

especially helpful during poor weather conditions, they are often used by commercial pilots when visibility is good. Instrument approaches are classified as precision and nonprecision. Both provide runway alignment and course guidance, while precision approaches also provide glide slope information for the descent to the runway. The instrument approaches for the Lincoln Airport are depicted on **Exhibit 1E**.

Precision Instrument Approaches

Most precision instrument approaches in use in the United States today are instrument landing systems (ILS). An ILS provides an approach path for exact alignment and descent of an aircraft on final approach to a runway. The system provides three functions: guidance, provided vertically by a glide slope (GS) antenna and horizontally by a localizer (LOC); range, furnished by marker beacons or distance measuring equipment (DME); and visual alignment, supplied by the approach light systems and runway edge lights.

Lincoln Airport has two published precision approaches. Runways 17R and 35L are equipped with an ILS consisting of a localizer, glide slope antenna, and a medium intensity approach lighting system with runway alignment indicator lights (MALSR). The Runway 17R ILS uses a standard 3.0 degree glide slope. The Category I ILS approaches to Runway 17R can be flown when cloud ceilings are 1,395 feet MSL or greater and visibility is one-half

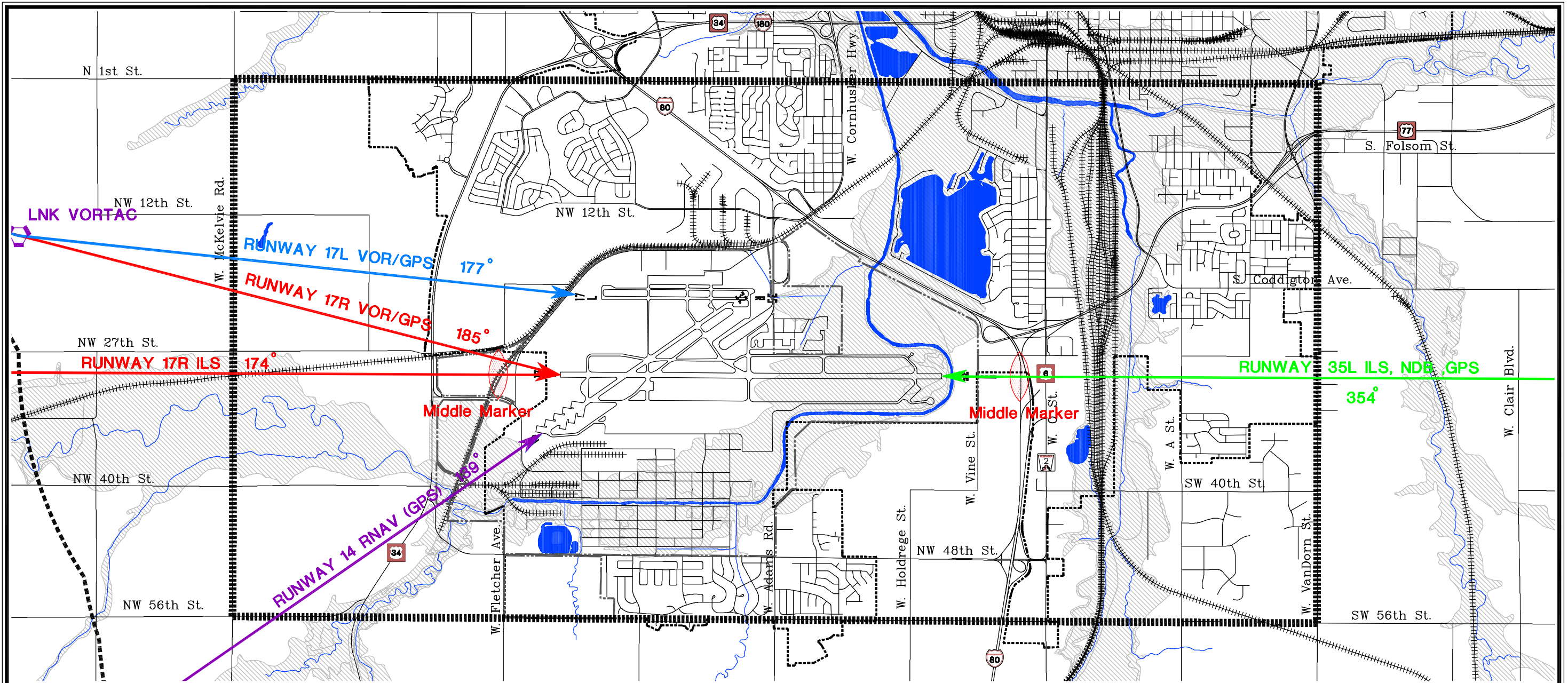
mile or greater. The Runway 35L ILS also uses a standard 3.0-degree glide slope. The Category I ILS approaches to Runway 35L can be flown when cloud ceilings are 1,375 feet under a runway visual range (RVR) of 2,400 feet.

Nonprecision Approaches

Lincoln Airport has a number of nonprecision approaches available. The following paragraphs describe nonprecision approaches available for the runways.

Runway 17L. The VOR or GPS approach to Runway 17L uses VOR signals and fixes to ensure adequate terrain and obstruction clearance during final approach to the runway. The Lincoln (LNK) VORTAC is used to define the approach, although GPS can also be used to simulate the positions of required location fixes. This approach to Runway 17L can be flown when cloud ceilings are 1,720 feet MSL or greater and visibility is one mile for aircraft with approach speeds of up to 120 knots and visibility of 1-1/2 miles for aircraft with approach speeds up to 161 knots. This approach can also be used as a circling approach to any of the other runways.

Runway 17R. This utilizes a VOR or GPS approach. The approach can be flown with identical minimums as the VOR or GPS 17L approach. A circling approach to any of the other runways is also available.



LEGEND

- Airport Property
- Municipal Boundaries
- Extra-territorial Jurisdiction
- Railroad Tracks
- Study Area
- Floodplains
- ✈ Very High Frequency Omnidirectional Range Station, with Tactical Air Navigation Equipment
- ⬮ Marker Beacon
- ILS Instrument Landing System

- GPS Global Positioning System Approach
- VOR/DME Nonprecision Approach using Radials and Distances from LNK VORTAC

Source: Base Information and Map:
City of Lincoln Geographic
Information System, May 2002.
Coffman Associates Analysis.



Lincoln Airport

Runway 35L. The Potts non-directional beacon (NDB) or GPS can be used to define the approach for the NDB or GPS approach to Runway 35L. This approach can be flown with cloud ceilings at or above 1,760 feet MSL and an RVR of 4,000 feet for aircraft with approach speed up to 120 knots, an RVR of 5,000 feet for aircraft with approach speed of up to 140 knots, and 1-1/2 miles for aircraft with approach speeds up to 161 knots.

The localizer antennas used for the Runways 17R and 35L ILS approaches can also be used for a nonprecision approach to their respective runways. The localizer approach to Runway 17R can be flown when cloud ceilings are 1,720 feet MSL or greater and visibility is at least one-half mile for aircraft with approach speed up to 121 knots, 1 mile for aircraft with approach speed up to 140 knots, and 1-1/4 miles for aircraft with approach speeds up to 161 knots.

Runway 14. This runway has an approach that utilizes technology that has received relatively recent approval for approach navigation. Although area navigation (RNAV) has been in use in the United States for more than 40 years, this system was based on determining an aircraft's location via triangulation from various ground-based NAVAIDS. Recently, with the advent of GPS and the pending wide area (WAAS) and local area augmentation systems (LAAS), aircraft navigation is beginning to transition to satellite-based and satellite/ground-based hybrid navigation systems. The RNAV Runway 14 approach utilizes GPS or a combination of ground NAVAIDS to provide horizontal

guidance to an aircraft on approach for landing.

Aircraft using the RNAV Runway 14 approach must also have GPS or other RNAV equipment able to maintain required navigational performance (RNP) of 0.3 miles or better of lateral guidance (LNAV). Vertical (altitude) navigation is accomplished by ensuring that the aircraft is at or above specific altitudes when reaching waypoints defined by the horizontal navigation component. The RNAV 14 approach can be flown with cloud ceilings of at least 1,600 feet and visibility of 1 mile for aircraft with approach speed up to 120 knots and 1-1/4 miles for aircraft with approach speeds up to 161 knots.

CUSTOMARY ATC AND FLIGHT PROCEDURES

Flights to and from Lincoln Airport are conducted using both IFR and VFR procedures. Instrument Flight Rules (IFR) are those that govern the procedures for conducting instrument flight. Visual Flight Rules (VFR) govern the procedures for conducting flight under visual conditions (good weather). Most air carrier, military, and general aviation jet operations are conducted under IFR regardless of the weather conditions.

Visual Flight Rule Procedures

Under VFR conditions, the pilot is responsible for collision avoidance and will typically announce on the radio, when approximately 20 miles from the airport, their intention to enter the traffic pattern.

Typically, VFR general aviation traffic stays clear of the more congested airspace and follows recommended VFR flyways in the area. **Exhibit 1D** illustrates a view of Lincoln vicinity airspace with the recommended VFR routes.

Instrument Flight Rule Procedures

Lincoln Approach/Departure Control handles all IFR traffic to and from Lincoln Airport. IFR arrival traffic is transferred to the Lincoln approach/departure control from the Kansas City center.

EXISTING NOISE ABATEMENT PROCEDURES

No formal noise abatement procedures have been established at Lincoln Airport; however, as described below, several informal procedures have been established by various entities operating at the airport to alleviate the noise impacts of aircraft operations.

Offutt Aircraft Procedures

In a memo dated August 16, 1996, a number of noise procedures for aircraft arriving from the Offutt Air Force Base are outlined. These procedures were developed with input from the airport, ATCT, and Offutt representatives and are solely recommendations, as no specific formal or informal procedures have been adopted. The procedures are summarized as follows.

- Circling approaches by Offutt aircraft will only be conducted

between the hours of 0800 and 1600 local time (8:00 a.m. to 4:00 p.m.)

- Offutt pilots will be asked to fly their VFR patterns downwind, just west of the Airpark.
- Lincoln Airport Authority will permit Offutt aircraft to transition at the airport between 2200 and 2400 local time (10:00 p.m. to 12:00 a.m.) The following procedures are to be used by Offutt pilots during this time frame:
 - Upon completion of the approach, the aircraft are issued standard corridor headings (i.e. 300 or 210).
 - The aircraft are assigned an altitude of 4,000 feet.
 - Crosswind turns should be started no sooner than two miles from the departure end of the runway to which the approach had been conducted, no lower than 3,000 feet.
 - Downwind turns should be commenced four and six miles from the airport.
 - Descent from 4,000 feet will be issued on the base turn.

Nebraska Air National Guard Procedures

The NANG has made efforts to develop a noise abatement procedure to be used by their aircraft during practice operations. This procedure is outlined

within their operations notes and is as follows, “Use CAT (Category) E minimums for practice circling approaches and try to avoid direct overflight of west housing area.” The use of CAT E minimums places the aircraft at an altitude of 800 feet versus the typical 500-foot altitude utilized by the types of aircraft operated by NANG.

Run-Up Procedures

Run-up procedures occur at two locations based on when they occur. Aircraft maintenance performance run-ups occur on the north end of the east ramp (between the daytime hours of 7:00 a.m. and 7:00 p.m.)

The Lincoln Airport has requested that the FBOs located on the east side of the airport perform run-up operations between the evening and nighttime hours of 7:00 p.m. and 7:00 a.m. on the run-up mat located on Taxiway E between Runway 17R-35L and the west apron.

Noise Complaint Logs

Noise complaint logs have been maintained by Lincoln Airport staff, NANG, and Duncan Aviation. The airport has received 17 noise complaints since January 2002. NANG has deferred noise complaints to the airport for the past year as most of the military noise complaints are due to transient aircraft. Duncan Aviation has received two noise complaints since January 2002 due to run-up operations.

STUDY AREA

The study area, as depicted in **Exhibit 1F**, is generally centered on the airport and consists of approximately 32 square miles. Both the City of Lincoln and Lancaster County have planning jurisdiction within the study area as the entire study area is not contained within the city limits.

Boundaries of the study area are generally West McKelvie Road to the north, North First Street to the east, West VanDorn Street to the south, and Northwest 56th Street and the western boundary of Arnold Heights to the west.

The study area defines the area within which detailed existing land use information will be presented. It is intended to contain the area expected to be impacted by present and future aircraft noise exposure contours.

Modifications to the study areas can be made later in the study if deemed necessary as the study area boundaries were established for statistical convenience. It should be emphasized that this area is for the presentation of detailed background data - it is not a definition of the noise impact area. Areas adversely affected by aircraft noise will be defined in later analyses.

EXISTING LAND USE

Existing land use in the study area is shown in **Exhibit 1G**. The map was developed with the use of Geographical Information System (GIS) data provided

by the City of Lincoln Planning Department in May 2002. Other sources of land use information that were consulted include street maps and land use maps prepared by local agencies such as school district maps. The land use categories shown on the map were selected to fit the requirements of noise and land use compatibility planning. **Table 1C** lists the land use categories shown on the existing land use map.

TABLE 1C Land Use Categories Illustrated On Land Use Map	
Category	Land Uses Included
Agriculture	Agriculture
Low Density Residential	Single-family homes
Medium Density Residential	Single-family homes Duplexes
High Density Residential	Triplexes Apartments
Park & Open space	Parks Golf courses Riparian corridors Cemeteries
Public	Public owned properties
Commercial	Businesses Offices Government offices
Industrial	Manufacturing Light Industry Heavy Industry Warehousing
Vacant	Undeveloped areas or areas planned for development
Floodplains	Location of 500-year floodplains
Noise-Sensitive	Schools Places of Worship Historical Structures Libraries

NOISE-SENSITIVE INSTITUTIONS

Approximately 19 noise-sensitive institutions are present within the study area. As illustrated in **Exhibit 1G**, these institutions are primarily concentrated in the western portion of the study area and include six schools, one library, one historic structure, and 11 places of worship.

The Lincoln Public School District serves the entire Lincoln Airport study area. Five elementary schools and one private school are contained within the study area. The elementary schools are Fredstrom Elementary, West Lincoln Elementary, Lakewood Elementary, Roper Elementary, and Arnold Elementary, and the private school is the North American Martyrs School. One additional school is planned within the study area.

The 11 places of worship within the study area include the Buddhist Community Temple, First German Congregation, Open Bible Church, Vietnamese Alliance Church, Fellowship Baptist Church, Bethel Bibleway Apostolic Church, Lakeview Methodist Church, Korean Church of Lincoln, Rejoice in the Lord Church, and the Immanuel Temple Apostolic Church.

The Arnold Heights library is the only library located within the study area.

A review of the National Register of Historic Places revealed that one state-listed historical site is present within the study area. This historical structure is located in the western part of the study area.