UNITED STATES
FEDERAL AVIATION AGENCY

AIR VEHICLE PERFORMANCE CHARACTERISTICS

Volume VIII

GLIDE PATH

FOR

BUREAU OF RESEARCH & DEVELOPMENT
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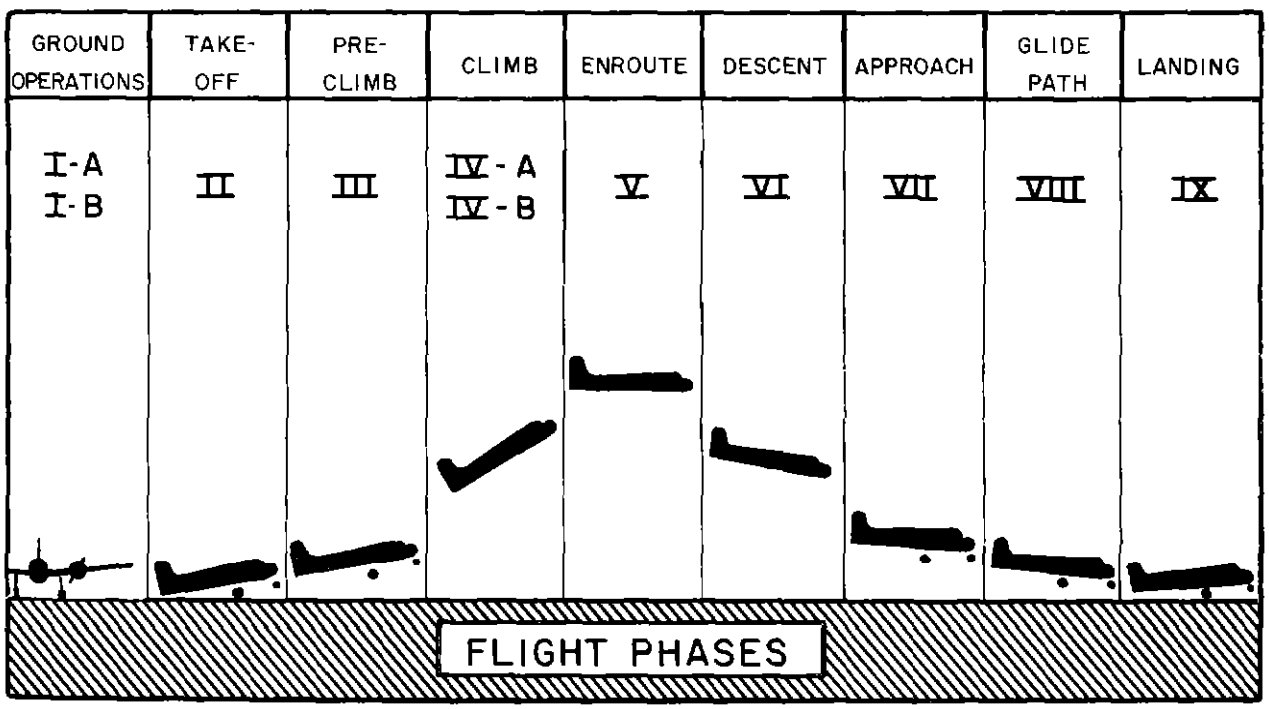
AIR VEHICLE PERFORMANCE CHARACTERISTICS

This is a fourteen volume study,
containing the following

Volume I-A	Ground Operations
Volume I-B	Ground Operations
Volume II	Take-Off
Volume III	Pre-Climb
Volume IV-A	Climb
Volume IV-B	Climb
Volume V	Enroute
Volume VI	Descent
Volume VII	Approach
Volume VIII	Glide Path
Volume IX	Landing
* Volume X-A	Classified Military Aircraft (S)
* Volume X-B	Classified Military Aircraft (S)
* Volume XI	Future Aircraft (S)

* Volumes I-A through IX contain flight phase data on current aircraft, except those classified by the military. The latter are in Volumes X-A and X-B, and future aircraft in Volume XI These three volumes have a security classification of secret.



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AIR VEHICLE PERFORMANCE CHARACTERISTICS

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The following is a complete listing of the 122 aircraft reported and their location by volume

Aircraft	Vol	Aircraft	Vol.
Aero Commander 500	I-IX	Convair C-131A	I-IX
Aero Commander 680 (L-26C)	I-IX	Convair F-102A	X
Aero Commander 720	I-IX	Convair F-106A	X
Avro CF-100 MK5	X	Convair R4Y-1	I-IX
Beechcraft "Bonanza" K-35	I-IX	Convair T-29C	I-IX
Beechcraft "Twin Bonanza"		Convair YB/RB-58	X
(L-23D)	I-IX	Curtiss C-46R	I-IX
Beechcraft Model 95	I-IX	de Havilland "Beaver"	
Beechcraft MS 760	XI	(L-20A)	I-IX
Beechcraft Super 18	I-IX	de Havilland Comet 4	I-IX
Beechcraft T-34A	I-IX	de Havilland "Otter"	
Bell H-13H (47G-2)	I-IX	(U-1A)	I-IX
Bell H-40	I-IX	Douglas AD-6	X
Bell XV-3	XI	Douglas A3D-2	X
Boeing 707-121	I-IX	Douglas A4D-1	X
Boeing 707-320	XI	Douglas C-124C	I-IX
Boeing B-377	I-IX	Douglas C-133A	I-IX
Boeing B-47B/B-47E	I-IX	Douglas DC-3 (C-47, R4D)	I-IX
Boeing B-52F	X	Douglas DC-4 (C-54)	I-IX
Boeing KC-97G	I-IX	Douglas DC-6	I-IX
Boeing KC-135A	I-IX	Douglas DC-6B	I-IX
Canadair CP-107	X	Douglas DC-7	I-IX
Canadair Sabre MK6	X	Douglas DC-7B	I-IX
Canadair T-33A MK3	X	Douglas DC-7C	I-IX
Cessna 150	I-IX	Douglas DC-8	XI
Cessna 172	I-IX	Douglas DC-9	XI
Cessna 175	I-IX	Douglas F4D-1	X
Cessna 180 (Amphibian)	I-IX	Douglas RB/WB-66B	I-IX
Cessna 182	I-IX	Fairchild C-119G	I-IX
Cessna 310A (L-27A)	I-IX	Fairchild C-123B	I-IX
Cessna 310C	I-IX	Fairchild F-27B	I-IX
Cessna L-19 A/E (OE-1)	I-IX	Goodyear ZPG-2	I-IX
Cessna T-37A	I-IX	Goodyear ZPG-3W	I-IX
Cessna TL-19D	I-IX	Grumman F9F-8T	X
Chance-Vought F8U-1	X	Grumman F11F-1	X
Convair 340/440	I-IX	Grumman SA-16A GR (UF-1)	I-IX
Convair 600	XI	Grumman S2F-1	X
Convair 880-22	XI	Hayes-Boeing KB-50J/KB-50K	I-IX

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AIR VEHICLE PERFORMANCE CHARACTERISTICS

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AIR VEHICLE PERFORMANCE CHARACTERISTICS

Volumes I-A through IX

SECTION 1

MILITARY AIRCRAFT

containing data on

Beechcraft T-34A
Bell H-13H (47G-2)
Bell H-40
Boeing B-47B/B-47E
Boeing KC-97G
Boeing KC-135A
Cessna L-19 A/E (OE-1)
Cessna TL-19D
Cessna T-37A
Convair C-131A
Convair R4Y-1
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Curtiss C-46R
Douglas C-124C
Douglas C-133A
Douglas RB/WB-66B
Fairchild C-119G
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Goodyear ZPG-2
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Hayes-Boeing KB-50J/KB-50K
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Lockheed C-121 C/G
Lockheed C-130A
Lockheed T2V-1
Lockheed T-33A-1
Martin B-57B
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North American T-28A
North American T-28B
North American T2J-1
Northrop F-89H
Republic F-84F Series
Sikorsky H-19D
Sikorsky H-34A (S-58) (HSS-1)
Sikorsky H-37A
Vertol H-21C (44-B)

(date of latest revision September 1, 1959)

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NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down and flaps fully extended Power is set at 2, 400 rpm and a minimum of 12 inches of manifold pressure

Speed (knots IAS)

Glide path airspeed 80
Stall speeds (see Table I)
Maximum allowable (structural limitations) 109 (full flaps)

Distance

Minimum 2 7 nautical miles
Maximum 4 0 nautical miles
Operationally desirable 4 0 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2 0 minutes
Maximum 3. 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum allowable 1, 000 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 seconds

TABLE I

(Stall Speeds in Knots IAS, Gear and Flaps Full Down, Approach Power)

Gross Weight	0° Bank	15° Bank	30° Bank	45° Bank
2,775 pounds	44	45	47	53
2,950 "	45	46	48	54

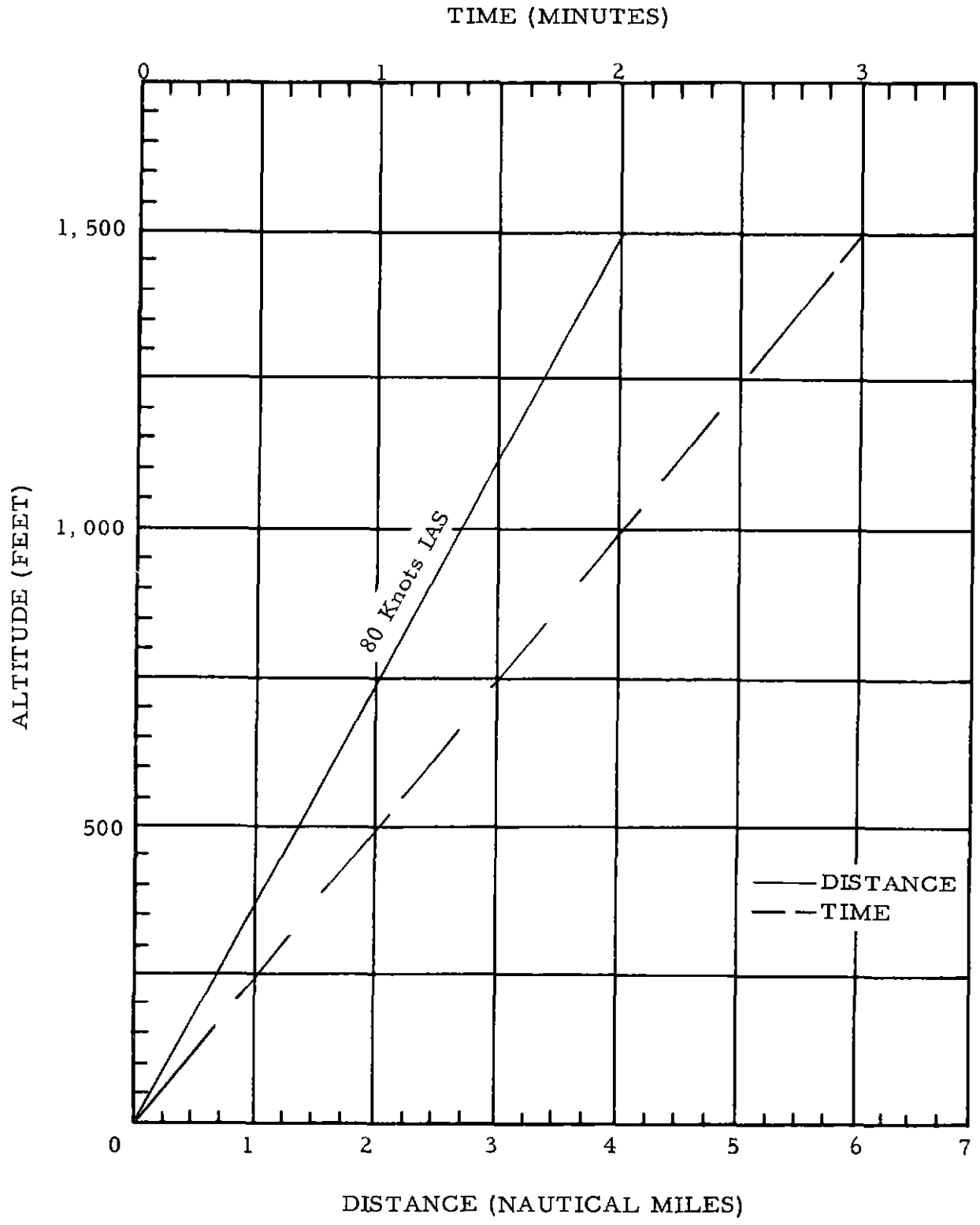


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Helicopter configuration on glide path is clean Throttle is set at 3, 100 rpm and manifold pressure as required to maintain airspeed and rate of descent

Speed

Glide path airspeed at any gross weight 60 knots IAS
Maximum allowable (structural limitations). 87 knots IAS
Maximum allowable rotor 360 rpm

Distance

Minimum 2 0 miles
Maximum 5 0 miles
Operationally desirable 3 0 miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 5 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

1 to 2 seconds

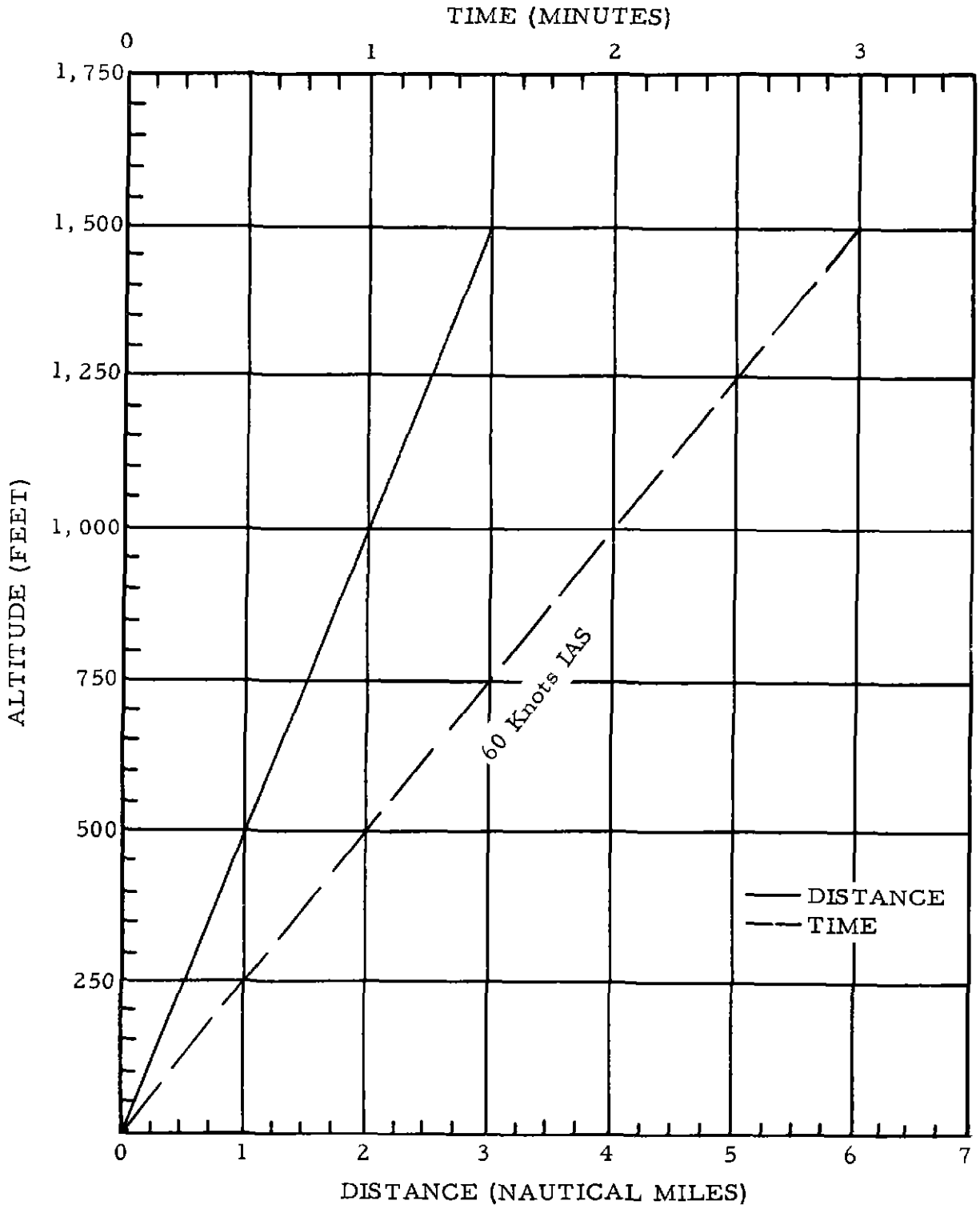


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Helicopter configuration on glide path is clean. Throttle is set at 6,400 rpm and torque pressure as required.

Speeds

Glide path airspeed at any gross weight 60 knots IAS
Maximum allowable (structural limitations) 105 knots IAS
Maximum allowable rotor. 314 rpm

Distance

Minimum 2.0 nautical miles
Maximum 5 0 nautical miles
Operationally desirable 3.0 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 5 0 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 300 feet
Maximum 750 feet
Operationally desirable 500 feet

Full Power Response Time for Go-Round

3 to 5 seconds

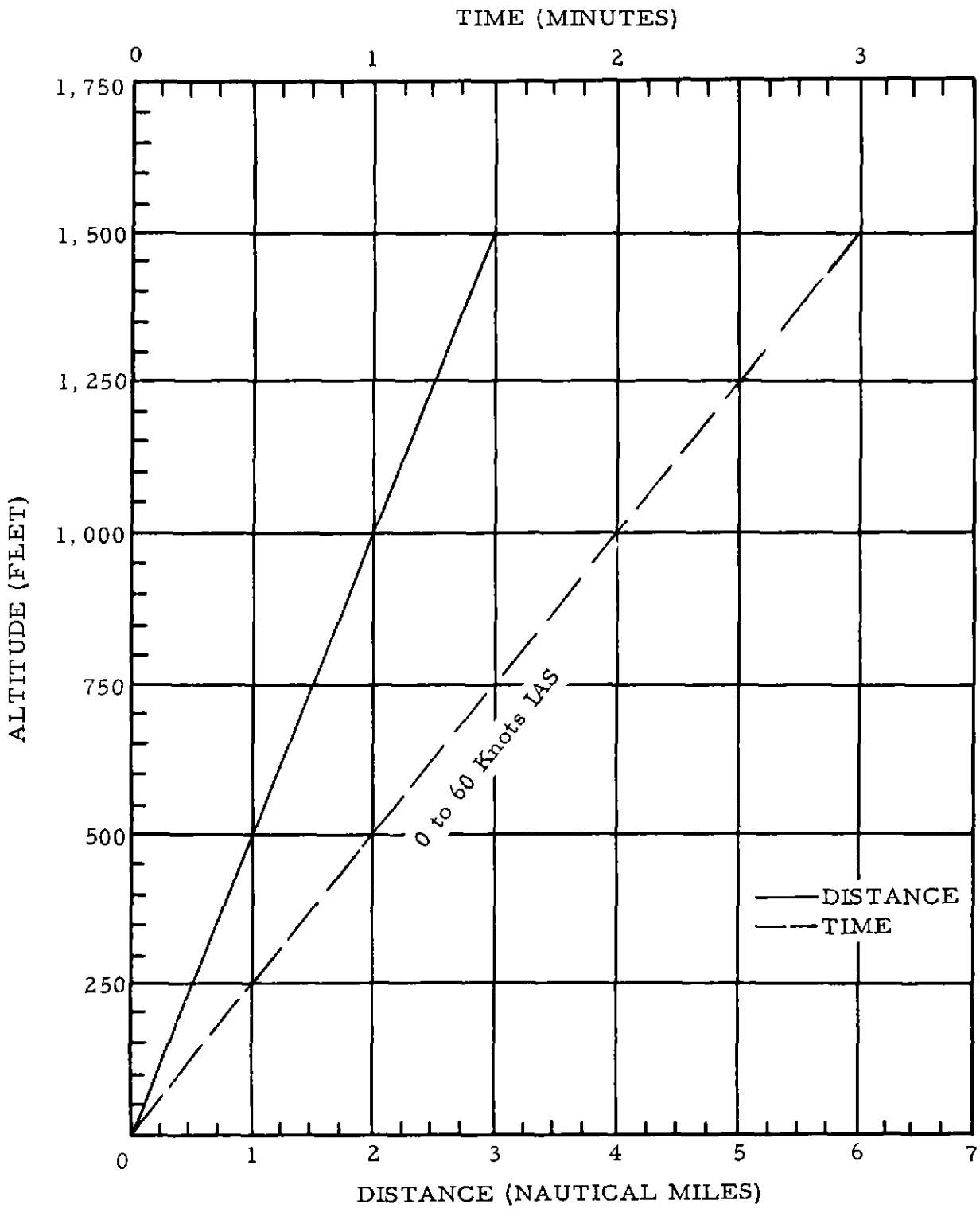


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down (including outriggers) and flaps fully extended Power is set at a minimum of 70% rpm. Approach chute may be deployed as necessary.

Speed (knots IAS)

Glide path airspeed at 105,000 pounds· 136
Percent deviation with gross weight 4.4% per 10,000 pounds
Stall speeds (see Table I)
Maximum allowable (structural limitations) 195 (full flaps)

Distance

Minimum 5.7 nautical miles
Maximum 11 3 nautical miles
Operationally desirable: 8.0 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2.5 minutes
Maximum 5.0 minutes
Operationally desirable: 3.5 minutes (see Figure 1)

Altitude

Minimum 1,500 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum allowable 600 feet per minute
Operationally desirable. 500 feet per minute

Full Power Response Time for Go-Round

12 to 20 seconds

Flare Speeds	Gross Weight
123 knots	90,000 pounds
128 knots	100,000 pounds
139 knots	110,000 pounds
143 knots	120,000 pounds
148 knots	130,000 pounds

TABLE I

(Stall Speed in Knots IAS, Gear down, 100 Percent Flaps)

Gross Weight	0° Bank
100,000 pounds	109
120,000 pounds	120
140,000 pounds	130

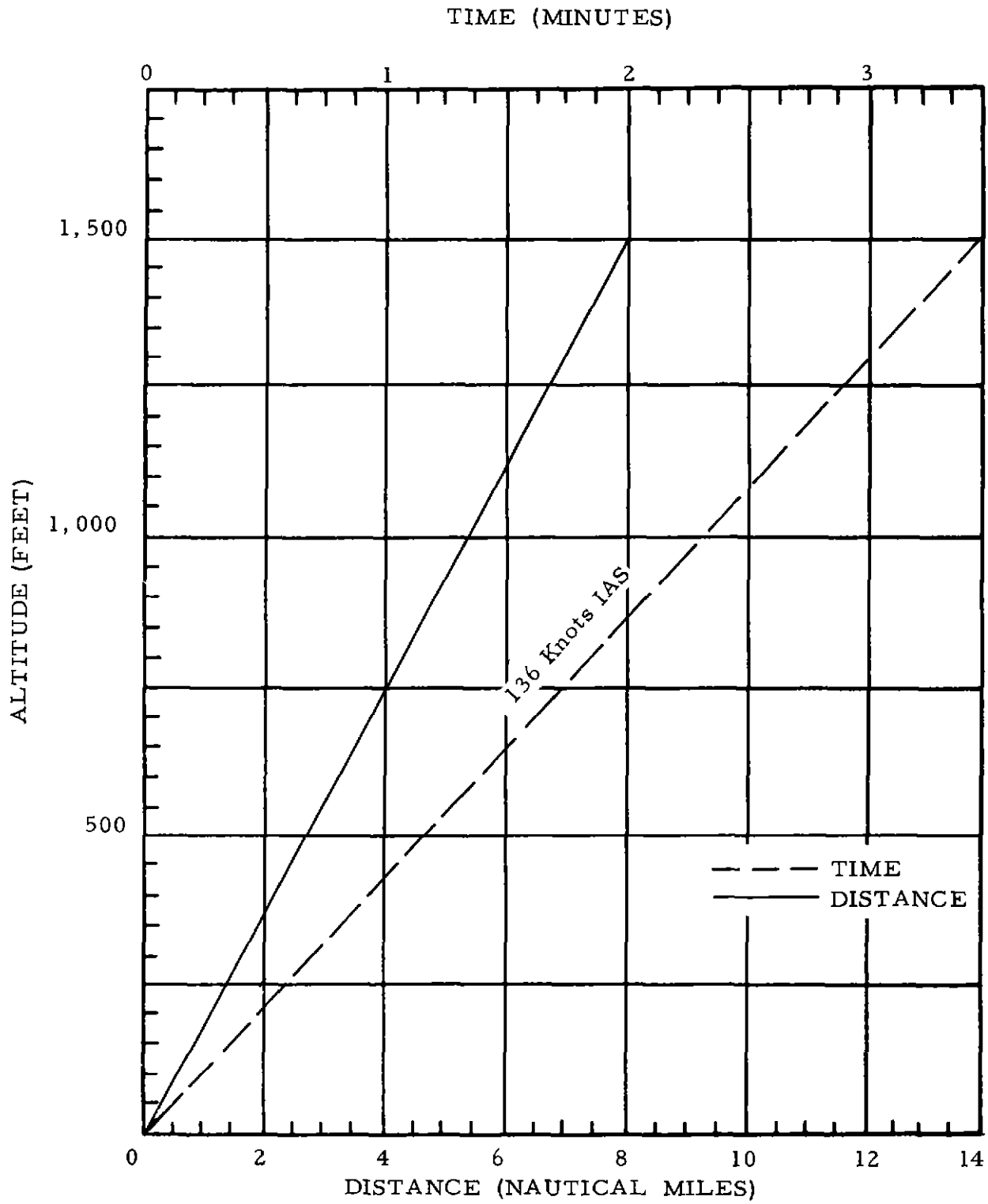


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down and flaps extended 22 degrees Power is set at 2,350 rpm and 26 inches manifold pressure

Speed (knots IAS)

Glide path airspeed 130
Maximum allowable (structural limitations) 158 (full flaps)

Distance

Minimum 6 5 nautical miles
Maximum 9 0 nautical miles
Operationally desirable 6 5 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 3 0 minutes
Maximum 4 2 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,500 feet
Maximum 2,000 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 600 feet per minute
Operationally desirable 500 feet per minute

Full power response time for go-round

2 to 5 seconds

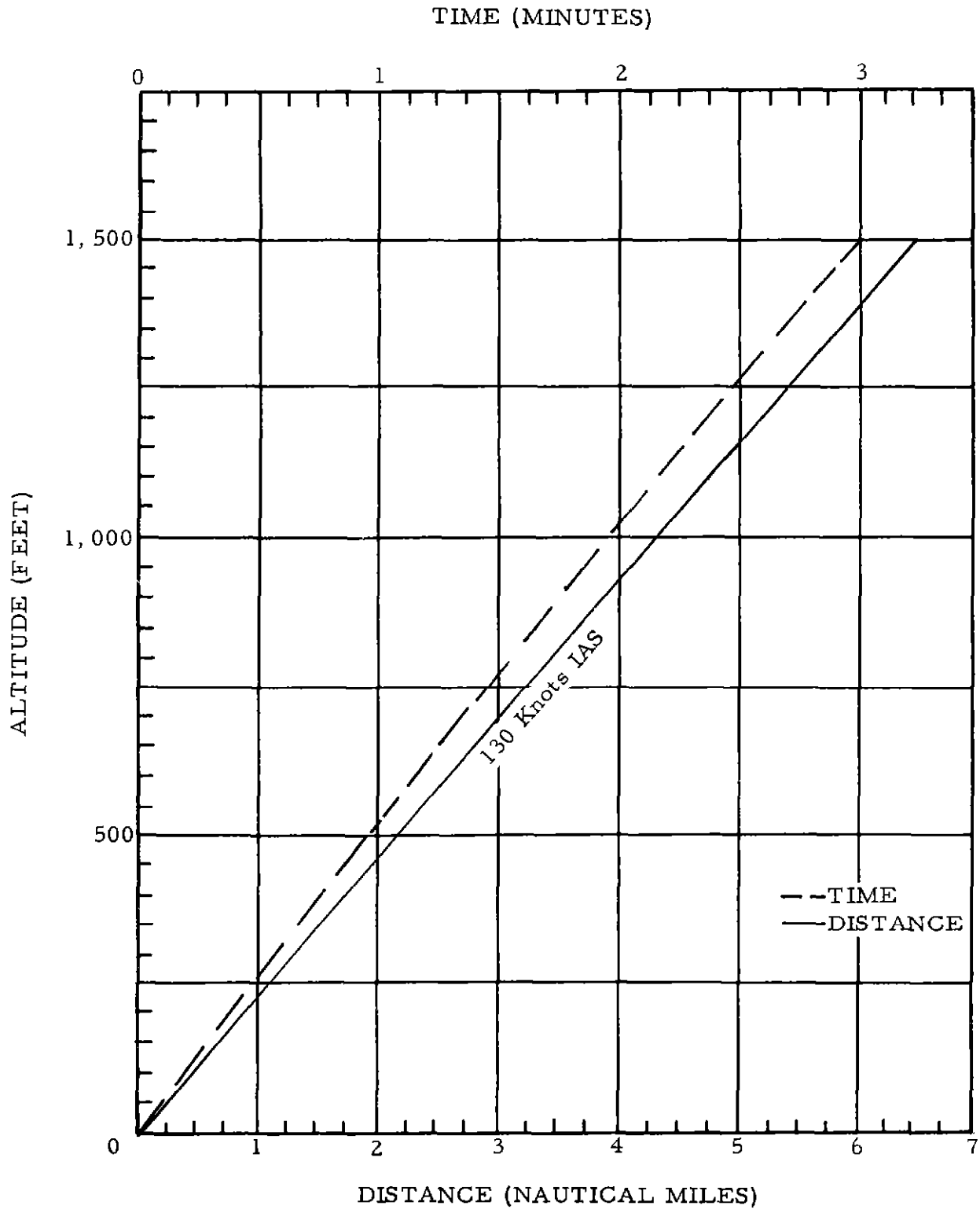


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, flaps extended 30 to 40 degrees, and speed brakes as required Power is set at a minimum of 80% rpm

Speed (knots IAS)

Glide path airspeed at 127,000 pounds 131
Percent deviation with gross weight per 10,000 pounds· 3 3%
Minimum maneuver speed 131
Stall Speeds (see Table I)
Maximum allowable (structural limitations) 200 (40° flaps)

Distance

Minimum 5 5 nautical miles
Maximum. 8 8 nautical miles
Operationally desirable 7.7 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2 5 minutes
Maximum 4 0 minutes
Operationally desirable 3 5 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 400 feet per minute
Maximum allowable 700 feet per minute
Operationally desirable. 500 feet per minute

Full Power Response Time for Go-Round

5 to 10 seconds

TABLE I
(Stall Speeds in Knots IAS, Gear Down, 50 Degree Flaps)

Gross Weight	0^{o} Bank
100,000 Lbs.	77
125,000 Lbs.	86
150,000 Lbs.	94

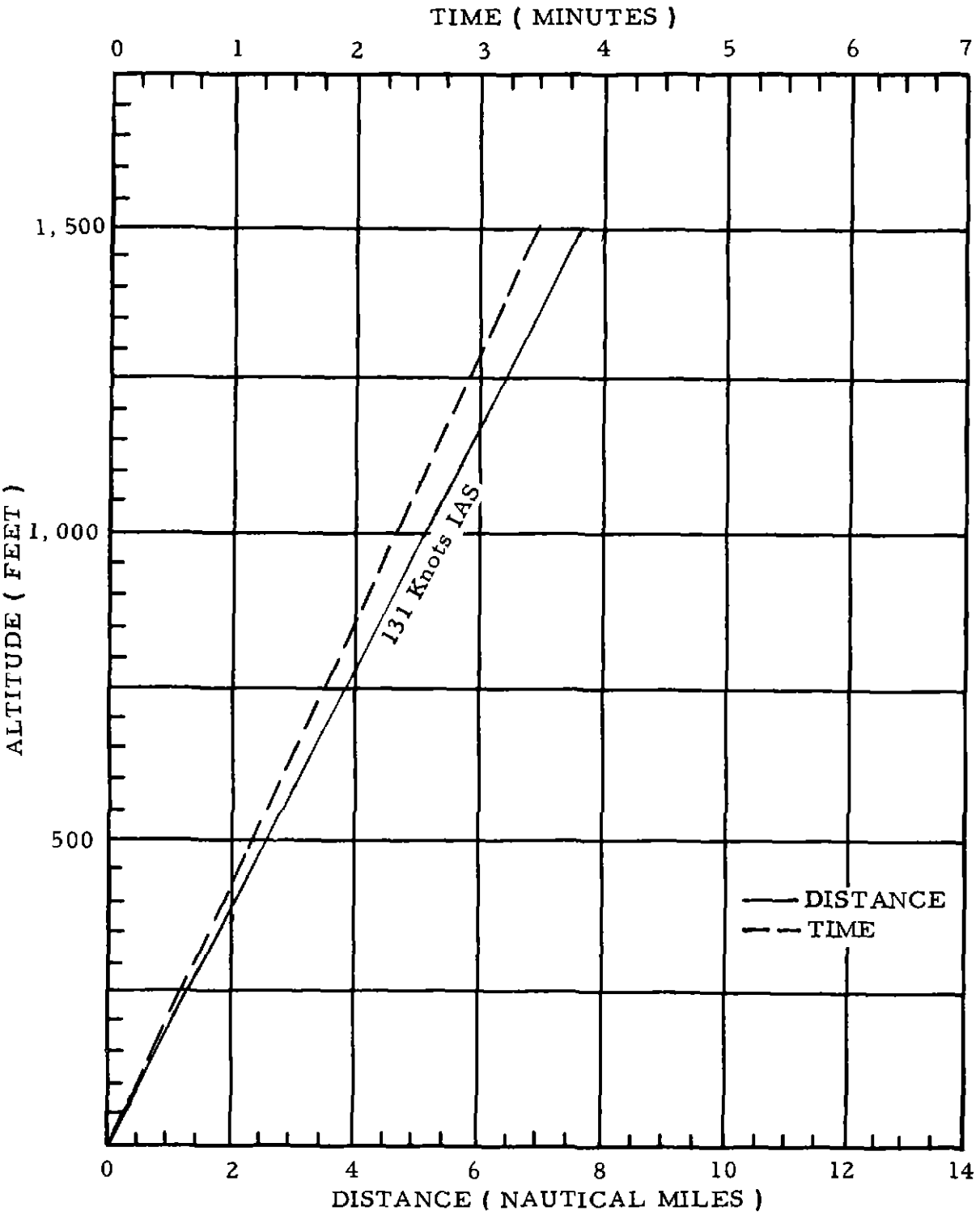


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path is with flaps extended as required Throttle is set for sufficient power to maintain a constant airspeed and rate of descent

Speed (knots IAS)

Glide path airspeed 87
Stall speeds (see Table I)
Maximum allowable (structural limitations) 87 (full flaps)

Distance

Minimum 2 9 nautical miles
Maximum 4 8 nautical miles
Operationally desirable 4 4 nautical miles (see Figure 1)

Time

Minimum 2. 0 minutes
Maximum 3 3 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum: 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

Immediate

Glide Path - 1/3 69

TABLE I
(Stall Speeds in Knots IAS at 100 Percent Flaps, Power Off)

Gross Weight	0° Bank	20° Banks	40° Bank	45° Bank
1,800 Lbs	36	39	47	60
2,100 Lbs	42	44	51	64
2,400 Lbs.	47	50	55	70

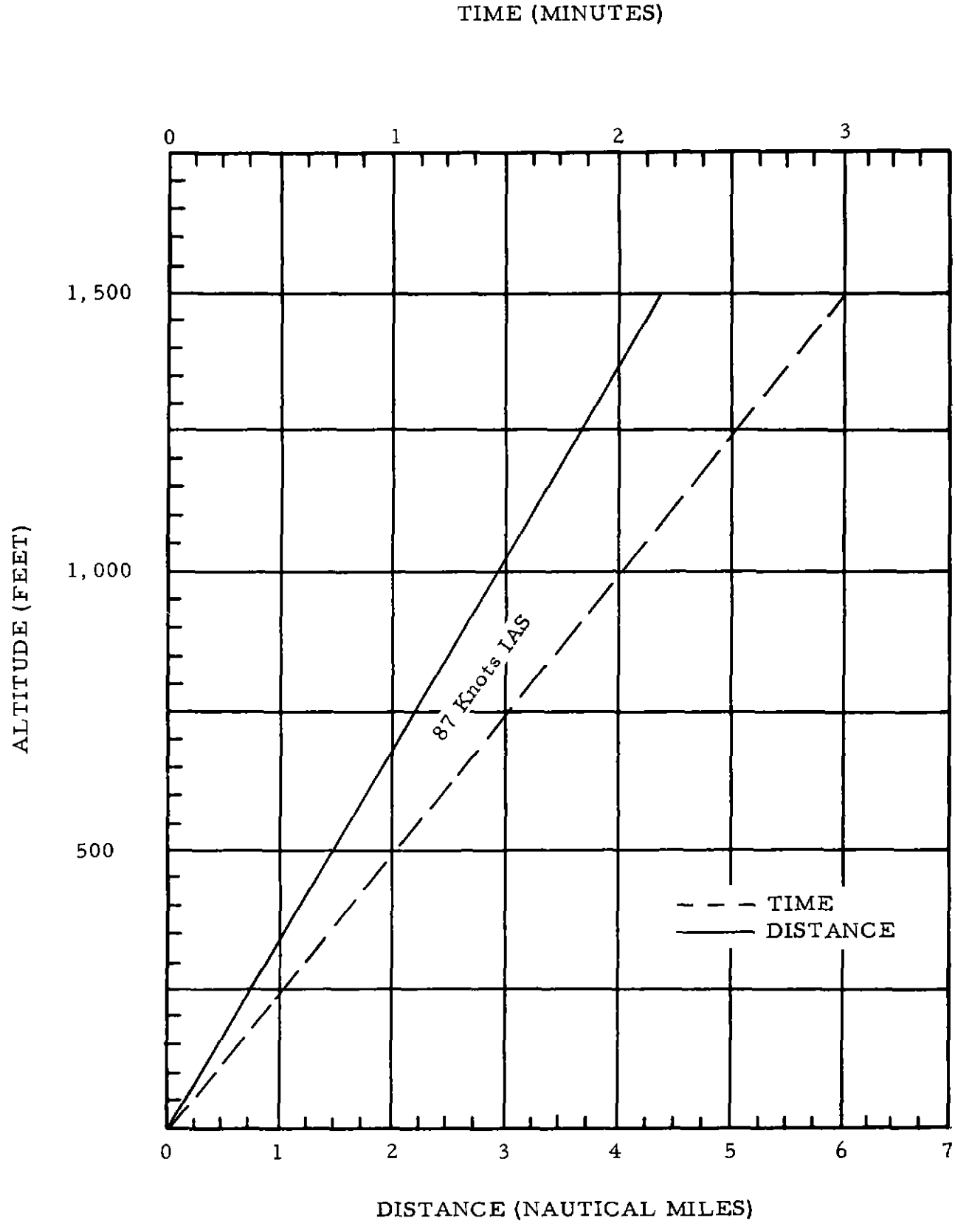


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down and flaps as required Throttle is set for sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed. 87
Stall speeds (see Table I)
Maximum allowable (structural limitations) 87 (full flaps)

Distance

Minimum 2 9 nautical miles
Maximum. 4 4 nautical miles
Operationally desirable 4 4 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum. 3 0 minutes
Operationally desirable. 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable 500 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

Immediate

TABLE I
(Stall Speeds in Knots IAS at 100 Percent Flaps and Gear Down)

Gross Weight	0° Bank	20° Bank	40° Bank	60° Bank
2,000	35	38	48	62
2,200	41	43	51	65
2,400	44	47	55	69

Note The above speeds apply for both power on and power off conditions.

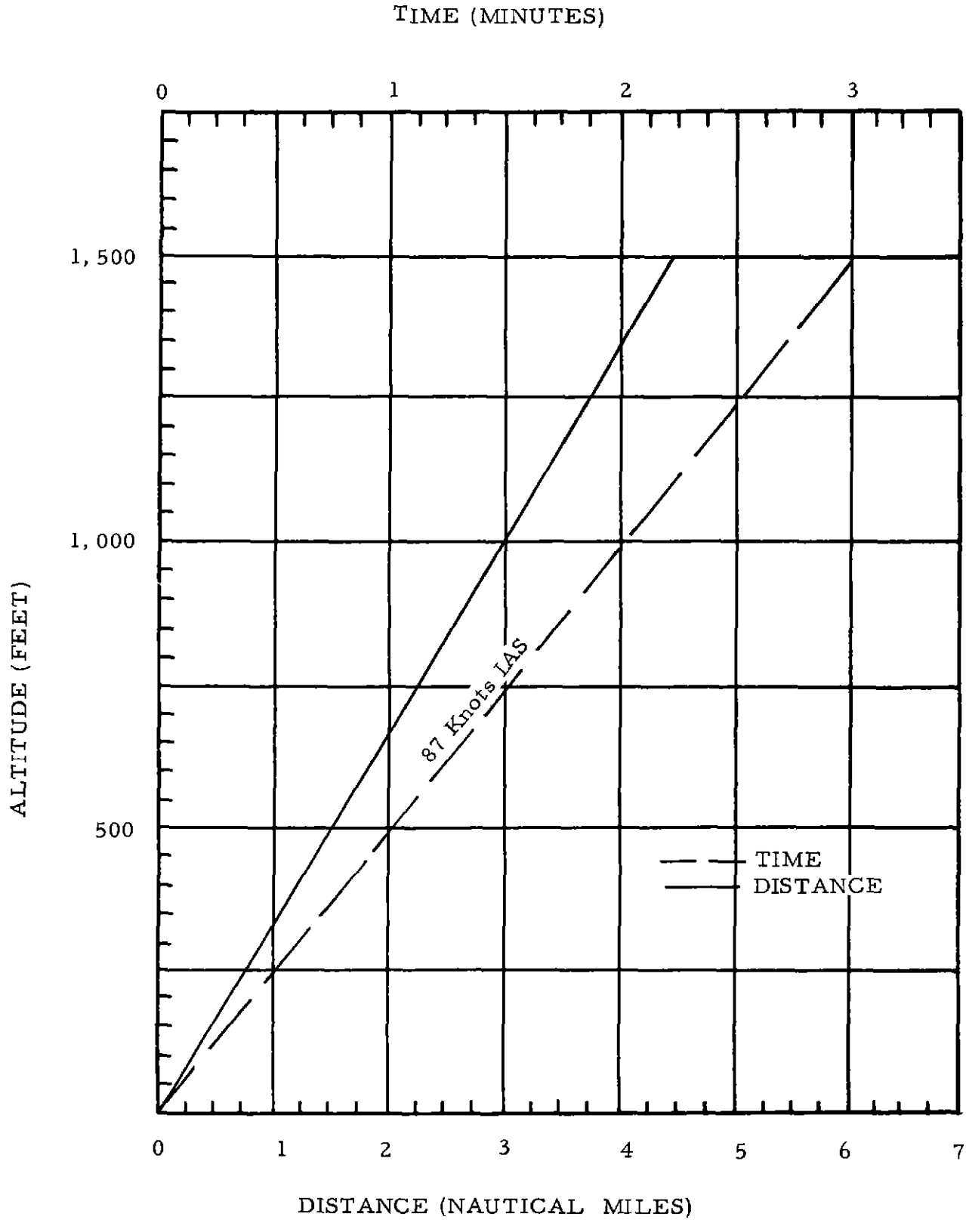


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, flaps extended 20 degrees, speed brakes and thrust attenuators extended Power is set at a minimum of 65 percent rpm

Speed (knots IAS)

Glide Path airspeed 110
Stall speeds (see Table I)
Maximum allowable (structural limitations) 135 (full flaps)

Distance

Minimum 3 0 nautical miles
Maximum 5. 5 nautical miles
Operationally desirable 5 5 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500

Rate of Descent

Minimum 500 feet
Maximum 1, 000 feet
Operationally desirable 500 feet

Full Power Response Time for Go-Round

14 seconds

TABLE I
(Stall Speeds in Knots IAS at 40 Degrees Flaps, Gear Down and Power Off)

Gross Weight	0° Bank	30° Bank	45° Bank	60° Bank
4, 400	60	64	72	85
5, 400	66	71	79	94
6, 400	72	77	86	102

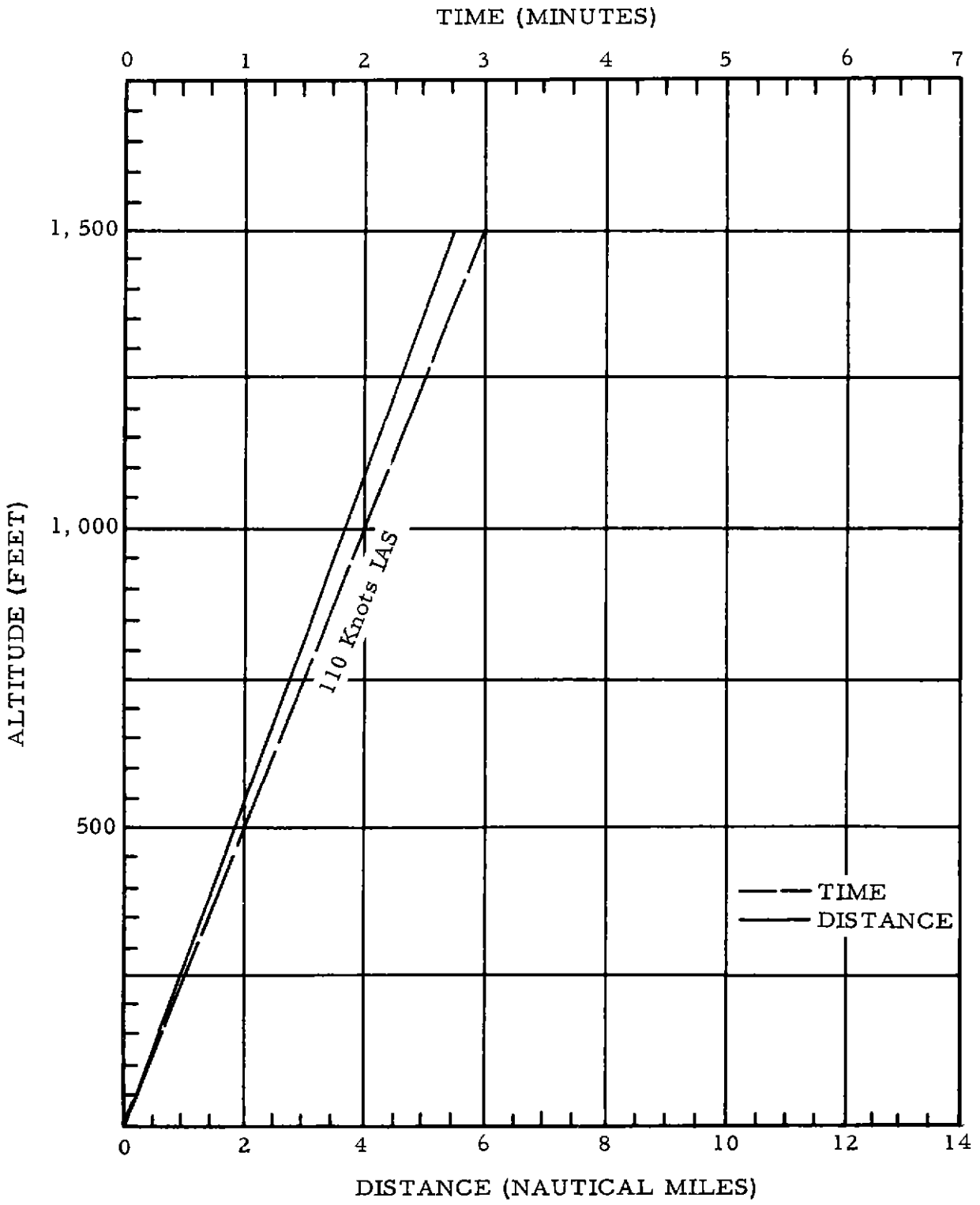


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 30 degrees. Power is set at 2, 800 rpm and manifold pressure as required.

Speed (knots IAS)

Glide path airspeed at 34, 000 pounds. 121
Percent deviation with gross weight per 2, 000 pounds 2. 1%
Stall speeds (see Table I)
Maximum allowable structural limitations 156 (30° Flaps)

Distance

Minimum 4. 0 nautical miles
Maximum 7. 0 nautical miles
Operationally desirable 6. 1 nautical miles (See Figure 1)

Time (to touchdown)

Minimum 2. 0 minutes
Maximum. 3. 5 minutes
Operationally desirable· 3. 0 minutes (See Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum· 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

Immediate

TABLE I

(Stall Speeds in Knots IAS at 75% Flaps)

Gross Weight	0° Bank	15° Bank	30° Bank
34,000	82	83	87
36,000	84	85	89
38,000	86	87	92
40,000	88	89	93
42,000	90	91	95
44,000	92	93	97
46,000	93	95	99

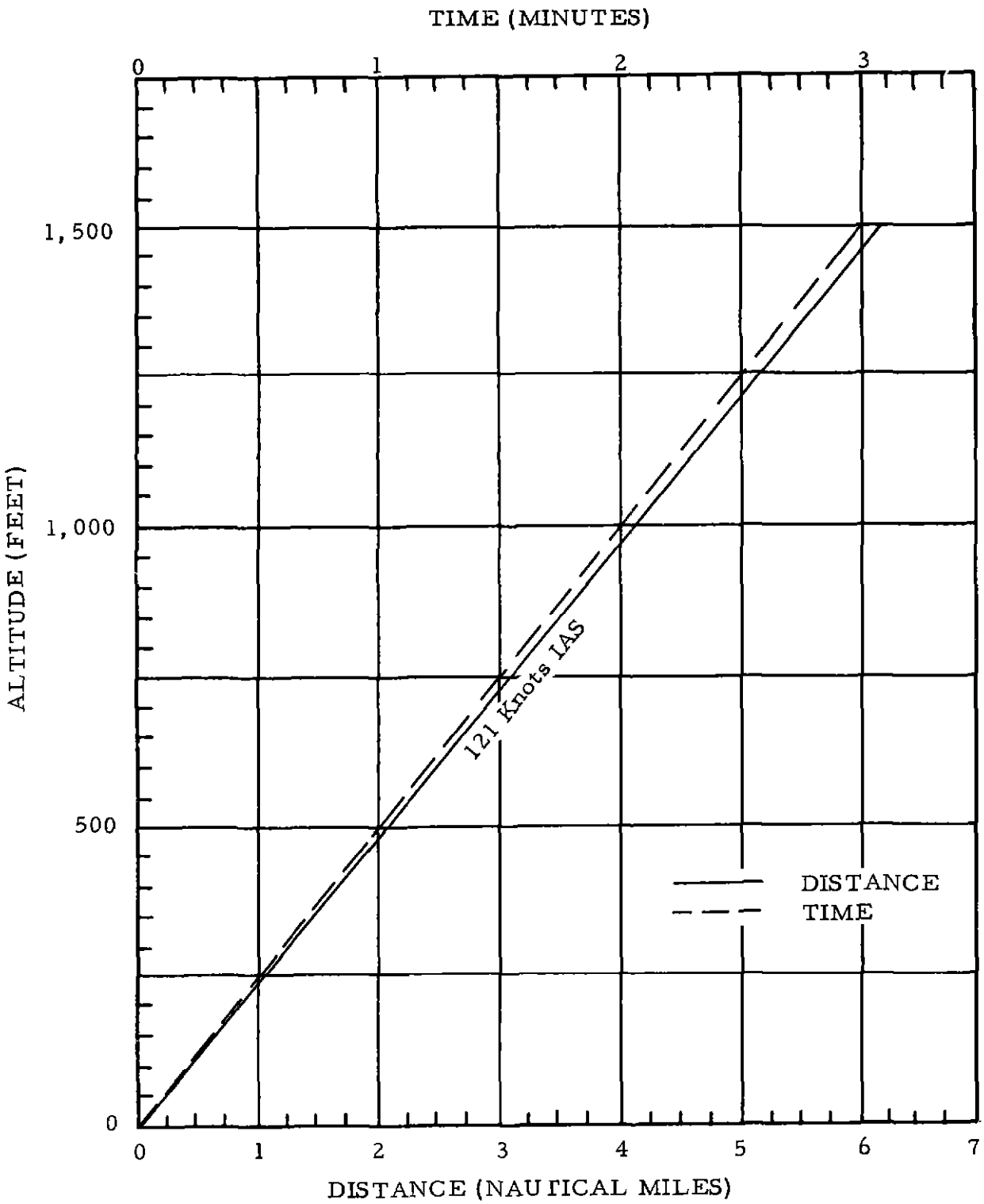


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 24 degrees. Power is set at 2,300 rpm and sufficient manifold pressure to maintain a constant airspeed and a constant rate of descent

Speed (knots IAS)

Glide path airspeed 115
Minimum maneuver speed 115
Maximum allowable (structural limitations) 165 knots
(24^{o} flaps)

Distance

Minimum 2.5 nautical miles
Maximum 9 6 nautical miles
Operationally desirable 4 8 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 1 3 minutes
Maximum 5 0 minutes
Operationally desirable 2 5 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum 750 feet per minute
Operationally desirable 600 feet per minute

Full Power Response Time for Go-Round

2 to 5 seconds

Stall Speeds (knots IAS with gear down and power off)

Gross Weight	24° Flaps
35,000 pounds	76
40,000 pounds	80
45,000 pounds	83
50,000 pounds	86

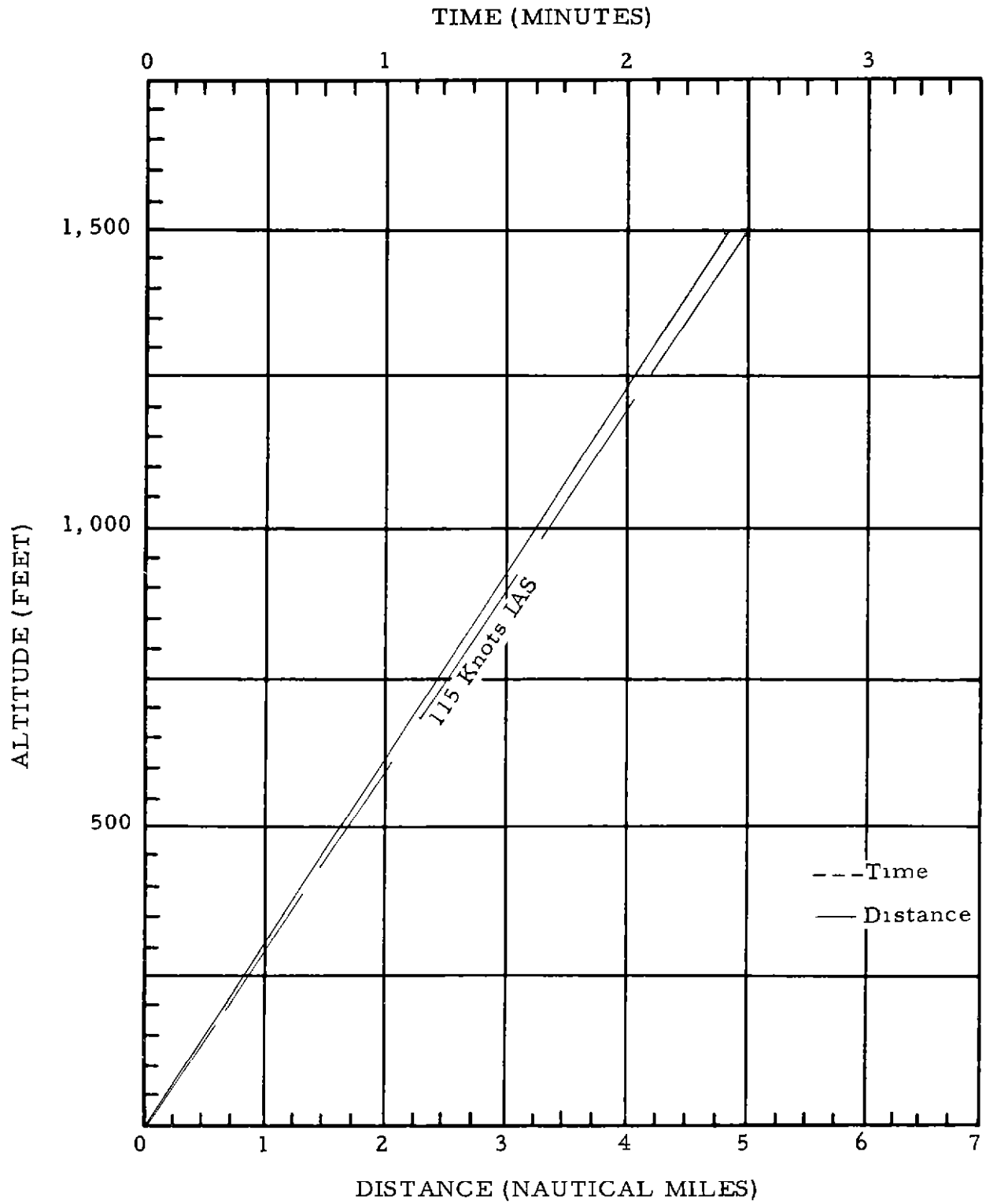


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 28 degrees. Power is set at 2, 300 rpm and manifold pressure as required.

Speed (knots IAS)

Glide path airspeed at 38, 000 pounds 114
Percent deviation with gross weight per 1, 000 pounds 1%
Stall speeds (see Table I)
Maximum allowable (structural limitations) 141 (full flaps)

Distance

Minimum 2 5 nautical miles
Maximum 5 7 nautical miles
Operationally desirable 5. 7 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 1. 3 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum 770 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 3 seconds

TABLE I

(Stall Speeds in Knots IAS at 28 Degrees Flaps, Gear Down and Power-Off)

Gross Weight	0° Bank	15° Bank	30° Bank
42,000 pounds	90	92	96
40,000 "	89	90	94
38,000 "	87	88	92
36,000 "	85	86	90
34,000 "	83	84	88

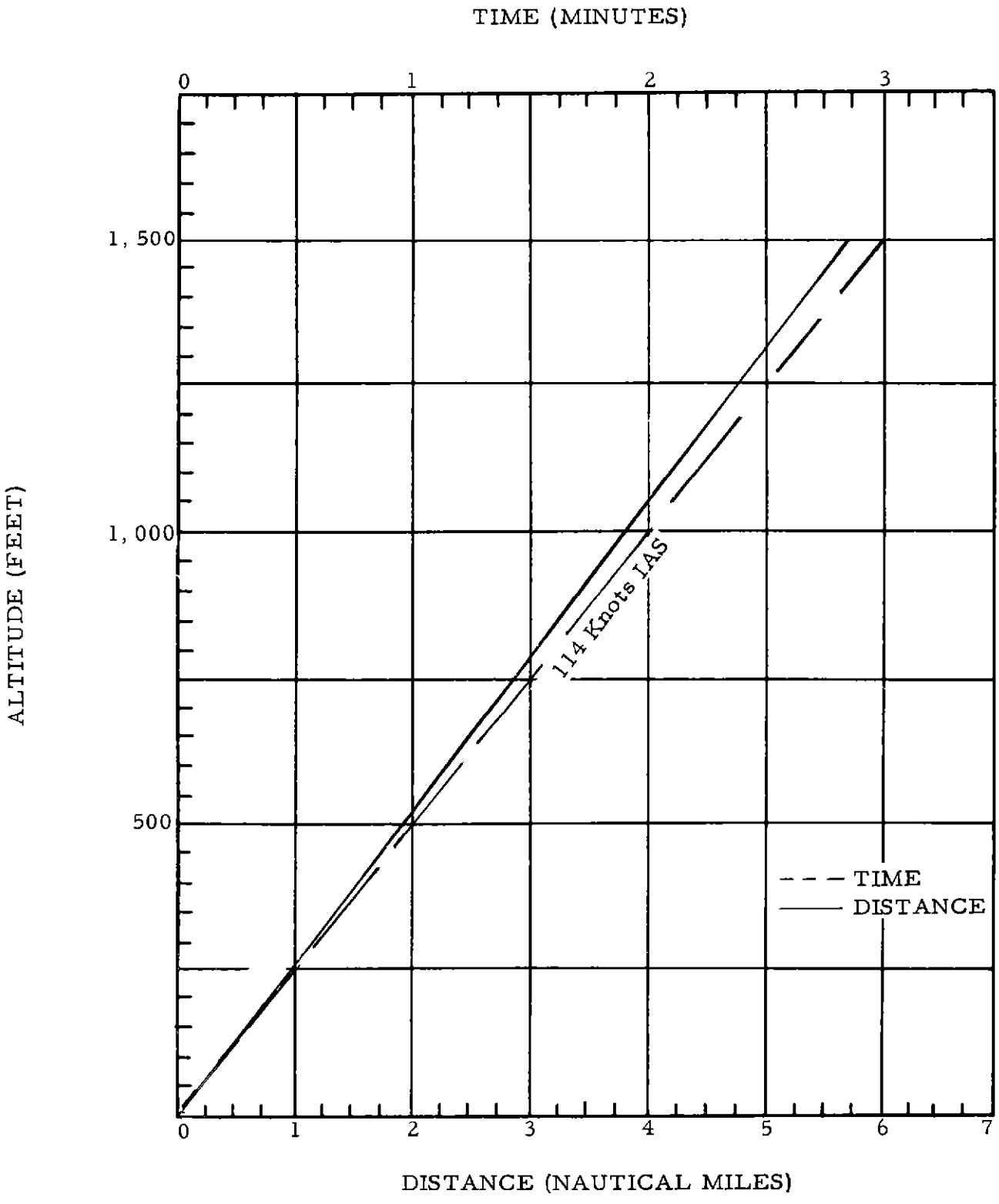


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required Throttles are set at sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed 110
Stall speeds (see Table I)
Maximum allowable (structural limitations). 114 (100% Flaps)

Distance

Minimum 2.7 nautical miles
Maximum 5.0 nautical miles
Operationally desirable 5 0 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 1 5 minutes
Maximum 2 7 minutes
Operationally desirable 2.7 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 550 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 550 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS with Gear Down)

Gross Weight	100% Flaps
50,000 pounds	72
46,000 pounds	69
40,000 pounds	64
36,000 pounds	61

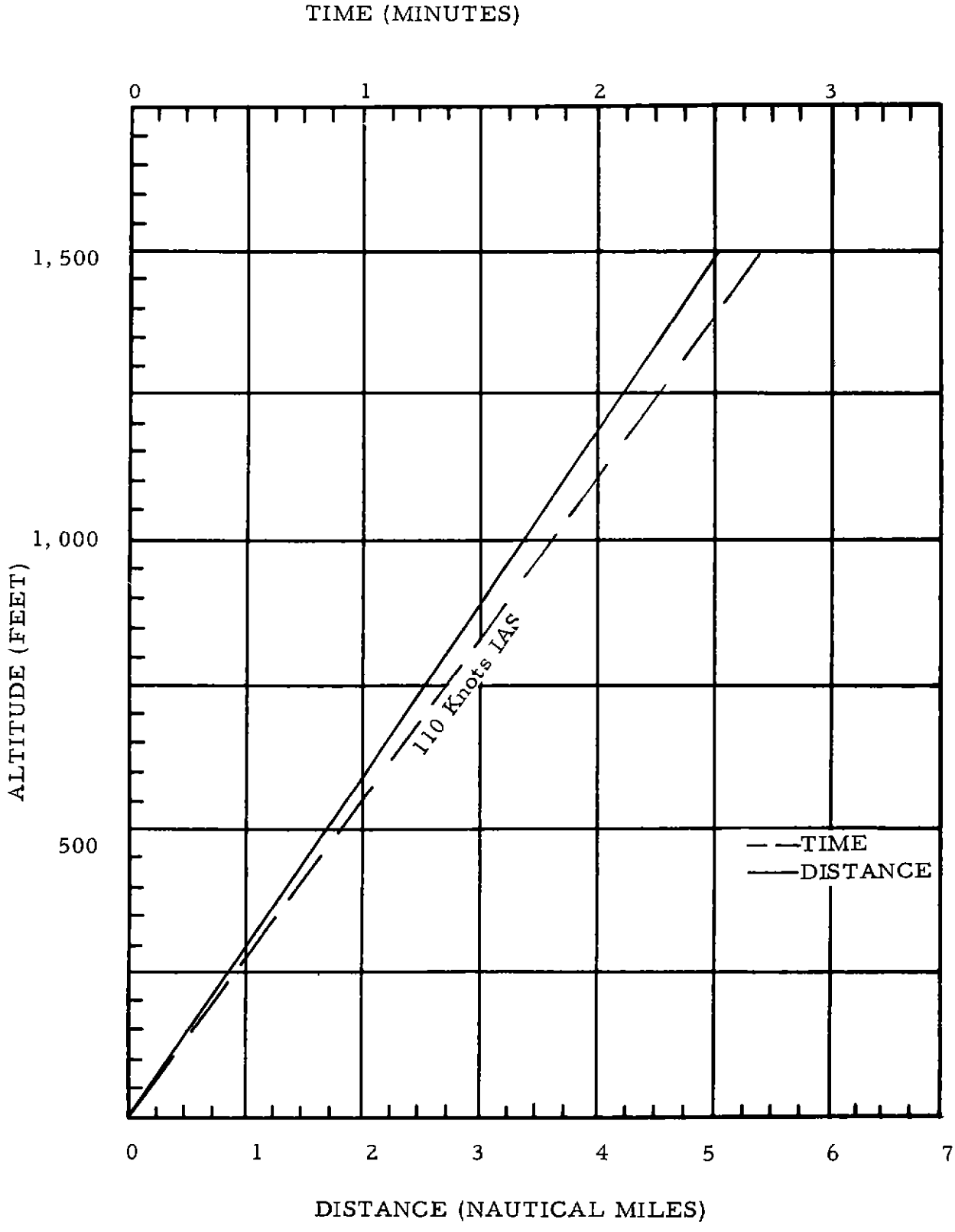


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down and flaps extended 20 degrees Throttles are set at sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed 135
Stall speeds (see Table I)
Maximum allowable (structural limitations) 132 (full flaps)

Distance

Minimum 6 0 nautical miles
Maximum 6 7 nautical miles
Operationally desirable 6 7 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2 8 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum 540 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

5 to 10 seconds

TABLE I
(Stall Speeds in Knots IAS With Gear Down and Power Off)

Gross Weight	20° Flaps		0° Flaps	
	0° Bank	30° Bank	0° Bank	30° Bank
168,000	100 5	109.0	111 0	120 5
160,000	98 0	106 0	108.0	117 5
150,000	95 0	103 0	105.0	114.0
140,000	91 5	99 0	101 5	110 0
130,000	88 0	95 5	97 5	106 0

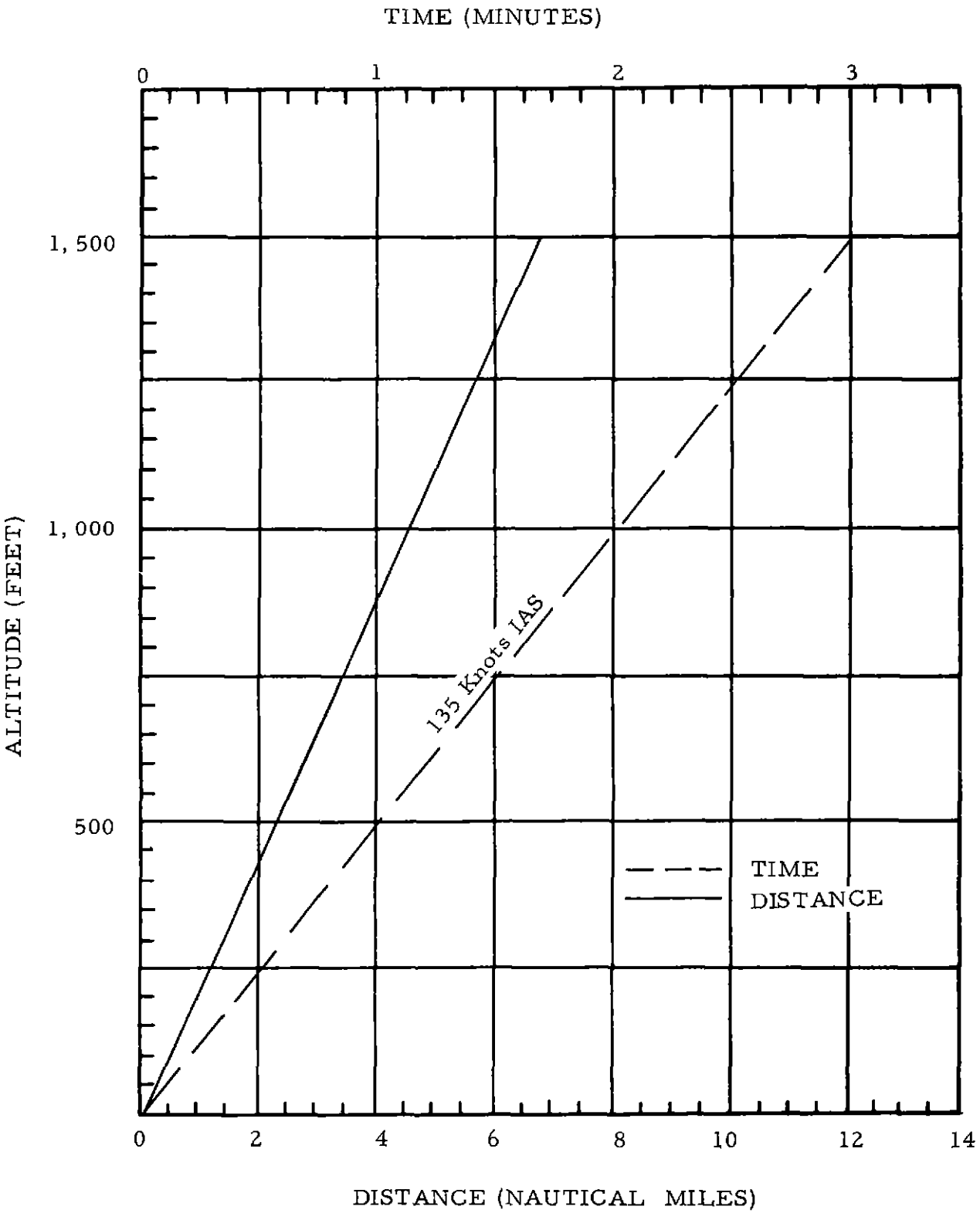


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 35 degrees

Speed (knots IAS)

Glide path airspeed 125
Stall speeds (see Table I)
Minimum maneuver speed 135
Maximum allowable structural limitations 160 (full flaps)

Distance

Minimum. 2 9 nautical miles
Maximum 10 0 nautical miles
Operationally desirable 6 3 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 1 4 minutes
Maximum 4 8 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 2,000 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum 700 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

Immediate

TABLE I

(Stall Speeds in Knots IAS With Gear Down and Power Off)

Gross Weight	35° Flaps
160,000 pounds	106
180,000 "	113
200,000 "	119
220,000 "	124
240,000 "	130

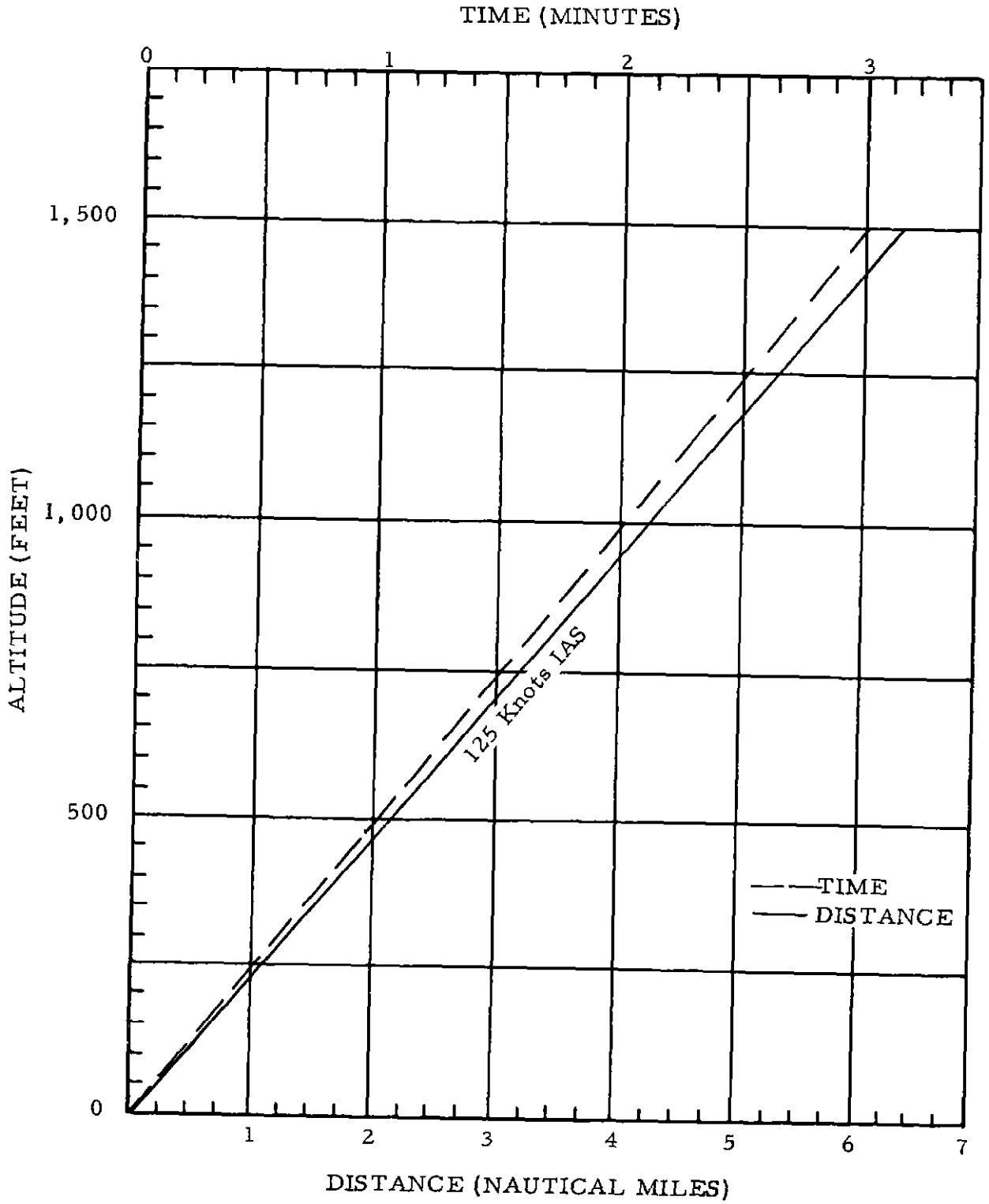


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, flaps extended 100%, and speed brakes open Power is reduced as required

Speed (knots IAS)

Glide path airspeed at 55,000 pounds 148
Percent deviation with gross weight per 5,000 pounds 4 1%
Stall speed (see Table I)
Maximum allowable, structural limitations 184 (full flaps)

Distance

Minimum 3 8 nautical miles
Maximum 7.4 nautical miles
Operationally desirable 5 0 nautical miles

Time (to touchdown)

Minimum 1 5 minutes
Maximum 3 0 minutes
Operationally desirable. 2.0 minutes

Altitude

Minimum 1,500 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum 1,000 feet per minute
Operationally desirable 750 feet per minute

Full Power Response Time for Go-Round

10 to 15 seconds

Flare Speed (knots IAS)

Gross Weight	
80,000 pounds	164
70,000 "	153
60,000 "	142
50,000 "	130

TABLE I

(Stall Speeds in Knots IAS with Gear Down and Flaps Extended 100%, Speed Brakes Open)

Gross Weight	0° Bank
80,000	129
70,000	121
60,000	112
50,000	102

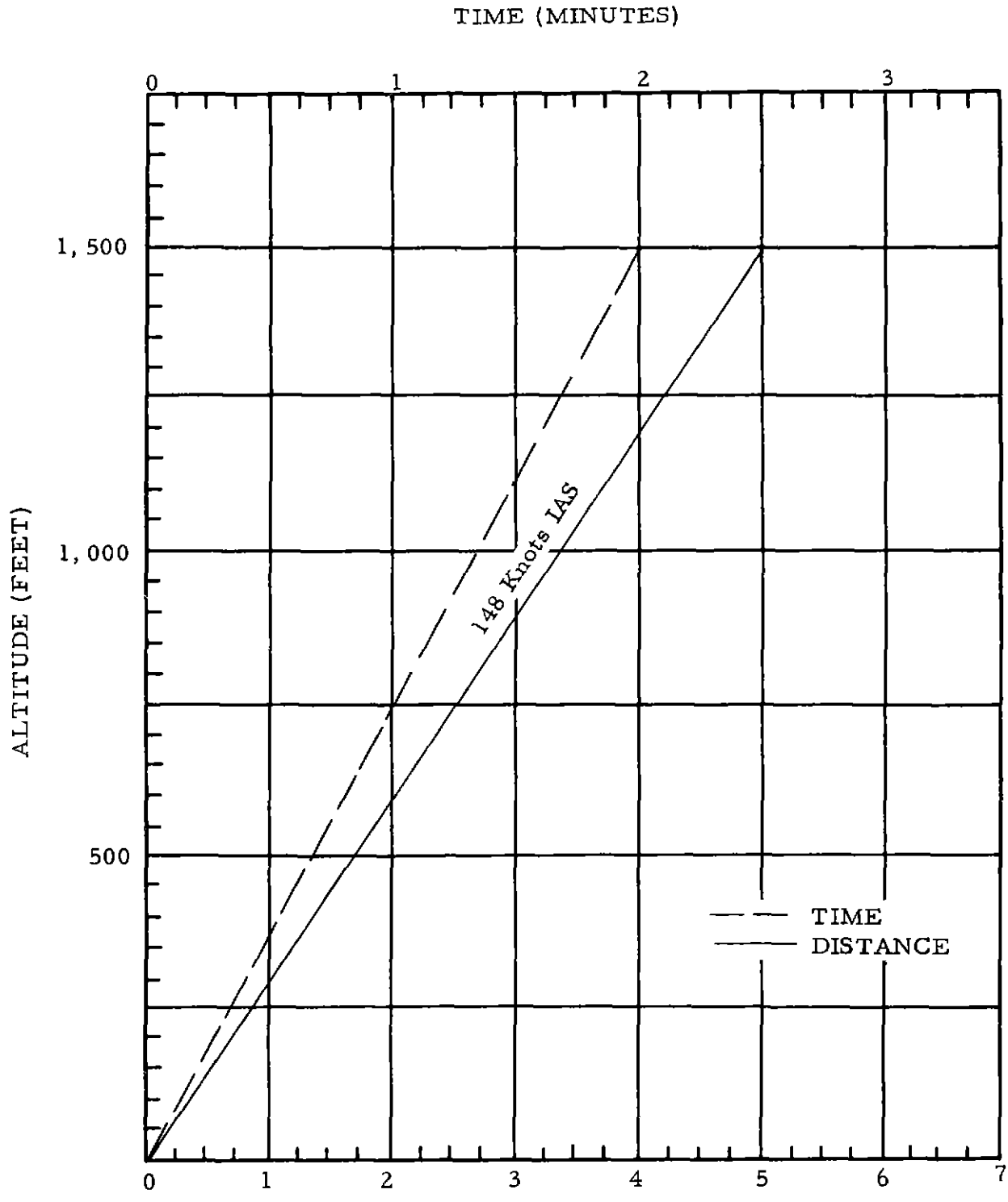


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 40 degrees. Throttles are set at sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed at 55,000 pounds 110
Percent deviation with gross weight per 5,000 pounds 3.3%
Minimum maneuver speed 110
Maximum allowable structural limitations 140 (40^{o} Flaps)

Distance

Minimum 2.6 nautical miles
Maximum 5 5 nautical miles
Operationally desirable 5.5 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 1.4 minutes
Maximum 3 0 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 500 feet per minute
Maximum allowable 700 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

5 seconds

Stall Speeds (approach power, 14 degrees flaps, 0 degree angle of bank)

81 knots IAS at a gross weight of 55,000 pounds
Percent deviation per 5,000 pounds gross weight 4.8%

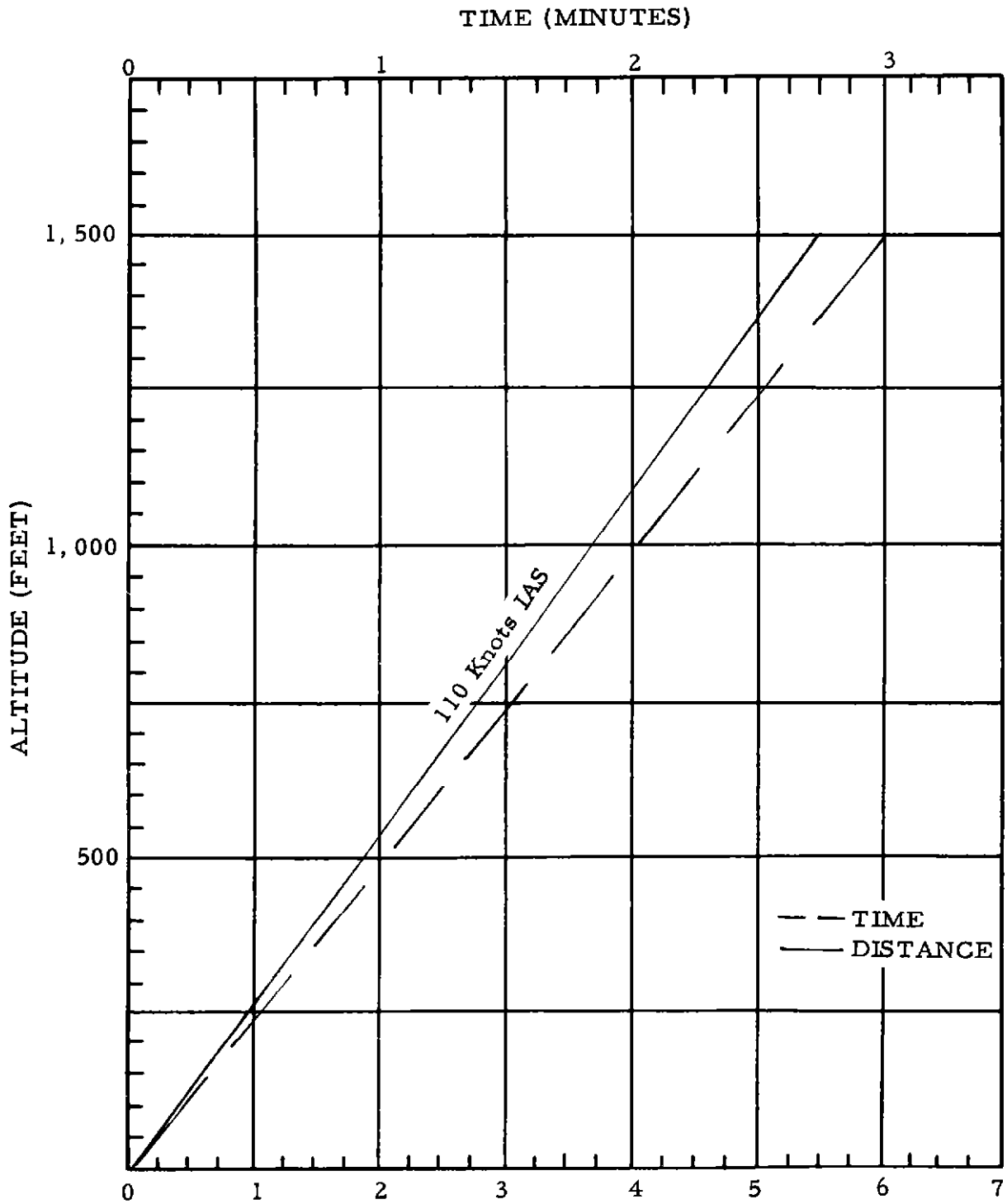


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 20 degrees. Power is set at a minimum of 2,400 rpm and manifold pressure as required to maintain a constant rate of descent and airspeed.

Speed (knots IAS)

Glide path airspeed at all gross weights 110
Minimum maneuver speed 100
Stall speeds. (see Table I)
Maximum allowable (structural limitations) 132 (60 degrees flaps)

Distance

Minimum 3.7 nautical miles
Maximum 5.5 nautical miles
Operationally desirable 5.5 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2.0 minutes
Maximum 3.0 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 500 feet per minute
Maximum allowable 700 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS With 45 Degree Flaps)

Gross Weight	0° Bank	10° Bank	20° Bank	30° Bank
Power On 42,000 Lbs.	63.5	64 0	66 0	69.0
Power Off 42,000 Lbs.	69.0	70.0	71.5	74.5

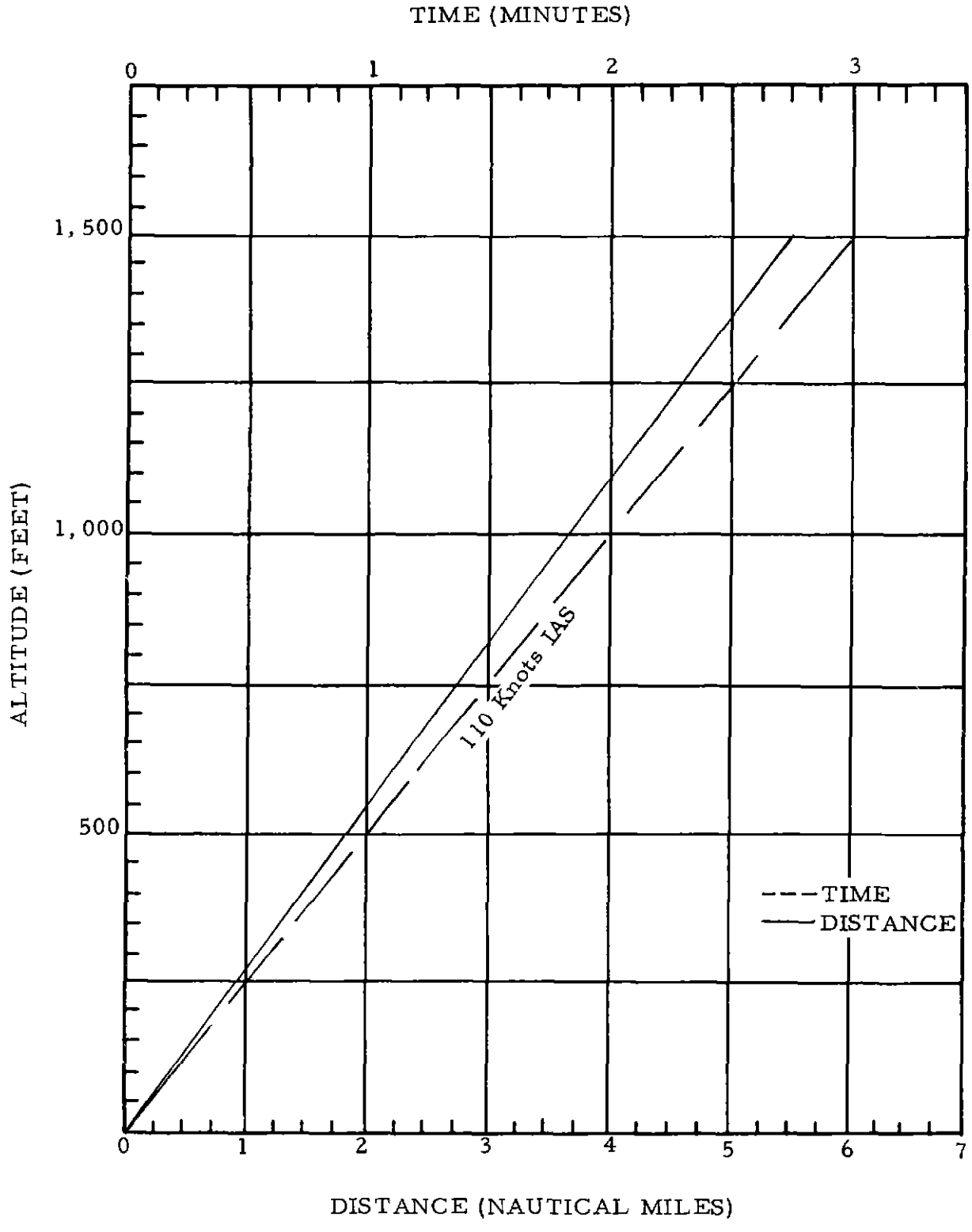


FIGURE 1, GLIDE PATH - TIME AND DISTANCE DATA

NARRATIVE SUMMARY

Sequence of Operations

On glide path, the airship configuration is with gear down and power set at a minimum of 22 inches manifold pressure

Speed (knots IAS)

Glide Path airspeed 40
Percent deviation with gross weight None
Minimum maneuver speed 25 (minimum control speed)
Maximum allowable (structural limitations) 75

Distance

Minimum 0 3 nautical mile
Maximum Not applicable
Operationally desirable 0 5 nautical mile (see Figure 1)

Time

Minimum 0.4 minute
Maximum Not applicable
Operationally desirable 0.8 minute (see Figure 1)

Altitude

Minimum 50 feet
Maximum 1,500 feet (estimated)
Operationally desirable 400 feet

Rate of Descent

Minimum 125 feet per minute
Maximum. 1,200 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 3 seconds

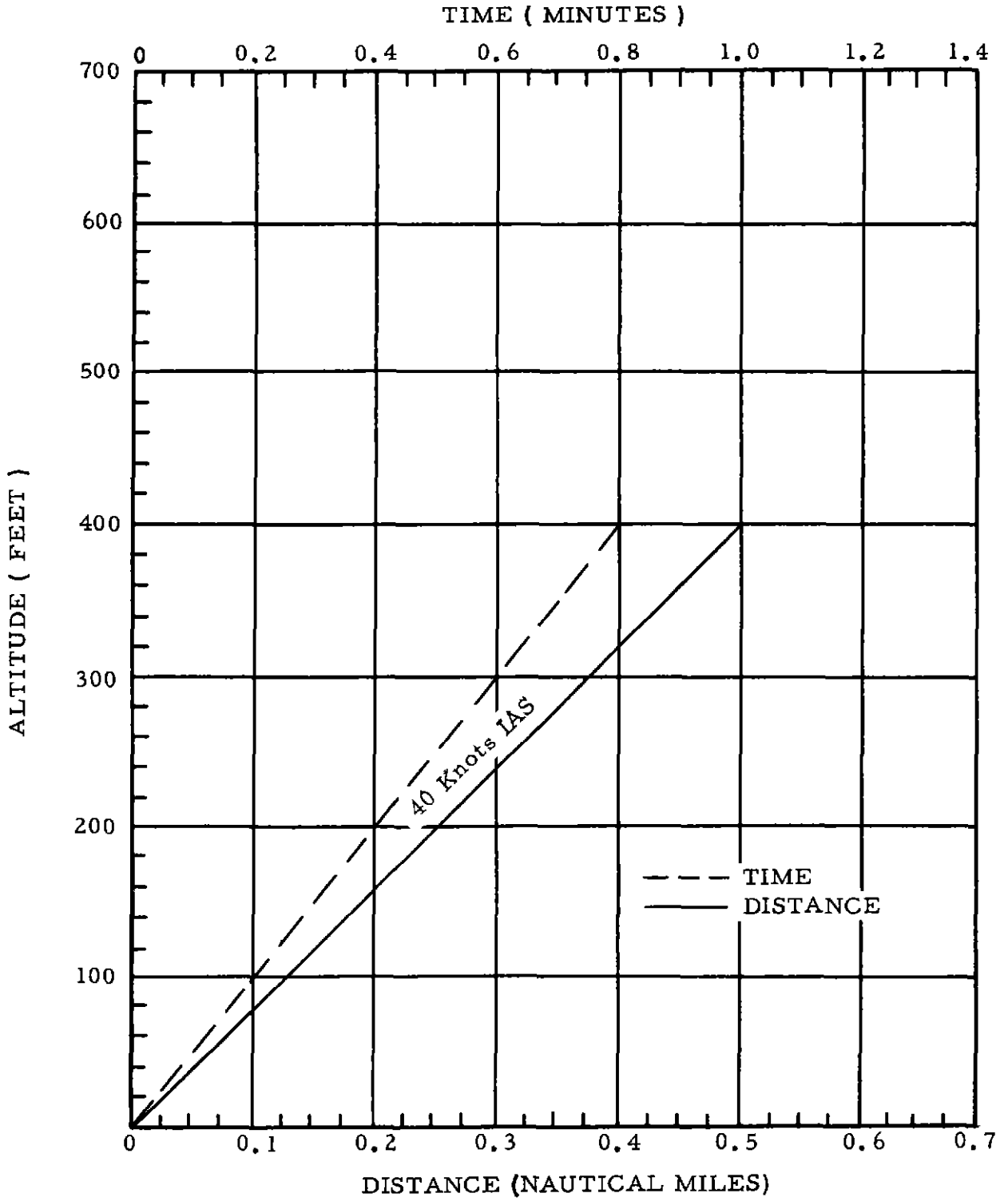


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

On glide path, the airship configuration is with landing gear down, and power is set to maintain an airspeed of 42 knots IAS

Speed (knots IAS)

Glide path airspeed 42
Percent deviation with gross weight none
Minimum maneuver speed. 25 (minimum control speed)
Maximum allowable (structural limitations) 82

Distance

Minimum. 0.3 nautical mile
Maximum not applicable
Operationally desirable 0 7 nautical mile (see Figure 1)

Time

Minimum 0 4 minute
Maximum not applicable
Operationally desirable 1.0 minute (see Figure 1)

Altitude

Minimum 50 feet
Maximum 1, 500 feet (estimated)
Operationally desirable 500 feet (see Figure 1)

Rate of Descent

Minimum 125 feet per minute
Maximum 2, 000 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

5 to 10 seconds

Flare Speed (knots IAS)

Gross Weight	
84,000	42
83,000	40
82,000	38
81,000	36

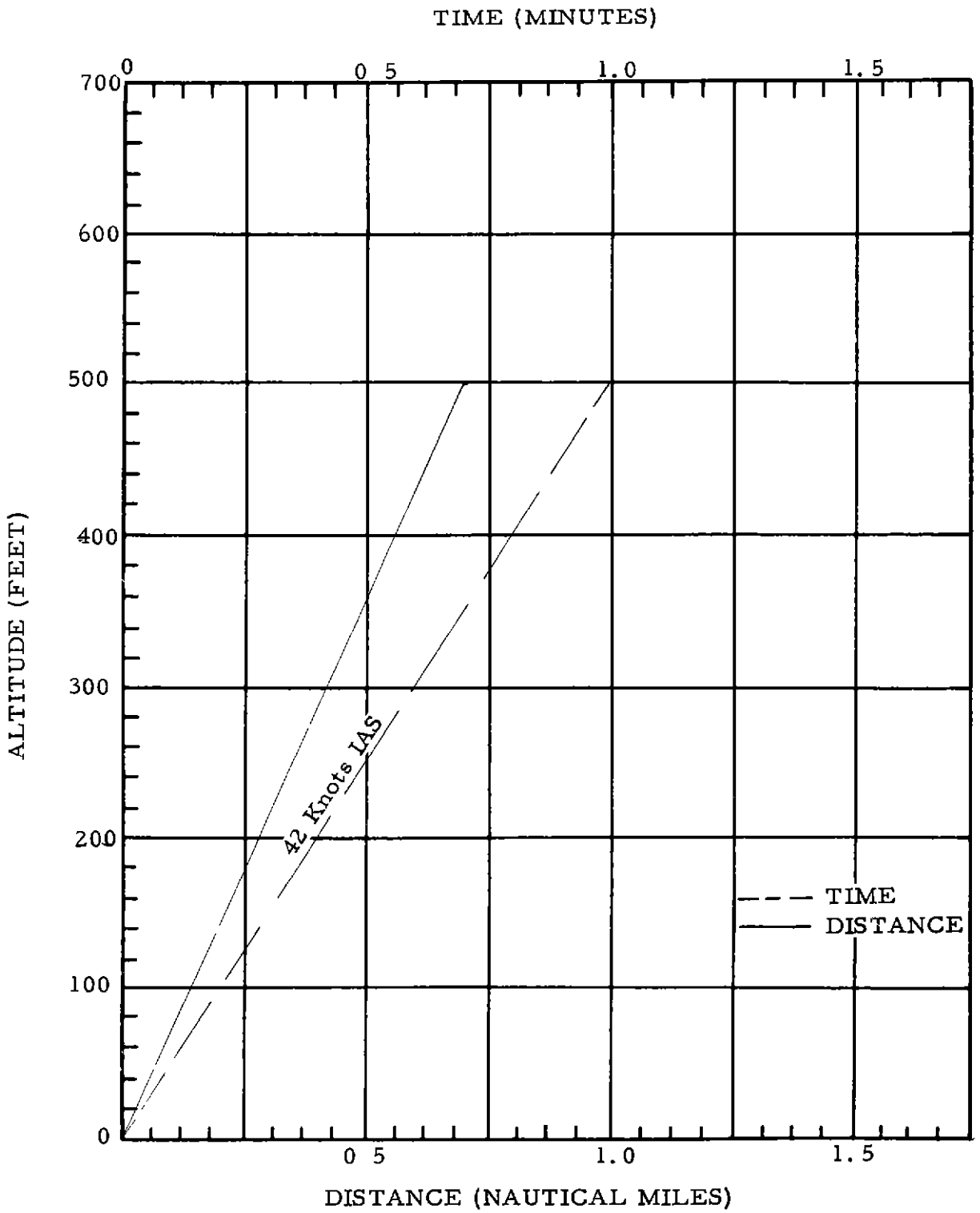


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 15 degrees. Throttles are set at sufficient power to maintain a constant airspeed and a constant descent.

Speed (knots IAS)

Glide path airspeed at any gross weight 115
Percent deviation with gross weight None
Stall Speeds (see Table I)
Maximum allowable (structural limitations). 130 (gear down)

Distance

Minimum. 3.8 nautical miles
Maximum 5.7 nautical miles
Operationally desirable 3.8 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2.0 minutes
Maximum 3.0 minutes
Operationally desirable 2.0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,000 feet (see Figure 1)

Rate of Descent

Minimum 500 feet per minute
Maximum 800 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

10 to 15 seconds

TABLE I
(Stall Speeds in Knots IAS at 40 Degree Flaps, Gear Down)
and Power Off)

Gross Weight	0^{o} Bank	15^{o} Bank
29,500	75	79
25,000	70	73

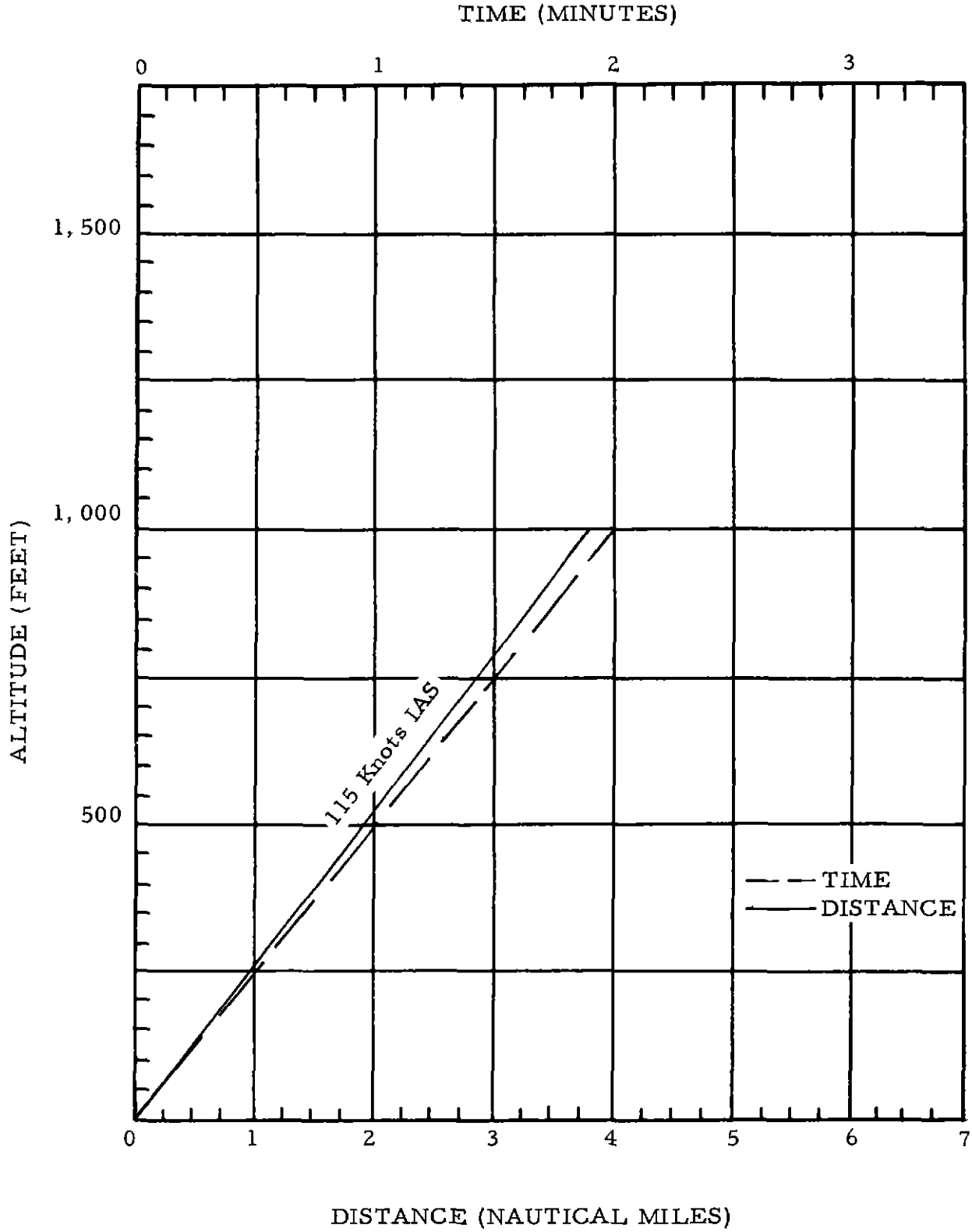


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps at 45 degrees, or as required Throttles are set at 2, 550 rpm

Speed (knots IAS)

Glide path airspeed at 120, 000 pounds 117
Percent deviation with gross weight per 10, 000 pounds 3.8%
Power-off stall speed (see Table I)
Maximum allowable structural limitations 155 (full flaps)

Distance

Minimum 2 0 nautical miles
Maximum 5 8 nautical miles
Operationally desirable 5 8 nautical miles

Time (to touchdown)

Minimum 1 0 minute
Maximum 3 0 minutes
Operationally desireable 3 0 minutes

Altitude

Minimum 800 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 800 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

Flare Speed (knots IAS)

Gross Weight	
150,000 pounds	131
140,000 "	126
130,000 "	122
120,000 "	117
110,000 "	113

TABLE I

(Power-off Stall Speeds - Knots IAS)

Gross Weight (pounds)	Flaps up Gear up		25° Flaps Gear Down		45° Flaps Gear Down	
	0° Bank	30° Bank	0° Bank	30° Bank	0° Bank	30° Bank
170,000	143	155	128	136	113	122
160,000	139	150	124	133	110	119
150,000	135	146	120	129	107	116
140,000	130	141	116	124	103	111
130,000	125	136	111	120	100	107
120,000	120	130	107	116	97	103
110,000	115	124	103	110	92	98

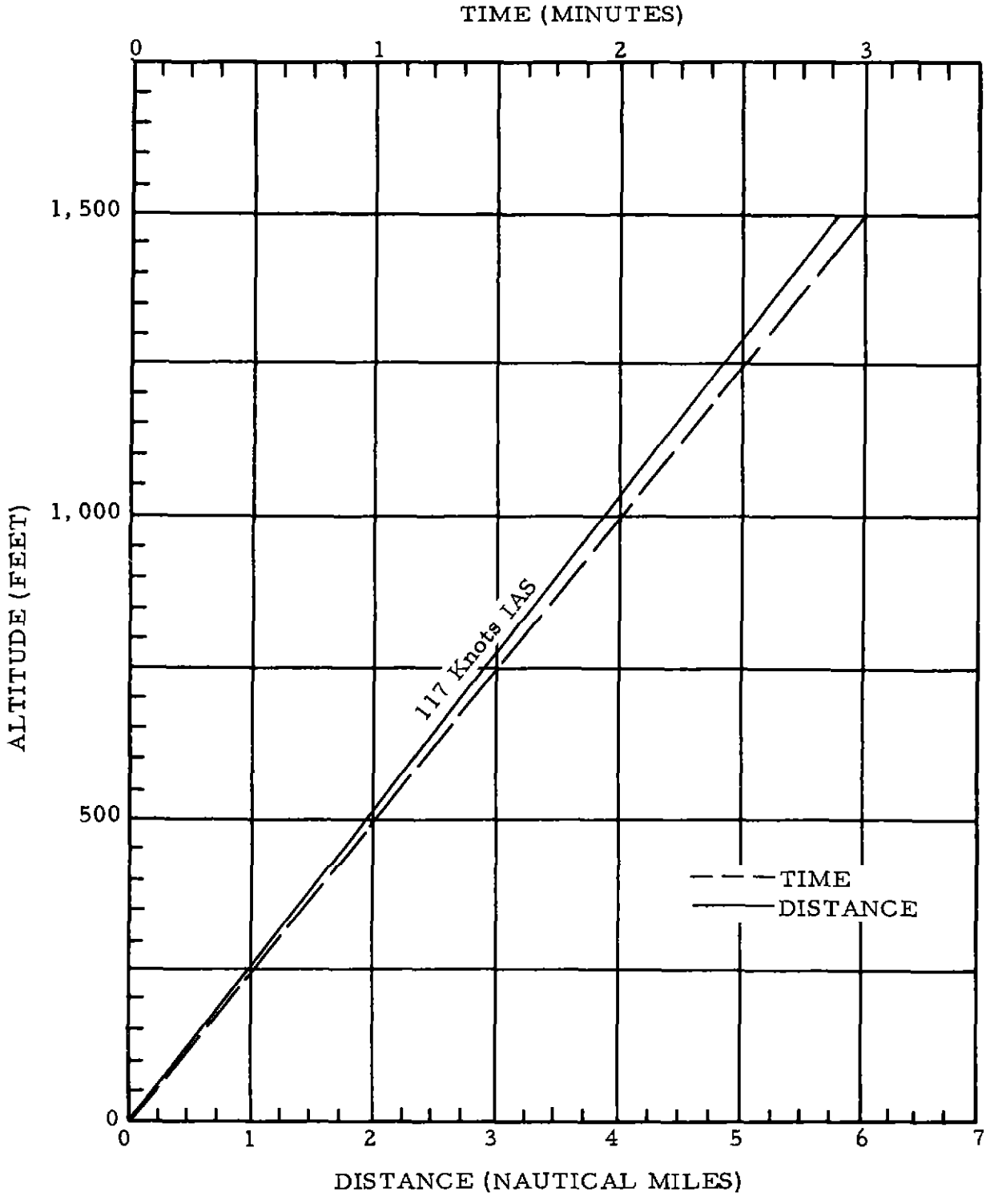


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Helicopter configuration on glide path is clean Power is set at 3, 200 rpm and manifold pressure as required

Speed

Glide path airspeed at any gross weight 65 knots IAS
Maximum allowable (structural limitations) 83 knots IAS
Maximum allowable rotor 395 rpm

Distance

Minimum 2 2 nautical miles
Maximum 4 9 nautical miles
Operationally desirable 3 3 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 4 5 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

1 to 2 seconds

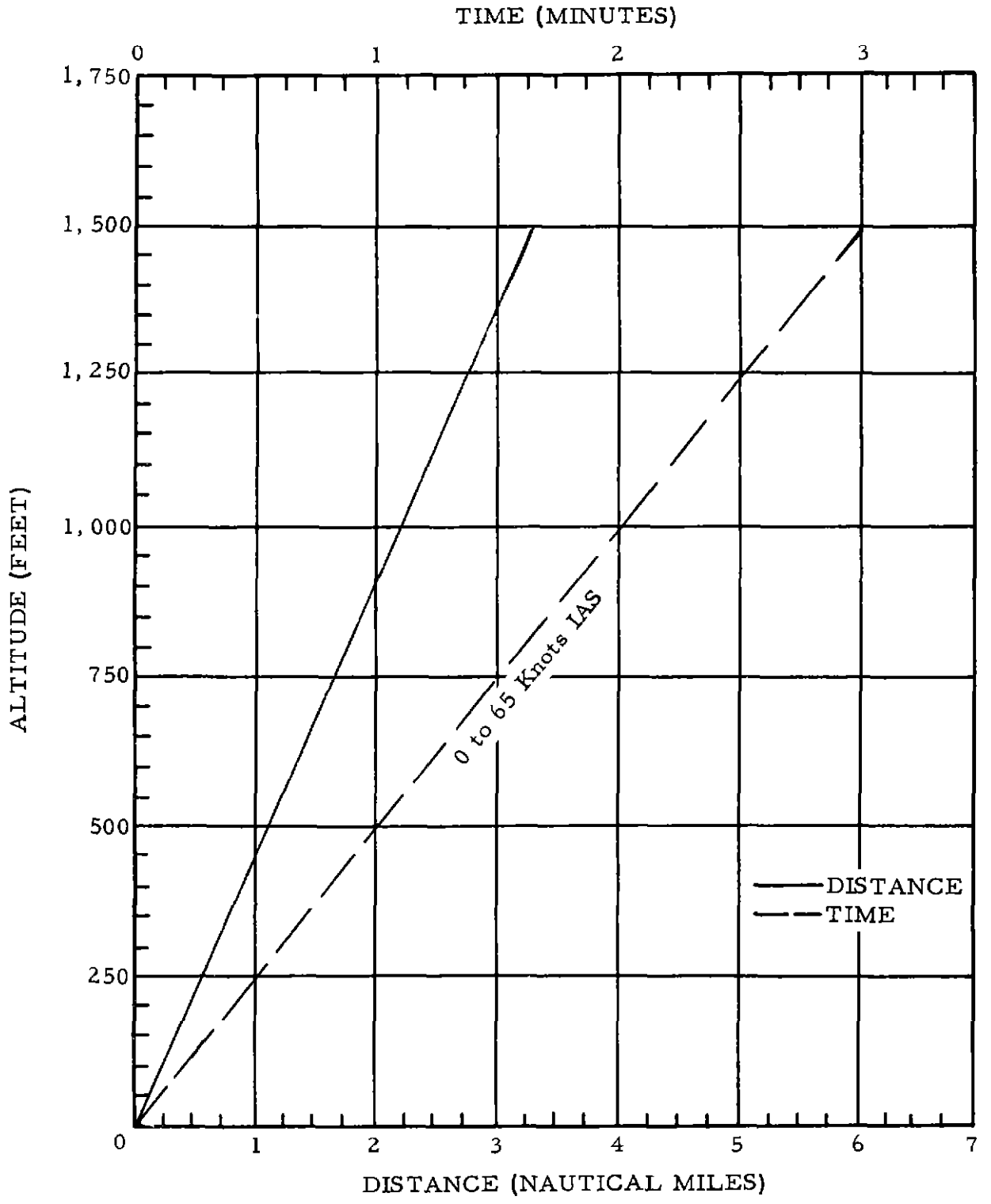


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 60 percent Throttles are set at sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed at 110, 000 pounds 130
Stall speeds (see Table I)
Maximum allowable (structural limitations) 155 (full flaps)

Distance

Minimum 5 0 nautical miles
Maximum 7 2 nautical miles
Operationally desirable 6 5 nautical miles (see Figure 1)

Time

Minimum 2 3 minutes
Maximum 3 3 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 500 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable 450 feet per minute
Maximum allowable 650 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

5 to 7 seconds

TABLE I

(Stall Speeds in Knots IAS at 100 Percent Flaps, Gear Down)

Gross Weight	0° Bank
123,000 pounds	92 0
120,000 "	90 0
110,000 "	86 0
100,000 "	82 5
90,000 "	78 0

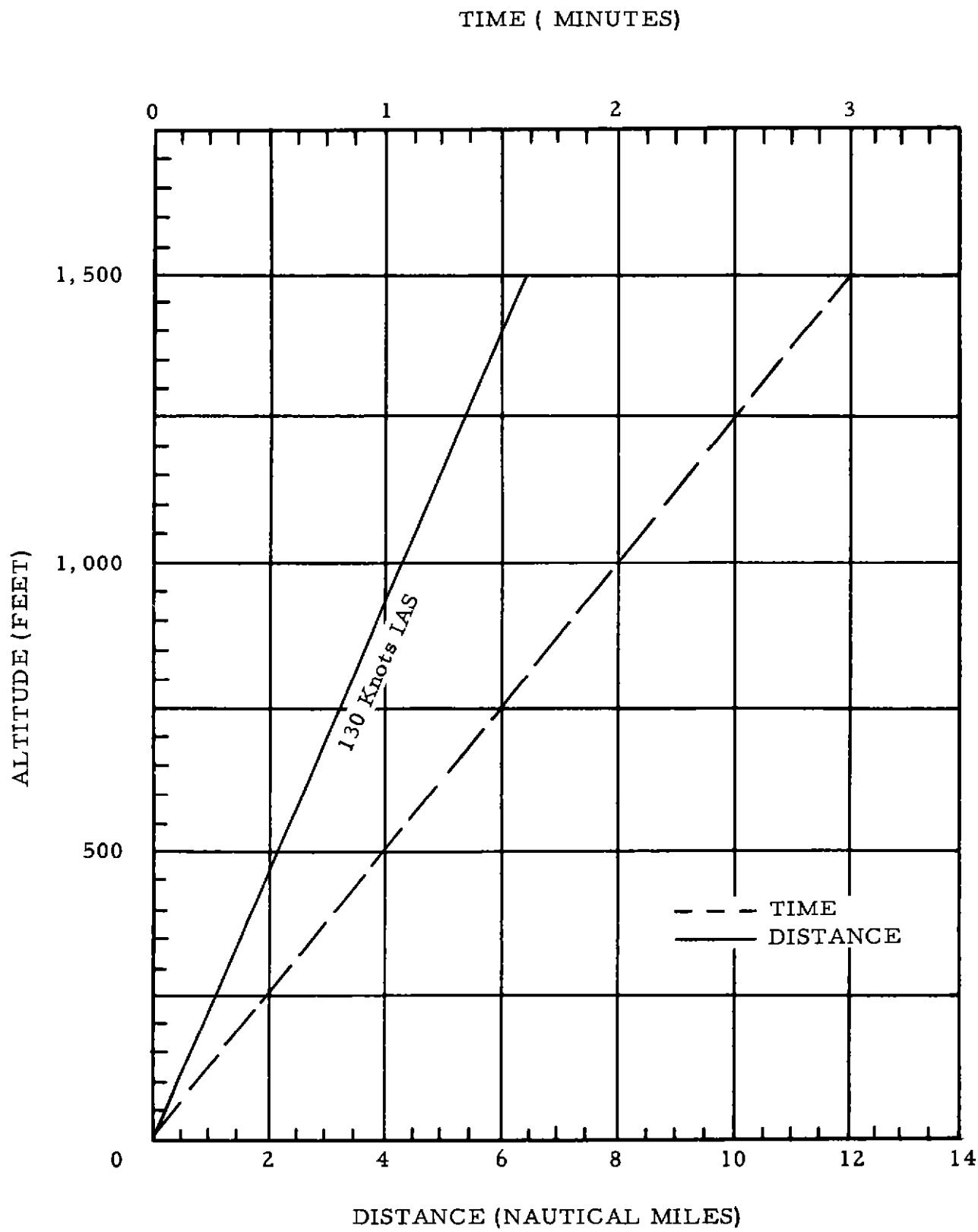


FIGURE I - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 18 degrees Power is set at idle

Speed (knots IAS)

Glide path airspeed at 100,000 pounds 120
Percent deviation per 10,000 pounds increase in gross weight 5 2%
Stall speeds (see Table I)
Maximum allowable (structural limitations) 183 (18° flaps)

Distance

Minimum 4.0 nautical miles
Maximum 8 0 nautical miles
Operationally desirable 6.0 nautical miles (see Figure 1)

Time

Minimum 2 8 minutes
Maximum 4.0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 2,000 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 5 seconds

Flare Speeds (knots IAS, 18 degrees flaps)

Gross Weight	
120,000 pounds	124
110,000 "	120
100,000 "	114
90,000 "	109
80,000 "	103
70,000 "	"

TABLE I

(Power-Off Stall Speed in Knots IAS Gear Up or Down)

Gross Weight	18° Flaps		Flaps Up	
	0° Bank	30° Bank	0° Bank	30° Bank
120,000 pounds	101	108	113	121
110,000 "	97	104	109	116
100,000 "	92	99	104	111
90,000 "	87	94	98	105
80,000 "	82	88	92	99
70,000 "	77	82	86	93

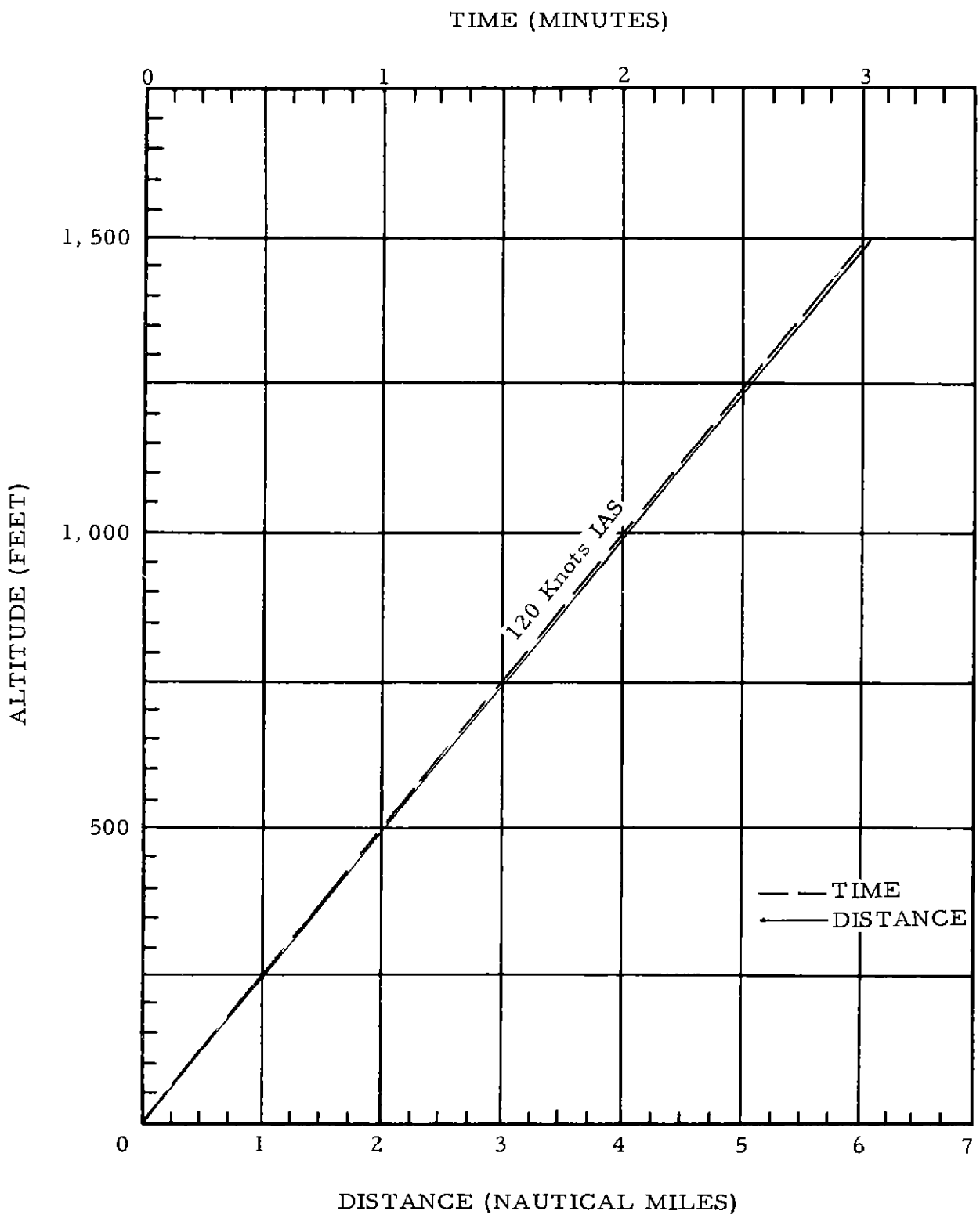


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operation

Aircraft configuration on glide path consists of gear down, flaps fully extended and speed brakes as required Power is set at a minimum of 83 percent

Speed (knots IAS)

Glide path airspeed at 12,000 pounds 130
Percent deviation with gross weight per 1,000 pounds 3.1
Stall speed (see Table I)
Maximum allowable structural limitations 215 (full flaps)

Distance

Minimum 2.1 nautical miles
Maximum 5 0 nautical miles
Operationally desirable 3.1 nautical miles (see Figure 1)

Time

Minimum 1.0 minute
Maximum 2 3 minutes
Operationally desirable 1.4 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,000 feet

Rate of Descent

Minimum: 650 feet per minute
Maximum allowable 1,000 feet per minute
Operationally desireable 700 feet per minute

Full Power Response Time for Go-Round

10 to 15 seconds

TABLE I

(Stall Speeds in Knots IAS at 100% Flaps With Gear Down and Power Off)

Gross Weight	0° Bank	30° Bank	45° Bank	60° Bank
11,000 pounds	75	81	90	108
13,000 "	82	89	99	118
15,000 "	89	95	106	127

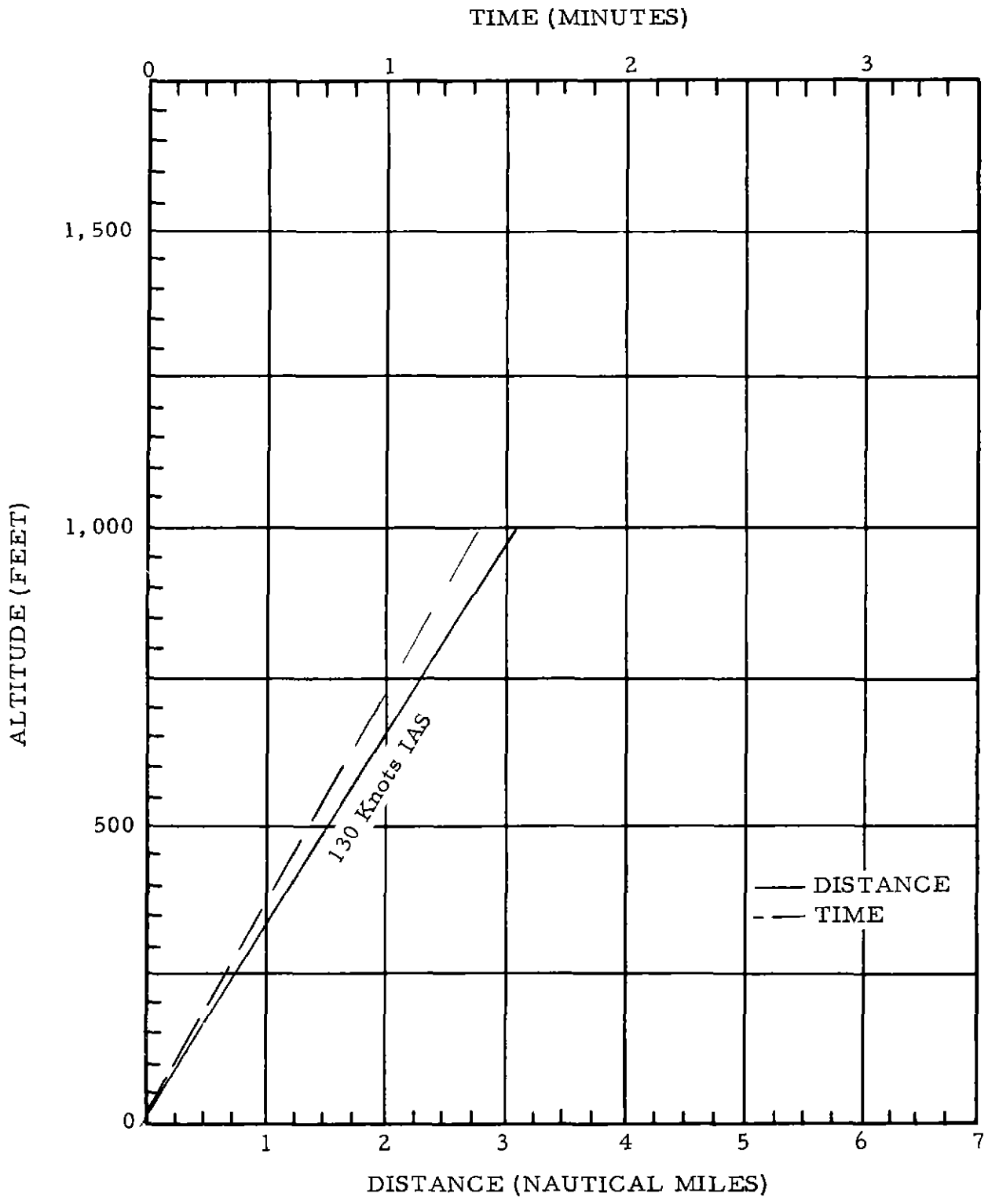


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path, consists of gear down and flaps fully extended Power is set at a minimum of 70 percent rpm

Speed (knots IAS)

Glide path airspeed at 11, 100 pounds 115
Percent deviation with gross weight 6 7% per 1, 000 pounds
Stall speeds (see Table I)
Maximum allowable (structural limitations) 175 (full flaps)

Distance

Minimum 1 3 nautical miles
Maximum 6 3 nautical miles
Operationally desirable 4 8 nautical miles (see Figure 1)

Time

Minimum 0 7 minute
Maximum 3. 3 minutes
Operationally desirable 2 5 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum allowable 1, 500 feet per minute
Operationally desirable 600 feet per minute

Full Power Response Time for Go-Round

6 to 7 seconds

TABLE I
(Stall Speeds in Knots IAS at 100 Percent Flaps and Gear Down)

Gross Weight	0° Bank	30° Bank	45° Bank	60° Bank
10,000 Lbs	85	90	100	120
12,000 Lbs.	95	100	110	130
14,000 Lbs	100	105	120	140

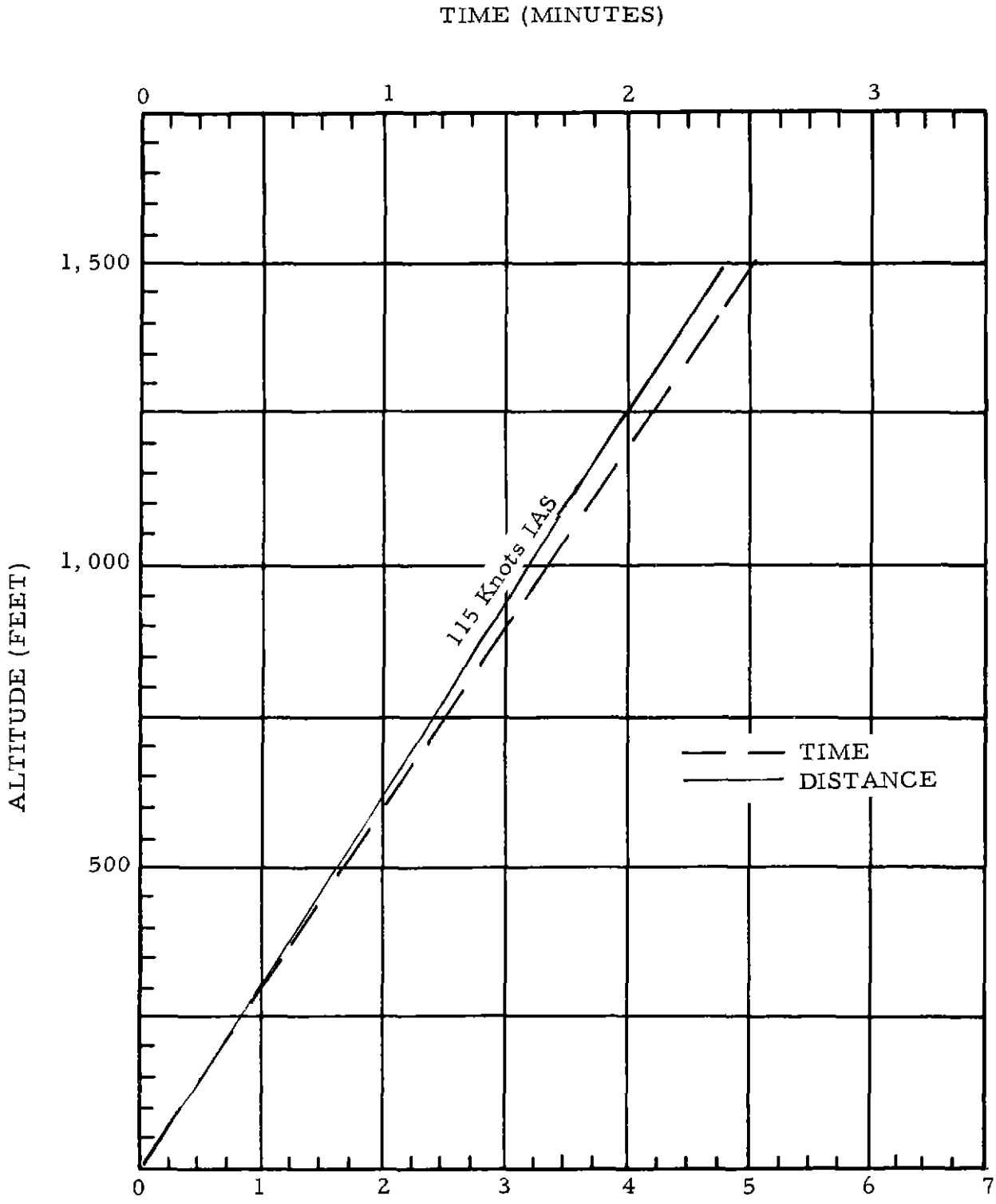


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, flaps fully extended, and speed brakes extended Throttles are set at a minimum of 70 percent power

Speed (knots IAS)

Glide path airspeed 140
Stall speeds (see Table I)
Maximum allowable (structural limitations) 170 (full flaps)

Distance

Minimum 2 3 nautical miles
Maximum 7 0 nautical miles
Operationally desirable 3 5 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 1 0 minute
Maximum 3 0 minutes
Operationally desirable 1 5 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum allowable 1,500 feet per minute
Operationally desirable 1,000 feet per minute

Full Power Response Time for Go-Round

8 to 14 seconds

TABLE I

(Stall Speeds in Knots IAS at 60 Degree Flaps Gear Down)

Gross Weight	0° Bank	30° Bank	45° Bank	60° Bank
28,000 Lbs	81	87	94	110
35,000 Lbs	91	97	106	120
45,000 Lbs	103	109	120	140
55,000 Lbs.	114	121	132	154

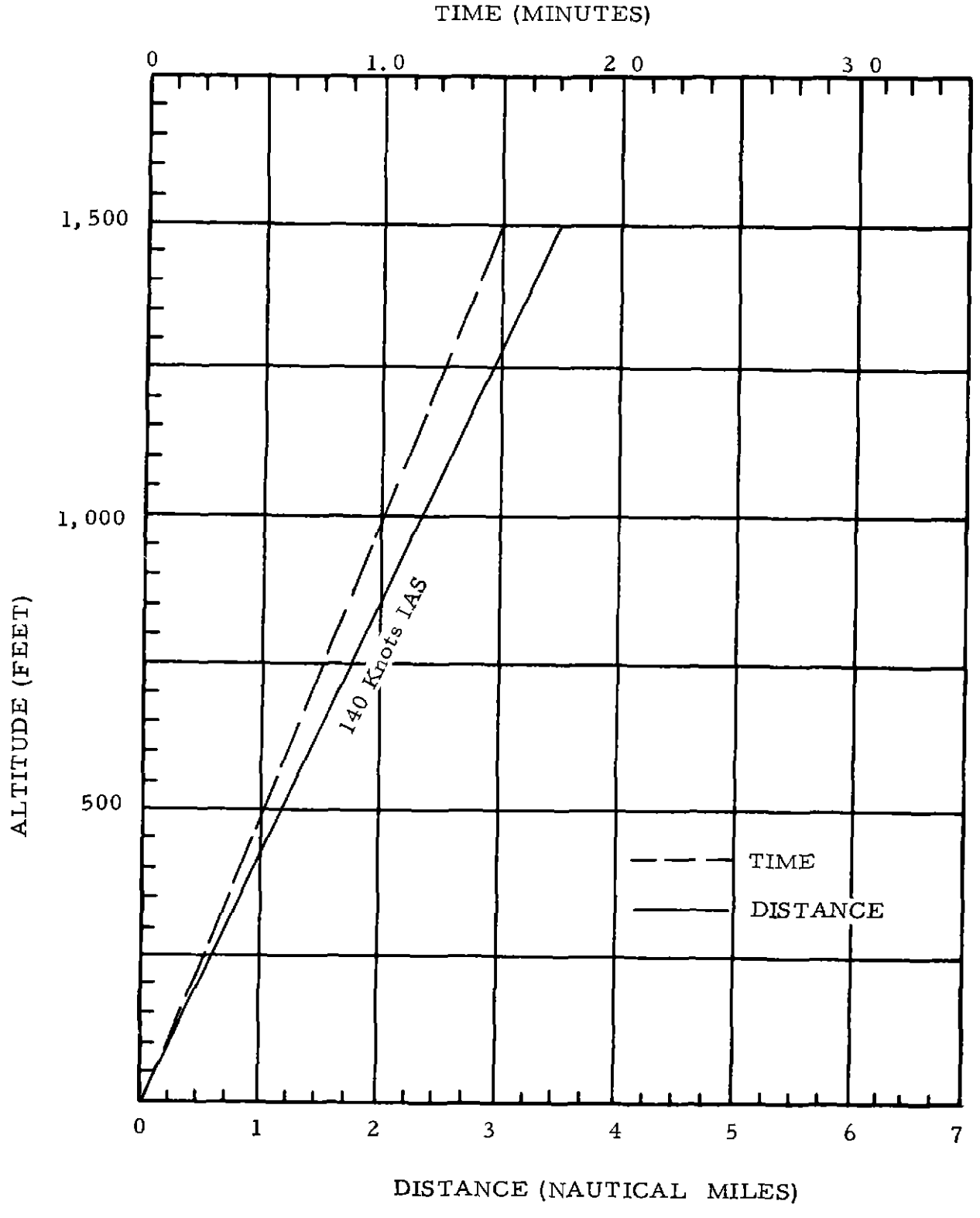


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, flaps fully extended and speed brakes out Power is set at a minimum of 85 percent rpm

Speed (knots IAS)

Glide path airspeed at 15,000 pounds 150
Percent deviation with gross weight per 1,000 pounds
3 4%
Stall speed (see Table I)
Maximum allowable (structural limitation) 195 (full flaps)

Distance

Minimum 5 0 nautical miles
Maximum 7 5 nautical miles
Operationally desirable 7 5 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum allowable 1,500 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 5 seconds

TABLE I

(Stall Speeds in Knots IAS, Full Flaps, Gear Down and Power Off)

Gross Weight	0° Bank	20° Bank	40° Bank	60° Bank
20,000 Lbs	120	123	136	165
17,500 Lbs.	111	115	127	155
15,000 Lbs	103	106	118	145

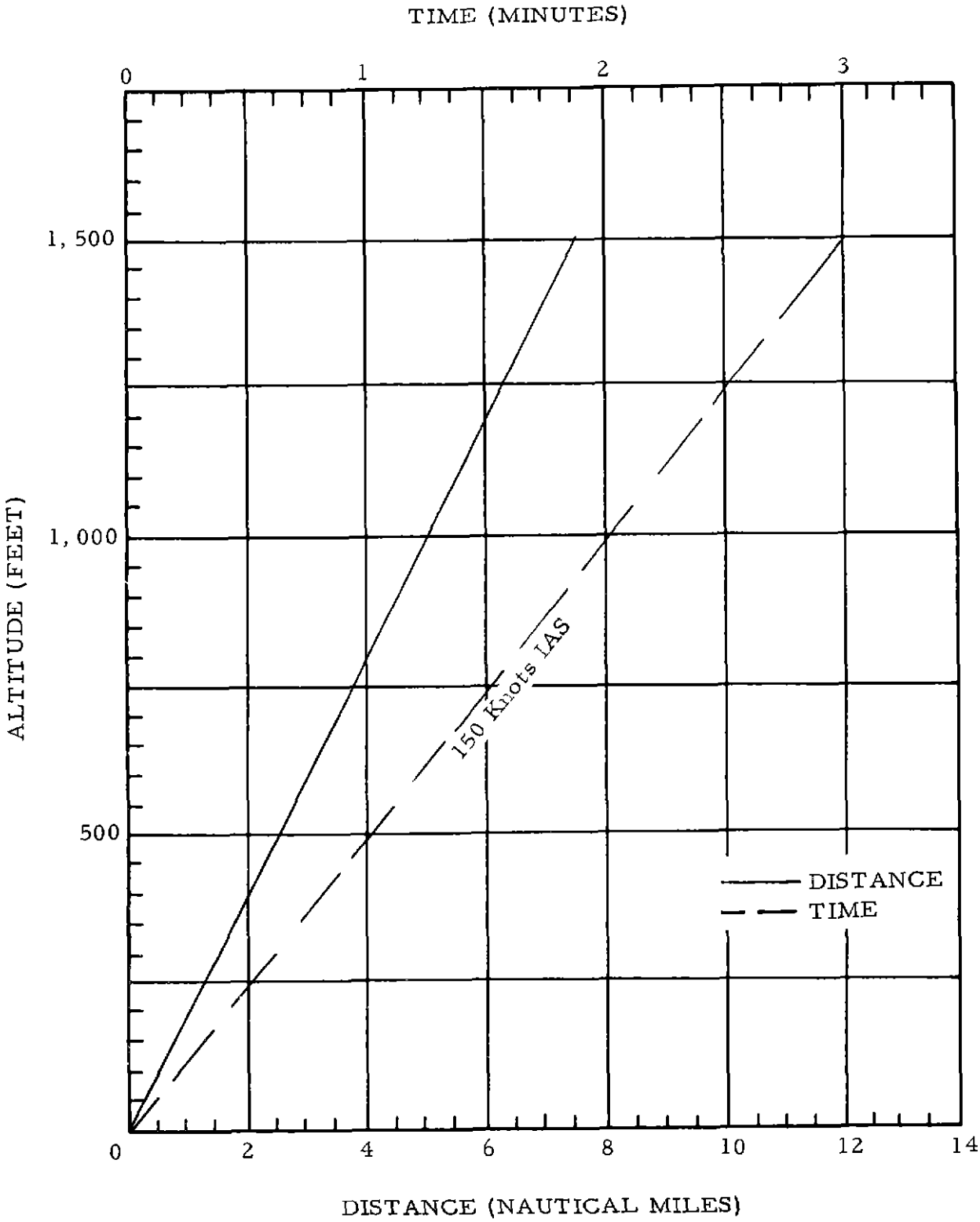


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 11 degrees Power is set at 2,200 rpm and sufficient manifold pressure to maintain a constant airspeed and rate of descent.

Speed (knots IAS)

Glide path airspeed at 24,000 pounds 113
Percent deviation with gross weight per 1,000 pounds 2%
Stall speeds (see Table I)
Maximum allowable structural limitations 147 (full flaps)

Distance

Minimum 4 5 nautical miles
Maximum 6 7 nautical miles
Operationally desirable 5.7 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2 4 minutes
Maximum 3.5 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum allowable 1,000 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 5 seconds

TABLE I

(Stall Speeds in Knots IAS with Gear Down, and 45° Flaps)

Power Off

Gross Weight	0° Bank	15° Bank	30° Bank	45° Bank
32,000	83	85	89	99
30,000	81	82	87	96
28,000	78	80	84	93
26,000	75	77	81	89
24,000	72	74	77	86
22,000	69	71	75	82
20,000	67	68	72	79

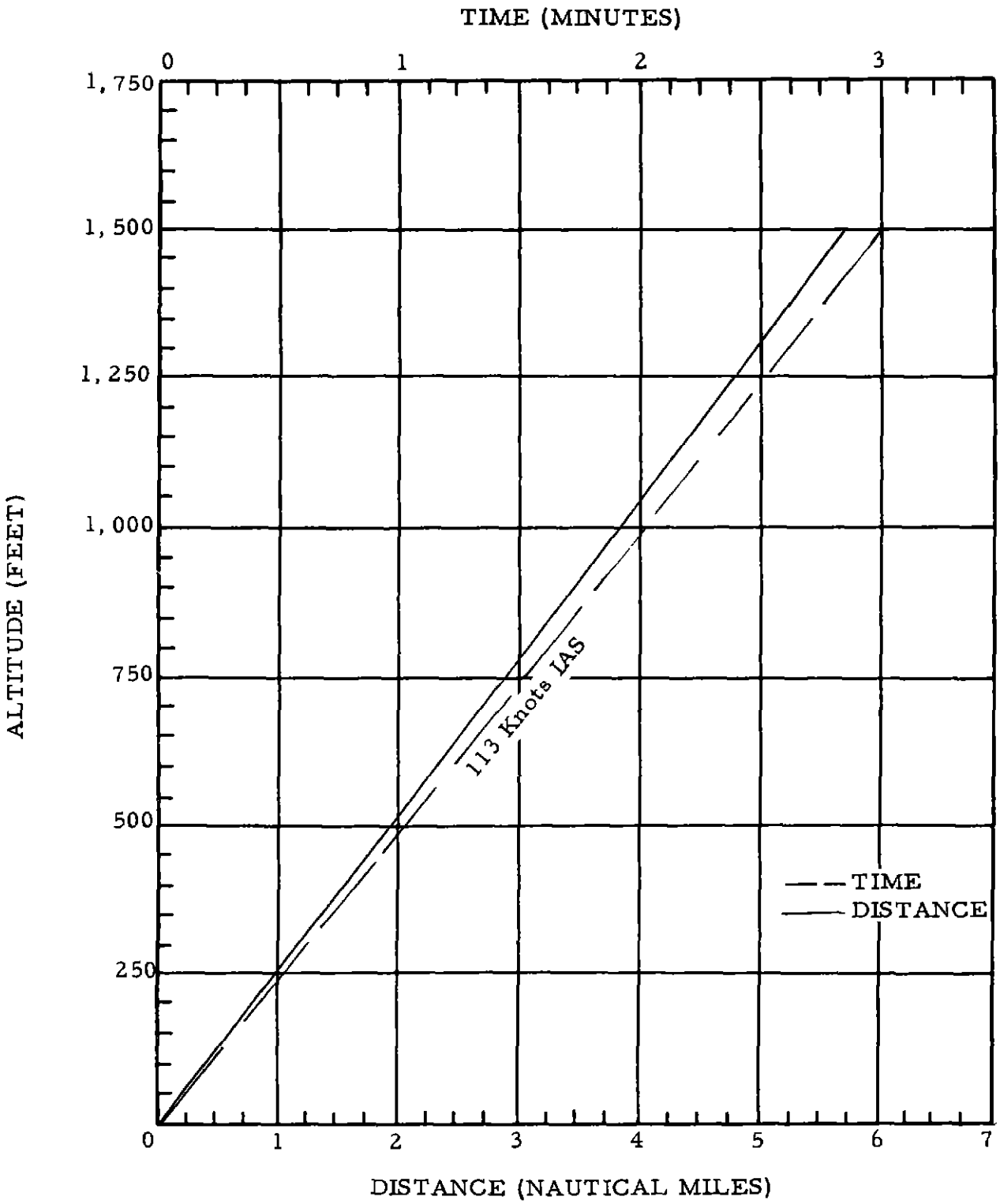


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required Power is set at a minimum of 2, 400 rpm and 20 to 25 inches manifold pressure.

Speed (knots IAS)

Glide path airspeed 120
Minimum maneuver speed (see Table I)
Maximum allowable (structural limitations) 140 (full flaps)

Distance

Minimum 2.0 nautical miles
Maximum 6.0 nautical miles
Operationally desirable 4.0 nautical miles

Time (to touchdown)

Minimum 1.0 minute
Maximum 3.0 minutes
Operationally desirable 2.0 minutes

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 000 feet

Rate of Descent

Minimum 500 feet per minute
Maximum allowable 1, 000 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 5 seconds

TABLE I

(Stall Speeds in Knots IAS With Gear and Flaps Down)

Gross Weight	0° Bank	30° Bank	45° Bank
6,500 pounds	57	65	75
7,000 "	61	69	78
7,500 "	65	72	82

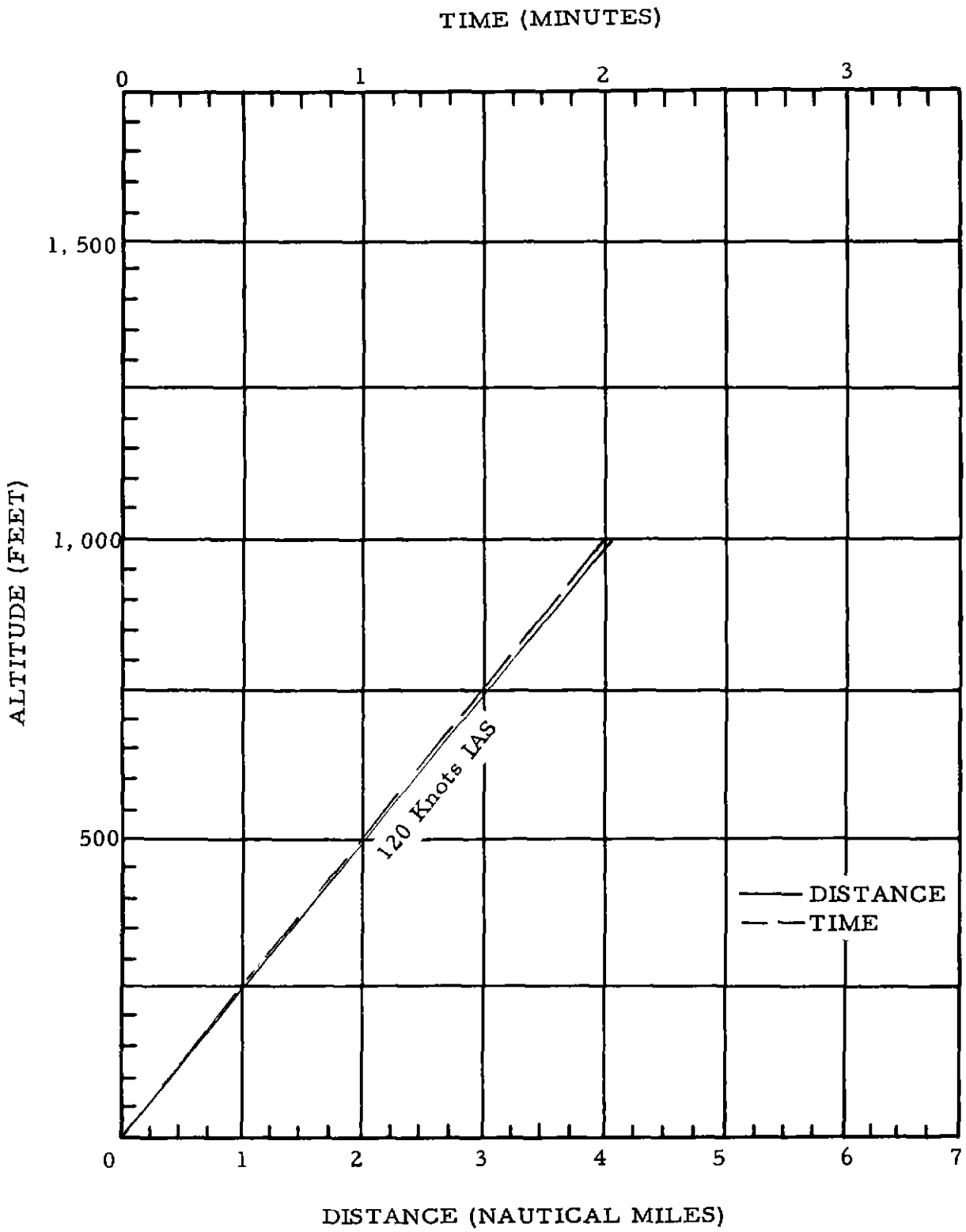


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and 18 to 37 degrees flaps as required Power is set at 2, 500 rpm with 28 inches manifold pressure

Speed (knots IAS)

Glide path airspeed 120
Stall speed (see Table I)
Maximum allowable (structural limitations) 140 (37°Flaps)

Distance

Minimum 2 0 nautical miles
Maximum 6. 0 nautical miles
Operationally desirable 4. 0 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 1. 0 minute
Maximum 3. 0 minutes
Operationally desirable 2. 0 minutes(see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable· 1, 000 feet

Rate of Descent

Minimum 500 feet per minute
Maximum allowable 1, 000 feet per minute
Operationally desirable· 500 feet per minute

Full Power Response Time for Go-Round

2 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS With Gear and Flaps Down and Approach Power)

Gross Weight	0° Bank	30° Bank	45° Bank
7,000 Pounds	56	63	71
7,500 "	59	65	74
8,000 "	61	67	77
8,500 "	64	70	80

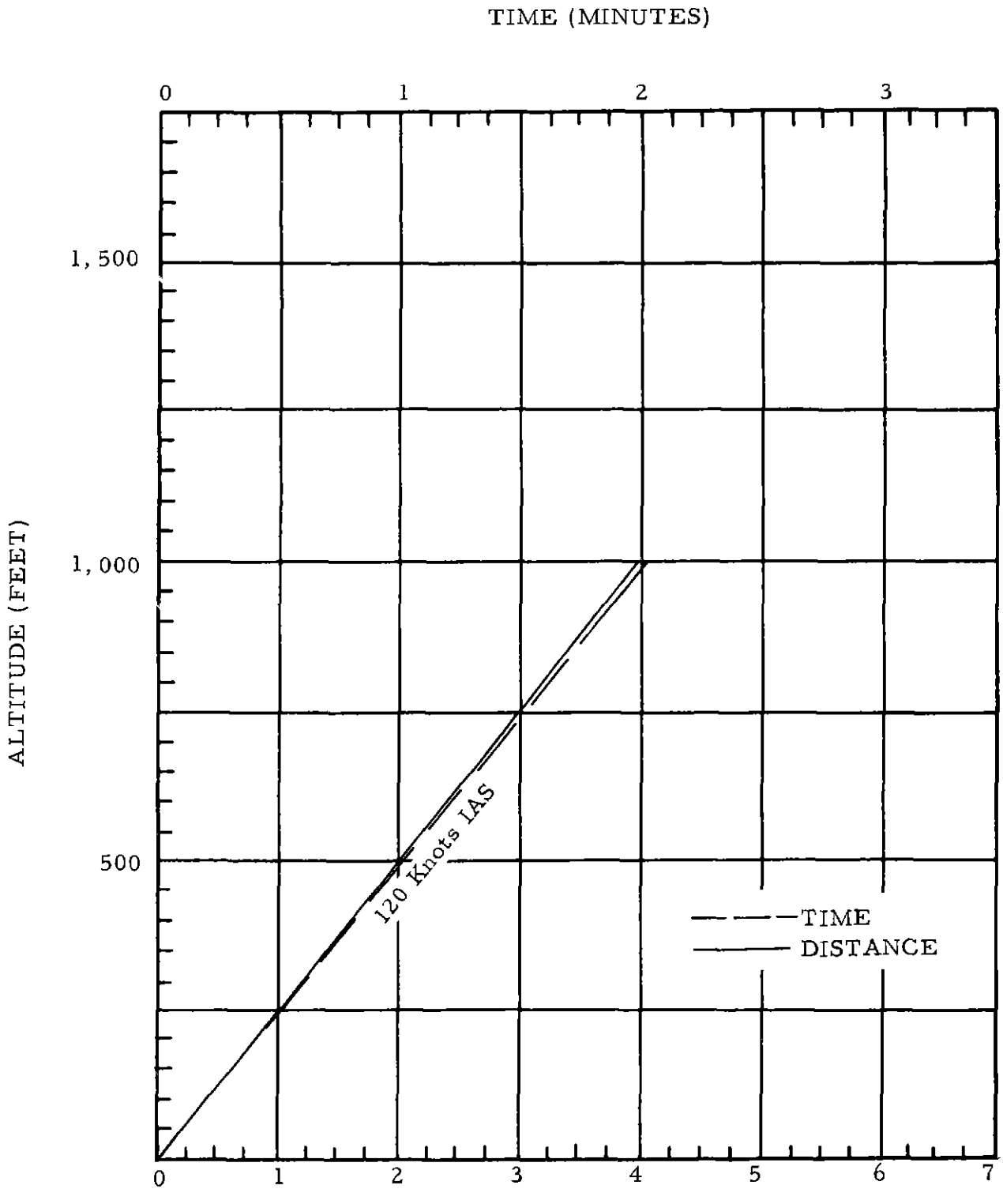


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, flaps and speed brakes fully extended Power is set at a minimum of 84 percent.

Speed (knots IAS)

Glide path airspeed at any gross weight 110
Percent deviation with gross weight none
Stall speeds (see Table I)
Maximum allowable (structural limitations) 165 (flaps extended or in motion)

Distance

Minimum 3 7 nautical miles
Maximum 4 8 nautical miles
Operationally desirable 4 8 nautical miles

Time

Minimum 2 0 minutes
Maximum 2 6 minutes
Operationally desirable 2 6 minutes

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 300 feet

Rate of Descent

Minimum 500 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable. 500 feet per minute

Full Power Response Time for Go-Round

5 to 10 seconds

TABLE I

(Stall Speeds in Knots IAS at 100% Flaps With Gear Down and Power Off)

Gross Weight	0° Bank	30° Bank	45° Bank
8,000	72 0	77.5	85 5
9,000	76.5	82.0	91.0
10,000	80.5	86.5	95.5

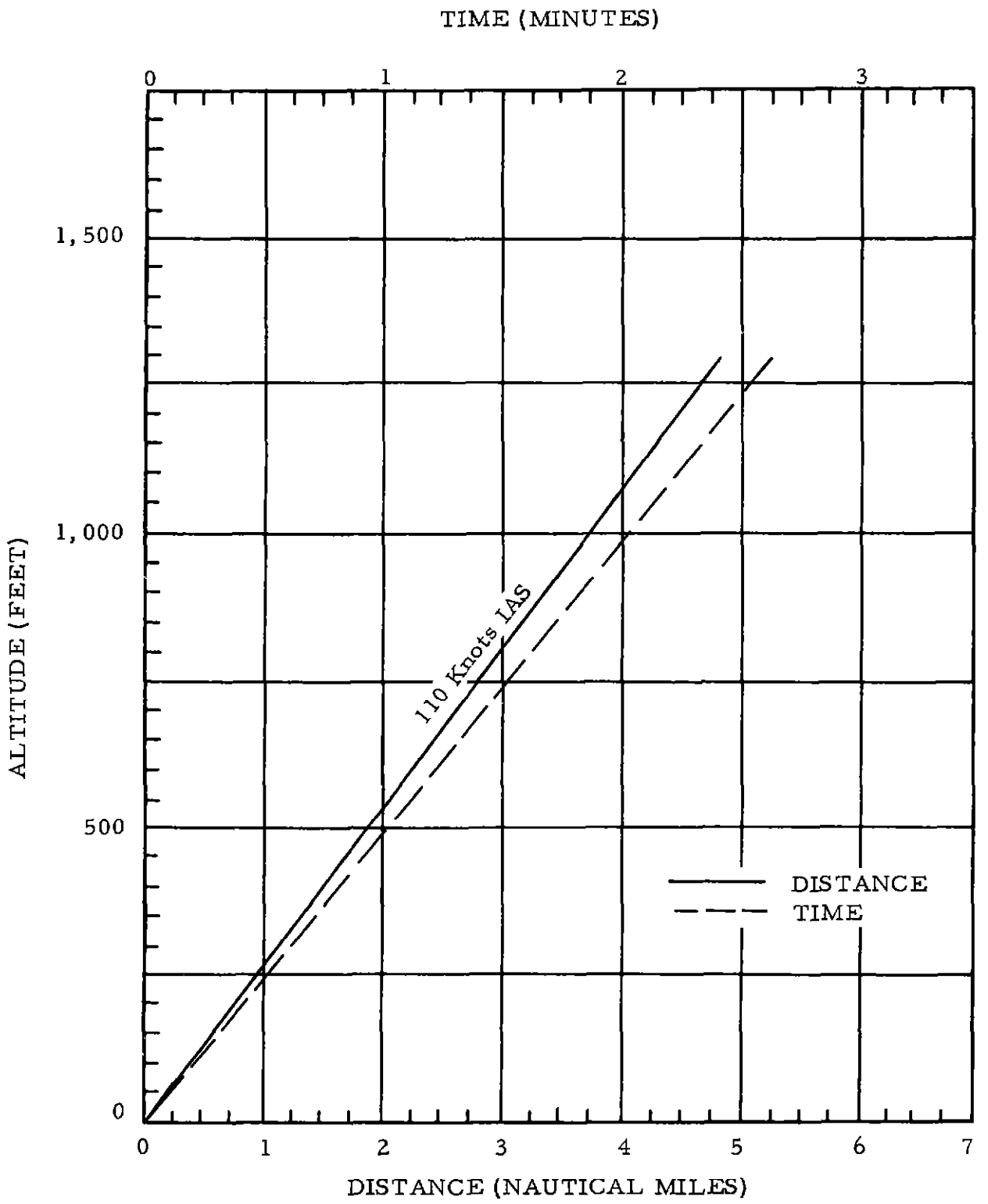


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down and flaps fully extended. Power is set at a minimum of 88 percent

Speed (knots IAS)

Glide path airspeed at 34, 350 pounds 160
Percent deviation with gross weight per 1, 000 pounds
1 3%
Stall speeds (see Table I)
Maximum allowable structural limitations 195 (50° flaps)

Distance

Minimum 2 7 nautical miles
Maximum 5 3 nautical miles
Operationally desirable 4 0 nautical miles

Time

Minimum 1 0 minute
Maximum 2 0 minutes
Operationally desirable 1 5 minutes

Altitude

Minimum 1, 000 feet
Maximum 2, 000 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 1, 000 feet per minute
Maximum allowable 1, 500 feet per minute
Operationally desirable 1, 000 feet per minute

Full Power Response Time for Go-Round

15 to 30 seconds

TABLE I
(Stall Speeds IAS in Knots at 50° Flaps, Gear Down, and Power Off)

Gross Weight	0° Bank	30° Bank	45° Bank
30,000	100	106	119
34,000	107	114	128
38,000	114	122	136
42,000	121	130	146
47,400	129	140	157

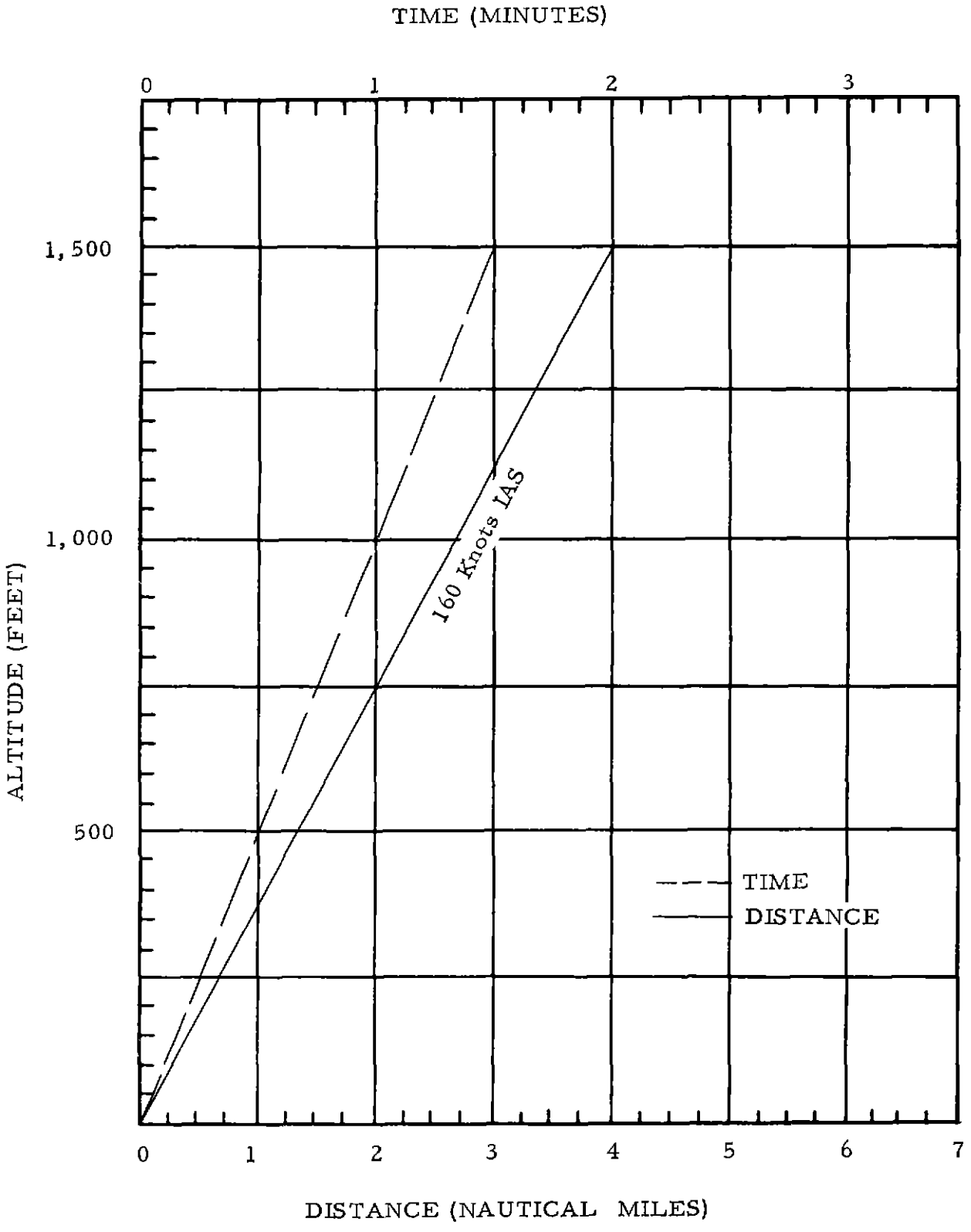


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps fully extended (40 degrees). Power is set at a minimum of 84% rpm Speed brakes are used as required

Speed (knots IAS)

Glide path airspeed at 17,000 pounds 180
Percent deviation with gross weight per 1,000 pounds
2 8%
Minimum flying speed (see Table I)
Maximum allowable (structural limitations) 220 (gear down)

Distance

Minimum 4 2 nautical miles
Maximum 9 0 nautical miles
Operationally desirable 9 0 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 1.4 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet (see Figure 1)

Rate of Descent

Minimum 400 feet per minute
Maximum allowable 700 feet per minute
Operationally desirable. 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

Flare Speeds (maximum)

Gross Weight

22,000 pounds	183 knots
20,000 pounds	175 knots
18,000 pounds	166 knots
17,000 pounds	162 knots
16,000 pounds	158 knots

TABLE I
(Minimum Flying Speeds in Knots IAS)

	20° Flaps		40° Flaps	
Gross Weight	0° Bank	45° Bank	0° Bank	45° Bank
22,000	150	177	137	164
20,000	142	169	131	156
18,000	135	160	125	148
17,000	131	156	122	144
16,000	127	151	118	140

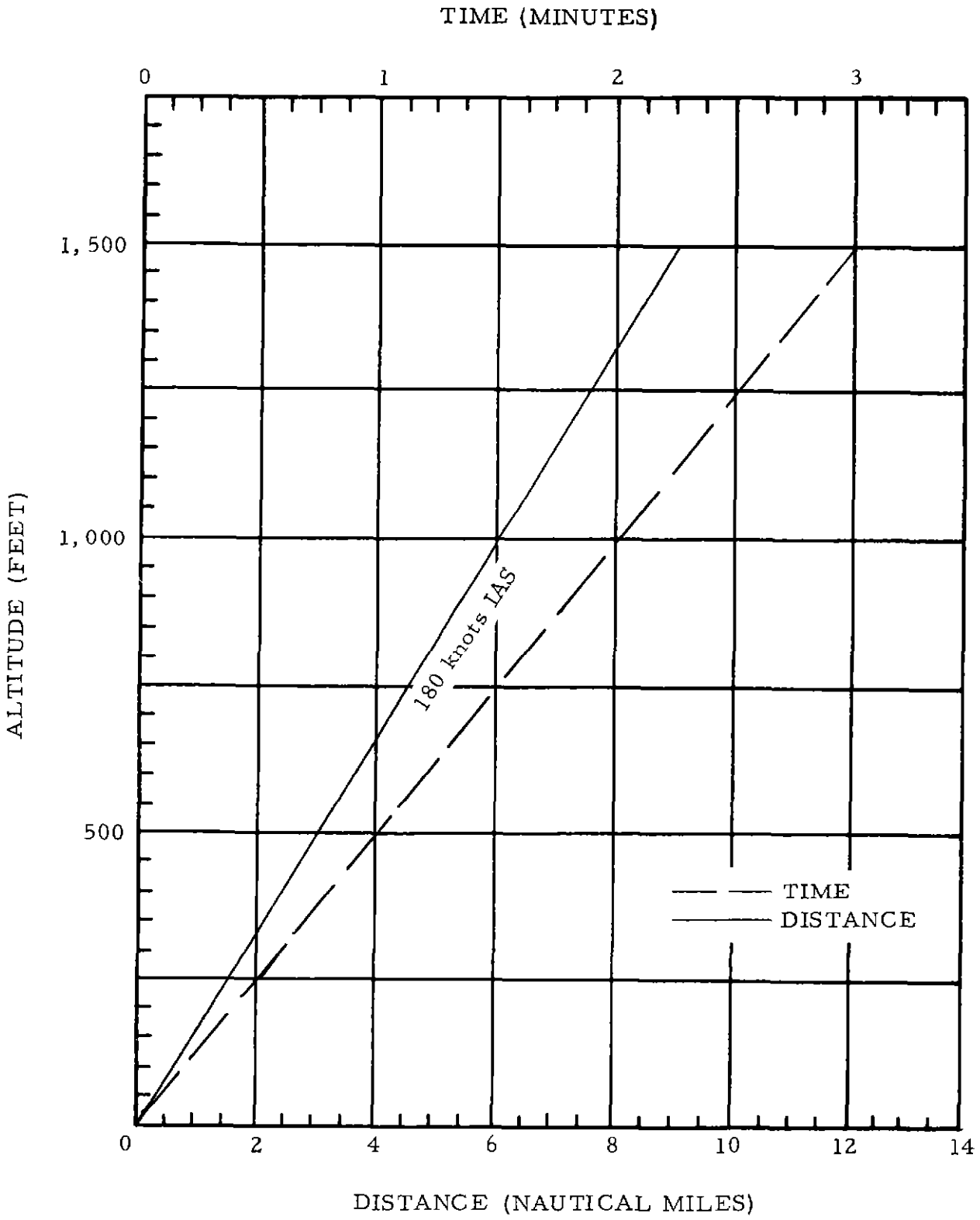


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Helicopter configuration on glide path is clean Power is set at 2, 400 rpm and manifold pressure as required

Speed

Glide Path airspeed at any gross weight 80 knots IAS
Maximum allowable (structural limitations) 115 knots IAS
Maximum allowable rotor 245 rpm

Distance

Minimum 2 7 nautical miles
Maximum 6 0 nautical miles
Operationally desirable 4 0 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 4 5 minutes
Operationally desirable. 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

1 to 3 seconds

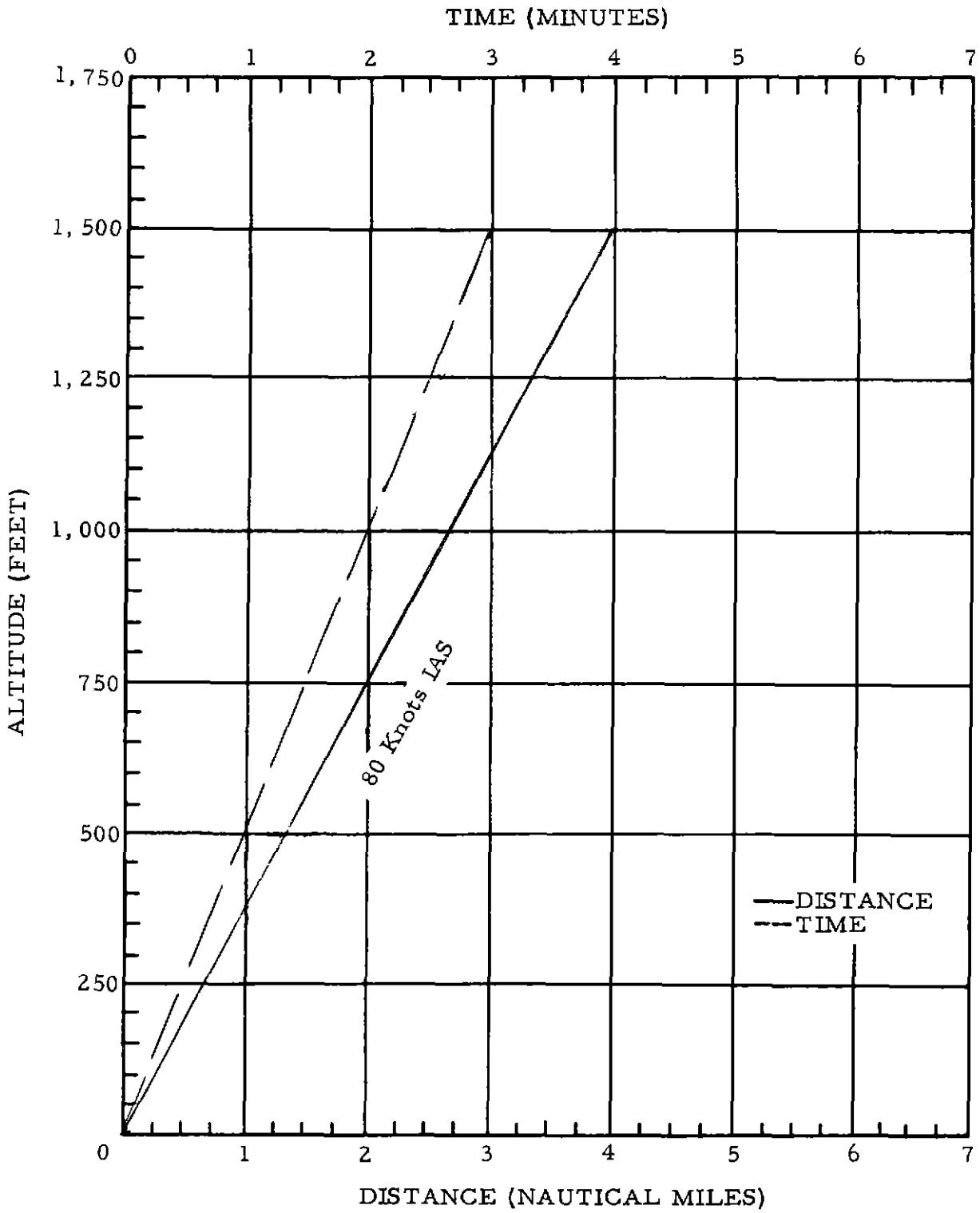


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Helicopter configuration on glide path is clean. Power is set at a minimum of 22 inches manifold pressure and 2,500 rpm

Speed

Glide path speed at any gross weight 80 knots IAS
Maximum allowable structural limitations 110 knots IAS
Maximum allowable rotor 258 rpm

Distance

Minimum 2.7 nautical miles
Maximum 6.0 nautical miles
Operationally desirable 4.0 nautical miles (see Figure 1)

Time

Minimum 2.0 minutes
Maximum. 4.5 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

1 to 3 seconds

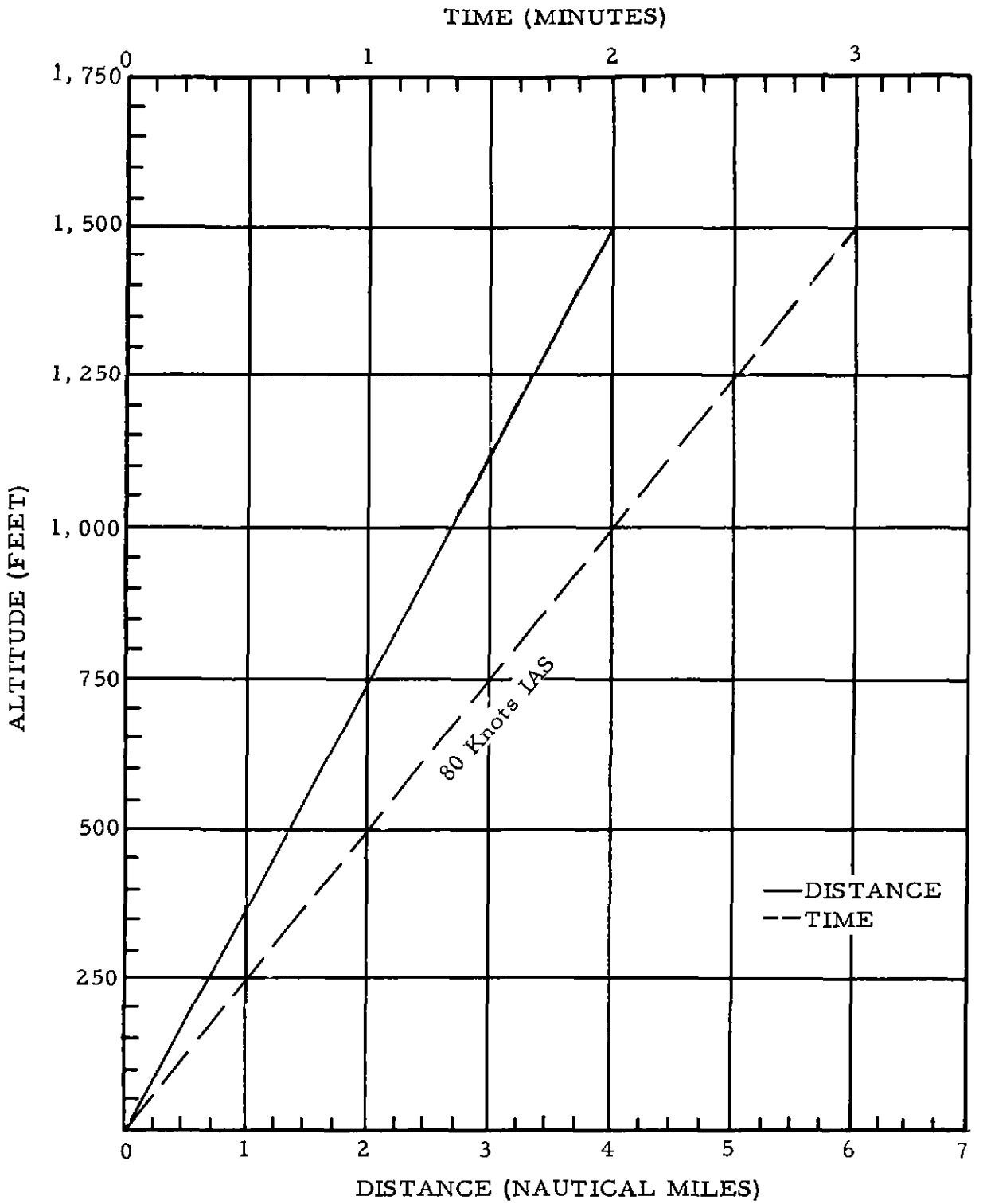


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Helicopter configuration on glide path consists of gear down Power is set at 2, 600 rpm and manifold pressure as required to maintain the desired airspeed and rate of descent

Speeds

Glide path airspeed at any gross weight 70 knots IAS
Maximum allowable (structural limitation) 110 knots IAS
Maximum allowable rotor 215 rpm

Distance

Minimum 2 3 nautical miles
Maximum 5 3 nautical miles
Operationally desirable 3 5 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 4 5 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 300 feet
Maximum 750 feet
Operationally desirable 500 feet

Full Power Response Time for Go-Round

5 to 10 seconds

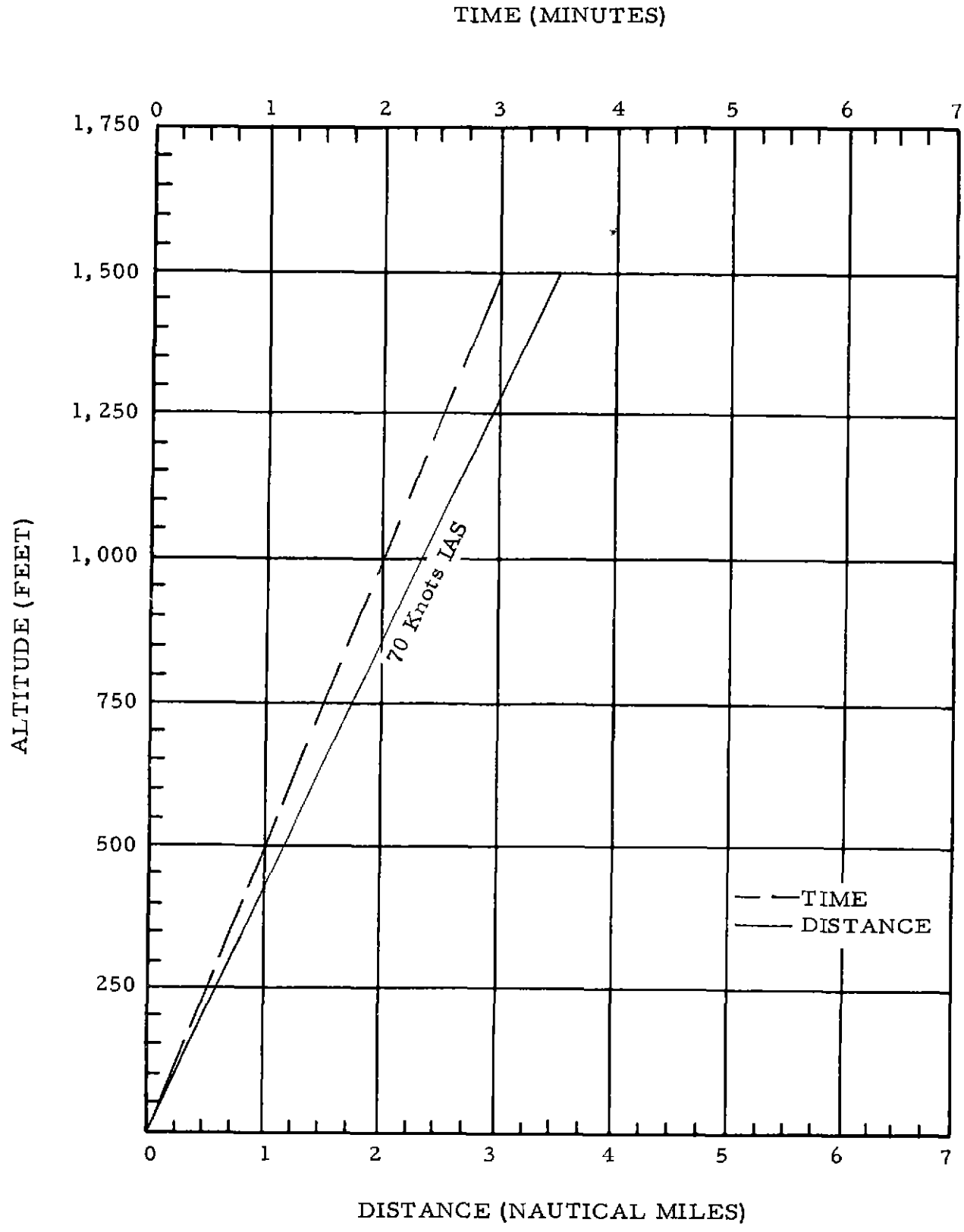


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Helicopter configuration on glide path is clean Power is set at a minimum of 22 inches manifold pressure at 2,500 rpm

Speed

Glide path airspeed at any gross weight 80 knots IAS
Maximum allowable (structural limitations) 100 Knots IAS
Maximum allowable rotor: 258 rpm

Distance

Minimum. 2 7 nautical miles
Maximum 6 7 nautical miles
Operationally desirable 4 0 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum. 5 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum· 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 300 feet
Maximum: 750 feet
Operationally desirable: 500 feet

Full Power Response Time for Go-Round

1 to 2 seconds

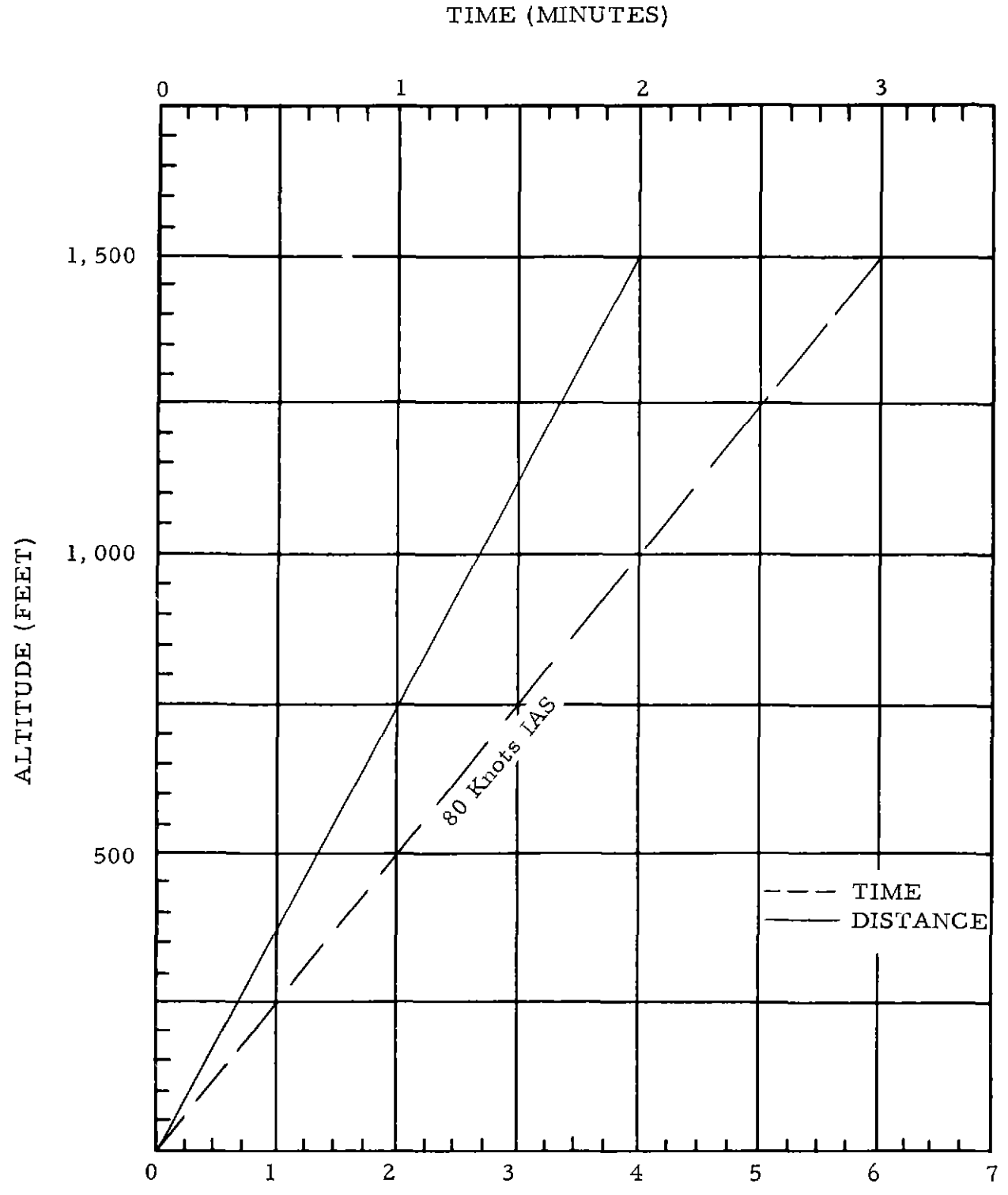


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

AIR VEHICLE PERFORMANCE CHARACTERISTICS

Volumes I-A through IX

SECTION 2

COMMERCIAL AIRCRAFT

containing data on

Boeing B-377

Boeing 707-121

Convair 340/440

de Havilland Comet 4

Douglas DC-3 (C-47, R4D)

Douglas DC-4 (C-54)

Douglas DC-6

Douglas DC-6B

Douglas DC-7

Douglas DC-7B

Douglas DC-7C

Fairchild F-27B

Lockheed Electra 188

Lockheed 1049G

Lockheed 1649A

Martin 404

Vickers Viscount 745D

Vickers Viscount 812

(date of latest revision September 1, 1959)

UNITED STATES FEDERAL AVIATION AGENCY
Bureau of Research & Development Washington 25, D. C

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required Throttles are set at sufficient power to maintain a constant airspeed and rate of descent

Speed (knots IAS)

Glide path airspeed 120
Stall speeds (see Table I)
Maximum allowable (structural limitations) 159 (full flaps)

Distance

Minimum 4 0 nautical miles
Maximum 10 0 nautical miles
Operationally desirable 6 0 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 5 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE I
(Stall Speeds Knots IAS with 45 Degree Flaps and Gear Down)

Gross Weight	0^{o} Bank
140,000 Lbs.	98
120,000 Lbs.	91
100,000 Lbs	83
80,000 Lbs.	74

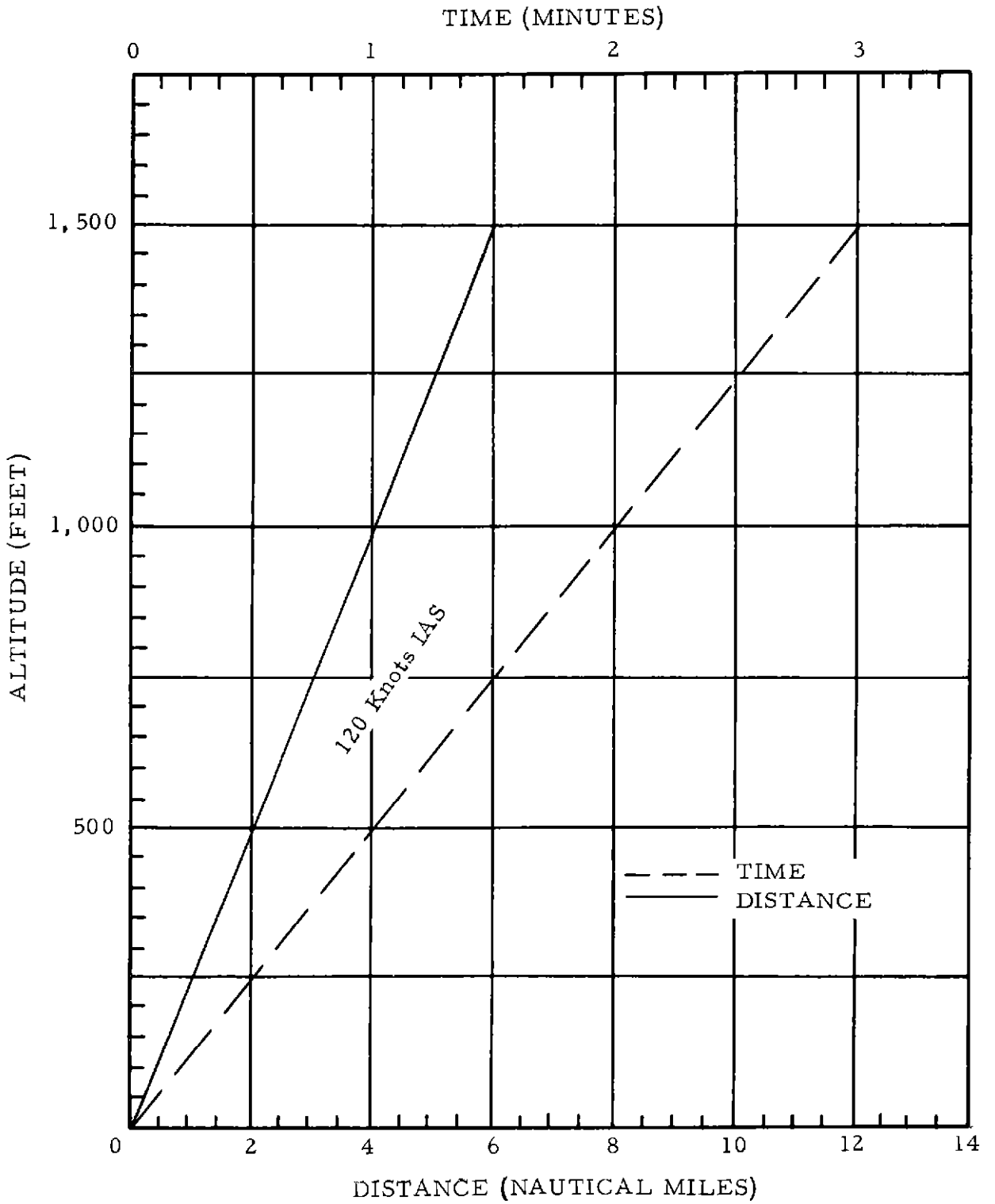


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 40 degrees. Power is set as required to maintain airspeed and rate of descent

Speed (knots IAS)

Glide path airspeed at 130,000 pounds) 128
Percent deviation with gross weight. 3.9% per 10,000 pounds
Minimum maneuver speed. 125
Maximum allowable (structural limitations) 209 (flaps 30°)

Distance

Minimum 3 2 nautical miles
Maximum 6 4 nautical miles
Operationally desirable 6 4 nautical miles

Time (to touchdown)

Minimum 1.5 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable. 1,500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum allowable 1,000 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

5 to 10 seconds

Gross Weight	Flare Speeds (maximum)
130,000 pounds	118 knots
135,000 "	121 "
140,000 "	124 "
145,000 "	125 "
150,000 "	127 "

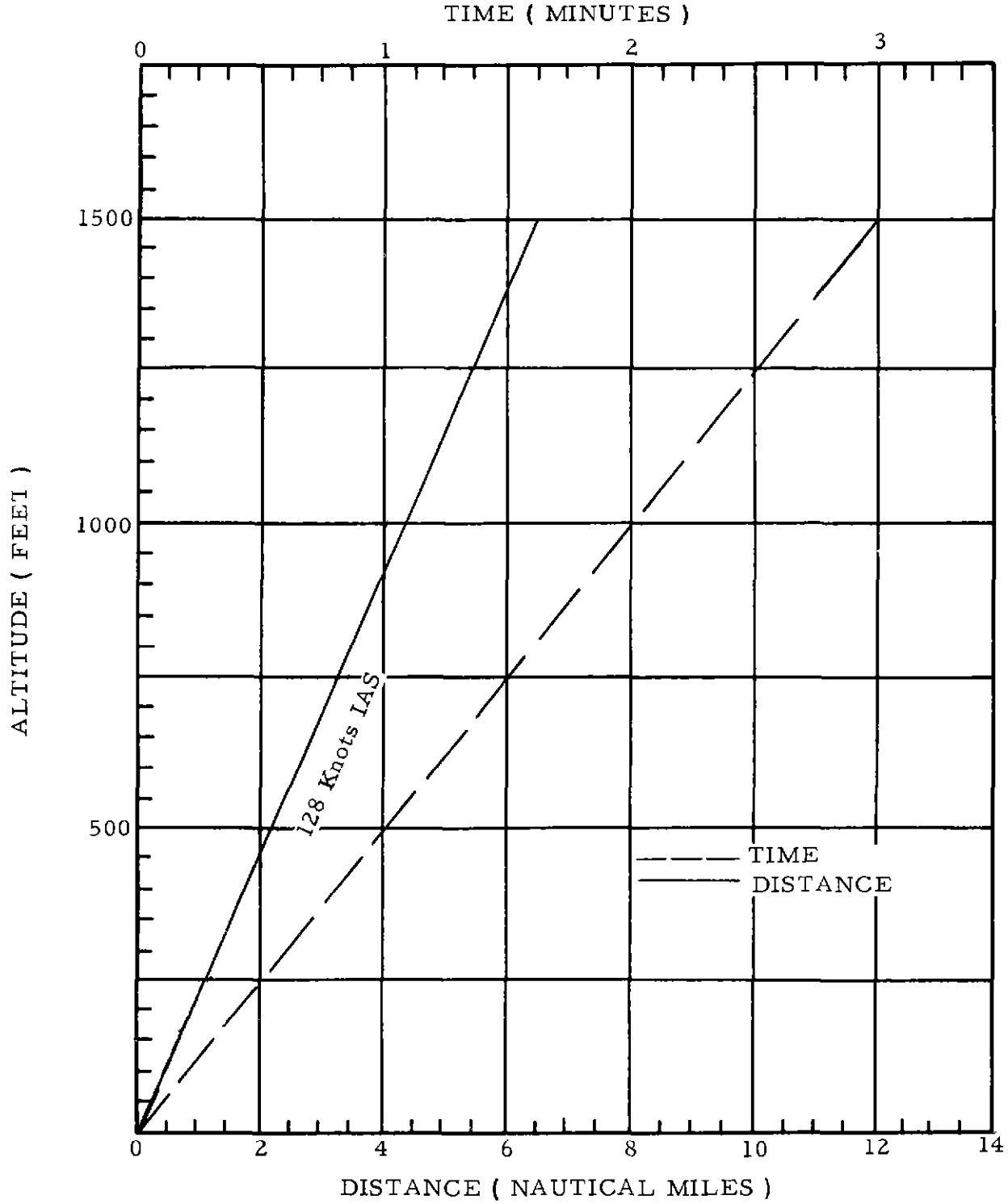


FIGURE 1 - GLIDE PATH-DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on the glide path consists of gear down and flaps extended 15 degrees. Power is set at 2,400 rpm and manifold pressure as required.

Speed (knots IAS)

Glide path airspeed at any gross weight 115
Stall speeds (see Table I)
Maximum allowable (structural limitations) 174 (15 degrees flaps)

Distance

Minimum 3.5 nautical miles
Maximum 6 5 nautical miles
Operationally desirable: 5.7 nautical miles (see Figure 1)

Time

Minimum 2.0 minutes
Maximum· 3.5 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum· 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS at 15 Degrees Flaps, Gear Down, and Power off)

Gross Weight	0°Bank	30°Bank	45°Bank	60°Bank
48,000	85	Not available from operators.		
44,000	82			
40,000	80			
36,000	76			

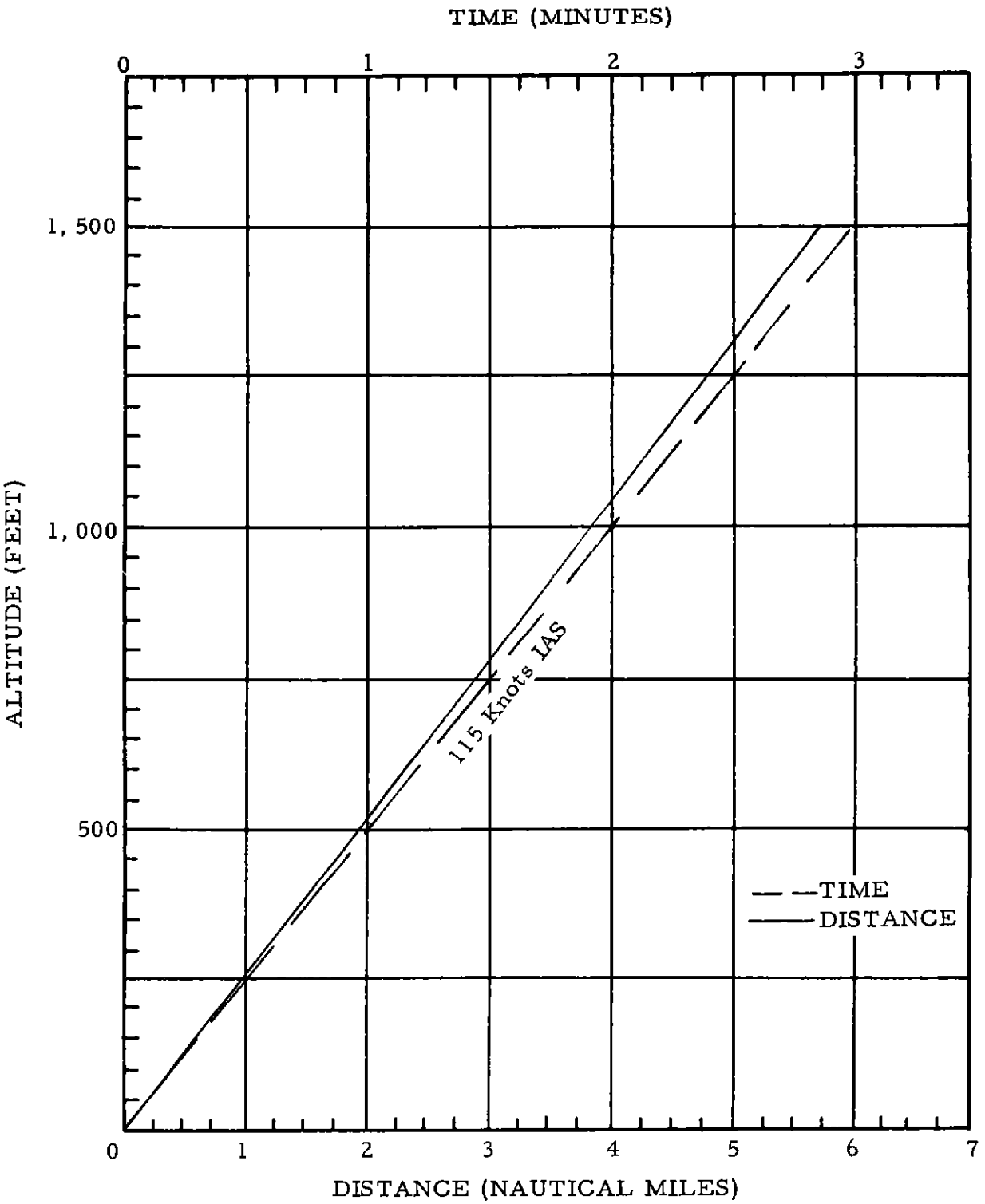


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 60 degrees plain and 40 degrees split. Throttles are set at sufficient power to maintain a constant airspeed and rate of descent

Speed (knots IAS)

Glide path airspeed 125
Stall Speeds (see Table I)
Maximum allowable (structural limitations) 214 (full flaps)

Distance

Minimum 3.0 nautical miles
Maximum 4.2 nautical miles
Operationally desirable 4 2 nautical miles (see Figure 1)

Time

Minimum 1 5 minutes
Maximum 2.0 minutes
Operationally desirable 2 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 750 feet per minute
Maximum 1,000 feet per minute
Operationally desirable 750 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE I
(Stall Speeds in knots IAS, gear down, full flaps)

Gross Weight	0^{o} Bank
118,000 pounds	88
110,000 "	86
100,000 "	84
90,000 "	82
80,000 "	80

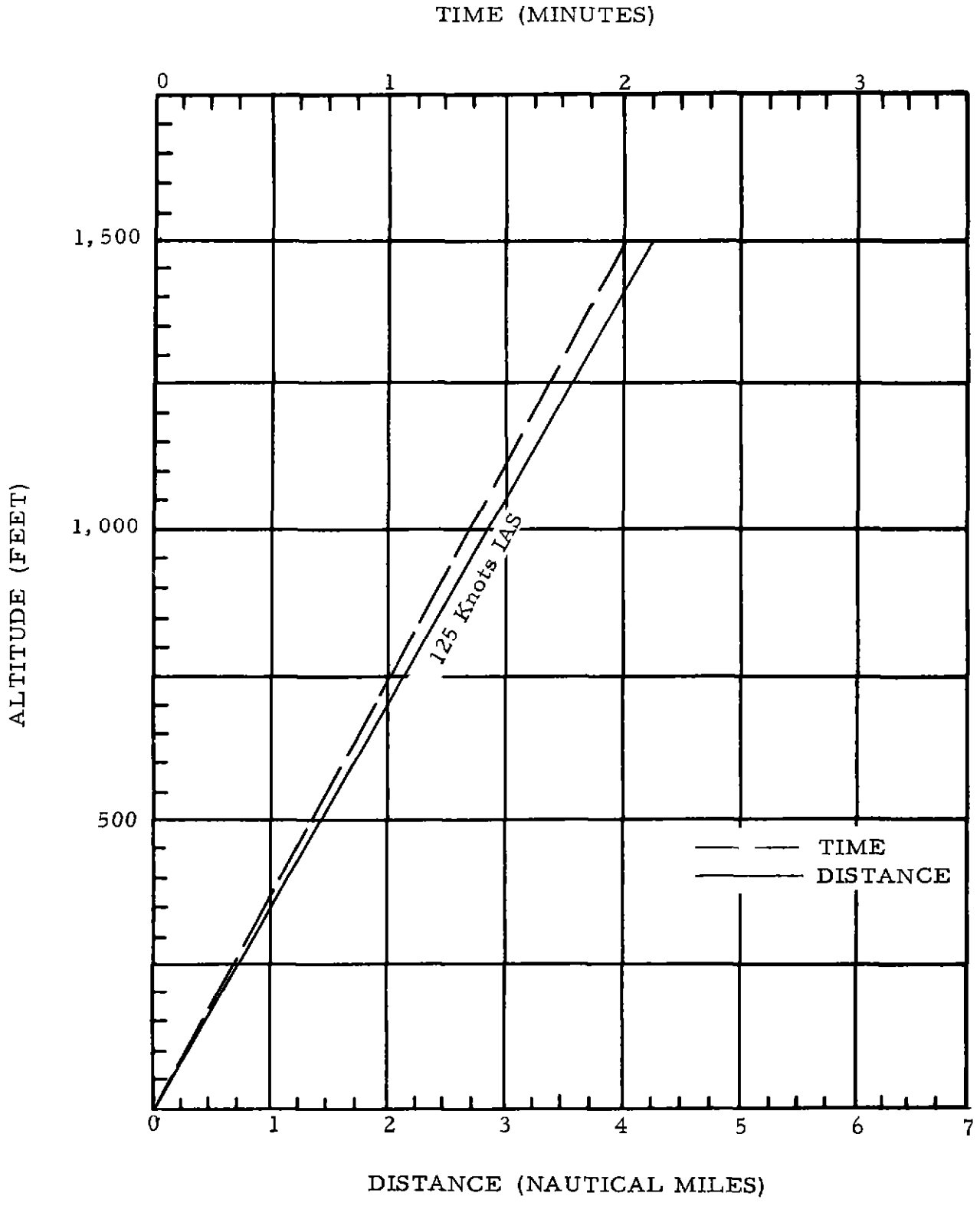


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down and flaps as required. Throttles are at sufficient power to maintain a constant rate of descent and airspeed.

Speed (knots IAS)

Glide path airspeed 95
Stall speeds (see Table I)
Maximum allowable (structural limitations) 105 (full flaps)

Distance

Minimum 2.6 nautical miles
Maximum 5 5 nautical miles
Operationally desirable 4.8 nautical miles (see Figure 1)

Time

Minimum 2.0 minutes
Maximum 3 6 minutes
Operationally desirable. 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable: 1,500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable: 500 feet per minute

Full Power Response Time for Go-Round

2 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS at 45 Degree Flaps, Gear Down, and Power Off)

Gross Weight	0° Bank	30° Bank	45° Bank
26,000 lbs	57	62	69

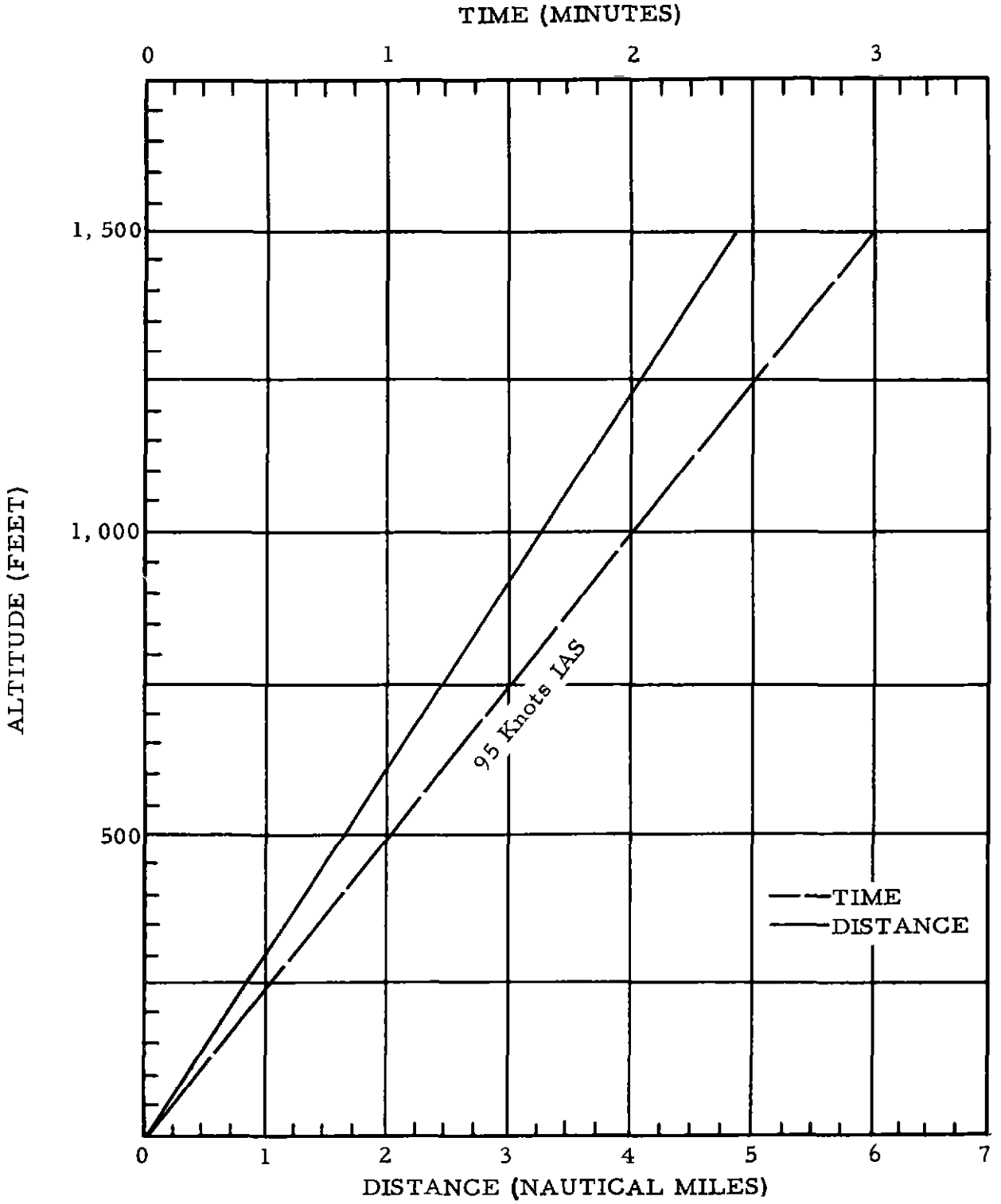


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 20 degrees

Speed (knots IAS)

Glide path airspeed 110
Percent deviation with gross weight per 1,000 pounds 0.8%
Stall speed at 55,000 pounds 77 (20° flaps)
Maximum allowable structural limitations 123 (gear down)

Distance

Minimum 2 4 nautical miles
Maximum 5.5 nautical miles
Operationally desirable 5 5 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 1.3 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

Flare Speed (knots IAS, 20 degree flaps, gear down)

Gross Weight	
50,000 pounds	88
55,000 "	91
60,000 "	95
65,000 "	98

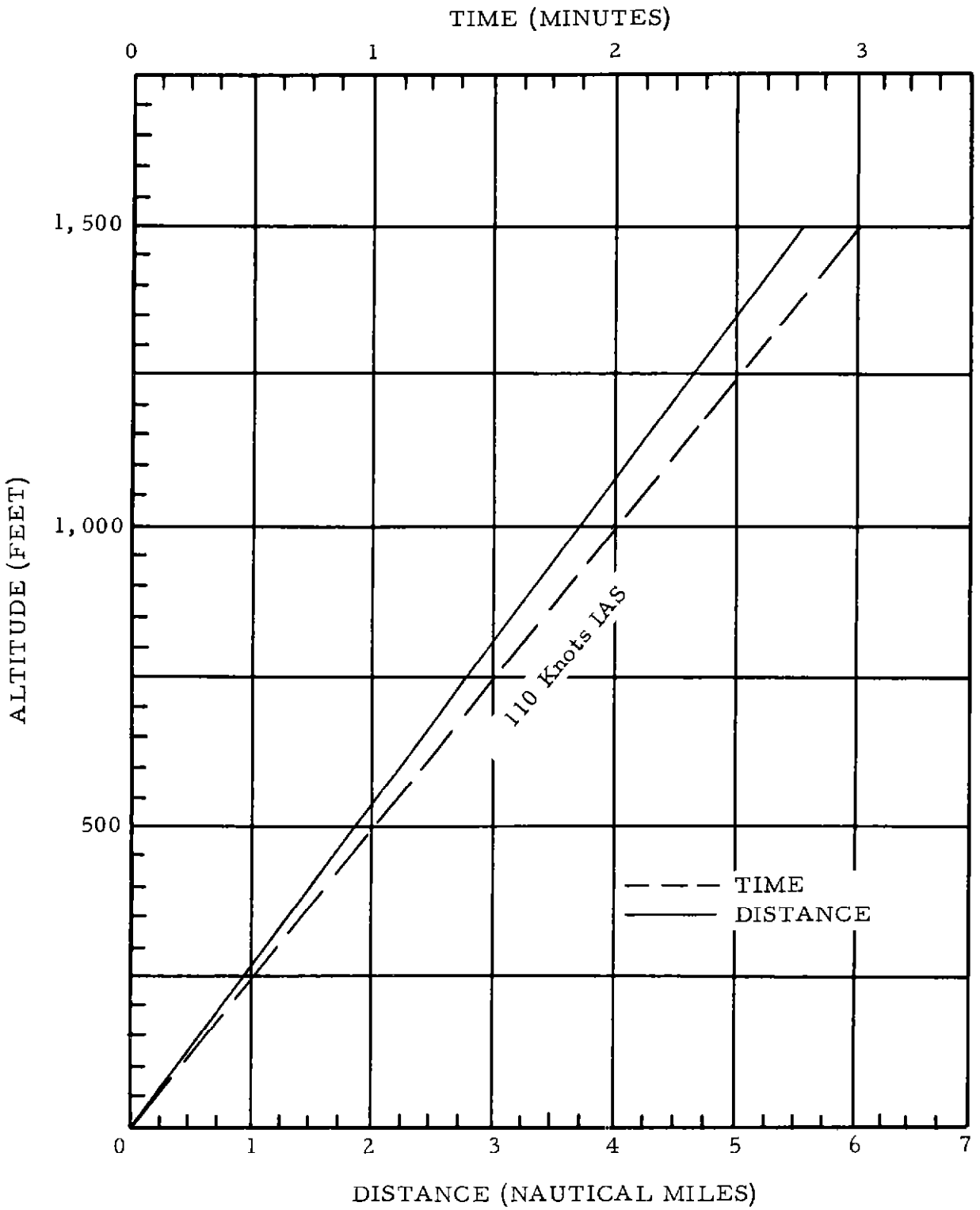


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down and flaps extended 30 degrees Power is set at 2, 300 rpm and 31 inches of manifold pressure.

Speed (knots IAS)

Glide Path airspeed at any gross weight 130
Percent deviation with gross weight none
Stall speeds (see Table I)
Maximum allowable (structural limitations) 150 (full flaps)

Distance

Minimum 7 2 nautical miles
Maximum 10 8 nautical miles
Operationally desirable 7 2 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 3 3 minutes
Maximum 5 0 minutes
Operationally desirable 3 3 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 000 feet (see Figure 1)

Rate of Descent

Minimum 300 feet per minute
Maximum 500 feet per minute
Operationally desirable 300 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE I

(Stall Speeds in Knots IAS)

Gross Weight	Gear Down 20° Flaps	Gear Up or Down 30° Flaps	Gear Down 50° Flaps
95,000 pounds	96	91	86
90,000 "	94	89	83
80,000 "	89	84	79
70,000 "	83	79	74

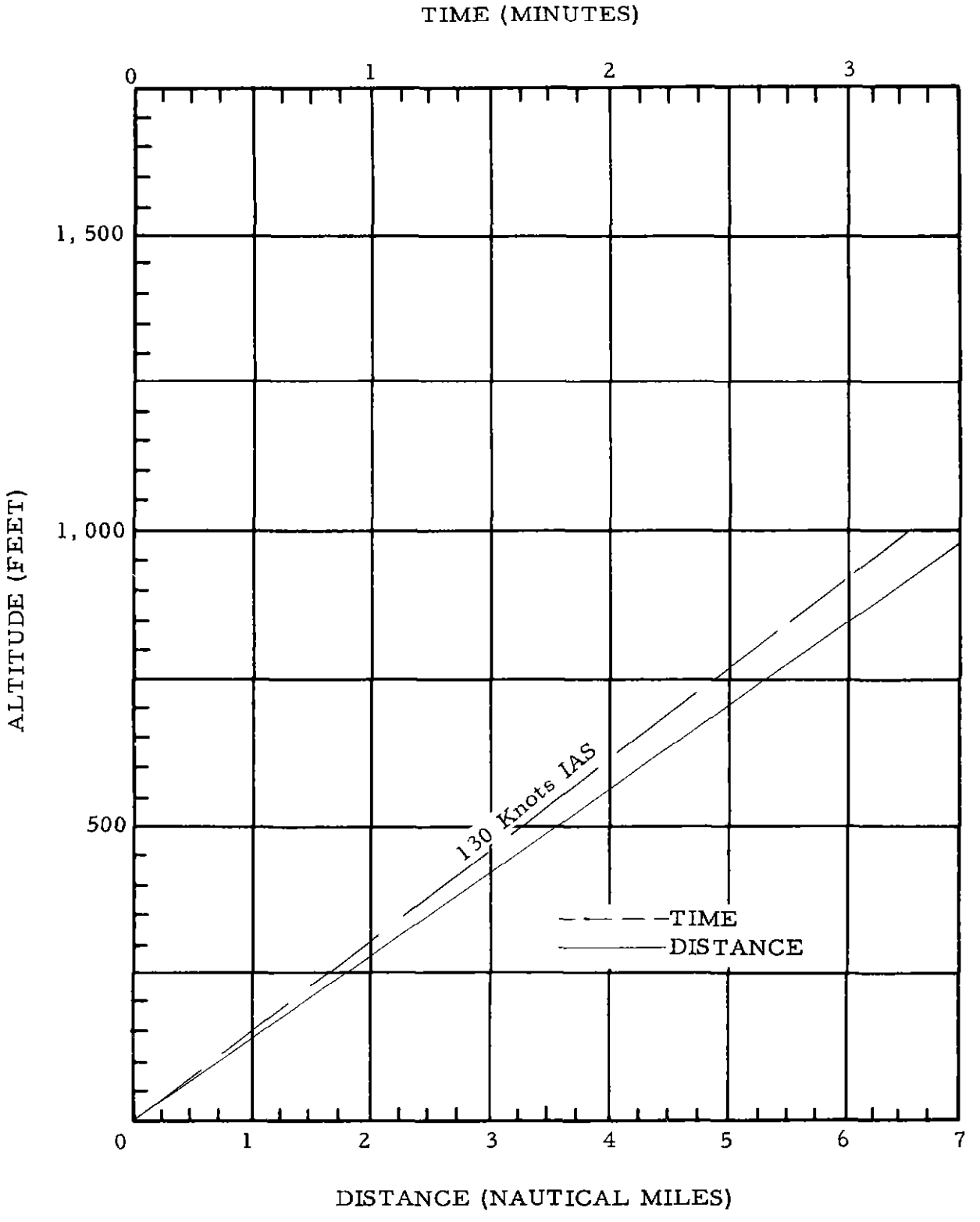


FIGURE 1 - GLIDE PATH - DESCENT AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps at 30 degrees Power is set for 2, 200 rpm and manifold pressure as required

Speed (knots IAS)

Glide path airspeed at any gross weight 130
Percent deviation with gross weight none
Stall speeds (see Table I)
Maximum allowable (structural limitations) 150 (full flaps)

Distance

Minimum 4. 0 nautical miles
Maximum. 6 5 nautical miles
Operationally desirable 6 5 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2 0 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

Flare Speeds (Knots IAS)

Gross Weight

88,200 pounds	107 knots
80,000 pounds	102 knots
70,000 pounds	95 knots

TABLE I
(Stall Speeds in Knots IAS)

Gross Weight	Gear Down 20°Flaps	Gear Up or Down 30°Flaps	Gear Up or Down 50°Flaps
107,000	100 0	95 0	91.0
100,000	97.5	92 0	88.0
90,000	93 0	88.0	83.0
80,000	88 0	84 0	78 0
70,000	83.0	80.0	73 0

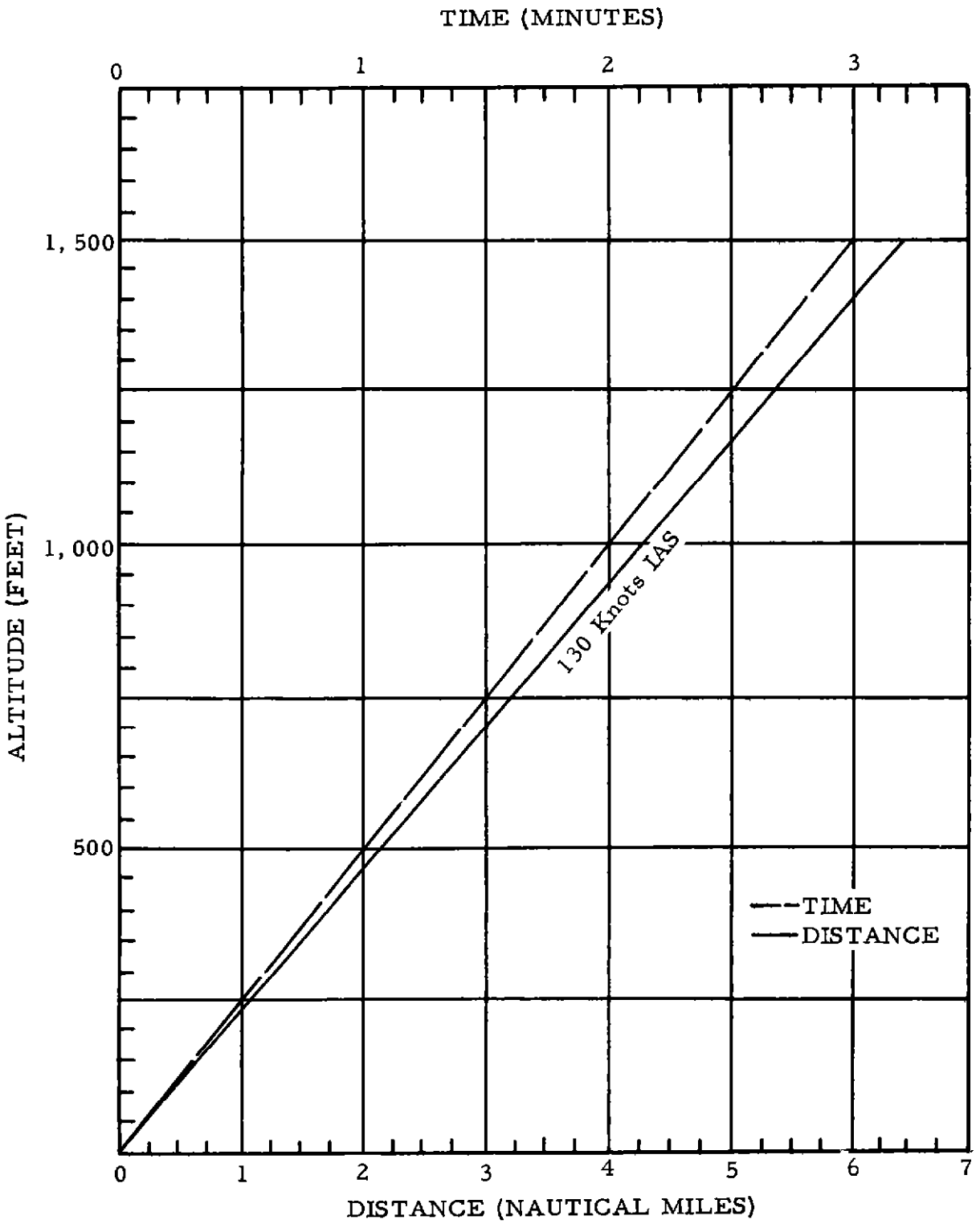


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 30 degrees Power is set at 2, 400 rpm with manifold pressure as required

Speed (knots IAS)

Glide path airspeed at any gross weight 125
Stall speed (see Table I)
Maximum allowable (structural limitations) 153 (50° flaps)

Distance

Minimum 4. 2 nautical miles
Maximum 6 3 nautical miles
Operationally desirable 6 3 nautical miles

Time (to touchdown)

Minimum 2. 0 minutes
Maximum 3. 0 minutes
Operationally desirable 3 0 minutes

Altitude

Minimum. 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable 500 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable· 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

Flare Speed (knots IAS)

Gross Weight	
97,000 pounds	114 knots
95,000 pounds	113 knots
90,000 pounds	110 knots
85,000 pounds	108 knots

TABLE I
Power-Off Stall Speed (knots IAS)

Gross Weight	20° Flaps Gear Up	30° Flaps Gear Up	50° Flaps Gear Down
97,000	100.5	95 0	87.0
95,000	99 5	94.0	86 5
90,000	97 5	92 0	84 5
85,000	95 5	89.5	83 0
80,000	93 0	87 0	81 0

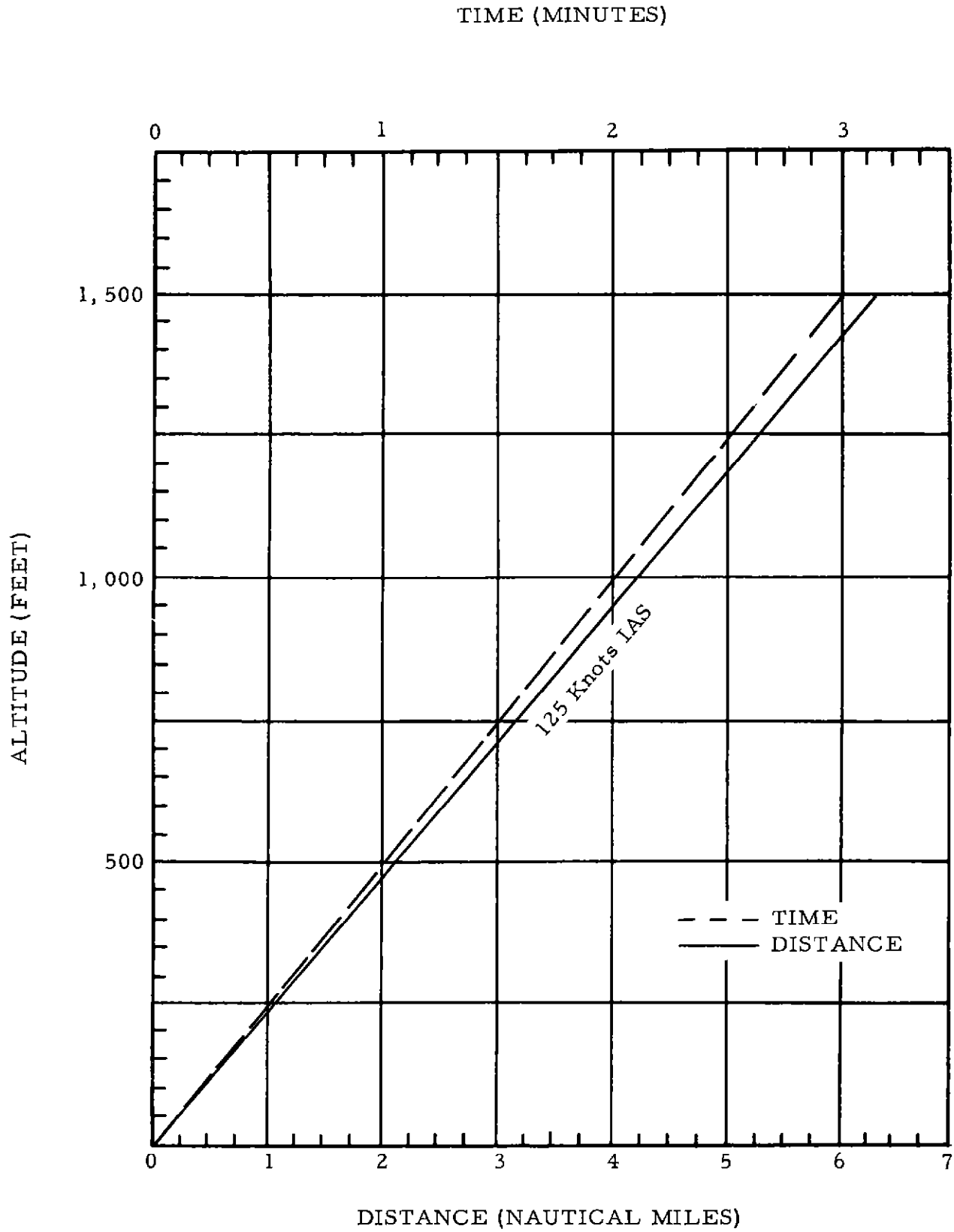


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 30 degrees. Power is set at 2, 400 rpm with manifold pressure as required

Speed (knots IAS)

Glide path airspeed at any gross weight 125
Stall Speed (see Table I)
Maximum allowable (structural limitations) 153 (50° flaps)

Distance

Minimum 4 2 nautical miles
Maximum 6 3 nautical miles
Operationally desirable 6 3 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2 0 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable. 500 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE I
Power-Off Stall Speed (knots IAS)

Gross Weight	20° Flaps Gear Up	30° Flaps Gear up	50° Flaps Gear down
97,000	98 0	95 0	87 0
95,000	97 0	94 0	86 0
90,000	95.0	92 0	84 0
85,000	92 5	89 5	82 0
80,000	90 0	87 0	80.0

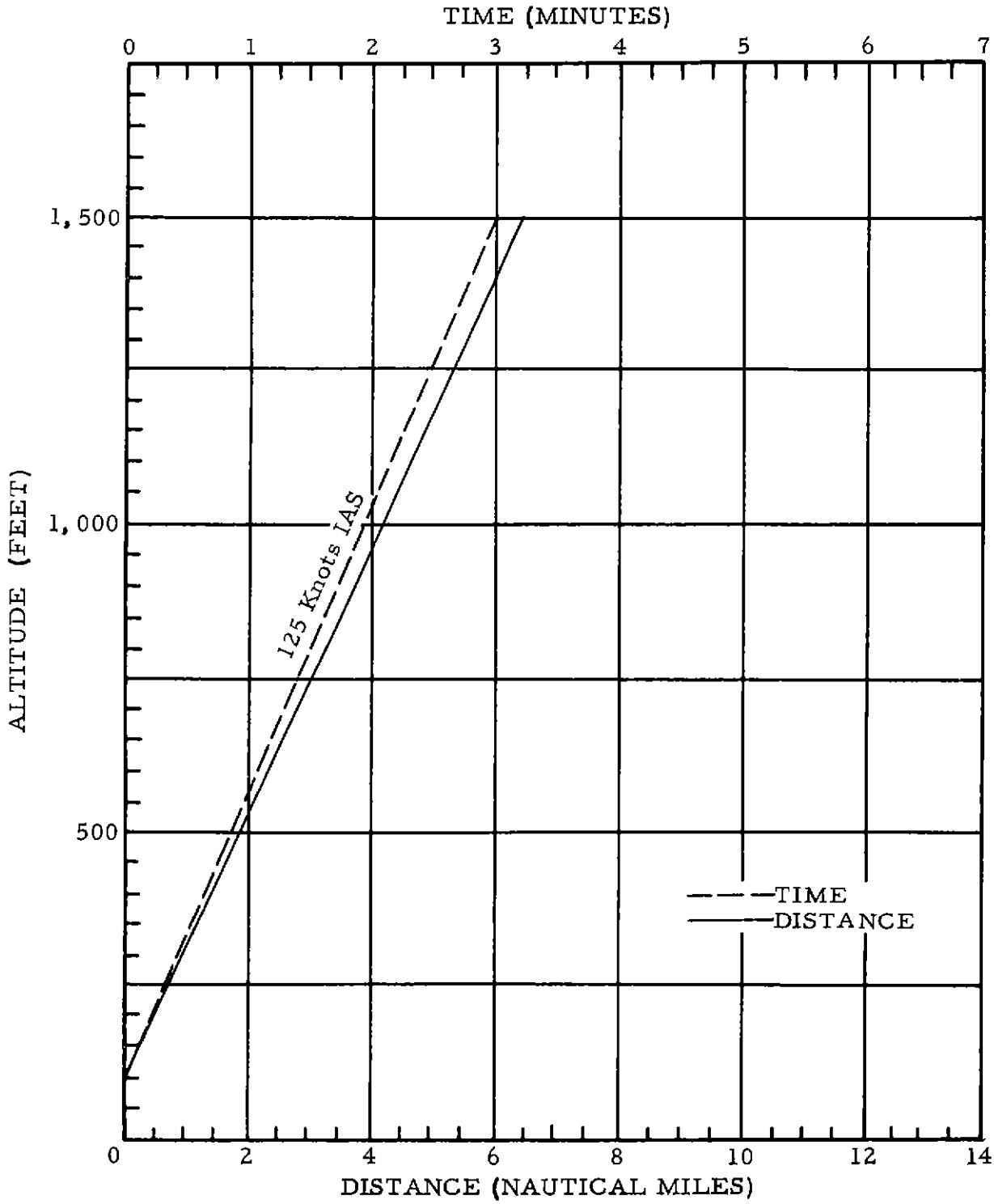


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down and flaps extended 30 degrees Throttles are set at sufficient power to maintain a constant rate of descent and airspeed.

Speed (knots IAS)

Glide path airspeed at any gross weight 130
Stall speeds (see Table I)
Maximum allowable (structural limitations) 172

Distance

Minimum 3 0 nautical miles
Maximum 7 5 nautical miles
Operationally desirable 6 5 nautical miles

Time (to touchdown)

Minimum 1. 4 minutes
Maximum 3. 8 minutes
Operationally desirable 3. 0 minutes

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 400 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS With Gear Down)

Gross Weight	30^{o} Flaps
80,000 Lbs	77
90,000 Lbs	82
100,000 Lbs	85
105,000 Lbs	89
110,000 Lbs	91

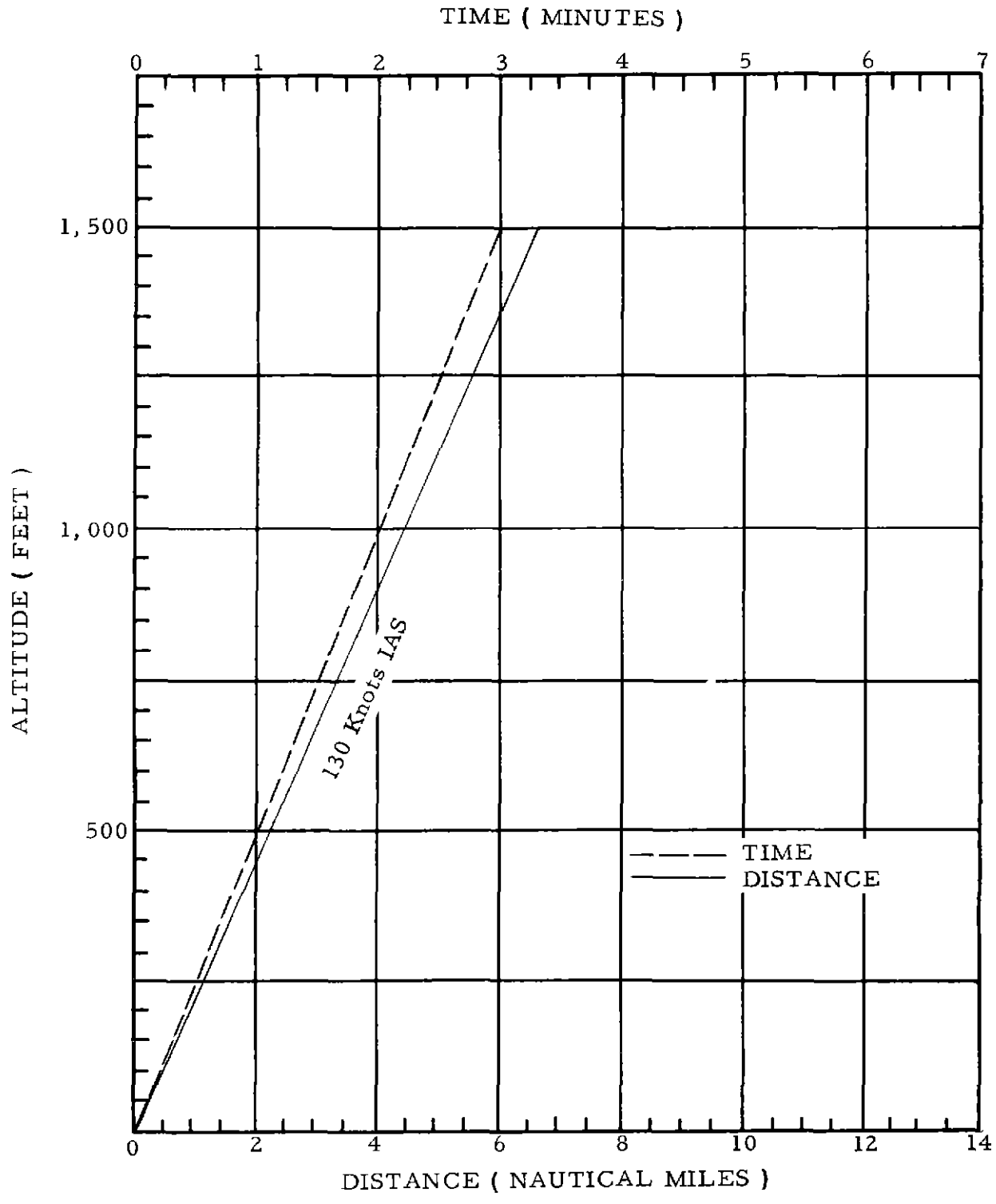


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required Power is set at a minimum of 8,000 turbine rpm

Speed (knots IAS)

Glide path airspeed at 32,000 pounds 100
Percent deviation with gross weight per 1,000 pounds
1 5%
Stall speeds (see Table I)
Maximum allowable (structural limitations) 126 (full flaps)

Distance

Minimum 3 3 nautical miles
Maximum 5 0 nautical miles
Operationally desirable 5.0 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS, Gear Down, Power-Off)

Gross Weight	16 5 degree Flaps
34,000 pounds	74 5
32,000 pounds	72 0
30,000 pounds	70 0
28,000 pounds	67 5
26,000 pounds	65 0

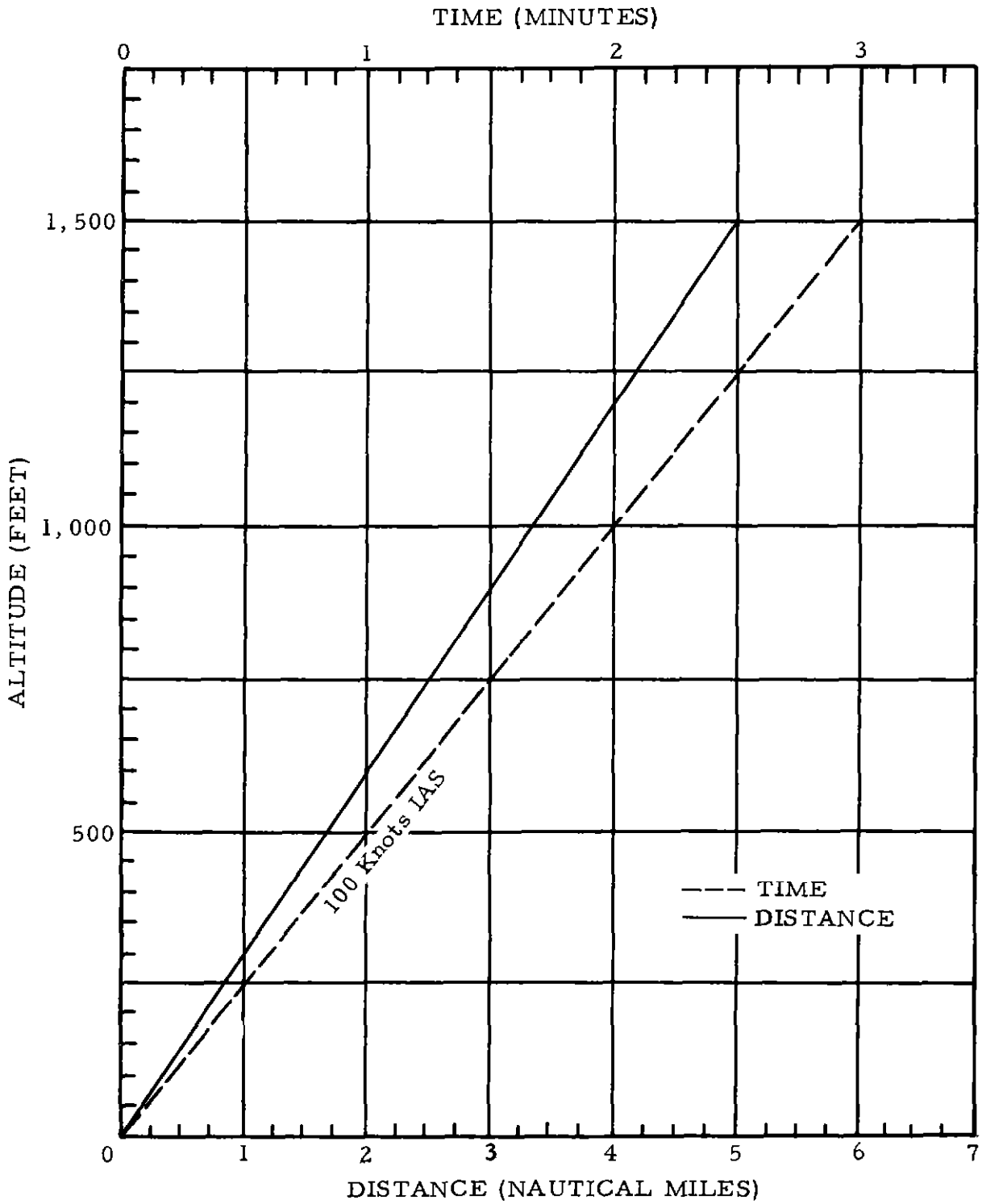


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 78 percent Throttles are set at a minimum of 80 percent power

Speed (knots IAS)

Glide path airspeed at 86, 000 pounds 145
Percent deviation with gross weight Not available from operators
Stall speeds (see Table I)
Maximum allowable (structural limitations) 185 (78 percent flaps)

Distance

Minimum 7. 0 nautical miles
Maximum 9 0 nautical miles
Operationally desirable 9 0 nautical miles (3. 0 miles outside outer marker) (see Figure 1)

Time (to touchdown)

Minimum 2 9 minutes
Maximum 3. 7 minutes
Operationally desirable 3 7 minutes (see Figure 1)

Altitude

Minimum 1, 500 feet
Maximum 2, 000 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 500 feet per minute
Operationally desirable 400 feet per minute

Full Power Response Time for Go-Round

1 to 3 seconds

TABLE I
(Stall Speeds in Knots IAS)

Gross Weight	Flaps (78%) Gear Up or Down	Flaps (100%) Gear Down
113,000 Lbs	107.5	103.0
110,000 Lbs	106 0	101 5
100,000 Lbs	101 0	96.5
90,000 Lbs.	96 0	91.5
80,000 Lbs.	90 5	86.5
70,000 Lbs	85 0	81 0

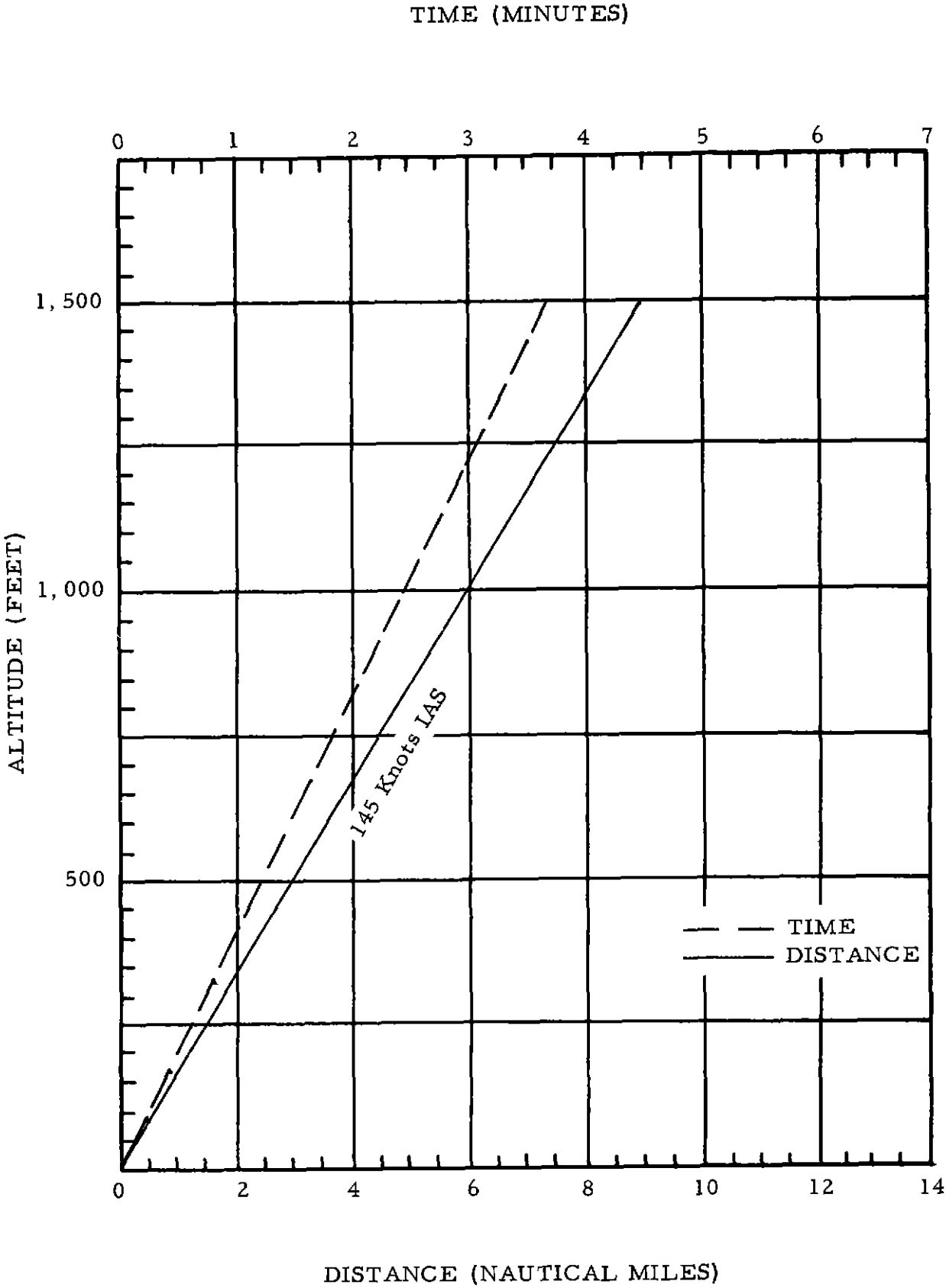


FIGURE 1 GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required Throttles are set at sufficient power to maintain a constant rate of descent and airspeed.

Speed (knots IAS)

Glide path airspeed 130
Stall speeds (see Table I)
Maximum allowable structural limitations 145 (100% flaps)

Distance

Minimum 2.2 nautical miles
Maximum 6 5 nautical miles
Operationally desirable 6 5 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 500 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS at 100% Flaps and Gear Down)

Gross Weight	0^{o} Bank
90,000	78.0
100,000	82 5
110,000	86.0
113,000	88.0

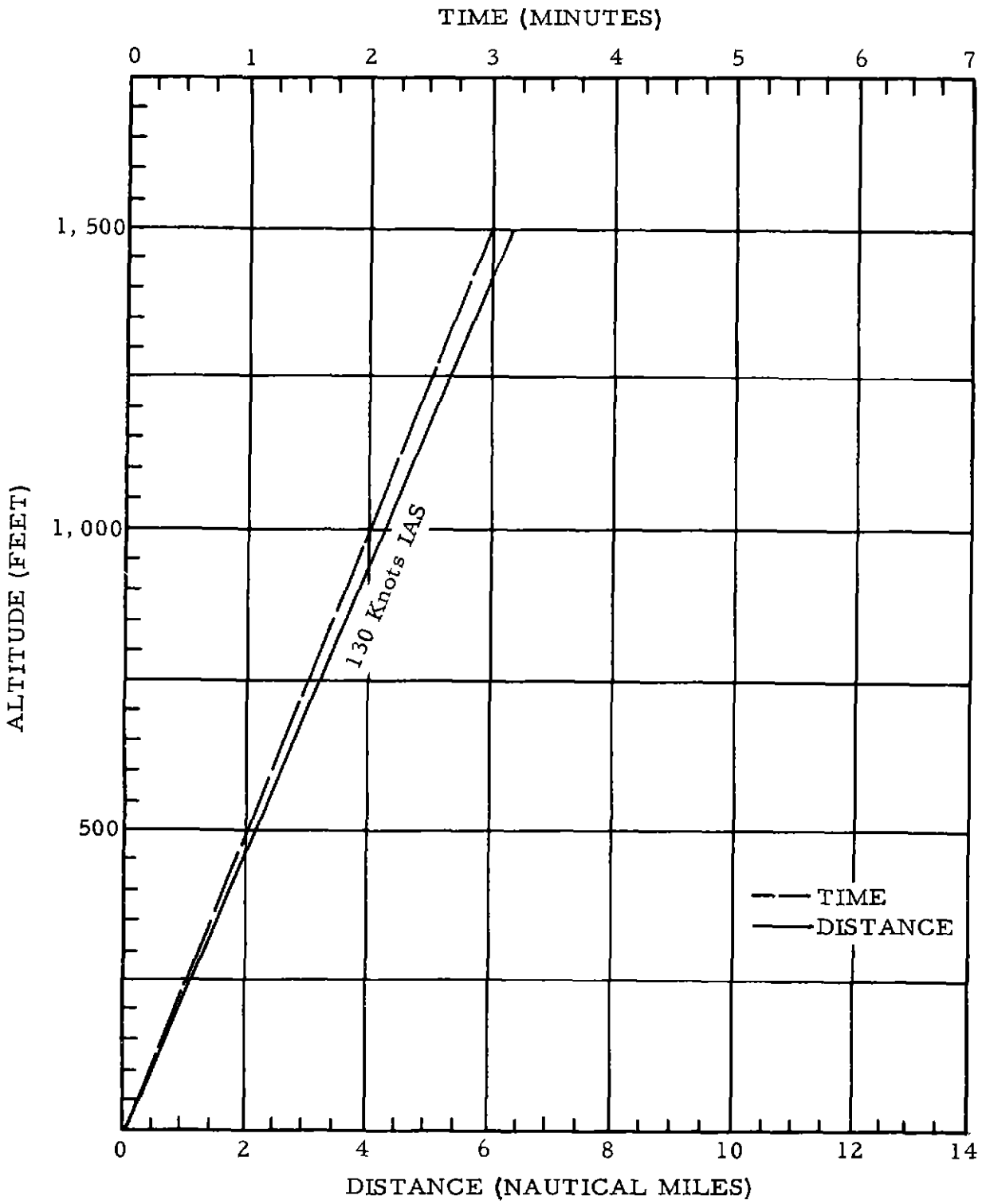


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required. Throttles are set at sufficient power ot maintain a constant rate of descent and airspeed.

Speed (knots IAS)

Glide path airspeed at any gross weight 130
Stall speed (see Table I)
Maximum allowable structural limitations 160 (100 percent flaps)

Distance

Minimum 4.0 nautical miles
Maximum 6.5 nautical miles
Operationally desirable 6.5 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2.0 minutes
Maximum 3.0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 500 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS at 100% Flaps and Gear Down)

Gross Weight	0° Bank
123,000	92.0
120,000	90.0
110,000	86.0
100,000	82.5
90,000	78.0

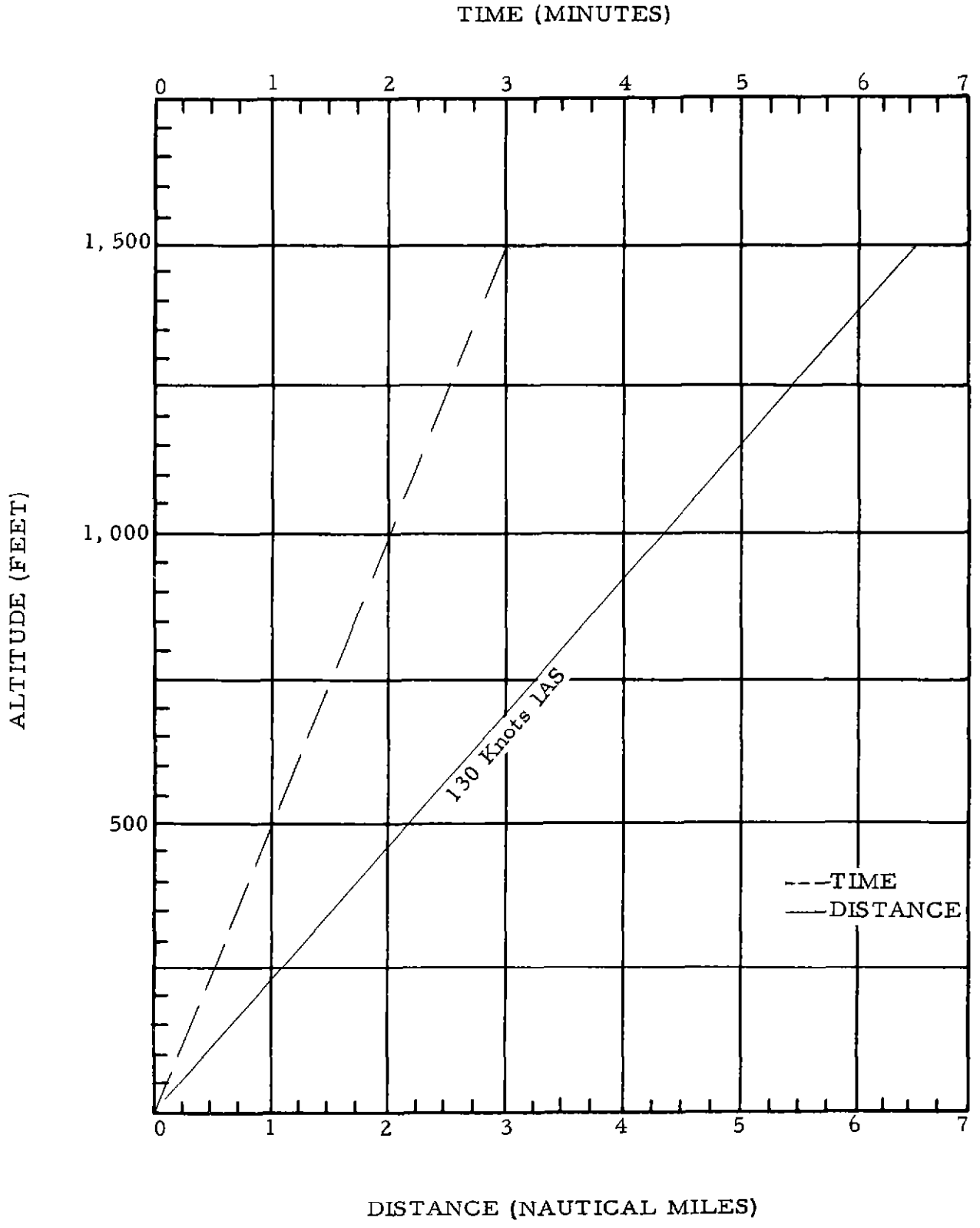


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 12 5 degrees Throttles are set at sufficient power to maintain a constant airspeed and rate of descent

Speed (knots IAS)

Glide path airspeed 110
Stall speeds (see Table I)
Maximum allowable (structural limitations) 130 knots
(24 degrees flaps)

Distance

Minimum 2 4 nautical miles
Maximum 9 2 nautical miles
Operationally desirable 5 5 nautical miles (see Figure 1)

Time

Minimum 1 3 minutes
Maximum 5 0 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

5 to 10 seconds

TABLE I

(Stall Speeds IAS in Knots at 100 Percent Flaps, Gear Down and Power-On)

Gross Weight	0° Bank	30° Bank	45° Bank	60° Bank
43,000 Lbs.	70	75	83	99

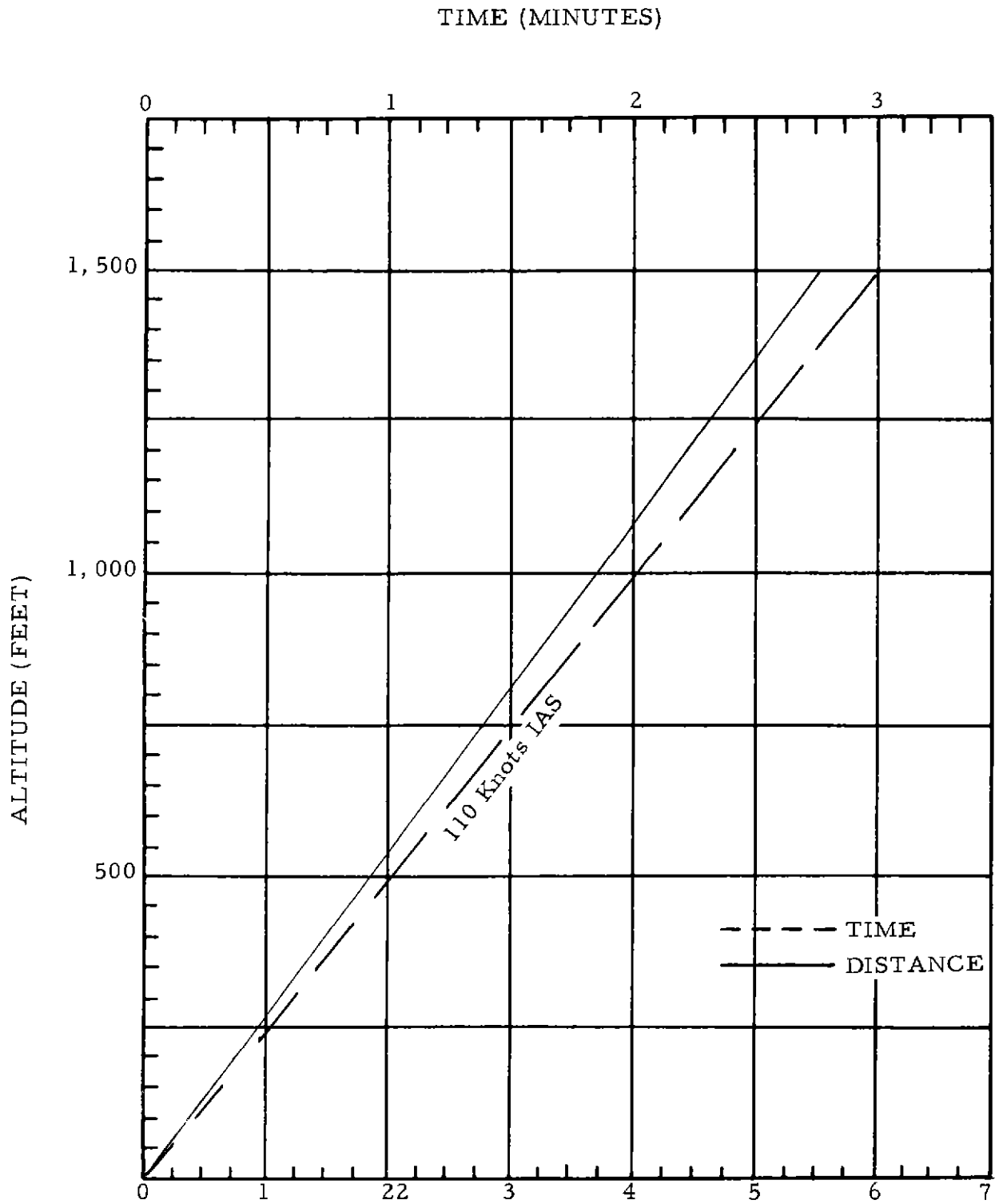


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down and flaps extended 32 degrees Power is set at 14,000 rpm and torque pressure as required

Speed (knots IAS)

Glide path airspeed at any gross weight 125
Minimum maneuver speed 120
Stall speeds (see Table I)
Maximum allowable (structural limitations) 142 (32 degrees flaps)

Distance

Minimum 6 0 nautical miles
Maximum 9 0 nautical miles
Operationally desirable 6 3 nautical miles (see Figure 1)

Time

Minimum 2 9 minutes
Maximum 4 3 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,200 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

1 to 3 seconds

TABLE I
(Stall Speeds in Knots IAS, Gear Down and Power-Off)

Gross Weight	0^{o} Flaps	20^{o} Flaps	47^{o} Flaps
64, 500	106	98	94
63, 000	104	96	92
60, 285	101	93	89
57, 500	99	91	87

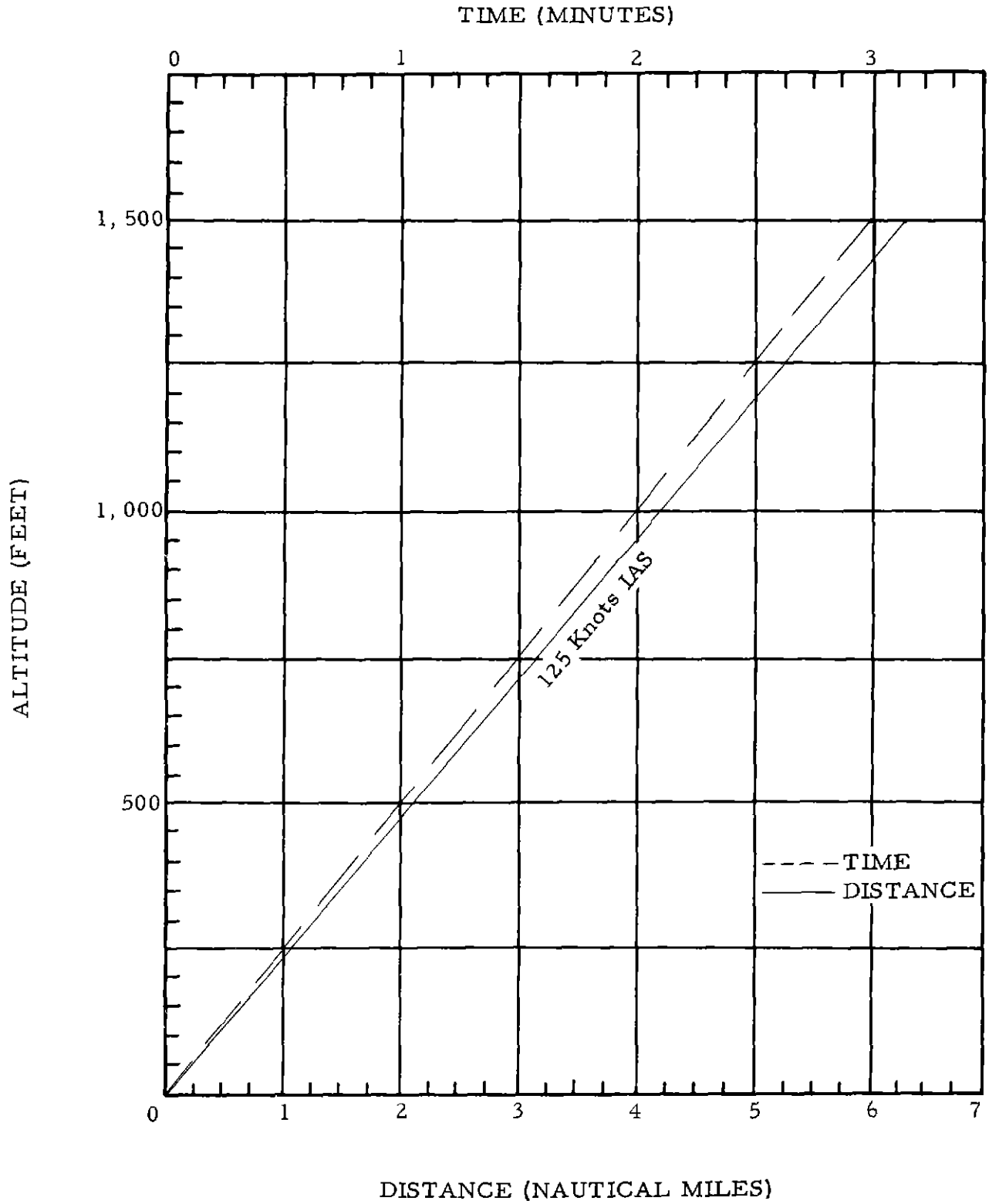


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 32 degrees Power is set at 12,000 rpm and torque pressure as required

Speed (knots IAS)

Glide path airspeed at any gross weight 125
Stall speeds (see Table I)
Maximum allowable structural limitations 194
(0 to 20 degrees flaps)

Distance

Minimum 4 2 nautical miles
Maximum 6 2 nautical miles
Operationally desirable 6.2 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2.0 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 500 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE 1
(Stall Speeds in Knots IAS With Gear Down and Power Off)

Gross Weight	0° Flaps	20° Flaps	40° Flaps
62,000 pounds	103	96	92
60,000 pounds	101	95	90
55,000 pounds	97	91	86
52,000 pounds	94	88	83
50,000 pounds	93	87	82

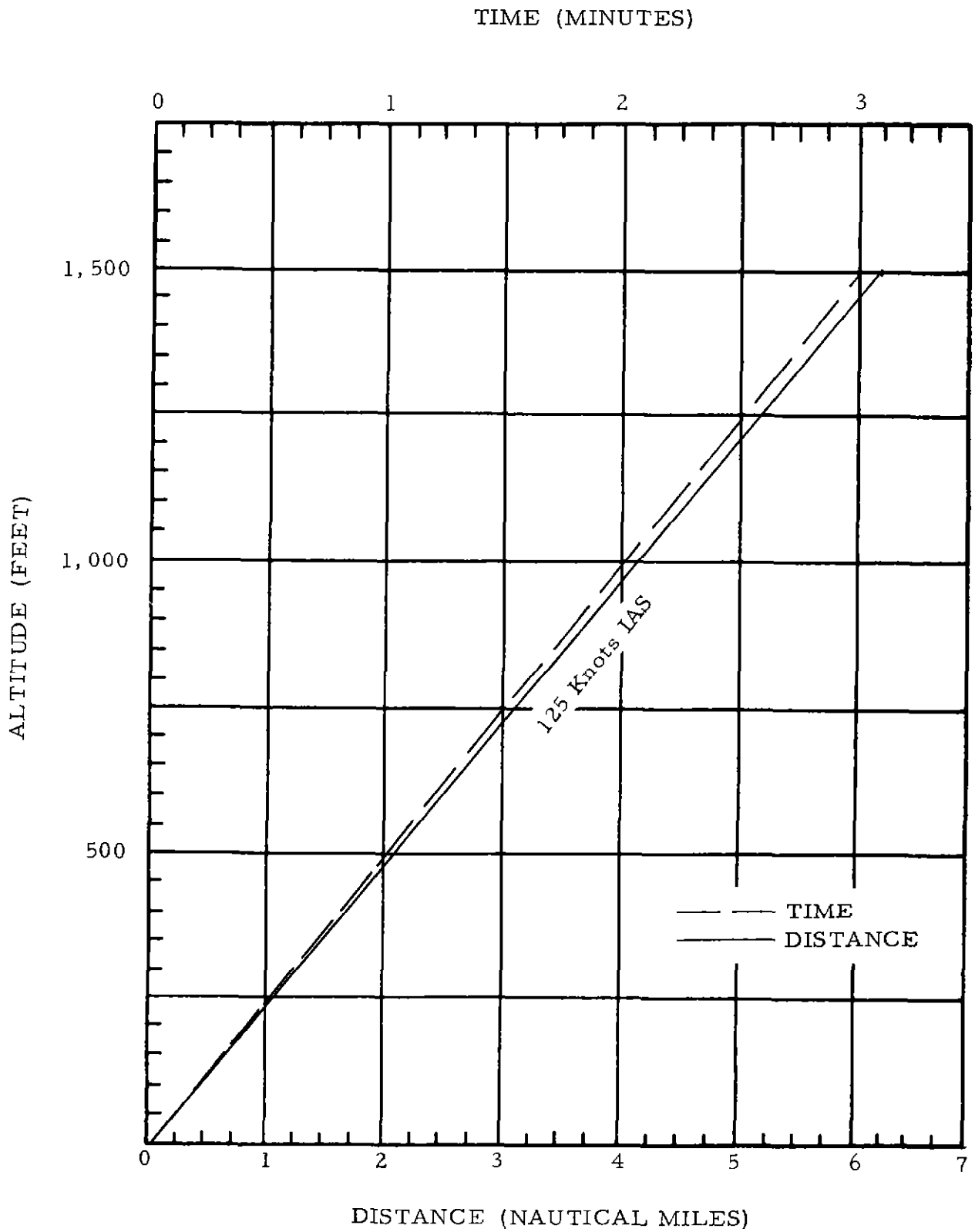


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

AIR VEHICLE PERFORMANCE CHARACTERISTICS

Volumes I-A through IX

SECTION 3

GENERAL AVIATION

containing data on

Aero Commander 500

Aero Commander 680 (L-26C)

Aero Commander 720

Beechcraft "Bonanza" K-35

Beechcraft "Twin Bonanza" (L-23D)

Beechcraft Model 95

Beechcraft Super 18

Cessna 150

Cessna 172

Cessna 175

Cessna 180 (Amphibian)

Cessna 182

Cessna 310A (L-27A)

Cessna 310C

de Havilland "Beaver" (L-20A)

de Havilland "Otter" (U-1A)

Mooney Mark 20A

Piper "Tri-Pacer" PA-22

Piper "Apache"" PA-23

Piper "Comanche" PA-24-180

(date of latest revision September 1, 1959)

UNITED STATES FEDERAL AVIATION AGENCY
Bureau of Research & Development
Washington 25, D. C.

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required Throttles are set at sufficient power to maintain a constant rate of descent and airspeed.

Speed (knots IAS)

Glide path airspeed at 6,000 pounds 78
Percent deviation with gross weight none
Stall speeds (see Table I)
Maximum allowable structural limitations 130 (20 degree flaps)

Distance

Minimum 2 6 nautical miles
Maximum 6 5 nautical miles
Operationally desirable 3.9 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2.0 minutes
Maximum 5 0 minutes
Operationally desirable 3 0 minutes

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 500 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 3 seconds

TABLE I
(Stall Speeds in Knots IAS at 40° Flaps With Gear Down)

	0° Bank	20° Bank	40° Bank	60° Bank
Power-Off	63	Not available from manufacturer.		

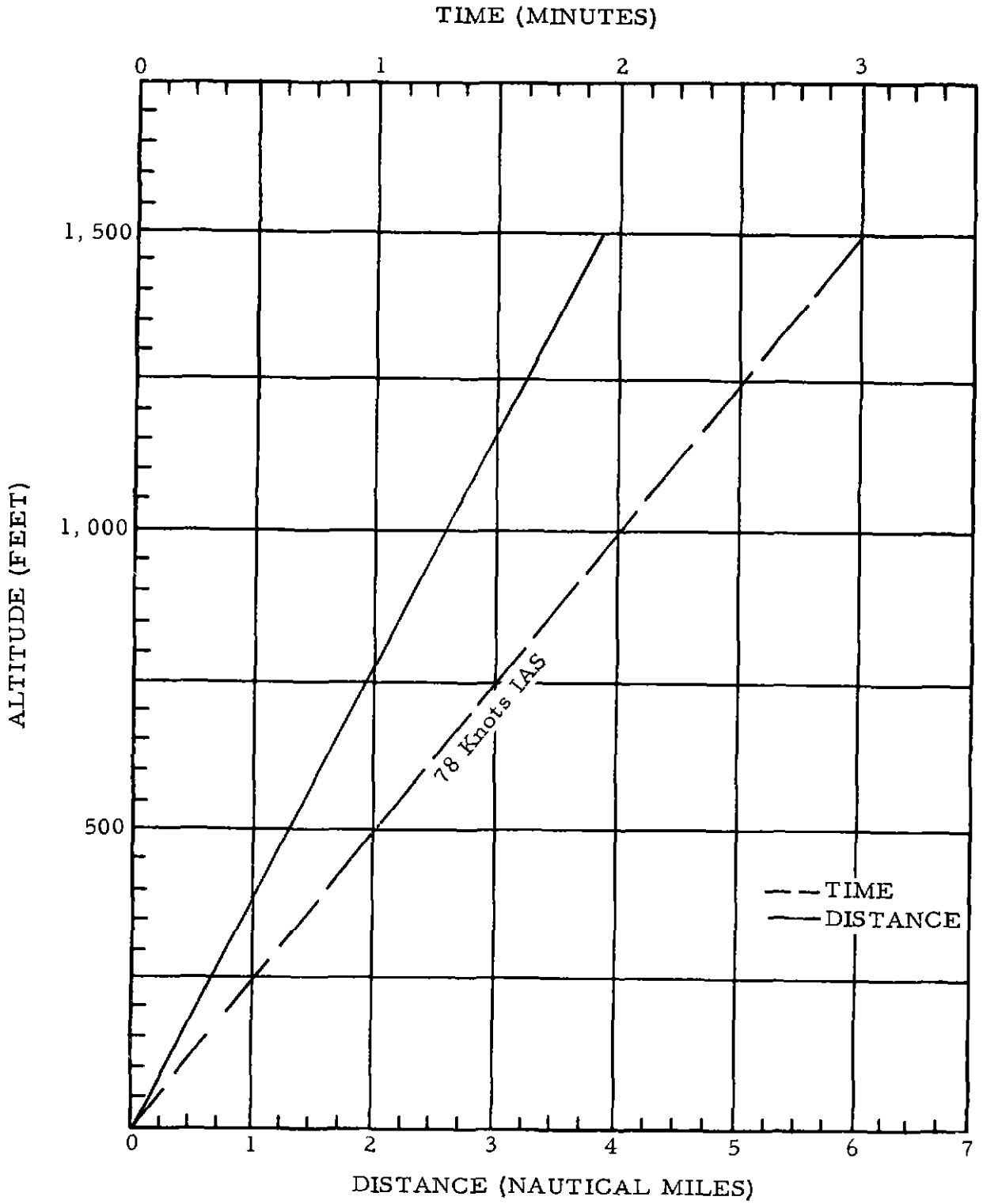


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required Throttles are set at sufficient power to maintain a constant rate of descent and airspeed.

Speed (knots IAS)

Glide path airspeed 70
Stall speeds (see Table I)
Maximum allowable (structural limitations) 113 (full flaps)

Distance

Minimum· 2 5 nautical miles
Maximum 5 0 nautical miles
Operationally desirable 3 5 nautical miles (see Figure 1)

Time

Minimum· 2 1 minutes
Maximum 4 3 minutes
Operationally desirable. 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 350 feet per minute
Maximum allowable 700 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

0 to 5 seconds

Flare Speeds

Not available from operator

TABLE I
(Stall Speeds IAS in Knots at 100 Percent Flaps and Gear Down)

	0° Bank	15° Bank	30° Bank	45° Bank
Power on	53	54	56	63
Power off	58	58	62	69

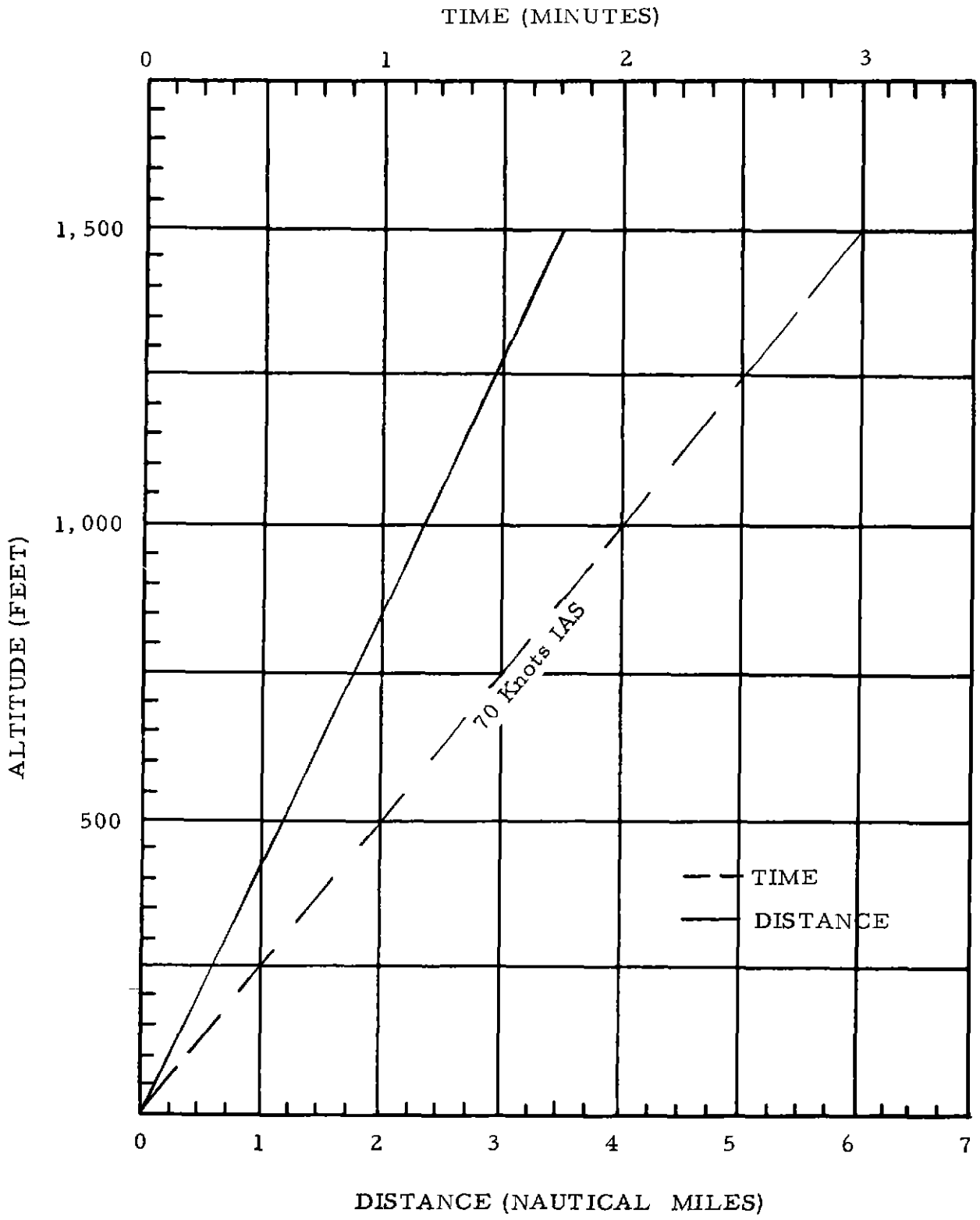


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down and flaps as required Power is set at 2, 600 rpm and manifold pressure as required to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed 104
Stall speeds (see Table I)
Maximum allowable (structural limitations) 113 (full flaps)

Distance

Minimum 3 5 nautical miles
Maximum 8 7 nautical miles
Operationally desirable 5 2 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 5 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 700 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS, 40 Degree Flaps, and Gear Down)

Gross Weight		0° Bank	15° Bank	30° Bank	45° Bank
6,000 Lbs.	Power On	50	51	54	60
	Power Off	58	58	62	69

Aero Commander (720)

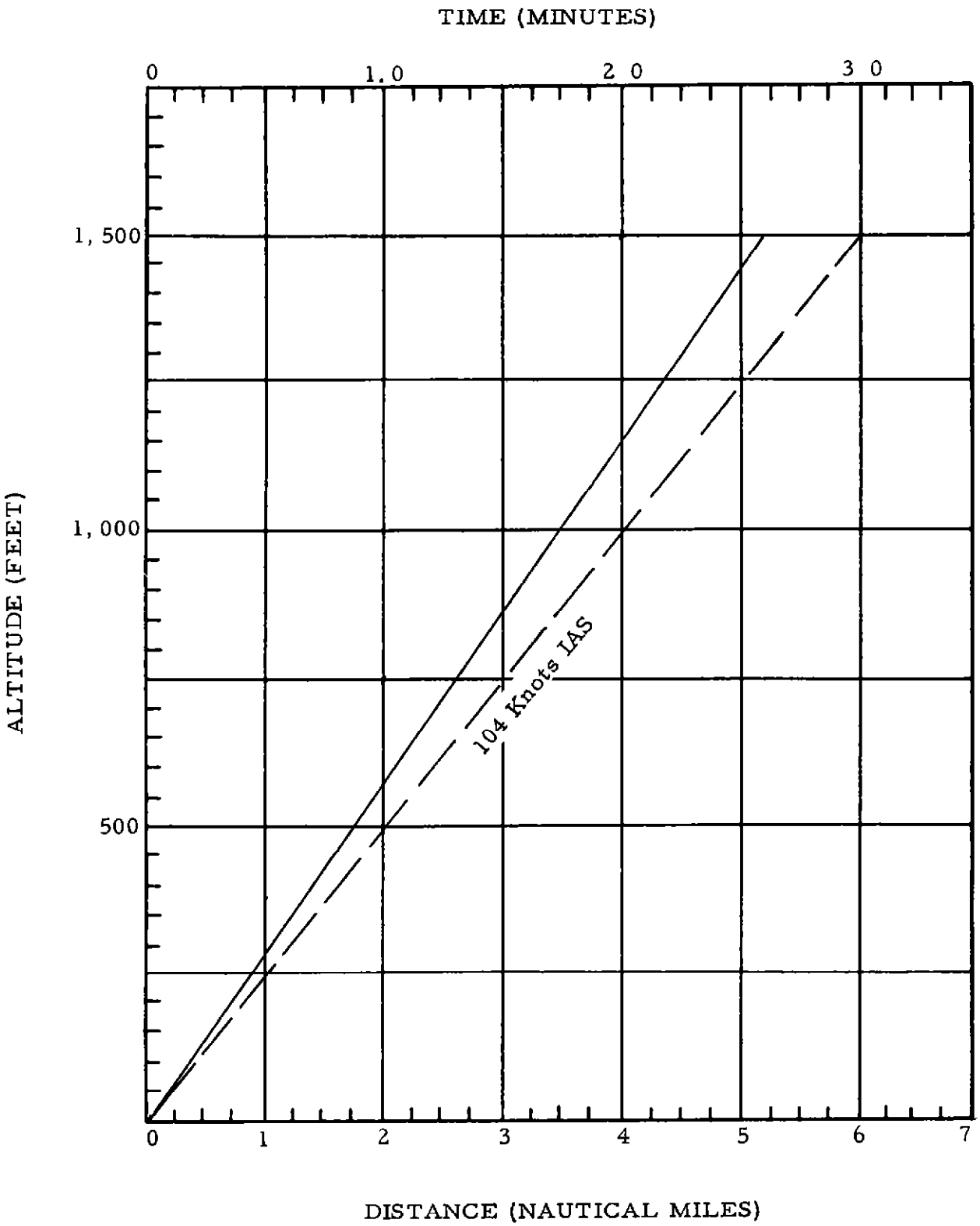


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required Throttles are set at sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed 69
Stall speeds (see Table I)
Maximum allowable (structural limitations) 104 (full flaps)

Distance

Minimum 2 3 nautical miles
Maximum 3 4 nautical miles
Operationally desirable. 3 4 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2 0 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

Immediate

TABLE I

(Stall Speeds in Knots IAS at 100 Percent Flaps and Gear Down)

	0° Bank	20° Bank	40° Bank	60° Bank
Power off	52	53	58	72

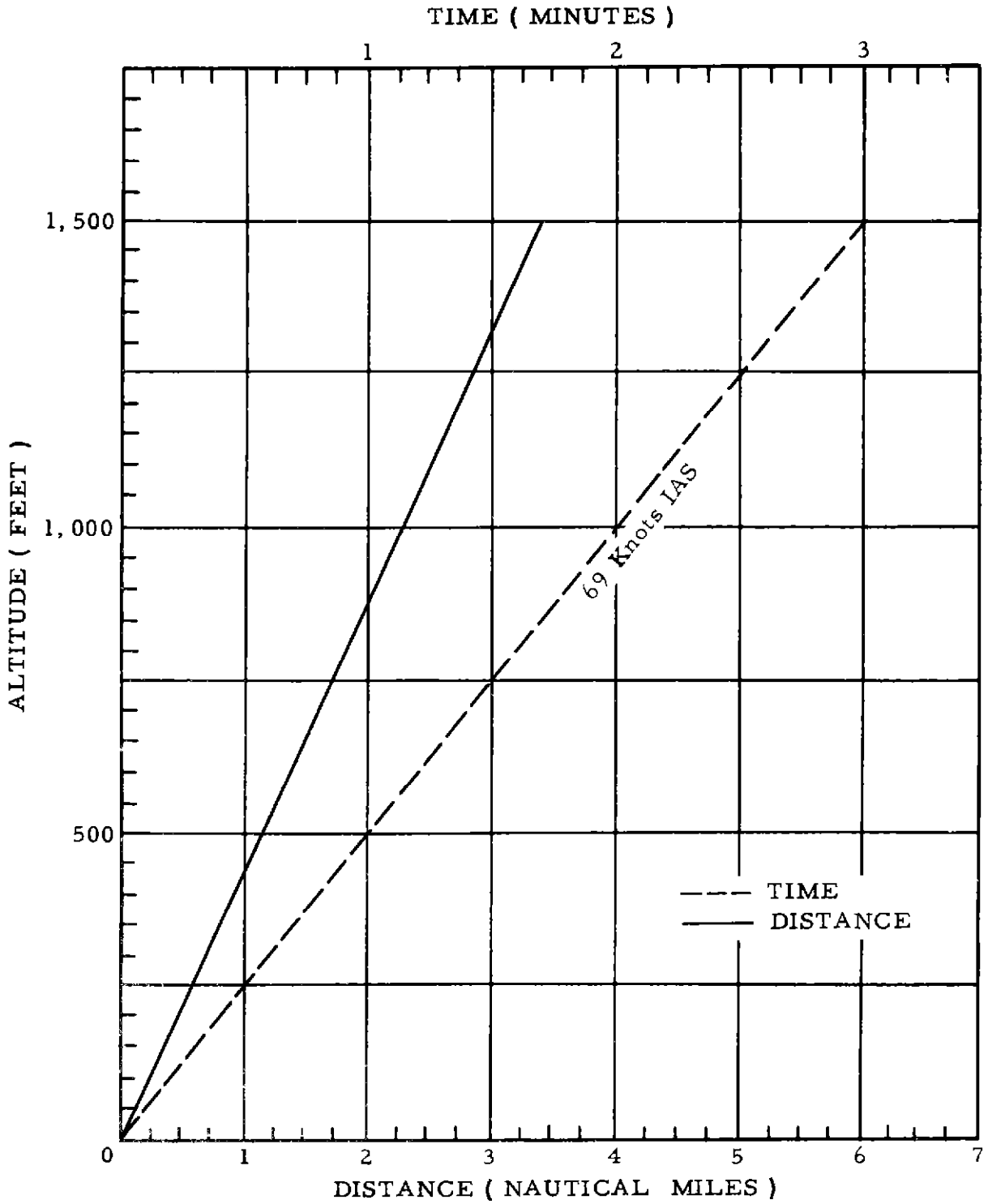


FIGURE 1 - GLIDE PATH - Distance And Time Data, K-35

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended as required Throttles are set at sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed at any gross weight 110
Stall speeds (see Table I)
Maximum allowable (structural limitations) 130 (full flaps)

Distance

Minimum 3 6 nautical miles
Maximum 7 3 nautical miles
Operationally desirable 5 5 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2 0 minutes
Maximum 4 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response for Go-Round

0 to 3 seconds

TABLE I
(Stall Speeds in Knots IAS at 30° Flaps and Gear Down)

Gross Weight		0° Bank	15° Bank	30° Bank	45° Bank
7,000 lbs	Power On	60	61	69	83
	Power Off	70	71	81	100

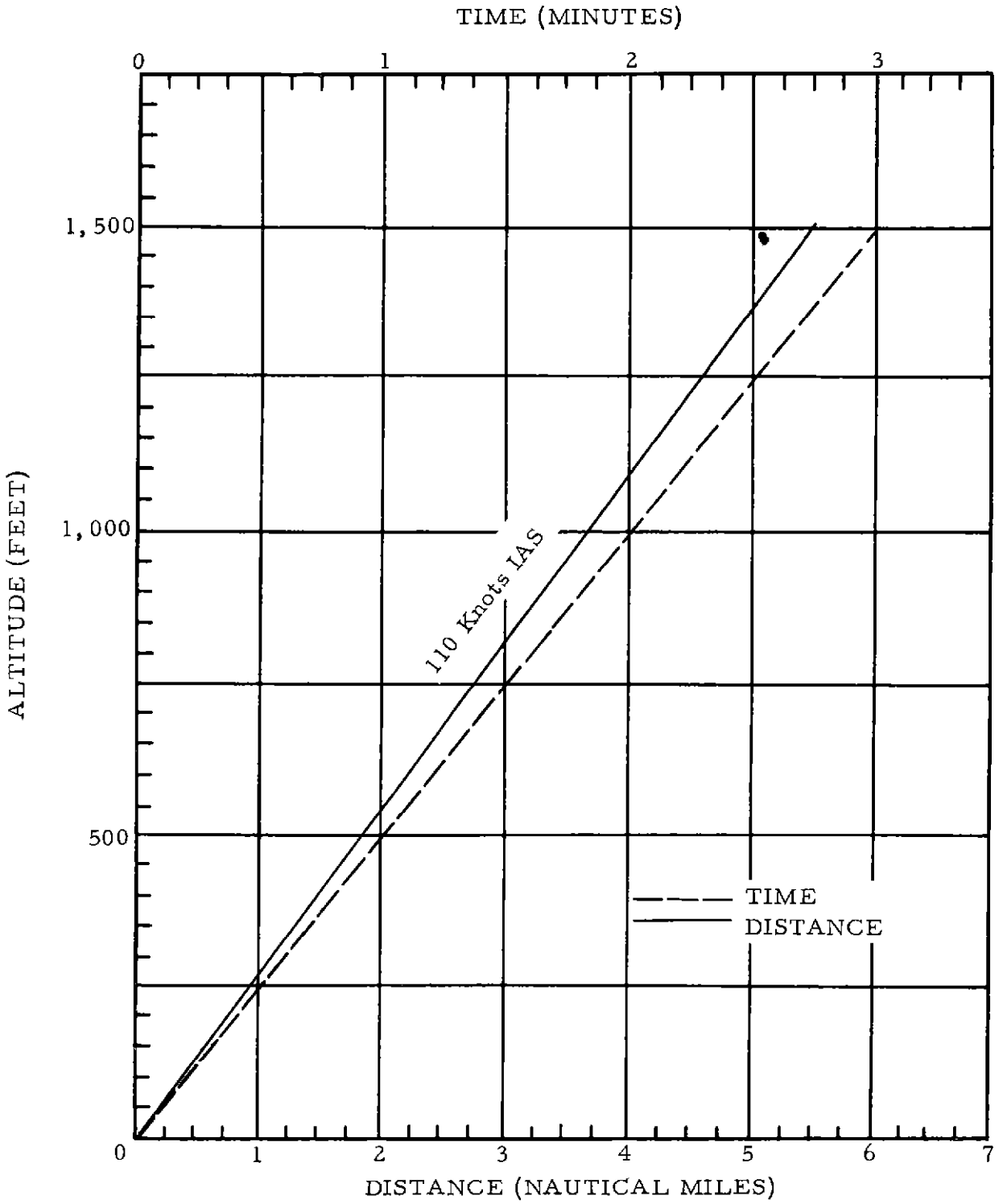


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required Throttles are set for sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed 70
Stall speeds (see Table I)
Maximum allowable (structural limitations) 113 (full flaps)

Distance

Minimum 1 2 nautical miles
Maximum 3 5 nautical miles
Operationally desirable 3. 5 nautical miles (see Figure 1)

Time

Minimum 1 0 minute
Maximum 3. 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 500 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum 2, 000 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

0 to 4 seconds

TABLE I
(Stall Speeds in Knots IAS with Gear Down and Power-Off)

Gross Weight	0° Bank	20° Bank	40° Bank	60° Bank
4,000 lbs	61	63	70	86

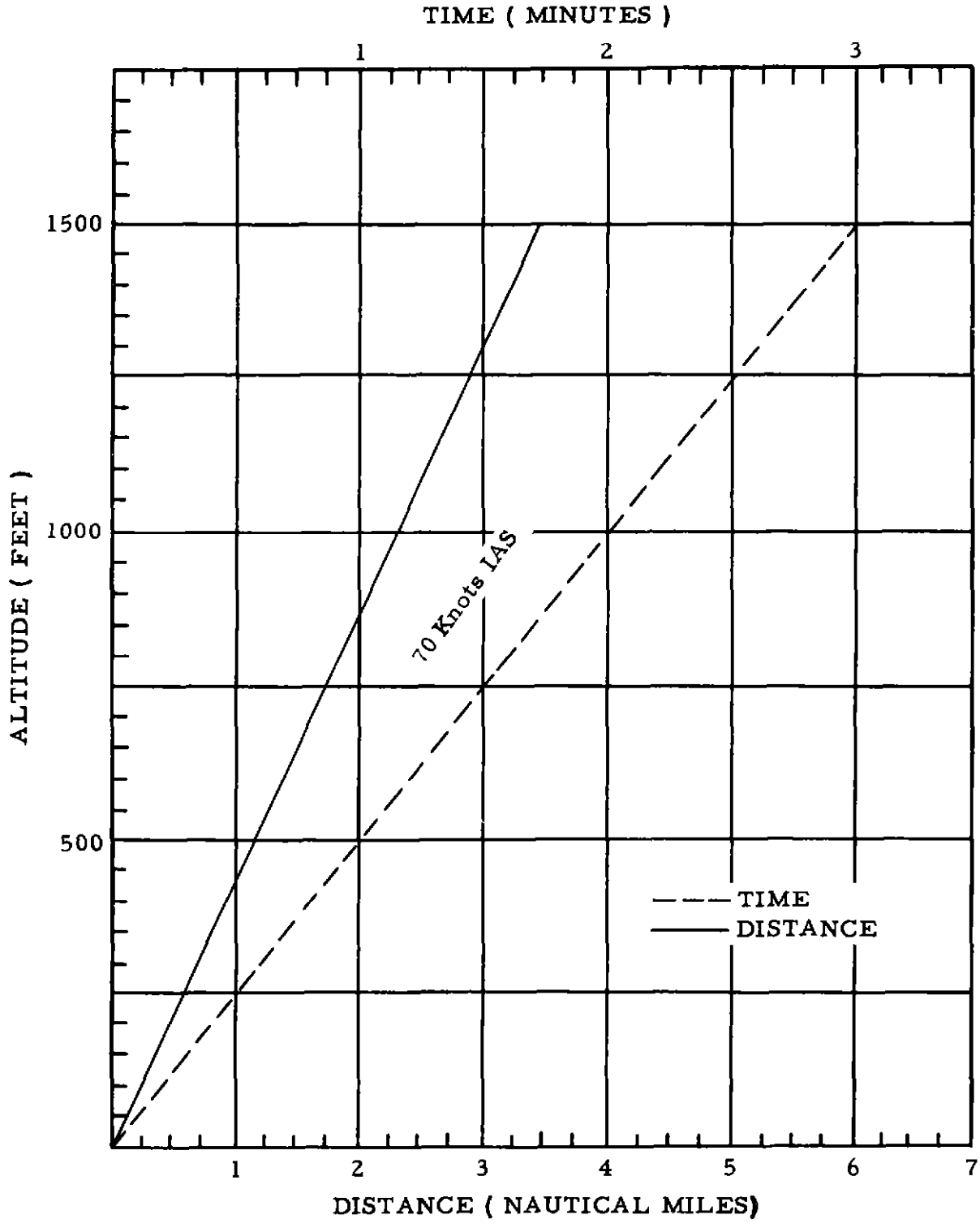


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps fully extended Throttles are at sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed at 9, 300 pounds 95
Percent deviation with gross weight none
Stall speeds (see Table I)
Maximum allowable (structural limitations) 104 (full flaps)

Distance

Minimum 3. 2 nautical miles
Maximum 6 4 nautical miles
Operationally desirable 4 8 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 4. 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable· 1, 500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable. 700 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 3 seconds

TABLE I
(Stall Speeds in Knots IAS With 45 Degree Flaps, Gear Down, and Power Off)

Gross Weight	0° Bank	20° Bank	40° Bank	60° Bank
9,300 pounds	73	76	83	103

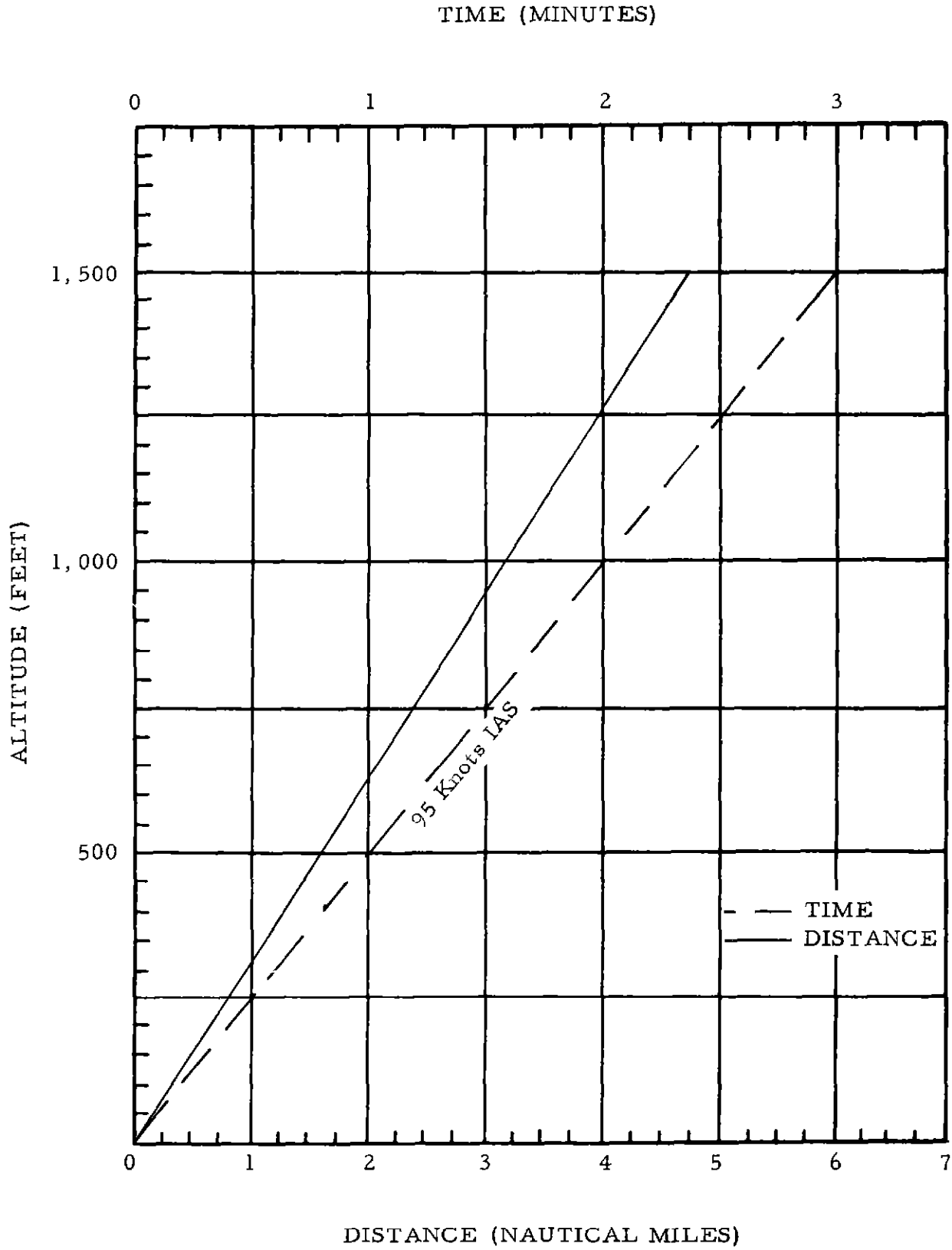


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of flaps extended 40 degrees Throttles are set at sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed at any gross weight 61
Stall speeds (see Table I)
Maximum allowable(structural limitations) 74 (full flaps)

Distance

Minimum 1 0 nautical mile
Maximum 3 0 nautical miles
Operationally desirable 3 0 nautical miles (see Figure 1)

Time

Minimum 1 0 minute
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 500 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable 500 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

Immediate

TABLE I
(Stall Speeds in Knots IAS at 40 Degree Flaps, Power Off)

Gross Weight	0° Bank	20° Bank	40° Bank	60° Bank
1,500	43	45	50	62

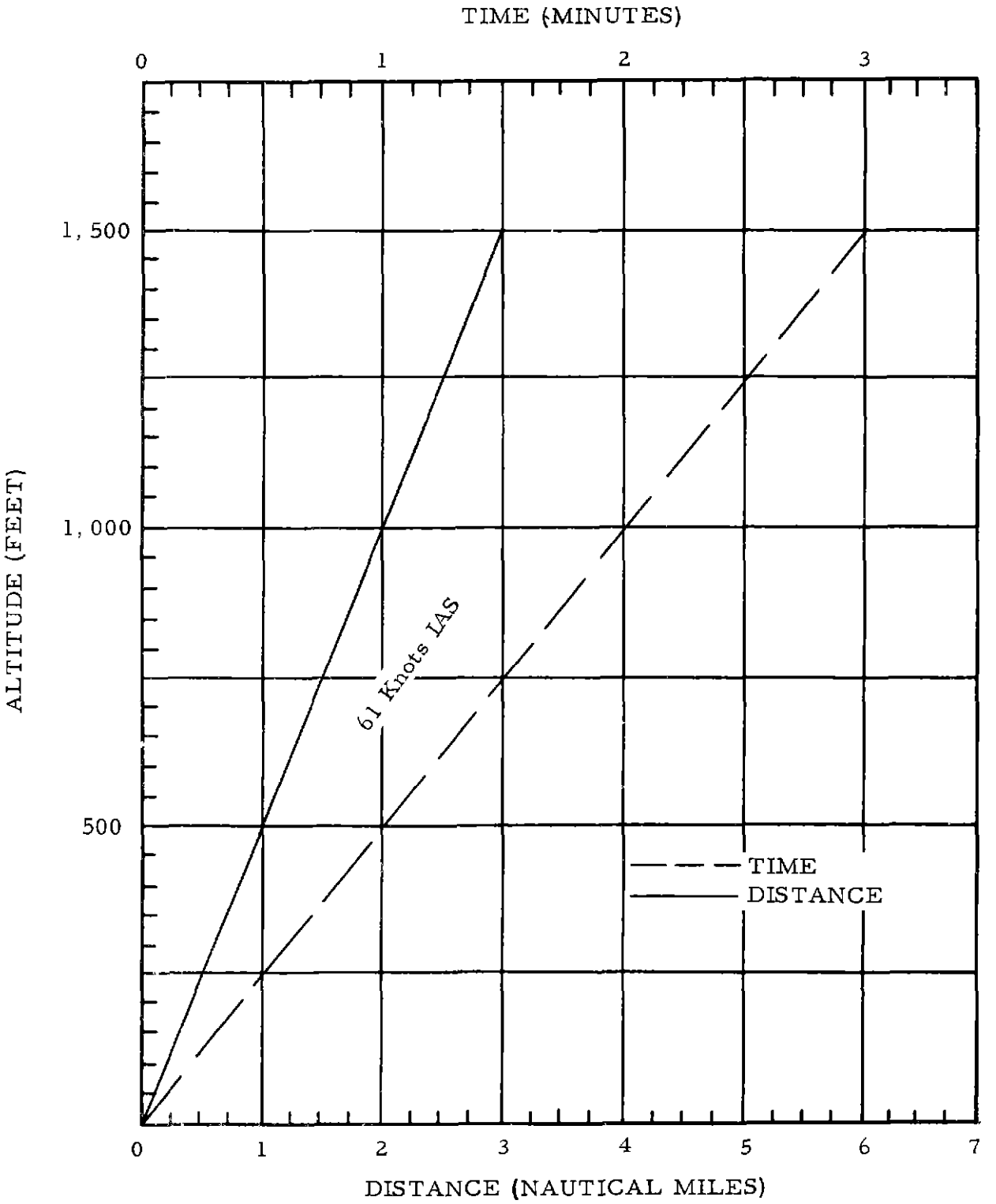


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of flaps as required. Throttle is set at sufficient power to maintain a constant airspeed and rate of descent.

Speed (knot IAS)

Glide path airspeed 60
Stall speeds (see Table I)
Maximum allowable (structural limitations) 87 (full flaps)

Distance

Minimum 2 0 nautical miles
Maximum 5 0 nautical miles
Operationally desirable 3 0 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2 0 minutes
Maximum 5 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable. 1, 500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 500 feet per minute
Operationally desirable. 500 feet per minute

Full Power Response Time for Go-Round

Immediate

TABLE I
(Stall Speeds in Knots IAS at 100 Percent Flaps, Power-Off)

Gross Weight	0° Bank	20° Bank	40° Bank	60° Bank
2,200 lbs	52	54	59	73

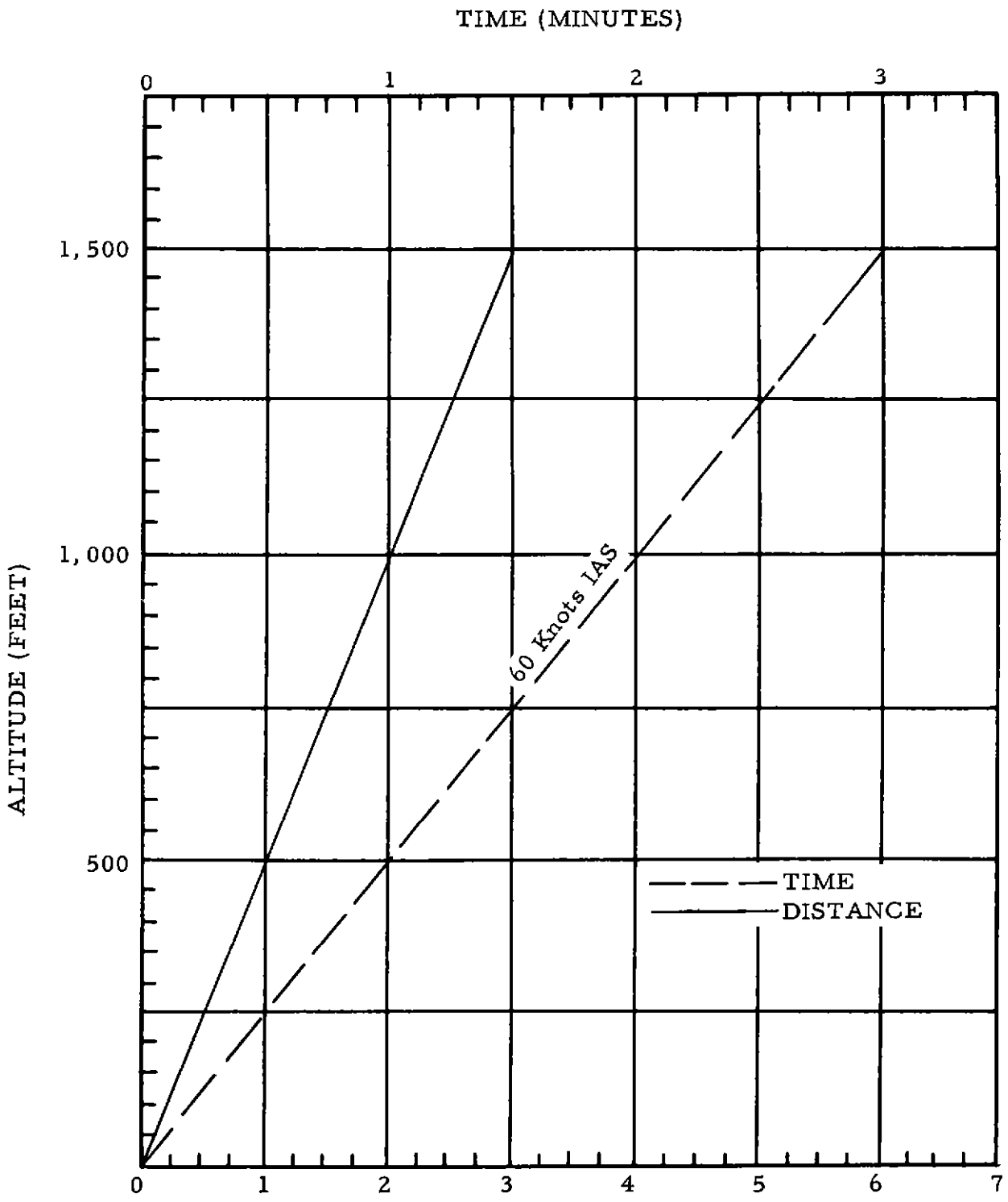


FIGURE 1 - GLIDE PATH-DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of flaps as required Throttle is set at sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed 61
Stall speeds. (see Table I)
Maximum allowable (structural limitations) 87 (full flaps)

Distance

Minimum 2 0 nautical miles
Maximum 5 1 nautical miles
Operationally desirable 3 0 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 5.0 minutes
Operationally desirable. 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

Immediate

TABLE I
(Stall Speeds in Knots IAS at 40 Degree Flaps and Power-Off)

Gross Weight	0° Bank	20° Bank	40° Bank	60° Bank
2,350 lbs	46	48	52	64

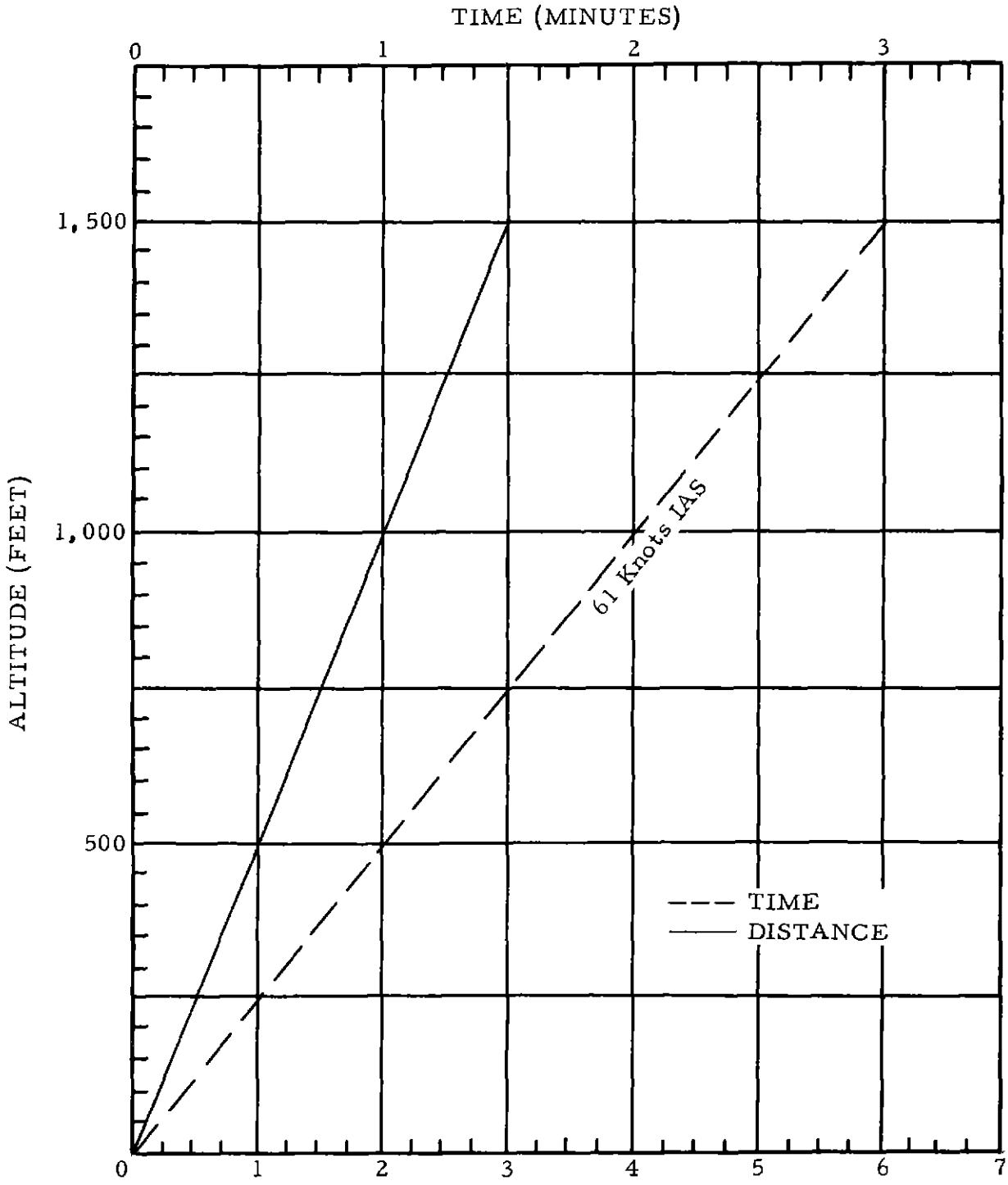


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended 20 degrees Power is set at 2,450 rpm and manifold pressure as required to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed at 2,850 pounds 65
Percent deviation with gross weight per 100 pounds 1 5%
Stall speeds (see Table I)
Maximum allowable structural limitations 87 (full flaps)

Distance

Minimum 2 1 nautical miles
Maximum 3 3 nautical miles
Operationally desirable 3 3 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2 0 minutes
Maximum 3 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Fuel Data

Remaining to landing (minimum required) 48 pounds

Full Power Response Time for Go-Round

1 to 3 seconds

TABLE I

(Stall Speeds in Knots IAS at 40 Degree Flaps and Power Off)

Gross Weight (Pounds)	0° Bank	30° Bank	60° Bank
2,850	49.5	53	70

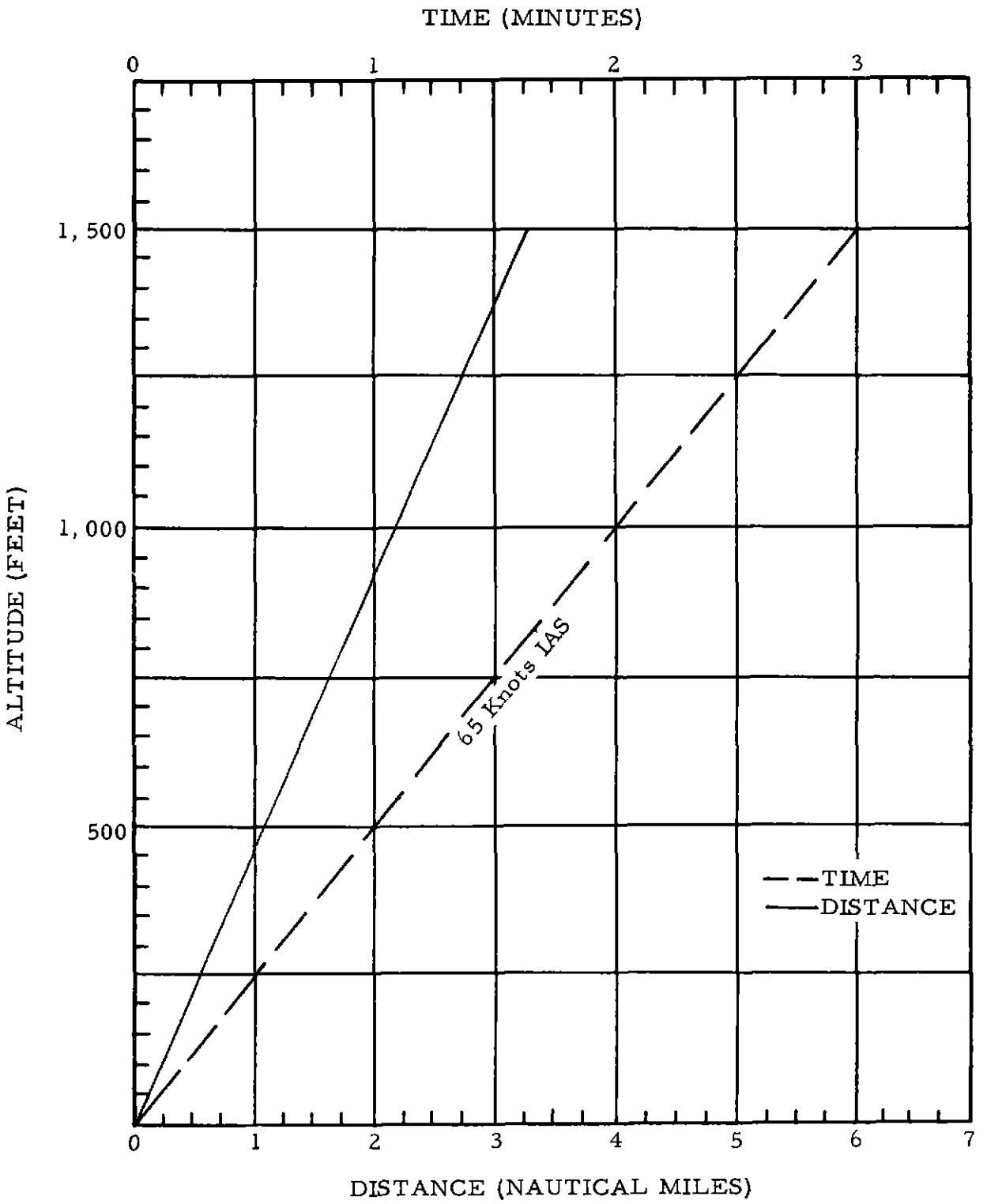


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path is flaps extended 20 degrees. Power is set at 2,600 rpm with manifold pressure as required to maintain a constant rate of descent and airspeed.

Speed (knots IAS)

Glide path airspeed at 2,650 pounds 87
Stall speeds. (see Table I)
Maximum allowable structural limitations 87 (full flaps)

Distance

Minimum 2.9 nautical miles
Maximum 6.0 nautical miles
Operationally desirable: 4.3 nautical miles (see Figure 1)

Time

Minimum 2.0 minutes
Maximum. 4.0 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum· 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 300 feet per minute
Maximum 750 feet per minute
Operationally desirable: 500 feet per minute

Full Power Response Time for Go-Round

Immediate

TABLE I
(Stall Speeds in Knots IAS at 40 Degree Flaps, Gear Down and Power Off)

Gross Weight	0°Bank	30°Bank	60°Bank
2,650	49	52	69

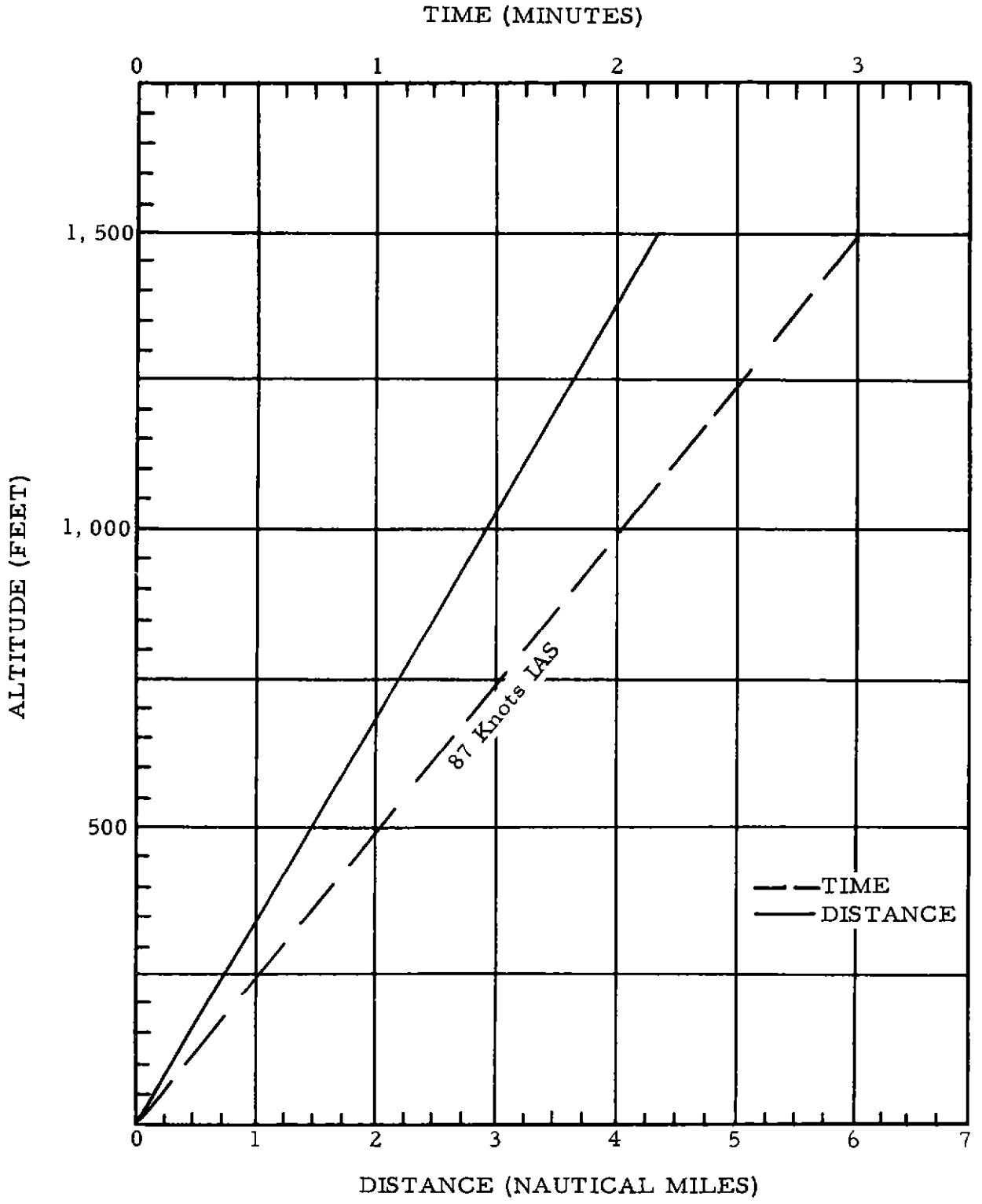


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required Throttles are set at sufficient power to maintain a constant rate of descent and airspeed.

Speed (knots IAS)

Glide path airspeed 100
Stall speeds (see Table I)
Maximum allowable structural limitations 121 (full flaps)

Distance

Minimum 2 2 nautical miles
Maximum 5.0 nautical miles
Operationally desirable 5.0 nautical miles (see Figure 1)

Time

Minimum 1 3 minutes
Maximum 3 0 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 500 feet per minute
Maximum allowable 1,200 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 4 seconds

TABLE I

(Stall Speeds in Knots IAS at 45 Degree Flaps, Gear Down and Power-off)

Gross Weight	0° Bank	20° Bank	40° Bank	60° Bank
4,600	57	61	69	89
3,800	52	55	64	81

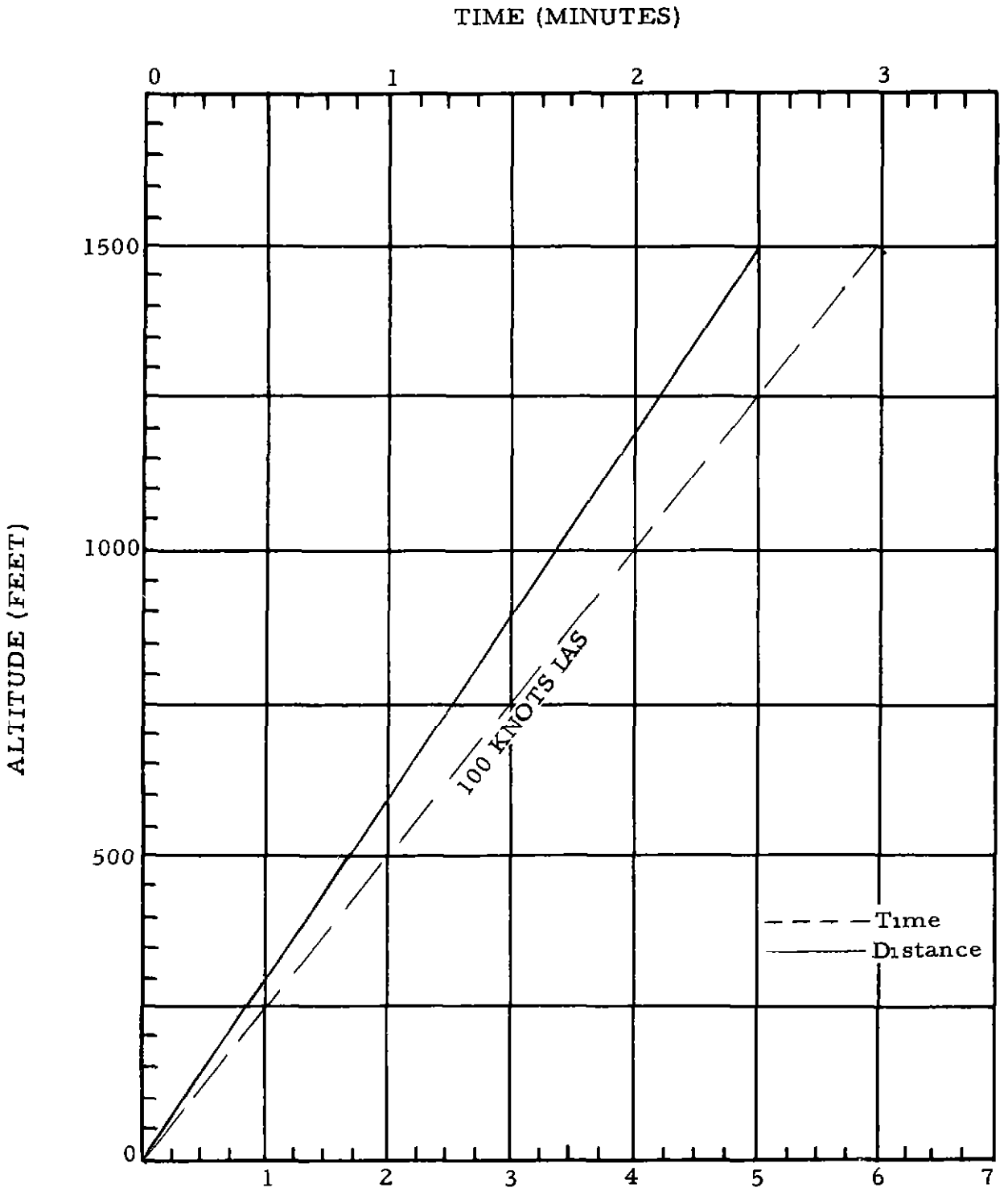


FIGURE 1-GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended as required Throttles are set at sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed 83
Stall speeds (see Table I)
Maximum allowable (structural limitations) 121 (full flaps)

Distance

Minimum 3 9 nautical miles
Maximum 5 5 nautical miles
Operationally desirable 4 2 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2 8 minutes
Maximum 4 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 2, 000 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum. 540 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

Immediate

TABLE I
(Stall Speeds in Knots IAS at 45 Degree Flaps, Power-Off, and Gear Down)

Gross Weight	0° Bank	20° Bank	40° Bank	60° Bank
4,830	65	67	74	92

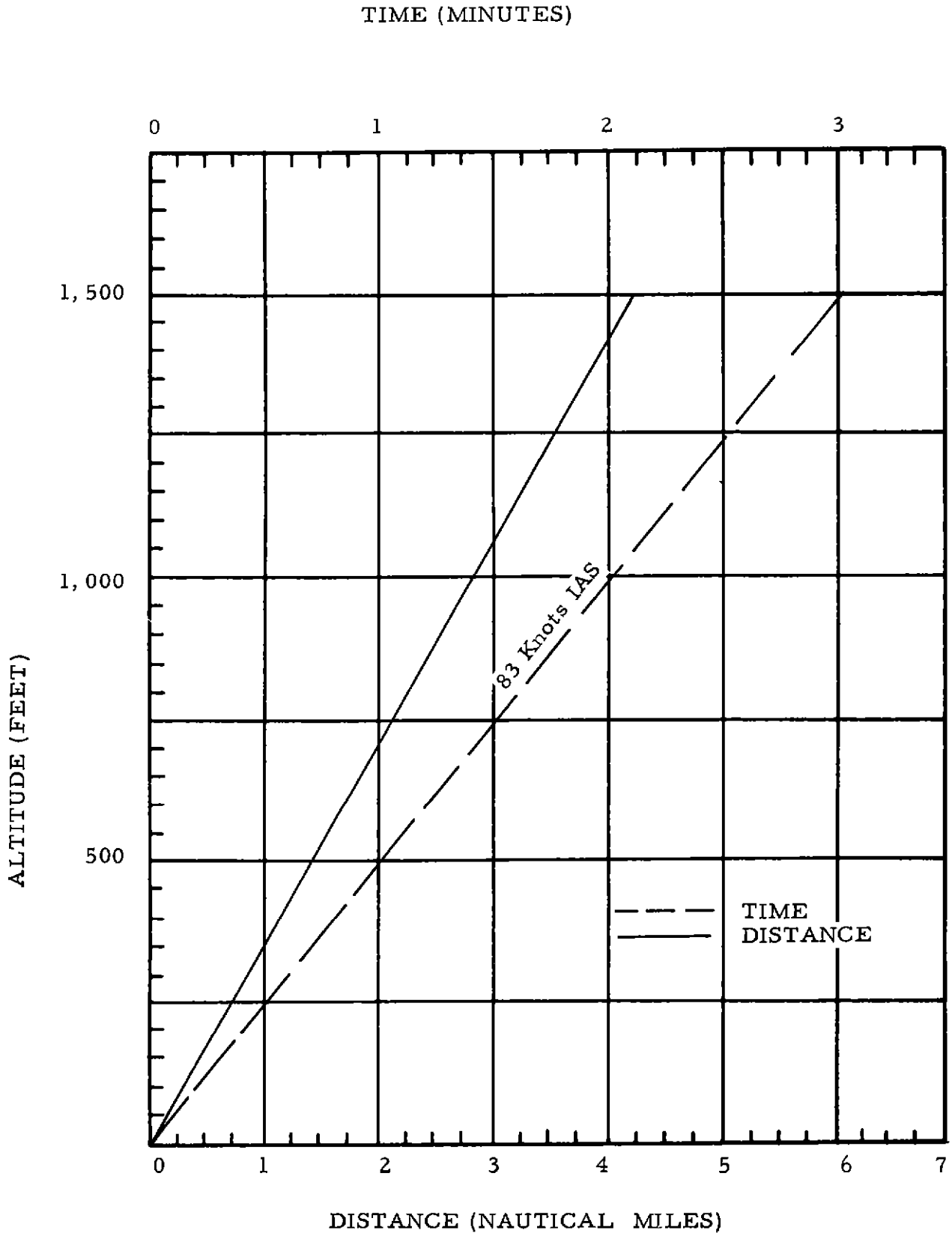


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of flaps extended as required Throttle is set at sufficient power to maintain a constant rate of descent and constant airspeed

Speed (knots IAS)

Glide path airspeed 80
Stall speeds (see Table I)
Maximum allowable (structural limitations) 96 (full flaps)

Distance

Minimum 2 7 nautical miles
Maximum 6 7 nautical miles
Operationally desirable. 4 0 nautical miles (see Figure 1)

Time

Minimum 2 0 minutes
Maximum 5 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum. 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable. 300 feet per minute
Maximum allowable 750 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

0 to 3 seconds

TABLE I
(Stall Speeds in Knots IAS with Flaps Retracted and Power-On)

Gross Weight	0° Bank	48° Bank	60° Bank	70° Bank
4, 800 lbs	59	79	93	113

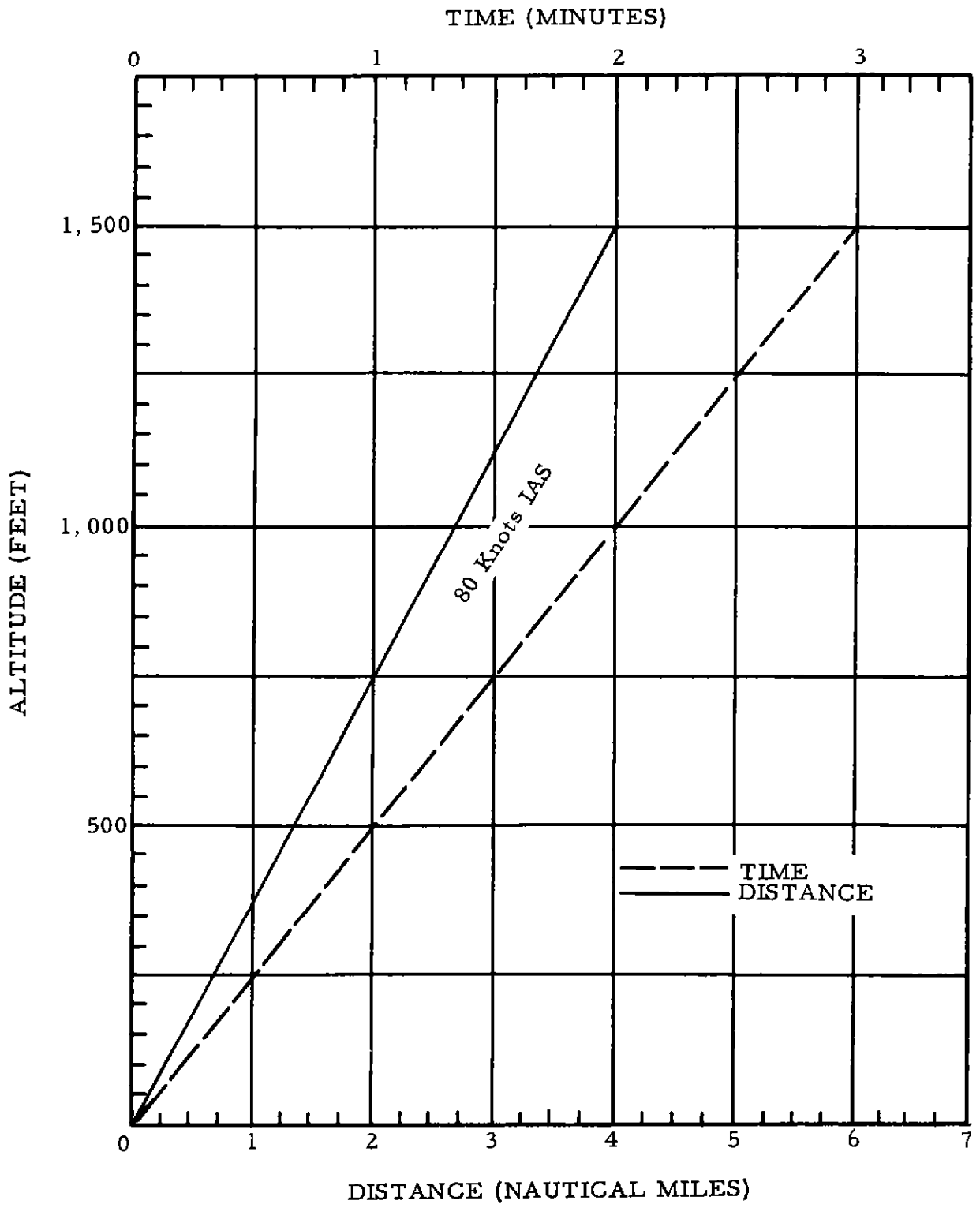


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path is clean Power is set at 2, 000 rpm and manifold pressure as required

Speed (knots IAS)

Glide path airspeed 100 (any gross weight)
Stall speeds (see Table I)
Maximum allowable (structural limitations) 168

Distance

Minimum 3 3 nautical miles
Maximum 8 4 nautical miles
Operationally desirable 5 0 nautical miles(see Figure 1)

Time (to touchdown)

Minimum 2 0 minutes
Maximum 5 0 minutes
Operationally desirable: 3 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable. 300 feet per minute
Maximum allowable 700 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

1 to 3 seconds

TABLE I

(Stall Speeds in Knots IAS, Power Off, and Flaps Fully Extended)

Gross Weight	0° Bank
6,000 Lbs	42
7,000 Lbs	46
8,000 Lbs.	49

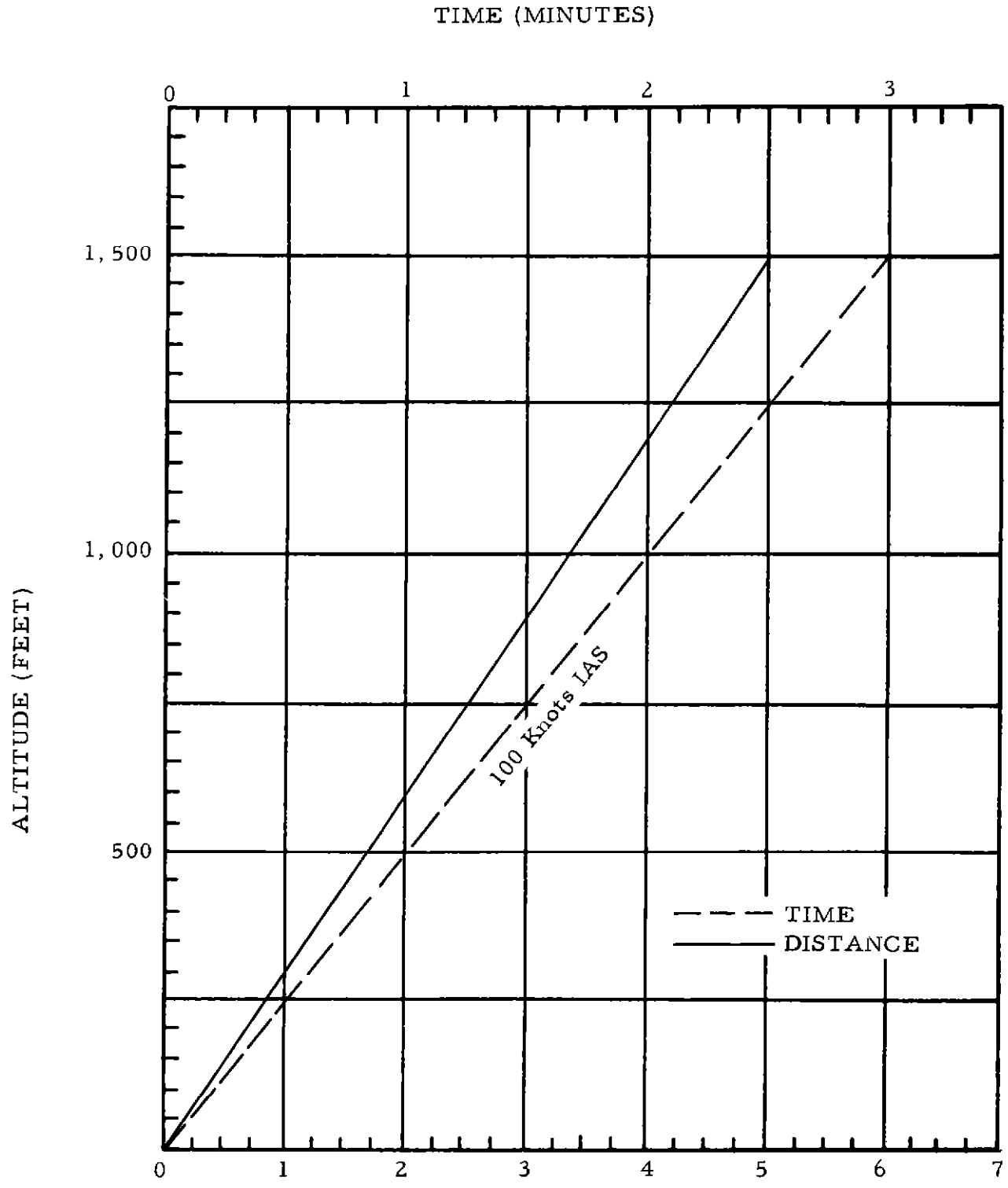


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

Glide Path - 3/3

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down and flaps as required. Throttles are set at sufficient power to maintain a constant rate of descent and airspeed.

Speed (knots IAS)

Glide path airspeed 75
Stall Speed (power off, at any gross weight) 50 (gear down and flaps fully extended)
Maximum allowable structural limitations 87 (full flaps)

Distance

Minimum 2 5 nautical miles
Maximum 6. 3 nautical miles
Operationally desirable· 3. 8 nautical miles (see Figure 1)

Time

Minimum 2. 0 minutes
Maximum 5 0 minutes
Operationally desirable 3. 0 minutes (see Figure 1)

Altitude

Minimum 1, 000 feet
Maximum 1, 500 feet
Operationally desirable 1, 500 feet

Rate of Descent

Minimum allowable 500 feet per minute
Maximum allowable 700 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

0 to 3 seconds

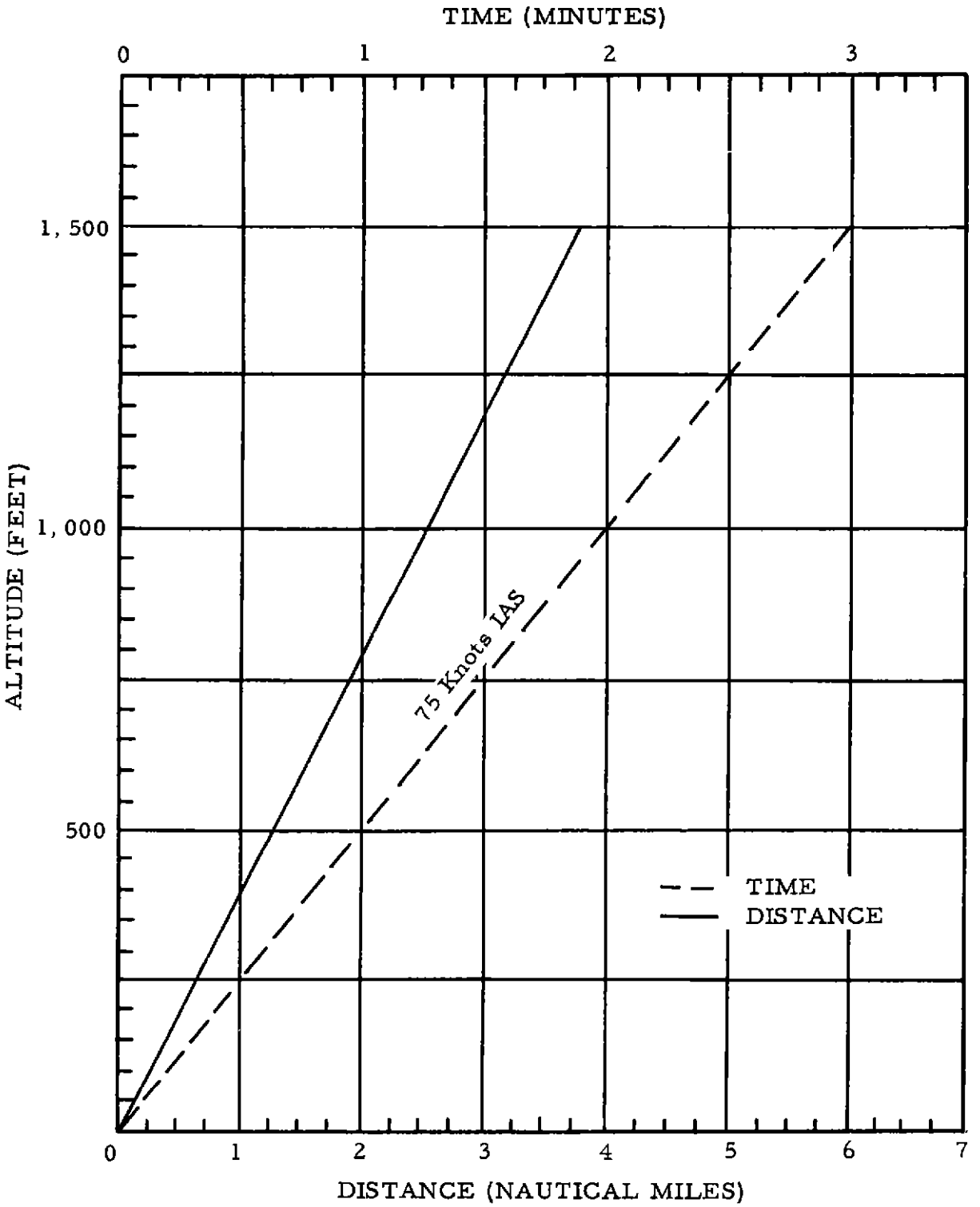


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of flaps fully extended. Throttle is set at sufficient power to maintain a constant rate of descent and airspeed.

Speed (knots IAS)

Glide path airspeed at 2,000 pounds 70
Stall speeds (see Table I)
Maximum allowable (structural limitations) 82 (100% flaps)

Distance

Minimum 2.3 nautical miles
Maximum 3.5 nautical miles
Operationally desirable 3 5 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 2.0 minutes
Maximum 3.0 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum. 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 300 feet per minute
Maximum allowable 500 feet per minute
Operationally desirable. 500 feet per minute

Full Power Response Time for Go-Round

3 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS, Power-Off)

Gross Weight	100% Flaps	0% Flaps
2,000 lbs.	43	46

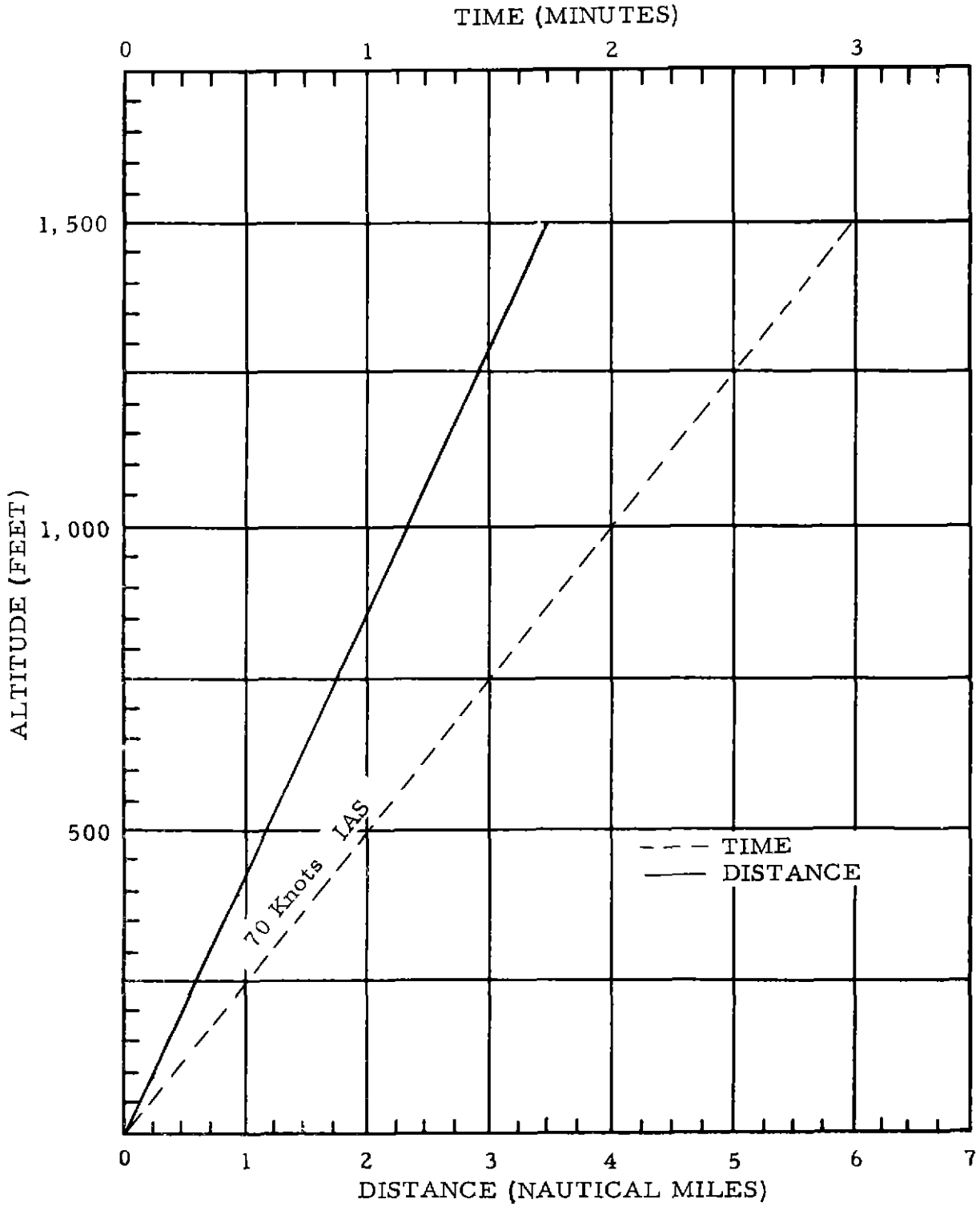


FIGURE 1 - GLIDE PATH-DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps extended as required Power is set for 2,400 rpm and 13 inches manifold pressure.

Speed (knots IAS)

Glide path airspeed 65
Stall speeds (see Table I)
Maximum allowable (structural limitations) 87 (50° Flaps)

Distance

Minimum. 1 4 nautical miles
Maximum. 4 3 nautical miles
Operationally desirable 3 3 nautical miles (see Figure 1)

Time (to touchdown)

Minimum 1 3 minutes
Maximum 4 0 minutes
Operationally desirable 3.0 minutes (see Figure 1)

Altitude

Minimum 750 feet
Maximum 2,000 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum 500 feet per minute
Maximum 1,000 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 5 seconds

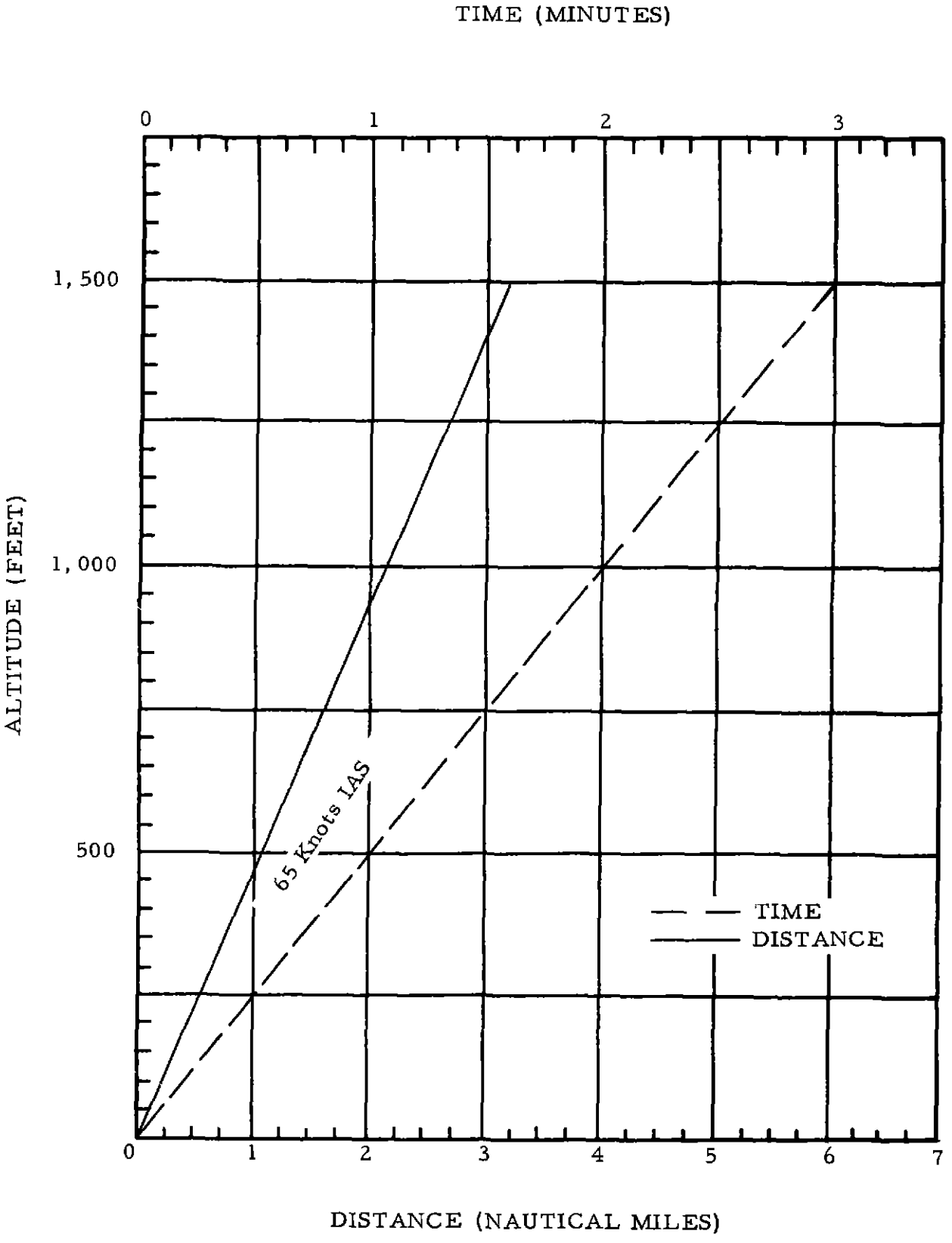


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

NARRATIVE SUMMARY

Sequence of Operations

Aircraft configuration on glide path consists of gear down, and flaps as required. Throttles are set at sufficient power to maintain a constant rate of descent and airspeed

Speed (knots IAS)

Glide path airspeed 80
Stall speeds (see Table I)
Maximum allowable structural limitations 108 (full flaps)

Distance

Minimum 1 3 nautical miles
Maximum 5 4 nautical miles
Operationally desirable 4 0 nautical miles (see Figure 1)

Time

Minimum 1.0 minute
Maximum 4 0 minutes
Operationally desirable 3 0 minutes (see Figure 1)

Altitude

Minimum 1,000 feet
Maximum 1,500 feet
Operationally desirable 1,500 feet

Rate of Descent

Minimum allowable 500 feet pre minute
Maximum allowable 1,500 feet per minute
Operationally desirable 500 feet per minute

Full Power Response Time for Go-Round

2 to 5 seconds

TABLE I
(Stall Speeds in Knots IAS at 27° Flaps, Power Off and Gear Down)

Gross Weight	0° Bank
2,550	54

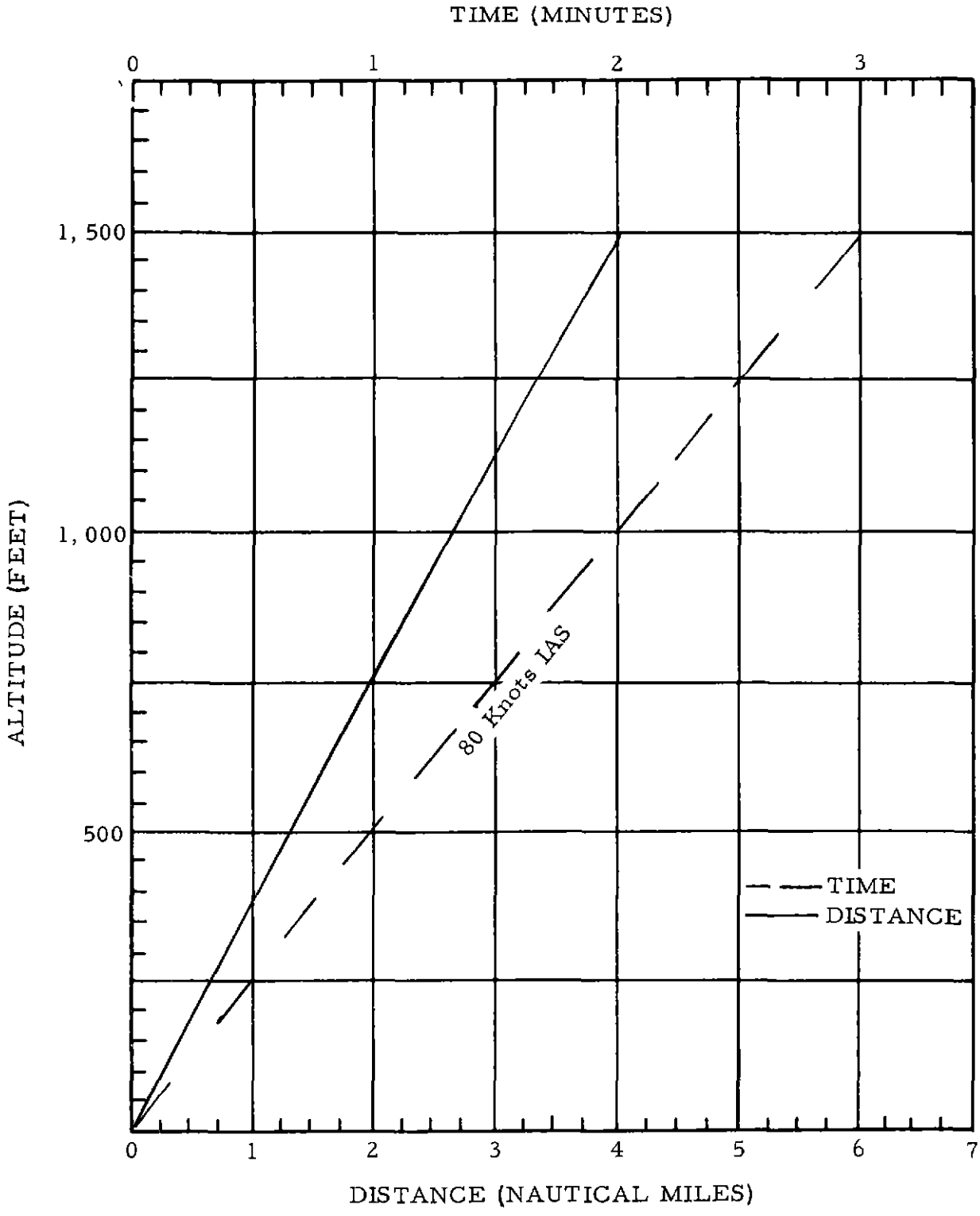


FIGURE 1 - GLIDE PATH - DISTANCE AND TIME DATA

AIR - VEHICLE PERFORMANCE CHARACTERISTICS

APPENDIX

(Containing Definitions and Reference Data)

UNITED STATES FEDERAL AVIATION AGENCY
Bureau of Research & Development Washington 25. D. C.

DEFINITIONS

PHASES OF OPERATION

1. GROUND OPERATIONS All ground activity from intent to start engines to and including pre-take-off preparations.

2. TAKE-OFF The complete action of getting an air vehicle into the air from the point of brake release through lift-off point.

3 PRE-CLIMB The flight path from the point of lift-off to the point where climb schedule is established

4. CLIMB The flight path from the point where climb schedule is established to enroute or operational altitude.

5 ENROUTE Flight path from top of climb to beginning of descent

6. DESCENT The flight path from beginning of descent to level-off for approach

7 APPROACH PATTERN The flight path from the end of descent to glide path interception

8. GLIDE PATH The flight path from the glide path interception to landing flareout.

9 LANDING Landing flareout to turn-off.

DISTANCES

ABORT DISTANCE The remaining runway distance required to stop aircraft after attaining V1 speed

REFUSAL DISTANCE The distance at which the aircraft will reach refusal speed assuming normal acceleration

SPEEDS

FLARE SPEED (also see flareout) The transitional airspeed that is established at the completion of the glide path phase to bring the aircraft down in a smooth curve, preparatory for touchdown

MAXIMUM (FLAP RETRACTION) SPEED The highest allowable airspeed at which the aircraft can be flown, with flaps extended

MINIMUM (FLAP RETRACTION) SPEED The lowest airspeed at which the flaps may be retracted without an undesirable loss of altitude.

MACH NUMBER The ratio of the speed of air, or of a moving body through the air, to the speed of sound in the air

REFUSAL SPEED The highest speed to which an aircraft can be accelerated, assuming normal acceleration, and still be stopped on the remaining runway

WEIGHTS

BASIC OPERATING WEIGHT The maximum gross weight of the aircraft less cargo, crew, passengers, fuel and oil.

NORMAL GROSS WEIGHT Typical operating weight selected as most probable at any given phase of flight

MAXIMUM GROSS WEIGHT Maximum operating weight, essentially the same as maximum take-off weight

MAXIMUM RAMP WEIGHT Maximum weight of the loaded aircraft which can be expected at the ramp, generally this will be the maximum take-off weight plus weight of fuel needed for starting, taxiing, and engine warm-up

MAXIMUM TAKE-OFF WEIGHT Maximum allowable weight at take-off limited by performance and/or regulations.

MAXIMUM LANDING WEIGHT Maximum allowable weight at landing limited by structural capability and/or regulations

ZERO FUEL WEIGHT Maximum ramp weight minus usable fuel

MISCELLANEOUS

MAXIMUM AND MINIMUM ACCEPTABLE (as used with respect to enroute airspeeds and altitudes) These minimum and maximum values are the acceptable tolerance on the operationally desirable values given They are not necessarily limits imposed by performance capabilities or by regulations

OPERATIONALLY DESIRABLE Value or condition given by operators or manufacturers as the most preferable, (speeds, altitudes, etc.)

DRY POWER Power with engine water/methanol system inoperative.

WET POWER Power with engine water/methanol system operative.

FLAREOUT (also see flare speed). The act of bringing an airplane down in a smooth curve, preparatory to touching down.

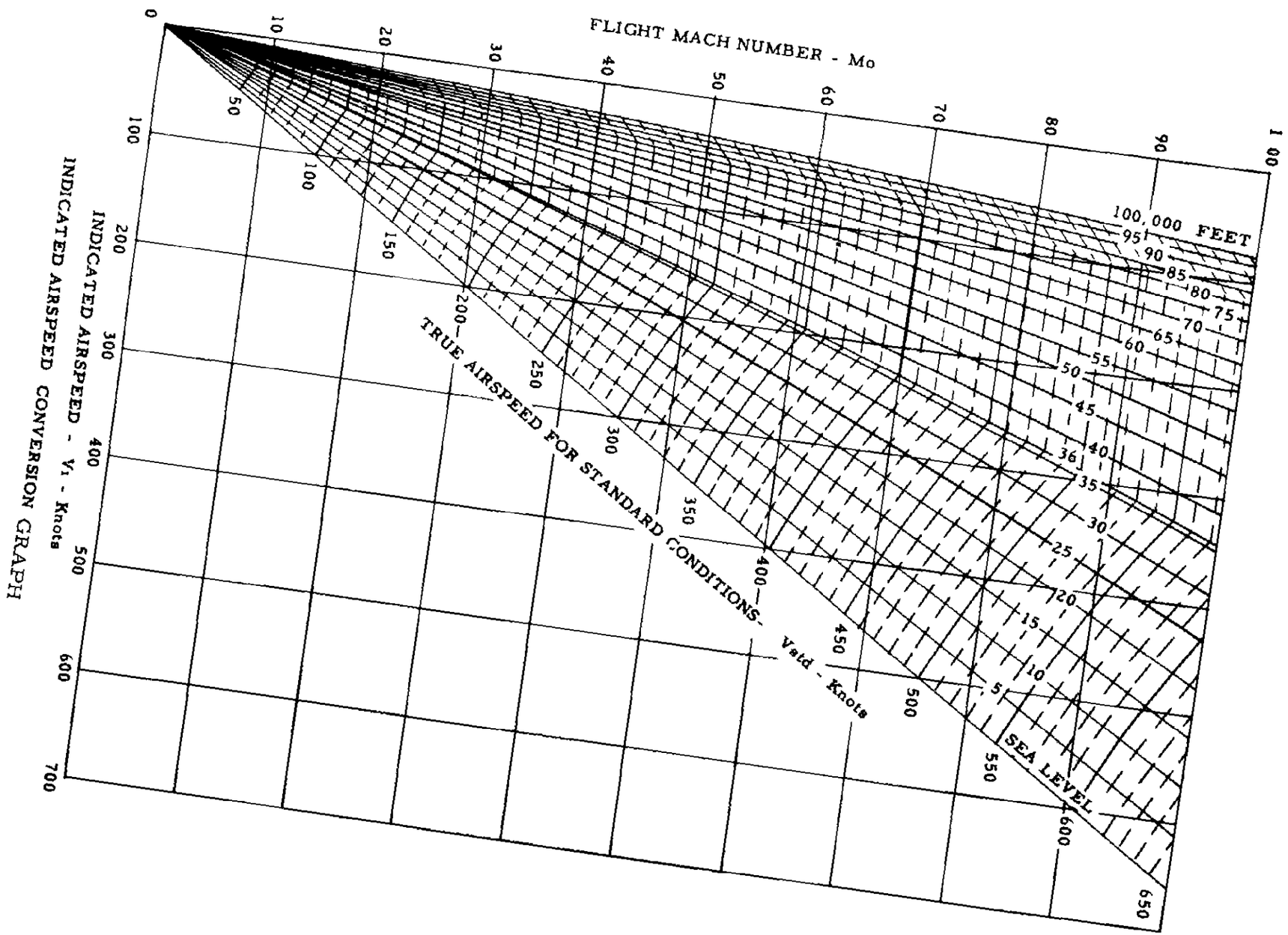
SPEED BRAKES Any aerodynamic device designed for slowing down an airplane in flight

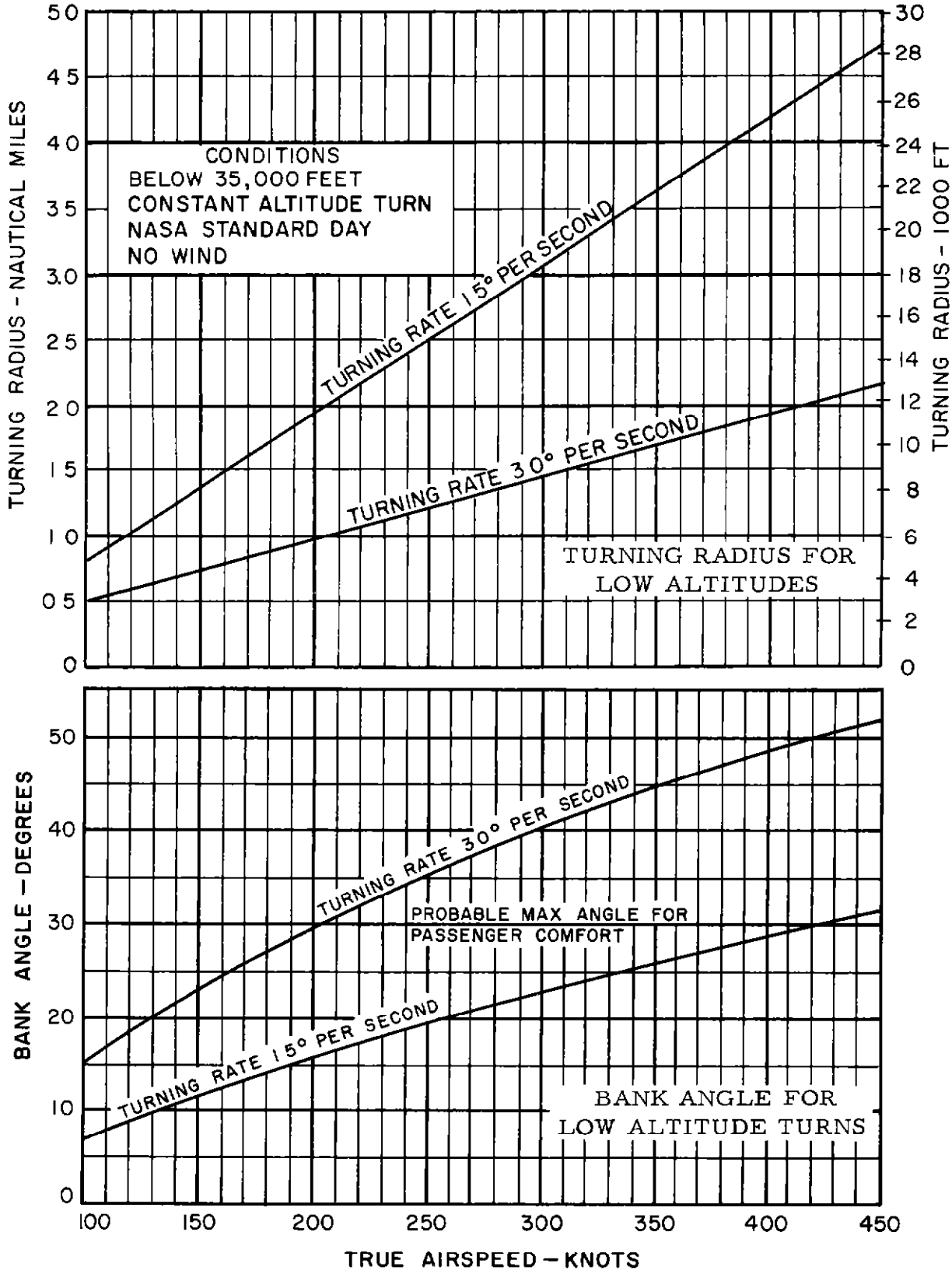
HOVER (relating to helicopters or VTOL) To remain in a stationary position at a given altitude above the surface

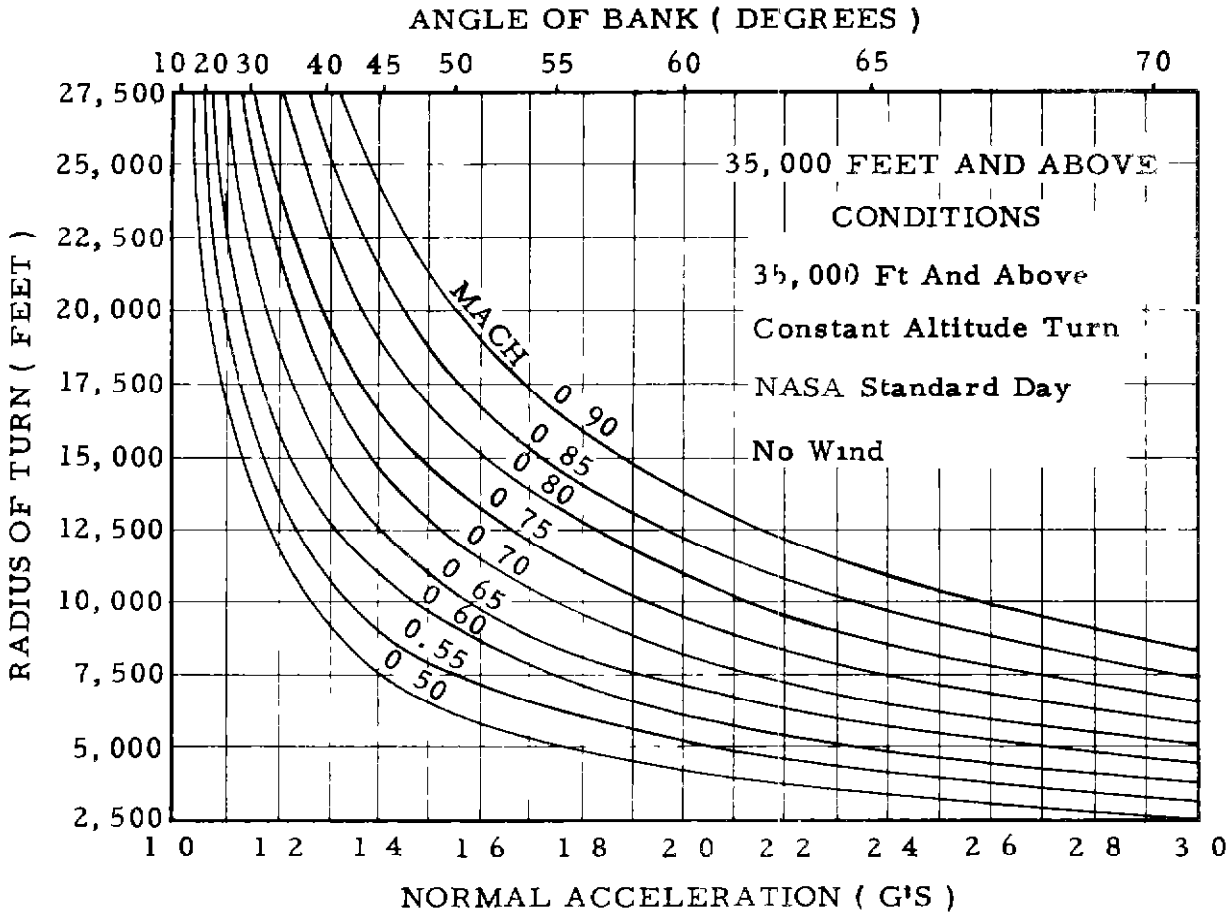
TRANSLATIONAL LIFT The lift force exerted on the rotor blades of a helicopter when increased speed is imparted to the blades or when their angle of attack is changed in going from one type of flight to another, such as from hovering to horizontal flight.

SYMBOLS AND ABBREVIATIONS

ADI	Anti-Detonation Injection
AEW	Airborne Early Warning
ASW	Anti-submarine Warfare
ATO	Assisted Take-Off
bhp	Brake Horsepower
BLC	Boundary Layer Control
BMEP	Brake Mean Effective Pressure
ECM	Electronic Countermeasures
EGT	Exhaust Gas Temperature
eshp	Equivalent Shaft Horsepower
fpm	Feet Per Minute
IAS	Indicated Airspeed
JPT	Jet Pipe Temperature
MEA	Minimum Enroute Altitude
METO	Maximum Except Take-Off
N. A. S A	National Aeronautics and Space Administration
psi	Pounds Per Square Inch
RCD/MAD	Radar Countermeasures - Magnetic Airborne Detection
shp	Shaft Horsepower
rpm	Revolutions Per Minute
TAS	True Airspeed
T/O	Take-Off
V1	Critical Engine Failure Speed
V2 (Vlof)	Take-Off Safety Speed - Actual Lift-Off Speed


FLIGHT MACH NUMBER - Mo
0
10
20
30
40
50
60
70
80
90
100
INDICATED AIRSPEED - Vi - Knots
50
100
150
200
250
300
350
400
450
500
550
600
650
700
TRUE AIRSPEED FOR STANDARD CONDITIONS - Vstd - Knots
100,000 FEET
95
90
85
80
75
70
65
60
55
50
45
40
36
35
30
25
20
15
10
5
SEA LEVEL
INDICATED AIRSPEED CONVERSION GRAPH


TURNING RADIUS - NAUTICAL MILES
TURNING RADIUS - 1000 FT
CONDITIONS
BELOW 35,000 FEET
CONSTANT ALTITUDE TURN
NASA STANDARD DAY
NO WIND
TURNING RATE 15° PER SECOND
TURNING RATE 30° PER SECOND
TURNING RADIUS FOR
LOW ALTITUDES
BANK ANGLE - DEGREES
TURNING RATE 30° PER SECOND
PROBABLE MAX ANGLE FOR
PASSENGER COMFORT
TURNING RATE 15° PER SECOND
BANK ANGLE FOR
LOW ALTITUDE TURNS
TRUE AIRSPEED - KNOTS



TURNING RADIUS GRAPH
HIGH ALTITU