AIRCRAFT PERFORMANCE

MAXIMUM WEIGHTS – POUNDS

Model	Taxi	Brake Release	Landing	Zero Fuel
82	150,500	149,500	130,000	122,000
83	161,000	160,000*	130,000	122,000

* At takeoff weights above 149,500 pounds, 930, 970, or 971 flight guidance computers must be installed.

Model or A/C	Taxi	Brake Release	Landing	Zero Fuel
15	91,500	90,700	81,700	74,000
31	109,000	108,000	98,100	87,000
32*	109,000	108,000	99,000	87,000
34	122,000	121,000	110,000	98,500
41	115,000	114,000	102,000	93,000
51	122,000	121,000	110,000	98,500
8220	109,000	108,000	98,100	87,000
8232	109,500	109,500	99,000	87,000
8537	115,000	114,000	102,000	95,500

* Except 8220 and 8232.

SPEED LIMITS	IAS	MACH
Maximum Operating Speed		
V_{mo} (15/31/32)	350	
V_{mo} (33F/34/41/51/82/83)	340	
M_{mo}		0.84
Turbulence Target		
Series 10	265	0.75–0.79
Series 30/40/50/80	280	0.75–0.79
Below 10,000 Feet	250 (But not less than minimum maneuvering speed.)	
Landing Gear		
Extension	300	0.70
Retraction	250	
Wing Flaps (80)		
0–13 Degrees	280	0.57
15–20 Degrees	240	0.57
21–25 Degrees	220	0.57
26–30 Degrees	200	0.57
31–40 Degrees (82)	195	0.57
31–40 Degrees (83)	200	0.57
Slat Extend Speed (80)		
Mid Slat Position	280	0.57
Full Slat Position	240	0.57
ASE Inoperative and Flap/Slat Handle Moved to Takeoff Position	240	0.57

Wing Flap Degrees/Slat Position

Series 10	Series 30/40/50		
–	SLATS ONLY	280	0.57
10	5	280	0.57
20	15	240	0.57
30	25	210	0.57
50	50	180	0.57

Mach Trim Inoperative		0.78
Overspeed Warning Inoperative	325	0.79
Windshield Anti–Ice Inoperative below 10,000 feet	315	
Outer Windshield Cracked below 10,000 feet	315	
Inner Windshield Cracked below 10,000 Feet	235	

ALTITUDE LIMITS

Maximum Operating (80)	37,000 Feet
Maximum Operating (10/30/40/50)	35,000 Feet

AIRCRAFT PERFORMANCE (Contd)

WIND LIMITS

Limiting Tailwind Component	
Takeoff or Landing	10
Limiting Headwind Component	
Autoland (80)	25
Crosswind Component (peak gusts)	
Takeoff & Landing	30
Autoland (80)	15
Initiating CAT II or III Approach	10

SLUSH OR STANDING WATER LIMITS

Takeoff	½ inch
Landing	1 inch

FUEL (LBS)

	82	83
Left	9,266	9,266
Right	9,266	9,266
Center	20,596	20,596
Forward Aux		3,785
Aft Aux		3,785
Total	39,128	46,698

	15	31/32/33F	34	41	51
Left	9,333	9,286	9,286	9,286	9,286
Right	9,333	9,286	9,286	9,286	9,286
Center	6,077	6,077	6,077	6,077	6,077
Fwd. Aux.		3,886*		3,886	3,886•
Fwd. Aux.					6,700*
Fwd. Fus.			5,226		
Rear Fus.			6,700		
Rear Aux.				5,226*	
Total	24,743	24,649	36,575	28,535	28,535•
		28,535*		33,761*	31,349*

*/• Applicable to aircraft so equipped.

FAA Fuel Reserve	15/31/32/33F	34/41/50/80
	3,700	4,500

Minimum Fuel For Brake Release	4,000 per Main Tank

Lateral Imbalance Allowable Between L & R Tanks	
Takeoff and Landing	1,500
Except:	
Series 10 80,000 lbs. and Above; 8232, 99,000 lbs. and Above; Model 34 108,000 lbs. and Above	900
In Flight	1,500
Except:	
Series 10 80,000 lbs. and Above	900

Fore and Aft Imbalance Allowable

	83	34
Takeoff & Landing	400	1,500
In Flight	400	3,000

OIL

Minimum Quantity for Engine Start	8 Quarts
Normal Pressure	40–55 PSI
Minimum Pressure for Takeoff	40 PSI
Minimum Pressure in Flight	35 PSI

Maximum Oil Temperature

	–217A/C	–7/–9	–15/–17
Continuous	135C	120C	130C
15 Minutes	165C	157C	165C

ENGINE LIMITS –80

Engine Model	JT8D–217A/C
Static Thrust (Lbs.) 84F at Sea Level	
ART OFF or Activated	20,850
ART AUTO	20,000

TAKEOFF	ART AUTO	ART OFF or ACTIVATED
EGT	2 minutes 595C	2 minutes 630C
	5 minutes 590C	5 minutes 625C
N_1 %	98.3	101.6
N_2 %	100.9	102.5

ENGINE LIMITS –80 (Contd)

MAXIMUM CONTINUOUS	
EGT	580C
N_1 %	101.6
N_2 %	102.5
STARTING EGT	
Ground	475C
Inflight	625C
GROUND IDLE RPM N_2%	50-61

ENGINE LIMITS –10/30/40/50

The presence of a quick rise (QR) EGT indicator means that a JT8D–15 engine is installed in that position.

Engine Model	JT8D-7B	JT8D-9A	JT8D-15	JT8D-17
Static Thrust (Lbs, S.L., 84F)	14,000	14,500	15,500	16,000
MAXIMUM EGT				
Takeoff (5 Min)	590C	590C	620C	650C
Max. Continuous	545C	545C	580C	610C
MAXIMUM RPM				
N_1 %	100.1	100.1	102.4	102.4
N_2 %	100.0	100.0	100.0	100.0
STARTING EGT				
Below 59F	350C	350C	550C	550C
59F And Above	420C	420C	550C	550C
Flight Start	---	---	620C	650C
GROUND IDLE RPM				
N_2%	50-57	50-57	52-60	52-60

ENGINE LIMITS – ALL AIRCRAFT

Maximum time with start valve open and no engine rotation	10 seconds
Maximum time with fuel lever on and no EGT rise	20 seconds
Minimum clearing time after unsuccessful start	20 seconds

AUXILIARY POWER UNIT

EGT Limits		
Maximum Starting (30 Seconds)		760C
Maximum Allowable	(50/80)	663C
	(10/30/40)	670C
Continuous Load	(50/80)	630C
	(10/30/40)	640C
Maximum For Shutdown (10/30/40)		400C
Maximum RPM %		110
Maximum Operating Altitude		35,000 ft.

ELECTRICAL

CSD	
Maximum Outlet Temperature	163C
Maximum Normal Outlet Temperature	146C
Maximum Rise Temperature	11.2C
AC POWER	
Engine Generator	
Volts	115 ± 3
Frequency	400 ± 4
Normal AC Load Limit	1.0
Overload, 5 Minutes	1.5
APU Generator	
Volts	115 ± 3
Frequency (Ground)	400 ± 10
Max AC Load (Ground)	1.25
Frequency (Flight)	400 ± 20
Max AC Load Below FL250	1.0
Max AC Load Above FL250	0.7
External Power	
Volts	115 ± 8
Frequency	400 ± 20
Battery – Voltage	
Charger Operating	29–34
Charger Not Operating	25 minimum

LANDING CONFIGURATION

80 – Gear Configuration Warning Sounds if Gear is Unsafe and Flaps Extended Beyond 26 Degrees

10/30/40/50 – Gear Warning Horn Sounds if Gear is Unsafe and Flap Handle is Moved Beyond:

Series 30 & 50	15 Degrees
Series 10 & 40	20 Degrees

EMERGENCY EQUIPMENT

Escape Slide Air Bottle Pressure	Green Zone

OXYGEN BOTTLES

Minimum Pressure @ 70F

Portable	1750 psi
Crew System	1300 psi
Passenger System (10/30/40/50)	1400 psi

OXYGEN DURATION	Minutes
3 Cockpit Crew:	
Normal	126
100%	15
Emergency	12
2 Cockpit Crew:	
Normal	189
100%	22
Emergency	18
Cockpit Portable Bottle	14
Cabin Portable Bottle	
LO–Outlet	146
HI–Outlet	73
Cabin Crew And Passengers (80)	15

HYDRAULIC SYSTEM

PRESSURES – PSI

Engine Pump – high	2800 to 3100 psi
Engine Pump – low	1300 to 1600 psi
Auxiliary Pump	2800 to 3100 psi
Minimum Alternate/Transfer Pump	
80	2000 psi
10/30/40/50	1800 psi

MINIMUM QUANTITIES

80 – 6 quarts per system

10/30/40/50 – Above red band

PRESSURIZATION	PSI
80:	
Normal Max Differential Press	7.77
Max Relief Differential Press	8.32
10/30/40/50:	
Normal Max Differential Press	7.46
Max Relief Differential Press	8.06

* * *

MINIMUM FUEL FOR TAKEOFF

Minimum fuel for takeoff is the greater of:

Fuel required for operation to destination including any DISP ADD for known or anticipated delays, plus FAA reserve, plus fuel required to the most distant alternate, if any, specified in the dispatch release;

OR

If operating on a planned re-release, the fuel to the intermediate station, plus FAA reserves, plus fuel to the most distant alternate;

OR

Minimum brake release fuel specified in section 2.75.

It is mandatory for the captain to determine at brake release (in position for takeoff) that the airplane has sufficient fuel as specified above.

DOMESTIC RESERVE FUEL

FAA Reserve	
-80	4,500 pounds
-34/-41/-51	4,500 pounds
-31/-32/-33	3,700 pounds
-10	3,700 pounds

INTERNATIONAL RESERVE FUEL

-80

Int'l Reserve	3,000 pounds
+ Lbs. Per Min.	10 pounds
Minimum Reserve	4,500 pounds

For example, with a planned flight time of 3:05, the required fuel reserve would be:

	3,000 pounds
+ 185 Minutes x 10	1,850 pounds
Total Reserve fuel	4,850 pounds

The international reserve represents a 30 minute hold at 1,500 feet.

This same reserve fuel formula must be used when operating under a re-release. Re-release dispatch procedures may be used whenever necessary to extend a flight to non-stop operation.

-34/-41/-51

Int'l Reserve	3,000 pounds
+ Lbs. Per Min.	9 pounds
Minimum Reserve	4,500 pounds

-33

Int'l Reserve	3,000 pounds
+ Lbs. Per Min.	8 pounds
Minimum Reserve	3,700 pounds

-31/-32

Int'l Reserve	2,500 pounds
+ Lbs. Per Min.	7 pounds
Minimum Reserve	3,700 pounds

-10

Int'l Reserve	2,500 pounds
+ Lbs. Per Min.	7 pounds
Minimum Reserve	3,700 pounds

HOLDING FUEL

Computer flight plans and dispatch release fuels are normally adequate to provide a margin for holding of a routine nature. Adding fuel for the specific purpose of holding should be done only when an assessment of forecast conditions for the flight show that delays are probable.

HOLDING FUEL (CONTD)

The arbitrary addition of extra fuel based on unidentified contingencies is wasteful and should be avoided. Unless the need can be specifically identified, normal reserves should be considered as adequate for planning purposes.

ALTERNATE PLANNING

This chart assumes an en route climb from a missed approach to the altitude shown, cruise at long range cruise, and a normal descent and approach to the alternate airport.

Time and fuel figures are based on the preceding assumptions except for altitudes 10,000 feet and below which are based on 250 knots IAS.

The TAS value given is for the cruise portion.

To use the chart:

1. For domestic operation, obtain nautical ground miles from the General Information section of the blue Special Airport Procedures page for the destination airport. For international operation, use the distance to Alternate Airports pages in the pilot's European Narrow Body Jeppesen.

2. Enter column nearest ground mileage to find approximate true airspeed.

3. Determine ground speed by applying forecast wind to approximate true airspeed.

4. Place true airspeed over ground speed on Jeppesen computer and find nautical air miles over nautical ground miles.

$$\frac{TAS}{GS} = \frac{NAM}{NGM}$$

5. Enter column nearest to nautical air mileage to obtain altitude, time, fuel, and cruise TAS.

CRUISE ALTITUDE SELECTION

INITIAL CRUISE ALTITUDE SELECTION

The computer flight plan provides the initial cruise altitude based upon minimum cost. However, changes to payload and/or fuel load after issuance of the flight plan may require the crew to recompute the initial cruise altitude. This is done by use of the Altitude Selection and Climb Capability charts.

The Altitude Selection chart provides a means of determining the minimum cost altitude for any flight as a function of weight. Target altitude is the most efficient altitude for a given weight when the wind component is the same at all altitudes.

The relationship of weight, altitude, and wind on minimum cost continually changes as the flight progresses. These variables should be periodically checked to ensure the flight is being operated at the most efficient altitude.

To use the charts:

1. Determine the estimated weight at top of climb. This weight is computed by subtracting estimated fuel burn during climb from the takeoff gross weight.

2. Enter the Altitude Selection chart with the estimated top of climb weight to determine target altitude.

3. Select an initial cruise altitude that is within 2,000 feet or preferably 1,000 feet of the target altitude.

CRUISE ALTITUDE SELECTION (CONTD)

INITIAL CRUISE ALTITUDE SELECTION (CONTD)

4. Refer to the Climb Capability chart to ensure aircraft performance permits climb to the selected altitude based on weight and temperature deviation from standard temperature.

5. Climb to and maintain the initial cruise altitude.

6. Maintain this altitude until it is determined that a step climb to a higher altitude is more economical. Step climb to the next desired cruise altitude which should be 2,000 feet or 4,000 feet above the present cruise altitude. Ideally, the step climb begins when the airplane weight equals the weight for a target altitude 1,000 feet below the next desired cruise altitude for a 2,000 foot step climb or 2,000 feet below the next desired cruise altitude for a 4,000 foot step climb.

CLIMB THRUST/CLIMB CAPABILITY

The JT8D engine is flat rated to standard temperature. This means that maximum climb thrust is available at standard temperature, and climb performance is not improved as temperature becomes colder than standard.

Climbing at low rates of climb and using high thrust setting for prolonged periods drastically reduces engine life. This chart indicates cruise altitudes that can be achieved with engine-saving climb rates as determined by weight and temperature.

To use the chart:

1. Compare outside air temperature with standard temperature. If the temperature deviation for a higher altitude cannot be determined, assume the deviation at the higher altitude will be the same as the existing altitude.

2. Enter with desired flight level and temperature deviation from standard to determine the maximum weight to arrive at the selected flight level.

CRUISE ALTITUDE ADJUSTMENT FOR WIND

The Wind Improvement Altitude section of the Altitude Selection chart is used to modify the selected cruise altitude. An altitude change based upon wind should be made very cautiously. If the more favorable wind fails to materialize, a substantial fuel mileage penalty will result.

To use the chart:

1. Enter the chart with the selected altitude relative to gross weight.

2. The wind advantage at the selected altitude must be greater than the values shown to consider a change in altitude above or below target altitude.

AIRSPEED ADJUSTMENTS

CRUISE

This chart is used in conjunction with the Altitude Selection chart to determine how much indicated airspeed adjustment is required to compensate for the existing headwind or tailwind in order to maintain minimum cost speed.

AIRSPEED ADJUSTMENTS (CONTD)

CRUISE (Contd)

Adjusting cruise indicated airspeed for wind conditions reduces total flight cost. Although an increase in speed increases fuel consumption, overall operating cost will be reduced. An increase of four knots above LRC indicated airspeed results in approximately one percent increased fuel burn. For example:

> A typical 2½ hour cruise segment experiencing an 80 knot headwind at target altitude should add 4 knots to the LRC indicated airspeed. The result is a 2 minute savings of total aircraft costs with an additional burn of 250 pounds of fuel.

To use the chart:

1. Enter chart at 0 (target altitude) or nearest 2,000 foot increment relative to target altitude.

2. Increase or decrease indicated airspeed by the amount indicated except maximum cruise thrust shall not be exceeded.

CLIMB

The climb speed schedule is used with no adjustment for wind.

DESCENT

This chart indicates the desired descent speed schedule and corresponding no-wind distances for descent from selected initial altitudes. It also includes an adjustment factor to be applied to the descent distance to compensate for the effect of wind.

The distance shown is from the point at which the throttles are closed for descent at cruise altitude to the point where the airplane reaches 10,000 feet. The chart assumes that idle thrust and the descent speed schedule shown are maintained throughout the descent and does not reflect any added distance to slow from the descent speed to 250 knots.

ESTIMATING LANDING WEIGHT

Estimated landing weight is the sum of the operating empty weight, estimated payload, and total reserve fuel.

1. Operating empty weight (OEW) can be obtained by entering the applicable FIP code into a computer terminal, contacting Flight Dispatch, from the computer flight plan, or checking chapter 30 of the Aircraft Weight Handbook kept at major station load control offices.

2. Payload is obtained from the load control agent or from Flight Dispatch.

3. Total reserve fuel requirement is determined by totaling the FAA reserve, hold, and alternate fuels. In no case can total reserve fuel be less than minimum target fuel.

   a. Obtain FAA reserve from this section.

   b. Holding fuel should be computed for any forecast ATC delay. If it is anticipated that fuel in addition to target fuel is needed, temporarily insert an estimated figure based on prior experience. This provides a more realistic landing weight. Target fuel provides contingency fuel over FAR reserves.

   c. Fuel to alternate is determined by following the instructions for the Alternate Planning charts in this section.

ALTERNATE PLANNING

-80

	20	40	60	80	100	120	140	160	180	200
OPTM ALT	6000	8000	11000	13000	16000	18000	20000	23000	25000	26000
TIME	.13	.17	.19	.21	.25	.28	.31	.33	.36	.39
FUEL	2700	2800	2900	3000	3100	3400	3700	4000	4400	4700
TAS	277	286	347	354	363	372	380	402	413	421

DIST NAM	220	240	260	280	300	320	340	360	380	400
OPTM ALT	28000	29000	30000	32000	33000	34000	35000	36000	36000	36000
TIME	.41	.44	.47	.50	.52	.55	.58	1.01	1.04	1.06
FUEL	5000	5200	5500	5900	6100	6500	6700	7100	7400	7600
TAS	436	442	445	449	451	450	449	448	448	448

DIST NAM	420	440	460	480	500	520	540	560	580	600
OPTM ALT	36000	36000	36000	36000	36000	36000	36000	36000	36000	36000
TIME	1.09	1.11	1.14	1.17	1.19	1.22	1.25	1.27	1.30	1.33
FUEL	7800	8200	8500	8700	9000	9400	9700	9900	10200	10500
TAS	448	448	448	448	448	448	448	448	448	448

DIST NAM	620	640	660	680	700	720	740	760	780	800
OPTM ALT	36000	36000	36000	36000	36000	36000	36000	36000	36000	36000
TIME	1.35	1.38	1.41	1.43	1.46	1.48	1.51	1.54	1.56	1.59
FUEL	10900	11200	11400	11700	12000	12300	12600	13000	13300	13500
TAS	448	448	448	448	448	448	448	448	448	448

Time and fuel includes en route trip requirement at LRC from destination to alternate with additional fuel for approach and landing at alternate airport.

Time and fuel figures below 10,000 feet are based on an indicated airspeed of 250 knots.

ALTERNATE PLANNING

-34/-41

DIST NAM	20	40	60	80	100	120	140	160	180	200
OPTM ALT	5000	8000	11000	14000	17000	20000	23000	25000	26000	27000
TIME	.11	.13	.16	.19	.22	.24	.27	.30	.32	.35
FUEL	2800	3000	3300	3500	3800	4100	4300	4600	4800	5100
TAS	267	279	336	353	371	392	412	425	429	434

DIST NAM	220	240	260	280	300	320	340	360	380	400
OPTM ALT	29000	30000	31000	32000	33000	33000	34000	34000	35000	35000
TIME	.38	.41	.43	.46	.49	.51	.54	.57	1.00	1.02
FUEL	5400	5600	5900	6100	6400	6700	6900	7200	7400	7700
TAS	440	441	443	443	443	442	440	440	440	440

DIST NAM	420	440	460	480	500	520	540	560	580	600
OPTM ALT	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000
TIME	1.05	1.08	1.11	1.13	1.16	1.19	1.21	1.24	1.27	1.30
FUEL	8000	8200	8500	8700	9000	9300	9500	9800	10000	10300
TAS	440	440	440	440	440	440	440	440	440	440

DIST NAM	620	640	660	680	700	720	740	760	780	800
OPTM ALT	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000
TIME	1.32	1.35	1.38	1.40	1.43	1.46	1.49	1.51	1.54	1.57
FUEL	10600	10800	11100	11300	11600	11900	12100	12400	12600	12900
TAS	440	440	440	440	440	440	440	440	440	440

Time and fuel includes en route trip requirement at LRC from destination to alternate with additional fuel for approach and landing at alternate airport.

Time and fuel figures below 10,000 feet are based on an indicated airspeed of 250 knots.

ALTERNATE PLANNING

-50

DIST NAM	20	40	60	80	100	120	140	160	180	200
OPTM ALT	5000	8000	11000	14000	17000	20000	23000	25000	26000	27000
TIME	.11	.13	.16	.19	.22	.24	.27	.30	.32	.35
FUEL	2400	2700	3000	3200	3500	3800	4100	4400	4700	5000
TAS	267	279	336	353	371	392	412	425	429	434

DIST NAM	220	240	260	280	300	320	340	360	380	400
OPTM ALT	29000	30000	31000	33000	35000	35000	35000	35000	35000	35000
TIME	.38	.41	.43	.46	.49	.51	.54	.57	.59	1.02
FUEL	5300	5600	5900	6100	6400	6700	7000	7300	7600	7900
TAS	440	441	443	443	440	440	440	440	440	440

DIST NAM	420	440	460	480	500	520	540	560	580	600
OPTM ALT	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000
TIME	1.05	1.07	1.10	1.13	1.16	1.18	1.21	1.24	1.26	1.29
FUEL	8200	8500	8800	9000	9300	9600	9900	10200	10500	10800
TAS	440	440	440	440	440	440	440	440	440	440

DIST NAM	620	640	660	680	700	720	740	760	780	800
OPTM ALT	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000
TIME	1.32	1.34	1.37	1.40	1.43	1.45	1.48	1.51	1.53	1.56
FUEL	11100	11400	11700	11900	12200	12500	12800	13100	13400	13700
TAS	440	440	440	440	440	440	440	440	440	440

Time and fuel includes en route trip requirement at LRC from destination to alternate with additional fuel for approach and landing at alternate airport.

Time and fuel figures below 10,000 feet are based on an indicated airspeed of 250 knots.

ALTERNATE PLANNING

-31/-32/-33

DIST NAM	20	40	60	80	100	120	140	160	180	200
OPTM ALT	5000	8000	11000	14000	17000	20000	23000	25000	26000	27000
TIME	.13	.17	.19	.21	.25	.28	.31	.34	.36	.40
FUEL	2400	2500	2600	2700	3000	3300	3600	3800	4000	4400
TAS	268	280	340	348	358	374	390	399	406	409

DIST NAM	220	240	260	280	300	320	340	360	380	400
OPTM ALT	29000	30000	31000	32000	33000	33000	34000	34000	35000	35000
TIME	.42	.45	.48	.50	.53	.56	.59	1.02	1.05	1.07
FUEL	4700	4900	5100	5300	5700	5900	6200	6400	6600	6900
TAS	417	423	430	433	437	436	438	437	439	439

DIST NAM	420	440	460	480	500	520	540	560	580	600
OPTM ALT	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000
TIME	1.10	1.13	1.15	1.18	1.21	1.24	1.26	1.29	1.32	1.35
FUEL	7100	7400	7600	7800	8100	8300	8500	8800	9000	9200
TAS	439	439	439	439	439	439	439	439	439	439

DIST NAM	620	640	660	680	700	720	740	760	780	800
OPTM ALT	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000
TIME	1.37	1.40	1.43	1.45	1.48	1.51	1.54	1.56	1.59	2.02
FUEL	9500	9700	9900	10200	10400	10600	10900	11100	11300	11600
TAS	439	439	439	439	439	439	439	439	439	439

Time and fuel includes en route trip requirement at LRC from destination to alternate with additional fuel for approach and landing at alternate airport.

Time and fuel figures below 10,000 feet are based on an indicated airspeed of 250 knots.

ALTERNATE PLANNING

-10

DIST NAM	20	40	60	80	100	120	140	160	180	200
OPTM ALT	5000	8000	11000	14000	17000	20000	23000	25000	26000	27000
TIME	.13	.17	.19	.21	.25	.28	.31	.34	.36	.39
FUEL	2200	2300	2400	2500	2900	3200	3300	3600	3700	4100
TAS	268	280	323	330	343	357	373	384	392	396

DIST NAM	220	240	260	280	300	320	340	360	380	400
OPTM ALT	28000	30000	31000	32000	32000	33000	33000	34000	34000	34000
TIME	.42	.44	.47	.50	.52	.55	.58	1.00	1.03	1.06
FUEL	4300	4600	4900	5100	5400	5500	5700	6000	6200	6400
TAS	403	419	428	435	434	441	440	449	448	447

DIST NAM	420	440	460	480	500	520	540	560	580	600
OPTM ALT	34000	34000	34000	34000	35000	35000	35000	35000	35000	35000
TIME	1.09	1.12	1.14	1.17	1.19	1.22	1.25	1.28	1.30	1.33
FUEL	6700	6900	7100	7300	7600	7800	8000	8200	8500	8700
TAS	446	445	444	443	453	452	451	450	449	448

DIST NAM	620	640	660	680	700	720	740	760	780	800
OPTM ALT	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000
TIME	1.36	1.38	1.41	1.44	1.46	1.49	1.52	1.55	1.57	2.00
FUEL	8900	9100	9300	9600	9800	10000	10200	10500	10700	10900
TAS	447	446	445	444	443	442	441	440	439	438

Time and fuel includes en route trip requirement at LRC from destination to alternate with additional fuel for approach and landing at alternate airport.

Time and fuel figures below 10,000 feet are based on an indicated airspeed of 250 knots.

CRUISE ALTITUDE SELECTION

-80

ALTITUDE SELECTION

GROSS WEIGHT	TARGET ALT	WIND IMPROVEMENT ALTITUDE								
		370	350	330	310	290	270	250	230	210
105,000	370	0	9	22	35	50	66	82	98	115
110,000	370	0	6	18	32	46	61	78	95	111
115,000	370	0	4	14	27	41	57	73	90	107
120,000	370	0	2	9	22	36	50	66	83	100
125,000	350	1	1	5	16	29	44	59	77	93
130,000	350		0	3	11	24	38	53	70	87
135,000	350		1	1	7	19	33	47	63	81
140,000	330		5	0	5	14	28	41	57	75
145,000	330			0	3	10	22	36	51	69
150,000	330			2	1	7	17	31	46	63
155,000	310			10	0	4	13	26	42	57
160,000	310				0	2	9	22	37	53

Target altitude is the most efficient altitude for the aircraft weight if wind is not considered. Target altitudes have been rounded to the nearest useable altitude.

The value at the intersection of weight and wind improvement altitude shows the increased tailwind or decreased headwind necessary to fly other than target altitude for the same cost. Wind improvement values are computed from the actual target altitude.

For example, the target altitude for a weight of 130,000 pounds is flight level 350. However, if flight level 330 has a 3 knot wind improvement over flight level 350, both are equally efficient and either can be flown at the same cost. If flight level 330 has more than a 3 knot wind improvement, it is the more efficient altitude.

-80

CLIMB CAPABILITY

FLIGHT LEVEL	370	360	350	340	330
STANDARD TEMP.	-57	-56	-54	-52	-50
STANDARD +10 or LESS	128	135	140	145	152
STANDARD +20	125	132	138	145	152
STANDARD +25	125	132	138	145	152

The intersection of outside air temperature and flight level defines the maximum weight in thousands of pounds to arrive at the selected flight level.

Rate of Climb will be approximately 300 ft./min. for the last 1000 feet of altitude based on Mach 0.75 and climb thrust.

Step Climbs, depending on weight, will require approximately 200 to 600 pounds burn for a 2000 foot step and 300 to 900 pounds burn for a 4000 foot step.

CRUISE ALTITUDE SELECTION

-50

ALTITUDE SELECTION

GROSS WEIGHT	TARGET ALT	WIND IMPROVEMENT ALTITUDE							
		350	330	310	290	280	270	260	250
65,000	350	0	17	36	55	65	72	79	86
70,000	350	0	14	31	50	59	67	74	82
75,000	350	0	13	29	46	56	65	74	82
80,000	350	0	13	28	43	52	62	71	80
85,000	350	0	13	27	42	51	60	69	79
90,000	350	0	13	27	43	51	59	68	77
95,000	350	0	11	25	40	48	56	64	73
100,000	350	0	9	22	36	43	51	58	67
105,000	350	0	5	17	30	37	45	52	60
110,000	330	1	0	9	22	27	35	42	51
115,000	330		0	6	17	24	30	37	46
120,000	330		0	0	9	15	23	29	37

Target altitude is the most efficient altitude for the aircraft weight if wind is not considered.

The value at the intersection of weight and wind improvement altitude shows the increased tailwind or decreased headwind necessary to fly other than target altitude for the same cost.

For example, the target altitude for a weight of 100,000 pounds is flight level 350. However, if flight level 310 has a 16 knot wind improvement over flight level 350, both are equally efficient and either can be flown at the same cost. If flight level 310 has more than a 16 knot wind improvement, it is the more efficient altitude.

-50

CLIMB CAPABILITY

FLIGHT LEVEL	350	330	310	290
STANDARD TEMP.	-54	-50	-46	-42
STANDARD +10 or LESS	110	120	121	121
STANDARD +20	108	116	121	121
STANDARD +25	102	108	114	119

The intersection of outside air temperature and flight level defines the maximum weight in thousands of pounds to arrive at the selected flight level.

Rate of Climb will be approximately 300 ft./min. for the last 1000 feet of altitude based on Mach 0.75 and climb thrust.

Step Climbs, depending on weight, will require approximately 200 to 600 pounds burn for a 2000 foot step and 300 to 900 pounds burn for a 4000 foot step.

CRUISE ALTITUDE SELECTION

-34/-41

ALTITUDE SELECTION

GROSS WEIGHT	TARGET ALT	WIND IMPROVEMENT ALTITUDE								
		350	330	310	290	270	250	230	210	190
65,000	350	0	13	26	43	62	77	96	115	132
70,000	350	0	12	26	42	60	77	96	116	135
75,000	350	0	11	24	39	58	76	96	116	135
80,000	350	0	10	22	36	53	72	93	114	134
85,000	350	0	9	20	34	50	68	89	111	132
90,000	350	0	9	19	31	46	64	85	108	129
95,000	350	0	8	18	29	42	59	80	102	125
100,000	350	0	5	16	26	38	53	74	96	119
105,000	350	0	0	8	19	30	43	62	84	106
110,000	330	10	0	7	17	27	39	57	77	99
115,000	330		0	1	10	20	32	47	66	86
120,000	310		9	0	7	18	29	43	60	80

Target altitude is the most efficient altitude for the aircraft weight if wind is not considered.

The value at the intersection of weight and wind improvement altitude shows the increased tailwind or decreased headwind necessary to fly other than target altitude for the same cost.

For example, the target altitude for a weight of 100,000 pounds is flight level 350. However, if flight level 310 has a 16 knot wind improvement over flight level 350, both are equally efficient and either can be flown at the same cost. If flight level 310 has more than a 16 knot wind improvement, it is the more efficient altitude.

-34/-41

CLIMB CAPABILITY

FLIGHT LEVEL	350	330	310	290
STANDARD TEMP.	-54	-50	-46	-42
STANDARD +10 or LESS	110	119	121	121
STANDARD +20	106	112	116	120
STANDARD +25	100	104	108	112

The intersection of outside air temperature and flight level defines the maximum weight in thousands of pounds to arrive at the selected flight level.

Rate of Climb will be approximately 300 ft./min. for the last 1000 feet of altitude based on Mach 0.75 and climb thrust.

Step Climbs, depending on weight, will require approximately 200 to 600 pounds burn for a 2000 foot step and 300 to 900 pounds burn for a 4000 foot step.

CRUISE ALTITUDE SELECTION

-31/-32/-33

ALTITUDE SELECTION

GROSS WEIGHT	TARGET ALT	WIND IMPROVEMENT ALTITUDE								
		350	330	310	290	270	250	230	210	190
65,000	350	0	9	19	32	47	61	78	95	112
70,000	350	0	10	19	31	44	59	76	93	111
75,000	350	0	9	19	31	43	57	74	91	109
80,000	350	0	8	18	29	41	55	71	88	106
85,000	350	0	7	16	27	39	52	67	85	103
90,000	350	0	7	15	25	37	50	64	81	100
95,000	350	0	6	14	23	34	47	61	77	95
100,000	350	0	3	11	19	29	42	56	71	89
105,000	350	0	2	9	17	27	38	52	67	83
110,000	350	0	3	6	14	23	34	47	62	77

Target altitude is the most efficient altitude for the aircraft weight if wind is not considered.

The value at the intersection of weight and wind improvement altitude shows the increased tailwind or decreased headwind necessary to fly other than target altitude for the same cost.

For example, the target altitude for a weight of 100,000 pounds is flight level 350. However, if flight level 310 has a 11 knot wind improvement over flight level 350, both are equally efficient and either can be flown at the same cost. If flight level 310 has more than a 11 knot wind improvement, it is the more efficient altitude.

-31/-32

CLIMB CAPABILITY

FLIGHT LEVEL	350	330	310	290
STANDARD TEMP.	-54	-50	-46	-42
STANDARD +10 or LESS	108	108	108	108
STANDARD +20	98	101	105	108
STANDARD +25	91	93	95	98

-33

CLIMB CAPABILITY

FLIGHT LEVEL	350	330	310	290
STANDARD TEMP.	-54	-50	-46	-42
STANDARD +10 or LESS	103	109	114	114
STANDARD +20	93	97	100	102
STANDARD +25	87	89	91	93

The intersection of outside air temperature and flight level defines the maximum weight in thousands of pounds to arrive at the selected flight level.

Rate of Climb will be approximately 300 ft./min. for the last 1000 feet of altitude based on Mach 0.75 and climb thrust.

Step Climbs, depending on weight, will require approximately 200 to 600 pounds burn for a 2000 foot step and 300 to 900 pounds burn for a 4000 foot step.

CRUISE ALTITUDE SELECTION

-10

ALTITUDE SELECTION

GROSS WEIGHT	TARGET ALT	WIND IMPROVEMENT ALTITUDE								
		350	330	310	290	270	250	230	210	190
55,000	350	0	12	27	39	52	65	82	100	117
60,000	350	0	10	23	38	50	63	79	97	115
65,000	350	0	6	17	32	46	58	74	90	109
70,000	350	0	6	13	26	41	54	70	86	103
75,000	350	0	7	13	23	37	52	68	84	100
80,000	330	2	0	5	13	25	39	56	71	87
85,000	310		4	0	6	15	29	44	61	77
90,000	310			0	5	14	24	40	56	72

Target altitude is the most efficient altitude for the aircraft weight if wind is not considered.

The value at the intersection of weight and wind improvement altitude shows the increased tailwind or decreased headwind necessary to fly other than target altitude for the same cost.

For example, the target altitude for a weight of 80,000 pounds is flight level 330. However, if flight level 290 has a 13 knot wind improvement over flight level 330, both are equally efficient and either can be flown at the same cost. If flight level 290 has more than a 13 knot wind improvement, it is the more efficient altitude.

-10

CLIMB CAPABILITY

FLIGHT LEVEL	350	330	310	290
STANDARD TEMP.	-54	-50	-46	-42
STANDARD +10 or LESS	89	90	90	90
STANDARD +20	83	89	90	90
STANDARD +25	79	83	87	90

The intersection of outside air temperature and flight level defines the maximum weight in thousands of pounds to arrive at the selected flight level.

Rate of Climb will be approximately 300 ft./min. for the last 1000 feet of altitude based on Mach 0.75 and climb thrust.

Step Climbs, depending on weight, will require approximately 200 to 600 pounds burn for a 2000 foot step and 300 to 900 pounds burn for a 4000 foot step.

SPEED ADJUSTMENT

CRUISE SPEED ADJUSTMENT FOR WIND

FEET BELOW TARGET ALTITUDE	WIND COMPONENT						
	20	40	60	80	100	120	140
0	1	2	3	4	5	6	7
2,000	1	3	4	6	7	8	10
4,000	2	4	5	7	9	10	13
6,000	2	4	7	9	11	14	15
8,000	3	5	8	10	13	16	18
10,000	3	6	9	12	15	18	21
12,000	3	7	10	14	17	20	24
14,000	4	8	11	15	19	22	27

Find normal cruise speed adjustment at the intersection of the win component and cruise altitude in feet below target altitude. When flyin against headwind, add adjustment to chart IAS. When flying with tailwind subtract adjustment from chart IAS. Do not exceed maximum cruise thrust If above target altitude, use the zero altitude line.

For example, the altitude selection chart shows a target altitude for th aircraft weight as FL350. However, the flight is being flown at FL31 because the wind is more favorable. The long range cruise chart IAS fo FL310 is 275 knots IAS. The flight is experiencing a 40 knot headwin component at FL310. The speed adjustment at the intersection of 40 knot and 4,000 feet below target altitude (350) is 4 knots IAS. Thrust shoul be added, up to but not exceeding maximum cruise thrust, to maintain cruise speed of 279 (275 + 4) knots IAS.

CLIMB

DC9-10/30/40/50:
250 KTS to 10,000 FT
280 KTS/Mach .74 above 10,000 FT

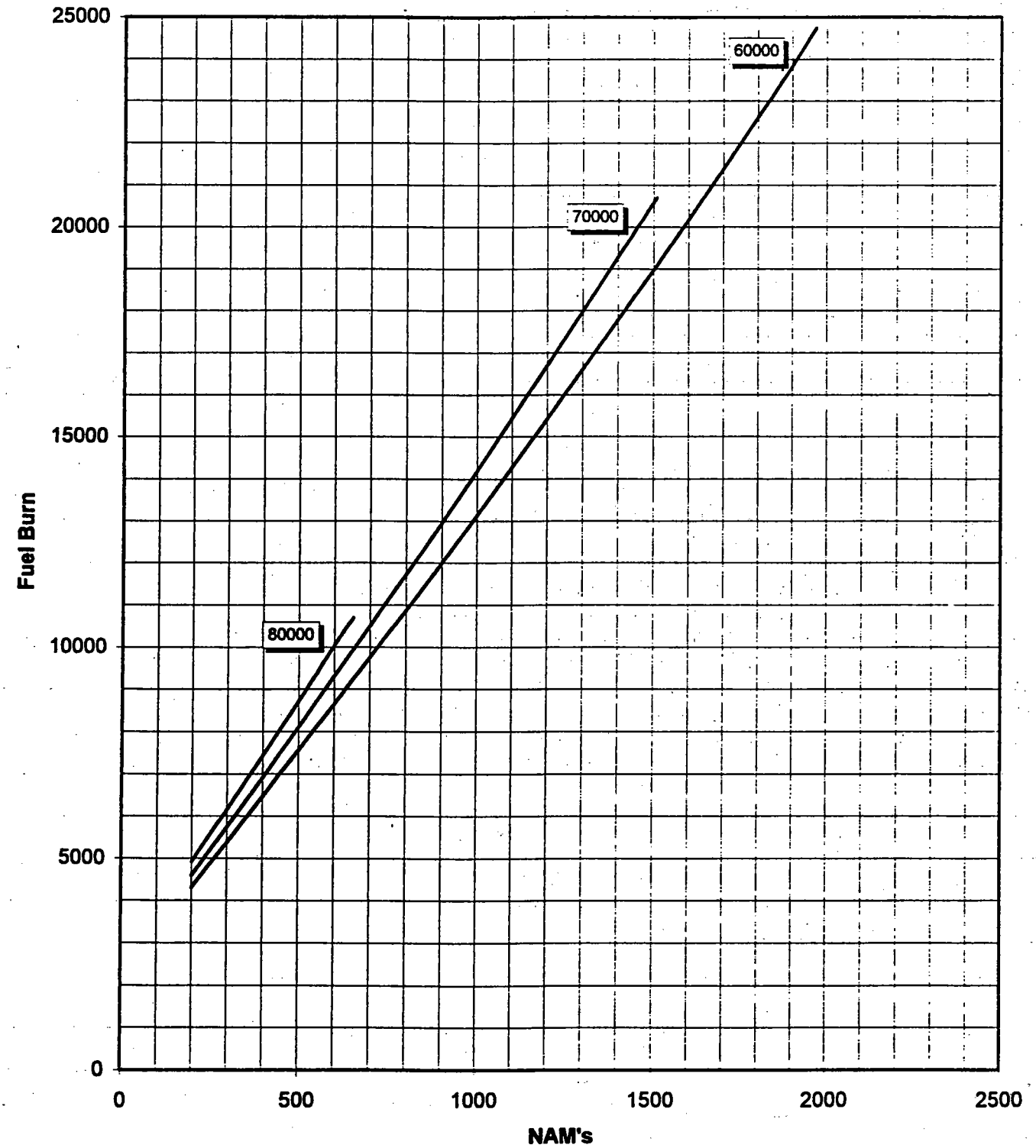
MD80:
250 KTS to 10,000 FT
PMS CLB OPT above 10,000 FT (PMS INOP - 280 KTS/Mach .74)

DESCENT DISTANCE

CRUISE MACH/290 KTS to 10,000 FT			
INITIAL ALTITUDE	DISTANCE NM	INITIAL ALTITUDE	DISTANCE NM
370	71	270	46
350	66	250	42
330	61	220	34
310	56	200	28
290	51	150	11
DECREASE DISTANCE 10% FOR 50 KTS OF HEADWIND INCREASE DISTANCE 10% FOR 50 KTS OF TAILWIND NOTE: DESCENT DISTANCES ARE TO 10,000 FEET AND 290 KTS.			

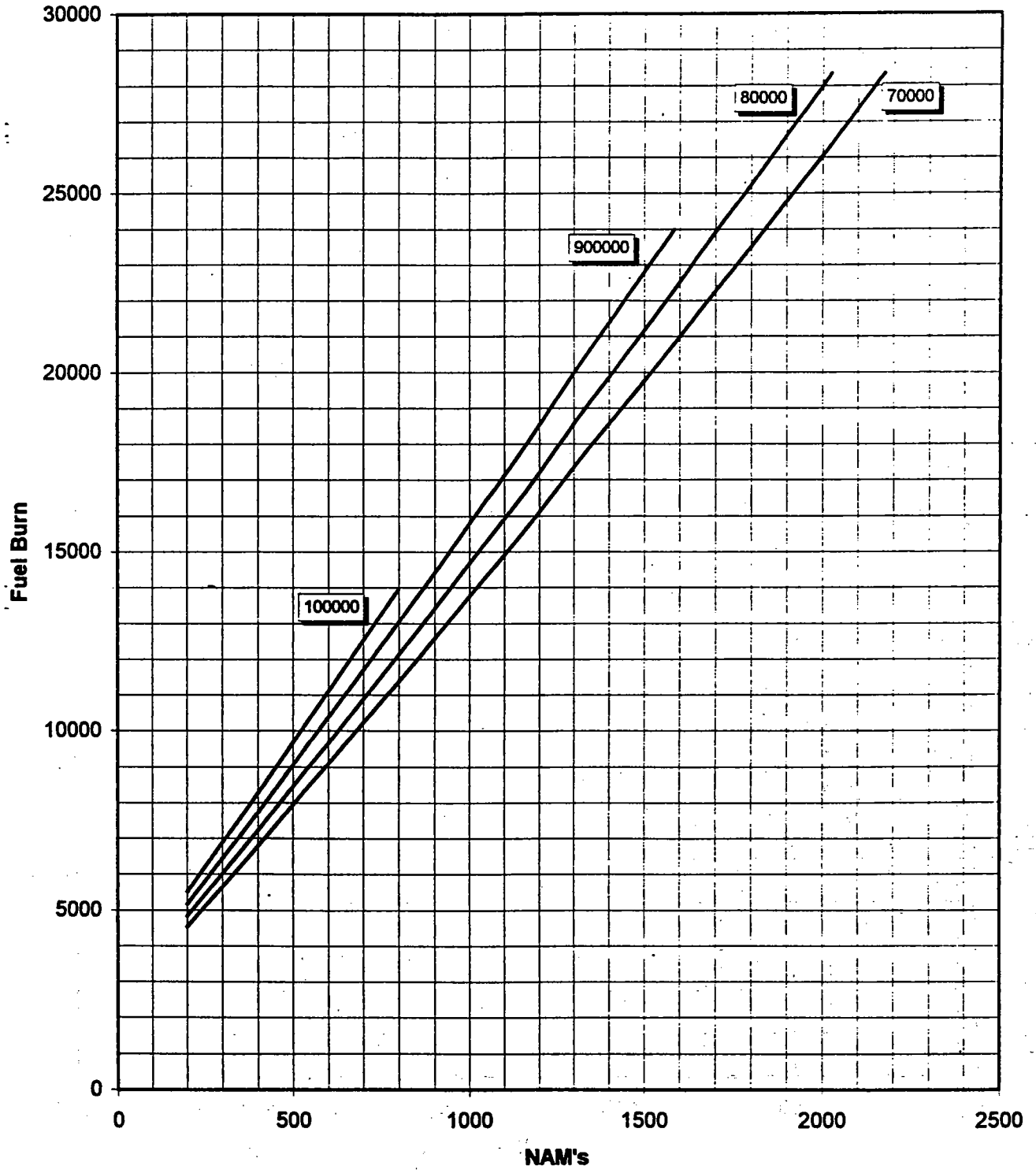
FUEL BURN

-10


25000
20000
15000
10000
5000
0
Fuel Burn
0
500
1000
1500
2000
2500
NAM's
60000
70000
80000

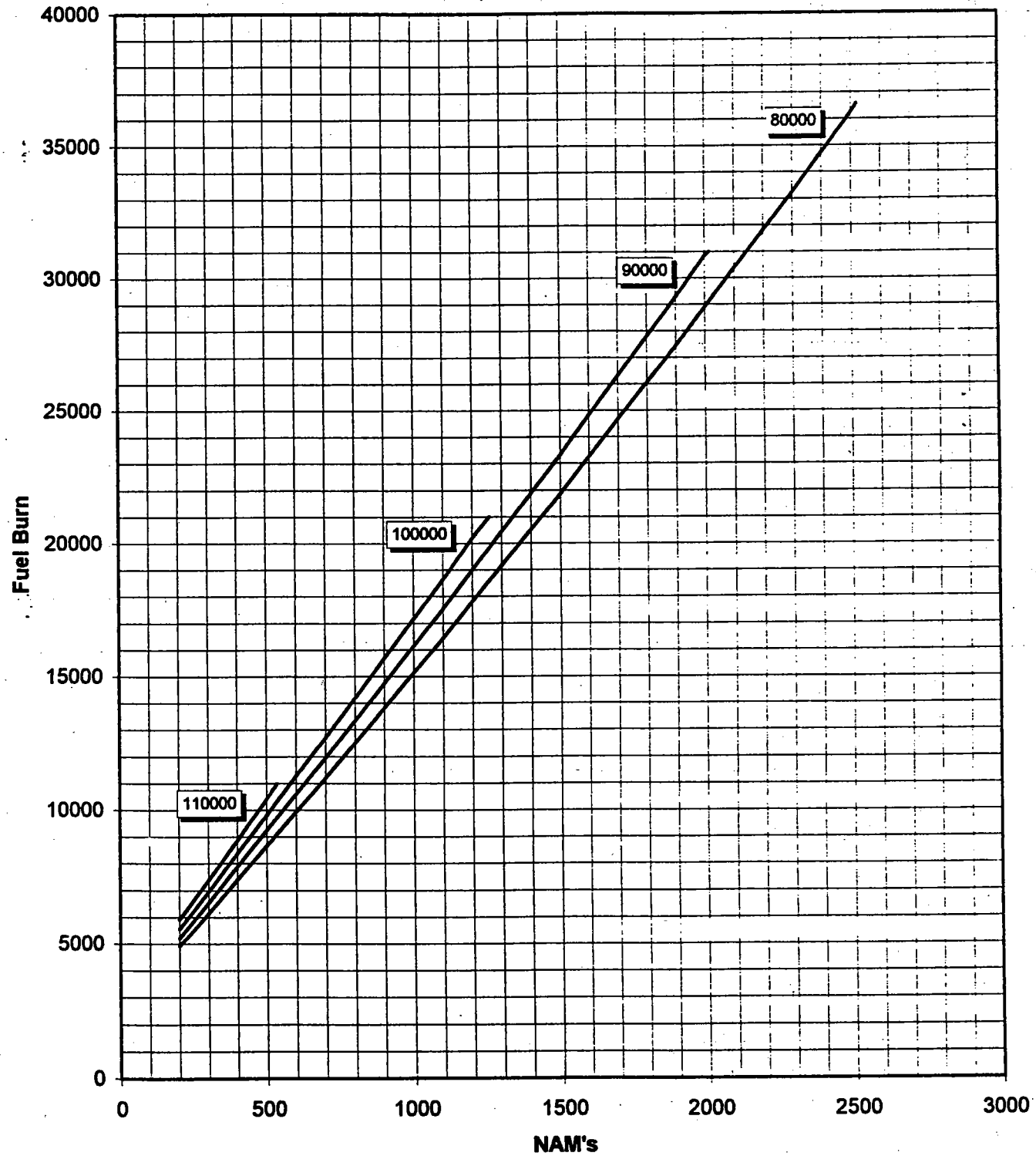
FUEL BURN

-30


30000
25000
20000
15000
10000
5000
0
Fuel Burn
0
500
1000
1500
2000
2500
NAM's
80000
70000
900000
100000

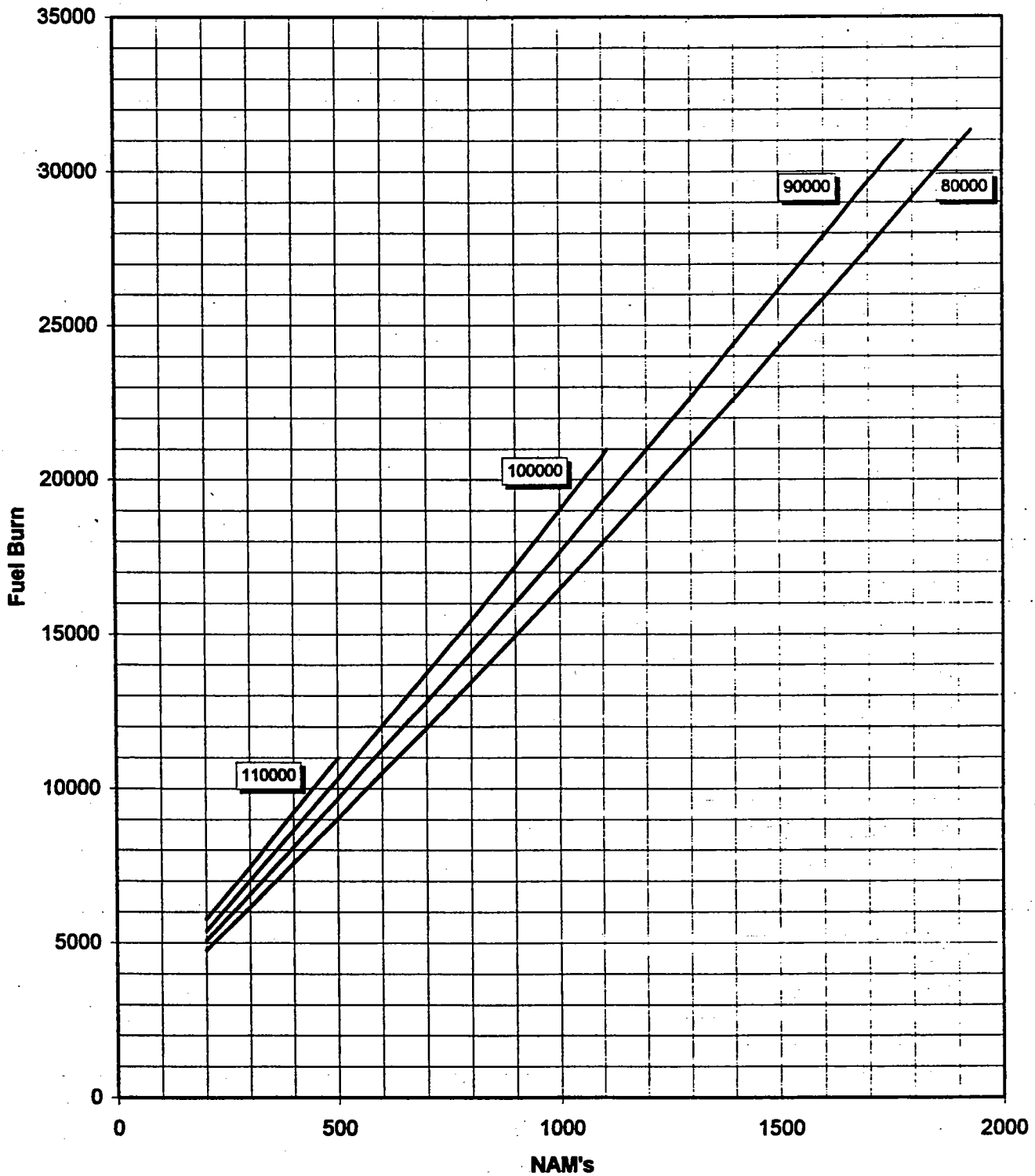
FUEL BURN

-34/41



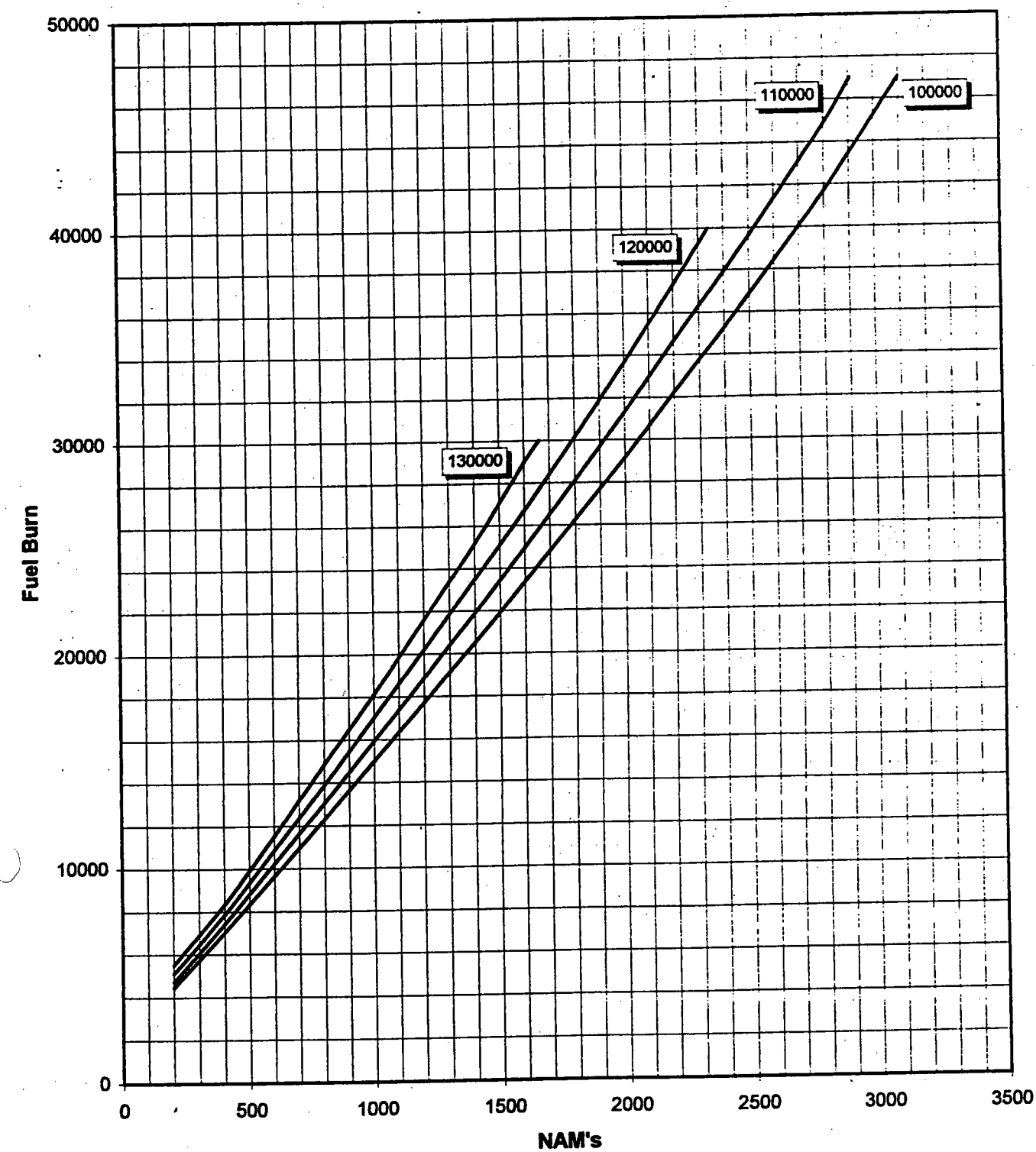
FUEL BURN

-50


35000
30000
25000
20000
15000
10000
5000
0
Fuel Burn
0
500
1000
1500
2000
NAM's
90000
80000
100000
110000

FUEL BURN

-80


50000
40000
30000
20000
10000
0
Fuel Burn
0
500
1000
1500
2000
2500
3000
3500
NAM's
110000
100000
120000
130000

* * *

HOLD - FLAPS UP

-80

HIGH ALTITUDE

ALTITUDE / STD TEMP	GROSS WEIGHT - LBS 150000	145000	140000	135000	130000	125000	120000	115000	110000	105000	100000	095000
37000 -57.								233 2451 1.84	220 2304 1.82	213 2179 1.79	206 2062 1.75	200 1947 1.71
35000 -54.							240 2640 1.84	229 2497 1.82	222 2371 1.78	216 2250 1.75	210 2129 1.72	205 2011 1.68	198 1889 1.65
33000 -50.			258 3021 1.85	246 2869 1.83	237 2729 1.81	231 2604 1.78	225 2480 1.75	220 2358 1.72	214 2238 1.68	209 2119 1.65	204 2003 1.62	198 1895 1.58
31000 -46.	261 3241 1.84	251 3094 1.82	245 2963 1.79	239 2837 1.77	234 2712 1.74	229 2588 1.71	224 2469 1.68	219 2351 1.65	214 2233 1.62	209 2121 1.59	204 2017 1.55	199 1915 1.52
29000 -42.	252 3153 1.78	247 3028 1.75	242 2904 1.73	238 2784 1.70	233 2665 1.67	229 2547 1.64	224 2430 1.62	220 2317 1.59	215 2211 1.56	210 2107 1.53	205 2003 1.50	200 1902 1.47
28000 -40.	251 3166 1.75	247 3042 1.72	242 2920 1.69	238 2799 1.67	233 2680 1.64	229 2561 1.61	224 2446 1.58	220 2338 1.56	215 2231 1.53	210 2126 1.50	205 2022 1.47	200 1920 1.45
27000 -38.	251 3137 1.71	247 3016 1.69	242 2894 1.66	238 2776 1.64	233 2657 1.61	229 2543 1.58	224 2433 1.56	220 2326 1.53	215 2220 1.50	210 2115 1.48	205 2012 1.45	200 1911 1.42
26000 -37.	251 3152 1.68	247 3031 1.66	242 2911 1.63	238 2790 1.60	233 2675 1.58	229 2563 1.55	224 2454 1.53	220 2344 1.50	215 2236 1.48	210 2131 1.45	205 2028 1.43	200 1928 1.40
25000 -35.	251 3126 1.65	247 3005 1.62	242 2885 1.60	238 2770 1.58	233 2658 1.55	229 2547 1.53	224 2437 1.50	220 2329 1.48	215 2222 1.45	210 2118 1.43	205 2016 1.41	200 1920 1.39
24000 -33.	251 3103 1.62	247 2985 1.59	242 2870 1.57	238 2759 1.55	233 2648 1.52	229 2538 1.50	224 2429 1.48	220 2323 1.45	215 2218 1.43	210 2115 1.41	205 2020 1.39	200 1924 1.37
23000 -31.	251 3125 1.59	247 3011 1.57	242 2897 1.54	238 2785 1.52	233 2674 1.50	229 2564 1.48	224 2456 1.45	220 2350 1.43	215 2246 1.41	210 2149 1.39	205 2051 1.37	200 1954 1.35

IAS
FF
EPR

1. CHECK MAX CRUISE THRUST CHART FOR EPR LIMIT AND ANTI-ICE CORRECTIONS.
2. ALL WEIGHT-ALTITUDE COMBINATIONS SHOWN HAVE AT LEAST 1.30G MANEUVER MARGIN.

HOLD - FLAPS UP

-80

LOW ALTITUDE

ALTITUDE / STD TEMP	GROSS WEIGHT - LBS 150000	145000	140000	135000	130000	125000	120000	115000	110000	105000	90000
22000 -29.	251	247	242	238	233	229	224	220	215	210	205	200
	3111	2998	2886	2775	2666	2558	2452	2347	2250	2153	2055	1957
	1.56	1.54	1.52	1.50	1.48	1.45	1.43	1.41	1.39	1.37	1.36	1.34
21000 -27.	251	247	242	238	233	229	224	220	215	210	205	200
	3140	3027	2915	2803	2694	2587	2481	2381	2283	2184	2085	1986
	1.53	1.51	1.49	1.47	1.45	1.43	1.41	1.39	1.38	1.36	1.34	1.32
20000 -25.	251	247	242	238	233	229	224	220	215	210	205	200
	3129	3017	2905	2796	2689	2583	2484	2386	2287	2188	2089	1991
	1.51	1.49	1.47	1.45	1.43	1.41	1.39	1.38	1.36	1.34	1.33	1.31
19000 -23.	251	247	242	238	234	229	224	220	215	210	205	200
	3120	3010	2900	2793	2688	2588	2490	2391	2292	2194	2095	2001
	1.49	1.47	1.45	1.43	1.41	1.39	1.38	1.36	1.35	1.33	1.31	1.29
18000 -21.	251	247	243	238	234	229	225	220	215	210	205	200
	3153	3043	2935	2828	2728	2628	2528	2428	2328	2227	2129	2043
	1.46	1.45	1.43	1.41	1.39	1.38	1.36	1.35	1.33	1.31	1.30	1.28
17000 -19.	251	247	243	238	234	229	225	220	215	210	205	200
	3147	3039	2932	2832	2733	2633	2532	2432	2332	2232	2144	2057
	1.44	1.43	1.41	1.39	1.38	1.36	1.35	1.33	1.32	1.30	1.29	1.27
16000 -17.	251	247	242	238	234	229	224	220	215	210	205	200
	3183	3075	2975	2874	2772	2671	2569	2468	2367	2275	2185	2098
	1.42	1.41	1.39	1.38	1.36	1.35	1.33	1.32	1.30	1.29	1.27	1.26
15000 -15.	251	247	242	238	233	229	224	220	215	210	205	200
	3179	3079	2978	2877	2775	2674	2572	2471	2377	2288	2199	2110
	1.40	1.39	1.38	1.36	1.35	1.33	1.32	1.30	1.29	1.28	1.26	1.25
14000 -13.	251	247	242	238	234	229	224	220	215	210	205	200
	3187	3086	2985	2883	2781	2680	2579	2484	2393	2304	2214	2125
	1.39	1.37	1.36	1.35	1.33	1.32	1.31	1.29	1.28	1.26	1.25	1.24
13000 -11.	251	247	243	238	234	229	225	220	215	210	205	200
	3234	3132	3029	2926	2823	2720	2623	2531	2438	2348	2258	2167
	1.37	1.36	1.35	1.33	1.32	1.31	1.29	1.28	1.27	1.25	1.24	1.23
12000 -9.	251	247	243	238	234	229	225	220	215	210	205	200
	3240	3137	3034	2931	2828	2730	2637	2544	2453	2365	2270	2180
	1.36	1.34	1.33	1.32	1.31	1.29	1.28	1.27	1.26	1.24	1.23	1.22
11000 -7.	251	247	242	238	234	229	224	220	215	210	205	200
	3285	3181	3077	2973	2874	2778	2684	2590	2499	2404	2312	2220
	1.34	1.33	1.32	1.31	1.29	1.28	1.27	1.26	1.25	1.23	1.22	1.21
10000 -5.	251	247	242	238	233	229	224	220	215	210	205	199
	3289	3185	3081	2981	2886	2790	2696	2606	2509	2416	2323	2226
	1.33	1.32	1.31	1.29	1.28	1.27	1.26	1.25	1.24	1.22	1.21	1.20

IAS
FF
EPR

1. CHECK MAX CRUISE THRUST CHART FOR EPR LIMIT AND ANTI-ICE CORRECTIONS.
2. ALL WEIGHT-ALTITUDE COMBINATIONS SHOWN HAVE AT LEAST 1.30G MANEUVER MARGIN.

HOLD - FLAPS 0°/T.O.

-80

ALTITUDE / STD TEMP	GROSS WEIGHT - LBS 150000	145000	140000	135000	130000	125000	120000	115000	110000	105000	100000	90000
17000 -19.	227	221	215	209	203	198	192	187	181	176	171	166
	3476	3355	3236	3119	3002	2887	2774	2661	2545	2429	2314	2202
	1.50	1.48	1.46	1.45	1.43	1.41	1.39	1.38	1.36	1.34	1.32	1.31
16000 -17.	224	218	213	207	201	196	191	185	180	175	171	166
	3485	3366	3248	3131	3015	2901	2788	2673	2556	2440	2329	2220
	1.48	1.46	1.44	1.43	1.41	1.39	1.38	1.36	1.34	1.33	1.31	1.29
15000 -15.	222	216	210	205	200	194	189	184	179	175	171	166
	3496	3378	3261	3144	3031	2917	2800	2683	2567	2454	2342	2246
	1.46	1.44	1.43	1.41	1.39	1.38	1.36	1.35	1.33	1.31	1.30	1.28
14000 -13.	219	214	209	203	198	193	188	183	179	175	170	166
	3509	3392	3275	3160	3046	2930	2813	2695	2580	2467	2368	2271
	1.44	1.42	1.41	1.39	1.38	1.36	1.35	1.33	1.32	1.30	1.28	1.27
13000 -11.	217	212	207	202	197	192	187	183	179	175	170	166
	3524	3406	3292	3177	3060	2942	2824	2706	2593	2491	2393	2297
	1.42	1.41	1.39	1.38	1.36	1.35	1.33	1.32	1.30	1.29	1.27	1.26
12000 -9.	215	210	205	200	195	191	187	183	179	175	171	167
	3539	3425	3308	3191	3072	2956	2833	2723	2618	2518	2420	2319
	1.40	1.39	1.38	1.36	1.35	1.33	1.32	1.30	1.29	1.27	1.26	1.24
11000 -7.	214	209	204	199	194	191	187	183	179	175	171	167
	3557	3441	3323	3203	3085	2968	2852	2745	2643	2544	2446	2344
	1.39	1.37	1.36	1.35	1.33	1.32	1.30	1.29	1.28	1.26	1.25	1.23
10000 -5.	212	207	202	198	194	190	186	183	179	175	171	167
	3575	3455	3339	3214	3099	2983	2874	2771	2670	2571	2468	2369
	1.37	1.36	1.35	1.33	1.32	1.31	1.29	1.28	1.27	1.25	1.24	1.22
9000 -3.	210	206	202	198	194	190	186	183	179	175	171	168
	3595	3469	3350	3232	3116	3005	2900	2798	2697	2592	2492	2392
	1.36	1.35	1.33	1.32	1.31	1.29	1.28	1.27	1.25	1.24	1.23	1.22
8000 -1.	209	205	201	198	194	190	186	183	179	175	172	168
	3599	3485	3367	3249	3137	3031	2928	2826	2720	2618	2517	2415
	1.34	1.33	1.32	1.31	1.29	1.28	1.27	1.26	1.24	1.23	1.22	1.21
7000 1.	208	205	201	198	194	190	187	183	179	176	172	169
	3621	3501	3384	3271	3164	3058	2955	2847	2745	2642	2539	2436
	1.33	1.32	1.31	1.29	1.28	1.27	1.26	1.25	1.23	1.22	1.21	1.20
6000 3.	208	205	201	198	194	190	187	183	180	176	173	169
	3637	3519	3406	3297	3191	3086	2978	2874	2770	2666	2562	2455
	1.32	1.30	1.29	1.28	1.27	1.26	1.25	1.24	1.22	1.21	1.20	1.19
5000 5.	208	205	201	198	194	191	187	184	180	177	173	170
	3655	3542	3433	3325	3219	3108	3003	2898	2793	2688	2581	2474
	1.30	1.29	1.28	1.27	1.26	1.25	1.24	1.23	1.21	1.20	1.19	1.18
4000 7.	208	205	201	198	194	191	187	184	181	177	174	171
	3680	3568	3459	3352	3241	3134	3028	2922	2816	2709	2601	2496
	1.29	1.28	1.27	1.26	1.25	1.24	1.23	1.22	1.21	1.20	1.19	1.18
3000 9.	208	205	201	198	195	191	188	185	181	178	175	171
	3706	3596	3488	3374	3267	3158	3051	2944	2837	2728	2622	2524
	1.28	1.27	1.26	1.25	1.24	1.23	1.22	1.21	1.20	1.19	1.18	1.17
2000 11.	208	205	201	198	195	192	188	185	182	179	176	172
	3733	3624	3508	3399	3291	3182	3074	2966	2857	2748	2648	2557
	1.27	1.26	1.25	1.24	1.23	1.22	1.21	1.20	1.19	1.18	1.17	1.16

IAS
FF
EPR

1. CHART EPR IS THAT REQUIRED FOR HOLD WITH 0 DEGREES OF FLAP AND SLATS EXTENDED.
2. ALL WEIGHT-ALTITUDE COMBINATIONS SHOWN HAVE AT LEAST 1.30G MANEUVER MARGIN.

HOLD - FLAPS UP

-34/-41

ALTITUDE / STD TEMP	GROSS WEIGHT - LBS 120000	116000	112000	108000	104000	100000	096000	092000	088000	084000	080000	076000	072000	068000
35000 -54.				240	234	228	221	215	209	203	198	192	187	181
				3091	2941	2827	2712	2596	2481	2360	2231	2092	1958	1825
				2.17	2.13	2.11	2.08	2.05	2.02	1.98	1.93	1.87	1.81	1.75
31000 -46.	256	250	244	239	233	227	222	216	211	205	200	194	189	183
	3326	3206	3087	2974	2861	2744	2628	2504	2365	2234	2113	2000	1891	1790
	2.07	2.05	2.02	2.00	1.97	1.94	1.91	1.87	1.82	1.77	1.73	1.68	1.64	1.60
27000 -38.	256	250	244	239	233	228	222	217	211	206	200	195	189	184
	3269	3149	3033	2921	2782	2645	2518	2401	2288	2177	2077	1981	1889	1798
	1.92	1.89	1.87	1.84	1.80	1.76	1.73	1.69	1.65	1.62	1.59	1.55	1.52	1.49
23000 -31.	252	247	241	236	231	225	220	215	210	204	199	194	188	183
	3211	3075	2941	2820	2703	2588	2481	2380	2282	2187	2094	2000	1906	1812
	1.77	1.74	1.71	1.68	1.65	1.62	1.59	1.56	1.54	1.51	1.48	1.46	1.43	1.40
21000 -27.	249	244	238	233	228	223	218	213	208	203	198	193	188	183
	3173	3051	2935	2818	2711	2605	2503	2403	2304	2207	2111	2017	1926	1836
	1.69	1.67	1.64	1.61	1.59	1.56	1.54	1.51	1.49	1.47	1.44	1.42	1.39	1.37
19000 -23.	246	241	236	231	226	222	217	212	207	202	197	193	188	183
	3165	3048	2941	2833	2728	2625	2523	2423	2325	2228	2135	2044	1952	1861
	1.63	1.60	1.58	1.56	1.54	1.51	1.49	1.47	1.45	1.42	1.40	1.38	1.36	1.34
17000 -19.	244	239	235	230	225	221	216	212	207	202	198	193	188	184
	3164	3056	2952	2849	2747	2644	2543	2443	2346	2250	2155	2060	1966	1874
	1.57	1.55	1.53	1.51	1.49	1.47	1.45	1.43	1.41	1.39	1.37	1.35	1.33	1.31
15000 -15.	241	237	233	228	224	219	215	211	206	202	198	193	189	184
	3181	3078	2975	2870	2766	2663	2561	2461	2362	2263	2166	2071	1980	1900
	1.52	1.51	1.49	1.47	1.45	1.43	1.41	1.39	1.37	1.35	1.33	1.32	1.30	1.28
13000 -11.	241	237	233	229	224	220	216	212	207	203	199	195	190	186
	3224	3118	3013	2909	2807	2705	2605	2504	2405	2307	2210	2121	2040	1958
	1.48	1.46	1.45	1.43	1.41	1.39	1.38	1.36	1.34	1.32	1.31	1.29	1.27	1.26
11000 -7.	241	237	233	228	224	220	216	212	208	204	200	196	192	188
	3260	3155	3053	2951	2849	2747	2646	2545	2446	2351	2263	2177	2094	2012
	1.44	1.42	1.41	1.39	1.38	1.36	1.34	1.33	1.31	1.30	1.28	1.27	1.25	1.24
9000 -3.	241	237	233	229	225	221	218	214	210	206	202	198	194	190
	3307	3203	3100	2997	2894	2792	2691	2591	2500	2411	2324	2238	2155	2072
	1.40	1.39	1.37	1.36	1.35	1.33	1.32	1.30	1.29	1.27	1.26	1.25	1.23	1.22
7000 1.	243	239	235	231	227	224	220	216	212	208	205	201	197	193
	3359	3255	3151	3047	2945	2845	2750	2660	2570	2482	2395	2311	2226	2140
	1.37	1.36	1.34	1.33	1.32	1.30	1.29	1.28	1.26	1.25	1.24	1.23	1.21	1.20
5000 5.	244	240	236	233	229	225	222	218	214	211	207	203	200	196
	3409	3305	3203	3102	3005	2913	2821	2731	2642	2555	2468	2381	2296	2220
	1.34	1.33	1.32	1.30	1.29	1.28	1.27	1.26	1.24	1.23	1.22	1.21	1.20	1.19
3000 9.	244	241	237	234	230	227	223	220	216	213	209	206	202	199
	3445	3343	3246	3152	3061	2969	2879	2790	2703	2614	2525	2443	2365	2287
	1.32	1.30	1.29	1.28	1.27	1.26	1.25	1.24	1.23	1.22	1.20	1.19	1.18	1.17

IAS
FF
EPR

1. CHECK MAX CRUISE THRUST CHART ON LRC PAGE FOR EPR LIMIT AND ANTI-ICE CORRECTIONS.
2. ALL WEIGHT-ALTITUDE COMBINATIONS SHOWN HAVE AT LEAST 1.30G MANEUVER MARGIN.

HOLD - FLAPS UP

-33

ALTITUDE / STD TEMP	GROSS WEIGHT - LBS 110200	108000	104000	100000	96000	92000	88000	84000	80000	76000	72000	68000
35000 -54.					221	215	209	202	197	191	186	181
					2657	2547	2430	2309	2173	2022	1881	1746
					2.08	2.05	2.02	1.98	1.93	1.87	1.81	1.75
31000 -46.	243	237	232	226	221	215	210	204	199	193	188	182
	3018	2905	2790	2669	2547	2414	2273	2142	2019	1902	1790	1690
	2.03	2.00	1.98	1.94	1.91	1.87	1.82	1.77	1.73	1.68	1.64	1.60
27000 -38.	244	238	233	227	221	216	210	205	199	193	188	182
	2922	2808	2663	2531	2405	2286	2172	2061	1963	1869	1778	1690
	1.87	1.84	1.80	1.76	1.73	1.69	1.65	1.62	1.58	1.55	1.52	1.49
23000 -31.	240	235	230	224	219	214	208	203	198	193	187	182
	2796	2676	2561	2446	2343	2245	2152	2062	1972	1881	1793	1706
	1.71	1.68	1.65	1.62	1.59	1.56	1.54	1.51	1.48	1.46	1.43	1.40
21000 -27.	237	232	227	222	217	212	207	202	197	192	187	182
	2770	2654	2551	2450	2354	2260	2169	2079	1989	1902	1818	1738
	1.64	1.61	1.59	1.56	1.54	1.51	1.49	1.47	1.44	1.42	1.39	1.37
19000 -23.	234	230	225	220	215	211	206	201	197	192	187	183
	2764	2662	2565	2469	2376	2284	2193	2104	2016	1935	1855	1774
	1.58	1.56	1.54	1.51	1.49	1.47	1.45	1.42	1.40	1.38	1.36	1.34
17000 -19.	234	229	225	220	215	211	206	202	197	193	188	184
	2783	2686	2591	2496	2402	2310	2218	2132	2047	1965	1883	1804
	1.53	1.51	1.49	1.47	1.45	1.43	1.41	1.39	1.37	1.35	1.33	1.31
15000 -15.	233	228	224	219	215	211	206	202	198	193	189	184
	2811	2715	2618	2521	2426	2335	2247	2161	2078	1996	1916	1842
	1.49	1.47	1.45	1.43	1.41	1.39	1.37	1.35	1.34	1.32	1.30	1.28
13000 -11.	233	229	224	220	216	212	207	203	199	195	190	186
	2851	2753	2658	2565	2476	2388	2301	2214	2130	2049	1974	1900
	1.45	1.43	1.41	1.39	1.38	1.36	1.34	1.32	1.31	1.29	1.27	1.26
11000 -7.	233	228	224	220	216	212	208	204	200	196	192	188
	2892	2799	2708	2618	2528	2439	2350	2263	2184	2107	2032	1958
	1.41	1.39	1.38	1.36	1.34	1.33	1.31	1.30	1.28	1.27	1.25	1.24
9000 -3.	233	229	225	221	217	213	209	205	202	198	194	190
	2944	2853	2761	2669	2578	2488	2406	2325	2248	2172	2097	2022
	1.37	1.36	1.35	1.33	1.32	1.30	1.29	1.27	1.26	1.24	1.23	1.22
7000 1.	234	230	226	223	219	215	211	207	204	200	196	192
	2999	2907	2814	2724	2639	2558	2477	2398	2320	2243	2167	2089
	1.34	1.33	1.32	1.30	1.29	1.28	1.26	1.25	1.24	1.23	1.21	1.20
5000 5.	235	231	227	224	220	217	213	209	206	202	198	195
	3054	2963	2877	2793	2710	2629	2549	2469	2390	2311	2232	2151
	1.32	1.30	1.29	1.28	1.27	1.26	1.24	1.23	1.22	1.21	1.20	1.18
3000 9.	235	232	228	225	221	218	214	211	207	204	200	197
	3101	3016	2933	2851	2768	2686	2604	2523	2442	2359	2277	2194
	1.29	1.28	1.27	1.26	1.25	1.24	1.23	1.21	1.20	1.19	1.18	1.17

IAS
FF
EPR

1. CHECK MAX CRUISE THRUST CHART ON LRC PAGE FOR EPR LIMIT AND ANTI-ICE CORRECTIONS.
2. ALL WEIGHT-ALTITUDE COMBINATIONS SHOWN HAVE AT LEAST 1.30G MANEUVER MARGIN.

IOLD - FLAPS UP

-31/-32

ALTITUDE / STD TEMP	GROSS WEIGHT - LBS 110600	120200	130800	139400	150000	160600	170200	178700	187400	197000	206600
35000 -54.		231 2603 2.04	225 2474 2.00	218 2341 1.96	212 2209 1.91	206 2080 1.86	199 1968 1.82	193 1851 1.78	186 1749 1.74	179 1651 1.71	171 1555 1.67
31000 -46.	229 2531 1.89	223 2410 1.85	217 2296 1.82	211 2186 1.78	205 2089 1.75	198 1997 1.72	192 1906 1.69	185 1818 1.65	178 1730 1.62	171 1635 1.59	164 1547 1.55
27000 -38.	221 2431 1.74	215 2336 1.71	209 2244 1.69	203 2155 1.66	197 2069 1.63	191 1977 1.60	184 1887 1.57	178 1803 1.55	171 1722 1.52	165 1641 1.49	160 1559 1.46
23000 -31.	213 2419 1.63	207 2326 1.60	201 2237 1.58	195 2152 1.55	189 2070 1.53	183 1988 1.51	177 1909 1.48	172 1828 1.46	168 1745 1.43	163 1662 1.40	158 1582 1.38
21000 -27.	209 2433 1.57	203 2346 1.55	197 2260 1.53	192 2177 1.51	186 2097 1.49	181 2015 1.46	176 1934 1.44	172 1850 1.42	168 1770 1.39	163 1692 1.37	159 1612 1.34
19000 -23.	205 2459 1.53	199 2375 1.51	194 2293 1.49	188 2210 1.47	184 2127 1.45	180 2043 1.42	176 1960 1.40	172 1880 1.38	167 1802 1.36	163 1724 1.33	159 1645 1.31
17000 -19.	201 2492 1.49	196 2407 1.47	191 2321 1.45	187 2234 1.43	183 2147 1.41	179 2066 1.39	175 1986 1.36	171 1907 1.34	168 1829 1.32	164 1750 1.30	160 1673 1.28
15000 -15.	198 2523 1.45	194 2432 1.43	190 2344 1.41	186 2259 1.39	182 2178 1.37	179 2099 1.35	175 2018 1.33	171 1940 1.31	167 1863 1.30	163 1788 1.28	160 1713 1.26
13000 -11.	198 2557 1.41	195 2470 1.39	191 2386 1.37	187 2303 1.35	184 2220 1.34	180 2138 1.32	176 2056 1.30	172 1980 1.29	169 1905 1.27	165 1831 1.25	161 1758 1.23
11000 -7.	199 2599 1.37	196 2513 1.36	192 2426 1.34	188 2342 1.32	185 2256 1.31	181 2176 1.29	177 2101 1.28	174 2026 1.26	170 1952 1.25	166 1879 1.23	162 1807 1.21
9000 -3.	200 2641 1.34	197 2554 1.32	193 2467 1.31	190 2384 1.30	186 2306 1.28	182 2229 1.27	179 2154 1.25	175 2079 1.24	172 2006 1.22	168 1933 1.21	164 1862 1.20
7000 1.	202 2690 1.31	198 2604 1.30	195 2524 1.28	191 2445 1.27	188 2366 1.26	184 2288 1.24	181 2212 1.23	177 2135 1.22	174 2059 1.20	170 1986 1.19	167 1913 1.18
5000 5.	203 2748 1.28	199 2666 1.27	196 2586 1.26	193 2504 1.25	189 2424 1.23	186 2344 1.22	183 2265 1.21	179 2187 1.20	176 2110 1.19	172 2035 1.17	169 1962 1.16
3000 9.	204 2797 1.26	200 2714 1.25	197 2631 1.24	194 2548 1.23	191 2465 1.22	187 2384 1.20	184 2304 1.19	181 2224 1.18	178 2146 1.17	174 2071 1.16	171 1996 1.15

IAS
FF
EPR

1. CHECK MAX CRUISE THRUST CHART ON LRC PAGE FOR EPR LIMIT AND ANTI-ICE CORRECTIONS.
2. ALL WEIGHT-ALTITUDE COMBINATIONS SHOWN HAVE AT LEAST 1.30G MANEUVER MARGIN.

HOLD - FLAPS UP

-10

ALTITUDE / STD TEMP	GROSS WEIGHT - LBS 08860	08860	08860	08860	08860	07860	07660	07460	07260	07060	06860	06660	06460	06260	06060
35000 -54.	224	220	217	214	212	209	206	204	201	198	195	192	189	186	183
	2633	2481	2389	2305	2221	2137	2054	1972	1893	1822	1765	1709	1654	1603	1553
	2.05	2.01	1.97	1.94	1.91	1.88	1.85	1.82	1.79	1.76	1.74	1.72	1.70	1.68	1.65
31000 -46.	222	219	217	214	211	208	206	203	200	198	195	192	190	187	184
	2292	2219	2160	2108	2055	2002	1950	1899	1849	1799	1750	1702	1654	1606	1558
	1.80	1.78	1.76	1.74	1.72	1.70	1.69	1.67	1.65	1.63	1.62	1.60	1.58	1.56	1.54
27000 -38.	221	218	216	214	211	209	206	204	202	199	197	193	190	186	182
	2232	2182	2133	2084	2035	1989	1941	1895	1850	1805	1761	1709	1653	1600	1548
	1.66	1.65	1.64	1.62	1.61	1.59	1.58	1.56	1.54	1.53	1.51	1.49	1.48	1.46	1.44
23000 -31.	222	220	218	215	213	209	206	203	200	196	193	190	187	183	180
	2239	2193	2147	2102	2055	2002	1947	1895	1843	1792	1742	1693	1648	1604	1561
	1.56	1.54	1.53	1.52	1.50	1.49	1.47	1.46	1.45	1.43	1.42	1.40	1.39	1.38	1.36
21000 -27.	223	220	217	214	210	207	204	201	198	195	192	189	186	183	179
	2262	2209	2158	2107	2053	2003	1954	1904	1856	1811	1768	1725	1683	1641	1598
	1.51	1.50	1.48	1.47	1.46	1.44	1.43	1.42	1.40	1.39	1.38	1.37	1.36	1.34	1.33
19000 -23.	221	218	215	212	209	206	203	200	197	194	191	188	185	182	179
	2273	2220	2170	2121	2072	2024	1979	1939	1892	1849	1806	1762	1718	1672	1626
	1.46	1.45	1.44	1.43	1.41	1.40	1.39	1.38	1.37	1.36	1.35	1.34	1.32	1.31	1.30
17000 -19.	219	216	213	210	208	205	202	199	196	193	191	188	185	182	179
	2291	2242	2195	2148	2105	2056	2011	1966	1921	1877	1830	1783	1738	1693	1648
	1.42	1.41	1.40	1.39	1.38	1.37	1.36	1.35	1.34	1.33	1.32	1.30	1.29	1.28	1.27
15000 -15.	218	215	212	210	207	204	201	199	196	193	191	188	185	183	180
	2323	2278	2227	2180	2134	2088	2042	1995	1947	1901	1856	1812	1768	1725	1681
	1.38	1.37	1.36	1.36	1.35	1.34	1.33	1.32	1.31	1.30	1.29	1.28	1.27	1.26	1.25
13000 -11.	217	214	212	209	206	204	201	199	196	193	191	188	186	183	181
	2357	2309	2262	2215	2167	2118	2070	2025	1980	1936	1894	1850	1806	1763	1719
	1.35	1.34	1.33	1.33	1.32	1.31	1.30	1.29	1.28	1.27	1.26	1.25	1.24	1.23	1.22
11000 -7.	216	214	211	209	206	204	201	199	196	194	191	189	187	184	182
	2390	2340	2291	2244	2198	2153	2108	2064	2020	1977	1933	1891	1848	1805	1762
	1.32	1.31	1.31	1.30	1.29	1.28	1.27	1.26	1.25	1.25	1.24	1.23	1.22	1.21	1.20
9000 -3.	216	214	211	209	207	204	202	200	197	195	192	190	188	185	183
	2425	2379	2333	2288	2244	2200	2156	2112	2068	2024	1981	1938	1895	1854	1814
	1.29	1.29	1.28	1.27	1.26	1.26	1.25	1.24	1.23	1.22	1.22	1.21	1.20	1.19	1.19
7000 1.	216	214	212	210	207	205	203	200	198	196	194	191	189	187	184
	2479	2433	2387	2342	2298	2253	2208	2163	2118	2074	2030	1991	1950	1914	1873
	1.27	1.26	1.25	1.25	1.24	1.23	1.23	1.22	1.21	1.20	1.20	1.19	1.18	1.18	1.17
5000 5.	217	215	213	210	208	206	204	202	199	197	195	193	191	188	186
	2534	2487	2441	2395	2350	2304	2258	2212	2171	2130	2089	2053	2013	1973	1933
	1.25	1.24	1.23	1.23	1.22	1.21	1.21	1.20	1.19	1.19	1.18	1.18	1.17	1.16	1.16
3000 9.	218	216	214	211	209	207	205	203	201	199	197	195	193	190	188
	2575	2528	2481	2434	2387	2344	2304	2263	2227	2185	2146	2106	2066	2028	1991
	1.22	1.22	1.21	1.21	1.20	1.19	1.19	1.18	1.18	1.17	1.17	1.16	1.16	1.15	1.15

IAS
FF
EPR

1. CHECK MAX CRUISE THRUST CHART ON LRC PAGE FOR EPR LIMIT AND ANTI-ICE CORRECTIONS.
2. ALL WEIGHT-ALTITUDE COMBINATIONS SHOWN HAVE AT LEAST 1.30G MANEUVER MARGIN.

HOLD - FLAPS UP

-51

ALTITUDE / STD TEMP	GROSS WEIGHT - LBS 120000	116000	112000	108000	104000	100000	096000	092000	088000	084000	080000	076000	072000	068000
35000 -54.					228	225	220	214	208	204	200	196	193	189
					2990	2814	2654	2514	2378	2240	2110	1986	1868	1755
					2.19	2.14	2.09	2.05	2.00	1.95	1.90	1.85	1.80	1.75
31000 -46.	243	241	236	231	227	223	219	214	209	205	201	197	193	190
	3418	3245	3100	2964	2825	2689	2556	2426	2301	2179	2059	1949	1844	1741
	2.15	2.10	2.06	2.02	1.98	1.94	1.90	1.85	1.81	1.77	1.73	1.69	1.65	1.61
27000 -38.	240	236	232	228	224	220	216	212	208	204	200	196	192	189
	3252	3112	2976	2848	2724	2601	2479	2361	2249	2142	2034	1927	1827	1730
	1.95	1.91	1.87	1.84	1.80	1.77	1.73	1.70	1.66	1.63	1.59	1.56	1.53	1.49
23000 -31.	241	237	233	228	224	220	216	212	208	205	201	197	193	189
	3159	3036	2912	2793	2679	2566	2453	2344	2239	2137	2039	1942	1847	1754
	1.77	1.74	1.71	1.69	1.66	1.63	1.60	1.57	1.54	1.51	1.49	1.46	1.43	1.41
21000 -27.	240	236	232	228	224	220	216	212	208	204	200	196	192	188
	3143	3024	2907	2792	2675	2566	2460	2356	2256	2157	2058	1961	1865	1771
	1.70	1.67	1.65	1.62	1.59	1.57	1.54	1.52	1.49	1.47	1.44	1.42	1.39	1.36
19000 -23.	241	236	232	228	224	220	216	212	208	204	201	197	193	189
	3145	3027	2907	2798	2689	2583	2481	2380	2280	2180	2079	1982	1889	1799
	1.64	1.61	1.59	1.56	1.54	1.52	1.49	1.47	1.45	1.42	1.40	1.37	1.35	1.33
17000 -19.	240	236	232	228	224	220	216	212	208	204	200	196	193	189
	3135	3024	2914	2807	2703	2600	2498	2396	2294	2193	2096	2002	1914	1830
	1.58	1.56	1.53	1.51	1.49	1.47	1.45	1.43	1.40	1.38	1.36	1.34	1.32	1.30
15000 -15.	239	235	231	227	223	219	215	211	207	204	200	196	192	188
	3147	3040	2935	2830	2726	2622	2517	2414	2313	2216	2122	2038	1953	1877
	1.53	1.51	1.49	1.47	1.45	1.43	1.41	1.39	1.36	1.34	1.32	1.30	1.29	1.27
13000 -11.	240	236	232	228	224	220	216	212	208	204	200	196	192	188
	3177	3071	2964	2858	2752	2646	2543	2442	2346	2256	2167	2087	2012	1939
	1.48	1.46	1.44	1.43	1.41	1.39	1.37	1.35	1.33	1.31	1.29	1.28	1.26	1.24
11000 -7.	239	235	231	227	223	219	215	211	207	203	200	196	192	188
	3206	3097	2989	2881	2775	2673	2574	2482	2394	2306	2225	2150	2076	2004
	1.44	1.42	1.40	1.39	1.37	1.35	1.33	1.32	1.30	1.28	1.27	1.25	1.24	1.22
9000 -3.	239	235	231	227	223	219	215	211	206	203	199	195	191	187
	3229	3119	3018	2908	2808	2715	2624	2532	2449	2370	2292	2220	2141	2059
	1.40	1.38	1.37	1.35	1.33	1.32	1.30	1.29	1.27	1.26	1.24	1.23	1.22	1.20
7000 1.	239	235	231	227	223	219	215	211	207	203	200	196	192	188
	3272	3160	3058	2962	2869	2776	2690	2608	2528	2453	2373	2290	2207	2121
	1.36	1.35	1.33	1.32	1.30	1.29	1.28	1.26	1.25	1.24	1.22	1.21	1.20	1.18
5000 5.	240	236	232	228	224	220	216	212	208	204	200	196	192	189
	3313	3215	3121	3026	2938	2855	2772	2697	2613	2528	2444	2357	2270	2181
	1.33	1.32	1.30	1.29	1.28	1.26	1.25	1.24	1.23	1.21	1.20	1.19	1.18	1.16
3000 9.	240	236	232	228	224	220	216	212	208	204	200	196	192	189
	3365	3268	3179	3094	3011	2929	2851	2764	2676	2587	2498	2410	2320	2229
	1.30	1.29	1.28	1.27	1.25	1.24	1.23	1.22	1.21	1.19	1.18	1.17	1.16	1.15

IAS
FF
EPR

1. CHECK MAX CRUISE THRUST CHART FOR EPR LIMIT AND ANTI-ICE CORRECTIONS
2. ALL WEIGHT-ALTITUDE COMBINATIONS SHOWN HAVE AT LEAST 1.30G MANEUVER MARGIN.