APPENDIX 7. USEFUL INFORMATION

THIS PAGE INTENTIONALLY LEFT BLANK

U.S. STANDARD ATMOSPHERE (1962)

Geopotential Altitude h ft	Temp. T °F	°R	°C	Temp. Ratio θ	Press. p psi	Press. Ratio δ	Density ρ slug/ft^3	Density Ratio σ	Speed of Sound V_a ft/sec
0	59.0	518.7	15.0	1.000	14.70	1.000	2.3768×10^{-3}	1.000	1116.4
1000	55.4	515.1	13.0	.9932	14.17	.9644	2.3081	.97106	1112.6
2000	51.9	511.5	11.0	.9863	13.66	.9298	2.2409	.94277	1108.7
3000	48.3	508.0	9.1	.9794	13.17	.8962	2.1751	.91512	1104.9
4000	44.7	504.4	7.1	.9725	12.69	.8637	2.1109	.88809	1101.0
5000	41.2	500.8	5.1	.9657	12.23	.8320	2.0481	.85167	1097.1
6000	37.6	497.3	3.1	.9588	11.78	.8014	1.9868	.83586	1093.2
7000	34.0	493.7	1.1	.9519	11.34	.7716	1.9268	.81064	1089.2
8000	30.5	490.1	-0.9	.9450	10.92	.7428	1.8683	.78602	1085.3
9000	26.9	486.6	-2.8	.9382	10.50	.7148	1.8111	.76196	1081.4
10000	23.3	483.0	-4.8	.9313	10.11	.6877	1.7553	.73848	1077.4
11000	19.8	479.4	-6.8	.9244	9.720	.6614	1.7008	.71555	1073.4
12000	16.2	475.9	-8.8	.9175	9.346	.6360	1.6476	.69317	1069.4
13000	12.6	472.3	-10.8	.9107	8.984	.6113	1.5957	.67133	1065.4
14000	9.1	468.7	-12.7	.9038	8.633	.5875	1.5451	.65003	1061.4
15000	5.5	465.2	-14.7	.8969	8.294	.5643	1.4956	.62924	1057.3
16000	1.9	461.6	-16.7	.8900	7.965	.5420	1.4474	.60896	1053.2
17000	-1.6	458.0	-18.7	.8831	7.647	.5203	1.4004	.58919	1049.2
18000	-5.2	454.5	-20.7	.8763	7.339	.4994	1.3546	.56991	1045.1
19000	-8.8	450.9	-22.6	.8694	7.041	.4791	1.3100	.55112	1041.0
20000	-12.3	447.3	-24.6	.8625	6.754	.4595	1.2664	.53281	1036.8
21000	-15.9	443.8	-26.6	.8556	6.475	.4406	1.2240	.51497	1032.7
22000	-19.5	440.2	-28.6	.8488	6.207	.4223	1.1827	.49758	1028.5
23000	-23.0	436.6	-30.6	.8419	5.947	.4046	1.1425	.48065	1024.4
24000	-26.6	433.1	-32.5	.8350	5.696	.3876	1.1033	.46417	1020.2
25000	-30.2	429.5	-34.5	.8281	5.454	.3711	1.0651	.44812	1016.0

FIGURE A7-1

THIS PAGE INTENTIONALLY LEFT BLANK

U.S. STANDARD ATMOSPHERE (1962)

Geopotential Altitude h	Temp. T			Temp. Ratio θ	Press. p	Press. Ratio δ	Density ρ	Density Ratio σ	Speed of Sound V_a
ft	°F	°R	°C		psi		slug/ft³		ft/sec
26000	-33.7	426.0	-36.6	.8213	5.220	.3552	1.0280	.43250	1011.7
27000	-37.3	422.4	-38.5	.8144	4.994	.3398	.9919	.41730	1007.5
28000	-40.9	418.8	-40.5	.8075	4.777	.3250	.9567	.40251	1003.2
29000	-44.4	415.3	-42.5	.8006	4.567	.3107	.9225	.38812	999.0
30000	-48.0	411.7	-44.4	.7938	4.364	.2970	.8893	.37413	994.7
31000	-51.6	408.1	-46.4	.7869	4.169	.2837	.8569	.36053	990.3
32000	-55.1	404.6	-48.4	.7800	3.981	.2709	.8255	.34731	986.0
33000	-58.7	401.0	-50.4	.7731	3.800	.2586	.7950	.33447	981.6
34000	-62.2	397.4	-52.4	.7663	3.626	.2467	.7653	.32199	977.3
35000	-65.8	393.9	-54.3	.7594	3.458	.2353	.7365	.30987	972.9
36000	-69.4	390.3	-56.4	.7525	3.297	.2243	.7086	.29811	968.5
37000	-69.7	390.0	-56.5	.7519	3.142	.2138	.6759	.28435	968.1
38000	-69.7	390.0	-56.5	.7519	2.994	.2038	.6442	.27101	968.1
39000	-69.7	390.0	-56.5	.7519	2.854	.1942	.6139	.25829	968.1
40000	-69.7	390.0	-56.5	.7519	2.720	.1851	.5851	.24617	968.1
41000	-69.7	390.0	-56.5	.7519	2.592	.1764	.5577	.23462	968.1
42000	-69.7	390.0	-56.5	.7519	2.471	.1681	.5315	.22361	968.1
43000	-69.7	390.0	-56.5	.7519	2.355	.1602	.5065	.21311	968.1
44000	-69.7	390.0	-56.5	.7519	2.244	.1527	.4828	.20311	968.1
45000	-69.7	390.0	-56.5	.7519	2.139	.1455	.4601	.19358	968.1
46000	-69.7	390.0	-56.5	.7519	2.039	.1387	.4385	.18450	968.1
47000	-69.7	390.0	-56.5	.7519	1.943	.1322	.4180	.17584	968.1
48000	-69.7	390.0	-56.5	.7519	1.852	.1260	.3983	.16759	968.1
49000	-69.7	390.0	-56.5	.7519	1.765	.1201	.3796	.15972	968.1
50000	-69.7	390.0	-56.5	.7519	1.682	.1145	.3618	.15223	968.1

°Rankine = °F + 459.7°
°Kelvin = °C + 273.2°

FIGURE A7-1 (CONTINUED)

THIS PAGE INTENTIONALLY LEFT BLANK

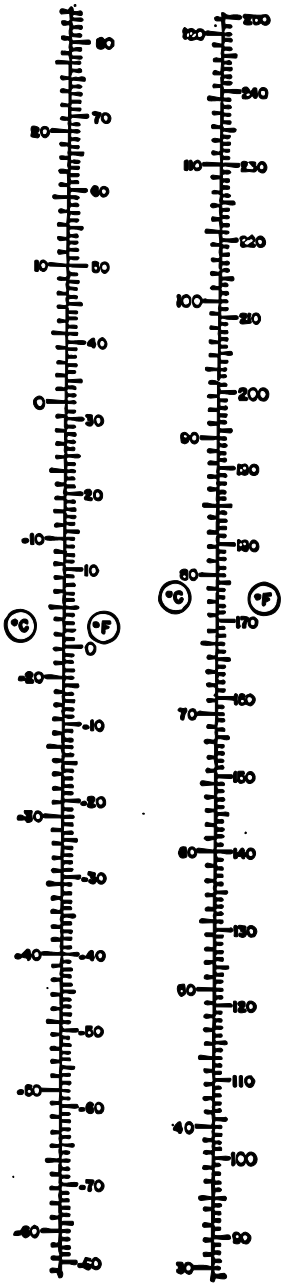

FIGURE A7-2 – TEMPERATURE CONVERSION CHART

THIS PAGE INTENTIONALLY LEFT BLANK

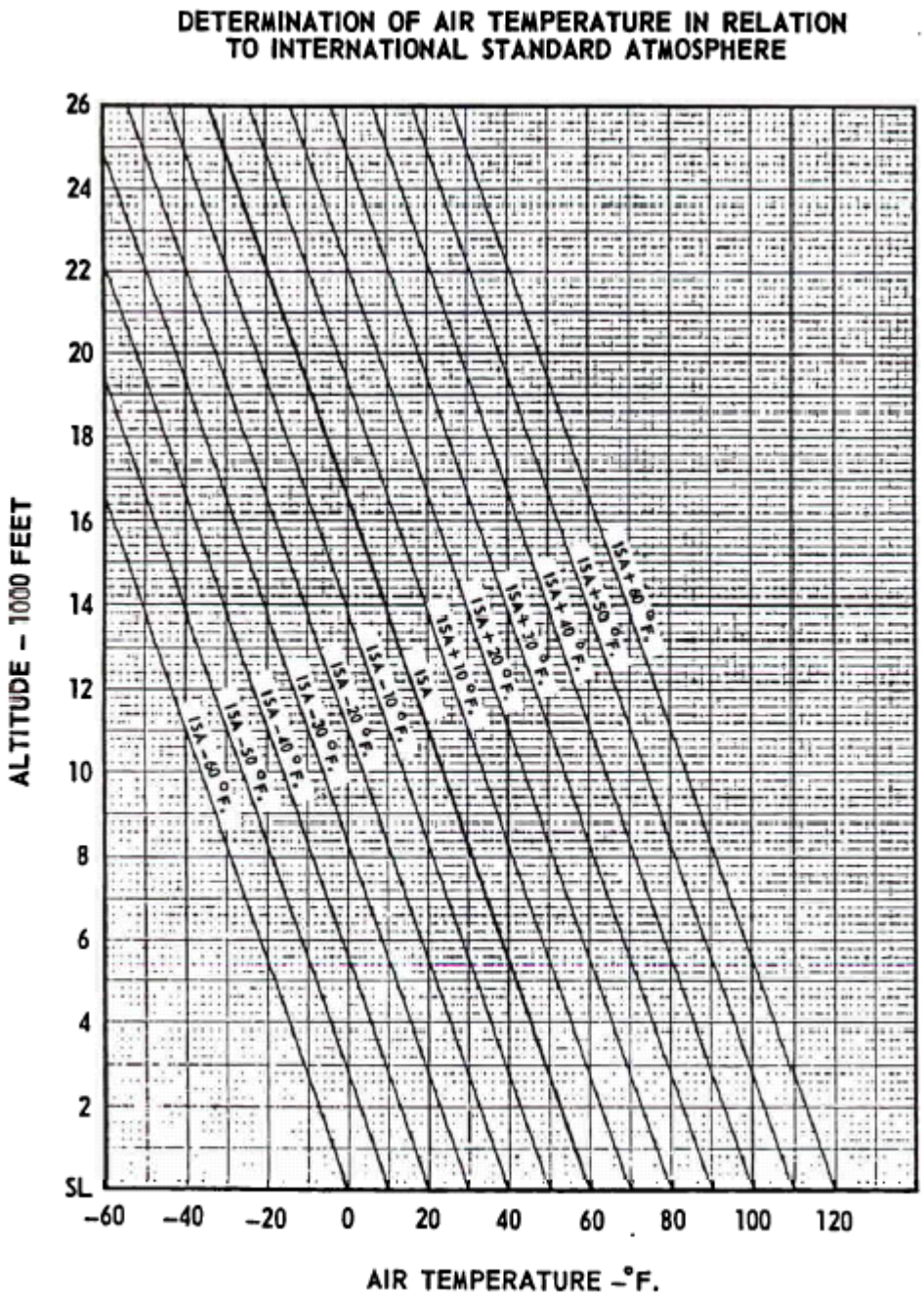
DETERMINATION OF AIR TEMPERATURE IN RELATION TO INTERNATIONAL STANDARD ATMOSPHERE
ALTITUDE – 1000 FEET
26
24
22
20
18
16
14
12
10
8
6
4
2
SL
–60
–40
–20
0
20
40
60
80
100
120
AIR TEMPERATURE –°F.
ISA –60 °F.
ISA –50 °F.
ISA –40 °F.
ISA –30 °F.
ISA –20 °F.
ISA –10 °F.
ISA
ISA +10 °F.
ISA +20 °F.
ISA +30 °F.
ISA +40 °F.
ISA +50 °F.
ISA +60 °F.

FIGURE A7-3

THIS PAGE INTENTIONALLY LEFT BLANK

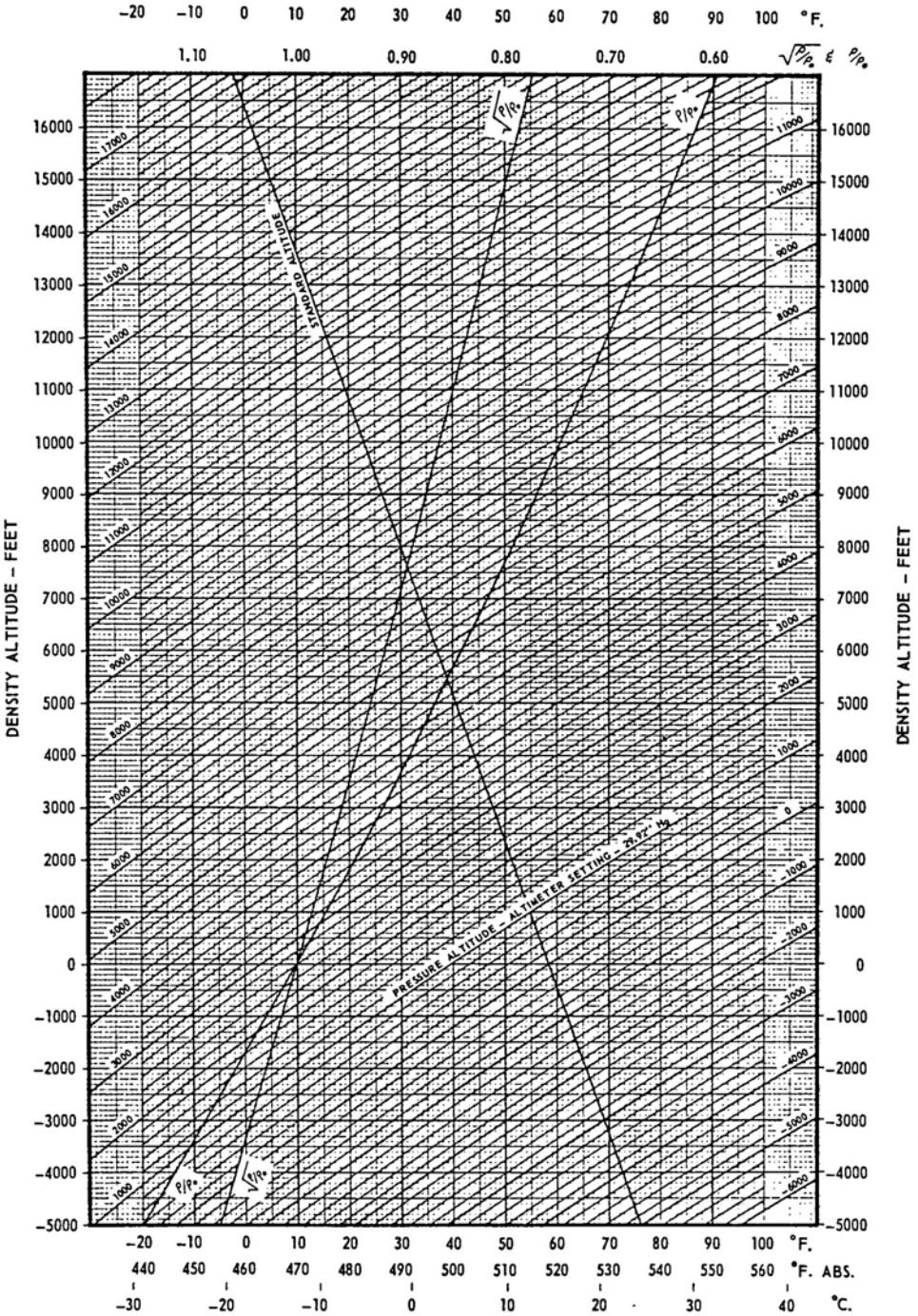

FIGURE A7-4 – DENSITY/PRESSURE ALTITUDE CONVERSION

THIS PAGE INTENTIONALLY LEFT BLANK

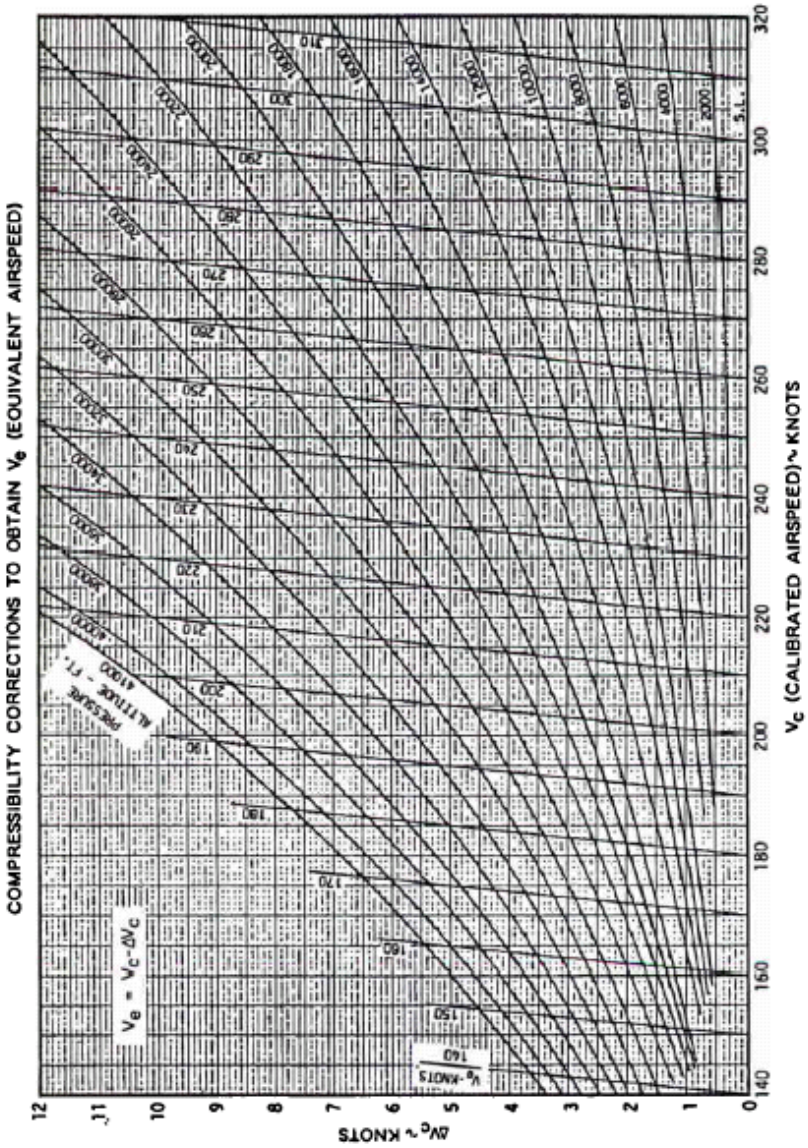

FIGURE A7-5 – COMPRESSIBILITY CORRECTION CAS

THIS PAGE INTENTIONALLY LEFT BLANK