

Technical Memorandum

176-57-52

THE "ZERO DEGREE" ISOTHERMAL
AND
ICAO STANDARD ATMOSPHERES

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ICAO STANDARD ATMOSPHERES

AECU-3542

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ABSTRACT

The variation of apparent gravity with altitude is incorporated in the hypsometric formula. New values of pressure altitudes for a zero degree centigrade isothermal atmosphere were then computed by the Elecom Model 125. The ICAO Standard Atmosphere, adopted November 20, 1952, and extended by ARDC, is also presented.

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THE "ZERO DEGREE" ISOTHERMAL AND ICAO STANDARD ATMOSPHERES

With the advent of the hypsometer for measuring pressures accurately at high altitudes, and the proposed use of individually calibrated radiosondes for test data purposes, it was considered advisable to recompute the pressure-height tables used in altitude reduction.

Examination showed that the variation of gravity with altitude causes significant differences in computed pressure heights as compared to pressure heights computed from tables that neglect this variation. Typical differences found were 4 feet for 700 millibars, 313 feet for 100 millibars, and 886 feet for 10 millibars. The variation of gravity with altitude has been incorporated in the following tables as part of the 0°C isothermal atmosphere for use with data from the Salton Sea Test Base (SSTB).

For determination of height differences between pressure levels in the atmosphere, the hydrostatic equation may be written in the form:

$$dp = -\rho g dz ,$$

where

p = pressure,

ρ = density,

g = apparent acceleration due to gravity, and

z = height.

Substituting for ρ from the general gas law in which

$$\rho = \frac{p}{RA} ,$$

where

R = gas constant for dry air and

A = temperature in degrees Kelvin,

then

$$RA \frac{dp}{p} = -gdz .$$

The apparent gravity at height Z is expressed by

$$g_z = g_o \left[1 - \frac{2z}{r} \right] - 3z\omega^2 \cos^2 \phi ,$$

where

g_z = apparent gravity at height z ,

g_o = gravity at the surface,

r = radius of earth at the point where g_o is measured,

ω = angular speed of rotation of the earth, and

ϕ = latitude.

Assuming that temperature between two pressure levels p_1 and p_2 is constant and is represented by \bar{A} ,

then

$$R\bar{A} \int_{p_2}^{p_1} \frac{dp}{p} = \int_{z_1}^{z_2} \left[g_0 \left(1 - \frac{2z}{r} \right) - 3z\omega^2 \cos^2 \varphi \right] dz .$$

Performing the indicated operations

$$R\bar{A} \ln \left(\frac{p_1}{p_2} \right) = g_0 (z_2 - z_1) - \left(\frac{z_2^2}{2} - \frac{z_1^2}{2} \right) \left(\frac{g_0}{r} + 3/2 \omega^2 \cos^2 \varphi \right) .$$

If the integration is performed from mean sea level to z_2 in every case (so that z_1 is zero), and rearranging terms,

then

$$z_2 = \frac{g_0}{2 \left(\frac{g_0}{r} + 3/2 \omega^2 \cos^2 \varphi \right)} \left[1 \pm \sqrt{1 + \frac{4 \left(\frac{g_0}{r} + 3/2 \omega^2 \cos^2 \varphi \right) R\bar{A} \ln \left(\frac{p_2}{p_1} \right)}{g_0^2}} \right] ,$$

where

$$R = 3089.7 \text{ ft}^2 \text{ sec}^{-2} (\text{°K})^{-1} \text{ (Ref. 2),}$$

$$g_0 \text{ for SSTB} = 32.1376 \text{ ft sec}^{-2},$$

$$= 979.565 \text{ cm sec}^{-2} \text{ (Ref. 1) .}$$

The pressure at sea level was assumed to be 1013.25 millibars, in agreement with the ICAO atmosphere (Ref. 2).

The value for 0°C used was 273.16°K (Ref. 2).

No gravity correction was applied to levels below mean sea level because the effect on the following tables was considered negligible.

Variation of gravity with latitude produces smaller effects on height calculations than does variation of gravity with altitude. However, if it is desired to maintain accuracy when using these tables at locations other than SSTB, the effect of variation of the local gravity, reduced to mean sea level, of more than 1 cm sec^{-2} from the SSTB value should be considered.

The ICAO atmosphere was projected above 54.7 millibars in accordance with the Air Research and Development Command recommendations (Ref. 3).

The computations were performed on an Elecom Model 125 electronic digital computer.

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References:

1. SSTB gravity measured by the U. S. Coast and Geodetic Survey.
2. National Advisory Committee for Aeronautics, Report 1235, Standard Atmosphere - Tables and Data for Altitudes to 65,800 Feet, 1955, International Civil Aviation Organization, Montreal, Canada, and Langley Aeronautical Laboratory, Langley Field, Virginia.
3. Minzer, R. A. and Ripley, W. S., Tables and Graphs of the ARDC Model Atmosphere, 1956 (preliminary edition), May 1956, Atmospheric Physics Laboratory, Geophysics Research Directorate, AFCRC, ARDC.

P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO
31.302	1060.0	-1185	-1254	290.64	30.121	1020.0	- 174	- 184	288.52
31.272	1059.0	-1160	-1227	290.59	30.091	1019.0	- 149	- 157	288.47
31.243	1058.0	-1135	-1201	290.53	30.061	1018.0	- 123	- 130	288.41
31.213	1057.0	-1110	-1175	290.48	30.032	1017.0	- 97	- 102	288.36
31.184	1056.0	-1085	-1148	290.43	30.002	1016.0	- 71	- 75	288.30
31.154	1055.0	-1060	-1122	290.38	29.973	1015.0	- 45	- 48	288.25
31.125	1054.0	-1036	-1095	290.33	29.943	1014.0	- 19	- 20	288.20
31.095	1053.0	-1011	-1069	290.27	29.921	1013.25	0	0	288.16
31.065	1052.0	- 986	-1042	290.22	29.914	1013.0	6	7	288.14
31.036	1051.0	- 961	-1016	290.17	29.884	1012.0	32	34	288.09
					29.855	1011.0	58	61	288.03
31.006	1050.0	- 936	- 989	290.12	29.825	1010.0	84	89	287.98
30.977	1049.0	- 911	- 963	290.06	29.796	1009.0	110	116	287.92
30.947	1048.0	- 886	- 936	290.01	29.766	1008.0	136	144	287.87
30.918	1047.0	- 861	- 910	289.96	29.737	1007.0	162	171	287.82
30.888	1046.0	- 835	- 883	289.90	29.707	1006.0	189	199	287.76
30.859	1045.0	- 810	- 856	289.85	29.678	1005.0	215	226	287.71
30.829	1044.0	- 785	- 830	289.80	29.648	1004.0	241	254	287.65
30.800	1043.0	- 760	- 803	289.75	29.619	1003.0	267	281	287.60
30.770	1042.0	- 735	- 776	289.69	29.589	1002.0	293	309	287.54
30.741	1041.0	- 710	- 750	289.64	29.559	1001.0	319	336	287.49
30.711	1040.0	- 684	- 723	289.59	29.530	1000.0	346	364	287.43
30.682	1039.0	- 659	- 696	289.53	29.500	999.0	372	391	287.38
30.652	1038.0	- 634	- 669	289.48	29.471	998.0	398	419	287.32
30.623	1037.0	- 608	- 643	289.43	29.441	997.0	425	447	287.27
30.593	1036.0	- 583	- 616	289.38	29.412	996.0	451	474	287.22
30.563	1035.0	- 558	- 589	289.32	29.382	995.0	477	502	287.16
30.534	1034.0	- 532	- 562	289.27	29.353	994.0	504	530	287.11
30.504	1033.0	- 507	- 535	289.22	29.323	993.0	530	558	287.05
30.475	1032.0	- 482	- 508	289.16	29.294	992.0	557	585	287.00
30.445	1031.0	- 456	- 481	289.11	29.264	991.0	583	613	286.94
30.416	1030.0	- 431	- 455	289.06	29.235	990.0	610	641	286.89
30.386	1029.0	- 405	- 428	289.00	29.205	989.0	636	669	286.83
30.357	1028.0	- 380	- 401	288.95	29.176	988.0	663	697	286.77
30.327	1027.0	- 354	- 374	288.90	29.146	987.0	689	724	286.72
30.298	1026.0	- 328	- 347	288.84	29.117	986.0	716	752	286.66
30.268	1025.0	- 303	- 319	288.79	29.087	985.0	743	780	286.61
30.239	1024.0	- 277	- 292	288.73	29.057	984.0	769	808	286.55
30.209	1023.0	- 251	- 265	288.68	29.028	983.0	796	836	286.50
30.180	1022.0	- 226	- 238	288.63	28.998	982.0	823	864	286.44
30.150	1021.0	- 200	- 211	288.57	28.969	981.0	849	892	286.39

P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO
28.939	980.0	876	920	286.33	27.758	940.0	1970	2062	284.07
28.910	979.0	903	948	286.28	27.729	939.0	1998	2091	284.01
28.880	978.0	930	976	286.22	27.699	938.0	2026	2120	283.96
28.851	977.0	957	1005	286.16	27.670	937.0	2054	2149	283.90
28.821	976.0	984	1033	286.11	27.640	936.0	2082	2178	283.84
28.792	975.0	1011	1061	286.05	27.610	935.0	2110	2207	283.78
28.762	974.0	1037	1089	286.00	27.581	934.0	2139	2236	283.72
28.733	973.0	1064	1117	285.94	27.551	933.0	2167	2265	283.67
28.703	972.0	1091	1145	285.89	27.522	932.0	2195	2294	283.61
28.674	971.0	1118	1174	285.83	27.492	931.0	2223	2324	283.55
28.644	970.0	1146	1202	285.77	27.463	930.0	2251	2353	283.49
28.615	969.0	1173	1230	285.72	27.433	929.0	2279	2382	283.44
28.585	968.0	1200	1259	285.66	27.404	928.0	2308	2412	283.38
28.555	967.0	1227	1287	285.61	27.374	927.0	2336	2441	283.32
28.526	966.0	1254	1315	285.55	27.345	926.0	2364	2470	283.26
28.496	965.0	1281	1344	285.49	27.315	925.0	2393	2500	283.20
28.467	964.0	1308	1372	285.44	27.286	924.0	2421	2529	283.14
28.437	963.0	1336	1401	285.38	27.256	923.0	2450	2558	283.09
28.408	962.0	1363	1429	285.32	27.227	922.0	2478	2588	283.03
28.378	961.0	1390	1458	285.27	27.197	921.0	2507	2617	282.97
28.349	960.0	1418	1486	285.21	27.168	920.0	2535	2647	282.91
28.319	959.0	1445	1515	285.15	27.138	919.0	2564	2677	282.85
28.290	958.0	1472	1543	285.10	27.108	918.0	2592	2706	282.79
28.260	957.0	1500	1572	285.04	27.079	917.0	2621	2736	282.74
28.231	956.0	1527	1600	284.98	27.049	916.0	2649	2765	282.68
28.201	955.0	1555	1629	284.93	27.020	915.0	2678	2795	282.62
28.172	954.0	1582	1658	284.87	26.990	914.0	2707	2825	282.56
28.142	953.0	1610	1686	284.81	26.961	913.0	2736	2854	282.50
28.112	952.0	1637	1715	284.76	26.931	912.0	2764	2884	282.44
28.083	951.0	1665	1744	284.70	26.902	911.0	2793	2914	282.38
28.053	950.0	1693	1773	284.64	26.872	910.0	2822	2944	282.32
28.024	949.0	1720	1801	284.59	26.843	909.0	2851	2973	282.26
27.994	948.0	1748	1830	284.53	26.813	908.0	2880	3003	282.21
27.965	947.0	1776	1859	284.47	26.784	907.0	2909	3033	282.15
27.935	946.0	1803	1888	284.41	26.754	906.0	2938	3063	282.09
27.906	945.0	1831	1917	284.36	26.725	905.0	2967	3093	282.03
27.876	944.0	1859	1946	284.30	26.695	904.0	2996	3123	281.97
27.847	943.0	1887	1975	284.24	26.666	903.0	3025	3153	281.91
27.817	942.0	1915	2004	284.19	26.636	902.0	3054	3183	281.85
27.788	941.0	1943	2032	284.13	26.606	901.0	3083	3213	281.79

P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO
26.577	900.0	3112	3243	281.73	25.396	860.0	4306	4467	279.30
26.547	899.0	3141	3273	281.67	25.366	859.0	4336	4499	279.24
26.518	898.0	3171	3303	281.61	25.337	858.0	4367	4530	279.18
26.488	897.0	3200	3333	281.55	25.307	857.0	4397	4561	279.12
26.459	896.0	3229	3363	281.49	25.278	856.0	4428	4592	279.06
26.429	895.0	3258	3393	281.43	25.248	855.0	4459	4624	278.99
26.400	894.0	3288	3424	281.37	25.219	854.0	4489	4655	278.93
26.370	893.0	3317	3454	281.31	25.189	853.0	4520	4686	278.87
26.341	892.0	3347	3484	281.25	25.160	852.0	4551	4718	278.81
26.311	891.0	3376	3514	281.19	25.130	851.0	4582	4749	278.75
26.282	890.0	3405	3545	281.13	25.100	850.0	4613	4781	278.68
26.252	889.0	3435	3575	281.07	25.071	849.0	4644	4812	278.62
26.223	888.0	3465	3605	281.01	25.041	848.0	4674	4844	278.56
26.193	887.0	3494	3636	280.95	25.012	847.0	4705	4875	278.50
26.164	886.0	3524	3666	280.89	24.982	846.0	4736	4907	278.43
26.134	885.0	3553	3697	280.83	24.953	845.0	4768	4939	278.37
26.104	884.0	3583	3727	280.77	24.923	844.0	4799	4970	278.31
26.075	883.0	3613	3758	280.71	24.894	843.0	4830	5002	278.25
26.045	882.0	3643	3788	280.65	24.864	842.0	4861	5034	278.18
26.016	881.0	3672	3819	280.59	24.835	841.0	4892	5065	278.12
25.986	880.0	3702	3849	280.53	24.805	840.0	4923	5097	278.06
25.957	879.0	3732	3880	280.47	24.776	839.0	4955	5129	277.99
25.927	878.0	3762	3911	280.41	24.746	838.0	4986	5161	277.93
25.898	877.0	3792	3941	280.35	24.717	837.0	5017	5193	277.87
25.868	876.0	3822	3972	280.29	24.687	836.0	5049	5224	277.80
25.839	875.0	3852	4003	280.22	24.657	835.0	5080	5256	277.74
25.809	874.0	3882	4034	280.16	24.628	834.0	5111	5288	277.68
25.780	873.0	3912	4064	280.10	24.598	833.0	5143	5320	277.61
25.750	872.0	3942	4095	280.04	24.569	832.0	5174	5352	277.55
25.721	871.0	3972	4126	279.98	24.539	831.0	5206	5384	277.49
25.691	870.0	4002	4157	279.92	24.510	830.0	5238	5416	277.42
25.662	869.0	4032	4188	279.86	24.480	829.0	5269	5449	277.36
25.632	868.0	4063	4219	279.80	24.451	828.0	5301	5481	277.30
25.602	867.0	4093	4250	279.74	24.421	827.0	5333	5513	277.23
25.573	866.0	4123	4281	279.67	24.392	826.0	5364	5545	277.17
25.543	865.0	4153	4312	279.61	24.362	825.0	5396	5577	277.11
25.514	864.0	4184	4343	279.55	24.333	824.0	5428	5610	277.04
25.484	863.0	4214	4374	279.49	24.303	823.0	5460	5642	276.98
25.455	862.0	4245	4405	279.43	24.274	822.0	5492	5674	276.91
25.425	861.0	4275	4436	279.37	24.244	821.0	5524	5707	276.85

P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO
24.215	820.0	5556	5739	276.78	23.033	780.0	6868	7062	274.16
24.185	819.0	5588	5771	276.72	23.004	779.0	6902	7096	274.10
24.155	818.0	5620	5804	276.66	22.974	778.0	6936	7129	274.03
24.126	817.0	5652	5836	276.59	22.945	777.0	6970	7163	273.96
24.096	816.0	5684	5869	276.53	22.915	776.0	7003	7197	273.90
24.067	815.0	5716	5901	276.46	22.886	775.0	7037	7231	273.83
24.037	814.0	5749	5934	276.40	22.856	774.0	7071	7265	273.76
24.008	813.0	5781	5967	276.33	22.827	773.0	7105	7299	273.69
23.978	812.0	5813	5999	276.27	22.797	772.0	7139	7333	273.63
23.949	811.0	5846	6032	276.20	22.768	771.0	7173	7367	273.56
23.919	810.0	5878	6065	276.14	22.738	770.0	7207	7401	273.49
23.890	809.0	5910	6097	276.07	22.709	769.0	7241	7435	273.42
23.860	808.0	5943	6130	276.01	22.679	768.0	7275	7469	273.36
23.831	807.0	5975	6163	275.94	22.649	767.0	7309	7504	273.29
23.801	806.0	6008	6196	275.88	22.620	766.0	7344	7538	273.22
23.772	805.0	6040	6229	275.81	22.590	765.0	7378	7572	273.15
23.742	804.0	6073	6262	275.75	22.561	764.0	7412	7606	273.09
23.713	803.0	6106	6295	275.68	22.531	763.0	7447	7641	273.02
23.683	802.0	6138	6328	275.62	22.502	762.0	7481	7675	272.95
23.653	801.0	6171	6361	275.55	22.472	761.0	7516	7710	272.88
23.624	800.0	6204	6394	275.49	22.443	760.0	7550	7744	272.81
23.594	799.0	6237	6427	275.42	22.413	759.0	7585	7779	272.74
23.565	798.0	6270	6460	275.36	22.384	758.0	7619	7813	272.68
23.535	797.0	6303	6493	275.29	22.354	757.0	7654	7848	272.61
23.506	796.0	6335	6526	275.23	22.325	756.0	7689	7882	272.54
23.476	795.0	6368	6560	275.16	22.295	755.0	7723	7917	272.47
23.447	794.0	6402	6593	275.09	22.266	754.0	7758	7952	272.40
23.417	793.0	6435	6626	275.03	22.236	753.0	7793	7986	272.33
23.388	792.0	6468	6659	274.96	22.207	752.0	7828	8021	272.26
23.358	791.0	6501	6693	274.90	22.177	751.0	7863	8056	272.19
23.329	790.0	6534	6726	274.83	22.147	750.0	7898	8091	272.13
23.299	789.0	6567	6760	274.76	22.118	749.0	7933	8125	272.06
23.270	788.0	6601	6793	274.70	22.088	748.0	7968	8160	271.99
23.240	787.0	6634	6826	274.63	22.059	747.0	8003	8195	271.92
23.211	786.0	6667	6860	274.56	22.029	746.0	8038	8230	271.85
23.181	785.0	6701	6894	274.50	22.000	745.0	8073	8265	271.78
23.151	784.0	6734	6927	274.43	21.970	744.0	8108	8300	271.71
23.122	783.0	6768	6961	274.36	21.941	743.0	8144	8335	271.64
23.092	782.0	6801	6994	274.30	21.911	742.0	8179	8371	271.57
23.063	781.0	6835	7028	274.23	21.882	741.0	8214	8406	271.50

P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO
21.852	740.0	8250	8441	271.43	20.671	730.0	9708	9882	268.58
21.823	739.0	8285	8476	271.36	20.641	699.0	9745	9919	268.50
21.793	738.0	8321	8511	271.29	20.612	698.0	9783	9955	268.43
21.764	737.0	8356	8547	271.22	20.582	697.0	9821	9992	268.36
21.734	736.0	8392	8582	271.15	20.553	696.0	9858	10029	268.28
21.704	735.0	8428	8618	271.08	20.523	695.0	9896	10066	268.21
21.675	734.0	8464	8653	271.01	20.494	694.0	9934	10104	268.14
21.645	733.0	8499	8688	270.94	20.464	693.0	9972	10141	268.06
21.616	732.0	8535	8724	270.87	20.435	692.0	10010	10178	267.99
21.586	731.0	8571	8759	270.80	20.405	691.0	10047	10215	267.92
21.557	730.0	8607	8795	270.73	20.376	690.0	10085	10252	267.84
21.527	729.0	8643	8831	270.66	20.346	689.0	10124	10290	267.77
21.498	728.0	8679	8866	270.59	20.317	688.0	10162	10327	267.70
21.468	727.0	8715	8902	270.52	20.287	687.0	10200	10364	267.62
21.439	726.0	8751	8938	270.45	20.258	686.0	10238	10402	267.55
21.409	725.0	8787	8974	270.38	20.228	685.0	10276	10439	267.47
21.380	724.0	8823	9009	270.31	20.198	684.0	10315	10477	267.40
21.350	723.0	8860	9045	270.23	20.169	683.0	10353	10514	267.32
21.321	722.0	8896	9081	270.16	20.139	682.0	10391	10552	267.25
21.291	721.0	8932	9117	270.09	20.110	681.0	10430	10590	267.17
21.262	720.0	8969	9153	270.02	20.080	680.0	10468	10627	267.10
21.232	719.0	9005	9189	269.95	20.051	679.0	10507	10665	267.03
21.202	718.0	9042	9225	269.88	20.021	678.0	10546	10703	266.95
21.173	717.0	9078	9261	269.81	19.992	677.0	10584	10741	266.88
21.143	716.0	9115	9298	269.73	19.962	676.0	10623	10778	266.80
21.114	715.0	9152	9334	269.66	19.933	675.0	10662	10816	266.73
21.084	714.0	9188	9370	269.59	19.903	674.0	10701	10854	266.65
21.055	713.0	9225	9406	269.52	19.874	673.0	10740	10892	266.57
21.025	712.0	9262	9443	269.45	19.844	672.0	10779	10930	266.50
20.996	711.0	9299	9479	269.38	19.815	671.0	10818	10969	266.42
20.966	710.0	9336	9515	269.30	19.785	670.0	10857	11007	266.35
20.937	709.0	9373	9552	269.23	19.756	669.0	10896	11045	266.27
20.907	708.0	9410	9588	269.16	19.726	668.0	10936	11083	266.20
20.878	707.0	9447	9625	269.09	19.696	667.0	10975	11121	266.12
20.848	706.0	9484	9661	269.01	19.667	666.0	11014	11160	266.05
20.819	705.0	9521	9698	268.94	19.637	665.0	11054	11198	265.97
20.789	704.0	9558	9735	268.87	19.608	664.0	11093	11237	265.89
20.760	703.0	9596	9771	268.80	19.578	663.0	11133	11275	265.82
20.730	702.0	9633	9808	268.72	19.549	662.0	11172	11314	265.74
20.700	701.0	9671	9845	268.65	19.519	661.0	11212	11352	265.66

P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO
19.490	660.0	11252	11391	265.59	18.309	620.0	12892	12976	262.45
19.460	659.0	11291	11429	265.51	18.279	619.0	12934	13016	262.37
19.431	658.0	11331	11468	265.43	18.249	618.0	12976	13057	262.29
19.401	657.0	11371	11507	265.36	18.220	617.0	13019	13098	262.21
19.372	656.0	11411	11546	265.28	18.190	616.0	13061	13139	262.12
19.342	655.0	11451	11585	265.20	18.161	615.0	13104	13180	262.04
19.313	654.0	11491	11623	265.13	18.131	614.0	13147	13221	261.96
19.283	653.0	11531	11662	265.05	18.102	613.0	13189	13262	261.88
19.254	652.0	11572	11701	264.97	18.072	612.0	13232	13303	261.80
19.224	651.0	11612	11740	264.89	18.043	611.0	13275	13344	261.72
19.194	650.0	11652	11780	264.82	18.013	610.0	13318	13385	261.64
19.165	649.0	11693	11819	264.74	17.984	609.0	13361	13426	261.55
19.135	648.0	11733	11858	264.66	17.954	608.0	13404	13467	261.47
19.106	647.0	11774	11897	264.58	17.925	607.0	13447	13509	261.39
19.076	646.0	11814	11936	264.51	17.895	606.0	13491	13550	261.31
19.047	645.0	11855	11976	264.43	17.866	605.0	13534	13592	261.23
19.017	644.0	11895	12015	264.35	17.836	604.0	13577	13633	261.15
18.988	643.0	11936	12055	264.27	17.807	603.0	13621	13675	261.06
18.958	642.0	11977	12094	264.19	17.777	602.0	13664	13716	260.98
18.929	641.0	12018	12134	264.12	17.747	601.0	13708	13758	260.90
18.899	640.0	12059	12173	264.04	17.718	600.0	13752	13800	260.82
18.870	639.0	12100	12213	263.96	17.688	599.0	13795	13841	260.73
18.840	638.0	12141	12253	263.88	17.659	598.0	13839	13883	260.65
18.811	637.0	12182	12292	263.80	17.629	597.0	13883	13925	260.57
18.781	636.0	12223	12332	263.72	17.600	596.0	13927	13967	260.48
18.752	635.0	12265	12372	263.64	17.570	595.0	13971	14009	260.40
18.722	634.0	12306	12412	263.56	17.541	594.0	14015	14051	260.32
18.692	633.0	12347	12452	263.49	17.511	593.0	14059	14093	260.23
18.663	632.0	12389	12492	263.41	17.482	592.0	14104	14135	260.15
18.633	631.0	12430	12532	263.33	17.452	591.0	14148	14178	260.07
18.604	630.0	12472	12572	263.25	17.423	590.0	14192	14220	259.98
18.574	629.0	12514	12612	263.17	17.393	589.0	14237	14262	259.90
18.545	628.0	12555	12652	263.09	17.364	588.0	14282	14305	259.81
18.515	627.0	12597	12693	263.01	17.334	587.0	14326	14347	259.73
18.486	626.0	12639	12733	262.93	17.305	586.0	14371	14390	259.65
18.456	625.0	12681	12773	262.85	17.275	585.0	14416	14432	259.56
18.427	624.0	12723	12814	262.77	17.245	584.0	14461	14475	259.48
18.397	623.0	12765	12854	262.69	17.216	583.0	14505	14518	259.39
18.368	622.0	12807	12895	262.61	17.186	582.0	14550	14560	259.31
18.338	621.0	12849	12935	262.53	17.157	581.0	14596	14603	259.22

P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO
17.127	580.0	14641	14646	259.14	15.946	540.0	16515	16412	255.64
17.098	579.0	14686	14689	259.05	15.917	539.0	16563	16458	255.55
17.068	578.0	14731	14732	258.97	15.887	538.0	16612	16503	255.46
17.039	577.0	14777	14775	258.88	15.858	537.0	16661	16549	255.37
17.009	576.0	14822	14818	258.80	15.828	536.0	16710	16595	255.28
16.980	575.0	14868	14861	258.71	15.799	535.0	16758	16640	255.19
16.950	574.0	14913	14904	258.63	15.769	534.0	16808	16686	255.10
16.921	573.0	14959	14948	258.54	15.739	533.0	16857	16732	255.01
16.891	572.0	15005	14991	258.45	15.710	532.0	16906	16778	254.91
16.862	571.0	15051	15035	258.37	15.680	531.0	16955	16824	254.82
16.832	570.0	15097	15078	258.28	15.651	530.0	17005	16870	254.73
16.803	569.0	15143	15122	258.20	15.621	529.0	17054	16916	254.64
16.773	568.0	15189	15165	258.11	15.592	528.0	17104	16963	254.55
16.743	567.0	15235	15209	258.02	15.562	527.0	17154	17009	254.46
16.714	566.0	15282	15253	257.94	15.533	526.0	17203	17055	254.36
16.684	565.0	15328	15296	257.85	15.503	525.0	17253	17102	254.27
16.655	564.0	15374	15340	257.76	15.474	524.0	17303	17148	254.18
16.625	563.0	15421	15384	257.68	15.444	523.0	17353	17195	254.09
16.596	562.0	15467	15428	257.59	15.415	522.0	17403	17242	254.00
16.566	561.0	15514	15472	257.50	15.385	521.0	17454	17288	253.90
16.537	560.0	15561	15516	257.41	15.356	520.0	17504	17335	253.81
16.507	559.0	15608	15560	257.33	15.326	519.0	17555	17382	253.72
16.478	558.0	15655	15605	257.24	15.297	518.0	17605	17429	253.62
16.448	557.0	15702	15649	257.15	15.267	517.0	17656	17476	253.53
16.419	556.0	15749	15693	257.06	15.237	516.0	17707	17523	253.44
16.389	555.0	15796	15738	256.98	15.208	515.0	17757	17571	253.34
16.360	554.0	15843	15782	256.89	15.178	514.0	17808	17618	253.25
16.330	553.0	15891	15827	256.80	15.149	513.0	17859	17665	253.16
16.301	552.0	15938	15871	256.71	15.119	512.0	17911	17713	253.06
16.271	551.0	15986	15916	256.62	15.090	511.0	17962	17760	252.97
16.241	550.0	16033	15961	256.53	15.060	510.0	18013	17808	252.87
16.212	549.0	16081	16006	256.44	15.031	509.0	18065	17855	252.78
16.182	548.0	16129	16051	256.36	15.001	508.0	18116	17903	252.69
16.153	547.0	16177	16096	256.27	14.972	507.0	18168	17951	252.59
16.123	546.0	16225	16141	256.18	14.942	506.0	18220	17999	252.50
16.094	545.0	16273	16186	256.09	14.913	505.0	18271	18047	252.40
16.064	544.0	16321	16231	256.00	14.883	504.0	18323	18095	252.31
16.035	543.0	16369	16276	255.91	14.854	503.0	18375	18143	252.21
16.005	542.0	16418	16321	255.82	14.824	502.0	18428	18191	252.11
15.976	541.0	16466	16367	255.73	14.794	501.0	18480	18239	252.02

P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO
14.765	500.0	18532	18288	251.92	13.584	460.0	20718	20289	247.96
14.735	499.0	18585	18336	251.83	13.554	459.0	20775	20341	247.86
14.706	498.0	18637	18385	251.73	13.525	458.0	20832	20393	247.75
14.676	497.0	18690	18433	251.64	13.495	457.0	20889	20445	247.65
14.647	496.0	18743	18482	251.54	13.466	456.0	20947	20497	247.55
14.617	495.0	18796	18531	251.44	13.436	455.0	21004	20549	247.44
14.588	494.0	18849	18579	251.35	13.407	454.0	21062	20601	247.34
14.558	493.0	18902	18628	251.25	13.377	453.0	21120	20653	247.24
14.529	492.0	18955	18677	251.15	13.348	452.0	21178	20706	247.13
14.499	491.0	19008	18726	251.05	13.318	451.0	21236	20758	247.03
14.470	490.0	19062	18775	250.96	13.288	450.0	21294	20811	246.92
14.440	489.0	19115	18825	250.86	13.259	449.0	21352	20864	246.82
14.411	488.0	19169	18874	250.76	13.229	448.0	21411	20917	246.71
14.381	487.0	19223	18923	250.66	13.200	447.0	21469	20970	246.61
14.352	486.0	19277	18973	250.57	13.170	446.0	21528	21023	246.50
14.322	485.0	19331	19022	250.47	13.141	445.0	21587	21076	246.40
14.292	484.0	19385	19072	250.37	13.111	444.0	21646	21129	246.29
14.263	483.0	19439	19122	250.27	13.082	443.0	21705	21182	246.19
14.233	482.0	19493	19172	250.17	13.052	442.0	21764	21236	246.08
14.204	481.0	19548	19221	250.07	13.023	441.0	21823	21289	245.98
14.174	480.0	19602	19271	249.97	12.993	440.0	21883	21343	245.87
14.145	479.0	19657	19321	249.88	12.964	439.0	21943	21397	245.76
14.115	478.0	19712	19372	249.78	12.934	438.0	22002	21450	245.66
14.086	477.0	19767	19422	249.68	12.905	437.0	22062	21504	245.55
14.056	476.0	19822	19472	249.58	12.875	436.0	22122	21558	245.44
14.027	475.0	19877	19522	249.48	12.846	435.0	22182	21612	245.34
13.997	474.0	19932	19573	249.38	12.816	434.0	22243	21667	245.23
13.968	473.0	19987	19624	249.28	12.786	433.0	22303	21721	245.12
13.938	472.0	20043	19674	249.18	12.757	432.0	22364	21775	245.01
13.909	471.0	20099	19725	249.08	12.727	431.0	22424	21830	244.91
13.879	470.0	20154	19776	248.98	12.698	430.0	22485	21884	244.80
13.850	469.0	20210	19827	248.87	12.668	429.0	22546	21939	244.69
13.820	468.0	20266	19878	248.77	12.639	428.0	22608	21994	244.58
13.790	467.0	20322	19929	248.67	12.609	427.0	22669	22049	244.47
13.761	466.0	20378	19980	248.57	12.580	426.0	22730	22104	244.36
13.731	465.0	20435	20031	248.47	12.550	425.0	22792	22159	244.25
13.702	464.0	20491	20083	248.37	12.521	424.0	22854	22214	244.14
13.672	463.0	20548	20134	248.27	12.491	423.0	22915	22270	244.03
13.643	462.0	20604	20186	248.16	12.462	422.0	22977	22325	243.92
13.613	461.0	20661	20237	248.06	12.432	421.0	23040	22381	243.81

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12.403	420.0	23102	22436	243.70	11.221	380.0	25724	24756	239.11
12.373	419.0	23164	22492	243.59	11.192	379.0	25793	24817	238.99
12.344	418.0	23227	22548	243.48	11.162	378.0	25862	24878	238.87
12.314	417.0	23290	22604	243.37	11.133	377.0	25932	24938	238.75
12.284	416.0	23353	22660	243.26	11.103	376.0	26001	24999	238.63
12.255	415.0	23416	22716	243.15	11.074	375.0	26071	25060	238.51
12.225	414.0	23479	22773	243.04	11.044	374.0	26141	25121	238.38
12.196	413.0	23542	22829	242.93	11.015	373.0	26211	25183	238.26
12.166	412.0	23606	22886	242.81	10.985	372.0	26282	25244	238.14
12.137	411.0	23670	22942	242.70	10.956	371.0	26352	25306	238.02
12.107	410.0	23733	22999	242.59	10.926	370.0	26423	25367	237.90
12.078	409.0	23797	23056	242.48	10.897	369.0	26494	25429	237.77
12.048	408.0	23861	23113	242.36	10.867	368.0	26565	25491	237.65
12.019	407.0	23926	23170	242.25	10.837	367.0	26636	25553	237.53
11.989	406.0	23990	23227	242.14	10.808	366.0	26707	25615	237.41
11.960	405.0	24055	23285	242.02	10.778	365.0	26779	25678	237.28
11.930	404.0	24120	23342	241.91	10.749	364.0	26851	25740	237.16
11.901	403.0	24185	23400	241.80	10.719	363.0	26923	25803	237.03
11.871	402.0	24250	23457	241.68	10.690	362.0	26995	25866	236.91
11.842	401.0	24315	23515	241.57	10.660	361.0	27068	25928	236.79
11.812	400.0	24380	23573	241.45	10.631	360.0	27140	25992	236.66
11.782	399.0	24446	23631	241.34	10.601	359.0	27213	26055	236.54
11.753	398.0	24512	23689	241.22	10.572	358.0	27286	26118	236.41
11.723	397.0	24578	23747	241.11	10.542	357.0	27360	26182	236.28
11.694	396.0	24644	23806	240.99	10.513	356.0	27433	26245	236.16
11.664	395.0	24710	23864	240.88	10.483	355.0	27507	26309	236.03
11.635	394.0	24776	23923	240.76	10.454	354.0	27581	26373	235.90
11.605	393.0	24843	23982	240.64	10.424	353.0	27655	26437	235.78
11.576	392.0	24910	24040	240.53	10.395	352.0	27729	26501	235.65
11.546	391.0	24977	24099	240.41	10.365	351.0	27804	26566	235.52
11.517	390.0	25044	24159	240.29	10.335	350.0	27878	26630	235.40
11.487	389.0	25111	24218	240.17	10.306	349.0	27953	26695	235.27
11.458	388.0	25178	24277	240.06	10.276	348.0	28028	26760	235.14
11.428	387.0	25246	24337	239.94	10.247	347.0	28104	26824	235.01
11.399	386.0	25314	24396	239.82	10.217	346.0	28179	26890	234.88
11.369	385.0	25382	24456	239.70	10.188	345.0	28255	26955	234.75
11.339	384.0	25450	24516	239.58	10.158	344.0	28331	27020	234.62
11.310	383.0	25518	24576	239.47	10.129	343.0	28407	27086	234.49
11.280	382.0	25587	24636	239.35	10.099	342.0	28484	27152	234.36
11.251	381.0	25655	24696	239.23	10.070	341.0	28561	27217	234.23

P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO
10.040	340.0	28637	27284	234.10	8.859	300.0	31915	30064	228.59
10.011	339.0	28715	27350	233.97	8.829	299.0	32002	30137	228.45
9.981	338.0	28792	27416	233.84	8.800	298.0	32090	30211	228.30
9.952	337.0	28870	27483	233.71	8.770	297.0	32178	30284	228.16
9.922	336.0	28947	27549	233.57	8.741	296.0	32266	30358	228.01
9.893	335.0	29025	27616	233.44	8.711	295.0	32355	30432	227.86
9.863	334.0	29104	27683	233.31	8.682	294.0	32444	30507	227.72
9.833	333.0	29182	27750	233.18	8.652	293.0	32533	30581	227.57
9.804	332.0	29261	27818	233.04	8.623	292.0	32623	30656	227.42
9.774	331.0	29340	27885	232.91	8.593	291.0	32712	30731	227.27
9.745	330.0	29419	27953	232.77	8.564	290.0	32803	30806	227.12
9.715	329.0	29499	28021	232.64	8.534	289.0	32893	30881	226.97
9.686	328.0	29578	28089	232.51	8.505	288.0	32984	30957	226.82
9.656	327.0	29658	28157	232.37	8.475	287.0	33075	31032	226.67
9.627	326.0	29739	28225	232.24	8.446	286.0	33166	31108	226.52
9.597	325.0	29819	28294	232.10	8.416	285.0	33258	31185	226.37
9.568	324.0	29900	28362	231.96	8.386	284.0	33350	31261	226.22
9.538	323.0	29981	28431	231.83	8.357	283.0	33442	31338	226.07
9.509	322.0	30062	28500	231.69	8.327	282.0	33535	31414	225.92
9.479	321.0	30143	28569	231.55	8.298	281.0	33628	31491	225.76
9.450	320.0	30225	28639	231.42	8.268	280.0	33721	31569	225.61
9.420	319.0	30307	28708	231.28	8.239	279.0	33815	31646	225.46
9.391	318.0	30389	28778	231.14	8.209	278.0	33909	31724	225.30
9.361	317.0	30472	28848	231.00	8.180	277.0	34003	31802	225.15
9.331	316.0	30554	28918	230.86	8.150	276.0	34098	31880	224.99
9.302	315.0	30637	28988	230.72	8.121	275.0	34193	31958	224.84
9.272	314.0	30721	29058	230.58	8.091	274.0	34288	32037	224.68
9.243	313.0	30804	29129	230.44	8.062	273.0	34384	32116	224.53
9.213	312.0	30888	29200	230.30	8.032	272.0	34480	32195	224.37
9.184	311.0	30972	29271	230.16	8.003	271.0	34576	32274	224.21
9.154	310.0	31056	29342	230.02	7.973	270.0	34673	32354	224.06
9.125	309.0	31141	29413	229.88	7.944	269.0	34770	32434	223.90
9.095	308.0	31226	29485	229.74	7.914	268.0	34868	32514	223.74
9.066	307.0	31311	29557	229.60	7.884	267.0	34966	32594	223.58
9.036	306.0	31396	29629	229.45	7.855	266.0	35064	32675	223.42
9.007	305.0	31482	29701	229.31	7.825	265.0	35162	32755	223.26
8.977	304.0	31568	29773	229.17	7.796	264.0	35261	32836	223.10
8.948	303.0	31654	29845	229.03	7.766	263.0	35361	32918	222.94
8.918	302.0	31741	29918	228.88	7.737	262.0	35460	32999	222.78
8.889	301.0	31828	29991	228.74	7.707	261.0	35560	33081	222.61

P, INCHES	P,MB	Z at 0°C FEET	Z,ICAO TEMP,°K FEET ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z,ICAO TEMP,°K FEET ICAO
7.678	260.0	35661	33163 222.45	6.497	220.0	40032	36676 216.66
7.648	259.0	35762	33245 222.29	6.467	219.0	40151	36771 216.66
7.619	258.0	35863	33328 222.13	6.438	218.0	40271	36866 216.66
7.589	257.0	35965	33411 221.96	6.408	217.0	40391	36962 216.66
7.560	256.0	36067	33494 221.80	6.378	216.0	40512	37058 216.66
7.530	255.0	36169	33577 221.63	6.349	215.0	40633	37154 216.66
7.501	254.0	36272	33661 221.47	6.319	214.0	40755	37251 216.66
7.471	253.0	36375	33745 221.30	6.290	213.0	40878	37349 216.66
7.442	252.0	36479	33829 221.13	6.260	212.0	41001	37447 216.66
7.412	251.0	36583	33913 220.97	6.231	211.0	41125	37545 216.66
7.382	250.0	36687	33998 220.80	6.201	210.0	41249	37644 216.66
7.353	249.0	36792	34083 220.63	6.172	209.0	41374	37743 216.66
7.323	248.0	36897	34168 220.46	6.142	208.0	41499	37843 216.66
7.294	247.0	37003	34253 220.29	6.113	207.0	41625	37943 216.66
7.264	246.0	37109	34339 220.12	6.083	206.0	41752	38044 216.66
7.235	245.0	37216	34425 219.95	6.054	205.0	41879	38145 216.66
7.205	244.0	37323	34512 219.78	6.024	204.0	42007	38247 216.66
7.176	243.0	37430	34598 219.61	5.995	203.0	42136	38349 216.66
7.146	242.0	37538	34685 219.44	5.965	202.0	42265	38452 216.66
7.117	241.0	37647	34772 219.26	5.936	201.0	42395	38555 216.66
7.087	240.0	37756	34860 219.09	5.906	200.0	42525	38659 216.66
7.058	239.0	37865	34948 218.92	5.876	199.0	42656	38763 216.66
7.028	238.0	37974	35036 218.74	5.847	198.0	42788	38868 216.66
6.999	237.0	38085	35124 218.57	5.817	197.0	42920	38974 216.66
6.969	236.0	38195	35213 218.39	5.788	196.0	43054	39079 216.66
6.940	235.0	38306	35302 218.21	5.758	195.0	43187	39186 216.66
6.910	234.0	38418	35391 218.04	5.729	194.0	43322	39293 216.66
6.880	233.0	38530	35481 217.86	5.699	193.0	43457	39400 216.66
6.851	232.0	38643	35571 217.68	5.670	192.0	43593	39508 216.66
6.821	231.0	38756	35661 217.50	5.640	191.0	43729	39617 216.66
6.792	230.0	38869	35752 217.32	5.611	190.0	43867	39726 216.66
6.762	229.0	38983	35843 217.14	5.581	189.0	44005	39836 216.66
6.733	228.0	39098	35934 216.96	5.552	188.0	44143	39946 216.66
6.703	227.0	39213	36025 216.78	5.522	187.0	44283	40057 216.66
6.683	226.3	39294	36089 216.66	5.493	186.0	44423	40169 216.66
6.674	226.0	39328	36116 216.66				
6.644	225.0	39444	36209 216.66	5.463	185.0	44564	40281 216.66
6.615	224.0	39561	36301 216.66	5.434	184.0	44706	40394 216.66
6.585	223.0	39678	36394 216.66	5.404	183.0	44848	40507 216.66
6.556	222.0	39795	36488 216.66	5.374	182.0	44992	40621 216.66
6.526	221.0	39913	36582 216.66	5.345	181.0	45136	40736 216.66

P, INCHES	P,MB	Z at 0°C FEET	Z,ICAO FEET	TEMP,°K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z,ICAO FEET	TEMP,°K ICAO
5.315	180.0	45280	40851	216.66	4.134	140.0	51850	46080	216.66
5.286	179.0	45426	40967	216.66	4.105	139.0	52037	46229	216.66
5.256	178.0	45573	41084	216.66	4.075	138.0	52226	46379	216.66
5.227	177.0	45720	41201	216.66	4.046	137.0	52416	46531	216.66
5.197	176.0	45868	41319	216.66	4.016	136.0	52607	46683	216.66
5.168	175.0	46017	41437	216.66	3.987	135.0	52800	46837	216.66
5.138	174.0	46167	41557	216.66	3.957	134.0	52994	46991	216.66
5.109	173.0	46318	41676	216.66	3.927	133.0	53190	47147	216.66
5.079	172.0	46469	41797	216.66	3.898	132.0	53387	47304	216.66
5.050	171.0	46622	41918	216.66	3.868	131.0	53586	47462	216.66
5.020	170.0	46775	42040	216.66	3.839	130.0	53786	47622	216.66
4.991	169.0	46929	42163	216.66	3.809	129.0	53988	47783	216.66
4.961	168.0	47084	42287	216.66	3.780	128.0	54191	47944	216.66
4.931	167.0	47240	42411	216.66	3.750	127.0	54396	48108	216.66
4.902	166.0	47397	42536	216.66	3.721	126.0	54603	48272	216.66
4.872	165.0	47555	42662	216.66	3.691	125.0	54811	48438	216.66
4.843	164.0	47714	42788	216.66	3.662	124.0	55021	48605	216.66
4.813	163.0	47874	42915	216.66	3.632	123.0	55232	48773	216.66
4.784	162.0	48035	43043	216.66	3.603	122.0	55445	48943	216.66
4.754	161.0	48197	43172	216.66	3.573	121.0	55660	49115	216.66
4.725	160.0	48360	43302	216.66	3.544	120.0	55877	49287	216.66
4.695	159.0	48524	43432	216.66	3.514	119.0	56096	49461	216.66
4.666	158.0	48689	43563	216.66	3.485	118.0	56316	49637	216.66
4.636	157.0	48855	43696	216.66	3.455	117.0	56538	49814	216.66
4.607	156.0	49022	43829	216.66	3.425	116.0	56763	49993	216.66
4.577	155.0	49190	43962	216.66	3.396	115.0	56989	50173	216.66
4.548	154.0	49359	44097	216.66	3.366	114.0	57217	50354	216.66
4.518	153.0	49529	44233	216.66	3.337	113.0	57447	50538	216.66
4.489	152.0	49701	44369	216.66	3.307	112.0	57679	50723	216.66
4.459	151.0	49873	44506	216.66	3.278	111.0	57913	50909	216.66
4.429	150.0	50047	44645	216.66	3.248	110.0	58150	51098	216.66
4.400	149.0	50222	44784	216.66	3.219	109.0	58388	51288	216.66
4.370	148.0	50398	44924	216.66	3.189	108.0	58629	51479	216.66
4.341	147.0	50575	45065	216.66	3.160	107.0	58872	51673	216.66
4.311	146.0	50753	45207	216.66	3.130	106.0	59117	51868	216.66
4.282	145.0	50933	45350	216.66	3.101	105.0	59365	52065	216.66
4.252	144.0	51114	45494	216.66	3.071	104.0	59614	52265	216.66
4.223	143.0	51296	45639	216.66	3.042	103.0	59867	52466	216.66
4.193	142.0	51479	45785	216.66	3.012	102.0	60122	52669	216.66
4.164	141.0	51664	45932	216.66	2.983	101.0	60379	52874	216.66

P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO
2.953	100.0	60639	53081	216.66	1.772	60.0	73967	63709	216.66
2.923	99.0	60901	53290	216.66	1.742	59.0	74406	64058	216.66
2.894	98.0	61166	53501	216.66	1.713	58.0	74851	64414	216.66
2.864	97.0	61434	53714	216.66	1.683	57.0	75305	64776	216.66
2.835	96.0	61704	53930	216.66	1.654	56.0	75766	65144	216.66
2.805	95.0	61978	54148	216.66	1.624	55.0	76236	65519	216.66
2.776	94.0	62254	54368	216.66	1.595	54.0	76715	65901	216.66
2.746	93.0	62533	54591	216.66	1.565	53.0	77202	66290	216.66
2.717	92.0	62815	54815	216.66	1.536	52.0	77698	66686	216.66
2.687	91.0	63101	55043	216.66	1.506	51.0	78205	67090	216.66
2.658	90.0	63389	55273	216.66	1.476	50.0	78721	67502	216.66
2.628	89.0	63681	55505	216.66	1.447	49.0	79247	67923	216.66
2.599	88.0	63976	55740	216.66	1.417	48.0	79785	68352	216.66
2.569	87.0	64274	55978	216.66	1.388	47.0	80333	68790	216.66
2.540	86.0	64576	56219	216.66	1.358	46.0	80894	69237	216.66
2.510	85.0	64881	56462	216.66	1.329	45.0	81467	69694	216.66
2.481	84.0	65190	56708	216.66	1.299	44.0	82052	70162	216.66
2.451	83.0	65502	56957	216.66	1.270	43.0	82651	70640	216.66
2.421	82.0	65819	57210	216.66	1.240	42.0	83264	71130	216.66
2.392	81.0	66139	57465	216.66	1.211	41.0	83892	71631	216.66
2.362	80.0	66463	57723	216.66	1.181	40.0	84535	72145	216.66
2.333	79.0	66791	57985	216.66	1.152	39.0	85195	72672	216.66
2.303	78.0	67124	58250	216.66	1.122	38.0	85871	73212	216.66
2.274	77.0	67460	58519	216.66	1.093	37.0	86566	73767	216.66
2.244	76.0	67802	58791	216.66	1.063	36.0	87279	74337	216.66
2.215	75.0	68147	59066	216.66	1.034	35.0	88013	74923	216.66
2.185	74.0	68497	59345	216.66	1.004	34.0	88768	75526	216.66
2.156	73.0	68852	59628	216.66	.974	33.0	89545	76147	216.66
2.126	72.0	69212	59915	216.66	.945	32.0	90347	76788	216.66
2.097	71.0	69577	60206	216.66	.915	31.0	91173	77448	216.66
2.067	70.0	69947	60502	216.66	.886	30.0	92027	78130	216.66
2.038	69.0	70322	60801	216.66	.856	29.0	92909	78836	216.66
2.008	68.0	70703	61105	216.66	.827	28.0	93823	79566	216.66
1.979	67.0	71090	61413	216.66	.797	27.0	94769	80323	216.66
1.949	66.0	71482	61726	216.66	.768	26.0	95751	81108	216.66
1.919	65.0	71880	62043	216.66	.738	25.0	96772	81924	216.66
1.890	64.0	72284	62366	216.66	.723	24.5	97299	82345	216.66
1.860	63.0	72695	62694	216.66	.709	24.0	97834	82778	217.05
1.831	62.0	73112	63027	216.66	.679	23.0	98941	83667	217.85
1.801	61.0	73536	63365	216.66	.650	22.0	100097	84599	218.70
					.629	21.3	100971	85302	219.34
					.620	21.0	101307	85578	219.59

P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z, ICAO FEET	TEMP, °K ICAO
.591	20.0	102576	86609	220.52	.207	7.0	129842	109888	241.60
.561	19.0	103910	87697	221.51	.204	6.9	130215	110222	241.90
.532	18.0	105316	88850	222.55	.201	6.8	130594	110562	242.21
.502	17.0	106802	90075	223.66	.198	6.7	130978	110906	242.52
.472	16.0	108378	91380	224.85	.195	6.6	131368	111257	242.84
.443	15.0	110055	92778	226.11	.192	6.5	131764	111613	243.16
.413	14.0	111848	94281	227.48	.189	6.4	132166	111975	243.49
.384	13.0	113773	95905	228.95	.186	6.3	132575	112344	243.82
.354	12.0	115852	97671	230.55	.183	6.2	132989	112719	244.16
.342	11.6	116729	98425	231.24	.180	6.1	133411	113100	244.51
.325	11.0	118112	99605	232.30					
.295	10.0	120586	101740	234.23	.177	6.0	133840	113489	244.86
.292	9.9	120847	101966	234.44	.174	5.9	134275	113884	245.22
.289	9.8	121111	102194	234.64	.171	5.8	134719	114287	245.58
.286	9.7	121377	102426	234.85	.168	5.7	135170	114698	245.95
.283	9.6	121646	102659	235.06	.165	5.6	135628	115116	246.33
.281	9.5	121918	102896	235.28	.162	5.5	136096	115543	246.72
.278	9.4	122193	103135	235.49	.159	5.4	136571	115978	247.11
.275	9.3	122470	103377	235.71	.157	5.3	137056	116422	247.51
.272	9.2	122751	103622	235.94	.154	5.2	137549	116875	247.92
.269	9.1	123035	103870	236.16	.151	5.1	138053	117337	248.34
.266	9.0	123321	104120	236.39	.148	5.0	138566	117810	248.77
.263	8.9	123611	104374	236.62	.145	4.9	139090	118293	249.20
.260	8.8	123905	104631	236.85	.142	4.8	139624	118787	249.65
.257	8.7	124201	104891	237.08	.139	4.7	140169	119292	250.11
.254	8.6	124501	105155	237.32	.136	4.6	140727	119809	250.57
.251	8.5	124805	105421	237.56	.133	4.5	141296	120339	251.05
.248	8.4	125112	105691	237.81	.130	4.4	141879	120881	251.54
.245	8.3	125423	105965	238.05	.127	4.3	142474	121437	252.05
.242	8.2	125737	106242	238.30	.124	4.2	143084	122007	252.56
.239	8.1	126056	106523	238.56	.121	4.1	143708	122592	253.09
.236	8.0	126378	106808	238.82	.118	4.0	144348	123193	253.63
.233	7.9	126704	107097	239.08	.115	3.9	145003	123810	254.19
.230	7.8	127035	107389	239.34	.112	3.8	145676	124445	254.77
.227	7.7	127370	107686	239.61	.109	3.7	146367	125098	255.36
.224	7.6	127709	107987	239.88	.106	3.6	147076	125771	255.97
.221	7.5	128052	108292	240.16	.103	3.5	147806	126464	256.59
.219	7.4	128401	108602	240.44	.100	3.4	148556	127179	257.24
.216	7.3	128754	108916	240.72	.097	3.3	149329	127918	257.91
.213	7.2	129111	109235	241.01	.094	3.2	150126	128681	258.60
.210	7.1	129474	109559	241.30	.092	3.1	150948	129471	259.31

P INCHES	P,MB	Z at 0°C FEET	Z,ICAO FEET	TEMP,°K ICAO	P, INCHES	P,MB	Z at 0°C FEET	Z,ICAO FEET	TEMP,°K ICAO
.089	3.0	151797	130288	260.05					
.086	2.9	152674	131136	260.82					
.083	2.8	153582	132016	261.61					
.080	2.7	154524	132932	262.44					
.077	2.6	155500	133884	263.30					
.074	2.5	156515	134878	264.19					
.071	2.4	157571	135915	265.13					
.068	2.3	158672	137001	266.11					
.065	2.2	159822	138139	267.13					
.062	2.1	161025	139335	268.21					
.059	2.0	162287	140594	269.35					
.056	1.9	163613	141924	270.55					
.053	1.8	165011	143332	271.82					
.050	1.7	166485	144828	273.17					
.047	1.6	168055	146422	274.60					
.044	1.5	169723	148129	276.14					
.041	1.4	171506	149964	277.80					
.038	1.3	173420	151947	279.59					
.035	1.2	175488	154104	281.53					
.032	1.1	177735	156465	282.66					
.030	1.0	180196	159052	282.66					
.027	.9	182915	161912	282.66					
.024	.8	185955	165103	282.66					
.021	.7	189399	168734	282.66					
.018	.6	193374	172918	282.66					
.015	.5	198074	177867	282.66					
.012	.4	203824							
.009	.3	211231							
.006	.2	221663							
.003	.1	239472							

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