

SECTION 2.0

**INSTALLATION
DESCRIPTION**

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SECTION 2. INSTALLATION DESCRIPTION

Dyess Air Force Base (AFB) is located in Taylor County in north-central Texas. The installation is within the city limits of the city of Abilene and is adjacent to the city of Tye (see Figure 2–1). The base is approximately 5,366 acres of land (see Figure 2–2). Dyess AFB has one primary airfield with a runway (Runway 16/34) that measures 13,500 feet long by 300 feet wide, a paved Landing Zone (LZ) Runway 163/343, and a semi-improved LZ Runway 162/342. Each LZ is 3,500 feet long by 60 feet wide and is used exclusively by C-130J aircraft. All runways have a north-south orientation. There are also taxiways, an aircraft parking apron, and two test cells.

The 7th Bomb Wing (7 BW) provides installation management support for 759 facilities with an approximate value of \$2.97 billion in physical infrastructure. More than 14,470 Airmen, civilians, family members, and retirees living and working on and around Dyess AFB contribute to the economic impact on the city of Abilene metroplex.

2.1 MISSION

As an Air Combat Command (ACC) installation, Dyess AFB fulfills the ACC's mission as the primary provider of combat air forces to America's unified combatant commands. The missions of the two major organizations at Dyess AFB are described below.

2.1.1 7th Bomb Wing

7 BW is the host unit at Dyess AFB, Texas, and is assigned to the 12th Air Force (12 AF), located at Davis-Monthan AFB, Arizona. The 7 BW is a component of ACC, headquartered at Langley AFB, Virginia. The 7 BW operates B-1B aircraft and is the U.S. Air Force's (USAF's) only B-1B formal training unit. Groups assigned to the wing include the 7th Operations Group, the 7th Maintenance Group, the 7th Mission Support Group, and the 7th Medical Group. The 7th Operations Group is responsible for executing global conventional bombing and is the USAF's largest B-1B operations group. Four squadrons are assigned to the 7th Operations Group: the 9th Bomb Squadron and 28th Bomb Squadron (9 BS and 28 BS), the 436th Training Squadron (436 TS), and the 7th Operations Support Squadron (7 OSS).

The 9 BS maintains combat readiness to deliver rapid, decisive airpower on a large scale in support of conventional warfare tasks. The 9 BS is the oldest active bomb squadron in the USAF. The 28 BS is the largest bomb squadron in the USAF and the largest flying squadron in ACC. Its

primary mission is to provide initial B-1 qualification, requalification, and instructor training for ACC. The squadron also maintains conventional combat readiness supporting higher Headquarters contingency taskings worldwide.

2.1.2 317th Airlift Group

The 317th Airlift Group (317 AG) is the major tenant at Dyess AFB and is under the operational control of the 18 AF and Air Mobility Command (AMC) at Scott AFB, Illinois. The 317 AG operates C-130J Super Hercules aircraft in support of tactical airlift requirements worldwide. The 317 AG is composed of the 39th Airlift Squadron and 40th Airlift Squadron (39 AS and 40 AS), 317th Aircraft Maintenance Squadron, 317th Maintenance Squadron, and 317th Operations Support Squadron (317 OSS).

The mission of the 317 AG is to transport personnel and equipment into combat zones. The 317 AG is also often involved in humanitarian disaster relief and emergency evacuations of American nationals from troubled areas of the world.

2.1.3 Supported Organizations

Dyess AFB supports the following organizations:

- 7th Operations Group
 - 436th Training Squadron
 - 28th Bomb Squadron
 - 9th Bomb Squadron
 - 7th Operations Support Squadron
- 7th Mission Support Group
 - 7th Civil Engineering Squadron
 - 7th Contracting Squadron
 - 7th Communications Squadron
 - 7th Logistics Readiness Squadron
 - 7th Security Forces Squadron
 - 7th Force Support Squadron
- 7th Maintenance Group
 - 7th Aircraft Maintenance Squadron
 - 7th Component Maintenance Squadron
 - 7th Equipment Maintenance Squadron
 - 7th Munitions Squadron

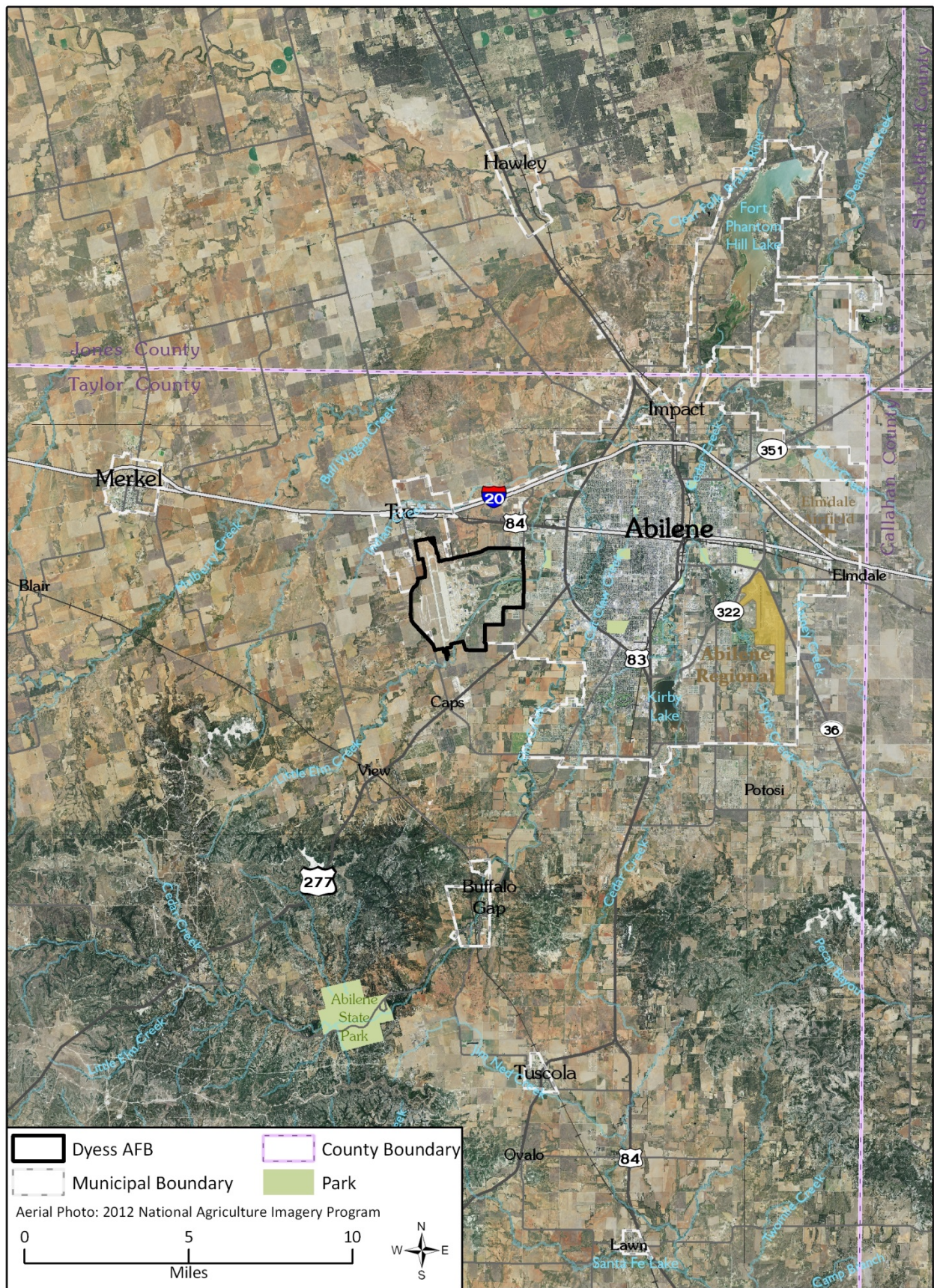


Figure 2-1 Regional Map

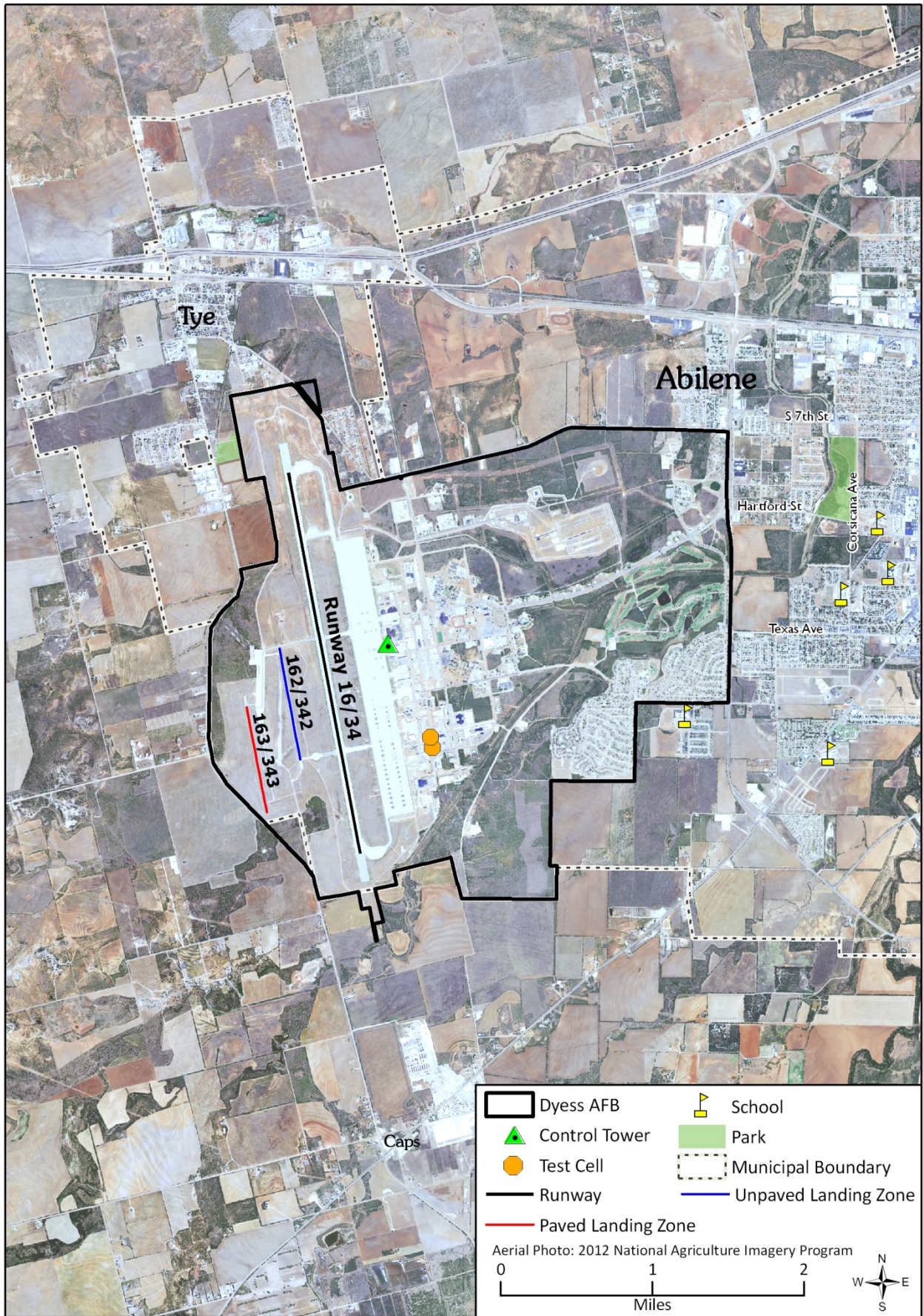


Figure 2-2 Dyess AFB Installation Map

- 7th Medical Group
 - 7th Medical Support Squadron
 - 7th Aeromedical/Dental Squadron
 - 7th Medical Operations Squadron
- 7th Bomb Wing Chapel
- 7th Bomb Wing Honor Guard

Dyess AFB supports the following tenant organizations:

- 317th Airlift Group
 - 39th Airlift Squadron
 - 40th Airlift Squadron
 - 317th Aircraft Maintenance Squadron
 - 317th Maintenance Squadron
 - 317th Operations Support Squadron
- ACC Training Support Squadron
- 29th Training Systems Squadron
- 337th Test and Evaluation Squadron
- 77th Weapons Squadron

Table 2–1 lists the aircraft assigned to or consistently operating at Dyess AFB.

Table 2–1 Primary Aircraft Assigned to or Consistently Operating at Dyess AFB

Unit	Aircraft Type	Number of Aircraft
7 BW / 9 BS	B-1B	12
7 BW / 28 BS	B-1B	13
337 TES	B-1B	2
77 WPS	B-1B	0*
317 AG / 39 AS	C-130J**	14
317 AG / 40 AS	C-130J**	14

* 77 WPS utilizes aircraft assigned to 7 BW.

** Indicates units that are new to Dyess AFB or have added new aircraft since the 2008 AICUZ Study. TES=Test and Evaluation Squadron; WPS=Weapons Squadron.

2.2 ECONOMIC IMPACT

The economic impact region for Dyess AFB is the geographic area subject to significant base-generated economic impacts, and is defined

as the area within a 50-mile radius of Dyess AFB. This area includes the Texas counties of Taylor, Callahan, and Jones. The area most immediately impacted includes the following:

- Taylor County:
 - City of Abilene
 - City of Tye

2.2.1 Local Economic Characteristics

As shown in Table 2–2, the population of the city of Abilene is considerably larger than the population of the city of Tye. Consequently, the greatest population density around Dyess AFB is to the east. In the past several years, the populations of the cities of Abilene and Tye and Taylor County have grown at a slower pace than the rest of Texas. Between 2000 and 2010, the population of the city of Abilene grew by more than 1,132, a 1 percent increase, and the population of the city of Tye grew by 84, a 7.3 percent increase. The population of Taylor County grew by more than 4,951, a 1.5 percent increase. The rest of Texas grew by about 4.3 million, a 21 percent increase, in the same timeframe.

Table 2–2 Historic and 2010 Population Estimates

Area	2000 Census	2010 Census	Percentage Change
City of Abilene	115,931	117,063	+1
City of Tye	1,158	1,242	+7.3
Taylor County	131,506	133,473	+1.5

Source: U.S. Census Bureau 2010.

2.2.2 Base Impact

The installation’s economic impact includes the total gross payroll for Dyess AFB personnel, the total actual annual expenditures of the installation, and the estimated annual value of jobs created by the base. Dyess AFB directly employs over 5,093 personnel. As shown in Table 2–3, Dyess AFB has a total population of 14,470, including military dependents. The annual payroll of the installation is over \$350 million (see Table 2–4). As a result of payroll expenditures and the estimated value of indirect jobs in the local area, Dyess AFB has an estimated total economic impact of nearly \$421 million on the local economy.

Table 2–3 Personnel by Classification

Classification	Total
Military	
Active-Duty Military	4,394
Total Military	4,394
Civilian	
Military Dependents	5,807
Appropriated Fund Civilians	398
Nonappropriated Fund Civilians and Private Business	301
Retired Military Personnel in Vicinity of Dyess AFB	3,570
Total Civilian	10,076
Grand Total	14,470

Source: Economic Resource Impact Statement, FY 2013

Table 2–4 Annual Economic Impact

Category	(\$)
Payroll	
Active-Duty Military	\$230,213,957
Nonappropriated Fund Civilian Employees	\$6,727,757
Appropriated Fund Civilian Employees	\$27,649,531
Military Retirees	\$86,112,000
Total Payroll	\$350,703,246
Expenditures	
Construction	\$6,491,570
Other Procurement Types	\$7,080,273
Total Expenditures	\$13,571,843
Estimated Annual Dollar Value of Jobs Created	\$56,664,000
Grand Total	\$420,939,089

Source: Economic Resource Impact Statement, FY 2013

2.3 FLYING ACTIVITY

To describe the relationship between aircraft operations and land use in the vicinity of the airfield, it is necessary to fully evaluate the exact nature of the operations. The following section provides an overview of the aircraft operations currently ongoing at Dyess AFB.

2.3.1 Flight Operations by Aircraft Type

Approximately 51,220 annual aircraft operations were modeled for analysis in this study. An aircraft operation is defined as one takeoff/departure, one approach/landing, or half of a closed pattern. A closed pattern consists of two portions, a takeoff/departure and an approach/landing, i.e., two operations. Some departures maneuver to land immediately at a

different runway on the base. These intra-facility flights count as one departure and one arrival operation in calculating total Dyess AFB operations. A sortie is a single military aircraft flight from the initial takeoff through the termination landing. The minimum number of aircraft operations for one sortie is two operations: one takeoff (departure) and one landing (approach).

Table 2–5 summarizes the frequency of aircraft operations for Dyess AFB based on information provided by base staff, flying organizations, and air traffic control personnel. Nineteen transient military and civilian aircraft were selected to represent the 110 different types/variants of transient aircraft (e.g., F-15C, F-15D, F-16D, F-16DG) for noise modeling purposes, with selection preference based on the uniqueness of a particular aircraft or those with the greatest number of operations. Operations for the transient military and civilian aircraft types were combined with the selected aircraft based on similar characteristics (e.g., number and type of engines, size of aircraft, airspeed). Table 2–5 reflect a total of about 140 average annual day (AAD) aircraft operations based on collected operations data. Approximately 41 percent of the operations occur during environmental nighttime (10:00 p.m. through 7:00 a.m.).

Although the number of military and civil aircraft operations at an installation usually varies from day to day, NOISEMAP requires input of the specific numbers of daily flight and aircraft maintenance engine run-up operations. For this Air Installation Compatible Use Zone (AICUZ) Study, operations are calculated for an AAD, meaning that operations are averaged across all 365 days of the year. U.S. Department of Defense Instruction 4165.57 (2 May 2011) states that the AICUZ Program will use AAD to calculate noise contours, unless the Services determine an extenuating circumstance.

2.3.1.1 Based B-1 Aircraft Operations

There are 27 B1-B primary aircraft assigned to the 7 BW, 12 of which are assigned to 9 BS and 13 to the 28 BS. The 337th Test and Evaluation Squadron (337 TES) has primary aircraft authorization (PAA) of 2 aircraft, and the 77th Weapons Squadron (77 WPS) utilizes 7 BW B-1 aircraft. The 7 BW conducts 30 operations per AAD (10,903 operations annually). Together, the 337 TES and 77 WPS conduct approximately 4 operations per day, or approximately 1,484 annual operations.

Table 2-5 Frequency of Aircraft Operations for Dyess AFB

Squadron	Aircraft	Operations Per Year			Operations Per Average Annual Day		
		Day	Night	TOTAL	Day	Night	TOTAL
9 BS	B-1	4,418	484	4,902	12.10	1.33	13.43
28 BS	B-1	5,420	581	6,001	14.85	1.59	16.44
337 TES	B-1	597	7	604	1.64	0.02	1.65
77 WPS	B-1	848	32	880	2.32	0.09	2.41
317 AG	C-130J	15,952	20,007	35,959	43.70	54.81	98.52
BASED SUBTOTAL		27,235	21,111	48,346	74.62	57.84	132.45
Transient	A-10A	18	0	18	0.05	0.00	0.05
	B-747-100	72	10	82	0.20	0.03	0.22
	C-12	34	0	34	0.09	0.00	0.09
	C-130P	156	2	158	0.43	0.01	0.43
	C-17	10	0	10	0.03	0.00	0.03
	C-21A	26	0	26	0.07	0.00	0.07
	F-15A	10	0	10	0.03	0.00	0.03
	F-16A	22	2	24	0.06	0.01	0.07
	F-18E/F	14	0	14	0.04	0.00	0.04
	Single-Engine Variable Pitch Propeller	64	0	64	0.18	0.00	0.18
	KC-10A	2	0	2	0.01	0.00	0.01
	KC-135	24	4	28	0.07	0.01	0.08
	T-1	80	0	80	0.22	0.00	0.22
	T-38A	2,272	0	2,272	6.22	0.00	6.22
	T-41	2	0	2	0.01	0.00	0.01
T-44	24	2	26	0.07	0.01	0.07	
UH-1N	24	0	24	0.07	0.00	0.07	
TRANSIENT SUBTOTAL		2,854	20	2,874	7.82	0.06	7.88
GRAND TOTAL		30,089	21,131	51,220	82.44	57.89	140.33

AG=Airlift Group; BS=Bomb Squadron; TES=Test and Evaluation Squadron; WPS=Weapons Squadron.

The 7 BW conducted an average of 3.6 arrivals, 3.6 departures, and 22.75 closed patterns per day during the study period. Together, the 337 TES and 77 WPS conduct an average of 0.8 arrivals, 0.8 departures, and 2.4 closed pattern operations per AAD. Daytime operations occur between the hours of 7:00 a.m. and 10:00 p.m. and night operations occur from 10:00 p.m. through 7:00 a.m. Dyess AFB personnel limit night flying to the minimum required to accomplish their mission and maintain required proficiencies. Night flying is more difficult due to reduced visibility and requires training to maintain currency and safety. Approximately 20 percent of arrivals, 4 percent of departures, and 9 percent of closed pattern operations conducted by the 7 BW occurred at night. Less than 1 percent of arrivals, 3 percent of departures, and 3 percent of closed pattern operations conducted by the 337 TES and 77 WPS occurred at night.

2.3.1.2 Based C-130J Aircraft Operations

At Dyess AFB, both the 39 AS and 40 AS operate 14 C-130J aircraft, for a total of 28 C-130Js. The 317 AG conducts approximately 98.5 daily operations. This equates to approximately 35,959 annual operations flown by the 317 AG during the study period.

Based C-130J aircraft averaged 6.2 arrivals, 6.2 departures, and 86.1 closed pattern operations per AAD during the study period. Approximately 59 percent of arrivals, 11 percent of departures, and 59 percent of closed pattern operations occurred at night.

2.3.2 Transient Aircraft Operations

Over the course of a year, numerous military transient aircraft arrive, depart, and perform closed pattern operations at Dyess AFB. Since a large variety of transient aircraft frequent Dyess AFB, some of the aircraft performing transient operations have been grouped with similar surrogate aircraft listed in Table 2–5.

There were an average of 1.5 arrivals, 1.5 departures, and 4.8 closed pattern transient operations per AAD during the study period. Approximately 1 percent of transient aircraft operations occurred at night.

2.3.3 Flight Patterns

Dyess AFB aircraft use the following basic flight patterns:

- Straight-in approaches
- Overhead break landing patterns
- Tactical approaches
- Combat approaches and departures

- Instrument Flight Rule (IFR) or radar closed patterns
- Visual Flight Rule (VFR) or closed patterns

The approach to Runway 16 is on the northwestern side of the airfield and the approach to Runway 34 is on the southeastern side of the airfield. Aircraft arriving and departing at the airfield use Runway 16 approximately 79 percent of the time and Runway 34 approximately 21 percent of the time. Operations on the LZs are always conducted in the same direction as those on the primary runway. Runway use is driven by wind direction. Pilots prefer to take off and land facing into the wind.

Dyess AFB flight patterns (Figures 2–3, 2–4, and 2–5) result from several considerations, including:

- Takeoff patterns routed to avoid heavily populated areas as much as possible.
- USAF criteria governing the speed, rate of climb, and turning radius for each type of aircraft.
- Efforts to control and schedule missions to keep noise levels low, especially at night.
- Coordination with the Federal Aviation Administration to minimize conflict with civilian aircraft operations.

As shown in Figures 2–3 and 2–4, aircraft arrive and depart at Dyess AFB from various directions. Aircraft based at Dyess AFB use Abilene Regional Airport, which is east of the installation, as a location for practice approaches and departures. The majority of closed pattern operations are flown to the west of Runway 16/34 and the LZs, which are west of the city of Abilene. The location of each pattern is representative of the specific track and may vary due to air traffic control, weather, and other reasons (e.g., one pilot may fly the track on one side of the depicted track, while another pilot may fly the track slightly to the other side). Aircraft crews try to minimize exposure to populated areas, but depending on the weather conditions and air traffic, these areas cannot always be avoided.

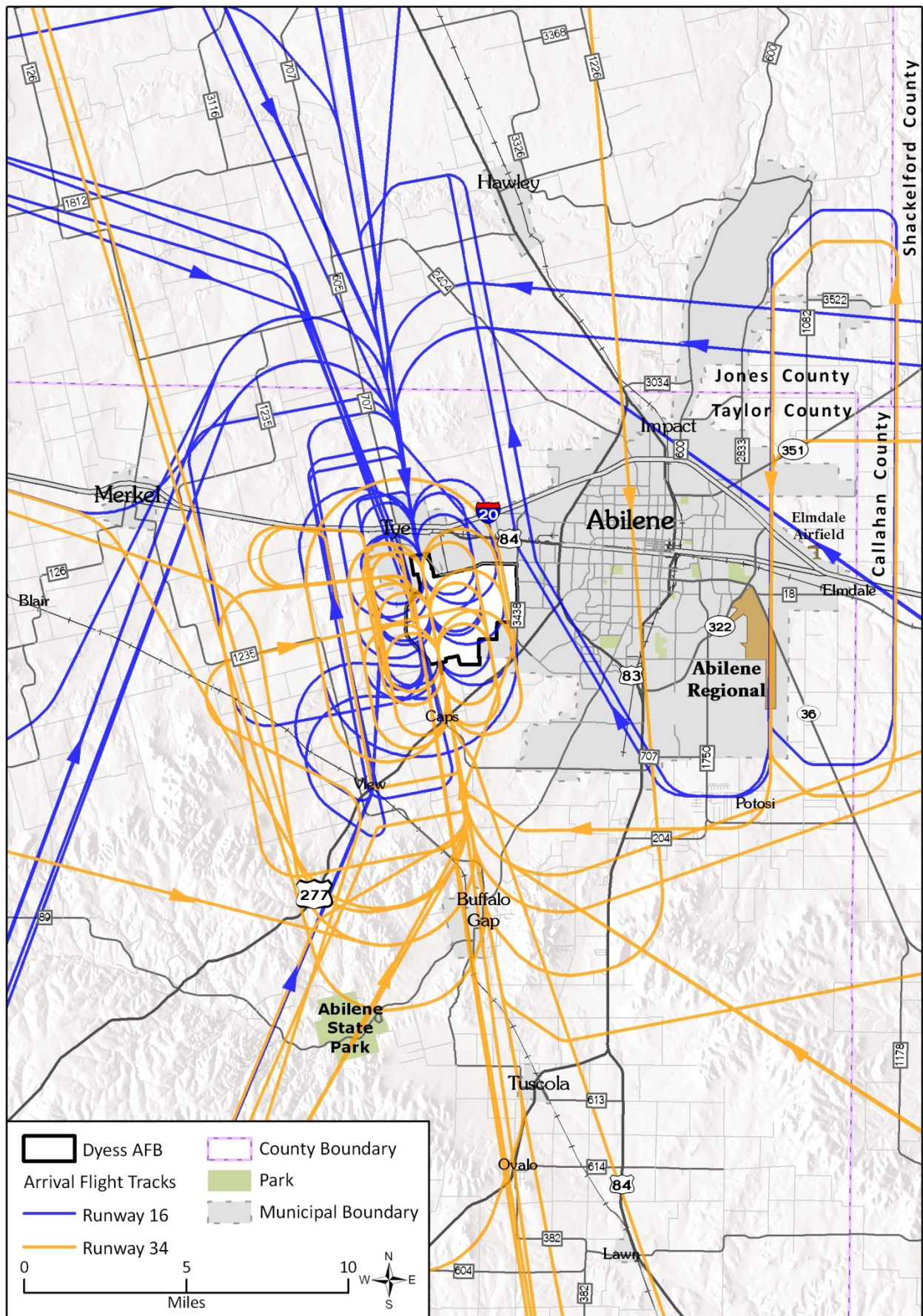


Figure 2-3 Dyess AFB Arrival Flight Patterns

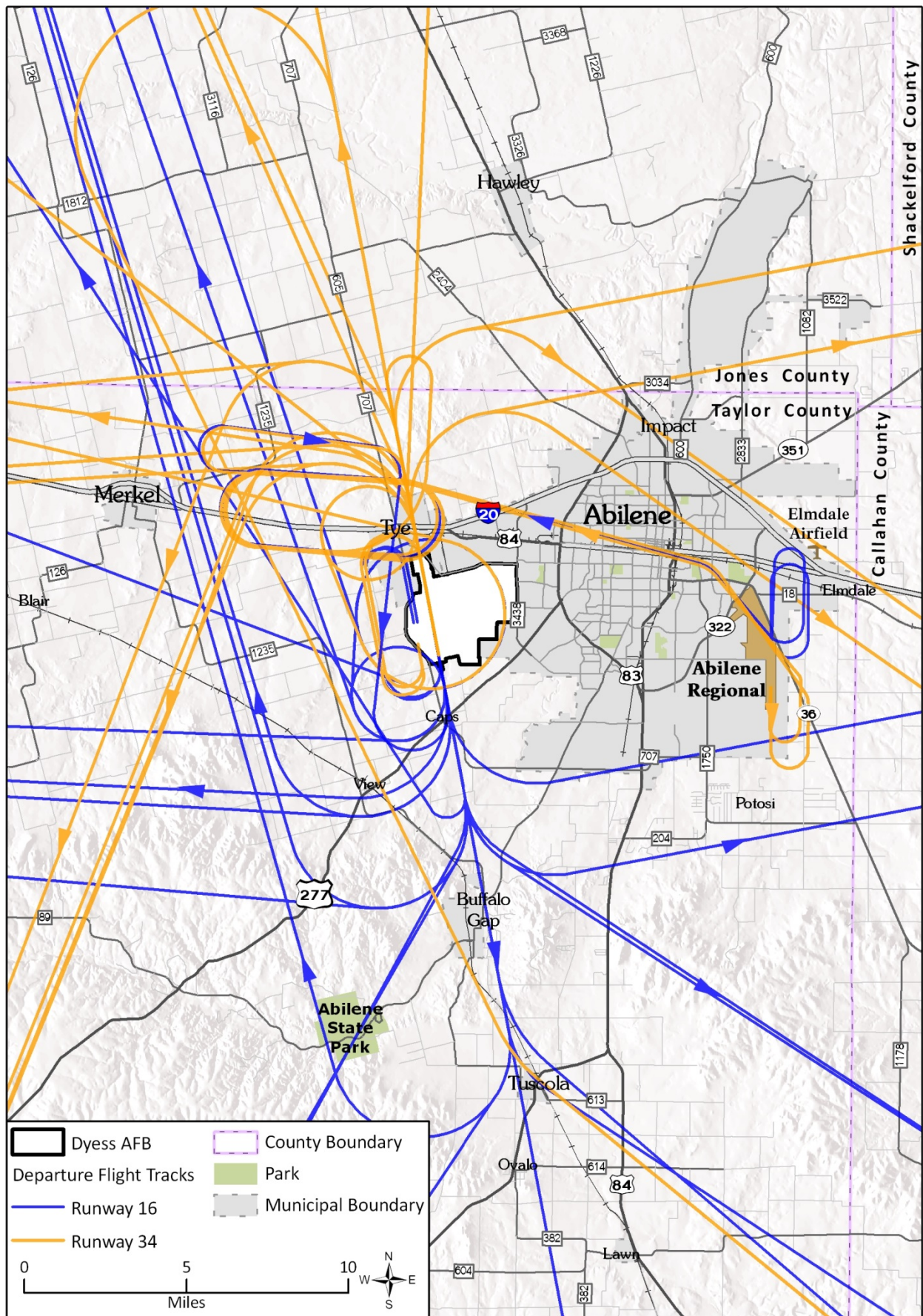


Figure 2-4 Dyess AFB Departure Flight Patterns

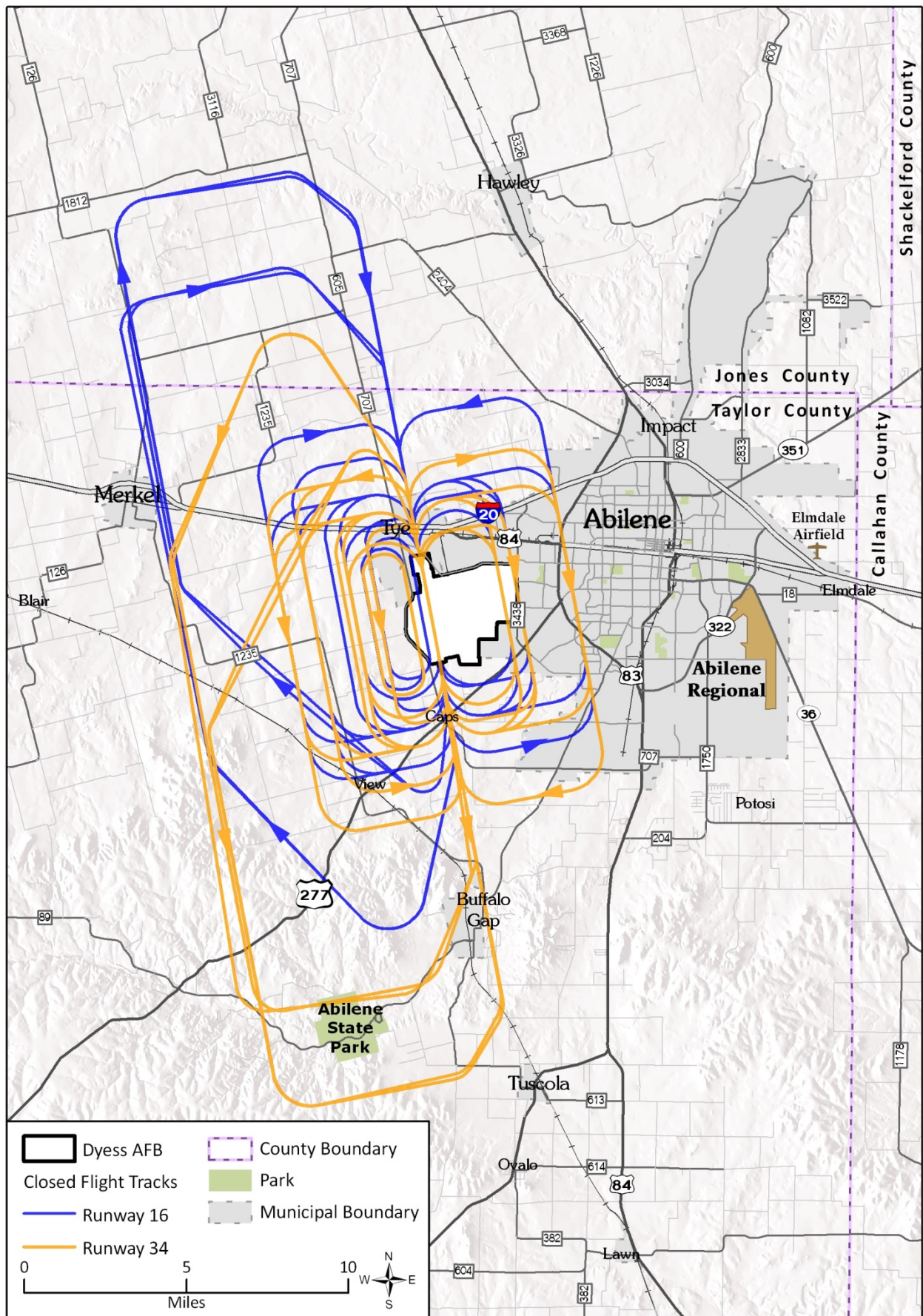


Figure 2-5 Dyess AFB Closed Pattern Flight Patterns

2.3.4 Pre-Flight and Maintenance Run-Up Operations

To the maximum extent possible, aircraft maintenance engine run-up locations have been established in areas to minimize noise. Dyess AFB utilizes two B-1B test cells equipped with suppressors and located east of the primary runway (see Figure 2-2). Normal base operations do not include late night engine run-ups, but heavy workloads or unforeseen contingencies sometimes require a limited number of nighttime engine run-ups.

Approximately 50 percent of B-1B flightline engine maintenance run-ups and 70 percent of C-130J flightline engine maintenance run-ups occur during acoustic night (10:00 p.m. through 7:00 a.m.). Engine maintenance run-ups in the test cells are conducted during acoustic night only about 6 percent of the time.



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