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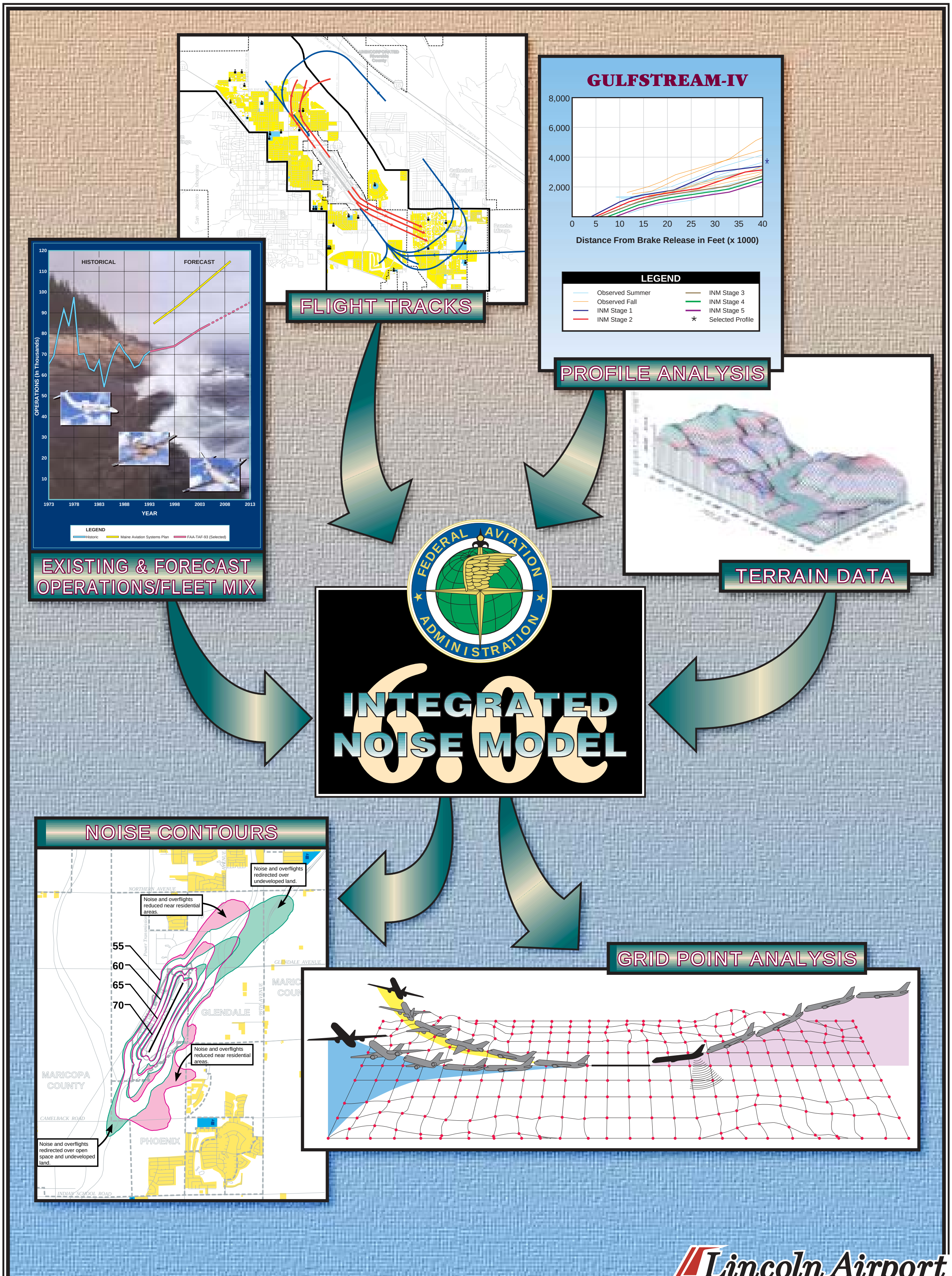

Exhibit 2B
INM PROCESS

OPERATIONS AND FLEET MIX

For this analysis, current aircraft operations data (takeoffs and landings) and forecasts of future activity (2007 and 2022) were used for noise modeling. Annual aircraft operations are converted into average daily operations by dividing total annual operations by 365 days.

The selection of individual aircraft types is important to the modeling process because different aircraft types generate different noise levels. The noise footprints presented in **Exhibit 2C**, **Exhibit 2D,** and **Exhibit 2E** illustrate this concept graphically. The footprints represent the noise pattern generated by one departure and one arrival of the given aircraft type. The aircraft illustrated are some of those commonly found at Lincoln Airport.

The distribution of these operations among various categories, users, and types of aircraft is critical to the development of the input model data. **Table 2D** lists the annual operations by aircraft type.

DATABASE SELECTION

To select the proper aircraft from the INM database, a review of the current fleet mix for each airline and user group at Lincoln Airport was conducted. The INM describes several different versions of the Boeing series aircraft. The model's B-717-200 was used for the 717200, with the 737300 used for B-737-300, and the 737500 used for the B-737-500 series. Hushkitted B-727 and B-737 aircraft were modeled with the 727EM2 and 737N9, respectively.

The MD83 was used to represent the MD-80 aircraft at Lincoln Airport. Hushkitted DC-9 aircraft operations are modeled using the DC93LW designator. The A320 designator was used to represent the A-320 aircraft operations. Regional jet and turboprop aircraft in the commuter fleet are represented by the INM designators CL601, DHC6, DHC8, and SF340. These selections are commensurate with the Approved Substitution List.

Military operations at Lincoln Airport are distributed between four generalized categories of aircraft. The large jet/transport military aircraft are modeled with INM designators KC135R, C135B, 737N17, and E4. The small military fighter/trainer jets are represented in the model by the INM designator F16A. The turboprop/trainer aircraft are modeled with the DHC6 aircraft from the model. Military helicopter operations are modeled with the S-70 (UH-60) helicopter.

The FAA aircraft substitution list indicates that the general aviation single-engine variable pitch propeller model, the GASEPV, represents a number of single-engine general aviation aircraft. Among others these include the Beech Bonanza, Cessna 177 and 180, Piper Cherokee Arrow, Piper PA-32, and the Mooney. The general aviation single-engine fixed pitch propeller model, the GASEPF, also represents several single-engine general aviation aircraft. These include the Cessna 150 and 172, Piper Archer,

TABLE 2D
Operations By Aircraft Type
Lincoln Airport

Activity	INM Descriptor	2002[1] Operations	2007[2] Operations	2022[2] Operations
Commercial Carrier				
B-717-200	717200	100	1,250	1,700
B-737-300	737300	262	590	4,010
B-737-500	737500	220	1,260	1,700
B-727-200 (Hushkit)	727EM2	108	70	0
B-737-200 (Hushkit)	737N9	130	70	0
A-320	A32023	10	470	2,000
BAE-146	BAE146	1,030	1,860	1,600
Regional Jet	CL601	6,664	2,380	3,610
DC-9-30 (Hushkit)	DC93LW	630	260	0
B-1900	DHC6	1,408	2,090	1,600
Do-328	DHC8	1,144	1,390	1,500
MD-83	MD83	150	860	800
SF340	SF340	2,126	1,390	1,500
Subtotal		**13,982**	**13,940**	**20,020**
Air Taxi				
Small Jets	LEAR35	2,165	1,850	2,200
Medium Jets	CL600	577	500	590
Large Jets	GV	911	780	930
Small Turboprop	CNA441	1,155	990	1,170
Large Turboprop	DHC6	346	300	350
Piston	BEC58P	1,732	1,480	1,760
Subtotal		**6,886**	**5,900**	**7,000**
Military Itinerant				
Large Jet/Transport				
KC135R	KC135R	3,388	7,790	12,350
RC135/EC135	C135B	5,785	4,560	0
B737	737N17	313	420	420
E4 (747)	E4	250	340	340
Small Jet/Fighter-Trainer				
F16/T38/T37/F18/T1	F16A	641	860	860
Turboprop/Trainer-Transp.				
C23/C12/C26	DHC6	688	930	930
Helicopter				
UH60	UH60	1,563	2,100	2,100
Subtotal		**12,628**	**17,000**	**17,000**
Military Local				
Large Jet/Transport				
KC135R	KC135R	1,589	3,670	5,820
RC135/EC135	C135B	2,713	2,150	0
B737	737N17	147	200	200
E4 (747)	E4	117	160	160

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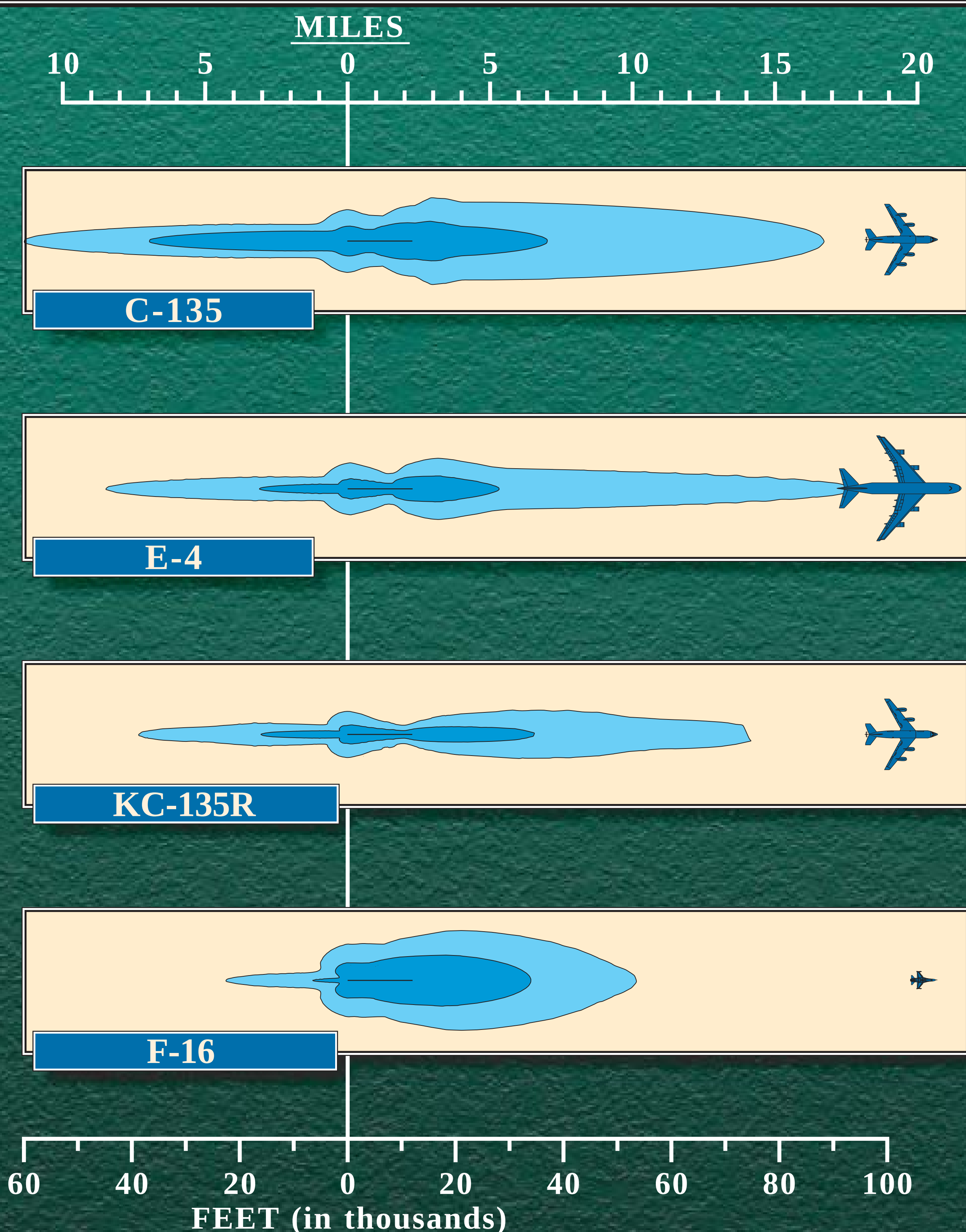


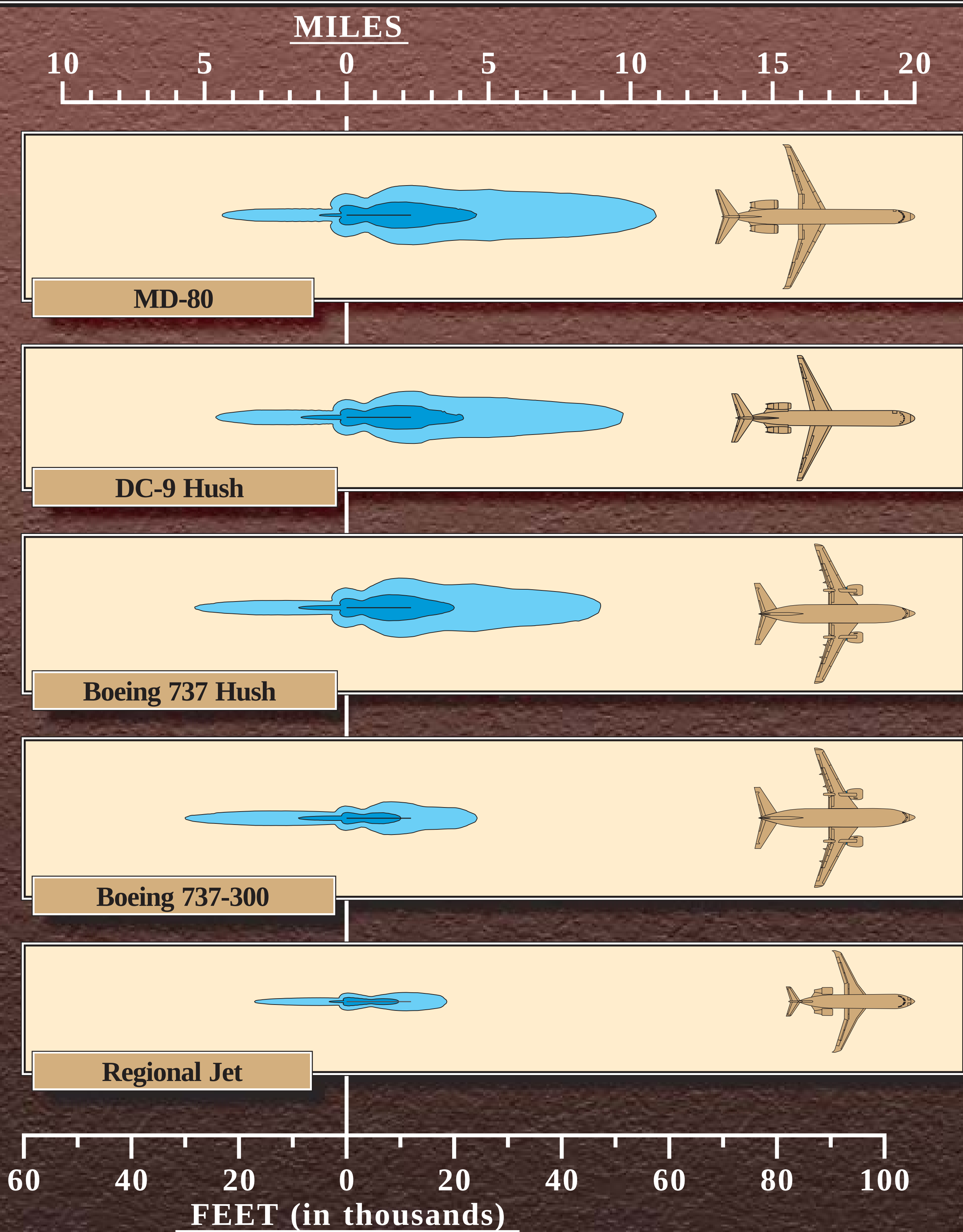
The contours represent sound exposure levels (SEL) of 80 and 90 dB for one arrival and one departure of each aircraft type. The outer contour represents 80 dB SEL. The inner contour represents 90 dB SEL.

Source: Coffman Associates 1999

Lincoln Airport

Exhibit 2C
MILITARY AIRCRAFT NOISE
FOOTPRINT COMPARISON

01SP21-2D-11/7/02



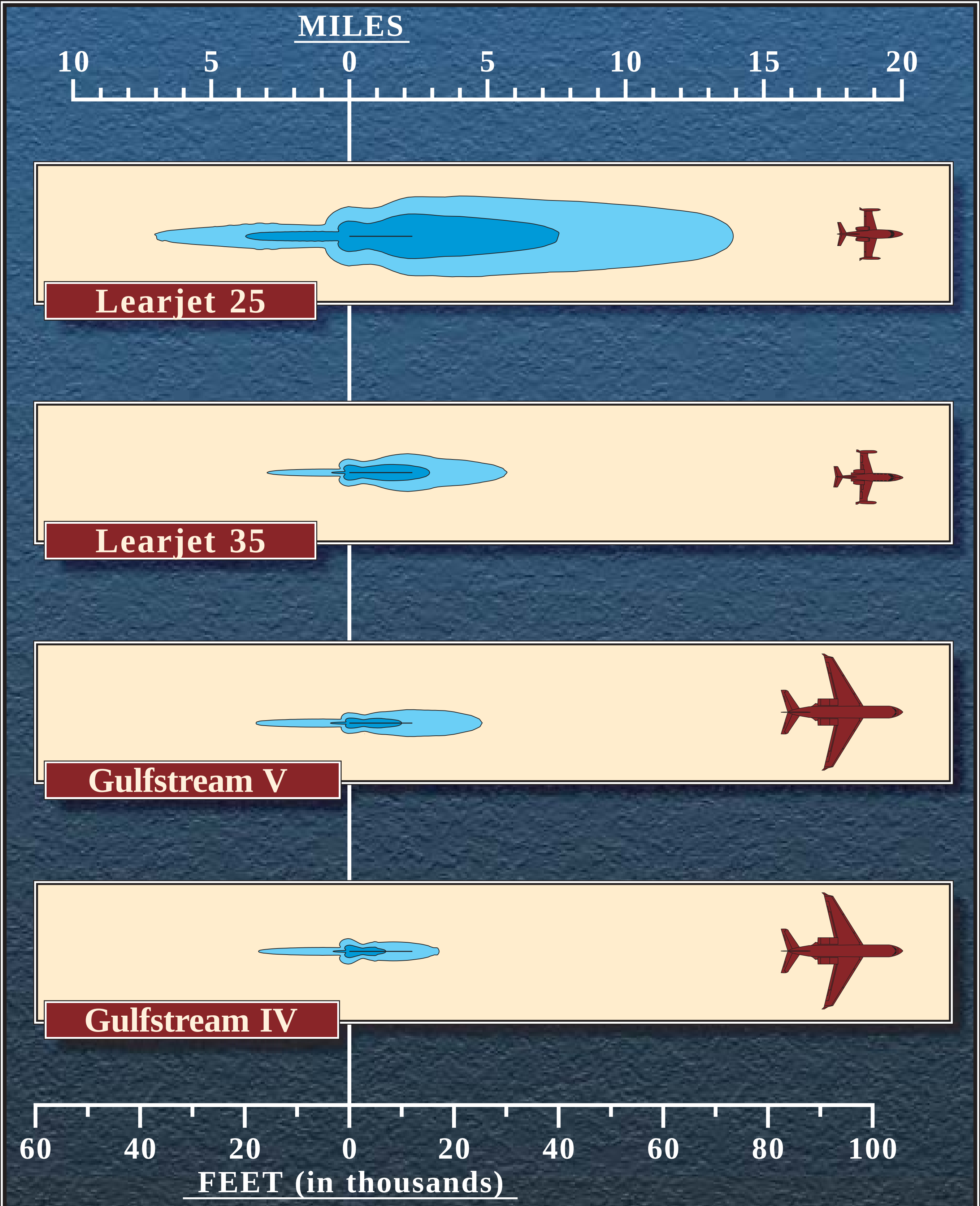
The contours represent sound exposure levels (SEL) of 80 and 90 dB for one arrival and one departure of each aircraft type. The outer contour represents 80 dB SEL. The inner contour represents 90 dB SEL.

Source: Coffman Associates 1999

Lincoln Airport

Exhibit 2D
COMMERCIAL AIRCRAFT NOISE
FOOTPRINT COMPARISON

01SP21-2E-11/7/02



The contours represent sound exposure levels (SEL) of 80 and 90 dB for one arrival and one departure of each aircraft type. The outer contour represents 80 dB SEL. The inner contour represents 90 dB SEL.

Source: Coffman Associates 1999

Lincoln Airport

Exhibit 2E

GENERAL AVIATION AIRCRAFT NOISE FOOTPRINT COMPARISON

TABLE 2D (Continued) **Operations By Aircraft Type** **Lincoln Airport**				
Activity	**INM Descriptor**	**2002[1] Operations**	**2007[2] Operations**	**2022[2] Operations**
Military Local (Continued)				
Small Jet/Fighter-Trainer				
F16/T38/T37/F18/T1	F16A	301	400	400
Turboprop/Trainer-Transp.				
C23/C12/C26	DHC6	323	430	430
Helicopter				
UH60	UH60	733	990	990
Subtotal		**5,923**	**8,000**	**8,000**
General Aviation Itinerant				
Small Jets	CNA500	3,030	3,380	4,980
	LEAR25	1,010	1,120	0
	LEAR35	3,535	3,930	5,700
Medium Jets	CL600	1,515	1,690	2,140
	GIV	500	560	710
Large Jets	GV	300	340	430
	737700	200	230	290
Small Turboprop	CNA441	4,040	4,500	5,700
Large Turboprop	DHC6	1,215	1,350	1,710
Single Engine Fixed Pitched	GASEPF	8,680	9,675	12,255
Single Engine Var. Pitched	GASEPV	8,680	9,675	12,255
Multi-Engine	BEC58P	6,060	6,750	8,550
Helicopter	B206L	1,612	1,800	2,280
Subtotal		**40,377**	**45,000**	**57,000**
General Aviation Local				
Single Engine Fixed Pitched	GASEPF	8,995	15,200	17,200
Single Engine Var. Pitched	GASEPV	8,995	15,200	17,200
Multi-Engine	BEC58P	3,375	5,700	6,450
Helicopter	B206L	1,125	1,900	2,150
Subtotal		**22,490**	**38,000**	**43,000**
GRAND TOTAL		***102,286***	***127,840***	***152,020***

[1] Year 2002 operations are based on ATCT counts from May 2001 to April 2002.
[2] Lincoln Airport Master Plan, March 1999.

Piper PA-28-140 and 180, and the Piper Tomahawk.

The FAA's substitution list recommends the BEC58P, the Beech Baron, to represent the light twin-engine aircraft such as the Piper Navajo, Beech Duke, Cessna 310, and others. The CNA441 effectively represents light turboprop and twin-engine piston aircraft such as the King Air, Cessna 402, Gulfstream Commander, and others. In addition, the DCH6 is recommended for use in modeling the Merlin Metroliner turboprop aircraft.

The INM provides data for most of the business turbojet aircraft in the national fleet. The CNA500 effectively represents the Cessna Citation I, II, and V series aircraft. The LEAR25 is used to represent the Lear Jet 23, 24, and 25 series aircraft. Aircraft such as the Lear 30, 40, 50, and 60 series, in addition to the Hawker 800 and 1000, are effectively represented by the LEAR35 designator. Both the Canadair Challenger 600 and Falcon 2000 are modeled using the CL600. The GIV designator represents the Gulfstream IV series while the GV represents the Gulfstream V series of aircraft. The Boeing Business Jet effectively uses the 737700 INM designator.

Helicopters operating at Lincoln Airport are modeled using the B206L designator. All substitutions are commensurate with published FAA guidelines.

Single Event Analysis

Measured single event noise levels for individual aircraft, taken during the noise monitoring program, are helpful in verifying and refining the noise modeling assumptions for existing and future conditions at Lincoln Airport. (Measured single event noise information is for comparative purposes only and cannot be used as input into the INM.) Both the loudest sound levels (Lmax) and the Sound Exposure Levels (SEL) for various aircraft types were recorded during the noise measurement program at each noise monitoring site. A detailed INM grid point analysis can then be prepared that generates Lmax and SEL values for the corresponding aircraft types at each noise monitoring site for comparison. The resulting measured and predicted Lmax and SEL values can then be compared.

Table 2E depicts the range of measured Lmax and SEL values from monitor sites 1, 2, 3, and 4 and the predicted Lmax and SEL values from the INM for these sites. (Monitor sites 1, 2, 3, and 4 were used because they received the vast majority of aircraft overflights due to their proximity to the runway arrival and departure paths.) As previously discussed, Lmax is the peak noise level of the aircraft overflight. SEL is the total noise energy (taking into account the peak and duration) of the aircraft overflight.

In most cases, the INM is very close, and in many cases, over-predicts the noise of individual aircraft types in the vicinity of the airport. In fact, the INM over-predicted the noise levels for departing aircraft captured on monitors 1, 2, and 3. For arriving aircraft, nearly all measured noise levels were recorded at or below predicted values. The regional jet, however, showed measured values that exceeded the predicted values by between 2 and 3 dBA. It should be noted, however, that there may be sizable differences between measured and predicted Lmax and SEL levels in some cases. There are several potential reasons for these differences:

- Small noise measurement sample size;

TABLE 2E
Summary of Measured and Predicted Single Event Noise Levels
Lincoln Airport

Aircraft Type	Measured Lmax, dBA [1]	Predicted Lmax, dBA [2]	Measured SEL, dBA[1]	Predicted SEL, dBA [2]
Departures				
Monitor Site 1				
E4	88.9-94.5	98.6-111.1	96.8-100.7	103.2-112.6
Monitor Site 2				
Multi-Engine Piston	68.3	58.0-72.6	74.1	69.4-82.4
KC-135	96.0-98.4	70.3-97.3	100.7-102.7	86.4-104.1
Monitor Site 3				
Single-Engine Piston	71.2-80.4	67.4-82.7	77.2-86.3	79.2-91.0
Multi-Engine Piston	84.4	71.1-87.4	88.5	87.1-89.0
Citation Jet	81.2-81.7	66.4-95.7	89.3-91.4	76.3-99.3
Regional Jet	73.8	63.2-101.2	81.6	71.2-106.2
Monitor Site 4				
Citation Jet	80.9	70.4-77.9	89.6	74.3-87.2
Arrivals				
Aircraft Type	**Measured[1] Lmax, dBA (Monitor Site 2)**	**Predicted[2] Lmax, dBA**	**Measured[1] SEL, dBA (Monitor Site 2)**	**Predicted[2] SEL, dBA**
Monitor Site 2				
Multi-Engine Piston	78.4	78.6-79.6	83.6	84.6-85.2
BAE 146	63.6-85.8	89.9-90.1	72.8-90.9	93.4-93.6
Regional Jet	87.5	84.7-85.0	93.1	89.6-89.8
KC-135	89.7-113.2	111.6-114.7	93.6-115.9	112.2-112.4
E4	98.3-102.3	100.0-102.2	103.0-106.5	102.4-104.1
Monitor Site 3				
Single-Engine Piston	76.4	78.6-79.6	82.4	84.6-85.2
Lear 35	67.2	54.7-83.0	74.0	59.5-87.4
Citation Jet	70.0	80.7-80.8	79.4	84.4-84.5

TABLE 2E (Continued)
Summary of Measured and Predicted Single Event Noise Levels
Lincoln Airport

Monitor Site 4				
Single-Engine Piston	77.5	85.0-86.2	83.0	88.5-89.1
Lear 35	79.5	88.2-89.7	84.1	91.4-92.2

[1] Measurements were taken May6, 2002 to May 11, 2002.
[2] Data from detailed grid analysis for 2002 base conditions.
Source: Coffman Associates analysis

- Differences in distances from the aircraft to the monitor;
- Differences in specific aircraft configurations within the general aircraft type;
- Differences in aircraft operating procedures and pilot techniques; and
- The effect of weather conditions (temperature, wind direction, and wind velocity) on aircraft performance.

TIME-OF-DAY

The time-of-day at which operations occur is important as input to the INM due to the 10 decibel weighting of nighttime (10:00 p.m. to 7:00 a.m.) flights. In calculating airport noise exposure, one operation at night has the same noise emission value as 10 operations during the day by the same aircraft. While Lincoln Airport does have an airport traffic control tower (ATCT), it is closed between midnight and 5:30 a.m. Specific counts for nighttime activity were derived from air carrier and cargo flight schedules as well as interviews with airport users, military units, and airport staff. Information obtained from these sources and interviews were used to determine nighttime aircraft operations (between 10:00 p.m. and 7:00 a.m.) for modeling the 2002 noise exposure contours. This percentage of operations was applied to both future forecast scenarios. A detailed breakdown of nighttime operations by aircraft type can be found in **Appendix C**.

RUNWAY USE

Runway usage data is another essential input to the INM. For modeling purposes, wind data analysis usually determines runway use percentages. Aircraft will normally land and takeoff into the wind. However, wind analysis provides only the directional availability of a runway and does not consider pilot selection, primary runway operations, or local operating conventions. At Lincoln Airport, the parallel and crosswind runway configuration has six runway ends.

The runway usage at Lincoln Airport was established through discussions with the ATCT manager and staff. In addition, a supplemental wind analysis was conducted which supported that wind conditions are consistent for runway use as stated by ATCT. **Table 2F** summarizes the runway use percentages for existing and future conditions.

FLIGHT TRACKS

A review of local and regional air traffic control procedures, as well as an assessment of actual radar flight tracks, were used to develop consolidated flight tracks. The resulting analysis is a series of consolidated flight tracks describing the average corridors that lead to and from Lincoln Airport. For developing the flight tracks for input into the INM, radar data from October 7 to 11, 2002 were used. **Exhibit 2F** depicts the radar flight track data provided by the Lincoln Airport ATCT for the Lincoln area.

TABLE 2F
Existing Runway Use

Runway	Commercial	Business Jet	Military	General Aviation Turboprop & Piston
Arrivals and Departures				
14	3.5%	3.5%	3.5%	3.5%
32	1.5%	1.5%	1.5%	1.5%
17R	65.1%	24.5%	66.5%	24.5%
35L	27.9%	10.5%	28.5%	10.5%
17L	1.4%	42.0%	0.0%	42.0%
35R	0.6%	18.0%	0.0%	18.0%
Touch-And-Go's				
14	NA	NA	3.5%	3.5%
32	NA	NA	1.5%	1.5%
17R	NA	NA	66.5%	24.5%
35L	NA	NA	28.5%	10.5%
17L	NA	NA	0.0%	42.0%
35R	NA	NA	0.0%	18.0%

As seen on **Exhibit 2F**, there are three corridors where the radar flight track data are heavily concentrated: straight north, northwest, and straight south of the airport. More dispersed flight tracks are depicted west, east, and southeast of the airport. A majority of the aircraft training operations occur to the west of the airport.

Exhibit 2G depicts the consolidated departure flight tracks developed for input into the INM. INM consolidated flight tracks are developed by plotting the centerline of a concentrated group of tracks and then dispersing the consolidated track into multiple sub-tracks that conform to the radar flight track data. The light blue colored lines on **Exhibit 2G** are the radar track data. The wider dark blue lines represent the centerline or spine of each group of radar track data. The dark blue thin lines represent the departure sub-tracks.

Arrival tracks at Lincoln Airport are generally concentrated on the runway centerline due to the precision needed to safely land an aircraft. However, the small general aviation aircraft are able to make shorter approaches to the airport. **Exhibit 2H** depicts the arrival stream and consolidated flight tracks at Lincoln Airport. Runways 14, 17L, 17R, and 35L all have approaches concentrated on runway centerlines due to the availability of instrument approaches. Runways 17R and 35L have instrument landing systems and Runways 14 and 17L have VOR and GPS approaches, respectively.

Exhibit 2J depicts the consolidated touch-and-go tracks developed for input into the INM. The series of concentric oval-shaped tracks represent the radar flight track and observed variances in the size of the training pattern at Lincoln Airport. General aviation touch-and-go activity occurs both east and west of the airport. Military touch-and-go activity is primarily west of the airport on Runways 17R-35L and 14-32. **Exhibit 2J** also illustrates the helicopter arrival, departure, and touch-and-go tracks developed for this analysis. The helicopter routes represent an average of those observed and depict both arrival and departure traffic. Military helicopter touch-and-go activity is delegated to the west side of the airfield. This allows helicopters in the traffic pattern to approach and depart from Taxiway G.

ASSIGNMENT OF FLIGHT TRACKS

The final step in developing input data for the INM model is the assignment of aircraft to specific flight tracks. Prior to this step, specific flight tracks, runway utilization, and operational statistics for the various aircraft models using Lincoln Airport were evaluated. The radar flight track data was used to determine flight track percentages for each aircraft type. The radar flight tracks that formed the consolidated tracks and sub-tracks were first counted. Then each consolidated track was assigned a percentage based on the total number of tracks for each runway.

To determine the specific number of aircraft assigned to any one flight track, a long series of calculations was performed. This included a number of specific aircraft of one group, factored by runway utilization and flight track percentage. A detailed breakdown of the flight track assignments can be found in **Appendix C**.

ENGINE MAINTENANCE RUN-UPS

Version 6.0c of the Integrated Noise Model provides for the computation of noise levels due to airplane engine run-up operations. At Lincoln Airport, routine engine maintenance is done primarily by two fixed-base operators (FBO) located on the east side of the airport. One FBO provided an aircraft run-up log that provided the aircraft heading, duration of the run-up, and aircraft type. This FBO averaged between 20 and 30 run-ups per week with an average duration of 30 minutes per engine test. The second FBO averaged seven run-ups per week with an average duration of 10 minutes per engine test.

The engine run-ups take place on the north end of the east side general