REPORT FAA-EQ-76-6
MTR-7289

FAA INTEGRATED NOISE MODEL DATA BASE

AUGUST 1976

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Prepared for

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Office of Environmental Quality
Washington, D.C. 20591

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
FAA-EQ-76-6		

4. Title and Subtitle	5. Report Date
FAA Integrated Noise Model Data Base	August 1976
	6. Performing Organization Code: W-47
7. Author(s): Peter A. Mansbach	8. Performing Organization Report No.: MTR-7289
9. Performing Organization Name and Address: THE MITRE CORPORATION/METREK DIVISION, 1820 DOLLEY MADISON BOULEVARD, MCLEAN, VIRGINIA 22101	10. Work Unit No. (TRAIS)
	11. Contract or Grant No.: DOT-FA69NS-162
12. Sponsoring Agency Name and Address: DEPARTMENT OF TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION, OFFICE OF ENVIRONMENTAL QUALITY, WASHINGTON, D.C. 20591	13. Type of Report and Period Covered
	14. Sponsoring Agency Code: DOT/FAA

15. Supplementary Notes

16. Abstract

The FAA Integrated Noise Model computer program INMPROG has been made available to the public for computing a variety of noise indices in the vicinity of airports. One component of this program package is a data library which provides both acoustic and operational data for certain standard aircraft types and flight procedures.

This paper presents the data used to construct the supplied program library. It thus provides the information needed to reproduce a particular analysis. Further, it provides a necessary reference point for the user who specifies his own operational procedures.

17. Key Words	18. Distribution Statement
	Document is available to the public through the National Technical Information Service, Springfield, Virginia 22151

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
UNCLASSIFIED	UNCLASSIFIED	102	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

ABSTRACT

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This paper presents the data used to construct the supplied program library. It thus provides the information needed to reproduce a particular analysis. Further, it provides a necessary reference point for the user who specifies his own operational procedures.

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1. INTRODUCTION

The FAA Integrated Noise Model (INM) provides a conceptually simple method for characterizing aircraft noise near airports. It includes a determination of the total time that the sound level exceeds certain thresholds, and also the equivalent A-weighted sound level, L_{eq}, and the day-night average sound level, L_{dn}, at a number of points surrounding a particular airport. Thus, several methodologies are integrated into a single model which provides a very complete picture of the noise environment.

The computer program INMPROG is available to provide all of the information required. Times-above-threshold are computed using six different thresholds, from 65 dBA to 115 dBA in 10 dBA increments. In addition to the total exposure per day, the exposures occurring during the more sensitive evening hours (7 P.M. - 10 P.M.) and night hours (10 P.M. - 7 A.M.) are presented separately. The equivalent A-weighted sound level L_{eq}, and the day-night average sound level L_{dn}, are also computed.

Noise data for the common aircraft types are provided within the program. For those aircraft which may be retrofitted to meet FAR-36 requirements, data for both "standard" aircraft and aircraft equipped with quiet nacelles are included. Certain standard operational procedures - specifically takeoffs utilizing Air Transport Association (ATA) or National Business Aircraft Association (NBAA) procedures at a number of gross weights, and landings with maximum certificated flap settings - are assigned operational codes. These codes access a library of pre-computed noise exposure grids available to the program. Other operational procedures may be specified by the user. These cause additional noise exposure grids to be generated on a temporary basis.

This paper presents the data used to construct the supplied program library. Both acoustic data and operational data (thrust, altitude, and speed profiles) are included. It thus provides the information necessary to reproduce a particular analysis.

Furthermore, the user who inputs his own operational procedures - for example to define a noise abatement alternate to a given scenario - often needs access to the baseline data, so that his own input will be consistent with the library data. Thus, for example, in comparing a standard ATA takeoff with a deep-cutback takeoff, it is desirable that the same profiles be used, in both cases, prior to cutback, so that the only variable is the cutback procedure itself.

Additionally, the user who acquires improved acoustic data may determine how different these are from the supplied data, and thus decide for which entries it is desirable to create his own library. He also has the profile data readily available.

It is intended that this document supplement the User's Guide.* Instructions for creating user-generated library entries are given there.

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* Mansbach, P. A. and Maginnis, F. X., "FAA Integrated Noise Model - User's Guide", FAA-EQ-76-2, The Mitre Corporation, March, 1976.

2. ACOUSTIC DATA

For each aircraft type, a table giving noise levels in dB(A) as a function of slant distance and engine power setting is required. These tables are assembled in the acoustic data library which is supplied with the program. This library (ddname ACDFILE) is one of the inputs to the NOISLIB noise exposure grid generator program, which is part of the INMPROG package. The procedure for adding tables and generating data entries is described in the User's Guide (op. cit.).

The acoustic data itself is presented in Appendix A. Each table has a header block listing the acoustic data code (to be referenced by the profile data), the aircraft and engine, and the excess ground attenuation (EGA) class. Only three EGA classes are presently recognized: 2-3 engine low bypass, 4 engine low bypass, and high bypass.* Different EGA curves are used for takeoff and for landing.

The table lists slant distances, in feet, on the left. Engine power settings are listed across the top. At each intersection of slant distance and power setting is the noise level, in dB(A), for that combination.

The units in which the power settings are expressed are, in general, printed directly above the settings themselves. Four different units have been used in the supplied library, depending on the available data. Most common is the corrected net thrust per engine, F_n/δ ('FN/DELTA'), in lbs. This is the net thrust divided by the ambient pressure relative to standard conditions; $\delta = P/P_o$. For the high bypass engines, referred fan speed is used. This is the fan speed, in rpm, divided by the square root of the fan inlet temperature relative to standard conditions. Referred fan speed is $N_1/\sqrt{\theta_{T_2}}$ ('N1/SQRT(TH)'), where $\theta_{T_2} = T_2/T_o$.

Several aircraft are presented in terms of "percent thrust." This is actually a nominal thrust: takeoff power is taken to be 100%; cutback power, 85%; and approach power, 40%. Note that

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* The EGA class may be entered on a card following the ACOUSTIC card (see User's Guide). The required format is the characters EGA (upper case) in columns 1-3, and the EGA class - 1,2, or 3 - in column 11. In the absence of an EGA card the program will use EGA = 1 (2-3 engine low bypass).

in fact the actual power settings would be different on any specific aircraft. Users requiring actual thrust settings must create their own entries.

For a few aircraft, power settings are listed simply as "power", with values 1, 2, and perhaps 3. These data are the least reliable, having been extrapolated from a single distance measurement by assuming a nominal level vs. distance decay. In these listings, 1 represents approach power, 2 represents cutback power, and 3 represents takeoff power. Where only 1 and 2 are given, these are approach and takeoff power respectively.

Interpolation and extrapolation is performed by the programs, as needed. For this purpose, the sound pressure level in dB(A) is assumed to vary linearly with engine setting, and logarithmically with distance (i.e. $\propto \log d$).

Sources for the data are presented in Table 2-1.

TABLE 2-1
SOURCES OF AIRCRAFT ACOUSTIC DATA

Boeing: B. G. Williams and R. Yates, Aircraft Noise Definition, Report No. FAA-EQ-73-7, 2-5, Prepared for Federal Aviation Administration by Boeing Commercial Airplane Company, December 1973.

BB+N: D. E. Bishop, J. F. Mills, J. M. Beckman, Sound Exposure Level Versus Distance Curves for Civil Aircraft, Bolt, Beranek & Newman, October, 1974 (for GA jets); D. E. Bishop, A. P. Hays, Handbook for Developing Noise Exposure Contours for General Aviation Airports, Bolt, Beranek & Newman, October 1975 (for GA props).

FAA: Information furnished by the FAA Office of Environmental Quality.

Lockheed: N. Shapiro, et al, Commercial Aircraft Noise Definition: L-1011 Tristar, Report No. FAA-EQ-73-6, Prepared for Federal Aviation Administration by Lockheed California Company, September 1974.

McDonnell-Douglas: J. S. Goodman, et al, Aircraft Noise Definition: Phase 1 - Analysis of Existing Data for the DC-8, DC-9, and DC-10 Aircraft, Report No. FAA-EQ-73-5, Prepared for Federal Aviation Administration by Douglas Aircraft Company, August 1973.

The data from these sources was applied in the following manner.

Aircraft	Source	Method
Boeing 707 727 737 747	Boeing	Read from table.
DC-8-55/61,63 DC-9 DC-10	McDonnell-Douglas	Read from table.
DC-8 retrofit DC-9 retrofit		Douglas data for the baseline aircraft were adjusted by a delta equal to (baseline-retrofit) for the Boeing Aircraft with the same engines.
DC-8-30	FAA	The curve shape (dBA vs. distance) of the DC-8-63 was adjusted in height to agree with the single data point at each engine setting.
L-1011	Lockheed	Read from table.
GAJET 1,2,3 GAPRP 1,2	BB+N	SEL tables were converted to dB(A) using dBA=SEL-10 log d + 10 log v - C_n ($C_n = \sqrt{\pi}\,\Gamma(\frac{n}{6} - \frac{1}{2}) / \Gamma(\frac{n}{6})$, n=SEL(400')-SEL(800') + 3
BAC 1-11	FAA	The curve shape (dBA vs. distance) of the B-737-200 was adjusted in height to agree with the single data point at each engine setting.
CV-580	FAA	Single data point extrapolated using 8 dBA per doubling of distance.

3. PROFILE DATA

For each aircraft type and weight and for each operational procedure a profile is required. This profile specifies the aircraft's altitude, engine power setting, and speed as a function of downrange distance. It also specifies an acoustic data table which is to be used, together with the profile, to generate the noise exposure grid.

The INMPROG program package includes a noise library containing precomputed noise exposure grids for a large set of aircraft, at a variety of takeoff weights, for standard ATA (or NBAA) takeoff procedures; and for maximum certificated flap landings. This library (ddname NOISLIB) is one of the required inputs to the main INM program module.

The profiles which were used to generate this library appear in Appendix B. (Formatting is discussed in Sections 3 and 5.5 of the User's Guide, op.cit.). Each profile begins with a PROFILE card,* on which appears the aircraft code, acoustic data code, and type of operation. The aircraft code is a four-character designation to be used for the specific aircraft/engine/weight/operational procedure being defined. The acoustic data code references one of the tables in Appendix A, and the type of operation is either T (takeoff) or L (landing).

The AIRCRAFT and PROCDES cards are informational only, documenting the aircraft type, weight, and operational procedure being defined.

The profile itself is defined by a series of POINT cards. Each POINT card specifies, in order, the downrange distance, altitude, engine power settings, and aircraft speed. In addition, for the user's convenience, the gradient of the segment ending at that point is printed alongside; for example GRAD = .030 represents a 3% climb (or descent) gradient.

Downrange distances are in feet, neasured from brake release for takeoffs, and from touchdown for approaches. (Note that approaches are coded "in reverse", i.e. from the touchdown point back up the approach path). Altitudes are in feet above the runway level; engine power settings are in units appropriate to the acoustic data table, and speeds are in knots indicated air speed.

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* In the listing in Appendix B, each line represents one card.

The flight path is defined by connecting the points with straight line segments (linear interpolation on all the variables). While not exact, the errors introduced by using these linear segments are negligible when translated into noise levels on the ground. Where profiles terminate, they are extended to 125,000 ft. or 65 dBA (whichever comes first) by linear extrapolation of the last two points. One exception to the linear interpolation is provided: if the speed at the first point is exactly 0, the first segment is assumed to be a ground run at uniform acceleration, i.e. $v \propto t \propto \sqrt{d}$ (instead of the linear $v \propto d$).

3.1 Procedure Definitions

3.1.1 ATA (or NBAA) Takeoff

The ATA recommended takeoff procedure as used in the supplied data library is defined by five segments. These segments - ground run, takeoff, cutback, acceleration, and climbout - are defined in Table 3-1 and illustrated in Figure 3-1.

The ground run extends to the liftoff point, although distance to 35 ft. has sometimes been used as the length of this segment, with little effect on the resulting noise levels. The takeoff segment extends to 1500 ft. altitude (above the runway), and is flown at a speed of v_2 + 10 knots (v_2 + 15 for the B-737), where v_2 signifies "takeoff safety speed". At 1500 ft. a cutback to maximum continuous limiting thrust (MCLT) is initiated; aircraft speed is maintained at the original v_2 + 10. MCLT is maintained for the remainder of the profile. At 3000 ft. altitude the acceleration phase is begun, and flaps are retracted according to schedule. An acceleration of 1 knot/sec (indicated) has been assumed. Upon reaching 250 knots and in a clean configuration, climbout at constant speed is resumed.

Although climbout normally terminates according to local ATC procedures, it has been extended to 125,000 ft. from brake release (about 25 miles) in order to have some data - admittedly uncertain - available to the program. In general, contours close well before these distances; however, noise from the aircraft at these distances may still provide some small contribution to the totals closer in, particularly in computing the duration of noise above 65 dBA.

Note that two points are required to define the cutback. The first point specifies that takeoff power be maintained until 1500 ft. altitude; the second specifies the cutback power which must be achieved shortly thereafter. In the supplied profiles the achievement of cutback has been specified to be 1000 ft.

TABLE 3-1
ATA TAKEOFF

SEGMENT NUMBER	SEGMENT NAME	ENGINE SETTING	FLAP SETTING	SPEED	END OF SEGMENT
1	Ground Run	Takeoff Power	Takeoff Flaps	Starts at 0	Liftoff
2	Takeoff	Takeoff Power	Takeoff Flaps	V_2 + 10	1500 ft. Altitude
3	Cutback	Max Continuous Limiting Thrust	Optimum	Same	3000 ft. Altitude
4	Acceleration	Same	Retract Flaps on Schedule	Accelerate to 250	250 Knots
5	Climbout	Same	Clean	250	Open-ended (in Practice Depends on ATC Procedures)

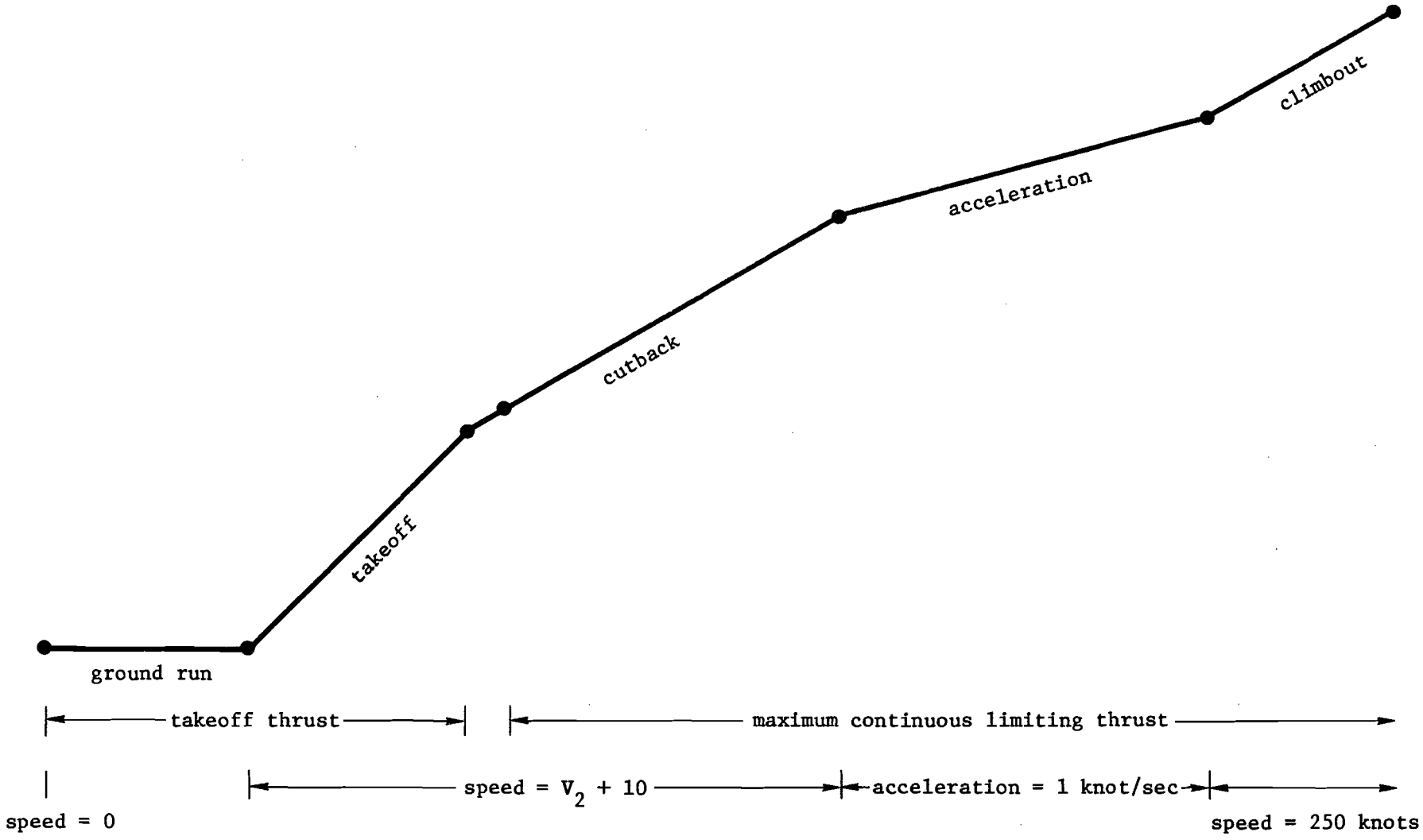

FIGURE 3-1
ATA TAKEOFF

further downrange. This provides a smooth transition in thrust lasting roughly four seconds. Although four seconds is somewhat excessive, this assumption results in realistically smoother contours, minimizing the anomaly of abrupt changes in the contours at cutback.

It is understood that standard piloting technique is to fly each segment with the throttle set to a constant engine pressure ratio (EPR) or a constant fan speed (N_1). Without introducing much error, we have used constant corrected net thrust (F_n/δ), or constant referred fan speed ($N_1/\sqrt{\theta}$), respectively, since these are the parameters required by the available noise tables.

Quiet nacelle or retrofit aircraft have been assumed to have the same performance as the non-retrofitted aircraft of the same type and weight.

The NBAA takeoff procedure as used in the data base is identical to the ATA procedure (Table 3-1), consistent with available data on profiles of business jet aircraft.

For all propeller-driven aircraft only the ground run and takeoff segments were used. Additional data on performance and procedures was not available, and in any case the contribution of propeller aircraft to the noise near any jet airport is minimal.

3.1.2 Max Flaps Approach

All the approach procedures supplied in the program library are designated "max flaps approach". The aircraft have been assumed to follow a 3° glide slope for the entire approach; i.e. there is no level flight segment and no intercept of the glide slope. In most airport analyses the contours due to approaches are limited in extent to the final descent portion of the approach. (Where this is not the case, the user must create his own library entries based on the local flight procedures).

Maximum certificated landing flaps have been assumed for the entire approach, with the appropriate engine power settings being specified. Often an approach is conducted at a reduced flap setting (and thus a lower power setting and less noise), at least until the final few miles. The approach procedures in

the supplied library are therefore conservative, i.e. they tend to overestimate the noise. Also, maximum landing weight has been used in obtaining thrust settings, again resulting in conservative noise levels.

Approach speeds of 1.3 v_s have been used in all cases (where v_s is the stalling speed), and zero wind conditions have been assumed.

The net thrust (F_N) must be held constant throughout the approach, in order to maintain a constant glide slope and indicated airspeed. The acoustic data is defined in terms of corrected net thrust (F_N/δ) or referred fan speed ($N_1/\sqrt{\theta}$), and hence these quantities, which appear in the profile tables, do vary with altitude.

3.2 Sources of Performance Data

3.2.1 General

The sources of the performance data used in constructing the profiles are presented in Table 3-2. Wherever possible, performance data taken from thenoise definition reports was used in preference to other sources.

The aircraft covered by these noise definition reports are listed in Table 3-3, together with the specific model of both aircraft and engine. Also listed are the flap settings which were used to select the appropriate performance charts. The engine pressure ratio (EPR) corresponding to the corrected net thrust used in the profiles is given at liftoff and again at cutback. (For the high bypass engines, percent rated fan speed is given, as is appropriate.)

The acceleration and climbout gradients require special discussion. Climbout gradients for the Douglas aircraft were available from the noise definition reports, and these were used. (This data was taken for 4000 ft. altitude.) For the Boeing aircraft some data was obtained from the Wyle study (see references in Table 3-2). Not all the aircraft types and weights were available, however; also there appeared to be some irregularities in the data. Simple aerodynamic theory provided a method of smoothing the data and of extrapolating data to different aircraft weights.

TABLE 3-2
SOURCES OF PERFORMANCE DATA

Aircraft Type	Ground Run	Takeoff	Cutback	Acceleration	Climbout	Landing
CV580	FAA**	FAA				FAA
B-737-200	N.D.R.*	N.D.R.	N.D.R.	Wyle + Extrapolation+	Wyle + Extrapolation	N.D.R.
DC-9-10 DC-9-30	N.D.R.	N.D.R.	N.D.R.	Wyle + Extrapolation	N.D.R.	N.D.R.
BAC 1-11	FAA	FAA	FAA	Wyle(same tables as DC-9-30)	Wyle(same tables as DC-9-30)	FAA
727-100 727-200	N.D.R.	N.D.R.	N.D.R.	FAA + Extrapolation	Wyle + Extrapolation	N.D.R.
L-1011	N.D.R.	N.D.R.	Thrust obtained from Lockheed;gradients used DC-10-10 data.	Used DC-10-10 data	Used DC-10-10 data	N.D.R.
DC-10-10 DC-10-40	N.D.R.	Fan speed obtained by comparing takeoff gradient (N.D.R.) with cutback gradient chart (N.D.R.)	Thrust cutback =2.5% of rated N_1, per Lockheed. Gradient from N.D.R.	Wyle + Extrapolation. (DC-10-30 data was used for the DC-10-40)	N.D.R.	N.D.R.
707-120	N.D.R.	N.D.R.	N.D.R.	Wyle + Extrapolation	Wyle + Extrapolation	N.D.R.
707-320	N.D.R.	N.D.R.	N.D.R.	Wyle DC-8-55 data at same T/W ratio, + Extrapolation	DC-8-55 N.D.R. data using F_n/δ for 707, + extrapolation	N.D.R.
CV-880	Wyle(same tables as DC-8-30)	Wyle	Wyle	Wyle	Wyle	FAA
DC-8-30	Wyle	Wyle	Wyle	Wyle	Wyle	FAA
DC-8-55/61	N.D.R.	N.D.R.	N.D.R.	Wyle + Extrapolation.	N.D.R.	N.D.R.
DC-8-63	N.D.R.	N.D.R.	N.D.R.	DC-8-55 gradients increased by an amount equal to the increase in the climbout gradients	N.D.R.	N.D.R.
747-100 747-200	N.D.R.	N.D.R.	N.D.R.	Wyle(747-200 data used for both)	Wyle	N.D.R.
G.A. Jets	FAA	FAA	FAA+HCI	HCI	HCI	-
G.A. Props -						
Typical	Piper	Piper	-	-	-	-
Cessna,N.A.	FAA	FAA	-	-	-	-

*Noise Definition Report. See references, listed by manufacturer

** References

Boeing: B. G. Williams and R. Yates, Aircraft Noise Definition, Report No. FAA-EQ-73-7, 2-5, Prepared for Federal Aviation Administration by Boeing Commercial Airplane Company, December 1973.

FAA: Information furnished by the FAA Office of Environmental Quality.

HCI: D. C. Gray, Results of Noise Surveys of Seventeen General Aviation Type Aircraft, FAA-EQ-73-1, Prepared for FAA by Hydrospace-Challenger, Inc., December 1972.

McDonnell-Douglas: J. S. Goodman, et al, Aircraft Noise Definition: Phase 1 - Analysis of Existing Data for the DC-8, DE-9, and DC-10 Aircraft, Report No. FAA-EQ-73-5, Prepared for Federal Aviation Administration by Douglas Aircraft Company, August 1973.

Wyle: C. Bartell, et al, Airport Noise Reduction Forecast, Volume II, DOT-TST-75-4, Prepared for DOT by Wyle Laboratories, October 1974.

+ Extrapolation techniques are discussed in the text.

TABLE 3-3
TAKEOFF AND CUTBACK PARAMETERS

Aircraft	Engine	Takeoff Flaps	Takeoff Thrust (EPR or % N1)	Cutback Flaps	Cutback Thrust at 1500 ft
B-737-200	JT8D-7	5°	1.93	1°	1.85
DC-9-10	JT8D-7	20°	1.95	20°	1.85
DC-9-30	JT8D-9	5°	2.00	0°	1.85
B-727-100	JT8D-1	15°	1.90	15°	1.83
B-727-200	JT8D-9	15° up to 160K lbs. 25° over 170K lbs.	1.97	15° 15°	1.85
L-1011	RB.211-22C	22°	93%N1	22°	90.5%N1
DC-10-10	CF6-6D	10°	98%N1	10°	95.5%N1
DC-10-40	JT9D-20	15°	90%N1	15°	87.5%N1
B-707-120B	JT3D-3	30°	1.74	30°	1.61
B-707-320B	JT3D-3B	14°	1.82	14°	1.69
DC-8-55/61	JT3D-3B	25°	1.85	15°	1.60
DC-8-63	JT3D-7	25°	1.85	12°	1.60
B-747-100D	JT9D-7W	10°	1.47	10°	1.30
B-747-200B	JT9D-7W	10°	1.47	10°	1.30

3.2.2 Extrapolation Techniques

The following two aerodynamic equations were found to be useful:

$$\tan\gamma = \frac{T}{W} - \frac{D}{L} \qquad (A)$$

$$\sin\gamma = \frac{T - D}{W} \qquad (B)$$

Both are for constant indicated airspeed.

T = thrust, W = weight, D = drag, L = lift (all in lbs);

γ = climb angle. The climb gradient G is defined by

$G = \tan\gamma$; $G \sim \sin\gamma$ also, for the small angles of interest.

If the ratio D/L is constant, then (A) can be rewritten as

$$G_2 - G_1 = T\left(\frac{1}{W_2} - \frac{1}{W_1}\right) \qquad (A')$$

If D alone is constant, then (B) can be rewritten as

$$G_2 - G_1 = \left(\frac{W_1}{W_2} - 1\right) G_1 \qquad (B')$$

Comparison with cutback segment data shows that (A') is an excellent predictor for this segment. For the climbout segment, however, the actual gradients (where available) were about midway between the values predicted by (A') and (B'). Where climbout gradients had to be extrapolated, therefore, both (A') and (B') were used, and the results averaged.

For the acceleration segment, a portion of the thrust provides the acceleration (according to $F = ma = W\frac{a}{g}$), and only the remaining thrust is available to overcome drag and to provide climb. Equations (A) and (B) must therefore be modified by replacing T with $T - W\frac{a}{g}$. The resulting expressions were found to be very poor predictors of the acceleration segment data available, presumably because flap retraction schedules and speed variations cause the drag to vary widely during the acceleration. The Wyle report was the only source of acceleration segment gradient data available.

For want of better techniques, the Wyle data was smoothed, and extrapolated by comparison with the climbout data.

APPENDIX A

ACOUSTIC DATA

CODE: 737278
AIRCRAFT: B-737-200
ENGINE: JT8D-1/7 (BASELINE)
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, CBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 3980	5030	6130	9480	12190
200	102.80	103.80	104.70	108.50	115.50
317	98.30	99.00	100.00	104.20	111.20
502	92.70	93.90	95.00	99.60	106.90
796	87.00	86.80	89.30	94.90	102.10
1262	80.80	82.00	83.70	90.00	97.30
2000	74.10	75.60	78.20	85.00	92.20
3170	67.80	68.90	72.80	79.50	86.70
5024	61.00	62.90	67.00	73.40	80.70
7962	54.60	56.20	60.30	66.90	74.10
12619	48.00	49.00	53.30	60.20	66.80

CODE: 737270
AIRCRAFT: B-737-200 QN
ENGINE: JT8D-1/7 QN
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, CBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 4010	5060	6260	9760	11880
200	98.10	98.50	101.20	108.10	114.40
317	93.30	93.60	97.10	103.90	110.30
502	87.70	88.70	92.80	99.40	106.00
796	81.70	83.90	88.10	94.90	101.30
1262	76.30	79.00	83.30	90.00	96.50
2000	71.00	74.00	78.20	85.20	91.40
3170	65.50	68.60	72.80	79.80	85.80
5024	60.00	63.00	67.00	74.00	79.90
7962	53.30	56.10	60.30	67.30	73.00
12619	46.20	49.00	53.20	60.60	65.90

CODE: 737290
AIRCRAFT: B-737-200 QN
ENGINE: JT8D-9/-15
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 4180	5370	6120	9220	12770	13480
200	97.80	100.40	101.00	106.40	116.60	118.40
400	89.80	93.00	94.20	99.80	110.20	112.00
600	85.00	88.00	90.20	95.60	106.20	107.80
1000	79.80	82.80	85.00	90.60	101.00	102.60
2000	72.40	75.60	77.80	83.20	93.40	94.80
4000	64.20	67.40	69.40	74.80	84.80	86.00
6000	59.20	62.00	64.00	69.40	79.20	80.40
10000	51.80	54.60	56.80	61.80	71.20	72.40

CODE: DC9378
AIRCRAFT: DC-9-30
ENGINE: JT8D-7
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 4000	5000	6000	8000	10000	12000
200	102.20	103.00	104.00	106.70	110.00	114.30
317	97.30	98.00	99.30	102.00	106.10	109.80
502	92.30	93.40	94.70	97.50	101.10	105.30
796	86.80	88.20	89.80	92.80	96.40	100.70
1262	81.50	83.30	84.90	88.20	92.10	96.30
2000	75.60	77.80	79.50	83.30	87.30	91.60
3170	69.00	71.80	74.00	78.30	82.70	86.90
5024	62.00	65.50	68.00	73.20	77.90	82.10
7962	54.80	58.30	61.30	67.50	72.00	77.10

CODE: DC937Q
AIRCRAFT: DC-9-30 (SAM)
ENGINE: JT8D-7 (SAM)
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 4000	5000	6000	8000	10000	12000
200	96.60	97.10	100.40	104.90	109.00	114.30
317	92.20	92.80	96.20	100.40	105.20	109.80
502	87.70	88.90	92.00	96.10	100.30	105.30
796	82.70	84.50	87.60	91.60	95.70	100.70
1262	77.90	80.40	83.10	87.30	91.50	96.30
2000	72.40	75.50	78.20	82.60	86.70	91.60
3170	66.30	70.30	73.10	77.80	82.20	86.90
5024	59.80	64.70	7.60	73.00	77.50	82.10
7962	53.10	58.20	1.30	67.50	71.70	77.10

CODE: DC939B
AIRCRAFT: DC-9-30
ENGINE: JT8D-9
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 2000	4000	5000	6000	8000	10000	12500
200	101.20	102.80	103.30	104.10	106.80	110.30	114.40
317	95.10	97.60	98.60	99.60	102.50	105.90	109.80
502	89.30	92.90	93.60	94.70	98.00	101.70	105.30
796	83.00	87.60	88.50	89.80	93.40	97.00	100.70
1262	77.20	82.50	83.60	85.00	89.00	92.70	96.20
2000	71.00	76.80	78.10	79.80	84.20	88.00	91.50
3170	64.70	70.70	72.30	74.50	79.30	83.20	86.80
5024	58.40	64.00	66.20	68.80	74.00	78.10	82.10
7962	52.00	57.00	59.30	62.30	68.10	72.60	77.10

CODE: DC939Q
AIRCRAFT: DC-9-30 (SAM)
ENGINE: JT8D-9 (SAM)
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 4000	5000	6000	8000	10000	12500
200	97.20	97.40	100.50	105.00	109.30	114.50
317	92.50	93.40	96.50	100.90	105.00	109.80
502	88.30	89.10	92.00	96.60	100.90	105.30
796	83.50	84.80	87.60	92.20	96.30	100.70
1262	78.90	80.60	83.20	88.10	92.10	96.20
2000	73.60	75.80	78.50	83.50	87.40	91.50
3170	68.00	70.80	73.60	78.80	82.70	86.80
5024	61.80	65.40	68.40	73.80	77.70	82.10
7962	55.30	59.20	62.30	68.10	72.30	77.10

CODE: BAC11B
AIRCRAFT: BAC-111
ENGINE: ROLLS ROYCE SPEY
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, PERCENT THRUST 40	85	100
200	103.00	114.50	120.50
300	99.00	110.50	116.50
500	93.00	105.00	112.00
1000	84.00	96.50	105.50
2000	74.00	87.50	97.50
3000	68.50	83.50	92.50
5000	61.00	77.00	85.50
10000	51.50	67.00	75.50

CODE: BAC11Q
AIRCRAFT: BAC-111 (RETROFIT)
ENGINE: ROLLS ROYCE SPEY
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, PERCENT THRUST 40	85	100
200	98.50	104.00	114.50
300	94.00	100.50	110.50
500	87.50	96.00	106.00
1000	79.00	89.00	99.00
2000	71.00	81.50	91.50
3000	66.00	76.50	86.50
5000	60.00	70.00	80.00
10000	50.00	60.00	69.50

CODE: 727118
AIRCRAFT: B-727-100
ENGINE: JT8D-1/7 (BASELINE)
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, CBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 3930	5090	6150	8380	10420	11850
200	105.80	105.90	106.60	109.30	113.20	117.00
317	100.30	100.50	101.80	104.80	108.70	112.60
502	94.70	95.10	96.70	100.00	104.20	107.80
796	88.70	89.20	91.00	95.20	99.30	103.20
1262	82.60	83.30	85.30	90.10	94.60	98.40
2000	76.40	77.70	79.80	85.00	89.70	93.30
3170	70.30	72.30	74.60	79.80	84.50	88.00
5024	63.70	66.30	68.50	73.20	78.80	81.90
7962	57.30	60.00	61.80	66.80	72.40	75.30
12619	50.00	53.00	54.80	59.60	65.50	68.00

CODE: 727110
AIRCRAFT: B-727-100 QN
ENGINE: JT8D-1/7 QN
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, CBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 3930	5090	6150	8380	10420	11850
200	98.40	100.20	102.40	107.50	111.70	115.80
317	93.80	95.70	98.30	103.40	107.60	111.60
502	89.00	91.00	93.70	99.00	103.20	107.10
796	83.90	86.30	89.00	94.40	98.70	102.70
1262	79.00	81.70	84.40	89.80	94.10	98.00
2000	73.80	76.70	79.30	84.50	89.20	92.90
3170	68.60	71.60	74.20	79.00	84.20	87.60
5024	62.70	66.00	68.10	73.00	78.70	81.70
7962	61.20	59.60	61.80	66.30	72.20	75.00
12619	49.50	53.00	54.80	59.50	65.60	68.00

CODE: 72725B
AIRCRAFT: B-727-200
ENGINE: JT8D-9/15 (BASELINE)
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 3500	4300	5300	7600	9800	12250	13050
200	104.80	105.10	105.80	108.10	112.30	116.90	118.80
317	99.90	100.30	101.00	103.70	108.00	112.80	114.50
502	94.50	95.00	96.00	98.80	103.50	108.30	110.50
796	88.70	89.40	90.20	93.70	98.90	104.00	106.00
1262	82.50	83.60	84.70	88.50	94.00	99.50	101.20
2000	76.10	77.50	78.70	83.30	88.90	94.70	96.30
3170	70.00	71.40	72.90	77.80	83.20	89.30	91.00
5024	64.00	65.20	67.00	72.00	77.10	84.00	85.60
7962	57.50	58.90	60.50	65.40	70.70	77.90	79.20
12619	50.80	52.40	54.00	58.60	64.20	71.00	72.50

CODE: 72725Q
AIRCRAFT: B-727-200 QN
ENGINE: JT8D-9/15 QN
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 3800	4900	5900	8200	10000	11900	12800
200	97.50	99.50	100.80	106.50	110.30	114.90	117.10
317	93.00	95.30	96.70	102.20	106.20	110.80	113.00
502	88.70	91.00	92.30	97.80	101.90	106.60	108.70
796	84.90	86.30	87.90	93.00	97.40	102.20	104.50
1262	78.90	81.60	83.00	88.10	93.00	97.90	99.80
2000	73.70	76.30	77.80	82.90	88.00	93.00	95.10
3170	68.20	70.60	72.00	77.40	82.50	87.80	90.30
5024	62.70	64.20	66.10	71.80	76.40	82.30	84.90
7962	56.20	58.00	59.80	65.30	70.00	76.00	78.80
12619	49.70	51.10	53.20	58.30	64.00	69.00	71.70

CODE: D1016D
AIRCRAFT: DC-10-10
ENGINE: CF6-6D
EGA CLASS: HIGH BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, N1/SQRT(THETA), RPMS 2200	2400	2600	3000	3420
200	101.00	102.80	103.50	105.90	108.00
317	95.80	97.10	98.30	100.70	102.90
502	90.50	91.60	92.90	95.70	97.80
796	84.50	85.70	87.20	90.20	92.60
1262	77.90	79.30	81.20	84.60	87.20
2000	70.10	72.40	74.70	78.50	81.80
3170	60.30	64.50	67.00	71.60	75.80

CODE: D10492
AIRCRAFT: DC-10-40
ENGINE: JT9D-20
EGA CLASS: HIGH BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, N1/SQRT(THETA), RPMS 2200	2400	2600	3000	3410	3600
200	97.00	100.00	101.00	104.00	106.00	107.00
317	93.00	96.00	97.00	99.70	101.70	102.70
502	89.00	92.00	93.00	95.50	98.00	99.00
796	84.00	87.50	89.00	91.00	93.50	94.50
1262	80.00	83.00	85.00	87.00	89.50	90.80
2000	75.00	78.50	80.00	82.50	85.00	86.20
3170	70.00	73.50	75.00	78.00	81.00	82.50
5024	66.00	68.00	70.00	73.00	76.00	77.50

CODE: L11122
AIRCRAFT: L-1011
ENGINE: RB-211
EGA CLASS: HIGH BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, N1/SQRT(THETA), % 55.00	60.00	67.40	75.00	85.00	95.00
200	96.20	97.80	100.10	102.30	105.00	108.50
317	92.00	93.20	95.60	97.80	100.70	104.40
502	87.20	88.40	90.80	93.20	96.30	99.80
796	82.40	83.50	85.70	88.30	91.20	95.00
1262	77.20	78.20	80.30	82.80	86.30	90.30
2000	71.80	72.80	75.00	77.30	81.00	85.00
3170	65.80	66.80	69.00	71.40	75.30	79.20
5024	59.00	60.20	62.60	64.70	69.00	73.00
7962	52.60	53.80	56.20	59.70	62.70	66.80
12619	45.00	46.80	49.30	51.80	56.00	59.80

CODE: 70733B
AIRCRAFT: B-707-120B/320B
ENGINE: JT3D-3B (BASELINE)
EGA CLASS: 4 ENGINE LOW BYPASS

NOISE LEVEL, CBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 3630	5880	8830	11990	15250
200	110.50	113.50	115.00	116.00	118.50
317	106.00	109.00	110.50	111.40	114.00
502	101.00	103.80	105.30	106.00	108.70
796	95.60	98.20	99.80	100.70	103.20
1262	89.20	92.00	93.20	94.00	97.00
2000	82.10	84.70	86.20	87.50	91.70
3170	73.00	75.70	78.60	80.20	83.70
5024	63.00	66.20	70.50	73.00	76.00
7962	52.70	58.40	62.80	66.20	70.50
12619	46.30	52.00	56.00	59.70	64.00

CODE: 70733Q
AIRCRAFT: B-707-120B/320 QN
ENGINE: JT3D-3B QN
EGA CLASS: 4 ENGINE LOW BYPASS

NOISE LEVEL, CBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 3490	6130	8670	11830	13390	15250
200	96.40	100.20	104.00	107.40	111.50	118.50
317	91.40	95.60	99.20	103.00	106.80	114.00
502	86.00	90.70	94.30	98.70	102.30	108.70
796	80.70	86.00	89.70	94.00	97.80	103.20
1262	75.20	81.00	84.70	89.20	94.20	97.00
2000	69.70	75.80	79.20	84.10	88.20	91.70
3170	63.70	70.00	73.70	78.80	82.70	83.70
5024	57.50	64.00	67.70	72.80	76.20	76.00
7962	51.00	57.50	61.00	65.80	69.40	70.50
12619	44.50	50.50	54.50	58.50	62.50	64.00

CODE: DC830B
AIRCRAFT: DC-8-30*
ENGINE:
EGA CLASS: 4 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, POWER 1	2	3
200	112.80	116.00	118.00
316	107.90	111.70	113.70
502	103.00	107.10	109.10
796	97.50	102.70	104.70
1262	91.80	98.30	100.30
2000	85.30	93.80	95.80
3160	77.60	89.20	91.20
5020	68.00	84.70	86.70
7960	57.00	79.80	81.80

CODE: DC813B
AIRCRAFT: DC-8-55/61
ENGINE: JT3D-3B
EGA CLASS: 4 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 3000	6000	10000	15000
400	99.00	104.50	107.50	110.50
1000	86.00	92.00	96.00	100.00
2000	76.00	82.00	86.50	92.00
4000	62.00	69.50	75.50	82.00
8000	48.00	57.00	63.50	72.00

* Also used for CV-880.

CODE: DC813Q
AIRCRAFT: DC-8-55/61 (SAM)
ENGINE: JT3D-3B (SAM)
EGA CLASS: 4 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, EN/DELTA, LBS. 3000	6000	10000	15000
400	83.40	91.30	98.00	110.50
1000	73.60	81.90	89.30	100.00
2000	66.60	73.70	81.80	92.00
4000	54.80	64.10	72.80	82.00
8000	46.70	55.50	62.80	72.00

CODE: DC837B
AIRCRAFT: DC-8-63
ENGINE: JT3D-7
EGA CLASS: 4 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 4000	5000	6000	8000	10000	12000	15800
200	109.90	110.90	111.40	112.80	115.00	116.00	116.00
317	104.80	106.00	108.00	107.90	109.80	110.90	111.70
502	99.60	100.60	101.50	103.00	104.50	105.90	107.10
796	93.70	95.00	95.90	97.50	98.90	100.40	102.70
1262	87.30	89.10	90.00	91.80	93.40	95.30	98.30
2000	79.80	81.90	83.20	85.30	87.20	89.60	93.80
3170	70.50	73.10	74.80	77.60	80.70	83.70	89.20
5024	59.70	62.60	64.90	68.00	73.60	77.20	84.70
7962	48.00	51.20	53.00	57.00	65.00	69.90	79.80

CODE: DC837Q
AIRCRAFT: DC-8-63
ENGINE: JT3D-7 (ACOUSTIC MOD
EGA CLASS: 4 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, FN/DELTA, LBS. 4000	5000	6000	8000	10000	12000	15800
200	92.60	94.30	95.90	99.40	103.50	107.40	116.00
317	89.20	91.00	94.10	95.80	99.70	103.40	111.70
502	85.60	87.20	89.10	92.30	95.70	99.40	107.10
796	81.40	83.20	85.10	88.20	91.50	95.00	102.70
1262	76.60	79.00	80.70	83.80	87.40	90.90	98.30
2000	70.80	73.40	75.50	78.70	82.50	86.30	93.80
3170	63.10	66.20	68.60	72.40	77.40	81.40	89.20
5024	54.00	57.30	60.30	64.10	71.60	76.00	84.70
7962	44.00	47.60	48.10	54.50	64.40	69.70	79.80

CODE: 74713B
AIRCRAFT: B-747-100
ENGINE: JT9D-3A BLOW IN DOOR
EGA CLASS: HIGH BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, N1/SQRT(TH), RPM 1990	2115	2330	2550	2875	3310
200	104.70	106.50	109.50	112.00	114.70	117.00
400	98.00	99.50	102.80	104.80	108.00	110.00
600	93.40	95.00	98.40	100.30	103.70	105.70
1000	87.50	88.90	92.30	94.00	97.50	99.70
2000	78.20	79.70	82.80	84.50	88.00	90.80
4000	67.70	69.30	71.80	73.70	77.50	81.20
6000	61.30	62.80	65.00	67.20	70.80	75.50
10000	53.20	54.20	56.00	58.40	62.20	67.50

CODE: 74717B
AIRCRAFT: B-747-100
ENGINE: JT9D-7 (FIXED LIP)
EGA CLASS: HIGH BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, N1/SQRT(THETA), RPM 1996	2346	2557	2923	3204	3355
200	103.10	104.20	105.30	108.90	112.20	114.30
317	98.30	99.60	100.70	104.50	107.80	109.80
502	93.50	94.80	95.90	99.70	103.10	105.20
796	88.20	89.70	90.40	94.60	98.10	100.20
1262	82.70	84.30	85.20	89.30	93.00	95.10
2000	76.80	78.20	79.10	83.60	87.30	89.60
3170	70.70	72.20	73.00	77.80	81.80	83.90
5024	64.00	65.90	66.50	71.60	75.50	77.50
7962	56.80	58.70	59.70	64.80	68.60	70.50
12619	49.00	51.00	52.60	57.60	61.40	63.50

CODE: 74727B
AIRCRAFT: B-747-200B
ENGINE: JT9D-7 (FIXED LIP)
EGA CLASS: HIGH BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, N1/SQRT(THETA), RPM					
	1996	2346	2552	2923	3204	3355
200	101.00	102.70	104.10	108.20	110.90	112.80
317	96.60	98.30	99.90	103.70	106.60	108.30
502	91.30	93.40	94.90	99.80	101.80	103.50
796	86.20	88.20	89.60	93.70	95.80	98.50
1262	80.90	82.90	84.00	89.40	91.50	93.50
2000	75.00	77.00	78.00	82.60	86.00	88.00
3170	69.00	71.00	71.90	76.60	80.30	82.20
5024	62.50	64.60	65.70	70.30	74.10	76.00
7962	55.30	57.50	58.80	63.80	67.40	69.30
12619	48.00	50.30	52.00	57.20	60.80	62.60

CODE: CV580
AIRCRAFT: CV-580
ENGINE:
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, POWER 1	2
200	85.00	94.90
470	75.10	85.00

CODE: GAJET1
AIRCRAFT:
ENGINE:
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, PERCENT THRUST 40	100
200	104.50	118.50
300	100.50	114.50
500	95.50	109.50
1000	88.50	101.50
2000	80.00	93.50
3000	75.50	87.00
5000	69.00	80.00
10000	58.00	68.00

CODE: GAJET2
AIRCRAFT: GULFSTREAM II
ENGINE: RR SPEY
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, PERCENT THRUST 40	100
200	96.50	117.50
300	92.50	113.50
500	87.50	109.00
1000	81.00	102.00
2000	73.50	95.00
3000	68.00	90.00
5000	62.00	84.00
10000	52.00	74.50

CODE: GAJET3
AIRCRAFT: CESSNA CITATION
ENGINE: JT15D
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, PERCENT THRUST 40	100
200	82.50	93.00
300	78.50	88.50
500	73.50	84.00
1000	66.50	77.00
2000	59.00	69.50
3000	53.50	64.00
5000	48.00	58.00
10000	38.00	48.00

CODE: GAPRP1
AIRCRAFT:
ENGINE: SINGLE PROP
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, LBS. 40	100
200	74.50	85.50
300	70.00	81.50
500	65.50	77.00
1000	59.00	70.50
2000	51.50	64.00
3000	47.00	59.00
5000	41.50	54.00
10000	33.00	45.50

CODE: GAPRP2
AIRCRAFT:
ENGINE: TWIN PROP
EGA CLASS: 2/3 ENGINE LOW BYPASS

NOISE LEVEL, DBA

SLANT DISTANCE, FEET	POWER, LBS. 40	100
200	81.50	93.00
300	77.00	89.00
500	72.50	84.50
1000	66.00	78.00
2000	58.50	71.50
3000	54.00	66.50
5000	48.50	61.50
10000	40.00	53.00

APPENDIX B

PROFILES

```
PROFILE   B200,737278,T
AIRCRAFT  B-737-200
PROCDES   80K LBS., ATA T/C
POINT           0        0    11900        0
POINT        3200        0    11900      139
POINT       10500     1500    11900      139      GRAD=.205
POINT       11500     1678    11000      139
POINT       18900     3000    11000      139      GRAD=.179
POINT       58600     7129    11000      250      GRAD=.104
POINT      125000    16757    11000      250      GRAD=.145
*
PROFILE   B201,737278,T
AIRCRAFT  B-737-200
PROCDES   90K LBS., ATA T/C
POINT           0        0    11900        0
POINT        4150        0    11900      147
POINT       13000     1500    11900      147      GRAD=.169
POINT       14000     1651    11000      147
POINT       22950     3000    11000      147      GRAD=.151
POINT       60100     6046    11000      250      GRAD=.082
POINT      125000    14029    11000      250      GRAD=.123
*
PROFILE   B202,737278,T
AIRCRAFT  B-737-200
PROCDES   100K LBS., ATA T/C
POINT           0        0    11900        0
POINT        5300        0    11900      156
POINT       15700     1500    11900      156      GRAD=.144
POINT       16700     1630    11000      156
POINT       27250     3000    11000      156      GRAD=.130
POINT       61650     5236    11000      250      GRAD=.065
POINT      125000    11952    11000      250      GRAD=.106
*
PROFILE   B203,737278,T
AIRCRAFT  B-737-200
PROCDES   109K LBS., ATA T/C
POINT           0        0    11900        0
PCINT        6550        0    11900      163
POINT       18600     1500    11900      163      GRAD=.124
PCINT       19600     1615    11000      163
POINT       31650     3000    11000      163      GRAD=.115
PCINT       63850     4686    11000      250      GRAD=.052
POINT      125000    10372    11000      250      GRAD=.093
*
PROFILE   B204,737278,L
AIRCRAFT  B-737-200
PROCDES   MAX FLAPS APPROACH
POINT           0        0     5300      138
PCINT      100000     5220     6360      138      GRAD=.052
*
```

```
PROFILE   B296,73727Q,T
AIRCRAFT  B-737-200 QN
PROCDES   80K LBS., ATA T/C
POINT           0        0    11900        0
POINT        3200        0    11900      139
POINT       10500     1500    11900      139      GRAD=.205
POINT       11500     1678    11000      139
POINT       18900     3000    11000      139      GRAD=.179
POINT       58600     7129    11000      250      GRAD=.104
POINT      125000    16757    11000      250      GRAD=.145
*
PROFILE   B297,73727Q,T
AIRCRAFT  B-737-200 QN
PROCDES   90K LBS., ATA T/C
POINT           0        0    11900        0
POINT        4150        0    11900      147
POINT       13000     1500    11900      147      GRAD=.169
POINT       14000     1651    11000      147
POINT       22950     3000    11000      147      GRAD=.151
POINT       60100     6046    11000      250      GRAD=.082
POINT      125000    14029    11000      250      GRAD=.123
*
PROFILE   B298,73727Q,T
AIRCRAFT  B-737-200 QN
PROCDES   100K LBS., ATA T/C
POINT           0        0    11900        0
POINT        5300        0    11900      156
POINT       15700     1500    11900      156      GRAD=.144
POINT       16700     1630    11000      156
POINT       27250     3000    11000      156      GRAD=.130
POINT       61650     5236    11000      250      GRAD=.065
POINT      125000    11952    11000      250      GRAD=.106
*
PROFILE   B299,73727Q,T
AIRCRAFT  B-737-200 QN
PROCDES   109K LBS., ATA T/C
POINT           0        0    11900        0
POINT        6550        0    11900      163
POINT       18600     1500    11900      163      GRAD=.124
POINT       19600     1615    11000      163
POINT       31650     3000    11000      163      GRAD=.115
POINT       63850     4686    11000      250      GRAD=.052
POINT      125000    10372    11000      250      GRAD=.093
*
PROFILE   B300,73727Q,L
AIRCRAFT  B-737-200 QN
PROCDES   MAX FLAPS APPRCACH
POINT           0        0     5300      138
POINT      100000     5220     6360      138      GRAD=.052
*
```

```
PROFILE   B205,DC937B-T
AIRCRAFT  DC-9-10
PROCDES   70K LBS., ATA T/C
POINT           0        C    12000        0
POINT        2500        C    12000      136
POINT        8200     1500    12000      136      GRAD=.263
POINT        9200     1682    11200      136
POINT       16450     3000    11200      136      GRAD=.182
POINT       57400     8610    11200      250      GRAD=.137
POINT      125000    20778    11200      250      GRAD=.180
*
PROFILE   B206,DC937B,T
AIRCRAFT  DC-9-10
PROCDES   80K LBS., ATA T/C
POINT           0        C    12000        0
POINT        3000        C    12000      145
POINT       10250     1500    12000      145      GRAD=.207
POINT       11250     1648    11100      145
POINT       20400     3000    11100      145      GRAD=.148
POINT       58550     7387    11100      250      GRAD=.115
POINT      125000    17826    11100      250      GRAD=.157
*
PROFILE   B207,DC937B,T
AIRCRAFT  DC-9-10
PROCDES   90.8K LBS., ATA T/C
POINT           0        C    12000        0
POINT        3800        C    12000      153
POINT       13400     1500    12000      153      GRAD=.156
POINT       14400     1619    11000      153
POINT       26000     3000    11000      153      GRAD=.119
POINT       61600     6306    11000      250      GRAD=.093
POINT      125000    14834    11000      250      GRAD=.135
*
PROFILE   B208,DC937B,L
AIRCRAFT  DC-9-10
PROCDES   MAX FLAPS APPROACH
POINT           0        C     4320      127
POINT      100000     5240     5180      127      GRAD=.052
*
```

```
PROFILE   B301,DC937Q,T
AIRCRAFT  DC-9-10 (SAM)
PROCDES   70K LBS., ATA T/C
POINT            0        C    12000        0
POINT         2500        C    12000      136
POINT         8200     1500    12000      136      GRAD=.263
POINT         9200     1682    11200      136
POINT        16450     3000    11200      136      GRAD=.182
POINT        57400     8610    11200      250      GRAD=.137
POINT       125000    20778    11200      250      GRAD=.180
*
PROFILE   B302,DC937Q,T
AIRCRAFT  DC-9-10 (SAM)
PROCDES   80K LBS., ATA T/C
POINT            0        C    12000        0
POINT         3000        C    12000      145
POINT        10250     1500    12000      145      GRAD=.207
POINT        11250     1648    11100      145
POINT        20400     3000    11100      145      GRAD=.148
POINT        58550     7387    11100      250      GRAD=.115
POINT       125000    17826    11100      250      GRAD=.157
*
PROFILE   B303,DC937Q,T
AIRCRAFT  DC-9-10 (SAM)
PROCDES   90.8K LBS., ATA T/C
POINT            0        C    12000        0
POINT         3800        C    12000      153
POINT        13400     1500    12000      153      GRAD=.156
POINT        14400     1619    11000      153
POINT        26000     3000    11000      153      GRAD=.119
POINT        61600     6306    11000      250      GRAD=.093
POINT       125000    14824    11000      250      GRAD=.135
*
PROFILE   B304,DC937Q,L
AIRCRAFT  DC-9-10 (SAM)
PROCDES   MAX FLAPS APPROACH
POINT            0        C     4320      127
POINT       100000     5240     5180      127      GRAD=.052
*
```

```
PROFILE   B209,DC939B,T
AIRCRAFT  DC-9-30
PROCDES   80K LBS., ATA T/C
POINT           0        0    12500       0
POINT        3500        0    12500     139
POINT        9500     1500    12500     139      GRAD=.250
POINT       10500     1657    11100     139
POINT       19050     3000    11100     139      GRAD=.157
POINT       58700     7480    11100     250      GRAD=.113
POINT      125000    17823    11100     250      GRAD=.156
*
PROFILE   B210,DC939B,T
AIRCRAFT  DC-9-30
PROCDES   90K LBS., ATA T/C
POINT           0        0    12500       0
POINT        4200        0    12500     146
POINT       11850     1500    12500     146      GRAD=.196
POINT       12850     1628    11100     146
POINT       23550     3000    11100     146      GRAD=.128
POINT       60950     6403    11100     250      GRAD=.091
POINT      125000    15370    11100     250      GRAD=.140
*
PROFILE   B211,DC939B,T
AIRCRAFT  DC-9-30
PROCDES   100K LBS., ATA T/C
POINT           0        0    12500       0
POINT        4700        0    12500     152
POINT       13450     1500    12500     152      GRAD=.171
POINT       14450     1607    11100     152
POINT       27450     3000    11100     152      GRAD=.107
POINT       63050     5457    11100     250      GRAD=.069
POINT      125000    12766    11100     250      GRAD=.118
*
PROFILE   B212,DC939B,T
AIRCRAFT  DC-9-30
PROCDES   108K LBS., ATA T/C
POINT           0        0    12500       0
POINT        5500        0    12500     155
POINT       16800     1500    12500     155      GRAD=.133
POINT       17800     1593    11100     155
POINT       32900     3000    11100     155      GRAD=.093
POINT       67400     4932    11100     250      GRAD=.056
POINT      125000    11210    11100     250      GRAD=.109
*
PROFILE   B213,DC939B,L
AIRCRAFT  DC-9-30
PROCDES   MAX FLAPS APPROACH
POINT           0        0     5300     139
POINT      100000     5220     6360     139      GRAD=.052
*
```

```
PROFILE   B305,DC939Q,T
AIRCRAFT  DC-9-30 (SAM)
PROCDES   80K LBS., ATA T/C
POINT           0        C    12500        0
POINT        3500        0    12500      139
POINT        9500     1500    12500      139      GRAD=.250
POINT       10500     1657    11100      139
POINT       19050     3000    11100      139      GRAD=.157
POINT       58700     7480    11100      250      GRAD=.113
POINT      125000    17823    11100      250      GRAD=.156
*
PROFILE   B306,DC939Q,T
AIRCRAFT  DC-9-30 (SAM)
PROCDES   90K LBS., ATA T/C
POINT           0        C    12500        0
POINT        4200        C    12500      146
POINT       11850     1500    12500      146      GRAD=.196
POINT       12850     1628    11100      146
POINT       23550     3000    11100      146      GRAD=.128
POINT       60950     6403    11100      250      GRAD=.091
POINT      125000    15370    11100      250      GRAD=.140
*
PROFILE   B307,DC939Q,T
AIRCRAFT  DC-9-30 (SAM)
PROCDES   100K LBS., ATA T/C
POINT           0        C    12500        0
POINT        4700        C    12500      152
POINT       13450     1500    12500      152      GRAD=.171
POINT       14450     1607    11100      152
POINT       27450     3000    11100      152      GRAD=.107
POINT       63050     5457    11100      250      GRAD=.069
POINT      125000    12766    11100      250      GRAD=.118
*
PROFILE   B308,DC939Q,T
AIRCRAFT  DC-9-30 (SAM)
PROCDES   108K LBS., ATA T/C
POINT           0        C    12500        0
POINT        5500        C    12500      155
POINT       16800     1500    12500      155      GRAD=.133
POINT       17800     1593    11100      155
POINT       32900     3000    11100      155      GRAD=.093
POINT       67400     4932    11100      250      GRAD=.056
POINT      125000    11210    11100      250      GRAD=.109
*
PROFILE   B309,DC939Q,L
AIRCRAFT  DC-9-30 (SAM)
PROCDES   MAX FLAPS APPROACH
POINT           0        0     5300      139
POINT      100000     5220     6360      139      GRAD=.052
```

```
PROFILE   B119,BAC11B,T
AIRCRAFT  BAC 1-11
PROCDES   75K LBS., ATA T/C
POINT           0        0      100        0
POINT        5200        0      100      145
POINT       14700     1500      100      145      GRAD=.158
POINT       15700     1625       85      145
POINT       26700     3000       85      145      GRAD=.125
POINT       64300     6350       85      250      GRAD=.089
POINT      125000    14720       85      250      GRAD=.138
*
PROFILE   B120,BAC11B,T
AIRCRAFT  BAC 1-11
PROCDES   80K LBS., ATA T/C
POINT           0        0      100        0
POINT        5800        0      100      150
POINT       15900     1500      100      150      GRAD=.149
POINT       16900     1619       85      150
POINT       28500     3000       85      150      GRAD=.119
POINT       64650     5930       85      250      GRAD=.081
POINT      125000    13840       85      250      GRAD=.131
*
PROFILE   B005,BAC11B,T
AIRCRAFT  BAC 1-11
PROCDES   87K LBS., ATA T/C
POINT           0        0      100        0
POINT        6700        0      100      156
POINT       17500     1500      100      156      GRAD=.139
POINT       18500     1611       85      156
POINT       31000     3000       85      156      GRAD=.111
POINT       65350     5404       85      250      GRAD=.070
POINT      125000    12682       85      250      GRAD=.122
*
PROFILE   B006,BAC11B,L
AIRCRAFT  BAC 1-11
PROCDES   MAX FLAPS APPROACH
POINT           0        0       40      136
POINT      100000     5220       40      136      GRAD=.052
*
```

```
PROFILE   B123,BAC11Q,T
AIRCRAFT  BAC 1-11 RETROFIT
PROCDES   75K LBS., ATA T/C
POINT           0        0      100        0
POINT        5200        0      100      145
POINT       14700     1500      100      145      GRAD=.158
POINT       15700     1625       85      145
POINT       26700     3000       85      145      GRAD=.125
POINT       64300     6350       85      250      GRAD=.089
POINT      125000    14720       85      250      GRAD=.138
*
PROFILE   b122,BAC11Q,T
AIRCRAFT  BAC 1-11 RETROFIT
PROCDES   80K LBS., ATA T/C
POINT           0        0      100        0
POINT        5800        0      100      150
POINT       15900     1500      100      150      GRAD=.149
POINT       16900     1619       85      150
POINT       28500     3000       85      150      GRAD=.119
POINT       64650     5930       85      250      GRAD=.081
POINT      125000    13840       85      250      GRAD=.131
*
PROFILE   B121,BAC11Q,T
AIRCRAFT  BAC 1-11 RETROFIT
PROCDES   87K LBS., ATA T/C
POINT           0        0      100        0
POINT        6700        0      100      156
POINT       17500     1500      100      156      GRAD=.139
POINT       18500     1611       85      156
POINT       31000     3000       85      156      GRAD=.111
POINT       65350     5404       85      250      GRAD=.070
POINT      125000    12682       85      250      GRAD=.122
*
PROFILE   B124,BAC11Q,L
AIRCRAFT  BAC 1-11 RETROFIT
PROCDES   MAX FLAPS APPRCACH
POINT           0        0       40      136
POINT      100000     5220       40      136      GRAD=.052
*
```

```
PROFILE   B237,72711B,T
AIRCRAFT  B-727-100
PROCDES   110K LBS., ATA T/O
POINT           0        0    11500       0
POINT        3050        0    11500     134
POINT       10350     1500    11500     134      GRAD=.205
POINT       11350     1676    10850     134
POINT       18850     3000    10850     134      GRAD=.177
POINT       59650     7490    10850     250      GRAD=.110
POINT      125000    17620    10850     250      GRAD=.155
*
PROFILE   B238,72711B,T
AIRCRAFT  B-727-100
PROCDES   120K LBS., ATA T/O
POINT           0        0    11500       0
POINT        3600        0    11500     139
POINT       11900     1500    11500     139      GRAD=.181
POINT       12900     1651    10850     139
POINT       21850     3000    10850     139      GRAD=.151
POINT       61200     6660    10850     250      GRAD=.093
POINT      125000    15446    10850     250      GRAD=.138
*
PROFILE   B239,72711B,T
AIRCRAFT  B-727-100
PROCDES   130K LBS., ATA T/O
POINT           0        0    11500       0
POINT        4250        0    11500     143
POINT       13750     1500    11500     143      GRAD=.158
POINT       14750     1633    10790     143
POINT       25050     3000    10790     143      GRAD=.133
POINT       63350     6162    10790     250      GRAD=.083
POINT      125000    13808    10790     250      GRAD=.124
*
PROFILE   B240,72711B,T
AIRCRAFT  B-727-100
PROCDES   140K LBS., ATA T/O
POINT           0        0    11500       0
POINT        4900        0    11500     147
POINT       15600     1500    11500     147      GRAD=.140
POINT       16600     1617    10750     147
POINT       28400     3000    10750     147      GRAD=.117
POINT       65500     5600    10750     250      GRAD=.070
POINT      125000    12260    10750     250      GRAD=.112
*
```

```
PROFILE   B241,72711B,T
AIRCRAFT  B-727-100
PROCDES   150K LBS., ATA T/O
POINT           0        0    11500        0
POINT        5650        0    11500      151
POINT       17750     1500    11500      151      GRAD=.124
POINT       18750     1601    10730      151
POINT       32550     3000    10730      151      GRAD=.101
POINT       68500     5160    10730      250      GRAD=.060
POINT      125000    10920    10730      250      GRAD=.102
*
PROFILE   B242,72711B,T
AIRCRAFT  B-727-100
PROCDES   160K LBS., ATA T/O
POINT           0        0    11500        0
POINT        6450        0    11500      155
POINT       20050     1500    11500      155      GRAD=.110
POINT       21050     1591    10700      155
POINT       36550     3000    10700      155      GRAD=.091
POINT       71250     4800    10700      250      GRAD=.052
POINT      125000     9860    10700      250      GRAD=.094
*
PROFILE   B243,72711B,L
AIRCRAFT  B-727-100
PROCDES   MAX FLAPS APPROACH
POINT           0        0     4450      138
POINT      100000     5220     5350      138      GRAD=.052
*
```

```
PROFILE   B318,727-11Q,T
AIRCRAFT  B-727-100 QN
PROCDES   110K LBS., ATA T/C
POINT           0        C    11500        0
POINT        3050        C    11500      134
POINT       10350     15CC    11500      134      GRAD=.205
POINT       11350     1676    10850      134
POINT       18850     30CC    10850      134      GRAD=.177
POINT       59650     749C    10850      250      GRAD=.110
POINT      125000    17620    10E50      250      GRAD=.155
*
PROFILE   B319,72711Q,T
AIRCRAFT  B-727-100 QN
PROCDES   120K LBS., ATA T/C
POINT           0        C    11500        0
POINT        3600        C    11500      139
POINT       11900     15CC    11500      139      GRAD=.181
POINT       12900     1651    10E50      139
POINT       21850     30CC    10850      139      GRAD=.151
POINT       61200     666C    10E50      250      GRAD=.093
POINT      125000    15446    10850      250      GRAD=.138
*
PROFILE   B320,72711Q,T
AIRCRAFT  B-727-100 QN
PROCDES   130K LBS., ATA T/C
POINT           0        C    11500        0
POINT        4250        C    11500      143
POINT       13750     15CC    11500      143      GRAD=.158
POINT       14750     1633    10790      143
POINT       25050     30CC    10790      143      GRAD=.133
POINT       63350     6162    10790      250      GRAD=.083
POINT      125000    13806    10790      250      GRAD=.124
*
PROFILE   B321,72711Q,T
AIRCRAFT  B-727-100 QN
PROCDES   140K LBS., ATA T/C
POINT           0        C    11500        0
POINT        4900        C    11500      147
POINT       15600     15CC    11500      147      GRAD=.140
POINT       16600     1617    10750      147
POINT       28400     30CC    10750      147      GRAD=.117
POINT       65500     560C    10750      250      GRAD=.070
POINT      125000    12260    10750      250      GRAD=.112
*
```

```
PROFILE   B322,72711Q,T
AIRCRAFT  B-727-100 QN
PROCDES   150K LBS., ATA T/O
POINT           0        0    11500        0
POINT        5650        0    11500      151
POINT       17750     1500    11500      151      GRAD=.124
POINT       18750     1601    10730      151
POINT       32550     3000    10730      151      GRAD=.101
POINT       68500     5160    10730      250      GRAD=.060
POINT      125000    10920    10730      250      GRAD=.102
*
PROFILE   B323,72711Q,T
AIRCRAFT  B-727-100 QN
PROCDES   160K LBS., ATA T/O
POINT           0        0    11500        0
POINT        6450        0    11500      155
POINT       20050     1500    11500      155      GRAD=.110
POINT       21050     1591    10700      155
POINT       36550     3000    10700      155      GRAD=.091
POINT       71250     4800    10700      250      GRAD=.052
POINT      125000     9860    10700      250      GRAD=.094
*
PROFILE   B324,72711Q,L
AIRCRAFT  B-727-100 QN
PROCDES   MAX FLAPS APPROACH
POINT           0        0     4450      138
POINT      100000     5220     5350      138      GRAD=.052
*
```

```
PROFILE   B230,72725B,T
AIRCRAFT  B-727-200
PROCDES   130K LBS., ATA T/C
POINT           0        C   12300        0
POINT        4000        C   12300      145
POINT       12500     1500   12300      145      GRAD=.176
POINT       13500     1639   10890      145
POINT       23350     3000   10890      145      GRAD=.138
POINT       61100     6107   10890      250      GRAD=.082
POINT      125000    14096   10890      250      GRAD=.125
*
PROFILE   B231,72725B,T
AIRCRAFT  B-727-200
PROCDES   140K LBS., ATA T/C
POINT           0        C   12300        0
POINT        4650        C   12300      149
POINT       14250     1500   12300      149      GRAD=.156
POINT       15250     1620   10900      149
POINT       26750     3000   10900      149      GRAD=.120
POINT       63300     5560   10900      250      GRAD=.070
POINT      125000    12780   10900      250      GRAD=.117
*
PROFILE   B232,72725B,T
AIRCRAFT  B-727-200
PROCDES   150K LBS., ATA T/C
POINT           0        C   12300        0
POINT        5300        C   12300      153
POINT       16000     1500   12300      153      GRAD=.140
POINT       17100     1604   10840      153
POINT       30500     3000   10840      153      GRAD=.104
POINT       65900     5120   10840      250      GRAD=.060
POINT      125000    11390   10840      250      GRAD=.106
*
PROFILE   B233,72725B,T
AIRCRAFT  B-727-200
PROCDES   160K LBS., ATA T/C
POINT           0        C   12300        0
POINT        6100        C   12300      157
POINT       18100     1500   12300      157      GRAD=.125
POINT       19100     1591   10800      157
POINT       34600     3000   10800      157      GRAD=.091
POINT       68750     4780   10800      250      GRAD=.052
POINT      125000    10230   10800      250      GRAD=.097
*
```

```
PROFILE   B234,72725B,T
AIRCRAFT  B-727-200
PROCDES   170K LBS., ATA T/C
POINT           0        C    12300        0
POINT        6300        C    12300      152
POINT       21600     1500    12300      152      GRAD=.098
POINT       22600     1580    10800      152
POINT       40350     3000    10800      152      GRAD=.080
POINT       75900     4600    10800      250      GRAD=.045
POINT      125000     8970    10800      250      GRAD=.089
*
PROFILE   B235,72725B,T
AIRCRAFT  B-727-200
PROCDES   184.8K LBS., ATA T/C
POINT           0        C    12300        0
POINT        7600        C    12300      158
POINT       26300     1500    12300      158      GRAD=.080
POINT       27300     1566    10800      158
POINT       49050     3000    10800      158      GRAD=.066
POINT       82850     4320    10800      250      GRAD=.039
POINT      125000     7650    10800      250      GRAD=.079
*
PROFILE   B236,72725B,L
AIRCRAFT  B-727-200
PROCDES   MAX FLAPS APPROACH
POINT           0        C     4600      145
POINT      100000     5220     5520      145      GRAD=.052
*
```

```
PROFILE   B311,72725Q,T
AIRCRAFT  B-727-200 QN
PROCDES   130K LBS., ATA T/C
POINT           0        C    12300        0
POINT        4000        C    12300      145
POINT       12500     1500    12300      145      GRAD=.176
POINT       13500     1639    10890      145
POINT       23350     3000    10890      145      GRAD=.138
POINT       61100     6107    10890      250      GRAD=.082
POINT      125000    14096    10890      250      GRAD=.125
*
PROFILE   B312,72725Q,T
AIRCRAFT  B-727-200 QN
PROCDES   140K LBS., ATA T/C
POINT           0        C    12300        0
POINT        4650        C    12300      149
POINT       14250     1500    12300      149      GRAD=.156
POINT       15250     1620    10900      149
POINT       26750     3000    10900      149      GRAD=.120
POINT       63300     5560    10900      250      GRAD=.070
POINT      125000    12780    10900      250      GRAD=.117
*
PROFILE   B313,72725Q,T
AIRCRAFT  B-727-200 QN
PROCDES   150K LBS., ATA T/C
POINT           0        C    12300        0
POINT        5300        C    12300      153
POINT       16000     1500    12300      153      GRAD=.140
POINT       17100     1604    10840      153
POINT       30500     3000    10840      153      GRAD=.104
POINT       65900     5120    10840      250      GRAD=.060
POINT      125000    11390    10840      250      GRAD=.106
*
PROFILE   B314,72725Q,T
AIRCRAFT  B-727-200 QN
PROCDES   160K LBS., ATA T/C
POINT           0        C    12300        0
POINT        6100        C    12300      157
POINT       18100     1500    12300      157      GRAD=.125
POINT       19100     1591    10800      157
POINT       34600     3000    10800      157      GRAD=.091
POINT       68750     4780    10800      250      GRAD=.052
POINT      125000    10230    10800      250      GRAD=.097
*
```

```
PROFILE    B315,727250,T
AIRCRAFT   B-727-200 QN
PROCDES    170 LBS., ATA T/C
POINT            0        0    12300        0
POINT         6300        0    12300      152
POINT        21600     1500    12300      152      GRAD=.098
POINT        22600     1580    10800      152
POINT        40350     3000    10800      152      GRAD=.080
POINT        75900     4600    10800      250      GRAD=.045
POINT       125000     8970    10800      250      GRAD=.089
*
PROFILE    B316,727250,T
AIRCRAFT   B-727-200 QN
PROCDES    184.8K LBS., ATA T/C
POINT            0        0    12300        0
POINT         7600        0    12300      158
POINT        26300     1500    12300      158      GRAD=.080
POINT        27300     1566    10800      158
POINT        49050     3000    10800      158      GRAD=.066
POINT        82850     4320    10800      250      GRAD=.039
POINT       125000     7650    10800      250      GRAD=.079
*
PROFILE    B317,727250,L
AIRCRAFT   B-727-200 QN
PROCDES    MAX FLAPS APPROACH
POINT            0        0     4600      145
POINT       100000     5220     5520      145      GRAD=.052
```

```
PROFILE   B222,D1016D,T
AIRCRAFT  DC-10-10
PROCDES   320K LBS., ATA T/C
POINT           0        C     3360        0
POINT        4000        C     3360      152
POINT       12500     1500     3360      152      GRAD=.176
POINT       13500     1638     3280      152
POINT       23350     3000     3280      152      GRAD=.138
POINT       59000     6066     3280      250      GRAD=.086
POINT      125000    14448     3280      250      GRAD=.127
*
PROFILE   B223,D1016D,T
AIRCRAFT  DC-10-10
PROCDES   340K LBS., ATA T/C
POINT           0        C     3360        0
POINT        4500        C     3360      157
POINT       14000     1500     3360      157      GRAD=.158
POINT       15000     1622     3280      157
POINT       26300     3000     3280      157      GRAD=.122
POINT       60450     5527     3280      250      GRAD=.074
POINT      125000    13079     3280      250      GRAD=.117
*
PROFILE   B224,D1016D,T
AIRCRAFT  DC-10-10
PROCDES   360K LBS., ATA T/C
POINT           0        C     3360        0
POINT        5000        C     3360      160
POINT       15500     1500     3360      160      GRAD=.143
POINT       16500     1608     3280      160
POINT       29400     3000     3280      160      GRAD=.108
POINT       62600     5125     3280      250      GRAD=.064
POINT      125000    11799     3280      250      GRAD=.107
*
PROFILE   B225,D1016D,T
AIRCRAFT  DC-10-10
PROCDES   380K LBS., ATA T/C
POINT           0        C     3360        0
POINT        5500        C     3360      164
POINT       17000     1500     3360      164      GRAD=.130
POINT       18000     1597     3280      164
POINT       32450     3000     3280      164      GRAD=.097
POINT       64400     4661     3280      250      GRAD=.052
POINT      125000    10600     3280      250      GRAD=.098
*
```

```
PROFILE   B226,D1016D,T
AIRCRAFT  DC-10-10
PROCDES   400K LBS., ATA T/O
POINT           0        0     3360        0
POINT        6000        0     3360      168
POINT       19000     1500     3360      168       GRAD=.115
POINT       20000     1587     3280      168
POINT       36250     3000     3280      168       GRAD=.087
POINT       66900     4287     3280      250       GRAD=.042
POINT      125000     9574     3280      250       GRAD=.091
*
PROFILE   B227,D1016D,T
AIRCRAFT  DC-10-10
PROCDES   420K LBS., ATA T/O
POINT           0        0     3360        0
POINT        6500        0     3360      171
POINT       21000     1500     3360      171       GRAD=.103
POINT       22000     1578     3280      171
POINT       40250     3000     3280      171       GRAD=.078
POINT       69850     3947     3280      250       GRAD=.032
POINT      125000     8468     3280      250       GRAD=.082
*
PROFILE   B228,D1016D,T
AIRCRAFT  DC-10-10
PROCDES   440K LBS., ATA T/O
POINT           0        0     3360        0
POINT        7000        0     3360      175
POINT       23500     1500     3360      175       GRAD=.091
POINT       24500     1570     3280      175
POINT       44950     3000     3280      175       GRAD=.070
POINT       73200     3622     3280      250       GRAD=.022
POINT      125000     7558     3280      250       GRAD=.076
*
PROFILE   B229,D1016D,L
AIRCRAFT  DC-10-10
PROCDES   MAX FLAPS APPROACH
POINT           0        0     2600      145
POINT      100000     5220     2840      145       GRAD=.052
*
```

```
PROFILE   B357,D10492,T
AIRCRAFT  DC-10-40
PROCDES   360K LBS., ATA T/O
POINT           0        0     3240        0
POINT        4500        0     3240      140
POINT       13500     1500     3240      140      GRAD=.167
POINT       14500     1640     3150      140
POINT       24200     3000     3150      140      GRAD=.140
POINT       46450     5000     3150      250      GRAD=.090
POINT       87550    10338     3150      250      GRAD=.130
*
PROFILE   B358,D10492,T
AIRCRAFT  DC-10-40
PROCDES   400K LBS., ATA T/O
POINT           0        0     3240        0
POINT        5500        0     3240      147
POINT       16000     1500     3240      147      GRAD=.143
POINT       17000     1616     3150      147
POINT       28950     3000     3150      147      GRAD=.116
POINT       65950     5667     3150      250      GRAD=.072
POINT      125000    12264     3150      250      GRAD=.112
*
PROFILE   B359,D10492,T
AIRCRAFT  DC-10-40
PROCDES   440K LBS., ATA T/O
POINT           0        0     3240        0
POINT        6800        0     3240      154
POINT       19000     1500     3240      154      GRAD=.123
POINT       20000     1594     3150      154
POINT       34950     3000     3150      154      GRAD=.094
POINT       69800     4952     3150      250      GRAD=.056
POINT      125000    10185     3150      250      GRAD=.095
*
PROFILE   B360,D10492,T
AIRCRAFT  DC-10-40
PROCDES   480K LBS., ATA T/O
POINT           0        0     3240        0
POINT        8200        0     3240      161
POINT       22500     1500     3240      161      GRAD=.105
POINT       23500     1578     3150      161
POINT       41750     3000     3150      161      GRAD=.078
POINT       74450     4308     3150      250      GRAD=.040
POINT      125000     8451     3150      250      GRAD=.082
*
```

```
PROFILE   B361,D10492,T
AIRCRAFT  DC-10-40
PROCDES   520K LBS., ATA T/C
POINT           0        0    3240        0
POINT        9700        0    3240      175
POINT       26500     1500    3240      175      GRAD=.089
POINT       27500     1563    3150      175
POINT       50300     3000    3150      175      GRAD=.063
POINT       78600     3707    3150      250      GRAD=.025
POINT      125000     6907    3150      250      GRAD=.069
*
PROFILE   B362,D10492,T
AIRCRAFT  DC-10-40
PROCDES   540K LBS., ATA T/C
POINT           0        0    3240        0
POINT       10500        0    3240      190
POINT       29000     1500    3240      190      GRAD=.081
POINT       30000     1557    3150      190
POINT       55300     3000    3150      190      GRAD=.057
POINT       78700     3444    3150      250      GRAD=.019
POINT      125000     6461    3150      250      GRAD=.065
*
PROFILE   B363,D10492,L
AIRCRAFT  DC-10-40
PROCDES   MAX FLAPS APPROACH
POINT           0        0    2430      160
POINT      100000     5220    2640      160      GRAD=.052
```

```
PROFILE   B214,L11122,T
AIRCRAFT  L-1011
PROCDES   300K LBS., ATA T/O
POINT           0        0      93        0
PCINT        2950        0      93      151
POINT       10650     1500      93      151      GRAD=.195
POINT       11650     1655    90.5      151
POINT       20300     3000    90.5      151      GRAD=.155
PCINT       56350     6530    90.5      250      GRAD=.098
POINT      125000    15940    90.5      250      GRAD=.137
*
PROFILE   B215,L11122,T
AIRCRAFT  L-1011
PROCDES   320K LBS., ATA T/O
PCINT           0        0      93        0
POINT        3400        0      93      153
PCINT       12000     1500      93      153      GRAD=.174
POINT       13000     1638    90.5      153
PCINT       22900     3000    90.5      153      GRAD=.138
POINT       58300     6044    90.5      250      GRAD=.086
PCINT      125000    14515    90.5      250      GRAD=.127
*
PROFILE   B216,L11122,T
AIRCRAFT  L-1011
PROCDES   340K LBS., ATA T/O
PCINT           0        0      93        0
PCINT        3900        0      93      157
PCINT       13500     1500      93      157      GRAD=.156
PCINT       14500     1622    90.5      157
POINT       25800     3000    90.5      157      GRAD=.122
PCINT       59950     5527    90.5      250      GRAD=.074
PCINT      125000    13138    90.5      250      GRAD=.117
*
PROFILE   B217,L11122,T
AIRCRAFT  L-1011
PROCDES   360K LBS., ATA T/O
PCINT           0        0      93        0
PCINT        4400        0      93      160
PCINT       15100     1500      93      160      GRAD=.140
PCINT       16100     1608    90.5      160
PCINT       29000     3000    90.5      160      GRAD=.108
PCINT       62200     5125    90.5      250      GRAD=.064
PCINT      125000    11841    90.5      250      GRAD=.107
*
```

```
PROFILE   B218,L11122,T
AIRCRAFT  L-1011
PROCDES   380K LBS., ATA T/O
POINT           0        0      93        0
POINT        5000        0      93      163
POINT       16850     1500      93      163      GRAD=.127
POINT       17850     1597    90.5      163
POINT       32300     3000    90.5      163      GRAD=.097
POINT       64550     4677    90.5      250      GRAD=.052
POINT      125000    10601    90.5      250      GRAD=.098
*
PROFILE   B219,L11122,T
AIRCRAFT  L-1011
PROCDES   400K LBS., ATA T/O
POINT           0        0      93        0
POINT        5600        0      93      166
POINT       18750     1500      93      166      GRAD=.114
POINT       19750     1587    90.5      166
POINT       36000     3000    90.5      166      GRAD=.087
POINT       67250     4313    90.5      250      GRAD=.042
POINT      125000     9568    90.5      250      GRAD=.091
*
PROFILE   B220,L11122,T
AIRCRAFT  L-1011
PROCDES   430K LBS., ATA T/O
POINT           0        0      93        0
POINT        6650        0      93      170
POINT       21850     1500      93      170      GRAD=.099
POINT       22850     1574    90.5      170
POINT       42100     3000    90.5      170      GRAD=.074
POINT       71950     3776    90.5      250      GRAD=.026
POINT      125000     7970    90.5      250      GRAD=.079
*
PROFILE   B221,L11122,L
AIRCRAFT  L-1011
PROCDES   MAX FLAPS APPRCACH
POINT           0        0      66      138
POINT      100000     5220      71      138      GRAD=.052
*
```

```
*
PROFILE   B244,70733B,T
AIRCRAFT  B-707-120B
PROCDES   160K LBS., ATA T/O
POINT            0        C    14000        0
POINT         3400        C    14000      143
POINT         9800     1500    14000      143      GRAD=.234
POINT        10800     1674    12110      143
POINT        18400     3000    12110      143      GRAD=.174
POINT        57450     8078    12110      250      GRAD=.130
POINT       125000    19224    12110      250      GRAD=.165
*
PROFILE   B245,70733B,T
AIRCRAFT  B-707-120B
PROCDES   180K LBS., ATA T/O
POINT            0        0    13900        0
POINT         3450        C    13900      146
POINT        11150     1500    13900      146      GRAD=.195
POINT        12150     1644    12080      146
POINT        21600     3000    12080      146      GRAD=.143
POINT        59500     7220    12080      250      GRAD=.111
POINT       125000    16587    12080      250      GRAD=.143
*
PROFILE   B246,70733B,T
AIRCRAFT  B-707-120B
PROCDES   200K LBS., ATA T/O
POINT            0        C    13840        0
POINT         4200        0    13840      152
POINT        13300     1500    13840      152      GRAD=.165
POINT        14300     1618    12020      152
POINT        26000     3000    12020      152      GRAD=.118
POINT        61850     6158    12020      250      GRAD=.088
POINT       125000    13989    12020      250      GRAD=.124
*
PROFILE   B247,70733B,T
AIRCRAFT  B-707-120B
PROCDES   220K LBS., ATA T/O
POINT            0        C    13770        0
POINT         5100        C    13770      157
POINT        15800     1500    13770      157      GRAD=.140
POINT        16800     1598    11980      157
POINT        31150     3000    11980      157      GRAD=.098
POINT        65250     5259    11980      250      GRAD=.066
POINT       125000    11772    11980      250      GRAD=.109
*
```

```
PROFILE   B248,707338,T
AIRCRAFT  B-707-120B
PROCDES   240K LBS., ATA T/O
POINT           0        0    13700       0
POINT        6200        0    13700     163
POINT       18800     1500    13700     163       GRAD=.119
POINT       19800     1581    11930     163
POINT       37350     3000    11930     163       GRAD=.081
POINT       69550     4614    11930     250       GRAD=.050
POINT      125000     9995    11930     250       GRAD=.097
*
PROFILE   B249,707338,T
AIRCRAFT  B-707-120B
PROCDES   258K LBS., ATA T/O
POINT           0        0    13630       0
POINT        7300        0    13630     168
POINT       21600     1500    13630     168       GRAD=.105
POINT       22600     1568    11890     168
POINT       43650     3000    11890     168       GRAD=.068
POINT       74300     4357    11890     250       GRAD=.044
POINT      125000     8885    11890     250       GRAD=.089
*
PROFILE   B250,707338,L
AIRCRAFT  B-707-120B
PROCDES   MAX FLAPS APPROACH
POINT           0        0     4600     138
POINT      100000     5240     5500     138       GRAD=.05?
*
```

```
PROFILE   B325,70733Q,T
AIRCRAFT  B-707-120B QN
PROCDES   160K LBS., ATA T/C
POINT          0        0    14000        0
POINT       3400        0    14000      143
POINT       9800     1500    14000      143      GRAD=.234
POINT      10800     1674    12110      143
POINT      18400     3000    12110      143      GRAD=.174
POINT      57450     8078    12110      250      GRAD=.130
POINT     125000    19224    12110      250      GRAD=.165
*
PROFILE   B326,70733Q,T
AIRCRAFT  B-707-120B QN
PROCDES   180K LBS., ATA T/C
POINT          0        0    13900        0
POINT       3450        0    13900      146
POINT      11150     1500    13900      146      GRAD=.195
POINT      12150     1644    12080      146
POINT      21600     3000    12080      146      GRAD=.143
POINT      59500     7220    12080      250      GRAD=.111
POINT     125000    16587    12080      250      GRAD=.143
*
PROFILE   B327,70733Q,T
AIRCRAFT  B-707-120B QN
PROCDES   200K LBS., ATA T/C
POINT          0        0    13840        0
POINT       4200        0    13840      152
POINT      13300     1500    13840      152      GRAD=.165
POINT      14300     1618    12020      152
POINT      26000     3000    12020      152      GRAD=.118
POINT      61850     6158    12020      250      GRAD=.088
POINT     125000    13989    12020      250      GRAD=.124
*
PROFILE   B328,70733Q,T
AIRCRAFT  B-707-120B QN
PROCDES   220K LBS., ATA T/C
POINT          0        0    13770        0
POINT       5100        0    13770      157
POINT      15800     1500    13770      157      GRAD=.140
POINT      16800     1598    11980      157
POINT      31150     3000    11980      157      GRAD=.098
POINT      65250     5259    11980      250      GRAD=.066
POINT     125000    11772    11980      250      GRAD=.109
*
```

```
PROFILE   B329,70733Q,T
AIRCRAFT  B-707-120B QN
PROCDES   240K LBS., ATA T/C
POINT           0        C    13700        0
POINT        6200        C    13700      163
POINT       18800     1500    13700      163      GRAD=.119
POINT       19800     1581    11930      163
POINT       37350     3000    11930      163      GRAD=.081
POINT       69550     4614    11930      250      GRAD=.050
POINT      125000     9995    11930      250      GRAD=.097
*
PROFILE   B330,70733Q,T
AIRCRAFT  B-707-120B QN
PROCDES   258K LBS., ATA T/C
POINT           0        C    13630        0
POINT        7300        C    13630      168
POINT       21600     1500    13630      168      GRAD=.105
POINT       22600     1568    11890      168
POINT       43650     3000    11890      168      GRAD=.068
POINT       74300     4357    11890      250      GRAD=.044
POINT      125000     8885    11890      250      GRAD=.089
*
PROFILE   B331,70733Q,L
AIRCRAFT  B-707-120B QN
PROCDES   MAX FLAPS APPROACH
POINT           0        C     4600      138
POINT      100000     5240     5500      138      GRAD=.052
*
```

```
PROFILE   B251,707338,T
AIRCRAFT  B-707-320B
PROCDES   190K LBS., ATA T/C
POINT           0        C    15000        0
POINT        5000        C    15000      140
POINT       11700     1500    15000      140      GRAD=.224
POINT       12700     1671    13240      140
POINT       20500     3000    13240      140      GRAD=.170
POINT       60200     7843    13240      250      GRAD=.122
POINT      125000    18406    13240      250      GRAD=.163
*
PROFILE   B252,707338,T
AIRCRAFT  B-707-320B
PROCDES   210K LBS., ATA T/C
POINT           0        C    15000        0
POINT        5000        C    15000      146
POINT       12900     1500    15000      146      GRAD=.190
POINT       13900     1644    13100      146
POINT       23300     3000    13100      146      GRAD=.144
POINT       61050     7115    13100      250      GRAD=.109
POINT      125000    16451    13100      250      GRAD=.146
*
PROFILE   B253,707338,T
AIRCRAFT  B-707-320B
PROCDES   230K LBS., ATA T/C
POINT           0        0    14840        0
POINT        5000        C    14840      152
POINT       14250     1500    14840      152      GRAD=.162
POINT       15250     1623    13100      152
POINT       26400     3000    13100      152      GRAD=.123
POINT       62250     6442    13100      250      GRAD=.096
POINT      125000    14662    13100      250      GRAD=.131
*
PROFILE   B254,707338,T
AIRCRAFT  B-707-320B
PROCDES   250K LBS., ATA T/C
POINT           0        C    14770        0
POINT        5100        0    14770      157
POINT       15800     1500    14770      157      GRAD=.140
POINT       16800     1606    13060      157
POINT       29950     3000    13060      157      GRAD=.106
POINT       64100     5834    13060      250      GRAD=.083
POINT      125000    13021    13060      250      GRAD=.118
*
```

```
PROFILE   B255,70733B,T
AIRCRAFT  B-707-320B
PROCDES   270K LBS., ATA T/C
POINT           0        C    14700       0
POINT        6050        C    14700     163
POINT       18250     1500    14700     163       GRAD=.123
POINT       19250     1593    13000     163
POINT       34200     3000    13000     163       GRAD=.094
POINT       66400     5254    13000     250       GRAD=.070
POINT      125000    11407    13000     250       GRAD=.105
*
PROFILE   B256,70733B,T
AIRCRAFT  B-707-320B
PROCDES   290K LBS., ATA T/C
POINT           0        C    14630       0
POINT        7050        C    14630     168
POINT       20950     1500    14630     168       GRAD=.108
POINT       21950     1581    12990     168
POINT       39500     3000    12990     168       GRAD=.081
POINT       70100     4744    12990     250       GRAD=.057
POINT      125000     9905    12990     250       GRAD=.094
*
PROFILE   B257,70733B,T
AIRCRAFT  B-707-320B
PROCDES   310K LBS., ATA T/C
POINT           0        C    14560       0
POINT        8150        C    14560     173
POINT       23950     1500    14560     173       GRAD=.095
POINT       24950     1571    12950     173
POINT       45100     3000    12950     173       GRAD=.071
POINT       74100     4305    12950     250       GRAD=.045
POINT      125000     8835    12950     250       GRAD=.089
*
PROFILE   B258,70733B,T
AIRCRAFT  B-707-320B
PROCDES   333.6K LBS., ATA T/O
POINT           0        C    14480       0
POINT        9500        C    14480     179
POINT       28200     1500    14480     179       GRAD=.080
POINT       29200     1560    12910     179
POINT       53200     3000    12910     179       GRAD=.060
POINT       80300     3859    12910     250       GRAD=.032
POINT      125000     7390    12910     250       GRAD=.079
*
PROFILE   B259,70733B,L
AIRCRAFT  B-707-320B
PROCDES   MAX FLAPS APPROACH
POINT           0        C     6250     147
POINT      100000     5220     7500     147       GRAD=.052
*
```

```
PROFILE   B332,70733Q,T
AIRCRAFT  B-707-320B QN
PROCDES   190K LBS., ATA T/O
POINT           0       0   15000       0
POINT        5000       0   15000     140
POINT       11700    1500   15000     140      GRAD=.224
POINT       12700    1671   13240     140
POINT       20500    3000   13240     140      GRAD=.170
POINT       60200    7843   13240     250      GRAD=.122
POINT      125000   18406   13240     250      GRAD=.163
*
PROFILE   B333,70733Q,T
AIRCRAFT  B-707-320B QN
PROCDES   210K LBS., ATA T/O
POINT           0       0   15000       0
POINT        5000       0   15000     146
POINT       12900    1500   15000     146      GRAD=.190
POINT       13900    1644   13100     146
POINT       23300    3000   13100     146      GRAD=.144
POINT       61050    7115   13100     250      GRAD=.109
POINT      125000   16451   13100     250      GRAD=.146
*
PROFILE   B334,70733Q,T
AIRCRAFT  B-707-320B QN
PROCDES   230K LBS., ATA T/O
POINT           0       0   14840       0
POINT        5000       0   14840     152
POINT       14250    1500   14840     152      GRAD=.162
POINT       15250    1623   13100     152
POINT       26400    3000   13100     152      GRAD=.123
POINT       62250    6442   13100     250      GRAD=.096
POINT      125000   14662   13100     250      GRAD=.131
*
PROFILE   B335,70733Q,T
AIRCRAFT  B-707-320B QN
PROCDES   250K LBS., ATA T/O
POINT           0       0   14770       0
POINT        5100       0   14770     157
POINT       15800    1500   14770     157      GRAD=.140
POINT       16800    1606   13060     157
POINT       29950    3000   13060     157      GRAD=.106
POINT       64100    5834   13060     250      GRAD=.083
POINT      125000   13021   13060     250      GRAD=.118
*
```

```
PROFILE   B336,707330,T
AIRCRAFT  B-707-320B QN
PROCDES   270K LBS., ATA T/C
POINT           0        0    14700        0
POINT        6050        0    14700      163
POINT       18250     1500    14700      163       GRAD=.123
POINT       19250     1593    13000      163
POINT       34200     3000    13000      163       GRAD=.094
POINT       66400     5254    13000      250       GRAD=.070
POINT      125000    11407    13000      250       GRAD=.105
*
PROFILE   B337,707330,T
AIRCRAFT  B-707-320B QN
PROCDES   290K LBS., ATA T/C
POINT           0        0    14630        0
POINT        7050        0    14630      168
POINT       20950     1500    14630      168       GRAD=.108
POINT       21950     1581    12990      168
POINT       39500     3000    12990      168       GRAD=.081
POINT       70100     4744    12990      250       GRAD=.057
POINT      125000     9905    12990      250       GRAD=.094
*
PROFILE   B338,707330,T
AIRCRAFT  B-707-320B QN
PROCDES   310K LBS., ATA T/C
POINT           0        0    14560        0
POINT        8150        0    14560      173
POINT       23950     1500    14560      173       GRAD=.095
POINT       24950     1571    12950      173
POINT       45100     3000    12950      173       GRAD=.071
POINT       74100     4305    12950      250       GRAD=.045
POINT      125000     8835    12950      250       GRAD=.089
*
PROFILE   B339,707330,T
AIRCRAFT  B-707-320B QN
PROCDES   333.6K LBS., ATA T/C
POINT           0        0    14480        0
POINT        9500        0    14480      179
POINT       28200     1500    14480      179       GRAD=.080
POINT       29200     1560    12910      179
POINT       53200     3000    12910      179       GRAD=.060
POINT       80300     3859    12910      250       GRAD=.032
POINT      125000     7390    12910      250       GRAD=.079
*
PROFILE   B340,707330,L
AIRCRAFT  B-707-320B QN
PROCDES   MAX FLAPS APPROACH
POINT           0        0     6250      147
POINT      100000     5220     7500      147       GRAD=.052
```

```
PROFILE   B055,DC830B,T
AIRCRAFT  DC-8-30
PROCDES   200K LBS., ATA T/O
POINT           0        0        3        0
POINT        3600        0        3      145
POINT       11600     1500        3      145       GRAD=.187
POINT       12600     1632        2      145
POINT       23000     3000        2      145       GRAD=.132
POINT       60650     5854        2      250       GRAD=.076
POINT      125000    15270        2      250       GRAD=.146
*
PROFILE   B056,DC830B,T
AIRCRAFT  DC-8-30
PROCDES   220K LBS., ATA T/O
POINT           0        0        3        0
POINT        4250        0        3      148
POINT       14000     1500        3      148       GRAD=.154
POINT       15000     1611        2      148
POINT       27500     3000        2      148       GRAD=.111
POINT       64100     5270        2      250       GRAD=.062
POINT      125000    13512        2      250       GRAD=.135
*
PROFILE   B099,DC830B,T
AIRCRAFT  DC-8-30
PROCDES   300K LBS., ATA T/O
POINT           0        0        3        0
POINT        7250        0        3      169
POINT       25500     1500        3      169       GRAD=.082
POINT       26500     1559        2      169
POINT       51000     3000        2      169       GRAD=.059
POINT       81150     3781        2      250       GRAD=.026
POINT      125000     6522        2      250       GRAD=.063
*
PROFILE   B057,DC830B,L
AIRCRAFT  DC-8-30
PROCDES   MAX FLAPS APPROACH
POINT           0        0        1      150
POINT      100000     5240        1      150       GRAD=.052
*
```

```
PROFILE   B260,DC813B,T
AIRCRAFT  DC-8-55/61
PROCDES   220K LBS., ATA T/O
POINT           0        0    15000        0
POINT        4000        0    15000      146
POINT       13000     1500    15000      146       GRAD=.167
POINT       14000     1608    11800      146
POINT       26850     3000    11800      146       GRAD=.108
POINT       64350     6188    11800      250       GRAD=.085
POINT      125000    13467    11800      250       GRAD=.120
*
PROFILE   B261,DC813B,T
AIRCRAFT  DC-8-55/61
PROCDES   240K LBS., ATA T/O
POINT           0        0    15000        0
POINT        4750        0    15000      151
POINT       16050     1500    15000      151       GRAD=.133
POINT       17050     1593    11800      151
POINT       32150     3000    11800      151       GRAD=.093
POINT       68050     5519    11800      250       GRAD=.070
POINT      125000    11500    11800      250       GRAD=.105
*
PROFILE   B262,DC813B,T
AIRCRAFT  DC-8-55/61
PROCDES   260K LBS., ATA T/O
POINT           0        0    15000        0
POINT        5500        0    15000      156
POINT       18000     1500    15000      156       GRAD=.120
POINT       19000     1578    11700      156
POINT       37200     3000    11700      156       GRAD=.078
POINT       71450     4788    11700      250       GRAD=.052
POINT      125000     9822    11700      250       GRAD=.094
*
PROFILE   B263,DC813B,T
AIRCRAFT  DC-8-55/61
PROCDES   280K LBS., ATA T/O
POINT           0        0    15000        0
POINT        6500        0    15000      161
POINT       21000     1500    15000      161       GRAD=.103
POINT       22000     1566    11700      161
POINT       43900     3000    11700      161       GRAD=.065
POINT       76550     4277    11700      250       GRAD=.039
POINT      125000     8248    11700      250       GRAD=.082
*
```

```
PROFILE   B264,DC813B,T
AIRCRAFT  DC-8-55/61
PROCDES   300K LBS., ATA T/C
POINT           0        C   15000       0
POINT        7500        C   15000     166
POINT       24000     1500   15000     166      GRAD=.091
POINT       25000     1555   11600     166
POINT       51250     3000   11600     166      GRAD=.055
POINT       82300     3753   11600     250      GRAD=.024
POINT      125000     6912   11600     250      GRAD=.074
*
PROFILE   B265,DC813B,T
AIRCRAFT  DC-8-55/61
PROCDES   325K LBS., ATA T/C
POINT           0        C   15000       0
POINT        8500        C   15000     172
POINT       28500     1500   15000     172      GRAD=.075
POINT       29500     1543   11600     172
POINT       63000     3000   11600     172      GRAD=.043
POINT       92150     3461   11600     250      GRAD=.016
POINT      125000     5431   11600     250      GRAD=.060
*
PROFILE   B266,DC813B,L
AIRCRAFT  DC-8-55/61
PROCDES   MAX FLAPS APPROACH
POINT           0        C    5180     143
POINT      100000     5240    6230     143      GRAD=.052
*
```

```
PROFILE   B341,DC813Q,T
AIRCRAFT  DC-8-55/61 (SAM)
PROCDES   220K LBS., ATA T/C
POINT           0        C    15000        0
POINT        4000        C    15000      146
POINT       13000     1500    15000      146       GRAD=.167
POINT       14000     1608    11800      146
POINT       26850     3000    11800      146       GRAD=.108
POINT       64350     6188    11800      250       GRAD=.085
POINT      125000    12983    11800      250       GRAD=.112
*
PROFILE   B342,DC813Q,T
AIRCRAFT  DC-8-55/61 (SAM)
PROCDES   240K LBS., ATA T/C
POINT           0        C    15000        0
POINT        4750        C    15000      151
POINT       16050     1500    15000      151       GRAD=.133
POINT       17050     1593    11800      151
POINT       32150     3000    11800      151       GRAD=.093
POINT       68050     5519    11800      250       GRAD=.070
POINT      125000    11500    11800      250       GRAD=.105
*
PROFILE   B343,DC813Q,T
AIRCRAFT  DC-8-55/61 (SAM)
PROCDES   260K LBS., ATA T/C
POINT           0        C    15000        0
POINT        5500        C    15000      156
POINT       18000     1500    15000      156       GRAD=.120
POINT       19000     1578    11700      156
POINT       37200     3000    11700      156       GRAD=.078
POINT       71450     4788    11700      250       GRAD=.052
POINT      125000     9822    11700      250       GRAD=.094
*
PROFILE   B344,DC813Q,T
AIRCRAFT  DC-8-55/61 (SAM)
PROCDES   280K LBS., ATA T/C
POINT           0        C    15000        0
POINT        6500        0    15000      161
POINT       21000     1500    15000      161       GRAD=.103
POINT       22000     1566    11700      161
POINT       43900     3000    11700      161       GRAD=.065
POINT       76550     4277    11700      250       GRAD=.039
POINT      125000     8248    11700      250       GRAD=.082
*
```

```
PROFILE   B345,DC813C,T
AIRCRAFT  DC-8-55/61 (SAM)
PROCDES   300K LBS., ATA T/C
POINT           0        C    15000        0
POINT        7500        C    15000      166
POINT       24000     1500    15000      166      GRAD=.091
POINT       25000     1555    11600      166
POINT       51250     3000    11600      166      GRAD=.055
POINT       82300     3753    11600      250      GRAD=.024
POINT      125000     6912    11600      250      GRAD=.074
*
PROFILE   B346,DC813Q,T
AIRCRAFT  DC-8-55/61 (SAM)
PROCDES   325K LBS., ATA T/C
POINT           0        C    15000        0
POINT        8500        0    15000      172
POINT       28500     1500    15000      172      GRAD=.075
POINT       29500     1543    11600      172
POINT       63000     3000    11600      172      GRAD=.043
POINT       92150     3461    11600      250      GRAD=.016
POINT      125000     5431    11600      250      GRAD=.060
*
PROFILE   B347,DC813C,L
AIRCRAFT  DC-8-55/61 (SAM)
PROCDES   MAX FLAPS APPRCACH
POINT           0        C     5180      143
POINT      100000     5240     6230      143      GRAD=.052
*
```

```
PROFILE   B267,DC837B,T
AIRCRAFT  DC-8-63
PROCDES   220K LBS., ATA T/C
POINT           0        0    15800        0
POINT        3500        0    15800      143
POINT       12000     1500    15800      143      GRAD=.176
PCINT       13000     1628    12500      143
POINT       23700     3000    12500      143      GRAD=.128
POINT       62250     6817    12500      250      GRAD=.099
POINT      125000    15226    12500      250      GRAD=.134
*
PROFILE   B268,DC837B,T
AIRCRAFT  DC-8-63
PROCDES   240K LBS., ATA T/C
PCINT           0        0    15800        0
PCINT        4200        0    15800      148
POINT       13500     1500    15800      148      GRAD=.161
POINT       14500     1610    12480      148
POINT       27150     3000    12480      148      GRAD=.110
POINT       64100     6140    12480      250      GRAD=.085
POINT      125000    13448    12480      250      GRAD=.120
*
PROFILE   B269,DC837B,T
AIRCRAFT  DC-8-63
PROCDES   260K LBS., ATA T/C
PCINT           0        0    15800        0
POINT        4900        0    15800      153
PCINT       15000     1500    15800      153      GRAD=.149
POINT       16000     1595    12460      153
PCINT       30800     3000    12460      153      GRAD=.095
POINT       66050     5291    12460      250      GRAD=.065
PCINT      125000    11599    12460      250      GRAD=.107
*
PROFILE   B270,DC837B,T
AIRCRAFT  DC-8-63
PROCDES   280K LBS., ATA T/C
POINT           0        0    15800        0
PCINT        5600        0    15800      158
POINT       17500     1500    15800      158      GRAD=.126
PCINT       18500     1583    12440      158
POINT       35550     3000    12440      158      GRAD=.083
PCINT       69250     4786    12440      250      GRAD=.053
POINT      125000    10138    12440      250      GRAD=.096
*
```

```
PROFILE   B271,DC837B,T
AIRCRAFT  DC-8-63
PROCDES   300K LBS., ATA T/C
POINT           0        0    15800        0
POINT        6300        0    15800      163
POINT       20450     1500    15800      163      GRAD=.106
POINT       21450     1572    12420      163
POINT       41300     3000    12420      163      GRAD=.072
POINT       73350     4218    12420      250      GRAD=.038
POINT      125000     8656    12420      250      GRAD=.086
*
PROFILE   B272,DC837B,T
AIRCRAFT  DC-8-63
PROCDES   320K LBS., ATA T/C
POINT           0        0    15800        0
POINT        7000        0    15800      167
POINT       22950     1500    15800      167      GRAD=.094
POINT       23950     1562    12400      167
POINT       47150     3000    12400      167      GRAD=.062
POINT       77950     3987    12400      250      GRAD=.032
POINT      125000     7601    12400      250      GRAD=.077
*
PROFILE   B273,DC837B,T
AIRCRAFT  DC-8-63
PROCDES   340K LBS., ATA T/C
POINT           0        0    15800        0
POINT        7700        0    15800      171
POINT       26000     1500    15800      171      GRAD=.082
POINT       27000     1553    12380      171
POINT       54300     3000    12380      171      GRAD=.053
POINT       83850     3799    12380      250      GRAD=.027
POINT      125000     6682    12380      250      GRAD=.070
*
PROFILE   B274,DC837B,T
AIRCRAFT  DC-8-63
PROCDES   355K LBS., ATA T/C
POINT           0        0    15800        0
POINT        8400        0    15800      175
POINT       28500     1500    15800      175      GRAD=.075
POINT       29500     1547    12360      175
POINT       60400     3000    12360      175      GRAD=.047
POINT       88700     3649    12360      250      GRAD=.023
POINT      125000     5972    12360      250      GRAD=.064
*
PROFILE   B275,DC837B,L
AIRCRAFT  DC-8-63
PROCDES   MAX FLAPS APPROACH
POINT           0        0     5000      158
POINT      100000     5240     6010      158      GRAD=.052
*
```

```
PROFILE   B348,DC837Q,T
AIRCRAFT  DC-8-63 (SAM)
PROCDES   220K LBS., ATA T/C
POINT           0        0    15800        0
POINT        3500        0    15800      143
POINT       12000     1500    15800      143      GRAD=.176
POINT       13000     1628    12500      143
POINT       23700     3000    12500      143      GRAD=.128
POINT       62250     6817    12500      250      GRAD=.099
POINT      125000    15226    12500      250      GRAD=.134
*
PROFILE   B349,DC837Q,T
AIRCRAFT  DC-8-63 (SAM)
PROCDES   240K LBS., ATA T/C
POINT           0        0    15800        0
POINT        4200        0    15800      148
POINT       13500     1500    15800      148      GRAD=.161
POINT       14500     1610    12480      148
POINT       27150     3000    12480      148      GRAD=.110
POINT       64100     6140    12480      250      GRAD=.085
POINT      125000    13448    12480      250      GRAD=.120
*
PROFILE   B350,DC837Q,T
AIRCRAFT  DC-8-63 (SAM)
PROCDES   260K LBS., ATA T/C
POINT           0        0    15800        0
POINT        4900        0    15800      153
POINT       15000     1500    15800      153      GRAD=.149
POINT       16000     1595    12460      153
POINT       30800     3000    12460      153      GRAD=.095
POINT       66050     5291    12460      250      GRAD=.065
POINT      125000    11599    12460      250      GRAD=.107
*
PROFILE   B351,DC837Q,T
AIRCRAFT  DC-8-63 (SAM)
PROCDES   280K LBS., ATA T/C
POINT           0        0    15800        0
POINT        5600        0    15800      158
POINT       17500     1500    15800      158      GRAD=.126
POINT       18500     1583    12440      158
POINT       35550     3000    12440      158      GRAD=.083
POINT       69250     4786    12440      250      GRAD=.053
POINT      125000    10138    12440      250      GRAD=.096
*
```

```
PROFILE   B352,DC837Q,T
AIRCRAFT  DC-8-63 (SAM)
PROCDES   300K LBS., ATA T/C
POINT           0        C    15800        0
POINT        6300        C    15800      163
POINT       20450     1500    15800      163      GRAD=.106
POINT       21450     1572    12420      163
POINT       41300     3000    12420      163      GRAD=.072
POINT       73350     4218    12420      250      GRAD=.038
POINT      125000     8656    12420      250      GRAD=.086
*
PROFILE   B353,DC837Q,T
AIRCRAFT  DC-8-63 (SAM)
PROCDES   320K LBS., ATA T/O
POINT           0        C    15800        0
POINT        7000        C    15800      167
POINT       22950     1500    15800      167      GRAD=.094
POINT       23950     1562    12400      167
POINT       47150     3000    12400      167      GRAD=.062
POINT       77950     3987    12400      250      GRAD=.032
POINT      125000     7601    12400      250      GRAD=.077
*
PROFILE   B354,DC837Q,T
AIRCRAFT  DC-8-63 (SAM)
PROCDES   340K LBS., ATA T/C
POINT           0        C    15800        0
POINT        7700        C    15800      171
POINT       26000     1500    15800      171      GRAD=.082
POINT       27000     1553    12380      171
POINT       54300     3000    12380      171      GRAD=.053
POINT       83850     3799    12380      250      GRAD=.027
POINT      125000     6682    12380      250      GRAD=.070
*
PROFILE   B355,DC837Q,T
AIRCRAFT  DC-8-63 (SAM)
PROCDES   355K LBS., ATA T/O
POINT           0        C    15800        0
POINT        8400        C    15800      175
POINT       28500     1500    15800      175      GRAD=.075
POINT       29500     1547    12360      175
POINT       60400     3000    12360      175      GRAD=.047
POINT       88700     3649    12360      250      GRAD=.023
POINT      125000     5972    12360      250      GRAD=.064
*
PROFILE   B356,DC837Q,L
AIRCRAFT  DC-8-63 (SAM)
PROCDES   MAX FLAPS APPROACH
POINT           0        0     5000      158
POINT      100000     5240     6010      158      GRAD=.052
```

```
PROFILE   B058,DC830B,T
AIRCRAFT  CV-880
PROCDES   SHORT RANGE, ATA T/O
POINT           0        C        3        0
POINT        5000        C        3      154
POINT       16750     1500        3      154      GRAD=.128
POINT       17750     1590        2      154
POINT       33500     3000        2      154      GRAD=.090
POINT       68200     4472        2      250      GRAD=.042
POINT      125000    11341        2      250      GRAD=.121
*
PROFILE   B059,DC830B,T
AIRCRAFT  CV-880
PROCDES   MED RANGE, ATA T/O
POINT           0        0        3        0
POINT        6000        C        3      160
POINT       19750     1500        3      160      GRAD=.109
POINT       20750     1572        2      160
POINT       40550     3000        2      160      GRAD=.072
POINT       73400     4006        2      250      GRAD=.031
POINT      125000     9627        2      250      GRAD=.109
*
PROFILE   B060,DC830B,T
AIRCRAFT  CV-880
PROCDES   LONG RANGE, ATA T/O
POINT           0        C        3        0
POINT        7250        0        3      169
POINT       25500     1500        3      169      GRAD=.082
POINT       26500     1559        2      169
POINT       51000     3000        2      169      GRAD=.059
POINT       81150     3780        2      250      GRAD=.026
POINT      125000     6519        2      250      GRAD=.062
*
PROFILE   B061,DC830B,L
AIRCRAFT  CV-880
PROCDES   MAX FLAPS APPROACH
POINT           0        0        1      130
POINT      100000     5240        1      130      GRAD=.052
*
```

```
PROFILE   B287,747178,T
AIRCRAFT  B-747-100
PROCDES   550K LBS., ATA T/C
POINT           0        0     3360        0
POINT        4650        0     3360      155
POINT       14250     1500     3360      155      GRAD=.156
POINT       15250     1589     3050      155
POINT       31100     3000     3050      155      GRAD=.089
POINT       65750     5079     3050      250      GRAD=.060
POINT      125000    10767     3050      250      GRAD=.096
*
PROFILE   B288,747178,T
AIRCRAFT  B-747-100
PROCDES   575K LBS., ATA T/C
POINT           0        0     3360        0
POINT        5100        0     3360      159
POINT       15550     1500     3360      159      GRAD=.144
POINT       16550     1582     3050      159
POINT       33900     3000     3050      159      GRAD=.082
POINT       67300     4717     3050      250      GRAD=.051
POINT      125000     9713     3050      250      GRAD=.087
*
PROFILE   B289,747178,T
AIRCRAFT  B-747-100
PROCDES   600K LBS., ATA T/C
POINT           0        0     3360        0
POINT        5550        0     3360      163
POINT       16900     1500     3360      163      GRAD=.132
POINT       17900     1575     3050      163
POINT       37000     3000     3050      163      GRAD=.075
POINT       69150     4416     3050      250      GRAD=.044
POINT      125000     8714     3050      250      GRAD=.077
*
PROFILE   B290,747178,T
AIRCRAFT  B-747-100
PROCDES   625K LBS., ATA T/C
POINT           0        0     3360        0
POINT        6000        0     3360      167
POINT       18200     1500     3360      167      GRAD=.123
POINT       19200     1571     3050      167
POINT       39400     3000     3050      167      GRAD=.071
POINT       70250     4109     3050      250      GRAD=.036
POINT      125000     8054     3050      250      GRAD=.072
*
```

```
PROFILE   B291,74717B,T
AIRCRAFT  B-747-100
PROCDES   650K LBS., ATA T/O
POINT           0        0     3360        0
POINT        6550        0     3360      170
POINT       19650     1500     3360      170      GRAD=.115
POINT       20650     1564     3060      170
POINT       43100     3000     3060      170      GRAD=.064
POINT       73000     3865     3060      250      GRAD=.029
POINT      125000     7271     3060      250      GRAD=.065
*
PROFILE   B292,74717B,T
AIRCRAFT  B-747-100
PROCDES   675K LBS., ATA T/O
POINT           0        0     3360        0
POINT        7100        0     3360      174
POINT       21250     1500     3360      174      GRAD=.106
POINT       22250     1558     3060      174
POINT       47100     3000     3060      174      GRAD=.058
POINT       75750     3745     3060      250      GRAD=.026
POINT      125000     6702     3060      250      GRAD=.060
*
PROFILE   B293,74717B,T
AIRCRAFT  B-747-100
PROCDES   700K LBS., ATA T/O
POINT           0        0     3360        0
POINT        7700        0     3360      178
POINT       22850     1500     3360      178      GRAD=.099
POINT       23850     1553     3060      178
POINT       51150     3000     3060      178      GRAD=.053
POINT       78500     3600     3060      250      GRAD=.022
POINT      125000     5970     3060      250      GRAD=.051
*
PROFILE   B294,74717B,T
AIRCRAFT  B-747-100
PROCDES   735K LBS., ATA T/O
POINT           0        0     3360        0
POINT        8700        0     3360      183
POINT       25400     1500     3360      183      GRAD=.090
POINT       26400     1547     3070      183
POINT       57300     3000     3070      183      GRAD=.047
POINT       83000     3462     3070      250      GRAD=.018
POINT      125000     5311     3070      250      GRAD=.044
*
PROFILE   B295,74717B,L
AIRCRAFT  B-747-100
PROCDES   MAX FLAPS APPROACH
POINT           0        0     2280      142
POINT      100000     5220     2480      142      GRAD=.052
*
```

```
PROFILE   B276,747278,T
AIRCRAFT  B-747-200
PROCDES   550K LBS., ATA T/O
POINT           0        0     3360        0
POINT        4650        0     3360      155
POINT       14250     1500     3360      155      GRAD=.156
POINT       15250     1589     3050      155
POINT       31100     3000     3050      155      GRAD=.089
POINT       65750     5079     3050      250      GRAD=.060
POINT      125000    10767     3050      250      GRAD=.096
*
PROFILE   B277,747278,T
AIRCRAFT  B-747-200
PROCDES   575K LBS., ATA T/O
POINT           0        0     3360        0
POINT        5100        0     3360      159
POINT       15550     1500     3360      159      GRAD=.144
POINT       16550     1582     3050      159
POINT       33900     3000     3050      159      GRAD=.082
POINT       67250     4702     3050      250      GRAD=.051
POINT      125000     9724     3050      250      GRAD=.087
*
PROFILE   B278,747278,T
AIRCRAFT  B-747-200
PROCDES   600K LBS., ATA T/O
POINT           0        0     3360        0
POINT        5550        0     3360      163
POINT       16900     1500     3360      163      GRAD=.132
POINT       17900     1575     3050      163
POINT       37000     3000     3050      163      GRAD=.075
POINT       69150     4416     3050      250      GRAD=.044
POINT      125000     8714     3050      250      GRAD=.077
*
PROFILE   B279,747278,T
AIRCRAFT  B-747-200
PROCDES   625K LBS., ATA T/O
POINT           0        0     3360        0
POINT        6000        0     3360      167
POINT       18200     1500     3360      167      GRAD=.123
POINT       19200     1571     3050      167
POINT       39400     3000     3050      167      GRAD=.071
POINT       70250     4109     3050      250      GRAD=.036
POINT      125000     8054     3050      250      GRAD=.072
*
```

```
PROFILE   B280,747278,T
AIRCRAFT  B-747-200
PROCDES   650K LBS., ATA T/O
POINT           0        0     3360        0
POINT        6550        0     3360      170
POINT       19650     1500     3360      170      GRAD=.115
POINT       20650     1564     3060      170
POINT       43100     3000     3060      170      GRAD=.064
POINT       73000     3838     3060      250      GRAD=.028
POINT      125000     7271     3060      250      GRAD=.066
*
PROFILE   B281,747278,T
AIRCRAFT  B-747-200
PROCDES   675K LBS., ATA T/O
POINT           0        0     3360        0
POINT        7100        0     3360      174
POINT       21250     1500     3360      174      GRAD=.106
POINT       22250     1558     3060      174
POINT       47100     3000     3060      174      GRAD=.058
POINT       75750     3745     3060      250      GRAD=.026
POINT      125000     6702     3060      250      GRAD=.060
*
PROFILE   B282,747278,T
AIRCRAFT  B-747-200
PROCDES   700K LBS., ATA T/O
POINT           0        0     3360        0
POINT        7700        0     3360      178
POINT       22850     1500     3360      178      GRAD=.099
POINT       23850     1553     3060      178
POINT       51150     3000     3060      178      GRAD=.053
POINT       78500     3600     3060      250      GRAD=.022
POINT      125000     5970     3060      250      GRAD=.051
*
PROFILE   B283,747278,T
AIRCRAFT  B-747-200
PROCDES   725K LBS., ATA T/O
POINT           0        0     3360        0
POINT        8400        0     3360      181
POINT       24600     1500     3360      181      GRAD=.093
POINT       25600     1548     3070      181
POINT       55850     3000     3070      181      GRAD=.048
POINT       82200     3470     3070      250      GRAD=.018
POINT      125000     5440     3070      250      GRAD=.046
*
```

```
PROFILE   B284,74727B,T
AIRCRAFT  B-747-200
PROCDES   750K LBS., ATA T/O
POINT           0        0     3360        0
POINT        9150        0     3360      185
POINT       26550     1500     3360      185       GRAD=.086
POINT       27550     1544     3070      185
POINT       60650     3000     3070      185       GRAD=.044
POINT       85700     3350     3070      250       GRAD=.014
POINT      125000     5080     3070      250       GRAD=.044
*
PROFILE   B285,74727B,T
AIRCRAFT  B-747-200
PROCDES   775K LBS., ATA T/O
POINT           0        0     3360        0
POINT        9950        0     3360      188
POINT       28450     1500     3360      188       GRAD=.081
POINT       29450     1540     3070      188
POINT       65950     3000     3070      188       GRAD=.040
POINT       89950     3264     3070      250       GRAD=.011
POINT      125000     4700     3070      250       GRAD=.041
*
PROFILE   B286,74727B,L
AIRCRAFT  B-747-200
PROCDES   MAX FLAPS APPROACH
POINT           0        0     2280      142
POINT      100000     5220     2480      142       GRAD=.052
*
```

```
PROFILE   B011,CV580,T
AIRCRAFT  CV-580
PROCDES   TAKEOFF
POINT           0       0       2       0
POINT        2800       0       2     120
PCINT        8000     470       2     120      GRAD=.090
*
PROFILE   B012,CV580,L
AIRCRAFT  CV-580
PROCDES   APPROACH
POINT           0       0       1     100
PCINT       10000     524       1     100      GRAD=.052
*
```

```
PROFILE   B133,GAJET1,T
AIRCRAFT  LEARJET
PROCDES   NBAA TAKEOFF
POINT           0        C      100       0
POINT        4000        C      100     155
POINT       11500     1500      100     155      GRAD=.200
POINT       12500     1575       85     155
POINT       31500     3000       85     155      GRAD=.075
POINT       66000     5500       85     250      GRAD=.072
POINT      125000    10000       85     250      GRAD=.076
*
PROFILE   B144,GAJET1,L
AIRCRAFT  LEARJET
PROCDES   MAX FLAPS APPROACH
POINT           0        0       40     155
POINT      100000     5220       40     155      GRAD=.052
*
```

```
PROFILE   B134,GAJET1,T
AIRCRAFT  JET COMMANDER
PROCDES   NBAA TAKEOFF
POINT           0        0      100       0
POINT        3500        0      100     145
POINT       15000     1500      100     145      GRAD=.130
POINT       16000     1560       85     145
POINT       40000     3000       85     145      GRAD=.060
POINT       77000     5000       85     250      GRAD=.054
POINT      125000     8000       85     250      GRAD=.062
*
PROFILE   B141,GAJET1,L
AIRCRAFT  JET COMMANDER
PROCDES   MAX FLAPS APPROACH
POINT           0        0       40     140
POINT      100000     5220       40     140      GRAD=.052
*
```

```
PROFILE   B135,GAJET2,T
AIRCRAFT  GULFSTREAM II
PROCDES   NBAA TAKEOFF
POINT           0        0      100        0
POINT        4500        0      100      175
POINT       13500     1500      100      175      GRAD=.167
POINT       14500     1575       85      175
POINT       33500     3000       85      175      GRAD=.075
POINT       62200     5000       85      250      GRAD=.070
POINT      125000    14000       85      250      GRAD=.143
*
PROFILE   B142,GAJET2,L
AIRCRAFT  GULFSTREAM II
PROCDES   MAX FLAPS APPRCACH
POINT           0        0       40      155
POINT      100000     5220       40      155      GRAD=.052
*
```

```
PROFILE   B136,GAJET1,T
AIRCRAFT  JETSTAR
PROCDES   NBAA TAKEOFF
POINT           0        C      100        0
POINT        5000        C      100      145
POINT       18000     1500      100      145      GRAD=.115
POINT       19000     1530       85      145
POINT       68000     3000       85      145      GRAD=.030
POINT      105000     4000       85      250      GRAD=.027
POINT      125000     5000       85      250      GRAD=.050
*
PROFILE   B143,GAJET1,L
AIRCRAFT  JETSTAR
PROCDES   MAX FLAPS APPROACH
POINT           0        C       40      140
POINT      100000     5220       40      140      GRAD=.052
*
```

```
PROFILE    B137,GAPRP2,T
AIRCRAFT   BEECH BARON
PROCDES    TAKEOFF
POINT            0        C      100        0
POINT          750        C      100      104
POINT         6950      550      100      104       GRAD=.089
*
PROFILE    B145,GAPRP2,L
AIRCRAFT   BEECH BARON
PROCDES    APPROACH
POINT            0        C       40       80
POINT        10000      524       40       80       GRAD=.052
*
```

```
PROFILE   B138,GAPRP2,T
AIRCRAFT  CESSNA 340
PROCDES   TAKEOFF
POINT           0       0      100       0
POINT        2400       0      100     113
POINT        9350     550      100     113      GRAD=.079
*
PROFILE   B146,GAPRP2,L
AIRCRAFT  CESSNA 340
PROCDES   APPROACH
POINT           0       0       40      80
POINT       10000     524       40      80      GRAD=.052
*
```

```
PROFILE   B139,GAPRP2,T
AIRCRAFT  NORTH AMERICAN 685
PROCDES   TAKEOFF
POINT           0       0     100       0
POINT        1900       0     100     120
POINT        8100     550     100     120      GRAD=.089
*
PROFILE   B147,GAPRP2,L
AIRCRAFT  NORTH AMERICAN 685
PROCDES   APPROACH
POINT           0       0      40      80
POINT       10000     524      40      80      GRAD=.052
*
```

```
PROFILE   B140,GAJET3,T
AIRCRAFT  CESSNA CITATION
PROCDES   NBAA TAKEOFF
POINT           0        0      100       0
POINT        4000        0      100     155
POINT       11500     1500      100     155      GRAD=.200
POINT       12500     1575       85     155
POINT       31500     3000       85     155      GRAD=.075
POINT       66000     5500       85     250      GRAD=.072
POINT      125000    10000       85     250      GRAD=.076
*
PROFILE   B148,GAJET3,L
AIRCRAFT  CESSNA CITATION
PROCDES   MAX FLAPS APPROACH
POINT           0        0       40     155
POINT      100000     5220       40     155      GRAD=.052
*
```

```
PROFILE   B370,GAPRP1,T
AIRCRAFT  GA SINGLE ENGINE
PROCDES   TAKEOFF
POINT           0        0      100       0
POINT        1000        0      100      90
POINT       50000     5600      100      90      GRAD=.114
*
PROFILE   B371,GAPRP1,L
AIRCRAFT  GA SINGLE ENGINE
PROCDES   APPROACH
POINT           0        0       40      75
POINT       50000     2610       40      75      GRAD=.052
```

APPENDIX C

LIST OF AVAILABLE LIBRARY CODES

Table C-1 lists all the currently available codes provided in the program's noise library. These codes are listed by aircraft type; and within each type, by operational procedures and gross weight.

Table C-2 lists aircraft library codes as a function of stage length. This is not as fine a breakdown as Table C-1, but generally provides sufficient accuracy. Its format is often more convenient; furthermore, finer classifications are often not available, or are uncertain to the point of being not meaningful.

TABLE C-1
LIST OF AVAILABLE AIRCRAFT TYPE CODES

AIRCRAFT TYPE	OPERATION	GROSS WEIGHT	AIRCRAFT CODE
AIR CARRIER TYPE AIRCRAFT			
TWO ENGINE PROP			
Convair 580	Takeoff	Typical	B011
	Landing	Maximum landing weight	B012
TWO ENGINE JET			
Boeing 737	Takeoff	80,000 lbs.	B200
	Takeoff	90,000 lbs.	B201
	Takeoff	100,000 lbs.	B202
	Takeoff	109,000 lbs. (Maximum takeoff weight)	B203
	Landing	98,000 lbs. (Maximum landing weight)	B204
Boeing 737 - Quiet Nacelle	Takeoff	80,000 lbs.	B296
	Takeoff	90,000 lbs.	B297
	Takeoff	100,000 lbs.	B298
	Takeoff	109,000 lbs. (Maximum takeoff weight)	B299
	Landing	98,000 lbs. (Maximum landing weight)	B300
DC-9-10	Takeoff	70,000 lbs.	B205
	Takeoff	80,000 lbs.	B206
	Takeoff	90,800 lbs. (Maximum takeoff weight)	B207
	Landing	81,700 lbs. (Maximum landing weight)	B208
DC-9-10 - Quiet Nacelle	Takeoff	70,000 lbs.	B301
	Takeoff	80,000 lbs.	B302
	Takeoff	90,800 lbs. (Maximum takeoff weight)	B303
	Landing	81,700 lbs. (Maximum landing weight)	B304
DC-9-30	Takeoff	80,000 lbs.	B209
	Takeoff	90,000 lbs.	B210
	Takeoff	100,000 lbs.	B211
	Takeoff	108,000 lbs. (Maximum takeoff weight)	B212
	Landing	99,000 lbs. (Maximum landing weight)	B213
DC-9-30 - Quiet Nacelle	Takeoff	80,000 lbs.	B305
	Takeoff	90,000 lbs.	B306
	Takeoff	100,000 lbs.	B307
	Takeoff	108,000 lbs. (Maximum takeoff weight)	B308
	Landing	99,000 lbs. (Maximum landing weight)	B309
BAC 1-11	Takeoff	75,000 lbs.	B119
	Takeoff	80,000 lbs.	B120
	Takeoff	87,000 lbs.	B005
	Landing	Maximum landing weight	B006

TABLE C-1 (CONTINUED)

AIRCRAFT TYPE	OPERATION	GROSS WEIGHT	AIRCRAFT CODE
BAC 1-11 - Quiet Nacelle	Takeoff	75,000 lbs.	B123
	Takeoff	80,000 lbs.	B122
	Takeoff	87,000 lbs.	B121
	Landing	Maximum landing weight	B124
THREE ENGINE NARROW BODY JETS			
Boeing 727-100	Takeoff	110,000 lbs.	B237
	Takeoff	120,000 lbs.	B238
	Takeoff	130,000 lbs.	B239
	Takeoff	140,000 lbs.	B240
	Takeoff	150,000 lbs.	B241
	Takeoff	160,000 lbs. (Maximum takeoff weight)	B242
	Landing	142,500 lbs. (Maximum landing weight)	B243
Boeing 727-100 - Quiet Nacelle	Takeoff	110,000 lbs.	B318
	Takeoff	120,000 lbs.	B319
	Takeoff	130,000 lbs.	B320
	Takeoff	140,000 lbs.	B321
	Takeoff	150,000 lbs.	B322
	Takeoff	160,000 lbs. (Maximum takeoff weight)	B323
	Landing	142,000 lbs. (Maximum landing weight)	B324
Boeing 727-200	Takeoff	130,000 lbs.	B230
	Takeoff	140,000 lbs.	B231
	Takeoff	150,000 lbs.	B232
	Takeoff	160,000 lbs.	B233
	Takeoff	170,000 lbs.	B234
	Takeoff	184,800 lbs. (Maximum takeoff weight)	B235
	Landing	154,500 lbs. (Maximum landing weight)	B236
Boeing 727-200 - Quiet Nacelle	Takeoff	130,000 lbs.	B311
	Takeoff	140,000 lbs.	B312
	Takeoff	150,000 lbs.	B313
	Takeoff	160,000 lbs.	B314
	Takeoff	170,000 lbs.	B315
	Takeoff	184,800 lbs. (Maximum takeoff weight)	B316
	Landing	154,400 lbs. (Maximum landing weight)	B317
THREE ENGINE WIDE-BODY JETS			
Lockheed 1011	Takeoff	300,000 lbs.	B214
	Takeoff	320,000 lbs.	B215
	Takeoff	340,000 lbs.	B216
	Takeoff	360,000 lbs.	B217
	Takeoff	380,000 lbs.	B218
	Takeoff	400,000 lbs.	B219
	Takeoff	430,000 lbs.	B220
	Landing	358,000 lbs. (Maximum landing weight)	B221

TABLE C-1 (CONTINUED)

AIRCRAFT TYPE	OPERATION	GROSS WEIGHT	AIRCRAFT CODE
DC-10-10	Takeoff	320,000 lbs.	B222
	Takeoff	340,000 lbs.	B223
	Takeoff	360,000 lbs.	B224
	Takeoff	380,000 lbs.	B225
	Takeoff	400,000 lbs.	B226
	Takeoff	420,000 lbs.	B227
	Takeoff	440,000 lbs. (Maximum takeoff weight)	B228
	Landing	363,500 lbs. (Maximum landing weight)	B229
DC-10-40	Takeoff	360,000 lbs.	B357
	Takeoff	400,000 lbs.	B358
	Takeoff	440,000 lbs.	B359
	Takeoff	480,000 lbs.	B360
	Takeoff	520,000 lbs.	B361
	Takeoff	540,000 lbs. (Maximum takeoff weight)	B362
	Landing	Maximum landing weight	B363
FOUR ENGINE NARROW-BODY JETS			
Boeing 707-120B	Takeoff	160,000 lbs.	B244
	Takeoff	180,000 lbs.	B245
	Takeoff	200,000 lbs.	B246
	Takeoff	220,000 lbs.	B247
	Takeoff	240,000 lbs.	B248
	Takeoff	258,000 lbs. (Maximum takeoff weight)	B249
	Landing	190,000 lbs. (Maximum landing weight)	B250
Boeing 707-120B - Quiet Nacelle	Takeoff	160,000 lbs.	B325
	Takeoff	180,000 lbs.	B326
	Takeoff	200,000 lbs.	B327
	Takeoff	220,000 lbs.	B328
	Takeoff	240,000 lbs.	B329
	Takeoff	258,000 lbs. (Maximum takeoff weight)	B330
	Landing	190,000 lbs. (Maximum landing weight)	B331
Boeing 707-320B	Takeoff	190,000 lbs.	B251
	Takeoff	210,000 lbs.	B252
	Takeoff	230,000 lbs.	B253
	Takeoff	250,000 lbs.	B254
	Takeoff	270,000 lbs.	B255
	Takeoff	290,000 lbs.	B256
	Takeoff	310,000 lbs.	B257
	Takeoff	333,600 lbs. (Maximum takeoff weight)	B258
	Landing	247,000 lbs. (Maximum landing weight)	B259
Boeing 707-320B - Quiet Nacelle	Takeoff	190,000 lbs.	B332
	Takeoff	210,000 lbs.	B333
	Takeoff	230,000 lbs.	B334
	Takeoff	250,000 lbs.	B335
	Takeoff	270,000 lbs.	B336
	Takeoff	290,000 lbs.	B337
	Takeoff	310,000 lbs.	B338
	Takeoff	333,600 lbs. (Maximum takeoff weight)	B339
	Landing	247,000 lbs. (Maximum landing weight)	B340

TABLE C-1 (CONTINUED)

AIRCRAFT TYPE	OPERATION	GROSS WEIGHT	AIRCRAFT CODE
Convair 880	Takeoff	140,000 lbs.	B058
	Takeoff	150,000 lbs.	B059
	Takeoff	170,000 lbs.	B060
	Landing	Maximum landing weight	B061
DC-8-30	Takeoff	200,000 lbs.	B055
	Takeoff	220,000 lbs.	B056
	Takeoff	300,000 lbs.	B099
	Landing	Maximum landing weight	B057
DC-8-50	Takeoff	220,000 lbs.	B260
	Takeoff	240,000 lbs.	B261
	Takeoff	260,000 lbs.	B262
	Takeoff	280,000 lbs.	B263
	Takeoff	300,000 lbs.	B264
	Takeoff	325,000 lbs. (Maximum takeoff weight)	B265
	Landing	207,000 lbs. (Maximum landing weight)	B266
DC-8-50 - Quiet Nacelle	Takeoff	220,000 lbs.	B341
	Takeoff	240,000 lbs.	B342
	Takeoff	260,000 lbs.	B343
	Takeoff	280,000 lbs.	B344
	Takeoff	300,000 lbs.	B345
	Takeoff	325,000 lbs. (Maximum takeoff weight)	B346
	Landing	207,000 lbs. (Maximum landing weight)	B347
DC-8-60	Takeoff	220,000 lbs.	B267
	Takeoff	240,000 lbs.	B268
	Takeoff	260,000 lbs.	B269
	Takeoff	280,000 lbs.	B270
	Takeoff	300,000 lbs.	B271
	Takeoff	320,000 lbs.	B272
	Takeoff	340,000 lbs.	B273
	Takeoff	355,000 lbs. (Maximum takeoff weight)	B274
	Landing	258,000 lbs. (Maximum landing weight)	B275
DC-8-60 - Quiet Nacelle	Takeoff	220,000 lbs.	B348
	Takeoff	240,000 lbs.	B349
	Takeoff	260,000 lbs.	B350
	Takeoff	280,000 lbs.	B351
	Takeoff	300,000 lbs.	B352
	Takeoff	320,000 lbs.	B353
	Takeoff	340,000 lbs.	B354
	Takeoff	355,000 lbs. (Maximum takeoff weight)	B355
	Landing	258,000 lbs. (Maximum landing weight)	B356

TABLE C-1 (CONCLUDED)

AIRCRAFT TYPE	OPERATION	GROSS WEIGHT	AIRCRAFT CODE
FOUR ENGINE WIDE-BODY JETS			
Boeing 747-100	Takeoff	550,000 lbs.	B287
	Takeoff	575,000 lbs.	B288
	Takeoff	600,000 lbs.	B289
	Takeoff	625,000 lbs.	B290
	Takeoff	650,000 lbs.	B291
	Takeoff	675,000 lbs.	B292
	Takeoff	700,000 lbs.	B293
	Takeoff	735,000 lbs. (Maximum takeoff weight)	B294
	Landing	564,000 lbs. (Maximum landing weight)	B295
Boeing 747-200B	Takeoff	550,000 lbs.	B276
	Takeoff	575,000 lbs.	B277
	Takeoff	600,000 lbs.	B278
	Takeoff	625,000 lbs.	B279
	Takeoff	650,000 lbs.	B280
	Takeoff	675,000 lbs.	B281
	Takeoff	700,000 lbs.	B282
	Takeoff	725,000 lbs.	B283
	Takeoff	750,000 lbs.	B284
	Takeoff	775,000 lbs. (Maximum takeoff weight)	B285
	Landing	564,000 lbs. (Maximum landing weight)	B286
GENERAL AVIATION TYPE AIRCRAFT			
GENERAL AVIATION JETS			
Lear Jet	Takeoff	13,000 lbs.	B133
	Landing	Maximum landing weight	B144
Jet Commander	Takeoff	17,000 lbs.	B134
	Landing	Maximum landing weight	B141
Gulfstream II (Fan jet)	Takeoff	59,000 lbs.	B135
	Landing	Maximum landing weight	B142
Jet Star	Takeoff	30,000 lbs.	B136
	Landing	Maximum landing weight	B143
Cessna Citation	Takeoff	10,850 lbs.	B140
	Landing	Maximum landing weight	B148
TWO ENGINE PROP			
Typical (e.g. Beech Baron)	Takeoff	5,000 lbs.	B137
	Landing	Maximum landing weight	B145
Cessna 340	Takeoff	5,975 lbs.	B138
	Landing	Maximum landing weight	B146
North American 685	Takeoff	6,750 lbs.	B139
	Landing	Maximum landing weight	B147
ONE ENGINE PROP			
Typical	Takeoff	Takeoff	B370
	Landing	Landing	B371

TABLE C-2
AIRCRAFT TYPE CODES BY STAGE LENGTH

Air Carrier - medium range types	Takeoff			Approach
	Short (under 500 mi.)	Medium (500-1000 mi.)	Medium-Long (1000-2000 mi.)	
DC-9	B210 (B306*)	B211 (B307)	B212 (B308)	B213 (B309)
727-100	B238 (B319)	B240 (B321)	B242 (B323)	B243 (B324)
727-200	B231 (B312)	B233 (B314)	B235 (B316)	B236 (B317)
737	B200 (B296)	B201 (B297)	B203 (B299)	B204 (B300)
BAC-1-11	B119 (B123)	B120 (B122)	B005 (B121)	B006 (B124)

Air Carrier - long range types	Takeoff		Approach
	Medium (under 1500 mi.)	Long (over 1500 mi.)	
DC-8-50	B260 (B341)	B263 (B344)	B266 (B347)
707-320B	B252 (B333)	B255 (B336)	B259 (B340)
DC-10-10	B225	B227	B229
L-1011	B218	B220	B221
747-100	-	B293	B295
747-200B	-	B282	B286

General Aviation	Takeoff	Approach
Typical business jets (Commander)	B134	
Fanjets (Gulfstream II)	B135	
Jetstar	B136	
Learjet	B133	
Citation	B140	B148
Piston aircraft - single engine	B370	B371
Piston aircraft - twin engine	B137	B145

* Numbers in parentheses refer to versions produced or retrofitted to meet FAR 36 levels

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