972		1.108			1.124	1.033	1.045
52	1.003	1.096	1.107	1.064	1.105	1.078	.929	1.089	.971	.981		1.163			1.127	1.063	1.047
51	1.060	1.114	1.050	1.139	1.094	1.045	.946	1.095	1.056	1.001					1.117	1.064	1.068
50	1.069	1.117	1.087	1.098	1.099	1.071	.915	1.126		.979					1.138	1.036	1.103
49	1.090	1.177	.993	1.140	1.102	1.078	.316	1.098		1.005					1.154	1.060	1.105
48	1.104	1.146		1.104	1.132	1.043	.977	1.107		.973					1.125	1.100	1.073
47	1.124	1.105		1.129	1.115	1.091	.974	1.119		.964					1.102	1.055	1.070
46	1.146	1.080		1.128	1.102	1.051	.375	1.103		1.028					1.113	.995	1.073
45	1.158	1.112		1.125	1.110	1.067	.973	1.152		.975					1.095	.978	1.021
44	1.155			1.093	1.085	1.084	.937			.925					1.162	.953	1.060
43					1.064	1.038	.365								1.093	.971	1.016
42					1.065	1.057	.933								1.122	.994	1.026
41						1.039	.947								1.153	1.004	1.053
40						1.036	.948								1.101	1.003	.995
39						1.016	.944								1.125	.999	.988
38						.993	.361								1.102	.981	.987
37						1.028	1.010								1.099	.969	1.015
36							.371								1.131	.942	.963
35							.991								1.158	.965	1.022
34							.991									.926	.975
33							.387									.933	.956
32							1.013									.954	.963
31							1.030									.977	.938
30																1.034	1.082

TABLE XXV (Continued)

TAB PRINT-OUT OF DENSITY RATIO

DENSITY RATIO

FLIGHT NO. / ALTITUDE	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67
100				1.246												
99				1.100												
98				1.008												
97				.939	1.153											
96				.893	1.091											
95				.884	1.049			1.024								
94				.870	1.035			1.103	.946				1.165	.918		
93				.885	.998			1.117	.930		1.010		1.083	1.112	.947	
92	.950		.852	.898	.998		.838	1.081	1.015	1.226	.950		1.001	1.245	1.095	
91	.884		.754	.916	.828		.916	1.012	1.132	1.232	.905		.928	1.286	1.209	
90	.823	1.003	.703	.927	.776		.909	.915	1.177	1.054	.924		.852	1.180	1.215	
89	.793	.992	.690	.940	.777		.861	.856	1.184	.856	1.052	.982	.795	1.052	1.189	
88	.777	1.005	.753	.967	.821		.753	.839	1.123	.810	1.138	.972	.935	.959	1.160	.902
87	.819	.983	.899	.981	.898		.661	.845	1.043	.794	1.121	.963	1.057	.959	1.101	.948
86	.875	.943	1.005	.984	.955		.665	.881	.963	.860	1.106	.966	1.081	.975	1.065	1.041
85	.918	.903	1.053	1.004	.988		.705	.903	.914	.926	1.053	.996	1.079	1.009	1.058	1.072
84	.949	.859	1.078	1.010	1.010		.764	.932	.902	.963	.980	1.044	1.035	1.025	1.066	1.074
83	.990	.833	1.086	1.010	1.018		.783	.948	.887	.974	.917	1.065	.982	1.038	1.039	1.034
82	1.026	.823	1.067	1.008	1.016		.789	.959	.894	.939	.884	1.022	.956	1.037	1.021	.967
81	1.043	.818	1.048	.993	.995		.774	.972	.900	.893	.863	.969	.960	1.017	.989	.901
80	1.040	.807	1.015	.973	.973		.760	.958	.901	.852	.871	.925	.948	.975	.949	.862
79	1.047	.822	.986	.971	.972	.818	.759	.956	.908	.851	.897	.930	.949	.944	.928	.871
78	1.029	.863	.956	.955	.969	.807	.758	.942	.914	.865	.901	.945	.934	.923	.910	.880
77	1.011	.856	.936	.927	.955	.801	.760	.919	.913	.874	.921	.947	.922	.923	.879	.890
76	1.004	.883	.911	.882	.955	.796	.760	.882	.915	.879	.958	.970	.900	.926	.849	.903
75	.990	.913	.889	.816	.951	.794	.763	.849	.916	.890	.980	.977	.890	.946	.823	.895
74	.960	.925	.866	.760	.933	.797	.765	.817	.906	.888	.989	.945	.883	.954	.800	.875
73	.932	.903	.841	.756	.908	.794	.775	.791	.894	.883	1.000	.914	.893	.955	.785	.869
72	.918	.859	.841	.780	.881	.787	.791	.787	.886	.876	.955	.939	.902	.942	.792	.903
71	.911	.844	.861	.837	.895	.791	.795	.810	.895	.899	.910	.955	.917	.928	.806	.925
70	.905	.838	.900	.894	.917	.808	.815	.841	.909	.917	.913	.975	.897	.933	.821	.961
69	.909	.854	.927	.958	.952	.824	.837	.871	.934	.916	.957	1.004	.914	.953	.838	.989
68	.907	.879	.943	.944	.966	.840	.846	.914	.965	.951	.982	.999	.954	.978	.878	.999
67	.885	.880	.942	.927	.962	.867	.869	.925	.950	.966	.926	.977	.939	.979	.888	.992
66	.888	.881	.925	.937	.968	.879	.850	.905	.926	.911	.911	.955	.931	.983	.894	.985
65	.876	.879	.917	.993	1.035	.885	.843	.912	.937	.919	.945	.934	.943	.994	.868	.995
64	.915	.907	.927	.991	1.135	.905	.863	.922	.936	.936	.933	.929	.966	1.007	.870	1.007
63	.974	.937	.941	.988	1.247	.927	.889	.934	.937	.955	.923	.929	.991	1.022	.890	1.022
62	1.039	.970	.957	1.041	1.372	.952	.917	.948	.931	.955	.920	.920	1.010	1.015	.912	1.016

TABLE XXV (Concluded)

TAB PRINT-OUT OF DENSITY RATIO

DENSITY RATIO

FLIGHT NO. ALTITUDE	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67
61	1.022	.981	.954	1.017	1.511	.972	.940	.966	.969	.958	.959	.926	.957	.992	.916	1.042
60	1.040	.983	.953	1.077	1.551	.979	.935	.944	.956	.972	.979	.965	.974	.992	.917	1.007
59	1.077	.984	.949	1.001	1.655	.996	.941	.974	.954	.984	.988	.998	.977	1.007		1.002
58	1.055	.991	.937	1.026	1.862	1.000	.976	1.004	1.006	1.016	1.001	1.018	.942	.959		1.001
57	1.026	.998	.944	1.055		.986	1.001	.979	.999	1.004	1.048	1.051	.950	.968		1.017
56	1.042	1.014	.966	1.013		.980	1.031	.991	1.021	.999	.975	1.040	.995	.974		.998
55	1.032	1.015	.975	1.008		.979	1.017	1.000	1.033	.991	1.016	1.032	.959	1.002		1.030
54	1.044	1.017	1.012	1.009		.990	1.058	1.017	1.013	1.004	1.040	1.039	1.005	1.053		1.105
53	1.102	1.039	1.038	.992		1.048	1.040	.964	1.019	1.022	1.022	1.003	.986	1.047		1.024
52	1.054	1.057	1.064	1.020		1.071	1.047	.985	1.020	1.034	1.012	1.018	1.018	1.071		1.092
51	1.128	1.054	1.084	1.061		1.075	1.062	.994	.993	.996	1.044	1.023	1.000	1.010		1.093
50	1.063	1.042	1.068	1.048		1.070	1.040	.965	1.025	1.019	.998	1.016	1.055	1.056		1.068
49	1.064	1.032	1.100	1.042		1.089	1.063	.966	1.053	.959	1.013	1.000	1.026	1.041		1.050
48	1.076	1.078	1.084	1.071		1.068	1.082	1.032	1.006	1.014	1.045	1.031	1.028	1.047		1.094
47	1.055	1.070	1.086	1.054		1.071	1.065	1.022	.996	1.010	1.024	1.032	1.073	1.028		1.119
46	1.051	1.040	1.061	.982		1.058	1.038	1.034	.970	1.006	.999	1.008	1.089	1.011		1.102
45	1.010	.998	.997	1.038		1.015	1.030	1.011	.977	.997	.997	.963	1.066	.980	.994	1.062
44	.997	.975	.999			1.002	1.045	.971		.947	.939	.968	.992	.963	1.013	1.036
43	.985	.998	1.017			1.010	1.068	.951		.941	.951	.971		.971	.970	.997
42	1.017	1.005	1.017			1.015	1.029	.928		.950	.936	.999		.943	.967	.999
41	1.033	1.016	1.006			1.031	1.003	.919		.982		.976		.971	.992	.988
40	1.040		.986			1.033	1.032	.944		.985		.998			1.000	.944
39			1.021			1.019	1.092	.967		.956					.991	.958
38		1.035	1.049			.995	1.110	.971							.990	1.027
37		1.055				1.000	1.039	1.008							.989	1.003
36		1.062				.977	1.017	1.027							1.001	
35		.959				1.004	.965	1.042							1.002	
34		.987				.985	.957	.993							.982	
33		.969				1.008	.992	.971							.971	
32		.977				.997		.943							.939	
31						.992		.946								
30						1.011										

TABLE XXVI

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. ALTITUDE	1		2		3		4		5		6		7		8		9	
100																		
99																		
98																		
97																		
96																		
95																		
94																		
93																		
92																		
91																		
90																		
89																		
88																		
87																		
86																		
85	96.000	282	88.000	275	39.000	163	31.000	195			50.000	97	30.000	160	20.000	257	5.000	203
84	101.000	290	100.000	275	48.000	152	22.000	195			50.000	96	28.000	147	19.000	269	10.000	118
83	103.000	295	108.000	275	57.000	145	12.000	204			47.000	94	27.000	135	17.000	280	15.000	111
82	105.000	303	115.000	277	68.000	137	5.000	258			43.000	94	26.000	122	15.000	300	14.000	103
81	107.000	308	117.000	279	76.000	133	10.000	322			36.000	92	24.000	112	13.000	326	10.000	81
80	107.000	304	113.000	282	85.000	128	20.000	337			30.000	91	22.000	101	14.000	68	8.000	83
79	106.000	318	111.000	291	90.000	124	29.000	339			23.000	90	19.000	88	19.000	21	17.000	332
78	105.000	322	107.000	297	96.000	118	38.000	341			15.000	93	15.000	72	25.000	37	31.000	315
77	105.000	328	105.000	305	96.000	115	45.000	341			8.000	124	11.000	44	32.000	44	50.000	308
76	108.000	333	103.000	302	94.000	105	52.000	340			10.000	191	9.000	66	37.000	47	71.000	304
75	111.000	335	109.000	315	89.000	98	55.000	340			19.000	206	14.000	303	39.000	45	94.000	301
74	116.000	334	114.000	320	80.000	86	56.000	340			28.000	198	24.000	282	37.000	37	117.000	298
73	116.000	329	117.000	319	76.000	65	53.000	339			35.000	182	35.000	273	28.000	22	137.000	293
72	117.000	320	115.000	307	88.000	55	47.000	335			39.000	155	43.000	272	22.000	341	149.000	285
71	121.000	309	127.000	284	120.000	56	40.000	325			46.000	120	47.000	274	30.000	299	151.000	276
70	125.000	303	152.000	271	154.000	63	36.000	305			49.000	90	47.000	277	42.000	287	149.000	264
69	135.000	294	194.000	267	168.000	73	38.000	292			43.000	51	44.000	257	51.000	289	145.000	256
68	164.000	282	201.000	269	157.000	90	44.000	287			27.000	23	42.000	243	62.000	294	138.000	252
67	195.000	276	209.000	275	140.000	95	48.000	282			23.000	307	39.000	219	72.000	294	131.000	248
66	220.000	276	211.000	281	128.000	81	48.000	274			42.000	253	31.000	201	77.000	293	125.000	243
65	228.000	277	215.000	283	132.000	79	37.000	267			61.000	227	20.000	189	74.000	287	121.000	240
64	227.000	276	221.000	282	139.000	82	20.000	267			71.000	214	11.000	199	65.000	276	115.000	240
63	227.000	273	235.000	279	129.000	87	19.000	301			69.000	215	11.000	219	58.000	268	110.000	242
62	227.000	276	251.000	278	114.000	90	43.000	293			60.000	229	9.000	238	50.000	262	109.000	242

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. ALTITUDE	1		2		3		4		5		6		7		8		9	
61	230.000	282	252.000	282	103.000	91	59.000	277			60.000	240	15.000	289	38.000	254	119.000	243
60	231.000	286	247.000	287	89.000	95	43.000	263	133.000	286	61.000	233	32.000	287	32.000	254	128.000	249
59	226.000	283	242.000	287	66.000	102	30.000	265	135.000	282	57.000	223	39.000	277	38.000	245	127.000	255
58	224.000	282	246.000	282	62.000	98	27.000	279	133.000	277	50.000	216	33.000	258	44.000	222	124.000	256
57	229.000	286	249.000	281	81.000	101	25.000	247	134.000	276	32.000	228	10.000	196	27.000	223	123.000	250
56	247.000	289	257.000	287	91.000	103	15.000	225	134.000	276	39.000	272	21.000	142	16.000	243	124.000	251
55	256.000	289	264.000	282	82.000	89	19.000	300	137.000	263	47.000	283	35.000	152	23.000	232	130.000	257
54	251.000	287	257.000	279	88.000	76	24.000	308	143.000	264	39.000	284	54.000	133	18.000	217	126.000	262
53	250.000	294	268.000	283	91.000	71	5.000	213	133.000	262	54.000	264	62.000	111	13.000	192	129.000	259
52	254.000	293	267.000	284	88.000	69	26.000	173	127.000	271	63.000	250	43.000	96	8.000	261	129.000	262
51	243.000	293	257.000	282	97.000	71	32.000	151	134.000	267	67.000	265	46.000	99	22.000	230	121.000	255
50	228.000	288	243.000	285	97.000	74	32.000	118	134.000	260	73.000	264	32.000	102	3.000	312	109.000	253
49	238.000	290	253.000	293	94.000	82	16.000	101	119.000	256	71.000	266	38.000	90	17.000	339	99.000	263
48	236.000	296	260.000	291	72.000	84	2.000	26	117.000	259	70.000	261	50.000	92	12.000	192	92.000	268
47	228.000	295	265.000	294	76.000	85	5.000	357	113.000	265	78.000	256	49.000	85	26.000	234	83.000	275
46	204.000	235	261.000	290	70.000	94	5.000	27	102.000	263	78.000	245	49.000	105	22.000	178	73.000	262
45	188.000	288	230.000	287	54.000	85	8.000	288	98.000	267	54.000	245	40.000	84	24.000	123	58.000	273
44	201.000	291	210.000	284	45.000	87	11.000	273	91.000	263	54.000	263	35.000	107	19.000	49	78.000	267
43			203.000	284	47.000	69	17.000	264	91.000	252	52.000	220	55.000	86	10.000	60	54.000	245
42			183.000	298	43.000	93	14.000	252	63.000	265	34.000	232	53.000	93	10.000	187	54.000	277
41			185.000	287	44.000	100	19.000	237	84.000	281	30.000	266	43.000	77	30.000	108	68.000	270
40			175.000	288	42.000	75	9.000	249	81.000	281	41.000	292	32.000	62	22.000	56	43.000	255
39			171.000	278	37.000	94	9.000	223	101.000	276	36.000	286	47.000	92	32.000	55	40.000	286
38			163.000	281	36.000	84	13.000	160	85.000	262	34.000	256	52.000	107	25.000	41	46.000	284
37			168.000	284			2.000	195	82.000	255	34.000	264	48.000	100	22.000	346	42.000	270
36			161.000	279			11.000	280	79.000	257	31.000	241	37.000	96	8.000	241	36.000	262
35			153.000	282			23.000	308	90.000	272	28.000	245	27.000	92	9.000	156	36.000	274
34			159.000	279			20.000	245	80.000	271			23.000	96	11.000	72	34.000	274
33			160.000	280			9.000	176	69.000	267			24.000	103	18.000	89	19.000	255
32			144.000	277			11.000	126	68.000	269			27.000	95	14.000	98		
31			121.000	278			7.000	30	63.000	268			35.000	107	17.000	70		
30			100.000	279			11.000	65	54.000	59			25.000	79				

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. ALTITUDE	10		11		12		13		14		15		16		17		18	
100																		
99																		
98																		
97																		
96																		
95																		
94																		
93																		
92																		
91																		
90																		
89																		
88																		
87																		
86																		
85	67.000	264	69.000	227	65.000	179	50.000	94	41.000	59	40.000	55	27.000	100	118.000	241	100.000	190
84	63.000	264	79.000	220	59.000	165	44.000	93	34.000	56	32.000	55	35.000	82	117.000	240	118.000	246
83	62.000	262	86.000	214	57.000	150	37.000	89	29.000	51	24.000	52	43.000	72	113.000	239	113.000	245
82	61.000	262	90.000	208	61.000	136	30.000	84	25.000	41	17.000	39	50.000	64	109.000	237	108.000	235
81	58.000	262	92.000	206	67.000	124	24.000	74	22.000	26	14.000	19	56.000	61	98.000	235	102.000	227
80	55.000	261	95.000	203	75.000	117	18.000	50	21.000	10	13.000	65	60.000	56	88.000	233	96.000	220
79	54.000	259	97.000	201	83.000	111	17.000	25	23.000	353	14.000	337	61.000	55	73.000	231	91.000	210
78	55.000	256	99.000	199	91.000	105	20.000	359	27.000	341	18.000	329	59.000	50	59.000	230	86.000	200
77	54.000	252	97.000	197	97.000	103	26.000	340	30.000	333	22.000	329	54.000	50	46.000	228	80.000	190
76	56.000	247	95.000	193	101.000	101	34.000	328	32.000	329	29.000	335	42.000	48	31.000	229	72.000	179
75	60.000	241	97.000	189	101.000	100	41.000	321	32.000	329	36.000	351	26.000	51	19.000	244	59.000	167
74	66.000	235	96.000	183	98.000	98	44.000	319	32.000	336	50.000	7	12.000	70	18.000	300	44.000	156
73	75.000	231	84.000	177	85.000	98	44.000	324	34.000	351	73.000	18	5.000	130	40.000	321	24.000	152
72	83.000	229	57.000	176	56.000	100	45.000	347	45.000	13	103.000	26	3.000	223	68.000	314	9.000	275
71	88.000	230	20.000	225	18.000	136	68.000	16	76.000	27	139.000	30	20.000	320	105.000	305	47.000	289
70	92.000	237	53.000	308	49.000	240	118.000	30	129.000	29	172.000	29	46.000	319	133.000	295	97.000	291
69	103.000	252	95.000	310	104.000	243	177.000	33	192.000	26	197.000	28	61.000	312	141.000	287	140.000	295
68	132.000	258	124.000	297	137.000	278	217.000	33	232.000	23	202.000	28	57.000	301	131.000	284	162.000	296
67	171.000	276	140.000	283	157.000	225	226.000	30	236.000	23	201.000	27	42.000	277	118.000	283	163.000	294
66	197.000	274	138.000	277	154.000	215	217.000	29	219.000	25	203.000	23	38.000	262	105.000	278	154.000	285
65	185.000	267	119.000	267	135.000	208	207.000	28	207.000	26	204.000	20	42.000	258	90.000	269	141.000	251
64	161.000	260	93.000	256	104.000	203	200.000	28	200.000	26	196.000	21	54.000	261	74.000	264	151.000	264
63	143.000	250	90.000	256	84.000	202	190.000	27	193.000	26	188.000	25	65.000	258	65.000	269	155.000	269
62	144.000	265	94.000	262	85.000	199	180.000	26	182.000	25	184.000	26	72.000	252	67.000	267	160.000	273

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. ALTITUDE	10		11		12		13	
61	149.000	253	95.000	269	90.000	192	168.000	25
60	152.000	258	95.000	272	88.000	190	151.000	27
59	157.000	258	95.000	268	87.000	196	158.000	25
58	155.000	262	95.000	266	86.000	193	158.000	19
57	165.000	259	99.000	253	85.000	197	149.000	21
56	163.000	254	86.000	249	82.000	193	143.000	27
55	157.000	254	82.000	242	78.000	181	138.000	29
54	155.000	255	74.000	237	68.000	183	142.000	29
53	159.000	255	66.000	237	69.000	197	159.000	24
52	177.000	261	63.000	239	60.000	180	147.000	18
51	180.000	267	63.000	241	60.000	180	141.000	20
50	177.000	265	65.000	250	60.000	188	141.000	18
49	185.000	257	63.000	253	64.000	185	137.000	17
48	181.000	260	61.000	255	58.000	191	129.000	24
47			70.000	258	61.000	191	139.000	21
46			62.000	241	60.000	171	140.000	19
45			68.000	238	65.000	177	134.000	28
44			67.000	232	64.000	172	140.000	34
43			43.000	235	40.000	183	132.000	34
42			40.000	281	48.000	219	128.000	30
41			50.000	263	55.000	199	120.000	39
40			53.000	262	55.000	208	111.000	32
39			69.000	270	71.000	220	103.000	26
38			87.000	272	85.000	210	104.000	37
37			92.000	273	93.000	211	89.000	34
36			97.000	268	96.000	204	89.000	31
35			94.000	260	97.000	204	87.000	29
34			96.000	262	91.000	209	91.000	12
33			94.000	264	87.000	203	80.000	26
32			84.000	263	78.000	208	85.000	7
31			78.000	264	81.000	206	81.000	11
30			70.000	262			82.000	18

FLIGHT NO. ALTITUDE	14		15		16		17		18	
61	168.000	25	179.000	24	70.000	246	86.000	257	157.000	267
60	158.000	26	169.000	25	68.000	245	116.000	249	150.000	258
59	157.000	24	163.000	27	65.000	251	142.000	244	151.000	254
58	160.000	19	160.000	26	58.000	250	150.000	246	162.000	253
57	154.000	19	153.000	22	47.000	250	152.000	250	159.000	250
56	142.000	25	143.000	15	53.000	265	149.000	256	141.000	251
55	138.000	29	138.000	15	64.000	258	147.000	260	138.000	251
54	140.000	24	138.000	16	70.000	245	135.000	259	139.000	252
53	154.000	20	141.000	23	57.000	236	138.000	264	138.000	262
52	162.000	18	156.000	25	49.000	234	141.000	270	139.000	268
51	150.000	22	153.000	28	51.000	247	137.000	271	137.000	271
50	155.000	20	150.000	31	45.000	290	129.000	256	132.000	265
49	146.000	22	150.000	28	37.000	282	129.000	257	125.000	260
48	137.000	29	145.000	30	40.000	276	127.000	250	125.000	260
47	144.000	20	155.000	23	28.000	250	124.000	252	130.000	265
46	142.000	20	148.000	23	25.000	245	120.000	246	135.000	259
45	137.000	28	132.000	20	23.000	312	116.000	247	138.000	253
44	130.000	32	130.000	26	28.000	285	121.000	243	127.000	254
43	129.000	31	125.000	28	58.000	279	102.000	253	118.000	258
42	131.000	27	128.000	29	38.000	267	110.000	263	132.000	256
41	119.000	39	114.000	39	46.000	249	124.000	268	128.000	266
40	111.000	33	107.000	33	38.000	243	111.000	274	125.000	263
39	107.000	22	104.000	30			119.000	279	123.000	257
38	98.000	32	102.000	33			121.000	285	115.000	263
37	91.000	27	95.000	23			108.000	273	103.000	265
36	97.000	25	94.000	23			94.000	264	91.000	268
35	94.000	32	86.000	30			106.000	273	89.000	264
34	94.000	24	84.000	12			99.000	258	77.000	266
33	84.000	30	78.000	21			85.000	253	69.000	286
32	91.000	3	84.000	16			84.000	257	80.000	267
31	84.000	14	84.000	22			73.000	246	74.000	267
30	85.000	22	86.000	29			54.000	234	64.000	255

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. / ALTITUDE	19		20		21		22		23		24		25		26		27	
100																		
99																		
98																		
97																		
96																		
95																		
94																		
93																		
92																		
91																		
90																		
89																		
88																		
87																		
86																		
85	124.000	242	24.000	306			30.000	316	13.000	92	101.000	234	61.000	232	86.000	243	81.000	162
84	115.000	240	29.000	321			17.000	296	24.000	94	100.000	246	66.000	223	83.000	238	86.000	163
83	107.000	235	36.000	331			11.000	248	32.000	92	102.000	260	69.000	217	78.000	234	87.000	162
82	90.000	231	41.000	337			13.000	198	38.000	89	109.000	270	72.000	212	71.000	231	85.000	161
81	89.000	225	46.000	341			16.000	173	42.000	87	117.000	279	73.000	207	63.000	228	80.000	158
80	70.000	217	50.000	346			19.000	153	43.000	86	126.000	287	73.000	204	52.000	224	72.000	153
79	55.000	207	54.000	351			19.000	141	43.000	82	134.000	293	72.000	200	39.000	217	63.000	144
78	47.000	192	58.000	357			20.000	126	40.000	75	140.000	297	68.000	198	24.000	206	53.000	125
77	34.000	172	62.000	6			21.000	109	36.000	65	143.000	300	62.000	198	10.000	191	48.000	107
76	29.000	141	69.000	17			21.000	93	29.000	48	142.000	302	52.000	202	2.000	257	48.000	81
75	27.000	111	80.000	28	8.000	82	21.000	78	27.000	15	136.000	303	43.000	216	8.000	340	51.000	59
74	24.000	81	95.000	38	12.000	329	22.000	58	28.000	327	125.000	303	39.000	248	15.000	337	54.000	40
73	21.000	19	110.000	47	17.000	300	18.000	40	48.000	306	110.000	300	57.000	281	21.000	309	52.000	17
72	42.000	318	123.000	54	20.000	298	4.000	87	73.000	297	93.000	294	94.000	288	26.000	304	44.000	346
71	89.000	299	131.000	59	23.000	307	29.000	201	94.000	295	84.000	285	139.000	288	30.000	327	52.000	296
70	135.000	295	129.000	63	27.000	332	62.000	194	102.000	297	85.000	281	179.000	283	35.000	329	93.000	265
69	163.000	295	110.000	69	35.000	245	73.000	192	100.000	294	89.000	284	195.000	277	34.000	315	136.000	255
68	167.000	294	84.000	90	42.000	10	65.000	198	92.000	290	90.000	283	180.000	270	42.000	260	144.000	254
67	156.000	288	69.000	101	41.000	14	70.000	210	86.000	284	87.000	275	151.000	268	44.000	233	116.000	255
66	143.000	278	79.000	111	35.000	36	82.000	221	79.000	280	90.000	274	134.000	270	15.000	224	94.000	259
65	137.000	269	105.000	111	36.000	329	87.000	235	79.000	284	96.000	275	135.000	281	9.000	299	89.000	264
64	136.000	268	137.000	106	47.000	308	88.000	252	90.000	292	103.000	276	142.000	290	40.000	243	88.000	271
63	138.000	272	156.000	102	56.000	305	92.000	264	107.000	294	107.000	271	145.000	294	34.000	237	83.000	285
62	144.000	274	157.000	101	48.000	311	91.000	267	121.000	290	116.000	269	135.000	289	14.000	222	73.000	304

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. ALTITUDE	19		20		21		22		23		24		25		26		27	
61	148.000	266	152.000	108	28.000	314	86.000	266	133.000	289	127.000	264	115.000	280	20.000	187	51.000	319
60	155.000	258	158.000	114	10.000	51	34.000	260	130.000	291	131.000	263	104.000	270	8.000	208	15.000	339
59	156.000	252	157.000	114	46.000	79	91.000	263	119.000	299	120.000	264	102.000	263	14.000	299	12.000	119
58	147.000	247	166.000	110	49.000	70	112.000	270	107.000	288	109.000	269	93.000	263	30.000	283	14.000	100
57	175.000	251	163.000	106	20.000	96	123.000	265	92.000	276	108.000	266	84.000	265	51.000	267	20.000	71
56	129.000	255	151.000	100	22.000	168	124.000	255	89.000	270	104.000	254	84.000	275	62.000	273	14.000	65
55	128.000	247	152.000	91	18.000	163	126.000	247	91.000	278	100.000	241	85.000	275	74.000	277	9.000	27
54	128.000	250	143.000	38	35.000	156	119.000	238	87.000	277	89.000	241	85.000	257	82.000	267	24.000	109
53	130.000	260	132.000	86	44.000	145	103.000	240	92.000	269	87.000	243	90.000	258	85.000	262	47.000	122
52	138.000	264	122.000	85	41.000	148	108.000	244	88.000	266	89.000	249	95.000	265	107.000	270	40.000	119
51	139.000	268	124.000	85	26.000	159	105.000	249	75.000	263	82.000	264	100.000	265	107.000	269	25.000	111
50	131.000	265	121.000	82	21.000	179	109.000	251	71.000	263	79.000	266	104.000	276	90.000	261	18.000	72
49	122.000	259	111.000	78	45.000	103	113.000	255	73.000	258	77.000	253	119.000	281	86.000	250	19.000	57
48	123.000	260	103.000	81	47.000	107	130.000	246	75.000	260			133.000	287	93.000	259		
47	122.000	257	114.000	85	52.000	117	115.000	242	78.000	269			137.000	277	95.000	254		
46	176.000	254	102.000	88	84.000	99	114.000	242	72.000	268			144.000	275	82.000	259		
45	179.000	254	102.000	87	47.000	76	98.000	240	67.000	271			139.000	277	72.000	263		
44	133.000	260	85.000	88	18.000	75	92.000	247	67.000	259			127.000	274	68.000	269		
43	121.000	261	92.000	88	23.000	41	103.000	255	67.000	263			113.000	258	53.000	268		
42	128.000	254			41.000	110	86.000	264					109.000	269	54.000	269		
41	121.000	253			70.000	92									29.000	296		
40	124.000	257			57.000	93									37.000	269		
39	120.000	260			65.000	96									22.000	244		
38	113.000	259			36.000	84									12.000	199		
37	108.000	263			53.000	84									20.000	188		
36	91.000	271			46.000	98									9.000	244		
35	93.000	258													15.000	289		
34	82.000	272													18.000	305		
33	87.000	293													21.000	282		
32	77.000	257													26.000	264		
31	67.000	245													19.000	311		
30	62.000	254													18.000	241		

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. ALTITUDE	28		29		30		31		32		33		34		35		36	
100	38.780	245	114.850	130			154.090	48	102.350	34	103.050	14						
99	39.870	247	110.560	129			153.220	44	119.310	47	121.740	16						
98	32.990	328	103.120	128			169.720	39	135.510	52	135.180	16			141.830	251		
97	32.950	286	95.720	128			173.620	33	147.290	51	145.780	16			121.050	242		
96	51.960	254	88.700	127	264.040	159	171.400	28	152.960	49	149.230	16			95.820	234	166.360	8
95	78.840	243	81.770	129	234.080	154	162.730	25	154.170	45	148.490	16			70.360	229	123.610	3
94	107.690	239	75.510	132	205.560	32	150.200	21	152.270	40	145.470	16			47.360	236	85.390	358
93	123.670	239	69.250	136	178.450	37	132.920	18	147.420	33	140.400	15			32.540	253	53.010	353
92	136.790	240	61.000	143	152.310	43	111.960	18	140.570	27	133.790	15			30.010	278	25.450	346
91	141.500	241	51.850	154	127.830	49	86.460	21	130.390	22	125.960	14			36.490	289	4.100	330
90	138.820	244	44.090	170	104.320	55	62.250	28	117.440	18	116.770	13			45.610	292	12.620	160
89	130.280	247	40.990	192	81.650	60	41.100	41	100.770	16	106.370	13			54.090	294	24.670	151
88	117.260	251	44.040	215	60.020	55	27.020	76			95.670	14			61.160	293	33.520	143
87			51.800	233	39.910	73	27.940	122			84.200	15			67.670	294	38.900	133
86			51.620	245	21.330	87	35.720	149			71.080	19			72.870	298	42.690	123
85			71.310	252	7.680	146	47.930	164			57.380	25			75.950	302	46.010	112
84			79.220	257	16.400	226	60.070	173			43.790	34	117.280	348	77.000	308	49.020	103
83			85.430	251	30.150	242	70.460	180	14.480	151	31.440	46	97.020	350	77.090	314	52.280	94
82	33.910	337	83.540	265	42.530	249	80.250	187	30.960	172	20.290	62	76.280	356	75.900	320	56.040	85
81	36.310	2	92.450	269	52.800	254	90.100	193	48.740	179	11.180	103	62.610	5	76.500	328	59.730	77
80	39.370	19	94.100	273	61.450	259	98.510	201	55.360	184	14.310	177	58.760	17	78.990	335	63.410	69
79	39.470	32	95.400	277	67.950	264	106.690	209	79.070	191	29.470	204	58.770	29	83.850	342	66.130	62
78	37.660	43	95.690	282	72.500	269	115.800	219	88.300	199	47.790	217	55.540	41	89.900	349	68.670	54
77	19.670	60	93.570	286	75.310	275	126.680	228	96.880	210	68.810	225	39.650	52	97.320	355	68.860	48
76	8.030	179	102.060	289	74.590	281	138.490	236	107.760	223	91.840	232	8.590	98	105.260	359	67.310	40
75	36.140	270	103.680	290	71.480	287	151.050	244	121.990	235	116.080	240	43.270	227	112.360	1	63.010	33
74	68.170	246	121.070	291	64.950	295	165.130	253	140.290	247	141.560	248	97.920	239	113.860	1	56.250	24
73	92.520	259	139.130	290	56.110	306	177.190	260	150.160	257	165.460	255	149.110	247	108.440	359	48.810	12
72	100.920	271	160.750	289	48.130	321	180.770	266	175.880	265	183.900	261	185.820	255	93.060	354	40.950	353
71	91.150	277	173.510	289	43.080	338	177.530	272	180.250	270	193.660	268	205.980	262	72.880	352	41.100	326
70	78.640	271	165.050	288	34.530	354	163.910	279	171.480	274	188.180	274	203.270	269	55.640	4	49.190	306
69	78.320	260	141.740	283	20.910	1	135.540	284	150.810	280	165.360	280	182.360	275	52.720	33	54.190	294
68	84.060	259	123.580	271	3.210	327	102.350	288	122.450	285	132.310	286	157.010	283	59.570	53	49.840	284
67	84.790	276	140.300	265	9.100	224	75.870	289	94.220	286	107.490	291	137.240	288	56.590	67	44.380	276
66	85.060	299	153.490	267	7.510	219	67.830	285	78.460	281	100.470	291	123.640	292	56.950	86	41.870	275
65	73.270	311	177.610	273	8.620	157	71.400	285	84.830	285	104.850	293	122.720	295	71.890	100	41.220	274
64	46.230	305	192.720	281	20.720	145	73.880	286	93.820	292	102.000	295	107.950	297	91.780	103	40.400	274
63	28.250	286	199.320	287	34.220	148	73.210	292	91.650	297	89.270	297	91.710	294	91.110	106	43.870	272
62	20.890	269	195.610	290	52.220	150	69.160	296	81.480	297	76.210	294	85.300	286	64.860	112	54.780	265

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. / ALTITUDE	28		29		30		31		32	
61	27.790	274	199.940	292	76.330	151	62.780	286	73.550	289
60	47.690	232	187.750	292	84.930	162	80.620	273	80.400	276
59	46.410	251	192.480	292	84.050	186	101.100	263	96.300	262
58	31.660	269	200.540	290	87.140	210	111.210	258	103.160	256
57	22.440	277	212.020	298	77.500	236	113.630	264	97.730	263
56	26.590	275	220.910	299	76.980	250	107.900	265	93.700	267
55	49.030	250	219.070	296	69.840	243	99.570	260	91.390	258
54	39.710	255	227.890	296	73.500	227	99.080	264	86.190	258
53	40.970	262	227.000	289	59.850	219	92.930	265	83.900	257
52	36.750	304	235.800	288	69.190	206	93.140	265	87.390	257
51	19.320	285	227.880	294	78.920	197	96.520	261	91.530	259
50	29.420	294	213.390	280	99.460	202	96.770	273	98.980	271
49	9.820	360	218.370	279	105.780	205	88.990	290	84.800	284
48	13.510	311	219.860	281	92.950	205	58.300	289	68.410	282
47	5.860	82	212.140	295	101.310	202	57.880	280	75.660	278
46	19.590	234	209.530	285	116.910	200	74.710	285	78.140	282
45	8.220	217	193.540	286	101.200	207	55.800	266	57.250	276
44	19.110	9	175.150	280	80.990	201	33.950	261	38.050	269
43			169.840	295	83.590	209	26.180	227	33.160	263
42			157.630	289	88.280	194	36.500	241	36.830	256
41			137.900	286	85.530	185	35.870	220	40.410	231
40			129.010	283	75.220	194	44.580	236	44.020	228
39			116.650	281	58.390	197	33.740	206	22.760	221
38			102.330	275	45.450	230	26.300	230	22.450	208
37			89.640	269			24.110	244		
36			91.020	273			15.430	230		
35			69.950	262			17.860	250		
34			89.950	270			10.180	217		
33			78.630	267			16.680	280		
32							17.110	16		
31										
30										

FLIGHT NO. / ALTITUDE	33		34		35		36	
61	77.140	285	83.220	277	50.900	121	59.810	265
60	99.010	272	84.830	265	65.390	112	52.100	265
59	101.650	256	95.280	255	77.380	102	45.640	253
58	107.870	252	107.950	254	86.040	94	45.570	240
57	99.930	260	105.070	260			41.760	219
56	90.910	254	90.200	266	120.040	82	40.500	181
55	83.770	262	82.010	266	109.150	84	31.300	179
54	80.910	265	80.790	265	103.120	92	24.380	228
53	73.080	263	78.540	270	129.950	97	9.890	221
52	77.810	262	79.070	268	138.170	91	9.050	306
51	73.470	256	70.350	264	113.930	98	22.870	266
50	93.490	265	74.950	265	128.990	112	2.660	320
49	96.870	277	100.400	272	114.320	97	10.380	275
48	84.910	279	100.620	278	102.220	84	8.550	160
47	74.970	277	84.290	275	97.080	101	9.050	239
46	77.220	276	80.270	267	92.710	99	17.710	179
45	65.560	274	66.610	266	95.640	97	14.530	134
44	50.180	280	55.810	268	90.870	90		
43	29.710	247	39.260	262				
42	33.970	259	44.170	252				
41	34.580	247	39.850	249				
40	49.270	237	55.680	225				
39	22.440	242	33.090	250				
38	22.170	211	20.870	254				
37	23.330	232	31.340	234				
36	18.120	190	13.620	184				
35	24.740	256						
34	14.550	201						
33	5.260	214						
32	11.040	338						
31	11.410	317						
30								

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. ALTITUDE	37		38		39		40		41		42		43		44		45	
100	27.920	244	143.630	274							77.850	89			142.730	88		
99	7.610	114	94.480	279							49.720	93			103.480	67		
98	34.930	79	54.770	299	43.950	139			192.240	324	27.320	100			69.280	39	31.750	86
97	56.500	75	42.240	340	129.640	264			166.130	311	13.570	82			49.450	9	56.350	36
96	70.180	72	54.060	8	206.680	271			143.400	296	14.960	12			45.630	327	75.120	17
95	75.200	71	65.750	17	238.270	274			129.510	282	28.890	345			60.980	293	84.220	6
94	72.210	72	69.160	21	248.120	277			117.580	270	40.490	338			83.110	276	86.500	359
93	67.870	77	68.500	22	244.610	279			105.810	258	48.380	335			96.460	263	82.550	350
92	51.000	83	62.540	21	228.440	280			95.280	248	54.860	335			103.540	251	74.660	341
91	36.700	93	53.190	17	201.320	280			86.290	238	58.780	330			106.930	243	65.140	324
90	23.650	115	43.760	9	159.730	280			78.970	229	60.540	324			105.020	236	61.950	302
89	19.070	162	32.430	355	105.480	280			73.280	221	59.430	319			100.350	230	66.930	283
88	26.090	198	25.290	331	45.160	277			69.200	215	58.100	311			94.400	224	77.710	266
87	36.720	214	23.510	295	16.820	114			64.900	212	56.840	302			86.570	217	84.190	256
86	46.000	224	29.720	262	74.420	104			59.950	212	57.750	291			79.570	211	87.130	250
85	54.470	230	40.310	245	124.330	103			55.540	216	60.530	279			71.650	205	86.520	244
84	61.870	234	53.750	236	160.310	103			51.750	223	65.140	268			64.520	197	82.660	239
83	67.470	238	71.400	233	181.220	103			50.740	234	72.550	257			59.900	191	78.010	235
82	72.750	242	87.730	232	190.560	103			53.640	246	81.140	249			56.300	185	71.200	232
81	76.340	246	101.350	232	189.900	103			60.260	257	89.970	243			50.740	179	62.380	228
80	78.080	251	112.710	232	181.040	104			71.600	265	97.500	239			47.370	173	51.790	225
79	78.410	256	120.920	233	161.950	104			85.940	270	103.450	236			43.850	169	38.750	219
78	77.080	261	123.600	233	133.360	104			102.750	274	107.890	233			39.210	169	23.690	207
77	74.890	267	122.800	233	99.030	104			121.540	276	110.340	232			33.470	178	8.930	191
76	73.190	274	117.230	235	64.900	102			141.270	276	111.110	231			31.290	199	1.200	262
75	74.580	283	109.250	237	43.280	95			160.590	276	110.300	232			37.060	227	8.430	341
74	79.140	289	97.930	243	23.300	77			178.090	274	108.250	234			50.900	243	14.880	338
73	85.900	290	83.510	249	12.070	46			190.900	273	106.200	239			64.200	252	21.320	310
72	93.770	287	70.500	257	8.670	279			198.560	270	104.300	246			73.660	260	25.990	305
71	102.900	282	51.650	260	28.510	270			201.750	269	102.310	253			78.630	267	29.690	329
70	106.160	281	26.720	235	57.910	226	153.570	262	204.450	269	100.940	259			78.300	274	35.490	329
69	106.800	284	28.480	156	77.290	233	151.210	254	208.180	269	105.550	264			73.720	273	34.280	315
68	106.010	289	51.750	136	67.350	232	153.780	253	213.190	266	119.560	267			68.650	265	42.280	260
67	104.730	286	61.520	136	59.050	239	157.170	258	216.660	258	134.280	265	180.130	257	80.850	261	43.410	233
66	105.080	281	52.630	142	71.020	253	160.390	266	217.680	251	135.140	259	174.260	262	108.070	263	14.570	225
65	107.760	281	35.120	148	55.130	254	158.710	273	209.840	249	122.290	253	155.540	265	140.360	269	9.050	301
64	98.900	285	20.260	174	41.510	261	149.520	278	191.120	248	107.330	252	128.010	263	164.820	270	39.960	244
63	81.530	293	15.620	217	33.260	269	139.860	279	166.060	247	99.870	255	123.200	259	175.060	267	34.560	238
62	68.600	305	14.470	230	32.560	261	136.710	278	147.720	243	98.970	254	124.080	257	167.290	262	14.260	223

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. ALTITUDE	37		38		39		40		41		42		43		44		45	
61	74.000	306	8.530	236	37.590	260	140.390	277	142.120	237	94.150	249	127.070	272	156.240	255	19.720	188
60	78.950	297	4.010	191	39.310	277	147.010	275	136.010	235	79.510	242	141.110	270	148.690	249	8.070	208
59	66.690	289	14.140	170	48.410	290	146.200	271	124.510	244	68.090	247	135.410	258	150.070	243	14.260	300
58	62.250	288	23.540	193	51.130	292	142.560	265	129.780	254	73.060	258	125.500	255	152.120	239	29.640	285
57	65.290	287	13.450	158	47.310	290	147.030	268	136.190	253	86.070	257	124.280	264	154.700	237	50.910	268
56	65.050	277	16.170	168	18.960	312	155.520	272	126.210	249	86.430	254	128.010	272	146.560	239	61.750	274
55	54.950	273	23.950	176	53.040	287	151.790	271	115.880	253	79.720	255	123.180	259	128.990	251	74.230	277
54	46.080	288	20.650	216	36.740	320	148.760	270	125.540	258	99.060	261	115.440	254	133.840	267	82.230	268
53	48.460	303	35.990	228	41.010	334	155.000	275	131.160	252	113.030	258	116.940	260	147.020	266		
52	39.870	324	22.470	251	32.510	323	150.330	272	122.360	248	120.030	249	132.510	265	141.760	259		
51	41.570	337	5.570	340	23.090	312	159.210	269	117.790	256	142.370	246	135.750	259	144.700	260		
50	33.190	307	3.590	247	10.940	151	161.870	273	112.700	252	151.700	248			152.050	251		
49	43.130	261	3.370	97	43.970	240	154.280	275	115.450	261	158.880	253			146.810	252		
48			53.100	28	25.930	175	160.700	273	100.780	272	140.170	256			131.200	253		
47			41.720	58	40.840	253	151.830	277	96.540	280	95.330	262			143.280	260		
46			35.630	88	16.330	258	148.840	274	119.760	262	61.200	262			117.340	257		
45			3.780	267	21.990	231	154.890	254	123.130	247	40.300	303			123.080	263		
44			12.390	336	21.860	159	157.050	271	110.700	244					112.070	264		
43					14.120	351	153.290	267	102.030	247								
42					16.020	33	151.060	260	108.990	255								
41							145.200	264	110.430	262								
40							139.360	259	96.270	249								
39							129.410	257	88.750	261								
38							109.980	262	78.290	257								
37							106.450	254	79.530	262								
36									65.040	270								
35									59.620	277								
34									57.840	281								
33									41.220	300								
32									29.400	334								
31									19.390	342								
30																		

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. ALTITUDE	45		47		48		49		50		51		52		53		54	
100							193.990	14	147.680	170	148.840	298						
99			160.320	116			190.560	13	120.080	184	140.110	295						
98			88.650	120	188.110	140	180.300	12	102.540	203	118.720	296						
97			26.480	149	61.260	142	159.680	11	99.150	224	90.410	298						
96			37.940	271	40.280	306	135.110	11	103.540	242	59.150	303						
95			74.440	290	99.400	309	108.410	12	111.140	254	28.040	311						
94			94.360	295	130.080	306	80.480	15	116.340	263	8.500	64						
93			97.470	298	142.240	303	53.990	23	119.670	269	33.280	107						
92			91.830	297	142.220	298	30.180	43	121.500	274	56.010	113	252.170	312			107.560	2
91	70.790	280	84.850	294	136.500	292	19.750	96	120.560	278	73.330	115	235.140	299			97.790	338
90	63.350	269	74.760	290	126.590	286	29.580	141	117.450	281	85.430	118	220.640	285	89.170	241	80.080	306
89	53.700	249	60.250	291	114.050	278	43.880	158	113.030	285	93.150	119	201.630	273	128.880	231	75.520	269
88	50.100	225	44.720	272	100.050	267	54.840	165	108.590	289	96.870	119	180.660	261	161.190	223	88.900	240
87	50.650	207	30.370	258	86.920	255	62.090	171	104.430	292	96.940	119	157.010	250	180.050	216	102.990	224
86	52.040	192	21.550	226	77.410	242	54.600	174	100.620	296	95.300	118	132.320	240	185.310	209	110.880	213
85	56.910	174	25.760	186	70.630	226	63.970	176	97.190	300	91.780	117	103.820	230	182.230	203	114.840	207
84	67.490	160	36.840	165	68.220	208	59.840	179	94.420	304	85.510	115	78.170	216	169.240	199	114.190	203
83	65.700	148	49.600	154	72.620	189	53.880	193	92.470	308	77.200	115	65.380	207	150.860	196	108.690	200
82	66.550	136	57.650	149	82.420	174	46.830	187	90.910	312	67.140	114	51.080	193	128.210	196	97.210	200
81	69.380	125	63.820	145	91.480	164	38.980	195	90.790	314	55.500	112	37.750	178	105.680	199	82.850	203
80	71.170	113	69.030	140	95.760	157	31.010	206	91.590	316	41.170	110	28.110	159	87.520	207	66.990	212
79	74.200	102	70.350	135	92.580	152	23.960	225	93.750	317	25.080	108	21.630	142	76.670	221	55.230	230
78	77.820	93	71.370	132	85.180	148	21.600	254	96.500	318	7.290	83	13.640	131	74.650	241	53.970	254
77	78.970	81	69.390	127	72.640	144	25.740	282	99.940	316	12.320	315	2.640	104	85.360	255	61.360	274
76	78.500	66	65.160	124	57.350	141	32.080	295	104.470	314	30.840	301	10.340	316	101.170	265	73.330	285
75	73.950	49	56.200	123	39.300	137	36.870	298	108.570	312	50.350	296	23.340	296	117.210	270	87.090	291
74	76.270	31	45.820	121	24.300	138	37.780	293	112.410	310	70.650	290	38.260	285	130.550	271	98.500	292
73	69.030	15	40.750	126	15.770	144	35.190	276	116.430	308	91.130	285	53.710	280	141.590	269	107.820	288
72	51.780	357	37.090	132	8.590	191	38.750	249	120.850	309	111.260	283	68.870	275	146.640	267	114.020	282
71	34.500	320	35.100	130	10.820	254	50.100	230	126.060	312	128.650	283	82.440	274	147.570	264	119.830	275
70	25.850	268	34.940	120	17.000	288	52.990	224	130.220	318	137.980	286	97.550	272	146.450	262	123.270	268
69	18.420	235	34.820	85	19.170	283	45.480	224	129.140	321	142.570	291	115.570	268	146.790	259	123.830	262
68	11.540	176	35.870	57	20.970	276	42.910	224	120.950	317	148.650	292	127.840	259	148.730	257	122.380	263
67	15.790	142	33.310	34	22.660	265	52.850	225	113.410	308	152.220	289	133.230	250	154.930	254	122.920	268
66	24.490	144	39.210	17	24.110	260	68.870	226	107.850	301	149.570	284	130.130	243	160.420	253	125.060	274
65	41.910	145	35.150	8	32.500	252	77.900	227	102.360	299	139.730	279	123.370	245	166.600	255	128.510	273
64	35.670	137	20.150	22	46.480	256	75.420	234	96.330	301	131.840	276	117.390	254	165.010	255	137.310	260
63	20.570	130	18.970	44	48.310	257	69.150	250	88.080	303	125.250	268	113.720	264	163.210	256	152.590	249
62	8.260	159	5.900	89	43.250	256	72.590	265	77.430	306	120.340	254	113.70[illegible]	274	161.440	256	172.630	240

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. ALTITUDE	45		47		48		49		50		51		52		53		54	
61	7.440	200	19.100	199	47.520	257	74.290	265	71.360	309	115.180	242	117.100	279	160.400	259	189.910	236
60	.740	20	28.250	224	54.730	257	72.780	260	66.850	314	100.020	240	120.790	277	159.560	263	192.890	236
59	14.610	46	32.050	249	63.500	226	76.100	266	52.710	323	91.230	240	123.680	271	167.120	262	186.730	238
58	22.650	41	44.930	251	65.820	227	90.720	274	33.260	344	88.290	237	125.370	264	171.450	261	176.740	240
57	10.640	7	35.290	233	60.190	226	92.380	271	22.560	11	64.160	238	127.060	260	169.420	261	160.010	242
56	6.300	223	14.970	216	51.830	219	81.760	268	20.100	38	41.140	223	125.860	261	170.030	259	142.520	242
55	7.830	270	11.270	177			79.970	272	22.500	70	40.100	223	135.300	265	172.470	257	134.800	241
54	6.240	268	19.280	202			85.770	271	28.780	89	21.280	217	139.090	265	172.770	260	126.750	241
53	32.060	141					87.350	266	37.640	103	18.440	217	131.870	264	175.890	264	120.550	240
52	29.010	157					98.530	261	47.080	95	15.550	214	142.640	264	179.470	264	112.700	244
51							88.570	260	44.220	89	16.310	22	149.610	265	179.290	264	113.510	251
50							74.660	275	44.100	89	22.440	9	150.340	265	180.620	265	116.450	250
49							68.610	279	38.080	93	20.040	350	132.520	268	176.730	259	114.050	252
48							76.250	277	25.880	102	11.370	31	125.910	265	167.840	253	114.600	258
47							82.110	262	34.020	102	9.110	45	145.300	264	167.160	254	111.540	256
46							63.490	257	25.760	68	17.820	119	140.450	269	161.560	262	114.550	255
45							70.610	276	11.560	78	28.590	131	124.540	264	155.860	264	114.440	263
44							60.090	276	19.670	105	44.000	132	113.500	254	146.870	258	117.940	244
43							55.280	267	27.930	163	54.860	135	95.950	271	137.470	254	94.950	248
42							62.920	273	37.660	155	38.100	94	99.780	282	117.940	263	61.280	234
41							44.350	276	42.010	158	27.290	77	102.370	280	110.840	261	32.340	230
40							56.740	278	19.580	195	16.720	113	96.630	289			47.150	249
39							44.780	268	25.440	233	11.940	88					27.730	246
38							42.480	262	31.500	254	21.930	113			95.100	261	39.200	239
37							18.780	278	52.650	255	5.340	58			92.310	272		
36							41.380	287	61.710	255	19.820	341			89.620	268		
35							29.760	249	73.240	253	31.450	330			94.490	262		
34									78.760	245	30.070	304			80.480	269		
33									74.470	254	38.530	300			85.140	267		
32									70.800	262	44.600	309			84.850	266		
31									67.000	261	44.590	278						
30									55.410	289	50.370	289						

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. / ALTITUDE	55		56		57		58		59		60		61		62		63	
100	153.630	129																
99	126.270	124																
98	98.090	113																
97	74.250	94	272.920	164														
96	63.030	69	209.290	155														
95	59.720	48	130.280	137					183.410	338								
94	55.790	33	75.980	104					167.640	328	129.140	46						
93	44.010	20	81.590	44					150.710	318	131.040	50			138.310	6		
92	31.580	2	118.130	21			8.840	270	133.530	306	131.040	51	92.100	82	105.160	8		
91	18.560	328	137.230	11			152.540	345	118.790	292	129.890	49	92.350	63	78.350	11		
90	20.420	253	116.550	3			116.970	323	107.480	290	120.130	46	92.690	133	61.700	13		
89	40.080	226	77.570	351			110.330	285	100.500	268	102.180	41	95.130	32	38.050	13	103.130	97
88	58.580	217	37.920	314			136.080	258	95.360	256	83.080	36	84.000	24	9.480	5	82.150	92
87	72.130	214	44.000	245			172.340	244	86.970	246	62.490	29	71.080	14	18.950	205	57.800	82
86	87.130	212	74.980	221			200.010	236	77.260	235	42.170	20	47.020	2	51.560	200	38.720	62
85	91.280	211	98.280	214			216.570	231	67.350	221	21.160	2	21.000	330	78.380	199	33.770	24
84	96.150	212	109.290	212			215.360	229	58.330	205	8.680	262	19.210	243	98.670	201	40.290	355
83	100.640	211	112.830	210			202.170	227	53.430	185	27.130	211	35.140	208	115.810	203	47.560	343
82	101.850	212	108.470	211			179.870	227	52.780	169	46.270	202	56.850	198	128.090	203	49.170	339
81	99.670	213	100.480	214			152.430	228	50.110	154	63.240	196	73.200	194	132.650	202	44.840	339
80	92.750	216	88.810	220			125.390	231	46.890	139	72.950	192	84.920	193	134.000	201	36.830	344
79	84.790	221	75.550	232	90.350	275	102.980	240	41.920	123	75.800	190	97.130	194	126.990	198	31.860	358
78	74.030	229	67.130	249	80.220	279	88.130	254	33.010	110	73.950	188	99.930	195	114.600	195	33.520	19
77	63.100	245	70.260	266	72.460	283	85.620	271	23.900	74	65.140	189	94.570	199	98.640	191	37.400	34
76	61.030	264	79.650	279	68.610	288	96.720	285	25.270	19	51.520	197	85.950	205	79.940	186	43.270	40
75	67.190	281	90.110	285	69.970	293	114.860	294	42.110	344	36.170	220	71.950	219	60.280	180	49.510	41
74	80.240	291	102.620	286	76.850	297	134.940	297	63.670	327	36.500	259	62.220	243	39.950	172	53.810	36
73	96.060	294	115.210	285	89.860	298	153.650	299	88.850	314	58.930	296	68.840	271	22.290	147	53.780	24
72	110.750	289	125.470	280	107.950	296	169.790	297	109.820	304	88.490	305	88.560	288	9.120	65	49.670	2
71	121.050	280	135.150	274	128.860	293	178.810	295	129.810	294	114.850	306	112.550	294	25.720	353	50.460	333
70	127.270	271	137.960	269	149.950	289	182.390	292	141.850	285	128.380	301	129.010	294	48.210	332	55.670	305
69	120.140	266	131.900	267	166.730	284	184.570	290	148.070	276	129.250	290	130.240	292	68.930	318	58.000	279
68	127.520	268	124.990	266	176.470	278	186.170	287	149.540	269	124.150	277	122.550	285	81.510	302	54.380	257
67	128.300	271	122.890	266	179.590	270	185.480	284	142.690	264	115.530	265	109.300	275	88.340	288	50.630	236
66	129.070	269	126.620	265	176.660	262	180.180	281	130.810	259	106.350	258	102.920	262	86.910	275	47.550	229
65	129.010	262	131.500	259	163.400	256	165.100	279	121.770	252	101.050	249	104.690	253	85.700	270	46.970	244
64	138.400	251	138.280	253	144.940	252	153.870	277	118.750	250	99.940	243	102.020	249	86.820	266	53.180	265
63	159.340	242	146.390	248	126.850	248	144.740	275	115.960	247	99.830	237	99.560	245	88.340	262	62.860	278
62	175.260	240	155.650	243	109.670	243	135.830	272	113.290	245	99.020	235	94.440	242	95.810	252	66.580	273

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO.	55		56		57		58		59		60		61		62		63	
ALTITUDE																		
61	180.600	240	172.730	243	97.480	238	127.320	270	108.430	251	92.580	234	93.210	242	100.690	241	68.510	253
60	180.100	242	193.760	248	77.990	240	114.220	270	105.260	248	95.630	230	98.510	238	101.280	236	79.120	235
59	179.700	245	192.940	251	67.690	238	95.230	268	109.210	237	105.740	230	109.930	233	104.300	236	89.160	227
58	163.630	248	164.830	251	62.220	237	84.970	263	115.280	228	119.390	230	124.030	228	106.090	237	89.140	228
57	141.690	247			56.440	249	83.800	265	119.570	226	122.350	231	129.340	225	111.920	232	78.960	235
56	140.820	243			53.740	271	79.390	268	108.520	227	114.370	229	122.150	224	120.710	224	68.960	238
55	137.260	236			56.840	282	73.700	265	84.370	239	99.470	231	107.150	222	117.830	220	69.920	231
54	125.220	231			55.380	277	79.050	261	75.400	250	97.810	225	101.560	217	108.720	222	75.500	233
53	121.440	235			44.730	277	84.760	247	77.740	240	97.020	215	98.240	212	101.660	229	72.790	248
52	110.820	243			31.650	278	87.950	234	78.300	226	86.360	219	87.860	221	93.850	231	68.290	259
51	106.520	255			25.150	266	85.140	232	72.960	239	77.860	235	81.510	231	79.240	243	66.300	251
50	104.340	256			22.960	271	57.370	245	74.390	250	75.180	239	72.400	240	74.350	245	75.800	249
49	104.500	254			16.860	255	51.200	243	71.420	252	69.330	252	69.750	240	71.110	237	83.240	258
48	103.180	256			20.910	238	48.560	212	66.830	253	61.710	251	64.760	245	72.240	245	82.310	259
47	103.440	245			19.280	206	35.580	222	79.220	263	67.920	252	62.290	252	74.660	257	85.440	261
46	104.150	248			8.200	213	30.270	225	86.590	262	81.650	267	77.140	251	76.850	256	87.710	248
45	102.110	248			2.840	15	17.460	256	82.160	246	85.740	244	93.700	243	86.250	246	87.430	254
44					17.820	172	14.230	265	84.470	245			94.590	252	94.990	240	77.390	264
43					16.290	339	28.200	237	81.590	278			97.200	252	98.170	234	66.520	251
42					6.100	318	27.430	331	83.520	252			87.350	254	80.890	249	74.940	240
41					5.700	348	19.750	193	72.700	265			67.050	250			55.190	234
40					12.440	280	19.870	170	74.290	268			68.970	253			41.540	260
39					17.830	231	4.140	230	64.120	279			56.250	270				
38					16.260	207	16.770	358	55.960	270								
37					20.150	268	5.060	178	50.490	275								
36					7.630	298	3.030	264	45.120	297								
35					16.140	277	5.620	61	28.980	279								
34					21.430	338	6.530	84	34.290	270								
33					13.250	296	4.900	327	38.820	280								
32					28.330	248			23.230	260								
31					28.320	269			11.770	214								
30					14.630	274												

TABLE XXVI (Continued)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. / ALTITUDE	64		65		66		67	
100								
99								
98								
97								
96								
95								
94	141.870	328	128.610	347				
93	123.060	328	113.680	356	82.090	192		
92	104.250	329	94.340	11	115.650	174		
91	85.400	330	85.630	25	122.330	157		
90	65.750	332	80.260	35	113.130	164		
89	48.080	334	75.630	47	92.910	163		
88	40.690	350	68.910	58	68.270	166	133.810	213
87	39.970	11	66.050	66	44.770	180	128.170	203
86	44.850	23	62.820	71	74.720	215	115.930	194
85	52.490	38	57.440	74	44.260	247	99.820	185
84	55.080	43	52.090	76	61.130	258	84.060	176
83	52.880	46	47.480	77	76.240	261	64.520	166
82	49.250	48	45.110	73	87.930	262	45.920	149
81	44.080	49	45.720	69	96.550	260	36.430	121
80	38.840	48	44.480	64	100.590	258	35.150	95
79	36.120	47	43.910	60	103.520	256	37.500	81
78	36.250	50	40.640	54	102.790	254	37.770	70
77	35.800	47	36.410	48	100.570	253	36.720	64
76	34.470	40	33.640	39	96.990	253	32.890	64
75	34.950	27	33.370	26	93.290	253	25.950	70
74	37.780	12	34.750	13	91.220	253	14.760	87
73	45.190	349	36.180	357	90.440	254	2.810	165
72	57.960	332	42.090	340	95.100	254	17.780	265
71	74.380	317	52.140	324	103.100	252	38.390	272
70	87.910	303	64.000	308	111.830	254	57.610	273
69	96.020	290	75.410	296	121.850	257	70.820	267
68	99.290	280	84.930	288	129.770	263	80.900	260
67	94.290	273	91.130	284	135.710	268	85.940	259
66	88.580	270	93.470	283	139.700	272	87.820	262
65	87.650	265	91.860	279	140.140	273	87.940	258
64	87.060	259	90.660	275	137.200	272	88.430	255
63	87.510	253	89.880	271	129.260	270	89.310	251
62	88.450	247	85.510	266	121.630	267	84.670	249

TABLE XXVI (Concluded)

TAB PRINT-OUT OF WIND SPEED AND DIRECTION

WIND SPEED AND DIRECTION

FLIGHT NO. ALTITUDE	64		65		66		67	
61	81.350	246	75.740	258	112.960	263	75.360	255
60	74.790	250	69.350	248	103.250	258	71.290	263
59	70.040	250	63.530	241			71.660	257
58	73.510	240	66.080	232			73.590	267
57	73.040	236	69.170	230			72.470	258
56	59.930	249	53.340	242			69.150	241
55	51.870	266	40.020	250			60.670	226
54	47.590	279	36.690	260			43.780	228
53	57.730	291	43.080	273			35.340	251
52	67.370	289	56.420	285			30.600	252
51	79.710	282	69.570	276			22.540	225
50	90.700	289	77.820	279			23.560	221
49	88.850	282	78.590	277			35.750	236
48	80.080	267	77.600	255			37.060	244
47	68.300	248	77.180	245			42.230	285
46	63.900	240	72.530	250			44.390	260
45	65.540	240	67.750	248	81.620	277	44.370	249
44	60.810	248	64.340	260	80.950	277	43.930	250
43			59.560	252	58.090	276	54.090	281
42			40.850	251	48.810	305	44.930	264
41			41.680	217	47.160	292	33.970	287
40					36.510	281	46.490	287
39					39.990	288	39.690	248
38					37.420	316	35.750	276
37					27.840	290	34.620	250
36					40.040	283		
35					24.880	276		
34					6.380	320		
33					17.850	301		
32					18.390	267		
31								
30								