POWER SETTINGS FOR CRUISE
700 BHP/ENGINE
MANUAL LEAN OPERATION

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT 102A

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*								*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	−30	−20	−10	0	+10	+20	+30	+38				
25,000	21.9	22.4	22.8	23.3	23.1	23.5	23.9					
24,000	22.9	23.3	22.8	23.2	23.7	23.6	24.0		HIGH			
23,000	22.9	23.3	23.8	23.3	23.7	24.1	24.0		2200	12	368	90
22,000	23.0	23.4	23.9	24.3	24.8	24.2	24.6		HIGH			
21,000	23.8	24.3	24.7	24.4	24.8	25.3	24.6		2100	12	358	94
20,000	23.9	24.4	24.8	24.5	24.9	25.4	25.8					
19,000	24.8	25.3	24.9	25.4	25.9	26.3	25.8		HIGH			
18,000	24.9	25.4	26.0	25.5	26.0	26.4	25.9		2000	12	347	99
17,000	23.2	25.5	26.1	26.5	27.0	26.5	27.0		HIGH			
16,000	23.5	23.9	26.2	26.7	27.1	27.6	27.1		1900	12	338	104
15,000	23.7	24.1	24.5	25.0	27.3	27.7	28.2					
14,000	24.6	25.0	24.7	25.1	25.6	26.0	28.3		HIGH			
13,000	24.8	25.3	25.8	26.3	25.9	26.3	26.8		1800	12	327	110
12,000	25.6	26.1	26.5	26.5	27.0	26.7	27.2	27.5	LOW			
11,000	25.8	26.3	26.9	27.4	27.2	27.7	28.2	27.8	1800	12	322	110
10,000	26.8	26.6	27.1	27.6	28.2	28.0	28.5	28.9				
9,000	27.1	27.6	27.3	27.8	28.4	28.8	28.7	29.1	LOW			
8,000	27.3	27.9	28.4	28.9	28.6	29.0	29.5	29.4	1700	12	315	117
7,000	28.4	28.9	28.7	29.3	29.8	30.3	29.7	30.1	LOW			
6,000	28.6	29.2	29.8	30.3	30.0	30.5	31.0	30.3	1600	12	307	124
5,000	29.0	29.6	30.2	30.7	31.3	30.8	31.3	31.7	LOW			
4,000	29.3	29.9	30.5	31.1	31.7	32.2	31.7	32.1	1500	12	302	132
3,000	29.7	30.3	30.9	31.5	32.1	32.7	33.3	33.7				
2,000	30.0	30.7	31.3	31.9	32.4	33.0	33.6	34.0	LOW			
1,000	30.4	31.0	31.7	32.3	32.8	33.4	34.0	34.4	1400	12	297	142

Figure A5-36. Power Settings for Cruise - 700 BHP/Engine

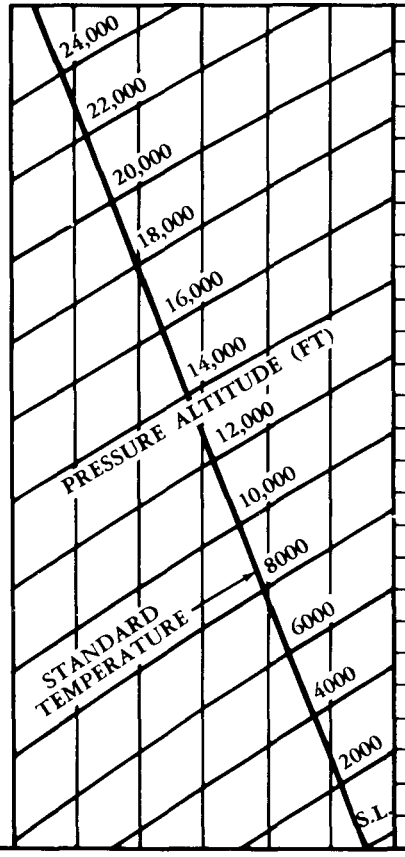
OPERATION BELOW $1.1V_{L/D}$

OPERATION BELOW $V_{L/D}$

CRUISE SPEEDS FOR 700 BHP/ENGINE MANUAL LEAN OPERATION

MODEL: C-118A
DATA BASIS: FLIGHT TEST

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	*Airspeed in Knots for Different Gross Weights*															
	110,000 Pounds		*105,000 Pounds*		*100,000 Pounds*		*95,000 Pounds*		*90,000 Pounds*		*85,000 Pounds*		*80,000 Pounds*		*75,000 Pounds*	
	IAS	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*
25,000																
24,000																
23,000																
22,000																
21,000																
20,000																
19,000																
18,000																
17,000																
16,000																
15,000															154	193
14,000															157	193
13,000															159	193
12,000															161	192
11,000															163	192
10,000													157	182	167	192
9000													160	182	169	191
8000													162	182	170	191
7000													164	182	172	190
6000													167	181	174	189
5000													169	181	175	189
4000											163	172	172	181	177	188
3000											167	172	174	180	179	187
2000											169	172	175	180	181	186
1000											170	172	177	180	183	185
S.L.											174	172	179	179	185	184

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-37. Cruise Speeds for 700 BHP/Engine

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT 102A

POWER SETTINGS FOR CRUISE
750 BHP/ENGINE
MANUAL LEAN OPERATION

R-2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*								*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	−30	−20	−10	0	+10	+20	+30	+38				
25,000	23.4	23.8	24.2	24.3	24.7	25.1						
24,000	23.4	23.8	24.3	24.3	24.8	25.2	25.6					
23,000	24.1	23.9	24.4	24.8	25.2	25.3	25.7		HIGH			
22,000	24.2	24.7	25.1	24.9	25.3	25.7	25.8		2200	12	385	96
21,000	24.9	24.8	25.3	25.7	25.3	25.8	26.2		HIGH			
20,000	25.0	25.5	26.0	25.8	26.2	26.6	26.2		2100	12	376	101
19,000	25.1	25.6	26.1	26.3	26.3	26.7	27.1		HIGH			
18,000	23.5	23.9	26.2	26.5	27.1	27.5	27.2		2000	12	365	106
17,000	23.7	24.1	24.6	26.7	27.1	27.6	28.1					
16,000	24.6	24.3	24.8	25.2	27.2	27.7	28.2					
15,000	24.8	25.3	25.7	25.4	25.9	27.7	28.3		HIGH			
14,000	25.6	25.5	25.9	26.4	26.1	26.5	27.0		1900	12	356	112
13,000	25.7	26.2	26.1	26.6	27.1	26.6	27.1	27.4	LOW			
12,000	25.9	26.4	26.9	27.5	27.2	27.7	28.1	27.5	1900	12	348	112
11,000	27.0	27.5	27.3	27.8	28.3	28.0	28.4	28.8				
10,000	27.2	27.8	28.3	28.0	28.5	29.0	28.5	28.9	LOW			
9,000	28.2	28.1	28.5	29.1	28.7	29.2	29.6	29.0	1800	12	339	118
8,000	28.4	28.9	29.5	29.3	29.9	30.4	29.7	30.1	LOW			
7,000	28.6	29.1	29.7	30.2	30.1	30.6	31.0	30.2	1700	12	332	125
6,000	29.8	30.3	30.0	30.5	31.1	31.7	31.1	31.5	LOW			
5,000	30.0	30.5	31.2	30.8	31.4	31.9	32.3	31.6	1600	12	325	133
4,000	30.3	30.9	31.5	32.1	31.7	32.2	32.6	33.0	LOW			
3,000	30.7	31.2	31.9	32.5	33.0	33.7	32.7	33.1	1500	12	320	142
2,000	31.0	31.6	32.3	32.9	33.4	34.0	34.4	34.8	LOW			
1,000	31.4	32.0	32.7	33.3	33.9	34.4	34.8	35.2	1400	12	315	152

Figure A5-38. Power Settings for Cruise - 750 BHP/Engine

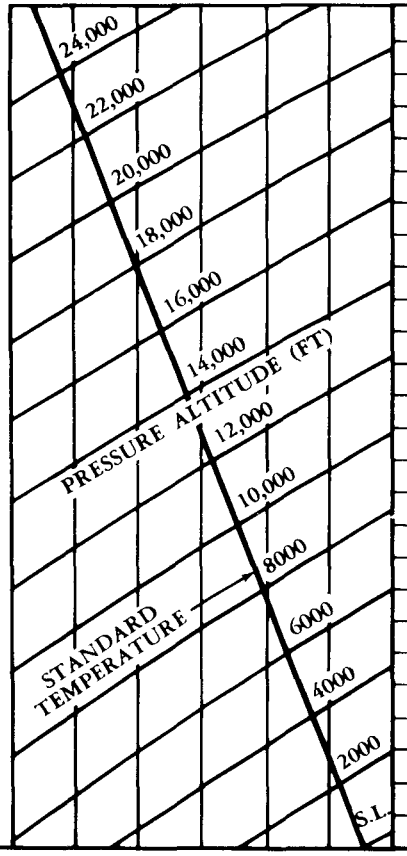
OPERATION BELOW $1.1V_{L/D}$

OPERATION BELOW $V_{L/D}$

CRUISE SPEEDS FOR 750 BHP/ENGINE MANUAL LEAN OPERATION

MODEL: C-118A
DATA BASIS: FLIGHT TEST

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	Airspeed in Knots for Different Gross Weights															
	110,000 Pounds		105,000 Pounds		100,000 Pounds		95,000 Pounds		90,000 Pounds		85,000 Pounds		80,000 Pounds		75,000 Pounds	
	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS
25,000																
24,000																
23,000																
22,000																
21,000																
20,000																
19,000															155	207
18,000															157	207
17,000															160	207
16,000															162	206
15,000															165	206
14,000													158	195	167	205
13,000													161	195	169	205
12,000													164	195	171	204
11,000													167	195	174	203
10,000													169	195	174	202
9000											162	184	171	194	177	201
8000											165	184	174	194	178	200
7000											167	184	174	192	181	199
6000											170	184	177	193	183	198
5000											172	184	178	192	184	197
4000									165	175	174	184	181	191	186	196
3000									169	175	177	183	183	190	188	195
2000									171	175	178	183	185	189	188	194
1000									174	175	181	183	186	188	189	192
S.L.									177	175	183	182	188	187	191	191

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-39. Cruise Speeds for 750 BHP/Engine

POWER SETTINGS FOR CRUISE
800 BHP/ENGINE
MANUAL LEAN OPERATION

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT 102A

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*								*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	-30	-20	-10	0	+10	+20	+30	+38				
25,000	23.9	24.4	24.9	25.2	25.6	26.1	F.T.					
24,000	23.9	24.5	24.9	25.5	25.8	26.2	26.7		HIGH 2300	12	415	98
23,000	24.6	25.1	25.6	25.5	25.8	26.3	26.7					
22,000	22.6	23.1	25.7	26.2	25.9	26.3	26.8		HIGH 2200	12	404	103
21,000	23.2	23.3	23.7	26.4	26.8	27.3	26.8					
20,000	23.3	23.6	23.8	24.3	24.7	27.4	27.9					
19,000	23.9	23.7	24.1	24.6	24.9	25.3	27.9		HIGH 2100	12	394	108
18,000	24.0	24.4	24.3	24.8	25.2	25.5	26.0					
17,000	24.7	24.5	25.0	25.5	25.3	25.8	26.2	26.5	LOW 2200	12	391	103
16,000	24.8	25.3	25.2	25.6	26.1	26.0	26.5	26.9	LOW 2100	12	383	108
15,000	25.0	25.5	26.0	26.5	26.3	26.7	26.7	27.1				
14,000	26.1	25.6	26.1	26.7	27.1	26.9	27.4	27.8	LOW 2000	12	373	113
13,000	26.3	26.8	27.3	26.9	27.4	27.8	27.5	27.9				
12,000	27.2	27.0	27.5	28.0	28.6	28.0	28.5	28.9	LOW 1900	12	366	119
11,000	27.4	28.0	28.5	28.2	28.8	29.2	28.7	29.1				
10,000	28.1	28.2	28.7	29.2	29.0	29.5	30.0	30.4	LOW 1800	12	357	126
9,000	28.3	28.8	29.4	29.4	30.0	30.5	30.0	30.0				
8,000	28.7	29.2	29.8	30.3	30.2	30.7	31.2	30.8				
7,000	29.6	30.2	30.1	30.6	31.2	30.9	31.5	31.9	LOW 1700	12	351	133
6,000	29.9	30.5	31.1	31.0	31.5	32.0	32.6	32.1				
5,000	30.1	30.7	31.3	31.9	31.7	32.2	32.8	33.2	LOW 1600	12	344	142
4,000	30.4	31.0	31.6	32.2	32.8	33.4	32.9	33.3				
3,000	30.7	31.2	31.9	32.5	33.1	33.7	34.3	34.7				
2,000	31.0	31.6	32.3	32.9	33.5	34.0	34.6	35.0	LOW 1500	12	339	151
1,000	31.4	32.0	32.7	33.3	33.9	34.4	35.0	35.4				

Figure A5-40. Power Settings for Cruise - 800 BHP/Engine

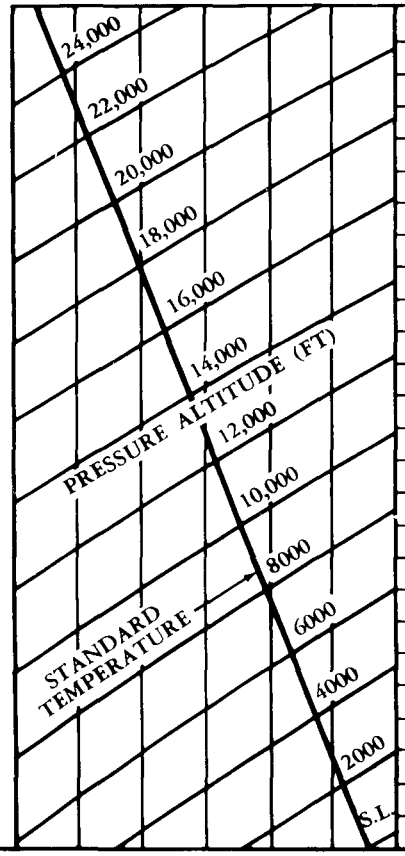
OPERATION BELOW $1.1V_{L/D}$

OPERATION BELOW $V_{L/D}$

CRUISE SPEEDS FOR 800 BHP/ENGINE MANUAL LEAN OPERATION

MODEL: C-118A
DATA BASIS: FLIGHT TEST

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	Airspeed in Knots for Different Gross Weights															
	110,000 Pounds		105,000 Pounds		100,000 Pounds		95,000 Pounds		90,000 Pounds		85,000 Pounds		80,000 Pounds		75,000 Pounds	
	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS
25,000																
24,000																
23,000															154	220
22,000															157	220
21,000															159	220
20,000															162	220
19,000															164	219
18,000													158	208	167	219
17,000													161	208	169	219
16,000													164	208	171	218
15,000													167	208	174	217
14,000													169	207	174	216
13,000											163	197	171	207	177	215
12,000											167	197	174	207	177	214
11,000											169	197	175	206	181	213
10,000											170	196	177	205	183	211
9000											172	196	179	204	185	210
8000									167	187	175	196	181	203	186	209
7000									169	187	177	195	183	202	188	208
6000									172	187	179	195	185	201	188	206
5000									174	186	181	194	187	200	190	205
4000									177	186	184	194	188	199	191	203
3000									179	186	186	193	189	198	193	202
2000							172	177	181	185	187	192	190	196	194	200
1000							175	177	184	185	188	191	192	195	197	199
S.L.							178	177	186	185	189	190	194	194	197	198

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-41. Cruise Speeds for 800 BHP/Engine

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT 102A

POWER SETTINGS FOR CRUISE
850 BHP/ENGINE
MANUAL LEAN OPERATION

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*								*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	-30	-20	-10	0	+10	+20	+30	+38				
25,000	25.4	F.T.	26.3	26.9	F.T.							
24,000	25.5	26.0	26.5	26.9	27.4	F.T.						
23,000	25.8	26.1	26.6	27.1	27.5	27.8						
22,000	25.9	26.3	26.8	27.2	27.6	27.9	28.4		HIGH			
21,000	26.0	26.4	26.9	27.5	27.7	28.0	28.4		2300	12	434	105
20,000	24.3	26.5	27.0	27.5	28.0	28.1	28.6		HIGH			
19,000	24.5	24.9	25.4	27.6	28.0	28.4	28.6		2200	12	422	109
18,000	25.1	25.5	25.5	26.0	28.1	28.4	28.9					
17,000	25.3	25.7	26.2	26.1	26.6	28.5	29.0					
16,000	26.0	25.9	26.4	26.9	26.7	27.2	29.1		HIGH			
15,000	26.1	26.6	26.5	27.0	27.4	27.4	27.9		2100	12	413	115
14,000	27.1	26.8	27.4	27.9	27.6	28.1	28.1	28.5	LOW 2100	12	400	115
13,000	27.2	27.7	27.6	28.1	28.6	28.3	28.8	29.3	LOW			
12,000	28.0	27.9	28.4	28.2	28.7	29.2	29.0	29.5	2000	12	391	120
11,000	28.2	28.8	28.7	29.3	28.9	29.4	29.9	30.4	LOW			
10,000	28.5	29.1	29.6	29.5	30.0	30.5	30.0	30.5	1900	12	384	127
9,000	29.5	30.1	29.9	30.4	30.2	30.7	31.2	31.7	LOW			
8,000	30.3	30.3	30.9	30.6	31.2	31.7	31.4	31.9	1800	12	375	134
7,000	30.5	31.1	31.1	31.7	31.4	32.0	32.5	32.9	LOW			
6,000	30.8	31.4	32.0	31.9	32.5	32.2	32.7	33.1	1700	12	369	142
5,000	31.0	31.7	32.3	32.9	32.8	33.4	33.9	34.3	LOW			
4,000	31.2	31.8	32.5	33.1	33.7	34.3	34.0	34.4	1600	12	363	150
3,000	31.5	32.1	32.7	33.4	34.0	34.6	35.2	35.6				
2,000	31.7	32.4	33.0	33.6	34.2	34.8	35.4	35.8	LOW			
1,000	32.0	32.6	33.3	33.9	34.5	35.1	35.7	36.1	1550	12	360	155

Figure A5-42. Power Settings for Cruise - 850 BHP/Engine

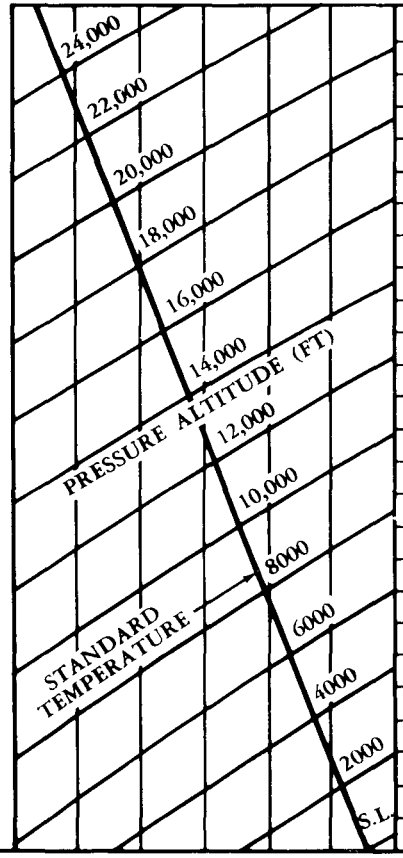
OPERATION BELOW $1.1V_{L/D}$

MODEL: C-118A
DATA BASIS: FLIGHT TEST

CRUISE SPEEDS FOR 850 BHP/ENGINE MANUAL LEAN OPERATION

OPERATION BELOW $V_{L/D}$

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	Airspeed in Knots for Different Gross Weights															
	110,000 Pounds		105,000 Pounds		100,000 Pounds		95,000 Pounds		90,000 Pounds		85,000 Pounds		80,000 Pounds		75,000 Pounds	
	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS
25,000															158	234
24,000															161	234
23,000															164	234
22,000													156	222	167	233
21,000													160	222	169	233
20,000													163	222	170	232
19,000													165	222	172	231
18,000													169	222	174	230
17,000											161	209	170	221	177	229
16,000											165	209	172	220	178	227
15,000											167	209	174	219	181	226
14,000											170	209	177	218	183	225
13,000											172	209	178	217	184	223
12,000									167	198	175	208	181	216	186	222
11,000									169	198	177	208	183	215	188	220
10,000									172	198	178	207	185	214	188	219
9000									174	198	181	206	187	213	190	218
8000									177	198	183	205	188	212	191	216
7000									179	197	185	204	189	210	193	214
6000							172	188	181	197	187	203	190	208	194	213
5000							175	188	184	197	188	202	192	207	197	211
4000							178	188	186	196	190	201	194	206	197	210
3000							181	188	188	195	191	200	196	204	200	208
2000							183	188	188	194	193	199	197	203	201	206
1000					177	178	186	187	190	193	196	198	200	202	202	205
S.L.					179	178	188	187	192	192	197	197	201	200	204	203

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-43. Cruise Speeds for 850 BHP/Engine

POWER SETTINGS FOR CRUISE
900 BHP/ENGINE
MANUAL LEAN OPERATION

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT 102A

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*								*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	−30	−20	−10	0	+10	+20	+30	+38				
25,000	26.7	27.2	F.T.									
24,000	26.6	27.2	27.7	28.2	F.T.							
23,000	26.7	27.3	27.8	28.2	28.8	29.3	F.T.					
22,000	26.7	27.3	27.8	28.3	28.8	29.2	29.7					
21,000	27.2	27.8	27.9	28.4	28.9	29.3	29.7					
20,000	25.0	27.8	28.3	28.9	28.9	29.4	29.9		HIGH 2300	12	453	111
19,000	25.0	25.5	26.1	28.8	29.4	29.9	29.9					
18,000	25.5	26.0	26.2	26.7	27.1	30.0	30.5		HIGH 2200	12	441	116
17,000	25.6	26.1	26.7	27.2	27.2	27.7	30.6					
16,000	26.3	26.8	26.8	27.3	27.7	27.8	28.3		HIGH 2100	12	431	121
15,000	26.4	26.9	27.5	27.4	27.9	28.3	28.5	28.9				
14,000	27.3	27.8	27.6	28.2	28.7	28.5	29.0	29.0	LOW 2200	12	426	116
13,000	27.4	28.0	28.5	28.3	28.8	29.3	29.2	29.6				
12,000	28.5	28.2	28.7	29.3	28.9	29.5	30.0	29.7	LOW 2100	12	417	121
11,000	28.7	29.3	29.8	29.6	30.1	29.7	30.2	30.6				
10,000	28.9	29.5	30.0	30.6	30.2	30.7	30.3	30.7	LOW 2000	12	410	127
9,000	29.9	30.5	31.1	30.7	31.3	30.9	31.5	31.9				
8,000	30.4	31.1	31.3	31.8	31.5	32.0	31.6	32.0	LOW 1900	12	402	134
7,000	30.6	31.2	31.9	32.1	32.7	32.3	32.9	33.3				
6,000	31.0	31.6	32.2	32.9	32.9	33.5	34.1	33.5	LOW 1800	12	395	142
5,000	31.1	31.8	32.4	33.0	33.6	34.2	34.3	34.7				
4,000	31.3	31.9	32.5	33.2	33.8	34.4	35.0	35.4	LOW 1700	12	388	150
3,000	31.5	32.1	32.7	33.4	34.0	34.6	35.2	35.6				
2,000	31.7	32.4	33.0	33.7	34.2	34.8	35.4	35.8				
1,000	32.0	32.6	33.3	33.9	34.5	35.1	35.7	36.1	LOW 1650	12	385	154

Figure A5-44. Power Settings for Cruise - 900 BHP/Engine

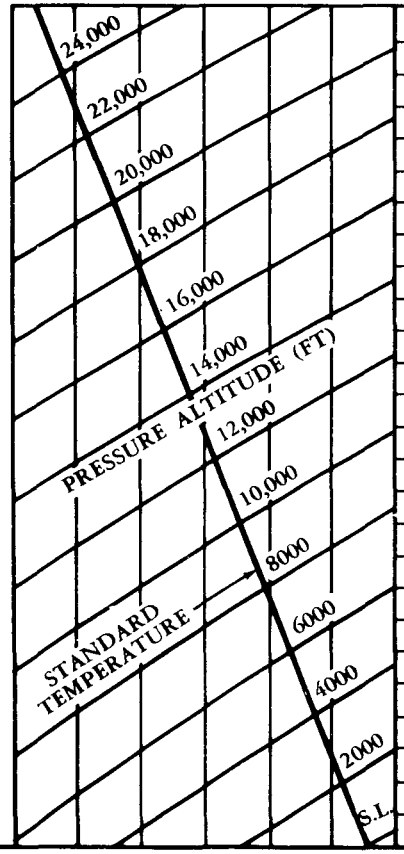
OPERATION BELOW $1.1V_{L/D}$

OPERATION BELOW $V_{L/D}$

CRUISE SPEEDS FOR 900 BHP/ENGINE MANUAL LEAN OPERATION

MODEL: C-118A
DATA BASIS: FLIGHT TEST

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	*Airspeed in Knots for Different Gross Weights*															
	110,000 Pounds		*105,000 Pounds*		*100,000 Pounds*		*95,000 Pounds*		*90,000 Pounds*		*85,000 Pounds*		*80,000 Pounds*		*75,000 Pounds*	
	IAS	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*
25,000													157	234	167	246
24,000													160	234	169	246
23,000													163	234	171	245
22,000													167	234	174	245
21,000													169	234	175	243
20,000											162	222	171	233	177	242
19,000											165	222	174	233	179	240
18,000											169	222	175	232	181	239
17,000											171	222	177	231	184	238
16,000									164	210	174	221	179	229	186	236
15,000									167	210	175	221	181	228	188	234
14,000									170	210	178	220	184	227	189	233
13,000									174	210	181	219	187	226	190	231
12,000									175	210	183	218	188	224	192	229
11,000									177	209	185	217	189	223	193	228
10,000							171	199	181	209	188	216	191	221	196	226
9000							174	199	183	209	188	215	193	220	197	224
8000							177	199	185	208	190	214	194	218	199	222
7000							179	199	187	207	191	212	196	216	200	220
6000							183	199	188	206	193	211	197	215	201	219
5000					177	189	185	198	190	205	194	210	199	214	201	217
4000					179	189	187	198	191	203	197	209	201	212	202	215
3000					181	189	188	197	193	202	199	207	201	211	204	214
2000					185	189	190	196	196	201	200	205	202	209	206	212
1000					187	189	192	195	197	200	201	204	204	208	207	210
S.L.					188	188	194	194	200	199	202	203	206	206	209	209

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-45. Cruise Speeds for 900 BHP/Engine

MODEL:C-118A
DATA AS OF: 10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT 102A

POWER SETTINGS FOR CRUISE
950 BHP/ENGINE
MANUAL LEAN OPERATION

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*								*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	−30	−20	−10	0 B	+10	+20 E	+30	+38				
25,000	28.0	28.5	F.T.									
24,000	28.0	28.5	29.0	F.T.								
23,000	28.1	28.6	29.1	29.4	F.T.							
22,000	28.0	28.6	29.1	29.7	30.2	30.7	F.T.					
21,000	28.3	28.9	29.2	29.8	30.2	30.7	31.2					
20,000	26.0	29.0	29.5	30.1	30.3	30.8	31.2		HIGH			
19,000	26.1	26.6	27.2	30.2	30.6	30.8	31.3		2300	12	472	117
18,000	26.5	27.0	27.3	27.8	30.6	31.1	31.3		HIGH			
17,000 A	26.6	27.1	27.7	27.9 C	28.3	31.2 F	31.7		2200	12	460	122
16,000	27.3	27.8	27.9	28.4	28.5	29.0	31.8		HIGH			
15,000	27.5	28.0	28.6	28.5	29.0	29.1	29.6		G 2100	12	450	128
14,000	28.0	28.6	28.7	29.3	29.3	29.7	29.7	30.1	LOW			
13,000	28.2	28.8	29.3	29.5	30.1	29.8	30.4	30.2	D 2200	12	444	122
12,000	29.1	29.7	29.5	30.1	30.3	30.8	30.5	30.9	LOW			
11,000	29.3	29.9	30.4	30.2	30.8	31.0	31.6	31.0	2100	12	435	128
10,000	30.2	30.0	30.6	31.2	31.0	31.6	31.7	32.1	LOW			
9,000	30.4	31.0	30.8	31.3	32.0	31.8	32.4	32.2	2000	12	428	134
8,000	30.7	31.3	32.0	31.5	32.1	32.7	32.5	32.9	LOW 1950	12	424	138
7,000	30.9	31.5	32.2	32.7	33.3	32.9	33.5	33.9	LOW 1850	12	417	145
6,000	31.2	31.8	32.4	33.0	33.6	34.2	34.8	35.2				
5,000	31.3	31.9	32.6	33.2	33.8	34.4	35.0	35.4				
4,000	31.4	32.0	32.7	33.3	33.9	34.5	35.1	35.5				
3,000	31.6	32.2	32.9	33.5	34.1	34.7	35.3	35.7				
2,000	31.8	32.5	33.1	33.7	34.3	34.9	35.5	35.9	LOW			
1,000	32.0	32.6	33.3	33.9	34.5	35.1	35.7	36.1	1750	12	411	154

Figure A5-46. Power Settings for Cruise - 950 BHP/Engine

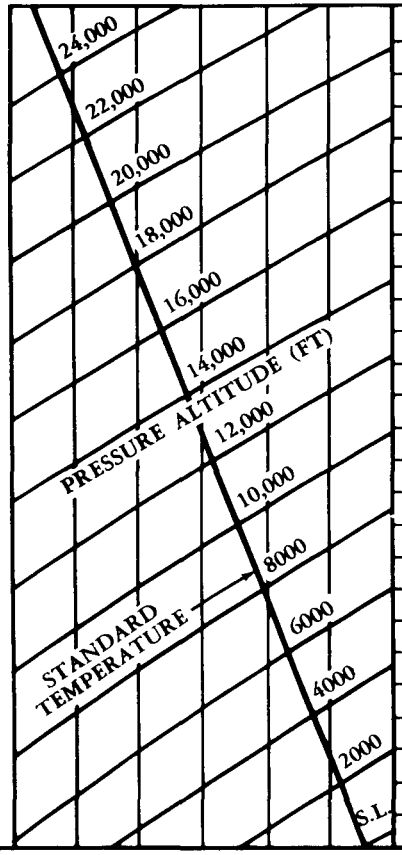
OPERATION BELOW $1.1V_{L/D}$

OPERATION BELOW $V_{L/D}$

CRUISE SPEEDS FOR 950 BHP/ENGINE MANUAL LEAN OPERATION

MODEL: C-118A
DATA BASIS: FLIGHT TEST

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	Airspeed in Knots for Different Gross Weights															
	110,000 Pounds		105,000 Pounds		100,000 Pounds		95,000 Pounds		90,000 Pounds		85,000 Pounds		80,000 Pounds		75,000 Pounds	
	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS
25,000													167	248	174	258
24,000											160	234	169	247	175	257
23,000											163	234	172	246	177	255
22,000											167	234	174	246	179	254
21,000											169	234	177	245	181	252
20,000											172	234	178	243	184	250
19,000											174	233	181	242	187	249
18,000									169	221	177	233	183	240	188	247
17,000									171	221	178	232	185	239	189	245
16,000									174	221	181	231	188	238	190	242
15,000									177	221	184	230	188	236	192	241
14,000									179	220	187	229	190	234	194	240
13,000							174	210	181	220	188	228	192	233	197	238
12,000							177	210	184	220	189	226	193	231	197	236
11,000							179	210	187	219	191	225	196	230	200	234
10,000							181	209	188	218	193	223	197	228	201	232
9000							184	209	190	217	196	222	199	226	201	230
8000					177	199	187	208	192	215	197	221	201	224	202	228
7000					181	199	188	208	193	214	197	219	201	223	204	226
6000					184	199	189	207	194	213	200	218	202	221	204	224
5000					186	198	191	206	197	212	201	216	204	220	207	222
4000					188	198	193	205	199	210	202	214	206	218	208	221
3000			181	188	190	197	196	204	201	209	204	213	207	216	210	219
2000			184	188	191	197	197	203	201	208	204	211	209	215	210	217
1000			187	188	193	196	200	202	204	207	207	210	210	213	211	215
S.L.			188	188	196	195	201	201	204	205	208	208	210	211	212	213

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-47. Cruise Speeds for 950 BHP/Engine

POWER SETTINGS FOR CRUISE
1000 BHP/ENGINE
MANUAL LEAN OPERATION

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT 102A

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*								*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	−30	−20	−10	0	+10	+20	+30	+38				
23,000	29.1	29.7	F.T.									
22,000	29.1	29.7	30.3	F.T. 30.9	F.T.							
21,000	29.2	29.7	30.3	30.9	31.4	F.T.						
20,000	29.5	29.8	30.3	30.9	31.4	32.0	F.T.					
19,000	29.6	30.2	30.7	30.9	31.4	32.0	32.6		HIGH 2300	12	492	123
18,000	27.0	27.5	30.8	31.3	31.5	32.0	32.6					
17,000	27.2	27.7	28.3	31.4	31.8	32.0	32.6		HIGH 2200	12	480	129
16,000	27.8	28.3	28.4	28.9	31.9	32.4	32.6					
15,000	27.9	28.5	29.1	29.0	29.6	32.5	33.0		HIGH 2100	12	470	135
14,000	28.8	29.4	29.2	29.7	29.7	30.1	33.0					
13,000	28.9	29.5	30.1	29.8	30.4	30.2	30.8	31.2	LOW 2200	12	463	129
12,000	29.8	30.3	30.2	30.7	30.5	31.1	31.7	31.4				
11,000	30.4	30.6	31.2	30.9	31.4	31.3	31.9	32.3	LOW 2100	12	454	135
10,000	30.5	31.1	31.3	31.9	31.5	32.1	32.7	32.4				
9,000	30.7	31.3	32.0	32.1	32.6	32.2	32.8	33.2	LOW 2000	12	447	141
8,000	30.9	31.5	32.1	32.6	32.8	33.4	34.0	33.4				
7,000	31.1	31.7	32.3	32.9	33.5	34.2	34.2	34.6	LOW 1900	12	441	149
6,000	31.3	31.9	32.5	33.1	33.7	34.3	34.9	35.3				
5,000	31.4	32.1	32.7	33.3	33.9	34.5	35.1	35.5				
4,000	31.6	32.3	32.9	33.6	34.2	34.8	35.4	35.8				
3,000	31.9	32.5	33.1	33.8	34.3	35.0	35.6	36.0				
2,000	32.0	32.7	33.3	33.9	34.5	35.1	35.7	36.1	LOW 1850	12	436	153
1,000	32.3	32.9	33.6	34.2	34.8	35.4	36.0	36.4				

Figure A5-48. Power Settings for Cruise - 1000 BHP/Engine

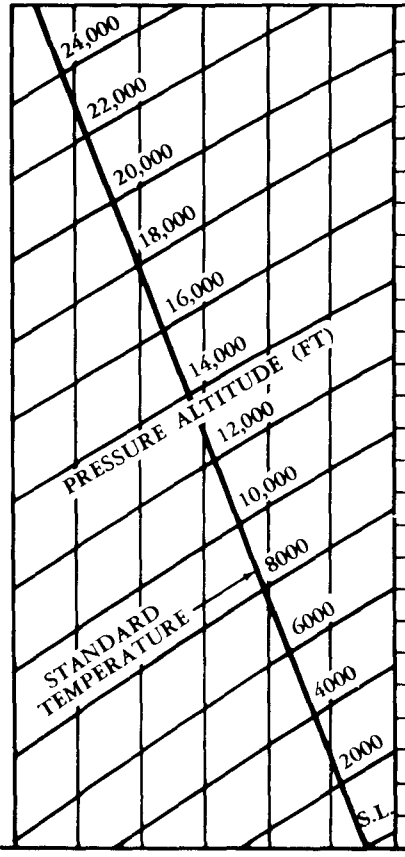
OPERATION BELOW $1.1V_{L/D}$

OPERATION BELOW $V_{L/D}$

MODEL: C-118A
DATA BASIS: FLIGHT TEST

CRUISE SPEEDS FOR 1000 BHP/ENGINE MANUAL LEAN OPERATION

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	Airspeed in Knots for Different Gross Weights															
	110,000 Pounds		105,000 Pounds		100,000 Pounds		95,000 Pounds		90,000 Pounds		85,000 Pounds		80,000 Pounds		75,000 Pounds	
	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS
25,000																
24,000																
23,000											172	246	179	256	185	264
22,000											175	246	181	254	188	262
21,000									169	233	177	245	184	253	189	260
20,000									172	233	179	244	186	252	190	258
19,000									175	233	183	243	188	250	192	256
18,000									177	233	185	242	190	248	193	254
17,000									181	232	188	241	191	247	196	252
16,000							174	221	183	232	189	239	193	245	197	250
15,000							177	221	186	231	190	238	196	243	199	248
14,000							181	221	188	230	192	236	197	242	201	246
13,000							183	221	190	229	194	235	199	240	201	244
12,000							186	220	191	228	197	234	201	238	204	241
11,000					179	210	188	219	193	226	199	232	202	236	204	239
10,000					183	210	190	219	196	225	200	230	204	234	206	237
9000					186	210	192	218	197	223	201	229	204	233	208	235
8000					188	209	194	217	200	222	204	229	206	231	209	233
7000					189	209	196	216	201	221	204	225	207	229	210	231
6000			181	199	190	208	197	215	201	219	206	224	208	227	210	229
5000			186	199	192	207	199	214	202	218	207	222	209	225	210	227
4000			188	199	194	206	201	212	204	216	208	220	210	223	211	225
3000			190	198	197	205	202	211	206	215	209	218	211	221	213	224
2000			192	198	199	204	204	210	208	214	210	217	212	219	214	222
1000	187	188	194	197	201	203	206	209	209	212	211	215	213	217	215	220
S.L.	189	188	197	197	202	202	208	208	210	211	212	214	215	216	218	218

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-49. Cruise Speeds for 1000 BHP/Engine

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT 102A

POWER SETTINGS FOR CRUISE
1050 BHP/ENGINE
MANUAL LEAN OPERATION

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*								*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	−30	−20	−10	0	+10	+20	+30	+38				
23,000	30.6	F.T.							HIGH 2300	12	513	129
22,000	30.4	31.0	31.6	F.T.								
21,000	30.3	30.9	31.7	32.2								
20,000	30.4	31.0	31.5	32.2	32.8	33.3						
19,000	30.7	31.3	31.6	32.2	32.9	33.4						
18,000	28.2	31.5	31.9	32.3	32.7	33.3			HIGH 2200	12	500	135
17,000	28.3	28.9	32.1	32.6	32.8	33.4						
16,000	28.8	29.0	29.6	32.7	33.2	33.9			HIGH 2100	12	490	142
15,000	28.9	29.5	29.7	30.2	33.3	34.0						
14,000	29.8	29.7	30.3	30.3	30.9	31.4			LOW 2200	12	482	135
13,000	29.9	30.5	30.5	31.0	31.0	31.5						
12,000	30.4	30.7	31.2	31.1	31.7	32.3	32.3	32.7				
11,000	30.6	31.2	31.3	32.0	32.0	32.5	32.5	32.9				
10,000	30.7	31.3	31.9	32.1	32.8	33.2	33.1	33.6	LOW 2100	12	473	142
9,000	30.8	31.5	32.1	32.7	33.3	33.8	33.8	33.8				
8,000	31.0	31.6	32.3	32.8	33.5	34.0	34.0	34.5	LOW 2000	12	467	149
7,000	31.2	31.8	32.4	33.0	33.7	34.2	34.8	34.6				
6,000	31.3	32.0	32.6	33.2	33.8	34.4	35.0	35.4	LOW 1950	12	463	153
5,000	31.5	32.1	32.8	33.4	34.0	34.6	35.2	35.6				
4,000	31.7	32.3	32.9	33.6	34.2	34.8	35.4	35.8				
3,000	31.9	32.5	33.2	33.8	34.4	35.0	35.6	36.0				
2,000	32.1	32.7	33.4	34.0	34.6	35.2	35.8	36.2				
1,000	32.3	32.9	33.6	34.2	34.8	35.4	36.0	36.4				

Figure A5-50. Power Settings for Cruise - 1050 BHP/Engine

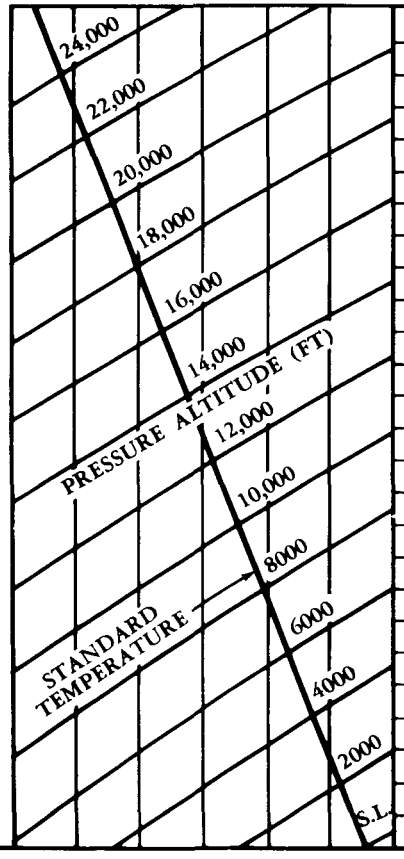
OPERATION BELOW $1.1V_{L/D}$

MODEL: C-118A
DATA BASIS: FLIGHT TEST

CRUISE SPEEDS FOR 1050 BHP/ENGINE MANUAL LEAN OPERATION

OPERATION BELOW $V_{L/D}$

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	Airspeed in Knots for Different Gross Weights															
	110,000 Pounds		105,000 Pounds		100,000 Pounds		95,000 Pounds		90,000 Pounds		85,000 Pounds		80,000 Pounds		75,000 Pounds	
	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS
25,000																
24,000									169	245	177	257	184	267	188	273
23,000									172	245	179	256	186	265	189	276
22,000									175	245	181	255	188	263	191	269
21,000									177	244	185	254	189	261	192	267
20,000									181	244	187	253	190	259	194	264
19,000							174	232	183	243	188	251	192	257	197	262
18,000							177	232	185	242	189	250	193	255	197	260
17,000							181	232	187	241	191	248	196	253	200	258
16,000							183	232	188	240	193	247	197	252	201	256
15,000							186	231	190	239	196	245	200	250	202	254
14,000					179	220	188	230	192	238	197	244	201	248	204	252
13,000					183	220	189	229	194	236	200	242	202	246	204	249
12,000					185	220	191	229	197	235	201	240	204	244	207	247
11,000					188	219	194	228	199	234	202	238	206	242	209	245
10,000					189	219	197	227	201	232	204	236	207	240	210	243
9000			184	208	192	218	199	226	202	230	206	234	209	238	210	241
8000			187	208	194	218	201	224	204	228	207	232	210	236	211	239
7000			189	208	197	217	201	223	204	227	209	231	211	234	213	237
6000			191	208	197	216	202	221	206	225	210	229	212	232	214	234
5000			193	207	200	215	204	220	208	224	210	227	213	230	215	232
4000	188	198	196	207	201	214	207	219	210	222	211	225	214	228	216	230
3000	190	198	197	206	204	213	208	217	210	221	213	224	215	226	218	228
2000	192	198	200	205	206	212	210	216	211	219	214	222	218	224	219	226
1000	196	197	201	205	207	210	210	215	213	217	216	220	219	222	220	224
S.L.	197	197	204	204	209	209	212	213	214	216	218	219	219	221	221	222

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-51. Cruise Speeds for 1050 BHP/Engine

POWER SETTING FOR CRUISE
1100 BHP/ENGINE
MANUAL LEAN OPERATION

MODEL: C-118A
DATA AS OF: 10-15-66
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT. 102A

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure at Carburetor Air Temperature °C (In. Hg)*								*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	-30	-20	-10	0	+10	+20	+30	+38				
21,000	31.6	32.1	F.T.						HIGH 2300	12	533	135
20,000	31.6	32.1	32.8	33.4	F.T.							
19,000	31.7	32.1	32.8	33.5	34.0	F.T.						
18,000	31.9	32.2	32.9	33.4	34.1	34.6	F.T.					
17,000	32.0	32.4	33.1	33.5	34.0	34.6	35.1					
16,000	29.3	29.9	33.2	33.7	34.1	34.6	35.1					
15,000	30.1	30.1	30.6	33.8	34.3	34.6	35.1		HIGH 2200	12	520	142
14,000	30.2	30.7	30.7	31.3	34.4	35.1	35.1					
13,000	31.0	30.9	31.5	31.4	32.0	35.2	35.7		HIGH 2100	12	510	148
12,000	31.1	31.7	31.7	32.2	32.2	32.8	35.7					
11,000	31.2	31.9	32.5	32.3	32.9	33.0	33.6	34.0	LOW 2200	12	502	142
10,000	31.3	32.0	32.6	33.2	33.0	33.6	34.2	34.1				
9,000	31.5	32.1	32.8	33.4	34.0	33.7	34.3	34.7	LOW 2100	12	493	148
8,000	31.7	32.3	33.0	33.5	34.2	34.8	35.4	34.9				
7,000	31.9	32.5	33.1	33.7	34.3	35.0	35.6	36.0	LOW 2000	12	487	155
6,000	32.1	32.7	33.4	34.0	34.6	35.2	35.8	36.2				
5,000	32.2	32.8	33.5	34.1	34.7	35.3	35.9	36.3				
4,000	32.3	33.0	33.7	34.3	34.9	35.5	36.1	36.5				
3,000	32.6	33.3	34.0	34.6	35.2	35.8	36.4	36.8				
2,000	32.7	33.4	34.1	34.7	35.3	35.9	36.5	37.0				
1,000	32.8	33.5	34.2	34.8	35.4	36.0	36.7	37.2				

Figure A5-52. Power Settings for Cruise - 1100 BHP/Engine

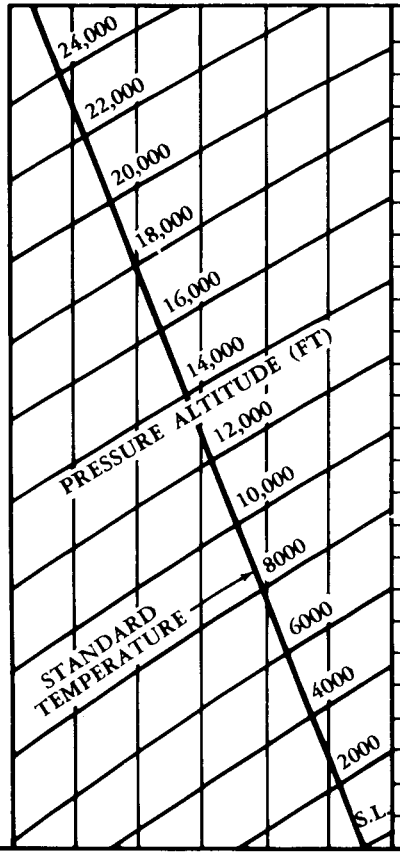
OPERATION BELOW $1.1V_{L/D}$

OPERATION BELOW $V_{L/D}$

CRUISE SPEEDS FOR 1100 BHP/ENGINE MANUAL LEAN OPERATION

MODEL: C-118A
DATA BASIS: FLIGHT TEST

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	Airspeed in Knots for Different Gross Weights															
	110,000 Pounds		105,000 Pounds		100,000 Pounds		95,000 Pounds		90,000 Pounds		85,000 Pounds		80,000 Pounds		75,000 Pounds	
	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS
25,000																
24,000																
23,000																
22,000																
21,000							175	243	184	254	189	262	193	268	199	273
20,000							178	243	187	253	191	260	196	266	201	271
19,000							181	243	188	252	193	259	197	264	201	269
18,000							185	242	190	250	196	257	200	262	202	266
17,000					178	230	187	242	192	249	197	255	201	260	204	264
16,000					181	230	189	241	194	247	199	253	202	258	204	261
15,000					185	230	191	240	197	246	201	252	204	256	207	259
14,000					188	230	193	239	199	244	202	249	206	254	208	257
13,000					189	229	196	237	201	243	204	248	207	252	210	254
12,000			183	218	191	229	197	236	202	241	206	246	209	250	210	252
11,000			187	218	193	228	200	235	204	239	207	244	210	248	211	250
10,000			189	218	197	227	201	233	206	238	209	242	211	246	213	248
9000			191	217	199	226	204	232	207	236	210	240	212	243	214	245
8000			194	217	201	225	206	231	209	235	211	238	213	241	215	243
7000	188	207	197	216	201	224	207	229	210	233	212	236	214	239	216	241
6000	190	207	197	216	204	223	208	228	210	231	213	234	215	237	218	239
5000	192	207	201	215	206	221	210	226	212	229	214	232	218	235	219	236
4000	196	207	202	215	208	220	210	224	213	228	216	230	219	233	220	234
3000	197	206	204	214	209	218	212	223	215	226	218	228	219	231	221	232
2000	201	206	207	213	210	217	214	221	216	224	219	227	221	229	222	230
1000	202	205	209	212	212	216	215	220	219	222	220	225	222	227	224	228
S.L.	204	204	210	211	213	215	218	218	219	221	222	223	223	225	225	226

−40 −30 −20 −10 0 +10 +20
Outside Air Temperature (°C)

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-53. Cruise Speeds for 1100 BHP/Engine

MODEL: C-118A
DATA AS OF:10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT 102A

POWER SETTINGS FOR CRUISE
1150 BHP/ENGINE
MANUAL LEAN OPERATION

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*								*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	−30	−20	−10	0	+10	+20	+30	+38				
20,000	32.2	F.T.							HIGH 2300	12	555	142
19,000	33.2	33.8	F.T.									
18,000	33.0	33.6	34.4	F.T.								
17,000	33.0	33.6	34.3	35.1	F.T.							
16,000	33.0	33.6	34.3	34.9	35.6	F.T.						
15,000	32.9	33.6	34.2	34.8	35.5	36.2	F.T.					
14,000	30.7	31.4	32.0	34.8	35.5	36.2	36.7					
13,000	30.8	31.4	32.1	32.7	35.4	36.0	36.7		HIGH 2200	12	541	148
12,000	31.3	31.9	32.6	32.8	33.3	36.0	36.7					
11,000	31.6	32.2	32.8	33.4	33.5	34.1	34.6					
10,000	31.7	32.3	33.0	33.6	34.2	34.2	34.8	35.4	LOW 2200	12	522	148
9,000	31.8	32.4	33.1	33.7	34.3	34.9	35.5	35.6				
8,000	31.9	32.6	33.2	33.8	34.5	35.1	35.7	36.2	LOW 2100	12	513	155
7,000	32.0	32.7	33.3	33.9	34.6	35.2	35.8	36.3				
6,000	32.2	32.8	33.5	34.1	34.8	35.4	35.9	36.5				
5,000	32.4	33.0	33.7	34.3	34.9	35.5	36.2	36.8				
4,000	32.6	33.2	33.9	34.6	35.2	35.8	36.2	37.0				
3,000	32.8	33.4	34.1	34.8	35.4	36.0	36.6	37.2				
2,000	32.9	33.6	34.3	34.9	35.5	36.1	36.8	37.4				
1,000	33.2	33.9	34.6	35.2	35.8	36.4	37.1	37.7				

Figure A5-54. Power Settings for Cruise - 1150 BHP/Engine

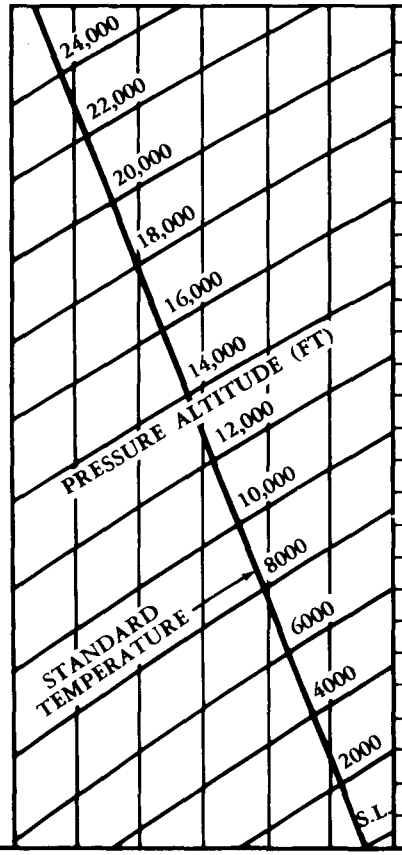
OPERATION BELOW $1.1V_{L/D}$

OPERATION BELOW $V_{L/D}$

CRUISE SPEEDS FOR 1150 BHP/ENGINE MANUAL LEAN OPERATION

MODEL: C-118A
DATA BASIS: FLIGHT TEST

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	Airspeed in Knots for Different Gross Weights															
	110,000 Pounds		105,000 Pounds		100,000 Pounds		95,000 Pounds		90,000 Pounds		85,000 Pounds		80,000 Pounds		75,000 Pounds	
	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS
25,000																
24,000																
23,000																
22,000							181	254	188	264	192	271	197	277	201	282
21,000							184	253	189	263	194	269	200	275	202	279
20,000					177	241	186	253	191	261	197	267	201	273	204	277
19,000					181	241	188	252	193	259	200	265	202	270	206	274
18,000					184	241	189	251	196	258	201	264	204	268	207	272
17,000					187	241	193	250	197	256	202	262	204	266	208	269
16,000					189	240	196	249	200	254	204	260	207	263	209	267
15,000			183	228	190	239	197	247	201	253	204	258	209	262	210	264
14,000			186	228	192	238	200	246	204	251	207	256	210	259	211	262
13,000			188	228	196	237	201	244	204	249	209	253	210	257	212	259
12,000			190	228	197	236	204	243	207	247	210	251	212	255	214	257
11,000			193	227	201	235	204	241	209	245	211	249	213	252	215	255
10,000	188	216	197	227	202	234	207	240	210	243	212	247	215	250	216	252
9000	190	216	199	226	204	233	209	238	211	242	214	245	216	248	219	250
8000	192	216	201	225	206	231	210	236	212	240	215	243	218	245	219	248
7000	196	216	202	224	207	230	211	235	213	238	216	241	219	243	220	245
6000	197	216	204	223	209	229	212	233	214	236	218	239	219	241	221	243
5000	201	216	207	222	210	227	214	232	216	234	219	237	221	239	222	241
4000	202	215	209	221	212	226	215	230	219	232	220	235	222	237	224	239
3000	204	214	210	220	213	224	218	228	219	231	222	233	223	235	225	236
2000	208	213	212	219	215	223	219	227	221	229	223	231	225	233	226	234
1000	210	212	214	218	218	222	221	225	223	227	225	229	226	231	227	232
S.L.	211	211	215	217	219	220	222	223	224	225	226	227	227	229	228	230

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-55. Cruise Speeds for 1150 BHP/Engine

POWER SETTINGS FOR CRUISE
1200 BHP/ENGINE
MANUAL LEAN OPERATION

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT 102A

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*								*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	−30	−20	−10	0	+10	+20	+30	+38				
23,000												
22,000												
21,000												
20,000												
19,000	33.9	F.T.										
18,000	33.9	34.6	F.T.									
17,000	33.9	34.6	35.3	35.9	F.T.							
16,000	31.3	34.5	35.2	35.8	36.5	F.T.						
15,000	31.3	31.9	35.2	35.8	36.4	37.1	37.7					
14,000	31.7	32.1	32.7	33.3	36.4	37.0	37.6		HIGH 2300	12	576	148
13,000	31.8	32.4	32.8	33.4	34.0	37.0	37.6					
12,000	31.9	32.5	33.1	33.7	34.0	34.6	37.6					
11,000	32.0	32.7	33.3	34.0	34.6	34.8	35.4	35.8	LOW 2300	12	554	148
10,000	32.2	32.8	33.5	34.1	34.7	35.3	35.4	35.8				
9,000	32.3	33.0	33.7	34.3	34.9	35.5	36.1	36.5				
8,000	32.6	33.2	33.8	34.4	35.1	35.7	36.3	36.7				
7,000	32.7	33.3	34.0	34.6	35.2	35.9	36.5	37.0				
6,000	32.8	33.5	34.2	34.8	35.5	36.1	36.6	37.1				
5,000	33.0	33.7	34.4	35.0	35.6	36.3	36.9	37.3				
4,000	33.2	33.9	34.6	35.3	35.9	36.5	37.1	37.6				
3,000	33.4	34.0	34.7	35.4	36.0	36.6	37.2	37.7				
2,000	33.6	34.3	35.0	35.6	36.2	36.8	37.5	38.0				
1,000	33.8	34.5	35.2	35.8	36.4	37.0	37.7	38.2	LOW 2200	12	543	154

Figure A5-56. Power Settings for Cruise - 1200 BHP/Engine

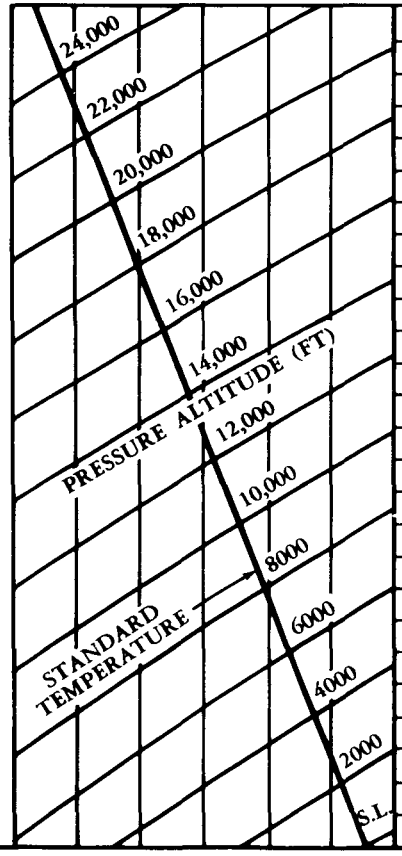
OPERATION BELOW $1.1V_{L/D}$

MODEL: C-118A
DATA BASIS: FLIGHT TEST

CRUISE SPEEDS FOR 1200 BHP/ENGINE MANUAL LEAN OPERATION

OPERATION BELOW $V_{L/D}$

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	Airspeed in Knots for Different Gross Weights															
	110,000 Pounds		105,000 Pounds		100,000 Pounds		95,000 Pounds		90,000 Pounds		85,000 Pounds		80,000 Pounds		75,000 Pounds	
	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS	IAS	TAS
25,000																
24,000																
23,000																
22,000					179	251	188	264	192	272	199	278	201	283	206	288
21,000					183	251	189	263	194	270	201	276	204	281	207	285
20,000					185	250	191	261	197	268	202	274	206	279	208	282
19,000					187	250	194	260	200	266	204	272	207	276	210	280
18,000					189	249	197	258	201	264	206	270	209	274	210	277
17,000			186	238	192	249	200	257	202	263	207	267	210	272	211	274
16,000			188	238	194	248	201	256	204	261	208	265	210	269	212	272
15,000			189	238	197	247	202	254	206	259	210	263	211	267	213	269
14,000			192	237	200	246	204	252	208	257	210	260	213	264	215	267
13,000	187	226	196	237	201	245	207	251	210	255	212	258	214	262	216	264
12,000	188	226	199	237	204	243	209	249	211	253	213	256	216	259	219	262
11,000	191	226	201	235	206	242	210	247	212	251	215	254	218	257	219	259
10,000	194	226	202	234	208	240	210	245	213	248	216	252	219	254	220	256
9000	197	225	204	233	210	239	212	243	215	246	219	250	220	252	221	254
8000	200	225	207	232	211	237	214	242	218	245	219	248	221	250	223	252
7000	201	224	209	231	212	236	216	240	219	243	221	245	222	248	224	249
6000	204	224	210	230	213	235	218	238	219	241	222	243	223	246	225	247
5000	207	223	211	228	215	233	219	236	221	239	223	241	225	243	226	245
4000	209	222	213	227	218	231	220	234	223	237	224	239	226	241	227	242
3000	211	221	215	226	219	230	222	233	224	235	226	237	227	239	228	240
2000	213	219	218	225	220	228	223	231	225	233	227	235	228	237	229	238
1000	215	218	219	223	222	226	225	229	227	231	228	233	229	235	231	236
S.L.	216	217	220	224	224	225	226	228	228	230	229	231	231	233	232	234

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-57. Cruise Speeds for 1200 BHP/Engine

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS ALT 102A

POWER SETTINGS FOR CRUISE
1240 BHP/ENGINE
MANUAL LEAN OPERATION
12 BMEP DROP

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*						*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	−30	−20	−10	0	+10	+20				
15,000	31.9						2300 LOW	12	571	153
14,000	32.0	32.7								
13,000	32.1	32.8	33.5							
12,000	32.2	33.0	33.6	34.2	34.8					
11,000	32.3	33.1	33.7	34.3	34.9	35.5				
10,000	32.5	33.2	33.8	34.4	35.0	35.6				
9,000	32.7	33.3	33.9	34.5	35.1	35.7				
8,000	32.8	33.4	34.0	34.6	35.2	35.9				
7,000	32.9	33.5	34.1	34.7	35.3	36.0				
6,000	33.0	33.7	34.3	34.9	35.5	36.1				
5,000	33.1	33.8	34.4	35.0	35.6	36.3				
4,000	33.2	33.9	34.5	35.1	35.7	36.4				
3,000	33.3	34.0	34.7	35.3	35.9	36.5				
2,000	33.5	34.1	34.8	35.4	36.0	36.6				
1,000	33.6	34.2	34.9	35.5	36.1	36.7				

Figure A5-58. Power Settings for Cruise - 1240 BHP/Engine - 12 BMEP Drop

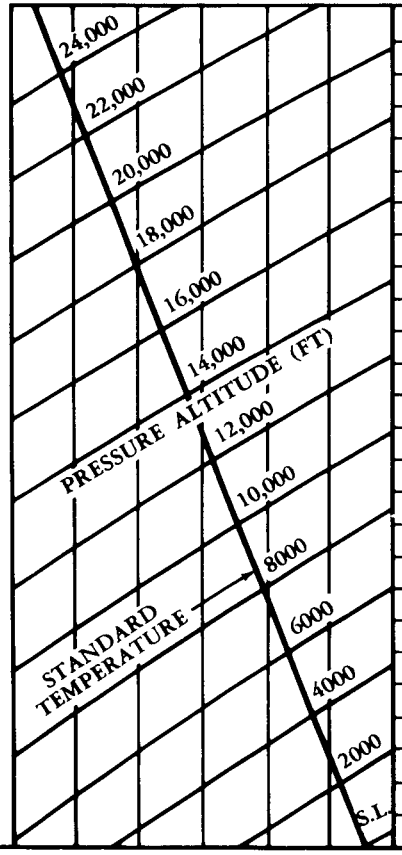
OPERATION BELOW $1.1V_{L/D}$

OPERATION BELOW $V_{L/D}$

CRUISE SPEEDS FOR 1240 BHP/ENGINE MANUAL LEAN OPERATION

MODEL: C-118A
DATA BASIS: FLIGHT TEST

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130



Density Altitude (Ft)	*Airspeed in Knots for Different Gross Weights*															
	110,000 Pounds		*105,000 Pounds*		*100,000 Pounds*		*95,000 Pounds*		*90,000 Pounds*		*85,000 Pounds*		*80,000 Pounds*		*75,000 Pounds*	
	IAS	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*	*IAS*	*TAS*
25,000																
24,000																
23,000																
22,000																
21,000																
20,000																
19,000																
18,000																
17,000			189	244	197	255	202	263	206	267	210	272	211	276	213	278
16,000			192	244	200	254	204	261	208	265	210	269	213	273	215	276
15,000	187	234	196	244	201	253	207	259	210	263	212	267	214	270	218	273
14,000	189	234	199	244	204	252	209	257	211	261	213	265	218	268	219	270
13,000	192	234	201	244	206	251	210	256	212	259	215	263	219	265	219	268
12,000	194	234	204	243	208	249	211	254	214	257	218	261	219	263	220	265
11,000	197	233	206	241	210	247	213	252	215	255	219	258	220	261	222	262
10,000	201	233	208	240	211	246	215	250	218	253	220	256	222	258	223	260
9000	202	232	210	239	213	244	216	248	219	251	221	254	223	256	225	258
8000	204	231	210	237	214	242	219	246	220	249	223	252	224	253	226	255
7000	208	230	212	236	216	240	220	244	222	247	224	249	225	251	227	253
6000	210	229	214	235	218	239	221	243	223	245	225	247	226	249	228	250
5000	211	228	215	233	219	237	222	241	224	243	226	245	227	247	229	248
4000	213	227	218	232	221	236	224	239	226	241	227	243	229	245	230	246
3000	215	225	219	230	222	234	225	237	227	239	228	240	230	242	231	243
2000	218	224	221	229	224	232	227	235	228	237	229	238	231	240	232	241
1000	219	223	223	227	226	230	228	233	229	235	231	236	232	238	234	239
S.L.	221	222	224	226	227	229	229	231	231	233	233	235	234	236	235	237

NOTES:
(1) Airspeeds based upon pilot's and copilot's normal pitot-static system.
(2) Airspeeds based on −2 degrees cowl flap setting. Decrease airspeeds 3 knots per degree of opening from −2 degrees.

Figure A5-59. Cruise Speeds for 1240 BHP/Engine

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: PRATT & WHITNEY CRUISE CHARTS

POWER SETTINGS FOR CRUISE
1240 BHP/ENGINE
MANUAL LEAN OPERATION – 2 BMEP DROP

R2800-52W ENGINES
FUEL GRADE: 115-145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Manifold Pressure At Carburetor Air Temperature °C (In. Hg)*						*RPM and Blower*	*BMEP Drop (psi)*	*Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	−30°	−20°	−10°	0°	+ 10°	+ 20°				
17,000	30.3	30.9	F.T.							
16,000	30.4	31.0	31.6	F.T.			2300	2	598	153
15,000	30.5	31.1	31.7	32.4			LOW			
14,000	30.6	31.2	31.9	32.5	33.1					
13,000	30.7	31.3	32.0	32.6	33.2	33.7				
12,000	30.8	31.5	32.1	32.7	33.3	33.8				
11,000	30.9	31.6	32.2	32.8	33.4	33.9				
10,000	31.0	31.7	32.3	32.9	33.5	34.1				
9000	31.2	31.8	32.4	33.0	33.6	34.2				
8000	31.3	31.9	32.5	33.1	33.7	34.4				
7000	31.4	32.0	32.6	33.2	33.8	34.5				
6000	31.5	32.2	32.8	33.4	34.0	34.6				
5000	31.6	32.3	32.9	33.5	34.1	34.8				
4000	31.7	32.4	33.0	33.6	34.2	34.9				
3000	31.8	32.5	33.2	33.8	34.4	35.0				
2000	32.0	32.6	33.3	33.9	34.5	35.1				
1000	32.1	32.7	33.4	34.0	34.6	35.2				
S.L.										

Figure A5-60. Power Settings for Cruise - 1240 BHP/Engine - 2 BMEP Drop

MODEL: C-118A
DATA AS OF: 10-15-66
DATA BASIS: ESTIMATED

POWER SETTINGS FOR CRUISE
1300 BHP/ENGINE
AUTO RICH OPERATION

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Maximum Cruise Manifold Pressure Carburetor Air Temperature °C (In. Hg)*							*RPM and Blower*	*Minimum Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	-30	-20	-10	0	+10	+20	+30			
22,000	34.5	36.0	36.7	F.T.						
21,000	34.0	35.2	35.9	37.5	F.T.					
20,000	34.0	34.7	35.9	36.7	38.2	F.T.				
19,000	34.1	34.7	35.4	36.7	37.4	39.0		2600 HIGH	994	142
18,000	34.1	34.8	35.4	36.1	37.4	38.1				
17,000	34.1	34.8	35.5	36.2	36.8	38.2		2500 HIGH	918	147
16,000	31.7	34.9	35.5	36.3	37.0	37.5		2400 HIGH	860	153
15,000	31.8	32.5	35.6	36.3	37.0	37.7				
14,000	32.1	32.6	33.3	36.3	37.0	37.7				
13,000	32.3	32.9	33.4	34.1	37.0	37.7		2300 HIGH	820	160
12,000	32.4	33.1	33.8	34.3	34.9	37.7				
11,000	32.6	33.2	33.9	34.6	35.1	35.8				
10,000	32.7	33.4	34.1	34.7	35.4	35.9	36.6	2300 LOW	809	160
9,000	32.9	33.5	34.2	34.9	35.6	36.3	37.0			
8,000	33.0	33.7	34.4	35.1	35.8	36.4	37.1	2200 LOW	792	167
7,000	33.2	33.9	34.5	35.2	35.9	36.6	37.3			
6,000	33.3	34.0	34.7	35.4	36.1	36.8	37.5			
5,000	33.5	34.2	34.9	35.6	36.3	37.0	37.7			
4,000	33.7	34.4	35.1	35.8	36.5	37.2	37.9			
3,000	33.9	34.6	35.3	36.0	36.7	37.4	38.1			
2,000	34.1	34.8	35.5	36.2	36.9	37.6	38.3			
1,000	34.3	35.0	35.7	36.4	37.1	37.8	38.5			
S.L.	34.5	35.2	35.9	36.6	37.3	38.0	38.7			

Figure A5-61. Power Settings for Cruise - 1300 BHP/Engine - Auto Rich

MODEL: C-118A
DATA AS OF: 10-15-66
DATA BASIS: ESTIMATED

POWER SETTINGS FOR CRUISE
1500 BHP/ENGINE
AUTO RICH OPERATION

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Maximum Cruise Manifold Pressure Carburetor Air Temperature °C (In. Hg)* -30	-20	-10	0	+10	+20	+30	*RPM and Blower*	*Minimum Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
21,000	F.T.							2500 HIGH	1131	170
20,000	40.2									
19,000	40.3	F.T.	F.T.							
18,000	39.6	41.0	41.8	F.T.						
17,000	39.6	40.3	41.9	42.7	F.T.					
16,000	39.7	40.4	41.2	42.8	43.5	F.T.				
15,000	39.8	40.4	41.3	42.0	43.6	44.3				
14,000	36.3	40.5	41.4	42.1	42.8	44.4				
13,000	36.4	37.1	41.4	42.1	42.9	43.5		2400 HIGH	1070	177
12,000	36.5	37.2	37.9	42.2	42.9	43.5				
11,000	36.6	37.3	38.0	38.7	43.0	43.6				
10,000	36.7	37.4	38.1	38.8	39.5	43.7				
9,000	36.8	37.6	38.3	38.9	39.7	40.3		2400 LOW	1015	177
8,000	36.9	37.7	38.4	39.0	39.8	40.5	41.2			
7,000	37.1	37.8	38.6	39.2	40.0	40.7	41.4			
6,000	37.3	38.0	38.7	39.5	40.2	40.9	41.6			
5,000	37.4	38.1	38.9	39.6	40.3	41.1	41.7			
4,000	37.5	38.3	39.1	39.8	40.5	41.3	41.9			
3,000	37.7	38.5	39.2	40.0	40.7	41.4	42.1			
2,000	37.9	38.7	39.5	40.2	40.9	41.6	42.3			
1,000	38.1	38.9	39.7	40.4	41.1	41.8	42.5			
S.L.	38.4	39.2	39.9	40.6	41.4	42.1	42.7			

Figure A5-62. Power Settings for Cruise - 1500 BHP/Engine - Auto Rich

POWER SETTINGS FOR CRUISE
1700 BHP/ENGINE
AUTO RICH OPERATION

MODEL: C-118A
DATA AS OF: 10-15-66
DATA BASIS: ESTIMATED

R2800-52W ENGINES
FUEL GRADE: 115/145
ALTERNATE FUEL GRADE: 100/130

Pressure Altitude (Feet)	*Maximum Cruise Manifold Pressure Carburetor Air Temperature C (In. Hg)*							*RPM and Blower*	*Minimum Fuel Flow Per Eng. (Lb./Hr.)*	*Nominal BMEP (psi)*
	-30	-20	-10	0	+10	+20	+30			
18,000	F.T.									
17,000	46.1	F.T.								
16,000	46.2	46.9	F.T.							
15,000	46.2	47.0	47.7	F.T.						
14,000	41.5	47.0	47.8	48.5	F.T.					
13,000	41.5	42.2	47.8	48.6	49.3	F.T.				
12,000	41.6	42.3	43.0	48.6	49.4	50.1				
11,000	41.6	42.4	43.1	43.8	49.4	50.2				
10,000	41.7	42.4	43.2	43.9	44.6	50.2		2600 HIGH	1360	185
9,000	41.7	42.5	43.2	44.0	44.7	45.5				
8,000	41.8	42.6	43.3	44.0	44.8	45.5	46.3			
7,000	41.9	42.6	43.4	44.1	44.9	45.6	46.4			
6,000	42.0	42.7	43.5	44.2	45.0	45.7	46.5	2600 LOW	1270	185
5,000	42.1	42.8	43.6	44.3	45.1	45.8	46.6			
4,000	42.2	42.9	43.7	44.4	45.2	45.9	46.7			
3,000	42.3	43.0	43.8	44.5	45.3	46.0	46.8			
2,000	42.4	43.2	43.9	44.6	45.4	46.1	46.9			
1,000	42.6	43.3	44.0	44.8	45.5	46.2	47.0			
S.L.	42.7	43.4	44.2	44.9	45.6	46.4	47.1			

Figure A5-63. Power Settings for Cruise - 1700 BHP/Engine - Auto Rich

part 6
landing

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DISCUSSION OF CHARTS.

LIFT-OFF, STALL, AND THRESHOLD SPEEDS.

The Lift-off, Stall, and Threshold Speeds chart (figure A6-1) gives the fuel dump time, the lift-off speed at 20 degrees flap setting, stall speeds for zero angle of bank for flap settings from zero to full down, the threshold speed (130 percent of power off stall speed) at flap settings from zero to full down, 140 percent of 20 degrees flap stall speed, and 140 percent of zero degrees flap stall speed, at various gross weights from 65,000 to 112,000 pounds. The stalling speeds in coordinated turns are shown on Figure 6-1 in Section VI, for various gross weights and flap angles and for bank angles up to 60 degrees.

LANDING GROUND ROLL CHARTS.

Charts are provided (figures A6-2 through A6-7) showing the landing ground roll for three configurations; brakes only, brakes plus two engines with full reverse thrust and brakes plus four engines with full reverse thrust. The chart is based on use of full flaps for landing; however, a conversion factor table is included on each chart for landing with flap settings other than full down. Allowances are shown for density altitude, gross weight, and headwind. Curve distances corrected for wind account for 100 percent of wind values shown. Use 50 percent of reported headwinds and 150 percent of reported tailwinds with the wind correction grid. This is a recommended procedure which may be revised at the discretion of the pilot, dependent upon the source of measurement of the wind data. This allows a safety margin for fluctuation of wind velocity.

LANDING GROUND ROLL — RUNWAY SLOPE CORRECTION.

The Landing Ground Roll – Runway Slope Correction charts (figures A6-3, A6-5 and A6-7) are provided to correct the ground roll distance when runway slope is other than zero percent; for brakes only, brakes plus two-engine reverse thrust, and brakes plus four-engine reverse thrust. Correction for runway slope is applied to the distance obtained from appropriate landing ground roll charts, after correction for wind velocity and before correction for runway conditions. Where runway slope is reported in percentage, multiply chart values by 100 to obtain percentage.

EFFECT OF RUNWAY SLOPE ON LANDING DISTANCE FROM 50-FT HEIGHT.

In addition to its effect on ground roll, runway slope also affects the air run. For runway with uphill slope this effect may be ignored. However, for runways with downhill slope, the air run from a 50-foot height will increase approximately 10 percent for each 0.01 of slope.

For the example shown on figure A6-2 the ground run corrected for wind is 2250 feet. The landing distance from a 50-foot height corrected for wind is 3150 feet. The air run corrected for wind is the difference between the two (3150 - 2250 = 900 feet). For a downhill slope of -0.04 the corrected ground roll from figure A6-3 is 2830 feet. The air run correction is 10 percent for each 0.01 of downhill slope, or 40 percent (40 percent of 900 feet = 360 feet). Thus the corrected air run is 900 feet + 360 feet = 1260 feet, and the corrected landing distance from a 50-foot height is 2830 + 1260 = 4090 feet.

EFFECT OF UNUSUAL RUNWAY CONDITIONS ON LANDING GROUND ROLL CHART.

The Effect of Unusual Runway Conditions on Landing Ground Roll chart (figure A6-8) is used to determine the effect of various runway conditions on the landing ground roll. Curves are presented to give corrected ground roll distances for landings made on runways with runway condition readings, as measured by the inspection decelerometer, from 23 to 04. A table is included on the chart to give the average RCR for various runway surface conditions where RCR numbers are not reported.

NOTE

When using ICAO Reports, use RCR 23 for GOOD (Dry); RCR 12 for MEDIUM (Wet); and RCR 05 for POOR (Icy).

The values given on the chart are approximate since other factors such as the condition of the tires or the amount of water on the runway may affect the coefficient of friction. The corrected landing ground roll distance is determined by entering the chart with the landing ground roll corrected for slope obtained from the Landing Ground Roll charts (figures A6-2 through A6-7).

CROSSWIND LANDING.

Crosswind components for landing are computed from the Takeoff and Landing Crosswind chart (figure A3-20) in the same manner as for takeoff. The chart shows the minimum nosewheel touchdown speed versus crosswinds, and is based on the use of maximum gust velocities for crosswind and tailwind components, and maximum steady wind velocity for headwind components. Whenever the minimum touchdown speed with crosswind and gust correction applied exceeds the touchdown speeds without this correction the pilot must be prepared to accept a correspondingly longer ground roll. Whenever this correction for gust or crosswind exceeds 10 knots, it is recommended that an alternate flap setting be selected and landing ground roll computed for the new flap setting.

RUNWAY LOAD BEARING CHART.

The Runway Load Bearing chart (figure A6-9) is included to determine the load bearing capabilities for various combinations of gross weight and CG position. Values are given for tire contact pressure, equivalent single wheel load, load classification number, unit construction index, and California bearing ratio. The values determined from the chart may be used to compare with the load bearing capabilities listed in the applicable ENROUTE-SUPPLEMENT (flip chart) as a guide to determine maximum takeoff and landing gross weight when runway strength is a critical factor.

The load bearing capabilities shown on the chart provide an adequate safety factor for unlimited use. When necessary, a 25 percent overload factor can be used for occasional landings without damage to the runways. The data shown is based on tires inflated to 35 percent tire deflection in accordance with existing maintenance procedures.

Contact pressure is given in psi, and is the load per square inch that the tires exert on the runway. The Equivalent Single Wheel Load (ESWL) adjusts the load on each single wheel for the mutual action of two or more single wheels which are in close proximity. The equivalent single wheel load value for the aircraft is then compared to the single wheel load weight bearing capacity of the runway.

Unit Construction Index (UCI), Load Classification Number (LCN), and California Bearing Ratio (CBR), are indexes which are used to indicate the strength of runways in various parts of the world. UCI and/or LCN are generally applied to concrete and flexible surface (macadam) runways, and CBR is generally applied to sod and unsurfaced runways.

The sample problem illustrated on the chart indicates the method of determining contact pressure and California Bearing Ratio. Unit Construction Index, Load Classification Number, and Equivalent Single Wheel Load are found in the same manner, reading to the right for UCI of 25, LCN of 20, and ESWL of 21, on the same scale as CBR and contact pressure.

LIFTOFF, STALL, AND THRESHOLD SPEEDS
NORMAL STATIC SOURCE – KIAS

MODEL: C-118A
DATE AS OF: 6-7-72
DATA BASIS: FLIGHT TEST

	Dump Time	Liftoff Speed	V_S for Zero Angle of Bank				Threshold Airspeed 130% V_S				140% V_S	140% V_S	
Wing Flap Setting		20°	0°	20°	30°	Full Down	0°	20°	30°	Full Down	0°	20°	Wing Flap Setting
Gross Weight Pounds		115% V_S											Gross Weight Pounds
112,000	9.0	125	127	107	102	99	165	140	134	129	179	151	112,000
110,000	8.2	124	126	106	101	98	164	139	133	128	177	150	110,000
107,000	7.0	122	124	105	100	96	161	137	131	126	175	148	107,000
105,000	6.2	121	123	104	99	95	160	135	129	125	173	146	105,000
100,000	4.2	118	120	101	97	93	156	132	126	122	169	142	100,000
95,000	2.5	115	117	98	94	91	152	129	123	119	165	139	95,000
92,610	1.7	113	115	97	93	89	150	127	122	117	162	137	92,610
90,000	.6	112	113	96	91	88	148	125	120	116	160	135	90,000
88,200	0	111	112	95	90	87	146	124	119	114	158	133	88,200
85,000	0	109	110	93	89	85	144	122	116	112	156	131	85,000
80,000	0	106	107	90	86	83*	139	118	113	109	151	128	80,000
75,000	0	102	103	87	83*	80*	135	114	109	105	146	123	75,000
70,000	0	99	100	84*	80*	77*	130	110	105	101	142	119	70,000
65,000	0	95	96	81*	77*	74*	126	106	101	97	136	115	65,000

NOTES:

1. Stall speed at zero thrust (V_S).
   *Less than minimum control speed (V_{mc}) with one engine out, in the air (85 KIAS).

Figure A6-1. Liftoff, Stall and Threshold Speeds (Sheet 1 of 2)

LIFTOFF, STALL, AND THRESHOLD SPEEDS
ALTERNATE SOURCE – KIAS

MODEL: C-118A
DATE AS OF: 6-7-72
DATA BASIS: FLIGHT TEST

	Dump Time	Liftoff Speed	V_S for Zero Angle of Bank				Threshold Airspeed 130% V_S				140% V_S	140% V_S	
Wing Flap Setting		20°	0°	20°	30°	Full Down	0°	20°	30°	Full Down	0°	20°	Wing Flap Setting
Gross Weight Pounds		115% V_S											Gross Weight Pounds
112,000	9.0	122	125	107	102	99	164	138	132	128	176	149	112,000
110,000	8.2	121	124	106	101	98	161	137	131	126	175	148	110,000
107,000	7.0	119	122	104	100	97	160	135	129	125	173	145	107,000
105,000	6.2	118	121	103	99	96	158	134	128	124	171	144	105,000
100,000	4.2	115	118	101	97	94	154	130	125	121	167	141	100,000
95,000	2.5	113	115	98	94	91	150	127	122	118	162	137	95,000
92,610	1.7	111	114	97	93	90	148	126	120	116	160	135	92,610
90,000	.6	110	112	96	92	89	146	124	119	115	158	133	90,000
88,200	0	109	111	95	91	88	144	123	117	114	156	132	88,200
85,000	0	107	109	93	89	86	142	121	115	112	154	129	85,000
80,000	0	104	106	91	87	84*	137	117	112	108	149	126	80,000
75,000	0	100	103	88	84*	81*	133	113	108	105	144	122	75,000
70,000	0	97	100	85	81*	79*	129	110	105	101	139	118	70,000
65,000	0	93	96	82*	79*	76*	124	106	101	98	134	114	65,000

NOTES:

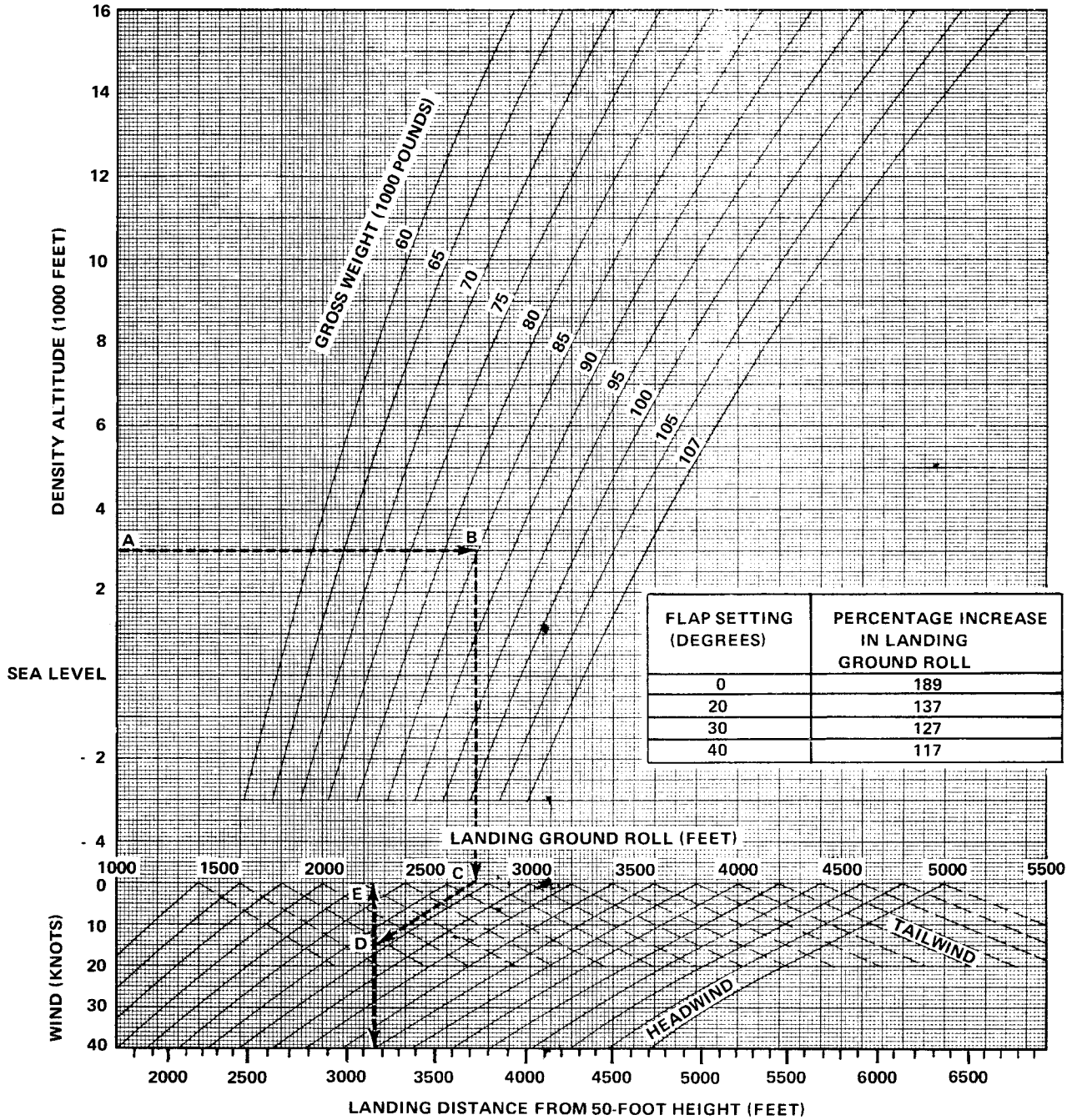
1. Stall speed at zero thrust (V_S).
   *Less than minimum control speed (V_{mc}) with one engine out, in the air (85 KIAS).

Figure A6-1. Liftoff, Stall and Threshold Speeds (Sheet 2 of 2)

LANDING GROUND ROLL – BRAKES ONLY

MODEL: C-118A
DATA AS OF: 10-30-72
DATA BASIS: FLIGHT TEST

ENGINES: (4) R2800-52W



FLAP SETTING (DEGREES)	PERCENTAGE INCREASE IN LANDING GROUND ROLL
0	189
20	137
30	127
40	117

NOTES:

1. Based on dry, hard surface runway.
2. Based on wing flaps full down. For ground roll at other flap settings see table.
3. Threshold speed = 130 percent of stall speed.
4. Touchdown speed = 120 percent of stall speed.

SAMPLE PROBLEM:

A. Density altitude = 3000 feet.
B. Gross weight = 85,000 pounds.
C. Landing ground roll no wind = 2740 feet.
D. Headwind = 30 knots.
E. Landing ground roll with wind = 2250 feet.
F. Landing distance from 50 feet height = 3150 feet.

Figure A6-2. Landing Ground Roll - Brakes Only

LANDING GROUND ROLL – RUNWAY SLOPE CORRECTION
BRAKES ONLY

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: CALCULATED

ENGINES: (4) R2800-52W

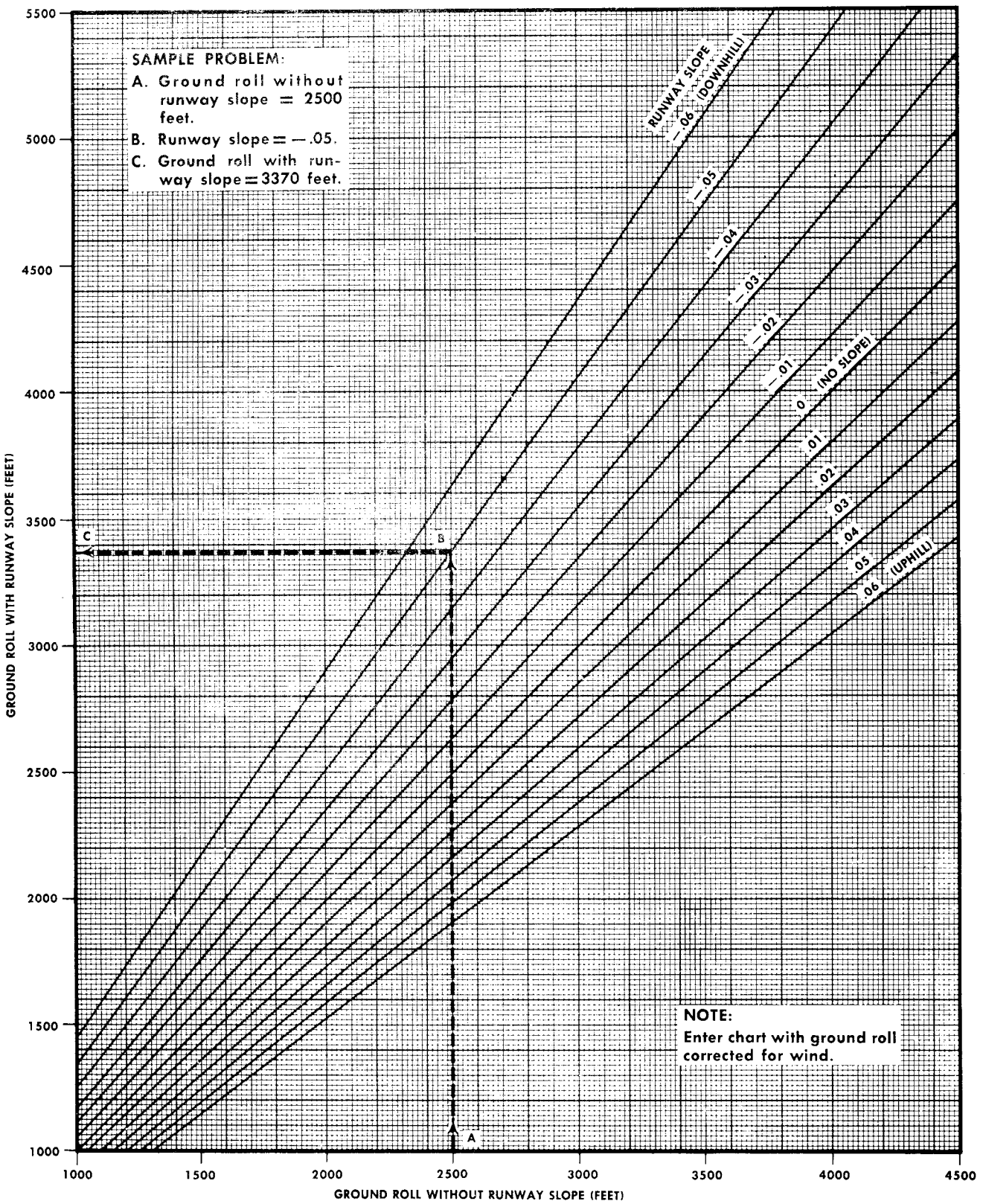
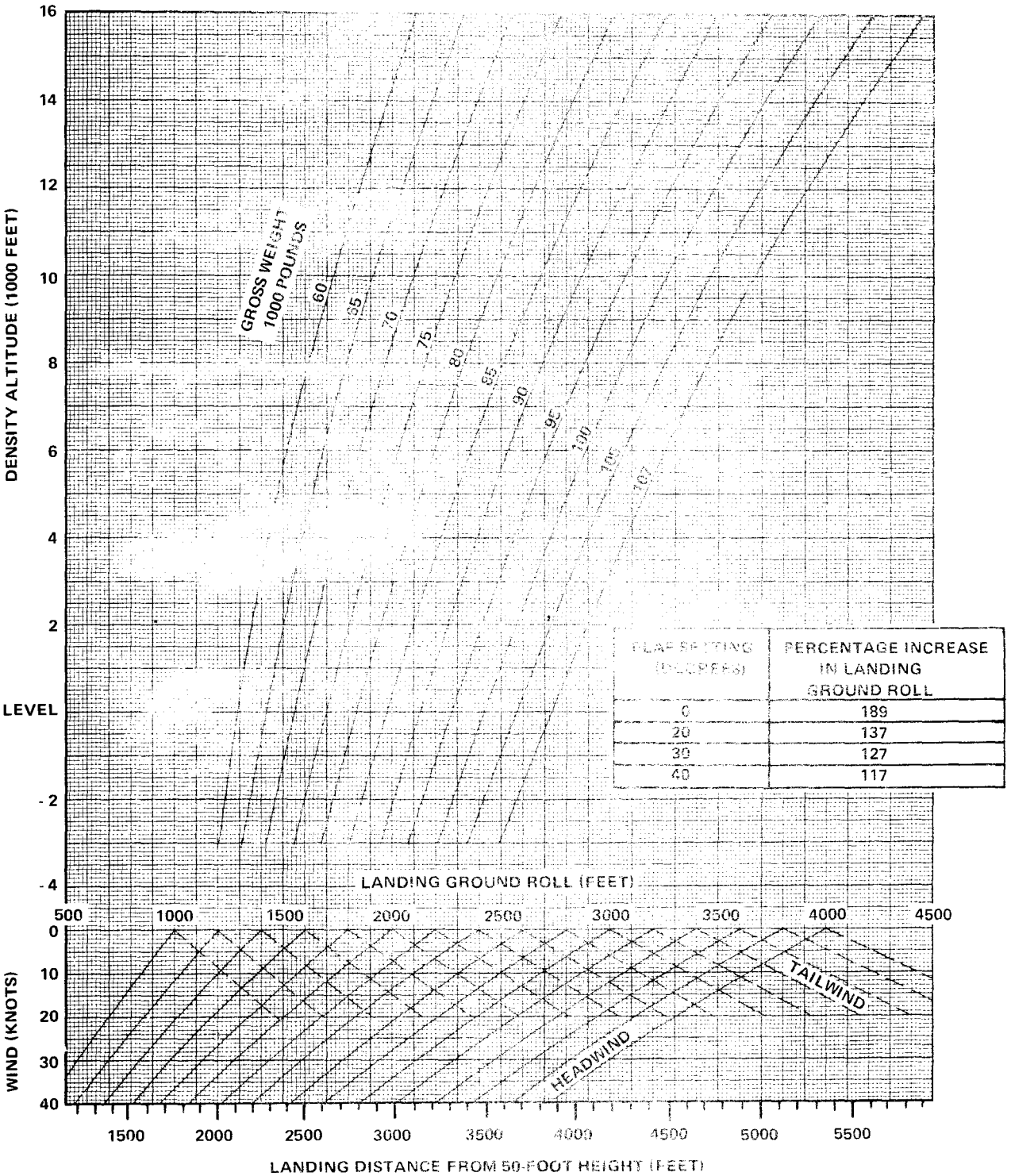


Figure A6-3. Landing Ground Roll - Runway Slope Correction - Brakes Only

LANDING GROUND ROLL
BRAKES PLUS TWO-ENGINE REVERSE THRUST

MODEL: C-118A
DATA AS OF: NOV 1972
DATA BASIS: FLIGHT TEST

ENGINES: (4) R2800-52W



FLAP SETTING (DEGREES)	PERCENTAGE INCREASE IN LANDING GROUND ROLL
0	189
20	137
30	127
40	117

NOTES:

1. Based on dry, hard surface runway.
2. Based on wing flaps full down. For ground roll at other flap settings see table.
3. Threshold speed = 130 percent of stall speed.
4. Touchdown speed = 120 percent of stall speed.

Figure A6-4. Landing Ground Roll - Brakes Plus Two-Engine Reverse Thrust

LANDING GROUND ROLL – RUNWAY SLOPE CORRECTION
BRAKES PLUS TWO-ENGINE REVERSE THRUST

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: CALCULATED

ENGINES: (4) R2800-52W

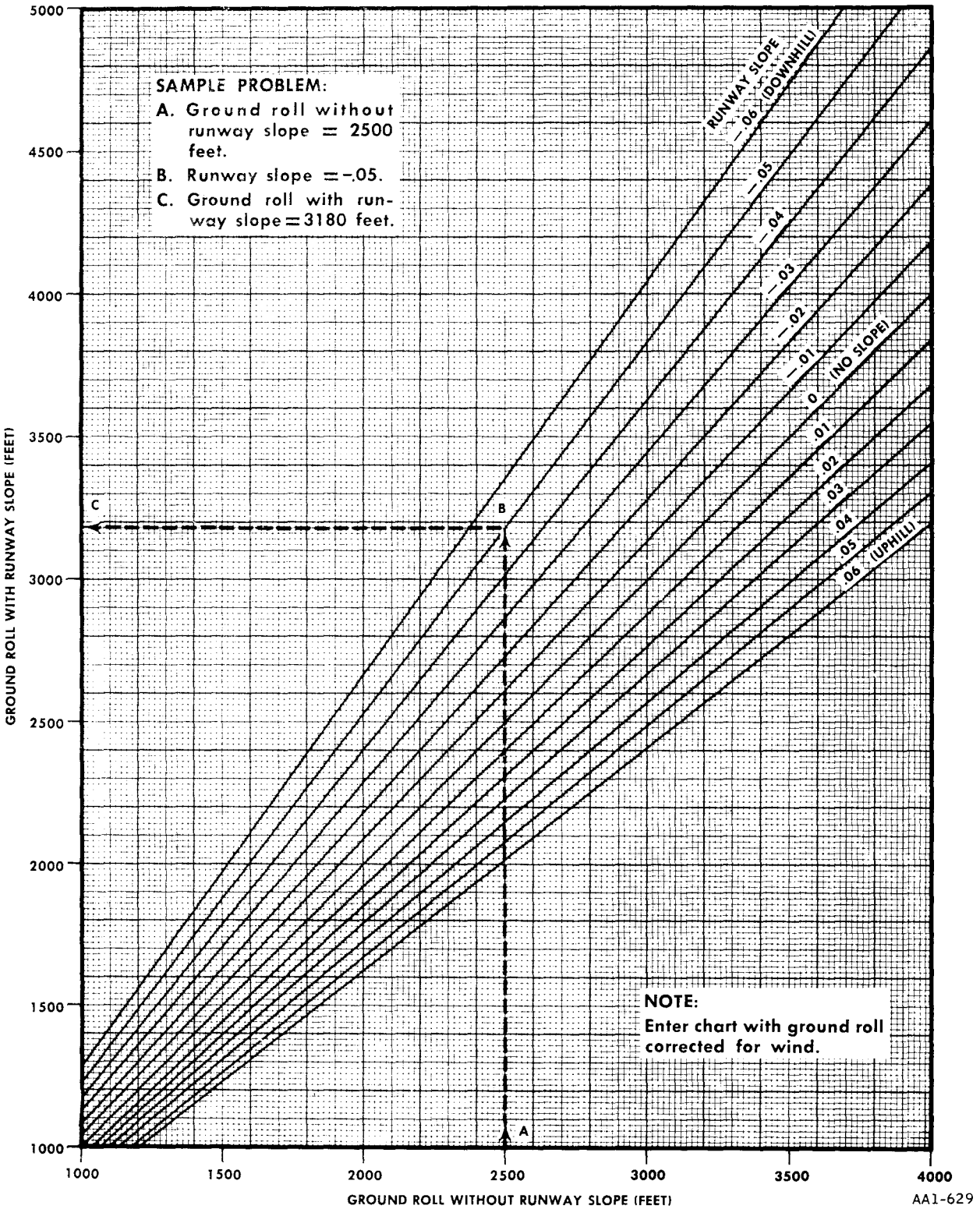
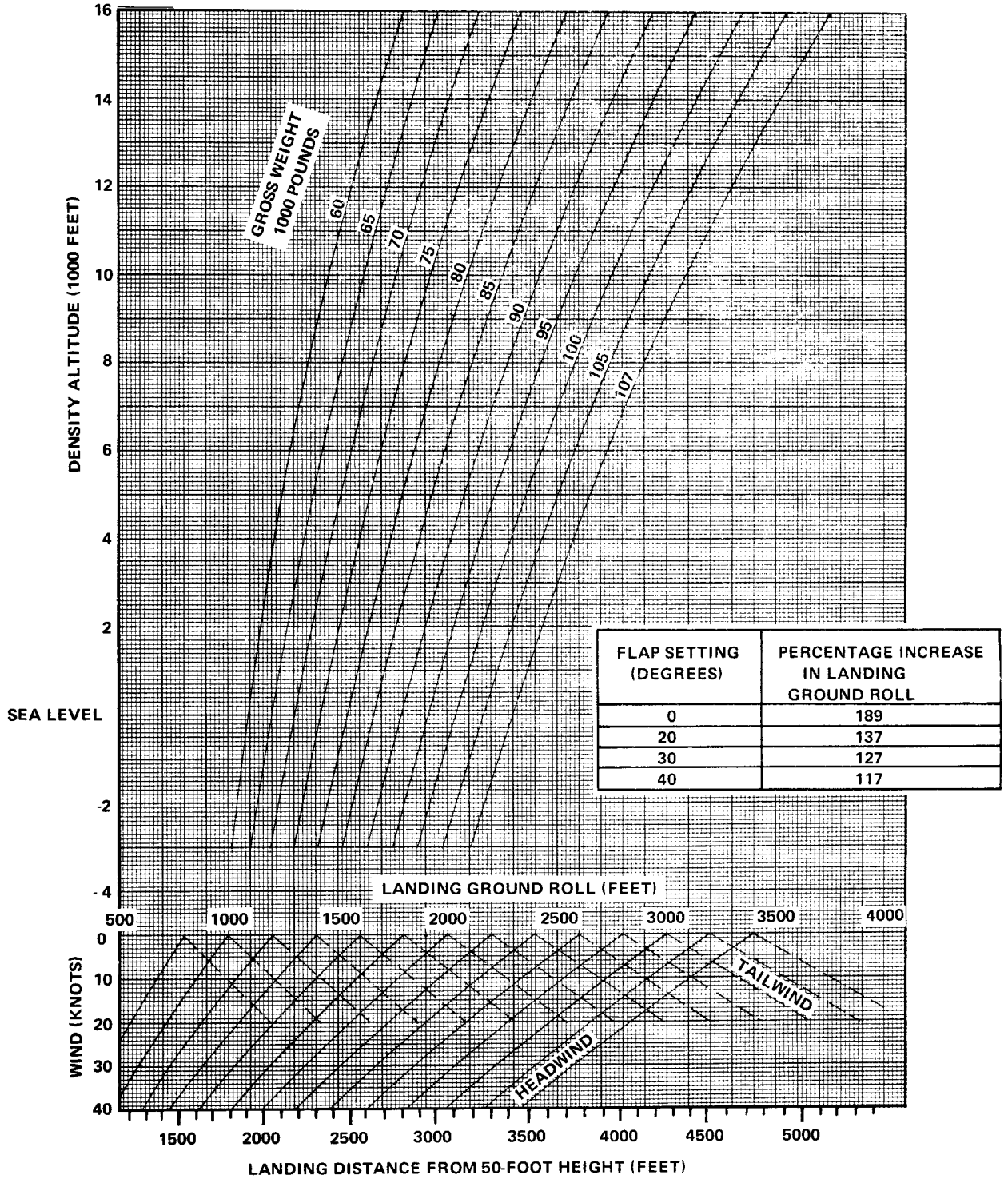


Figure A6-5. Landing Ground Roll - Runway Slope Correction - Brakes Plus Two-Engine Reverse Thrust

LANDING GROUND ROLL – BRAKES PLUS FOUR-ENGINE REVERSE THRUST

MODEL: C-118A **ENGINES: (4) R2800-52W**
DATA AS OF: NOV 1972
DATA BASIS: FLIGHT TEST



FLAP SETTING (DEGREES)	PERCENTAGE INCREASE IN LANDING GROUND ROLL
0	189
20	137
30	127
40	117

NOTES:

1. Based on dry, hard surface runway.
2. Based on wing flaps full down. For ground roll at other flap settings see table.
3. Threshold speed = 130 percent of stall speed.
4. Touchdown speed = 120 percent of stall speed.

Figure A6-6. Landing Ground Roll - Brakes Plus Four-Engines Reverse Thrust

LANDING GROUND ROLL — RUNWAY SLOPE CORRECTION
BRAKES PLUS FOUR-ENGINE REVERSE THRUST

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: CALCULATED

ENGINES: (4) R2800-52W

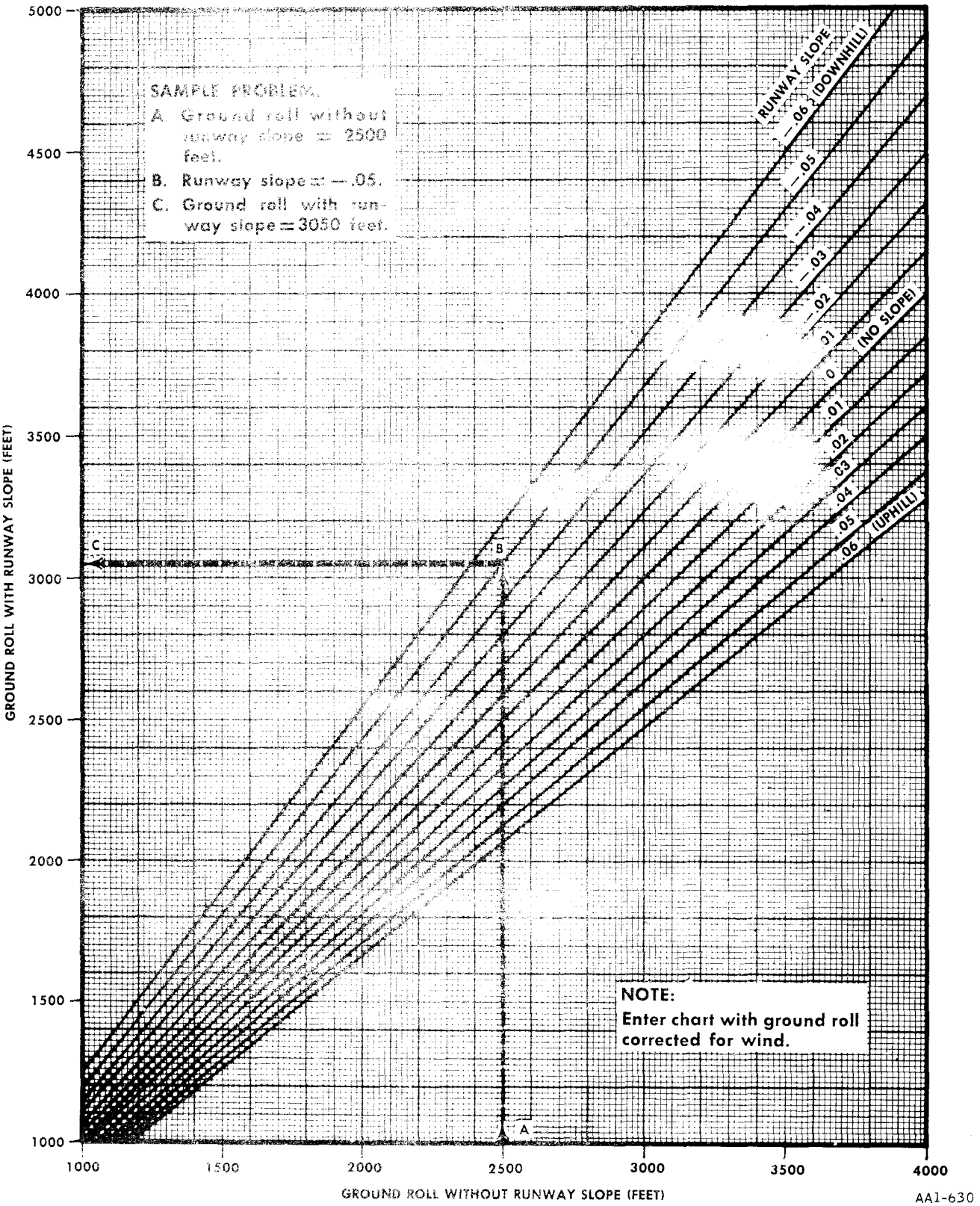


Figure A6-7. Landing Ground Roll - Runway Slope Correction - Brakes Plus Four-Engine Reverse Thrust

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: CALCULATED

EFFECT OF UNUSUAL RUNWAY CONDITIONS ON LANDING GROUND ROLL

ENGINES: (4) R2800-52W

RUNWAY SURFACE CONDITION	ICAO	RUNWAY CONDITION READING (RCR)
DRY CONCRETE OR MACADAM	GOOD	23
DRY TURF		15
WET CONCRETE OR MACADAM	MEDIUM	12
SNOW OR WET GRASS		08
ICE	POOR	05

SAMPLE PROBLEM:

A. Landing ground roll = 2500 feet.
B. Runway condition reading = 08.
C. Corrected landing ground roll = 4300 feet.

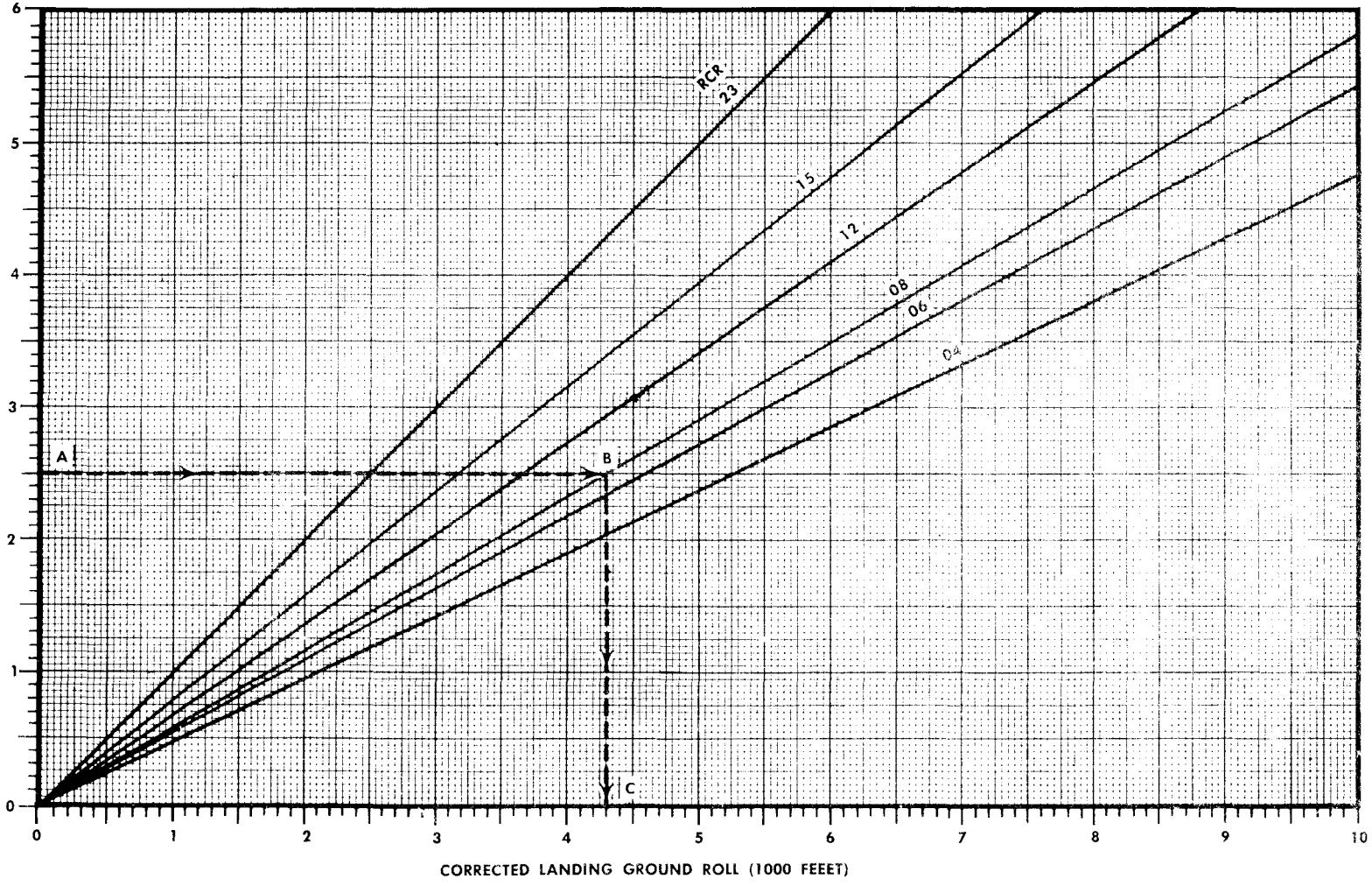


Figure A6-8. Effect of Unusual Runway Conditions on Landing Ground Roll

RUNWAY LOAD BEARING CHART

MODEL: C-118A
DATA AS OF: 10-15-64
DATA BASIS: ESTIMATED

SAMPLE PROBLEM:
(A) Gross weight = 80,000 pounds.
(B) C.G. at 16 percent MAC.
(C) Contact pressure line.
(D) Contact pressure = 73 PSI.
(E) California bearing ratio line.
(F) CBR = 5.6.

NOTE:
Tires inflated to maintenance procedures (35 percent deflection).

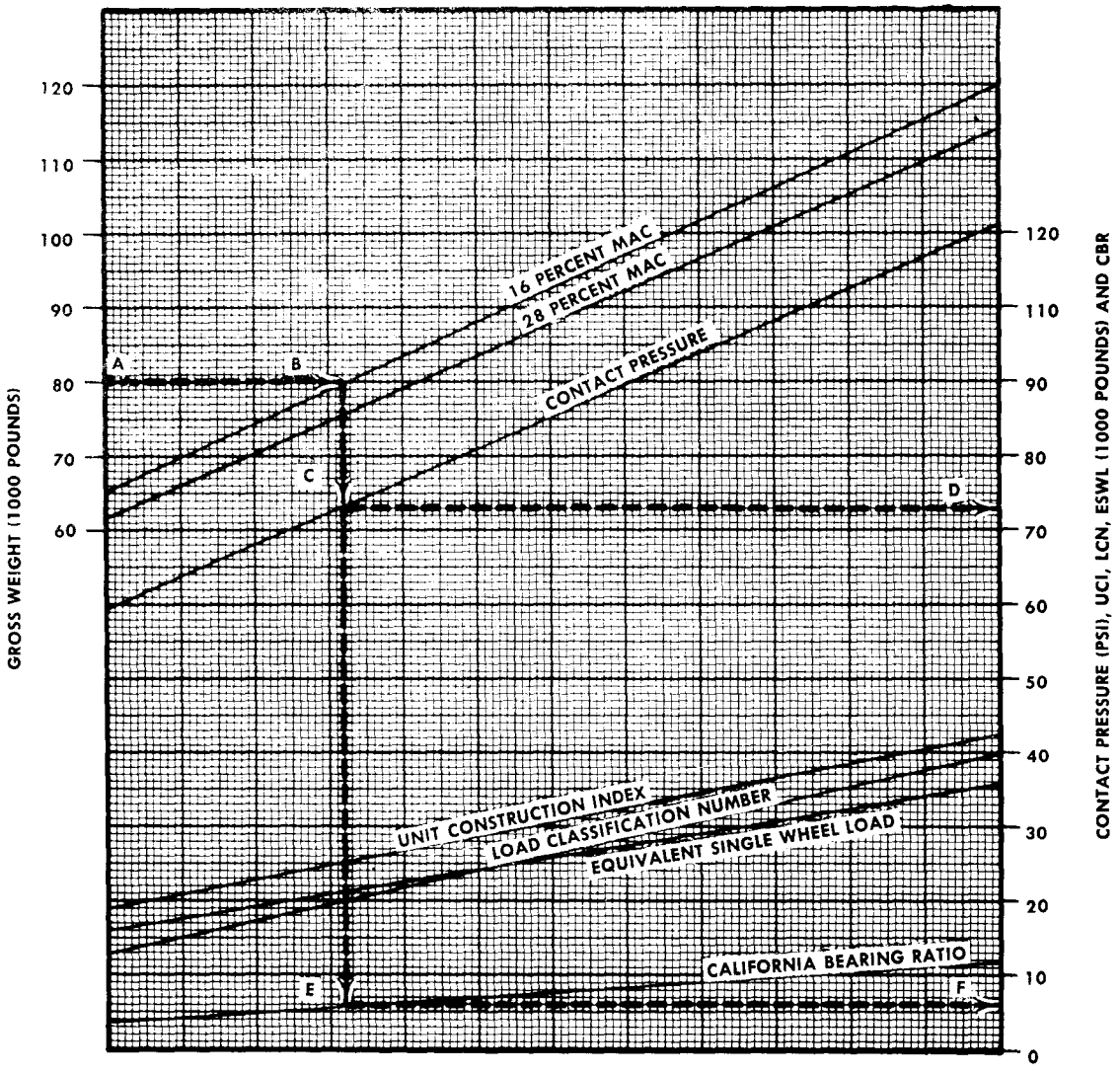


Figure A6-9. Runway Load Bearing Chart

part 7
mission planning

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

INTRODUCTION.

Sample problems have been included on the charts in this Appendix to illustrate the use of each type of chart. In addition, two mission planning sample problems are included herein to illustrate how several of the charts are used to plan typical missions.

Sample Problem 1 illustrates a typical medium range mission that does not require the use of capacity fuel. For this type of mission it is necessary to carry adequate reserve fuel to meet certain adverse conditions. (In Sample Problems 1 and 2, the reserve fuel allowance is based on holding for 3 hours at 10,000 feet altitude at long range cruise speed. However, the various commands may require reserve fuel to be determined differently, depending upon the availability of alternate airfields.) Another important consideration is that large amounts of excess fuel should not be carried without a reason. This is because the fuel consumption increases when the gross weight increases. For the conditions described in Sample Problem 1, the fuel consumed in completing the mission would increase by approximately 200 pounds for each 1000 pounds of additional fuel carried.

Sample Problem 2 illustrates a long range mission that cannot be completed with capacity payload. For this type of mission it is important that the fuel requirement be determined carefully, because each pound of additional fuel carried means that 1 pound less payload may be carried.

FUEL DUMP TIME.

The following shows the time required to dump fuel from any given gross weight down to the design landing weight for normal operation of 88,200 pounds.

Gross Weight (pounds)	Dump Time (minutes)
107,000	7.0
106,000	6.5
104,600	6.0
103,300	5.5
101,900	5.0
100,500	4.5
99,200	4.0
97,800	3.5
96,400	3.0
95,000	2.5
93,700	2.0
92,300	1.5
91,000	1.0
89,600	0.5

SAMPLE PROBLEM 1 — MEDIUM RANGE MISSION. (BACKWARD PLANNED FLIGHT PLAN).

Object of Mission:

To transport 18,500 pounds of cargo a distance of 1600 nautical miles.

GIVEN:

1. Miscellaneous conditions:

   Operating weight empty = 59,000 pounds.

   Fuel grade = standard (115/145), with water injection (ADI) used for takeoff.

   Oil carried = 1050 pounds (140 gallons).

   Fuel allowance for warmup, taxi and takeoff = 625 pounds.

NOTE

Fuel allowances may vary due to operational requirements due to variables such as warm-up times, clearance delays, etc.

   Reserve fuel requirement = fuel for 3 hours holding at long range cruise speed at 10,000 feet altitude.

2. Takeoff conditions:

   Runway length = 8000 feet.

   Runway slope = 0.015 (downhill).

   Runway condition reading = 23.

   Pressure altitude = 1500 feet.

   Temperature = 22°C.

   Dewpoint = 60°F.

   Wind = 20 knots headwind (runway component).

3. Cruise conditions:

   Cruise altitude = 14,000 feet pressure altitude.

   Temperature = -6°C.

   Cruise at long range cruise speed.

   Wind = 40 knots headwind.

4. Landing conditions:

   Runway length = 7500 feet.

   Runway condition reading = 12.

   Pressure altitude = 2000 feet.

   Temperature = 20°C.

   Wind = 30 knots headwind (runway component).

Estimate of Fuel Required.

For this type of mission the easiest way to determine the minimum fuel requirement is to first establish the landing weight and then the initial cruise weight, the initial climb weight and, finally, the takeoff weight. The fuel required is found by subtracting the zero fuel weight and the oil weight from the takeoff weight.

1. Add the payload to the operating weight empty to determine the zero fuel weight, 18,500 + 59,000 = 77,500 pounds.

2. Add the oil weight to the zero fuel weight to determine the zero fuel plus oil weight, 1050 + 77,500 = 78,550 pounds.

3. The reserve fuel allowance may now be determined from the Four-Engine Range Prediction-Time chart (figure A5-31). Enter the gross weight scale at the zero fuel plus oil weight of 78,550 pounds and read up to the 10,000-feet altitude line and across to the time scale at 23.6 hours. Subtract the holding time of 3 hours (23.6 - 3 = 20.6 hours). Re-enter the time scale at 20.6 hours and read across to the 10,000 foot curve and down to find the gross weight at start of holding of 82,700 pounds. The reserve fuel allowance is equal to the weight at the start of hold minus the weight at the end of hold (zero fuel plus oil weight), 82,700 - 78,550 = 4,150 pounds. (The weight at the start of hold is the same as the final cruise weight, and may also be considered as the landing weight since the fuel saved during the descent to the airfield is approximately offset by the fuel used during the landing and taxiing.)

4. The next step is to establish the cruising density altitude. This may be done with the aid of the Density Altitude Chart (figure A1-9). Enter the temperature scale at the expected cruise temperature, -6°C, and proceed vertically upward to cruising pressure altitude, 14,000 feet. The density altitude may then be read at the left hand scale, 14,800 feet. Use 15,000 feet for planning cruise data since the 200-foot difference is negligible.

5. The cruise fuel may now be determined from the Four-Engine Range Prediction—Distance chart (figure A5-30). Enter the gross weight scale at the final cruise weight of 82,700 pounds and read up to the 15,000 foot curve and across to the distance scale at 4340

nautical miles for the range at final cruise weight. To determine the cruise fuel accurately it is necessary to know the climb distance. Then the climb distance may be subtracted from the mission distance to establish the cruise distance. Since the climb distance will be small compared to the cruise distance, an approximation will suffice. To obtain this approximation subtract the mission distance from the range at final cruise weight (4340 - 1600 = 2740 nautical miles). Re-enter the range scale at 2740 nautical miles and read across to the 15,000 foot curve and down to find approximate initial cruise weight of 95,600 pounds. To correct the initial cruise weight for headwind enter the Range Prediction–Time chart (figure A5-31) at the initial and final gross weights of 95,600 and 82,700 pounds. Read up to the 15,000 foot curve and across to the time scale to read the times of 10.2 and 17.2 hours. The difference between these times, 7.2 hours, is the cruise time. Multiply the cruise time by the average predicted headwind of 40 knots to determine the decrease in range due to headwind in nautical miles (7.2 x 40 = 288 nautical miles). Correct for this decrease in range by subtracting 288 nautical miles from the range at initial cruise weight (2740 - 288 = 2452 nautical miles). Re-enter the range scale of the Distance chart (figure A5-30) and read across to 15,000 feet and down to obtain the approximate initial cruise weight, corrected for headwind of 98,200 pounds. Assume that this is the initial climb weight, and determine the approximate distance to climb from the Time, Distance, and Fuel to Climb chart (figure A4-1) assuming 1400 BHP/eng. Since this is only an approximation, it is not necessary to correct for temperature or headwind. Enter the gross weight scale at 98,200 pounds and proceed vertically upwards to 1500 feet altitude and note the distance (read at the left-hand scale), 7 nautical miles. Now follow the contour upwards to 14,000 feet and also note the distance, 82 nautical miles. The approximate climb distance is the difference between the two, 82 - 7 = 75 nautical miles. The cruise distance is the mission distance, minus the climb distance, plus headwind correction (1600 - 75 +288 = 1813 nautical miles). Subtract this cruise distance from the range at end of cruise determined above (4340 - 1813 = 2527 nautical miles). Re-enter the range scale on the Range Prediction–Distance chart (figure A5-30) at 2527 nautical miles and proceed horizontally to the 15,000 foot curve. The initial cruise weight may be read at the gross weight scale directly below, 97,500 pounds. The cruise fuel is equal to the initial cruise weight minus the final cruise weight, 97,500 - 82,700 = 14,800 pounds.

6. Time, distance and fuel to climb may now be estimated more accurately. First determine density altitude for the initial climb altitude. From the Density Altitude Chart (figure ure A1-9), density altitude for a pressure altitude of 1500 feet at 22°C is found to be 2600 feet. Density altitude at cruise altitude has already been computed as 14,800 feet for existing conditions. Using the Time, Distance, and Fuel to Climb chart for 1400 BHP (figure A4-1), enter the chart with the gross weight at final climb of 97,500 pounds and read up to the density altitude at cruise of 14,800 feet. At this point, read nautical miles traveled, 90, and time, 29 minutes. Follow the contour down to the density altitude at start of climb, 2600 feet, and read nautical miles traveled, 12, time, 4 minutes, and gross weight at start of climb, 99,100 pounds. The difference between the two sets of values will be the distance to climb (90 - 12 = 78 nautical miles), time to climb (29 - 4 = 25 minutes), and fuel to climb (99,100 - 97,500 = 1600 pounds). If necessary, the effect of wind on the distance to climb may be determined by multiplying the effective wind times the time to climb. Assuming that the average headwind during the climb is 75 percent of the headwind at the cruising altitude, this wind effect is 75 percent of 40 knots times 25/60 hour, or 12.5 nautical miles. Thus the distance to climb is 78 - 12.5, or 65.5 nautical miles.

7. The takeoff gross weight may now be determined by adding the fuel allowance for warmup, taxi and takeoff to the initial climb weight, 625 + 99,100 = 99.725 pounds.

8. The fuel requirement is equal to the takeoff weight minus the zero fuel weight minus the oil weight, 99,725 - 77,500 - 1050 = 21,175 pounds. This is also the sum of the reserve fuel, cruise fuel, climb fuel and warmup, taxi and takeoff fuel, 4,150 + 14,800 + 1,600 + 625 = 21,175 pounds.

Use of the Takeoff and Landing Data Card.

Takeoff and landing data cards will be completed for each takeoff and landing, except as follows:

1. On Local training flight, determine aircraft performance for the initial takeoff and landing. Further computation is unnecessary providing temperature, humidity, and wind conditions remain relatively constant. Refusal speed is not valid during touch and go landings, and need not be computed.

2. If the aircraft is not required to clear an obstacle after takeoff, and the runway available exceeds the critical field length by 500 feet, corrected for slope, RCR, and tailwind, only the performance data information contained in the T.O. 1C-118A-1CL-1, Pilot's/Flight Mechanic's Checklist, need be determined. This information will be entered on

the Takeoff and Landing Data Cards. If the abbreviated charts do not contain the necessary information, the appropriate charts in this Flight Manual will be used.

Portions of the Brake Horsepower Available for Takeoff charts (figures A2-2 thru A2-7) have been tabulated to facilitate determination of engine performance and takeoff factors. The tabulation may be used in lieu of the standard chart when temperature and humidity conditions fall within the limits of the tabulated data.

Filling Out the Takeoff Data Card.

After the takeoff gross weight has been estimated, data may be entered on the takeoff data card. The first step is to find what power will be available for takeoff. Then the takeoff performance may be determined based on this power.

1. Turn to the applicable Brake Horsepower Available for Takeoff Chart for standard fuel grade, wet (figure A2-2). Enter the pressure altitude scale at 1500 feet and proceed vertically upwards to 27°C CAT (22°C OAT plus 5°C ram rise). At this point, note that the brake horsepower, read at the right-hand scale, is 2440. Proceed horizontally to the right to the base line and draw a contour parallel to the guide lines. Enter the dew point scale on the auxiliary graph (figure A2-2) at 60°F, follow the guide lines to 1500 feet pressure altitude and then go vertically upwards to the contour line just drawn. At this point the power is approximately 2365 BHP. Since the first pressure altitude-CAT point indicates that the power will be obtained with part throttle setting, it is permissible to regain some of this power loss due to humidity by increasing the manifold pressure above the standard day limits (figure A2-1). Enter the dew point scale on the auxiliary graph at 60°F and read the allowable increase in manifold pressure, 0.5 inches Hg. Add allowable increase in manifold pressure of 0.5 inches Hg to MAP of 60.75 inches Hg obtained at intersection of pressure altitude and CAT to obtain corrected maximum MAP of 61.25 inches Hg. Re-enter the main graph where we left off (2365 BHP), continue to the right to the next base line and follow the guide lines as far as 0.5 inches Hg. Continue horizontally to the right-hand scale and read the predicted brake horsepower, 2385. Read predicted BMEP and 95 percent of the predicted BMEP on appropriate scale. Use 95 percent of predicted BMEP (229 PSI) for determining takeoff performance.

2. Determine the takeoff factor by entering the Takeoff Performance-Takeoff Factor Chart (figure A3-2) at a density altitude of 2600 feet, as determined from the Density Altitude Chart (figure A1-9) at 22°C and 1500 feet pressure altitude. Read across to a BMEP of 229 psi and down to find a takeoff factor of 4.3.

3. The next step is to find whether the estimated takeoff weight will meet all takeoff requirements. See Takeoff Gross Weight Limited By Three-Engine Climb Performance Chart (figure A3-3). Enter the chart with a takeoff factor of 4.3, as determined from the Takeoff Performance-Takeoff Factor Chart (figure A3-2), and proceed horizontally to baseline. Follow the guidelines to 229 BMEP. Proceed horizontally to the first bold line that shows maximum allowable takeoff gross weight for normal operation, 107,000 pounds. This is well in excess of the estimated takeoff gross weight of 99,725 pounds. By continuing to the right to the next bold line, it may be seen that the maximum allowable takeoff gross weight for an emergency is 112,000 pounds. By continuing further, it may be seen that the 50 feet per minute rate-of-climb requirement for the configuration noted on the chart is met above the gross weight required for the mission.

4. The critical field length may be determined from the Critical Field Length – Brakes Only chart (figure A3-6). Enter the chart with a takeoff factor of 4.3 and read across to a gross weight of 99,725 pounds. Read down to find zero wind/zero slope critical field length of 5250 feet. Correct for a 10 knot headwind (50 percent of reported headwind) by following the guide line to 10 knots and reading down to find corrected field length of 4600 feet. To correct for slope, enter the Effect of Runway Slope on Ground Run chart (figure A3-5) with a distance without runway slope of 4600 feet. Read up to the -0.015 (downhill) slope correction curve and across to find corrected critical field length of 4150 feet.

5. The refusal speed may be determined from the Takeoff Performance–Refusal Speed–Brakes Only chart (figure A3-8). Enter the chart with a takeoff factor of 4.3 and proceed horizontally to the available runway length of 8000 feet. Read down to a gross weight of 99,725 pounds and across to find the zero wind/zero slope refusal speed of 106.9 KIAS. Correcting for runway slope of 0.015 downhill and for 10 knots headwind results in a corrected refusal speed of 108.3 KIAS.

6. The ground run is determined from the Takeoff Performance – Ground Run chart (figure A3-4). Follow the same method described for the other takeoff performance charts using a takeoff factor of 4.3 and the takeoff gross weight of 99,725 pounds. For the given conditions the ground run without wind

or slope correction is 4175 feet. Correct for headwind by following the guide lines to 20 knots and reading down for corrected ground run of 3050 feet. Correct for runway slope by entering the Effect of Runway Slope on Ground Run chart (figure A3-5) with a distance (without runway slope) of 3050 feet. Read up to the slope correction curve for -0.015 downhill and across to find corrected distance of 2800 feet. The takeoff speed corresponding to the ground run is read from the gross weight curves on the ground run chart as 118 KIAS.

7. The acceleration check speed may be determined from the takeoff performance-distance and time versus speed chart (figure A3-10). Correct takeoff speed of 118 KIAS for headwind by subtracting the headwind of 20 knots from the takeoff speed (118 - 20 = 98 KIAS). Enter the scale at the bottom of the chart with the corrected takeoff speed of 98 KIAS, read up to the ground run (corrected for wind and slope) of 2800 feet, and establish a contour line following the guide lines. The acceleration check speed is five to 15 knots less than the refusal speed of 108.3 KIAS corrected for wind and slope, so 100 KIAS can be chosen. Correct check speed of 100 KIAS by subtracting 20 knot headwind to obtain ground speed (100 - 20 =80 knots). Read down the previously established contour line to the intersection of the check speed of 80 knots, and read the check speed time of 23 seconds. Correct acceleration check speed for headwind by adding the 20 knots headwind giving 80 + 20 = 100 KIAS, the corrected acceleration check speed. Correct the check time by dividing 23 by $1/\sqrt{6}$, or 23/1.04 = 22 seconds.

The values obtained above for 95 percent of predicted BMEP critical field length, refusal speed, acceleration check point, acceleration check speed, and lift-off speed may be entered in the appropriate places on the Takeoff and Landing Data Card under the Takeoff Data column labeled "Wet" (meaning all four ADI units operative). In a similar manner takeoff data for standard fuel grade, dry, may be obtained and entered on the card. The lift-off speed and dump time are the same for either wet or dry power. The charts used in determining takeoff data for the dry power are the same as those used for the wet power except for 95 percent of the predicted BMEP, which is obtained from figure A2-3. It will be seen when determining the dry power takeoff data that the takeoff requirements are still met at 99,725 pounds gross weight.

The items under "LANDING DATA (TAKEOFF WEIGHT)" are for landing shortly after takeoff, if some emergency demands it. The atmosphere and runway conditions are the same as those listed under "TAKEOFF CONDITIONS." The threshold speed may be obtained from the Lift-off, Landing, and Stalling Speeds chart (figure A6-1). For 99,725 pounds gross weight the threshold speed is approximately 122 KIAS (130 percent of stalling speed with flaps full down). The landing distance from a 50-foot height may be determined from the Landing Ground Roll - Brakes Only chart (figure A6-2). Enter the chart with a density altitude of 2600 feet and read across to a gross weight of 99,725 pounds. On the scale directly below read the landing ground roll with no wind, 3180 feet. Follow parallel to the guide lines to a 10 knot headwind. On the scale directly above read the ground roll corrected for wind, 2830 feet. Obtain the total landing distance from a 50-foot height on the scale directly below of 3840 feet. The air run is the difference between the two, 990 feet. Enter the Landing Ground Roll - Runway Slope Correction - Brakes Only chart (figure A6-3) at landing ground roll corrected for wind of 2830 feet. Read up to slope correction scale of -0.015 and read across to obtain corrected landing ground roll of 3070 feet. The air run correction is 10 percent for each 0.01 of downhill slope, or 15 percent (15 percent of 990 feet = 148 feet). The corrected air run is 990 feet + 148 feet = 1138 feet, and the corrected landing distance from a 50 foot height is 3070 feet + 1138 feet = 4208 feet.

Filling Out the Landing Data Card.

The information on the Landing Data Card is for landing at the intended destination at the predicted landing gross weight. The threshold speed may be obtained from the Lift-off, Landing, and Stalling Speeds chart (figure A6-1). At 82,700 pounds gross weight this is approximately 111 knots (130 percent of the stalling speed with flaps full down). The landing distance from a 50-foot height may be determined from the Landing Ground Roll – Brakes Only chart (figure A6-2). Determine the density altitude at destination for 2000 feet pressure altitude and 20°C from the Density Altitude chart (figure A1-9) as 3000 feet. Enter the Landing Ground Roll – Brakes Only chart at a density altitude of 3000 feet and read across to the gross weight at destination of 82,700 pounds. Read down to find the landing ground roll of 2665 without wind correction. Correct for a 15 knot headwind (50 percent of reported wind) by following the guide line to 15 knots and reading up for a corrected ground roll of 2190 feet. Obtain the total landing distance from a height of 50 feet from the scale directly below, of 3080 feet. Correct for Runway Condition Reading by entering Effect of Unusual Runway Conditions on Landing Ground Roll chart (figure A6-8) at landing ground roll corrected for wind of 2190 feet. Read across to RCR scale of 12 and read down to find corrected landing ground roll of 3220 feet. Subtract landing ground roll corrected for wind from landing ground roll corrected for RCR to obtain correction of 1030 feet. To obtain corrected landing distance from 50-foot height, add landing ground roll correction of 1030 feet (1030+3080=4110).

SAMPLE PROBLEM 2 — LONG RANGE MISSION.

Object of Mission.

To transport as much cargo as possible a distance of 3100 nautical miles.

GIVEN:

1. Miscellaneous conditions:

   Operating weight empty = 60,000 pounds.

   Fuel grade = standard (115/145), with water injection (ADI) used for takeoff.

   Oil carried = 1050 pounds (140 gallons).

   Fuel allowance for warmup, taxi and takeoff = 625 pounds.

   Reserve fuel requirement = fuel for 3 hours holding at long range cruise speed at 10,000 feet altitude.

2. Takeoff conditions:

   Runway length = 9000 feet.

   Runway slope = none.

   Runway condition reading = 23.

   Pressure altitude = 500 feet.

   Temperature = 14°C.

   Dew point = 10°F.

   Wind = none.

3. Cruise conditions:

   Cruise altitude = 10,000 feet pressure altitude.

   Temperature = -5°C.

   Cruise at long range cruise speed.

   Wind = none.

4. Landing conditions:

   Runway length = 7000 feet.

   Runway condition reading = 23.

   Pressure altitude = 1000 feet.

   Temperature = 5°C.

   Wind = none.

This type of mission differs from that discussed in Sample Problem 1. For long range missions it is very likely that it will not be possible to load the aircraft with capacity payload and still carry enough fuel to reach the destination without exceeding the maximum permissible takeoff gross weight. For this reason the maximum permissible takeoff gross weight weight is determined first, then the fuel required for the mission is estimated, and, finally, the maximum payload is solved for.

1. An examination of the takeoff conditions indicates that a takeoff is permitted at the maximum structural limit for normal operation, 107,000 pounds gross weight.

2. The initial climb weight is obtained by subtracting the fuel allowance for warm-up, taxi and takeoff from the takeoff gross weight, 107,000 - 625 = 106,375 pounds.

3. The initial cruise weight may be determined from the Time, Distance and Fuel to Climb Chart (figure A4-2, assuming 1500 BHP/eng). Since the temperature conditions for takeoff and cruise are standard, pressure altitude will be equal to density altitude. Enter the gross weight scale at 106,375 pounds and proceed vertically upwards to 500 feet density altitude and note the distance, 2 nautical miles. Continue upwards, following parallel to the guide lines, to 10,000 feet density altitude and note the distance, 54 nautical miles. The difference between these two values is the distance travelled during the climb, 54 - 2 = 52 nautical miles. From this last point drop straight down to the scale below and read the final climb weight, 105,000 pounds. This is also the initial cruise gross weight.

4. The final cruise weight may be determined from the Four-Engine Range Prediction – Distance Chart (figure A5-30). The cruise distance is equal to 3100 nautical miles minus the climb distance of 52 nautical miles, or 3048 nautical miles. The pressure altitude at 10,000 feet with a temperature of -5°C is approximately equal to a density altitude of 10,000 feet so no correction for density altitude is necessary. Enter the gross weight scale at 105,000 pounds and proceed vertically upwards to 10,000 feet density altitude and across to the range scale at 2500 nautical miles. Add 2500 to the desired cruise distance (3048 + 2500 = 5548 nautical miles) and re-enter the range scale at 5548 nautical miles. Read across to an altitude of 10,000 feet and down for a final cruise gross weight of 80,700 pounds. This is also the estimated landing gross weight.

5. Determine the reserve fuel from the Four-Engine Range Prediction – Time Chart (figure A5-31). Enter the gross weight scale at the final cruise weight of 80,700 pounds and read up to the density altitude of 10,000 feet. Read across to the time scale at 22.0 hours. Add the holding time of 3 hours (22.0 + 3.0 = 25.0 hours) and re-enter the time scale at 25.0 hours. Read across to the 10,000 feet altitude curve and down for a gross weight at end of hold of 76,800 pounds. This is also the zero fuel plus oil weight.

6. To obtain the zero fuel weight subtract the oil weight from the zero fuel plus oil weight, 76,800 - 1050 = 75,750 pounds.

7. To determine the allowable payload subtract the operating weight empty from the zero fuel weight, 75,750 - 60,000 = 15,750 pounds.

Information for the Takeoff and Landing Data Card may be determined in the same manner as described in detail in Sample Problem 1.

C-118A AND VC-118A
TAKEOFF AND LANDING DATA CARD

TAKEOFF CONDITIONS

DENSITY ALT 2600 FT.

PRESSURE ALT 1500 FT DEW PT 60 °F

OAT 22 °C + 5°C = 27 °C CAT

WIND COMP 20 (headwind) KTS GROSS WT 99,725 LBS

RUNWAY LENGTH 8000 FT SLOPE 0.015 (downhill)

RUNWAY CONDITION READING 23

SIGNIFICANT OBSTACLE HEIGHT 0

DIST FROM END OF RUNWAY -

GROSS WT. LIMITED BY CLIMBOUT OVER OBSTACLE -

GROSS WT. LIMITED BY 3-ENG. RATE OF CLIMB 112,000

TAKEOFF DATA

	WET		DRY	
PREDICTED/MAX MAP	61.25	IN.HG.		IN.HG
95 % PREDICTED BMEP	229	PSI		PSI
TAKEOFF FACTOR	4.3			
CRITICAL FLD LENGTH	4150	FT		FT
GROUND RUN	2800	FT		FT
REFUSAL SPEED	108.3	KIAS		KIAS
ACCELERATION TIME CHECK	22	SEC.		SEC.
ACCELERATION CHECK SPEED	100	KIAS		KIAS

LIFTOFF SPEED 118 KIAS

DUMP TIME 4.2 MIN

LANDING DATA (TAKEOFF WEIGHT)

LANDING GROUND ROLL 3070

THRESHOLD SPEED (130 % Vso) 122 KTS

LANDING DISTANCE FROM 50 FT HEIGHT 4208 FT

Figure A7-1. Takeoff and Landing Data Card

C-118A AND VC-118A LANDING DATA CARD

LANDING CONDITIONS

PRESSURE ALT 2000 FT.

OAT 20 °C

WIND COMP 30 (headwind) KTS GROSS WT 82,700 LBS

RUNWAY LENGTH 7500 FT SLOPE 0

DENSITY ALT 3000 FT

RUNWAY CONDITION READING 12

LANDING DATA

THRESHOLD SPEED (130° Vso) 111 KIAS

LANDING DISTANCE FROM 50 FT HEIGHT 4110 FT

LANDING GROUND ROLL 3220

Figure A7-2. Landing Data Card

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