Technical Report and Noise Model Operational Data Documentation (100%) for Fairchild AFB, WA

in Support of the Environmental Impact Statement for KC-46A Main Operating Base (MOB) 6 Beddown

HMMH Report No. 312900.01

July 2022

Prepared for:

HDR
Environmental, Operations and Construction, Inc.
3025 Chemical Road, Suite 110
Plymouth Meeting, PA 19462

This page intentionally left blank

Technical Report and Noise Model Operational Data Documentation (100%)

for Fairchild AFB, WA

in Support of the Environmental Impact Statement for KC-46A Main Operating Base (MOB) 6 Beddown

HMMH Report No. 312900.01
July 2022

Prepared for:

HDR
Environmental, Operations and Construction, Inc.
3025 Chemical Road, Suite 110
Plymouth Meeting, PA 19462

Prepared by:

Joseph J. Czech
Christopher P. Emma

HMMH
300 South Harbor Boulevard, Suite 516
Anaheim, CA 92805-3717
T 310.738.5943

This page intentionally left blank

Executive Summary

This Noise Model Operational Data Documentation (NMODD) is in support of an Environmental Impact Statement (EIS), pursuant to the National Environmental Policy Act (NEPA), for the proposed beddown by the US Air Force (DAF) of 24 Primary Authorized Aircraft (PAA) of KC-46A Pegasus, replacing 24 PAA of KC-135R Stratotanker. This beddown will occur either at MacDill Air Force Base (AFB), FL, or Fairchild AFB, WA. By the end of Calendar Year (CY) 2030 (CY30), all proposed KC-46A aircraft would be fully operational at the selected base.

The aircraft noise modeling for this EIS was launched from the previous Noise Update for Fairchild AFB conducted in 2012. Updating of the noise modeling files was limited to based KC-135R, proposed based KC-46A, and transient aircraft. Modeling for other based aircraft was not updated, except for numbers of flight operations. Only minor modifications were made to the flight profiles of the other based aircraft to facilitate the running of the noise model.

Operational Scenarios Modeled

This EIS considers three scenarios: Baseline, Proposed Action, and Alternative 1.

1. Baseline/No Action Alternative (referred to as simply "Baseline" for brevity) reflects CY21 activity.
2. The Proposed Action considers the full replacement of based KC-135R aircraft with the KC-46A at MacDill AFB.
3. Alternative 1 would replace 24 of 48 based KC-135R aircraft at Fairchild AFB with 24 KC-46A aircraft. Twenty-four based KC-135R aircraft would remain in operation at Fairchild AFB.

This NMODD considers the Baseline/No Action Alternative and Alternative 1 for Fairchild AFB only.

Modeling was accomplished with the legacy core programs of the NOISEMAP suite (NMAP) and the Advanced Acoustics Model (AAM) for airfield noise exposure. Noise exposure was computed in terms of Day-Night Average Sound Level (DNL) for annual average daily operations. DNL contours of 65 through 85 decibels (dB) are shown. Noise exposure for aircraft operations in Special Use Airspace (SUA) was not considered.

Interviews Conducted

Telephone interviews with subject matter experts (SMEs) were conducted in March 2022 for pilots and maintenance personnel for the KC-135R and KC-46A. Additional phone interviews were conducted with each base operations division to gather a comprehensive dataset. After the interviews, analysts processed and verified the data with its respective SMEs. Once approved, analysts then inserted the data into the model. See Section 1.3 for further detail.

Results Summary

The results of the analysis predict noise levels of 65 DNL would remain entirely on the base property for Baseline and Alternative 1. Alternative 1 would widen the 65 DNL area by up to 250 feet on either side of the runway. The extent of the noise areas by the runup pads would remain generally unchanged.

Additional metrics were calculated at specific locations to analyze the noise on nearby activities. There is no potential for hearing loss around the base and schools would not experience any noise related learning interference under either scenario. One residential monitor site and one hospital would potentially experience an annual increase of eight potentially sleep disturbing events and 132 outdoor speech interfering events under Alternative 1. Noise effects on wildlife would be dominated by transient fighter activity and would not change between the scenarios.

Contents

Figures

Tables

This page intentionally left blank

1 Modeling Overview

The International Civil Aviation Organization's (ICAO) abbreviation for Fairchild AFB is KSKA, shortened to just "SKA" for brevity for the purposes of this Noise Model Operational Data Documentation (NMODD).

1.1 Noise Metric and Levels of Significance

The noise contour methodology used herein is the Day-Night Average Sound Level (DNL) metric of describing the noise environment. Efforts to provide a national uniform standard for noise assessment have resulted in the U.S. Environmental Protection Agency adopting DNL as the standard noise descriptor for use in land-use planning.

The DNL metric can be used to describe different types of sounds. Because human hearing picks up noise energy in certain frequency ranges better than others, sound energy in certain frequency bands is emphasized when measuring noise to best predict effects. For aircraft noise and most other types of sound, the frequencies most easily audible to humans are emphasized using a function known as A-weighting. Because A-weighting is prevalent, sounds can be assumed to be A-weighted unless otherwise specified.

The DAF uses the DNL descriptor in assessing the amount of aircraft noise exposure and as a metric for community response to the various levels of exposure. The DNL values most plotted for planning purposes are 65, 70, 75, 80, and 85 decibels (dB). Land use guidelines are based on the compatibility of various land uses with these noise exposure levels. It is generally recognized that a noise environment descriptor should consider, in addition to the annoyance of a single event, the effect of repetition of such events and the time of day in which these events occur. DNL begins with a single-event descriptor and adds corrections for the number of events and the time of day. Since the primary development concern is residential, nighttime events (i.e., events occurring between the hours of 10 PM and 7 AM) are considered more annoying than daytime events. Thus, nighttime events are weighted by a factor of 10[1]. DNL values are computed from the single-event noise descriptor, plus corrections for number of flights and time of day (see Figure 1-1).

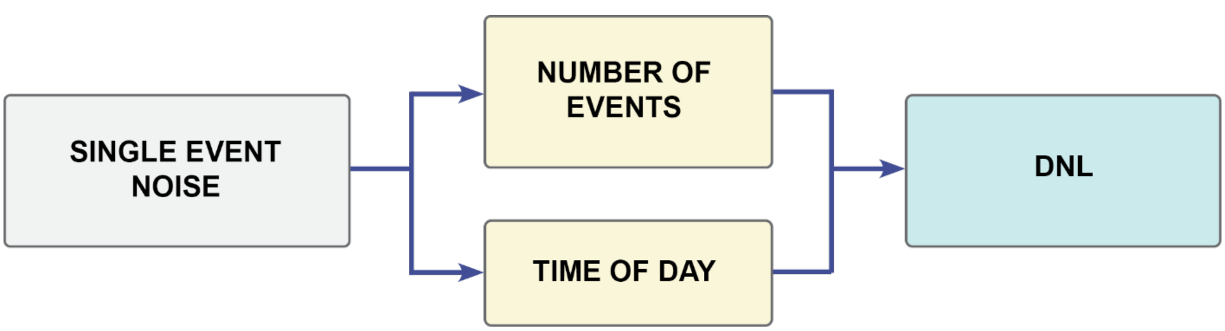


Figure 1-1. A-weighted Day-Night Average Sound Level

[1] Throughout this document, "day" or "daytime" refers to the period between 7 AM and 10 PM, local, (0700 to 2200 hours in 24-hour military time) and "night" or "nighttime" refers to the period between 10 PM and 7 AM, local (2200 to 0700 hours in 24-hour military time).

As part of the extensive data collection process, detailed information is gathered on the type of aircraft, time of day, and the number of flying operations for each flight track during a typical day. This information is used in conjunction with the single-event noise descriptor to produce DNL values. These values are combined on an energy summation basis to provide single DNL values for the mix of aircraft operations at the base. Points of equal DNL value on a rectangular grid of points are connected to form the contour lines.

1.2 Computer Noise Model

Data describing flight track distances and turns, altitudes, airspeeds, power settings, flight track operational utilization, maintenance locations, ground runup engine power settings, and number and duration of runs by type of aircraft/engine are assembled. Trained personnel process the data for input into the NOISEMAP computer program. Aircraft operations parameters are reviewed for accuracy by operational unit points of contact prior to running the noise model.

Tables 1-1 through 1-4 list the computerized noise models used for this NMODD and pertinent modeling parameters discussed herein. The models used are described briefly below.

NOISEMAP is a suite of computer programs and components developed by the US Department of Defense (DoD) to predict noise exposure near an airfield due to aircraft flight, maintenance, and ground runup operations. The relevant components of NOISEMAP are as follows:

- BASEOPS is the input module for NOISEMAP and is used to enter detailed aircraft flight track and profile and ground maintenance operational data.
- NOISEFILE is a comprehensive database of measured military and civil aircraft noise data. Aircraft operational information is matched with the noise measurements in NOISEFILE after the detailed aircraft flight and ground maintenance operational data have been entered into BASEOPS.
- NMAP and AAM (the Advanced Acoustics Model) are the core computational modules in NOISEMAP. NMAP and AAM take BASEOPS input and uses the NOISEFILE database to calculate the noise levels caused by aircraft events at specified grid points in the airbase vicinity. The output of NMAP is a series of georeferenced data points, specific grid point locations, and corresponding noise levels.
- NMPLOT is the program for viewing and editing the sets of georeferenced data points. NMPLOT plots the NMAP output from the noise contour grid and can export the noise contours as files used in mapping programs for analyzing the noise impacts.

Noise exposure was computed in terms of DNL for annual average daily operations. DNL contours of 65 dB through 85 dB, in 5-dB increments, are shown.

The airfield modeling uses a local coordinate system with the origin at the SKA Airfield Reference Point (ARP), which has geographical coordinates of 47.6150° North / 117.6558° West and an elevation of 2,462 feet above Mean Sea Level (MSL). The current magnetic declination is 14.4° West. All maps in this report depict a north arrow pointing to true north.

Table 1-1. Aircraft Noise Models Used

Software	Analysis	Version
NMAP	Airfield flight and runup noise	7.3
AAM	Airfield based helicopter modeling	3.1

Table 1-2. Modeling Parameters

Parameter	Description
Receiver Grid Spacing	100 feet in x and y
Modeled flying days	365
Magnetic Declination	14.4 degrees West
Reference Point Elevation	2,462 feet MSL

Table 1-3. Topography Parameters

Parameter	Description
Elevation and Impedance Grid Spacing	50 feet in x and y
Flow Resistivity of Land Areas (soft)	200 kPa-s/m^2
Flow Resistivity of Water Areas (hard)	none

Table 1-4. Average Daily Temperature, Relative Humidity and Pressure for Fairchild AFB 2021

Month	Temperature (°F)	Relative Humidity (%)	Pressure (in Hg)
January	32.3	97.30	30.03
February	27.3	80.80	29.95
March	39.4	68.47	29.99
April	48.3	42.67	30.01
May	55.8	42.21	30.00
June	69.1	38.08	29.96
July	77.5	26.41	29.98
August	69.5	41.55	29.97
September	59.0	52.59	29.98
October	46.8	73.48	29.94
November	37.8	91.78	30.07
December	25.3	93.14	29.77

Notes:
1) Relative humidity computed by averaging the monthly minimum and maximum; daily average provided by AMC.
2) Modeled condition chosen by BaseOps is highlighted (December).

The modeling used the topography data files from the US Geological Survey (USGS). HMMH specified areas of land as acoustically "soft" surfaces, with a flow resistivity of 200 kiloPascal-seconds per square meter (kPa-s/$m^{2)}$, and bodies of water as "hard" surface, with a flow resistivity of 1,000,000 kPa-s/m^2, though no large bodies of water exist near SKA.

Local weather conditions (e.g., temperature, relative humidity, and air pressure) influence how quickly sound is absorbed by the atmosphere as it travels outward from its source. This report utilized detailed daily average weather conditions for each month from SKA for 2021. Average daily temperature and relative humidity values are plotted in Figure 1-2. The average temperatures for summer months (May to September) and winter months (October to April) are 66°F and 37°F, respectively, and the average temperature overall is 49°F. Relative humidity for the same periods over the course of an entire day are 40.2 percent for the summer months and 78.2 percent for winter months and an average humidity overall of 62.4 percent. The NMAP's BaseOps program computes absorption coefficients for each month and selects the median coefficient to use in the noise exposure modeling (Lee and Mohlman 1990). The modeled conditions selected by the BaseOps program correspond to the month of December with a temperature of 25°F and a relative humidity of approximately 93 percent.

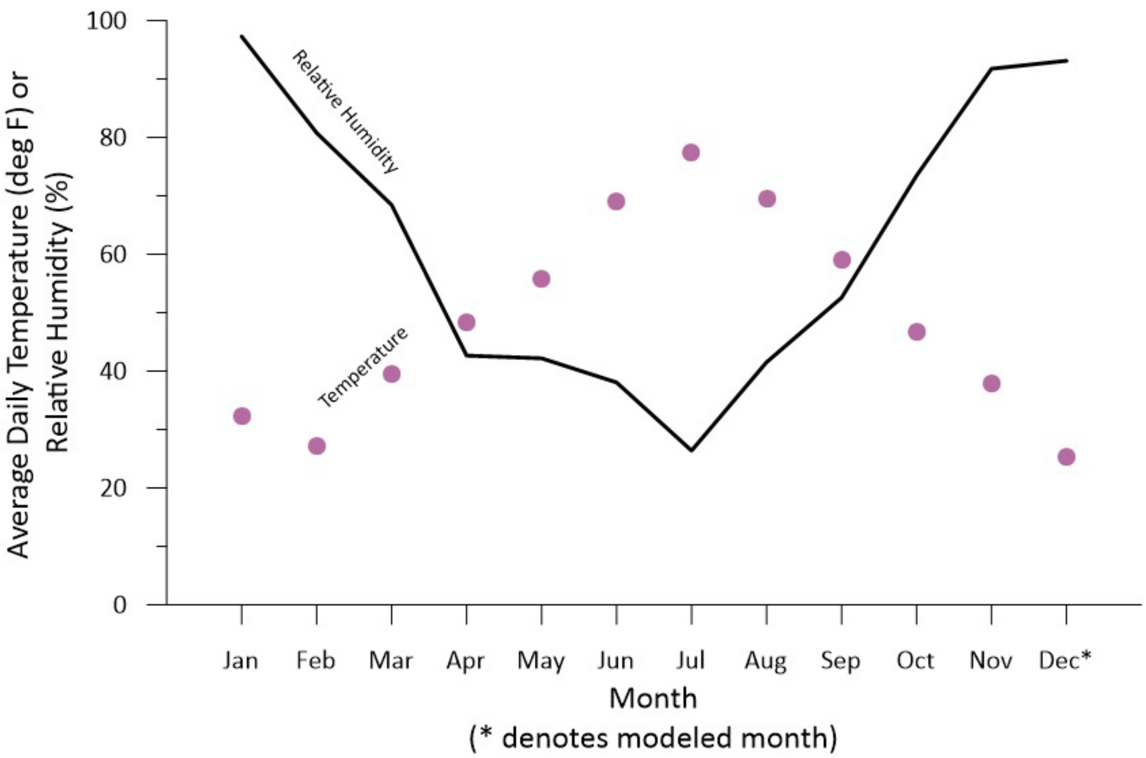


Figure 1-2. Average Daily Temperature and Relative Humidity for Each Month

1.3 Data Collection and Validation

For the data collection process, we developed packages for each Subject Matter Expert (SME) containing information from a 2012-era BaseOps file (Dooling 2021). For pilots, these packages consisted of annual operations, runway usage, flight tracks, flight profiles, and utilization percentages. For other SMEs, the data collection packages contained previously modeled information relevant to each group (e.g., analysts sent the KC-135R mechanics a list of all previously modeled KC-135R maintenance runups at SKA). Table 1-5 lists each of the interviewed SMEs and their contact information.

During interviews conducted during the week of March 7, 2022, interviewers discussed the contents of each package with its respective SME and corrected any errors and filled most data gaps. Afterwards, analysts synthesized the data and produced data validation packages for each pilot/maintainer SME. These packages contained final questions and subject-specific data for SME approval.

Table 1-5. SME Contact List

Role	Interviewee	E-mail	Phone Number
Airfield Management	Ms. Roberta LaPorte	roberta.laporte.1@us.af.mil	509-247-5481
Airfield Management (ANG)	TSgt Nathan Leitz	nathan.leitz@us.af.mil	509-247-7133
Base Ops/Transient Alert	Mr. Ken Goulding	kenneth.goulding.1@us.af.mil	509-247-5974
Base Ops/Transient Alert (ANG)	TSgt Nathan Leitz	nathan.leitz@us.af.mil	509-247-7133
Weather	Mr. Jacob Marche	jacob.marche.2@us.af.mil	509-247-5514
ATC Tower	MSgt John Tisue	john.tisue@us.af.mil	509-247-4000
KC-135 Pilot (AMC)	Maj Coty “Mule” Hoffman	coty.hoffman@us.af.mil	509-247-5597
KC-135 Pilot (ANG)	Maj Brian Kranches	brian.kranches@us.af.mil	509-247-7114
KC-135 Maintenance (AMC)	MSgt Ryan Cox	ryan.cox.7@us.af.mil	509-247-5597
KC-135 Maintenance (ANG)	Lt Col Craig Gural	craig.gural@us.af.mil	509-247-7254
KC-46 Pilot	Mr. Derek Strunk	derek.strunk.1@us.af.mil	618-229-2251
KC-46 Maintenance	Mr. Derek Strunk	derek.strunk.1@us.af.mil	618-229-2251

This page intentionally left blank

2 Airfield Flight Operations

Table 2-1 lists the Primary Authorized Aircraft (PAA) for each aircraft type. There are 48 PAA for the KC-135R for Baseline at SKA. Twenty-four of these would be replaced by 24 PAA of the KC-46A aircraft for Alternative 1.

Table 2-1. Numbers of Primary Authorized (Based) Aircraft at SKA

Modeled Aircraft Type	Baseline	Alternative 1
KC-135R	48	24
KC-46A	0	24
Total	48	48

Tables 2-2 through 2-4 summarize the annual airfield flight operations for the Baseline scenario. The based KC-135R aircraft (active duty and National Guard combined) generate approximately 17,000 annual flight operations, with about 700 during the DNL nighttime period (2200-0700 hours).

The 36RQF helicopter operations were modeled with AAM's AH-1W SuperCobra. The Army National Guard's H-60 operations were modeled with AAM's SH-60B Seahawk. The based helicopters comprise approximately 2,600 annual flight operations at the airfield, with approximately five percent of those operations during the DNL nighttime period. The total helicopter operations count was derived from subtracting the KC-135R and transient operations from the total 19,700 tower count provided by the Air Traffic Control (ATC) Tower. The resulting 2,600 operations were distributed to the two maintaining the ratio from the previous 2012 modeling (57% AH-1W and 43% SH-60B).

The transient aircraft in Table 2-3 only comprise 328 annual flight operations. These operations were derived from data provided by the Transient Alert community at SKA. The categories of transient aircraft listed in Table 2-3 are shown and defined in Table 2-5. The Transient Alert community logs many different types of aircraft. For modeling purposes, aircraft were grouped into categories and modeled with a representative aircraft type; this representative type usually represents the most frequently occurring aircraft type in each group supported by NMAP.

Tables 2-6 and 2-7 contain the distribution of arrivals and closed pattern operations to types/subtypes for the based KC-135R community, respectively. Five percent of arrivals use overhead breaks and five percent use tactical vectored arrivals. For Closed Pattern operations, three percent approach the runway under Instrument Flight Rules (IFR) before circling to land on the opposite runway end.

The No Action Alternative would be identical to the Baseline scenario.

This page intentionally left blank

Table 2-2. Annual Based Airfield Flight Operations for Baseline

Based Group	Modeled Aircraft Type	Departure Day	Departure Night	Departure Total	Arrival Day	Arrival Night	Arrival Total	Closed Pattern Day	Closed Pattern Night	Closed Pattern Total	Interfacility Day	Interfacility Night	Interfacility Total	Total Day	Total Night	Total
92nd & 141st (includes EXPO)	KC-135R	1,590	32	1,622	1,622	-	1,622	12,838	676	13,514	-	-	-	16,050	708	16,758
36RQF	AH-1W	240	12	252	240	12	252	868	44	912	65	3	68	1,413	71	1,484
Army National Guard	SH-60B	183	9	192	83	9	192	662	34	696	49	2	52	1,077	55	1,132

Table 2-3. Annual Transient Airfield Flight Operations for Baseline and Alternative 1

Transient Category	Modeled/Representative Aircraft Type	Departure Day	Departure Night	Departure Total	Arrival Day	Arrival Night	Arrival Total	Total Day	Total Night	Total
fighter/ attack	F-18A/C	6	-	6	6	-	6	12	-	12
4ELJ	C-17	7	3	10	7	3	10	14	6	20
4ENB	KC-135R	94	6	100	90	10	100	184	16	200
3EWB, 3ENB	KC-10A	2	-	2	2	-	2	4	-	4
2EWB, 2ENB	KC-46X	11	-	11	10	1	11	21	1	22
bizjet	C-21	4	-	4	4	-	4	8	-	8
4ETP	C-130H&N&P	10	-	10	10	-	10	20	-	20
2ETP, 1ETP	C-12	9	-	9	9	-	9	18	-	18
helo	UH60A	12	-	12	12	-	12	24	-	24

Table 2-4. Summary of Annual Airfield Flight Operations for Baseline

Group	Departure Day	Departure Night	Departure Total	Arrival Day	Arrival Night	Arrival Total	Closed Pattern Day	Closed Pattern Night	Closed Pattern Total	Interfacility Day	Interfacility Night	Interfacility Total	Total Day	Total Night	Total
Based	2,013	53	2,066	2,045	21	2,066	14,369	753	15,122	114	6	120	18,540	834	19,374
Transient	155	9	164	150	14	164	-	-	-	-	-	-	305	23	328
Total	**2,168**	**62**	**2,230**	**2,195**	**35**	**2,230**	**14,369**	**753**	**15,122**	**114**	**6**	**120**	**18,845**	**857**	**19,702**

This page intentionally left blank

Table 2-5. Aircraft Types Representing Each Transient Aircraft Group/Category

Grouping/Abbreviation	Meaning of Abbreviation	Represented Aircraft Types
Fighter/ Attack	n/a	F-18/ EA-18
4ELJ	4-engine large jet	C-17
4ENB	4-engine narrow body jet	K/RC-135, E-6, E-3, E-8
3EWB, 3ENB	3-engine wide/narrow body jet	KC-10, B727
2EWB, 2ENB	2-engine wide/narrow body jet	P-8, KC-46, C-40, C-32
bizjet	business jet or similar	C-21, C-37, L-36
4ETP	4-engine turboprop	C-130, P-3
2ETP, 1ETP	2-engine/single-engine turboprop	C-12, C-182
helo	Helicopter	H-60, CH-47

Table 2-6. Distribution of Arrival Operations for the Based KC-135R

Type	Type %	Day	Night	Total
Vectored	90%	1,460	-	1,460
Tactical	5%	81	-	81
Overhead Break	5%	81	-	81
Total	-	1,622	-	1,622

Note: Percentages would apply to Baseline and Alternative 1

Table 2-7. Distribution of Closed Pattern Operations for the Based KC-135R

Type	Type %	Day	Night	Total
IFR	58%	7,454	393	7,847
VFR	39%	4,970	261	5,230
IFR Approach with Circle to Land	3%	414	22	436
Total	-	12,838	675	13,513

Note: Percentages would apply to Baseline and Alternative 1

Alternative 1 involves the replacement of 24 of the 48 based KC-135R aircraft with 24 KC-46A aircraft at SKA. Tables 2-3, 2-8, and 2-9 summarize the annual airfield flight operations for Alternative 1. The based KC-46A aircraft would generate approximately 13,000 annual flight operations with 10 percent during the DNL nighttime period. The based KC-135R aircraft would be reduced to approximately 8,000 annual flight operations with approximately four percent during the DNL nighttime period. The remaining based and transient aircraft operations would be identical to the Baseline/No Action scenarios (Table 2-3), regardless of proposed scenario.

This page intentionally left blank

Table 2-8. Annual Based Airfield Flight Operations for Alternative 1

Based Group	Modeled Aircraft Type	Departure Day	Departure Night	Departure Total	Arrival Day	Arrival Night	Arrival Total	Closed Pattern Day	Closed Pattern Night	Closed Pattern Total	Interfacility Day	Interfacility Night	Interfacility Total	Total Day	Total Night	Total
92nd & 141st	KC-135R	795	16	811	811	-	811	6,419	338	6,757	-	-	-	8,025	354	8,379
92nd & 141st	KC-46A	1,272	35	1,307	1,081	226	1,307	9,546	1,061	10,607	-	-	-	11,899	1,322	13,221
36RQF	AH-1W	240	12	252	240	12	252	868	44	912	65	3	68	1,413	71	1,484
Army National Guard	SH-60B	183	9	192	183	9	192	662	34	696	49	2	52	1,077	55	1,132

Note: 36RQF and Army National Guard flight operations would be identical to Baseline/No Action Alternative

Table 2-9. Summary of Annual Airfield Flight Operations for Alternative 1

Group	Departure Day	Departure Night	Departure Total	Arrival Day	Arrival Night	Arrival Total	Closed Pattern Day	Closed Pattern Night	Closed Pattern Total	Interfacility Day	Interfacility Night	Interfacility Total	Total Day	Total Night	Total
Based	2,490	72	2,562	2,315	247	2,562	17,496	1,476	18,972	114	6	120	22,414	1,802	24,216
Transient	155	9	164	150	14	164	-	-	-	-	-	-	305	23	328
Total	**2,645**	**81**	**2,726**	**2,465**	**261**	**2,726**	**17,496**	**1,476**	**18,972**	**114**	**6**	**120**	**22,719**	**1,825**	**24,544**

This page intentionally left blank

3 Runway Use

Table 3-1 shows the runway utilization percentages. All baseline operations for the KC-135R and Transient aircraft use Runway 05 for 75 percent of operations except the based KC-135R IFR closed patterns. These flight operations use Runway 05 for 61 percent of sorties and Runway 23 for the remaining 39 percent.

In addition to the KC-135Rs, AH-1W and SH-60B helicopters are also based at SKA used by the 36RQF and Army National Guard respectively. The runway use percentages for these aircraft were not updated relative to the 2012 noise update for SKA. These based helicopters use both helicopter arrival/departure locations at both runway ends (Table 3-1) and dedicated helipads (Table 3-2) for their operations.

Proposed KC-46A would utilize Runways 05 and 23 for 75 percent and 25 percent of their operations, respectively. Proposed KC-135R would utilize the Runways identically to their Baseline counterparts, as would based helicopters and transient aircraft.

Table 3-1. Runway Utilization Percentages

Aircraft Type	Operation Type	Runway 23	Runway 05
Based KC-135R	Arrival	75%	25%
Based KC-135R	Departure	75%	25%
Based KC-135R	Radar and VFR closed patterns	75%	25%
Based KC-135R	IFR closed patterns	61%	39%
Based KC-46A	Arrival	75%	25%
Based KC-46A	Departure	75%	25%
Based KC-46A	Closed patterns	75%	25%
Based Helicopters	Arrival	75%	25%
Based Helicopters	Departure	75%	25%
Based Helicopters	Closed patterns	64%	36%
Transient	All	75%	25%

Table 3-2. Helipad Utilization Percentages

Aircraft Type	Operation Type	Pad18	Pad 36
Based Helicopters	Drop Pattern	50%	50%
Based Helicopters	Hover Pattern	50%	50%

This page intentionally left blank

4 Airfield Flight Tracks and their Utilization

The flight tracks shown in this section represent ground paths associated with aircraft operating to/from SKA runways. It is fully recognized that flying operations, particularly when conducted under Visual Flight Rules (VFR), vary from one operation to the next even when conducting the same procedure. Variations may be a result of winds, other air traffic, pilot preference, or a multitude of other factors. Instrument Landing System (ILS) and IFR operations have less variability.

Section 4.1 contains the flight tracks and utilization percentages for based aircraft for the Baseline scenario. Section 4.2 is for the transient aircraft. Section 4.3 is for the proposed based KC-46A aircraft.

The background maps for the flight track maps are the aeronautical sectional chart and/or an aerial photograph. Both types of background maps are geo-referenced. All tracks are labeled with the modeled identification number consisting of the runway, a character for the type of operation, and a consecutive number.

Flight tracks for the based aircraft, other than the KC-135R/KC-46A, were left unchanged from previous modeling.

4.1 Based Aircraft

Sections 4.1.1 through 4.1.3 show the modeled flight tracks and their utilization percentages for the based.

4.1.1 KC-135R

Figures 4-1 through 4-8 show the modeled arrival, departure and closed pattern flight tracks and their utilization, respectively, for the based KC-135R aircraft.

4.1.2 36RQF H-1

Figures 4-9 through 4-12 show the modeled arrival, departure, closed pattern and interfacility flight tracks for the 36RQF's H-1 helicopters. These tracks were not updated from the previous 2012 modeling.

This page intentionally left blank

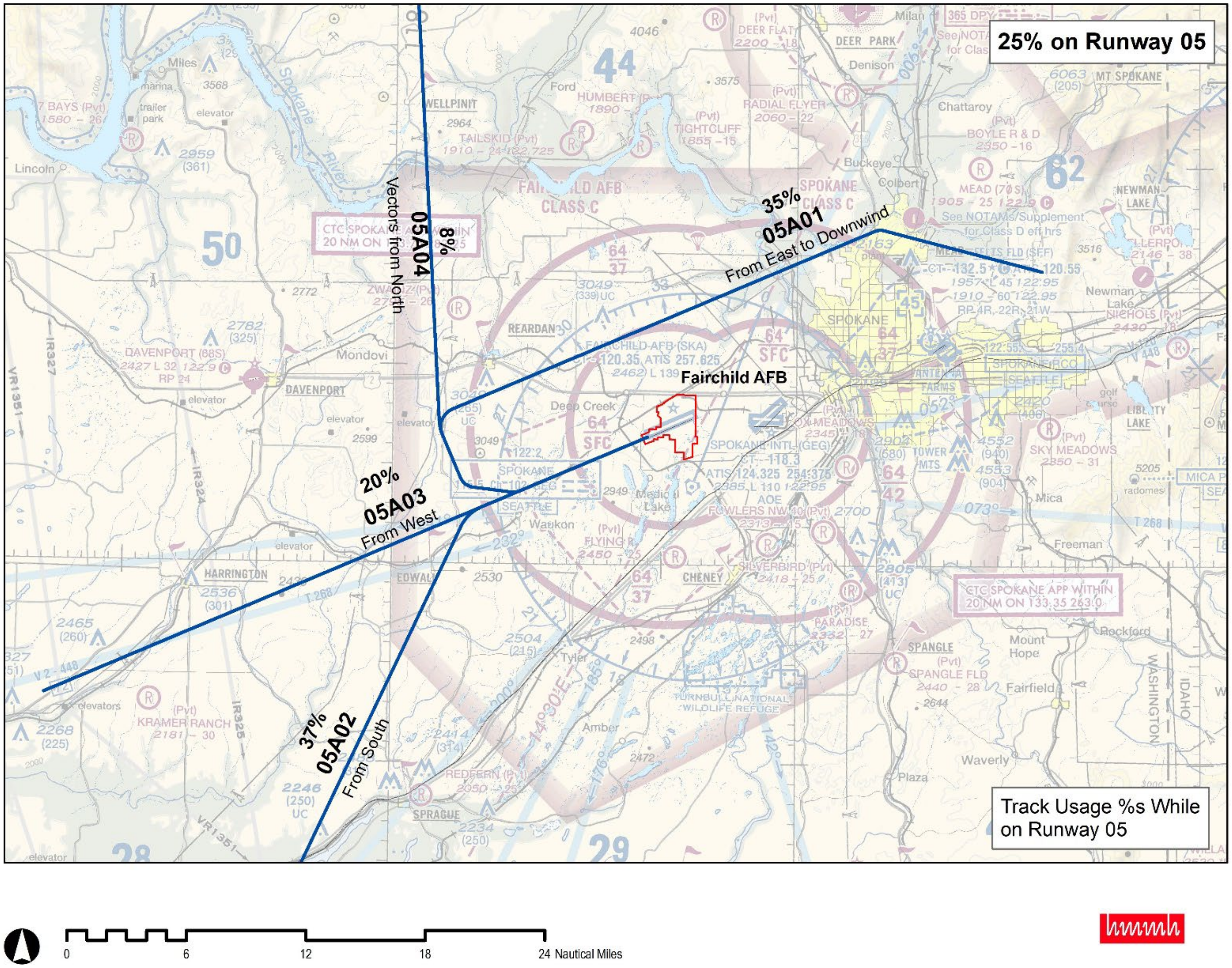


Figure 4-1. Modeled KC-135R Runway 05 Arrival Flight Tracks

Document Path: \\files\vol1\Projects\312XXX\312920_KC46_Beddown_EIS\GIS\Track Maps\312920_KC135_Arr_23.mxd

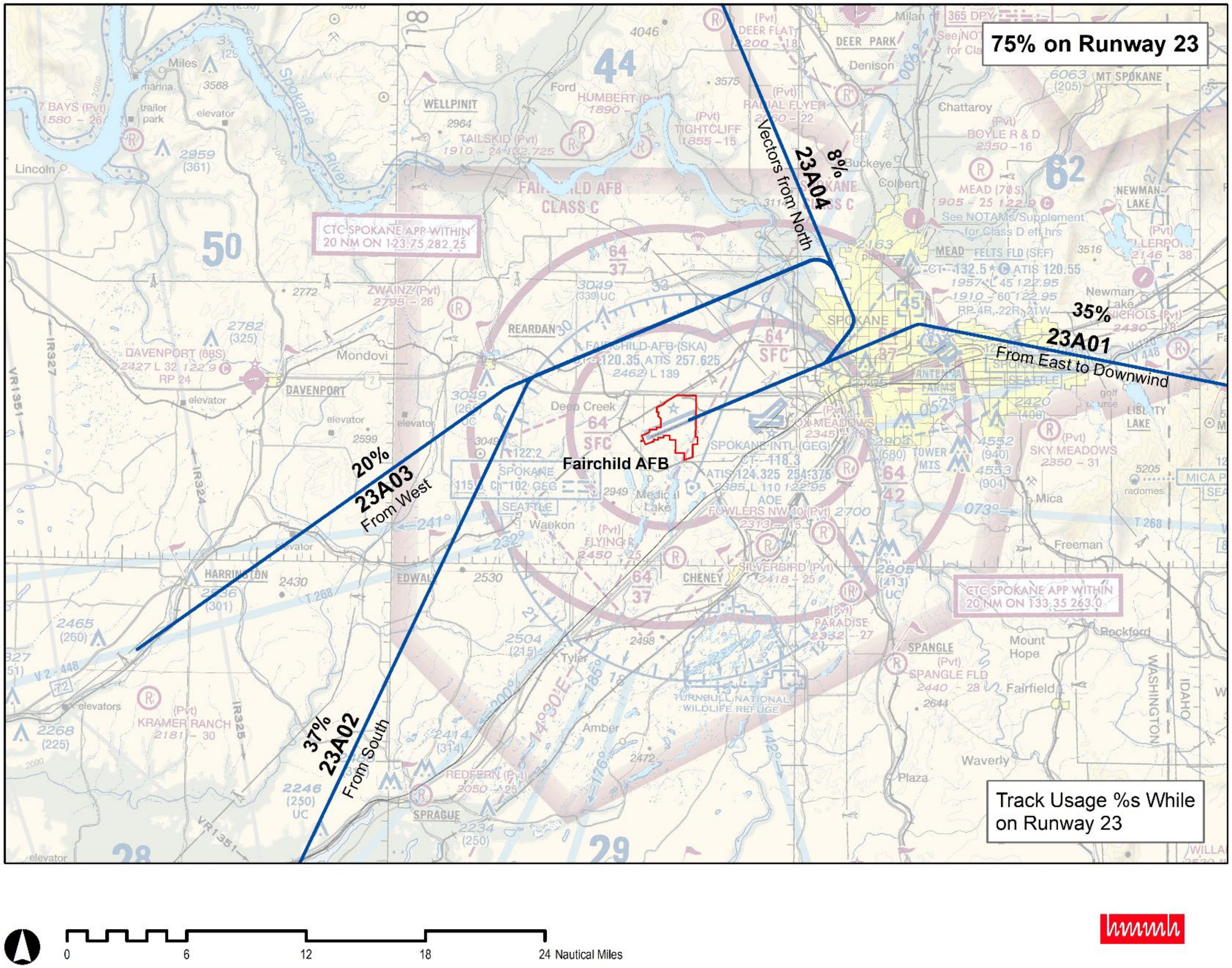


Figure 4-2. Modeled KC-135R Runway 23 Arrival Flight Tracks

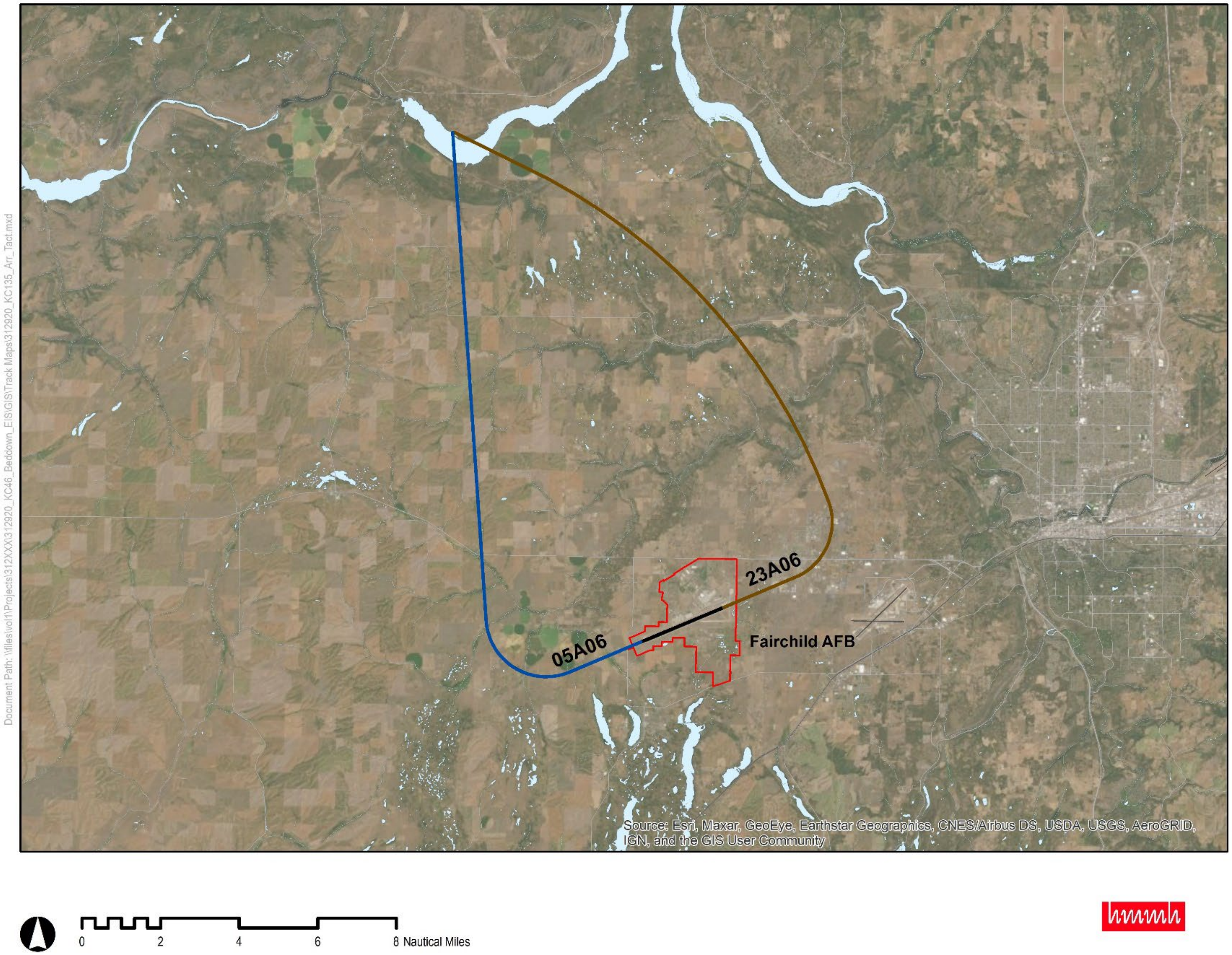


Figure 4-3. Modeled KC-135R Tactical Arrival Flight Tracks

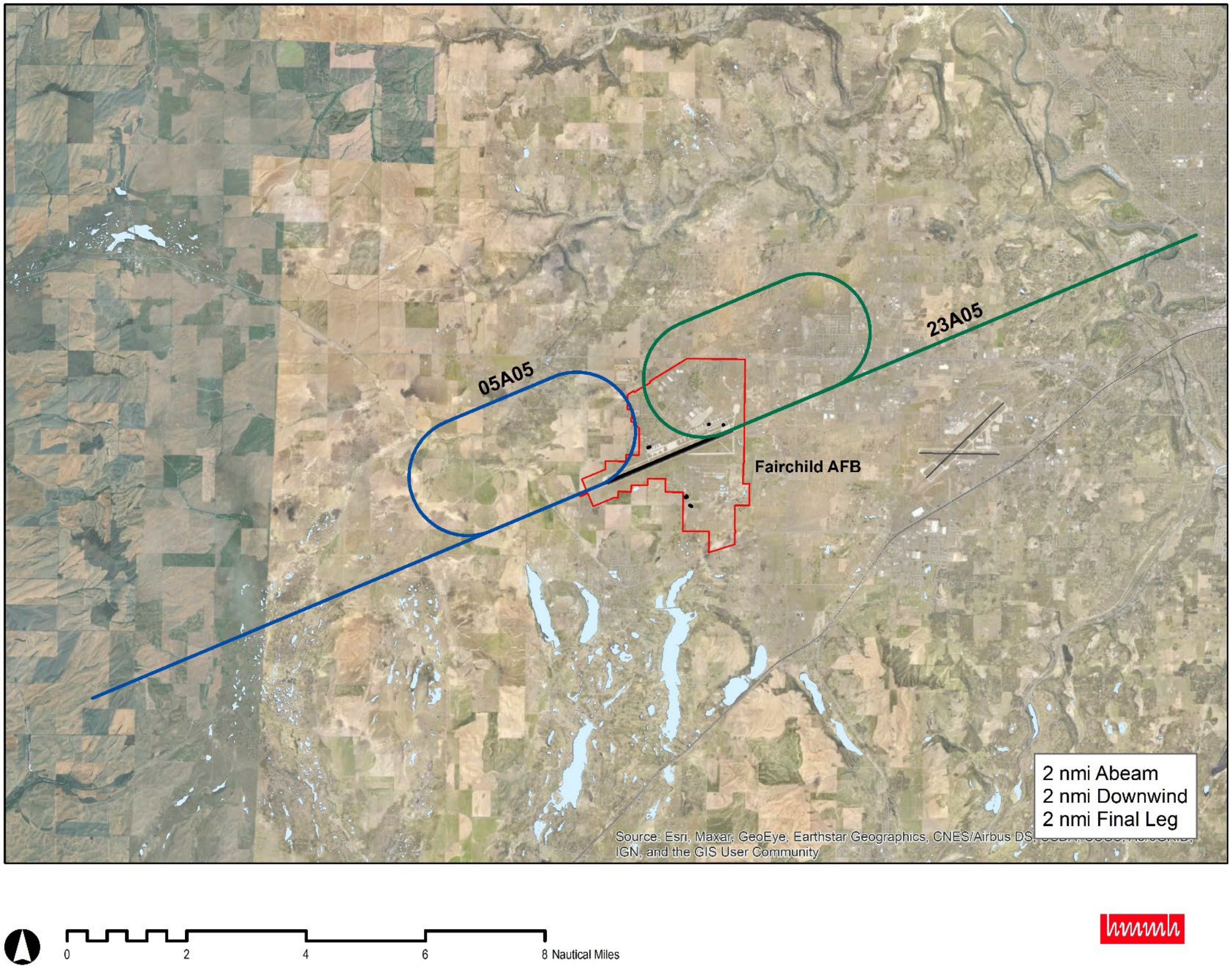


Figure 4-4. Modeled KC-135R Overhead Break Arrival Flight Tracks

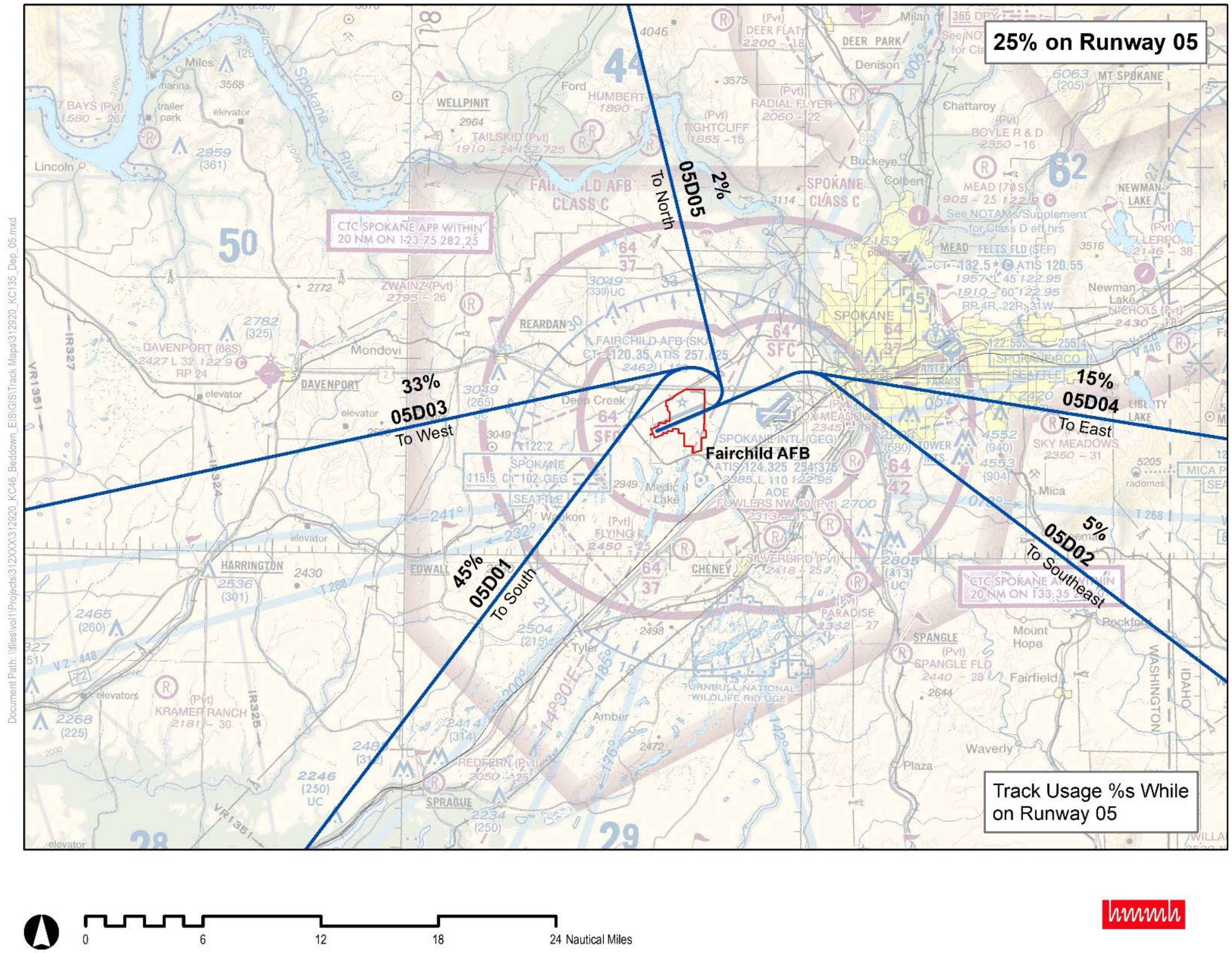


Figure 4-5. Modeled KC-135R Runway 05 Departure Flight Tracks

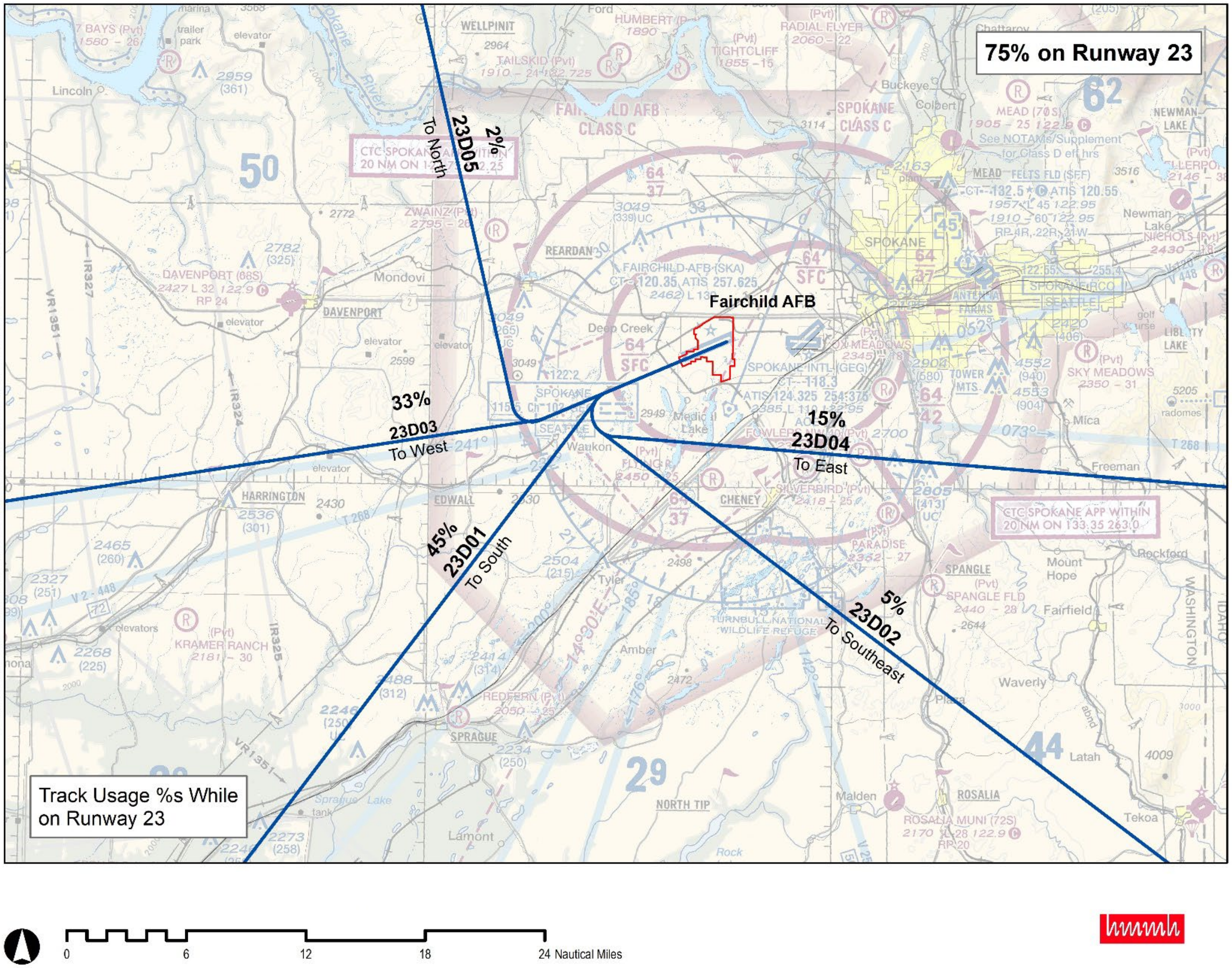


Figure 4-6. Modeled KC-135R Runway 23 Departure Flight Tracks

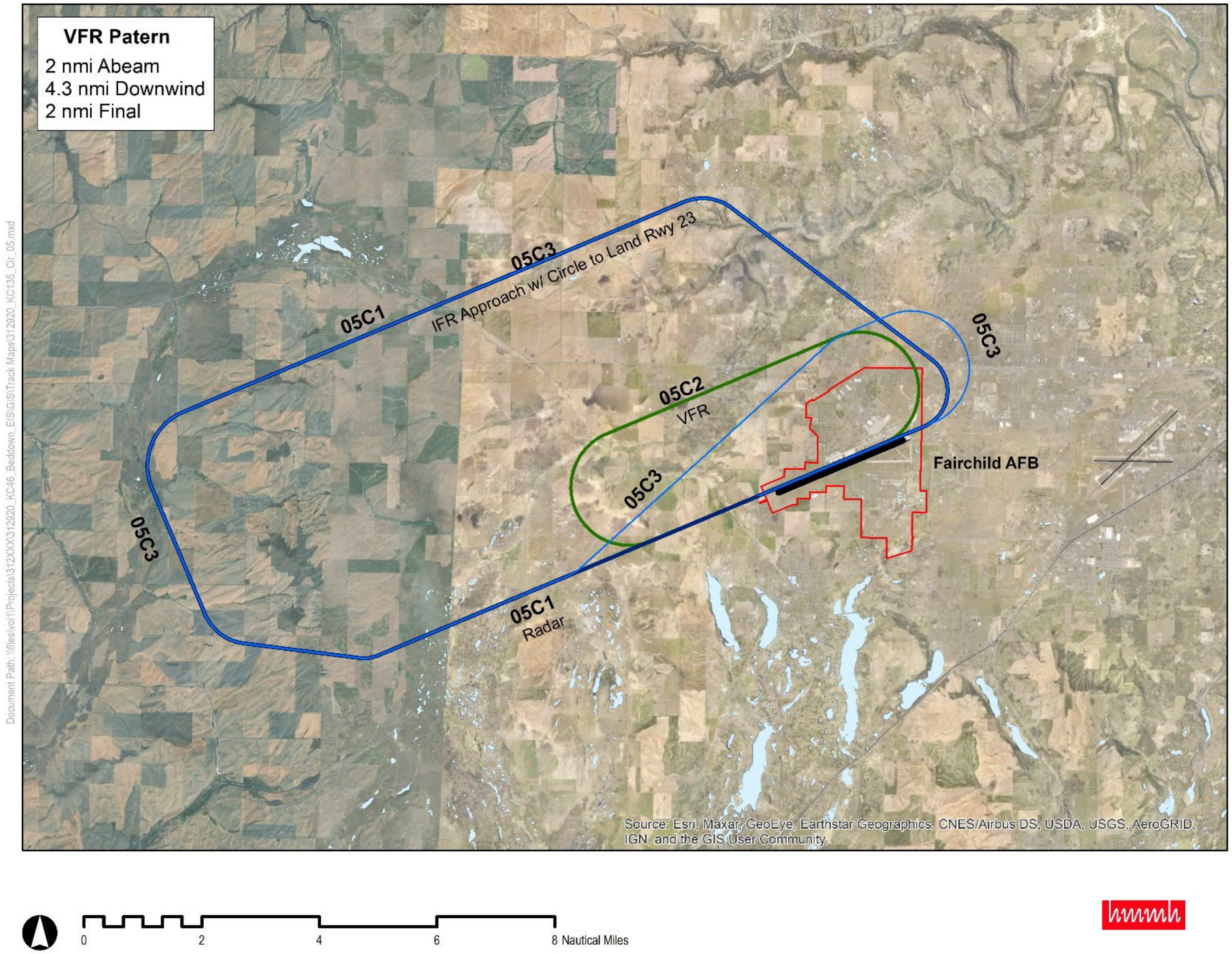


Figure 4-7. Modeled KC-135R Closed Patterns on Runway 05

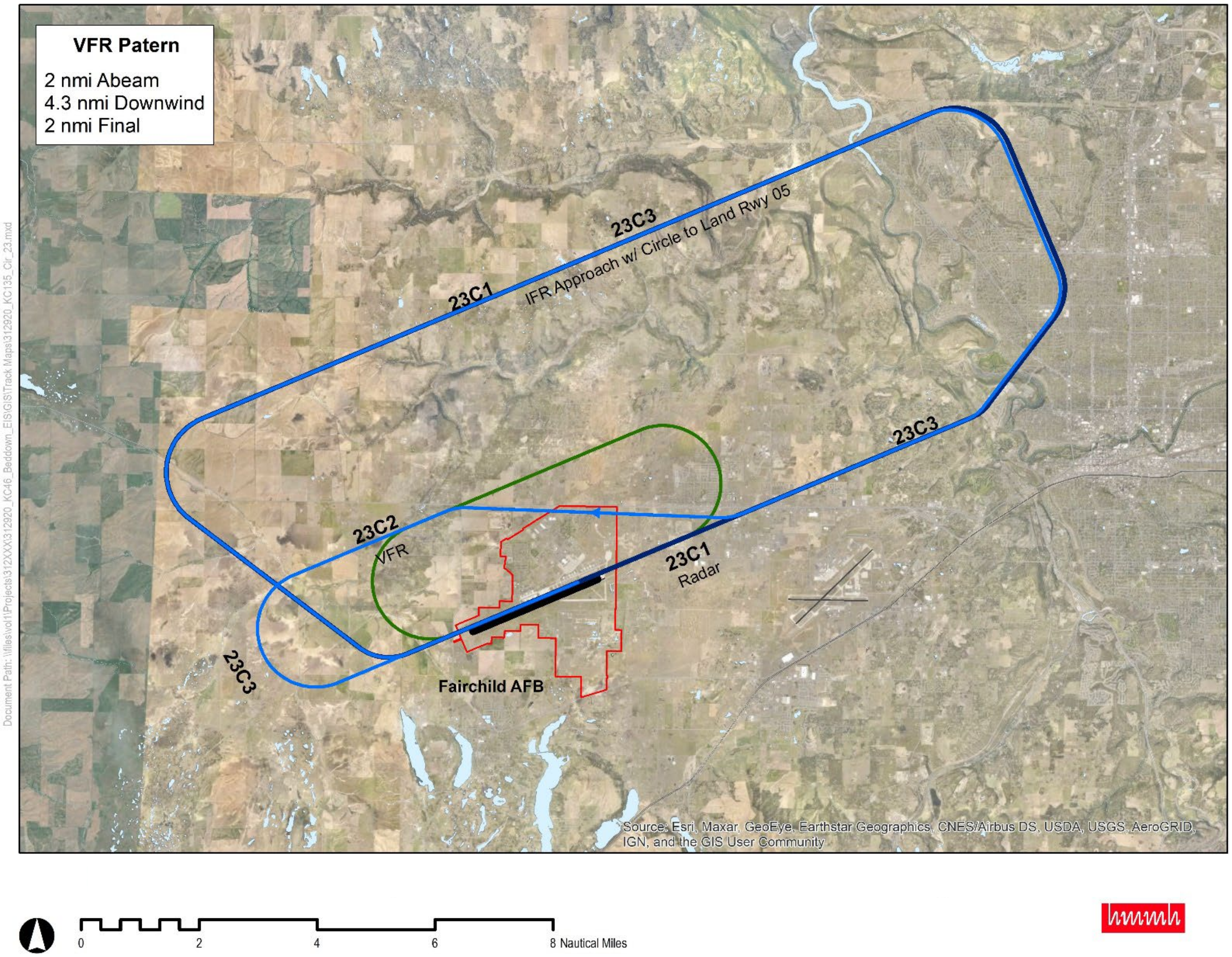


Figure 4-8. Modeled KC-135R Closed Patterns on Runway 23

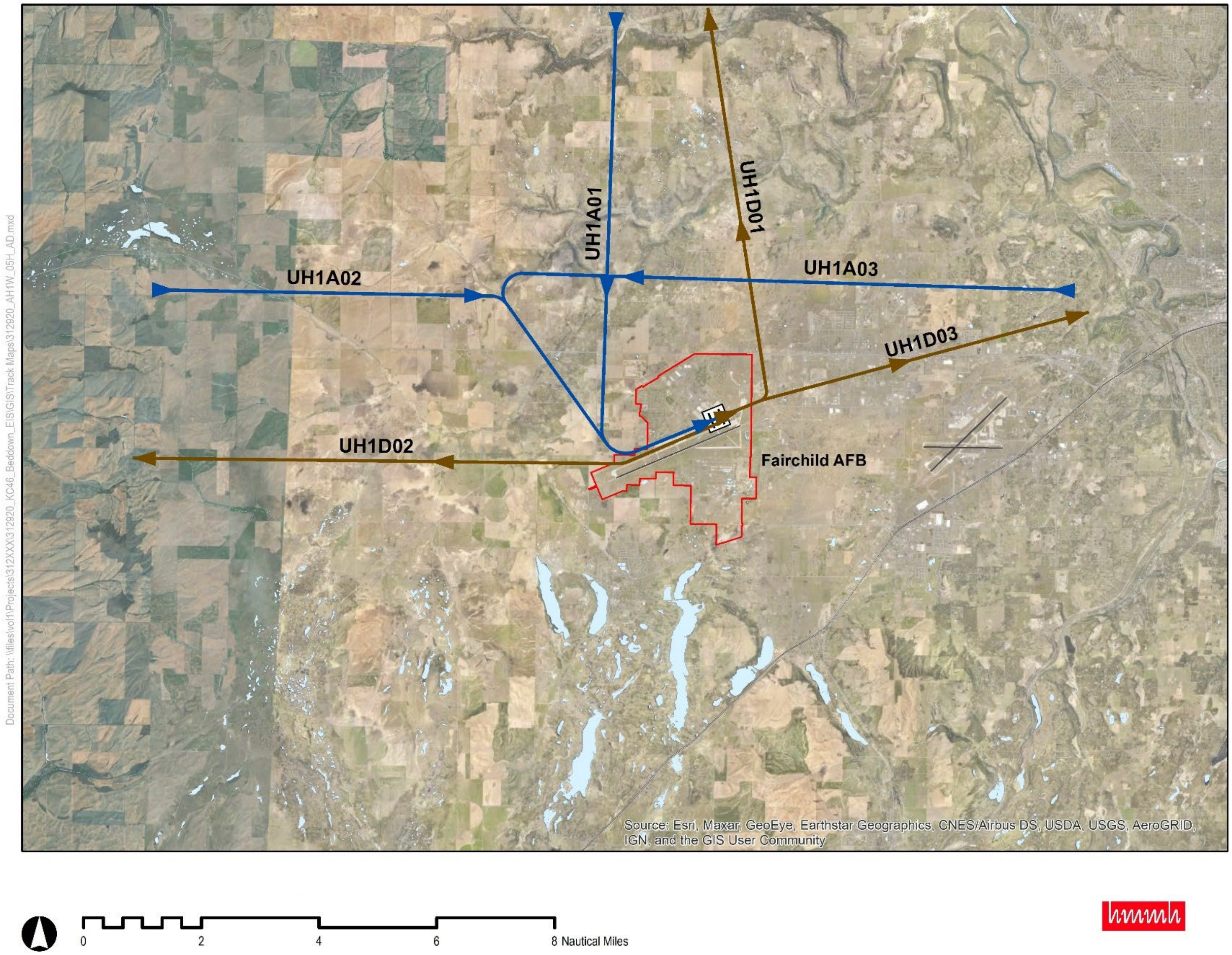


Figure 4-9. Modeled AH-1W Flight Tracks for Helipad 05H

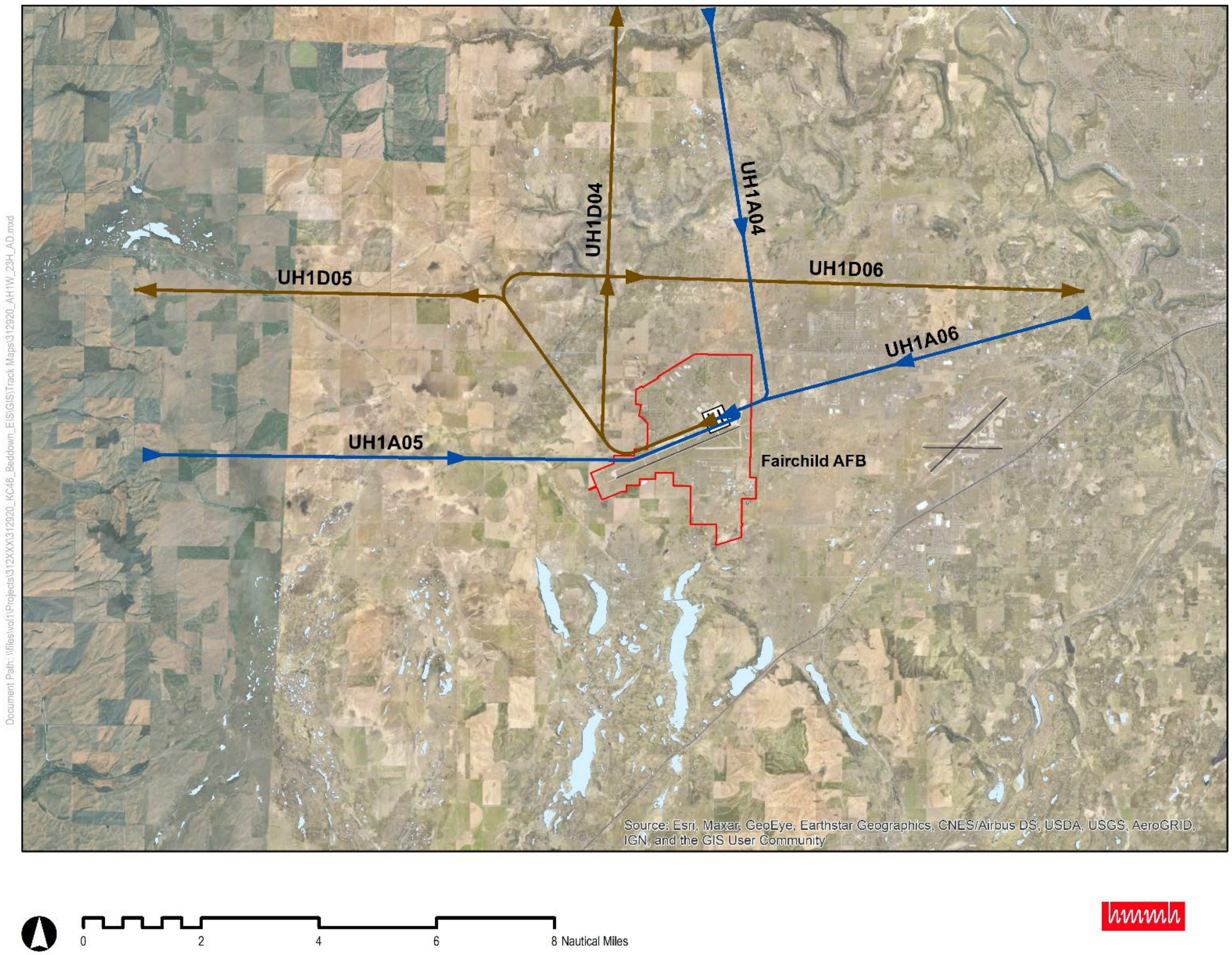


Figure 4-10. Modeled AH-1W Flight Tracks for Helipad 23H

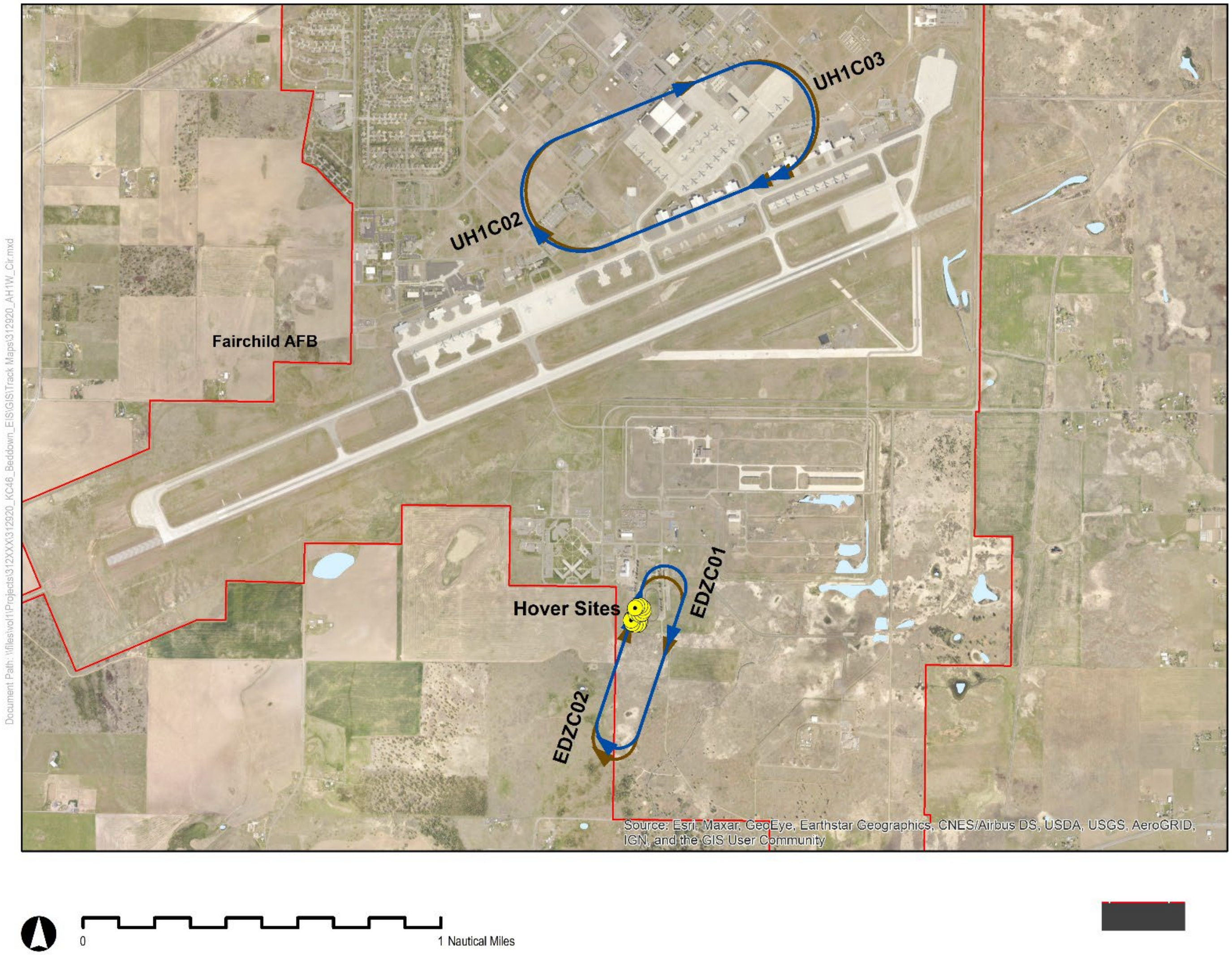


Figure 4-11. Modeled AH-1W Closed Pattern Flight Tracks

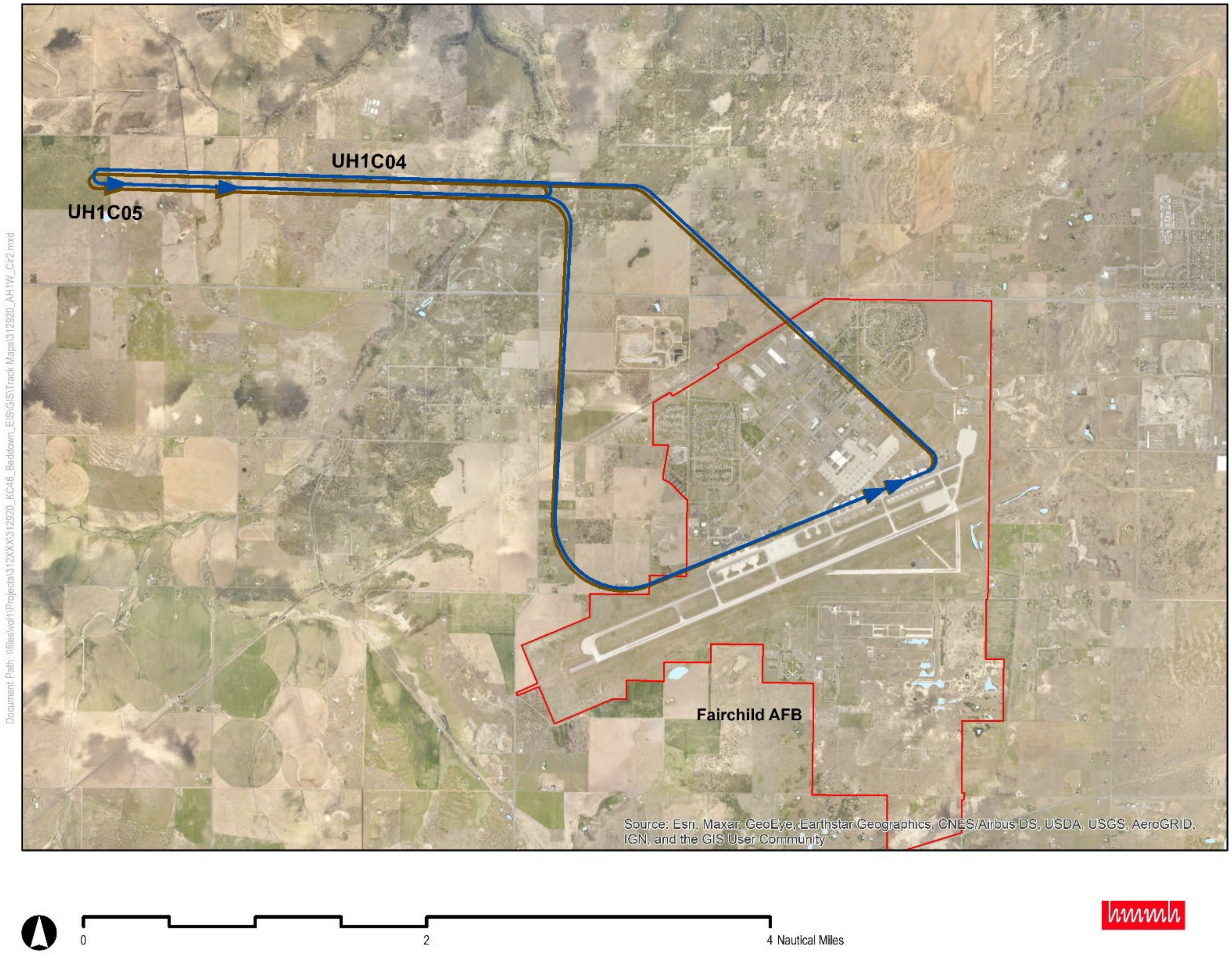


Figure 4-12. Modeled AH-1W Functional Check Flight Tracks

4.1.3 Army National Guard H-60

Figures 4-13 through 4-15 show the modeled arrival, departure, closed pattern and interfacility flight tracks for the Army National Guard's H-60 helicopters. These tracks were not updated from the previous 2012 modeling.

4.2 Transient Aircraft

Figure 4-16 and Figure 4-17 display the flight tracks followed by arriving and departing transient non-fighter aircraft. No utilization percentages are shown, because every runway has only one arrival and one departure track associated with it. For transient C-130, arrival track 05A02 is used instead of the 05A01 track used by other arrivals. Figures 4-18 and 4-19 show the tracks for transient fighter jets. Like the non-fighter aircraft, each runway has only one arrival and one departure track associated with it.

4.3 Proposed Based KC-46A Aircraft

Figures 4-20 through 4-32 show the modeled arrival, departure and closed pattern flight tracks and their utilization, respectively, for the proposed based KC-46A aircraft.

The KC-46A tracks would be identical to the based KC-135R, but the KC-46A utilization percentages would be different. The KC-46A would have new types of operations, relative to the baseline KC-135R operations, namely two types of beam arrivals (Figures 4-13 and 4-14), spiral up departures as well as beam, spiral, and overhead break closed pattern operations.

This page intentionally left blank

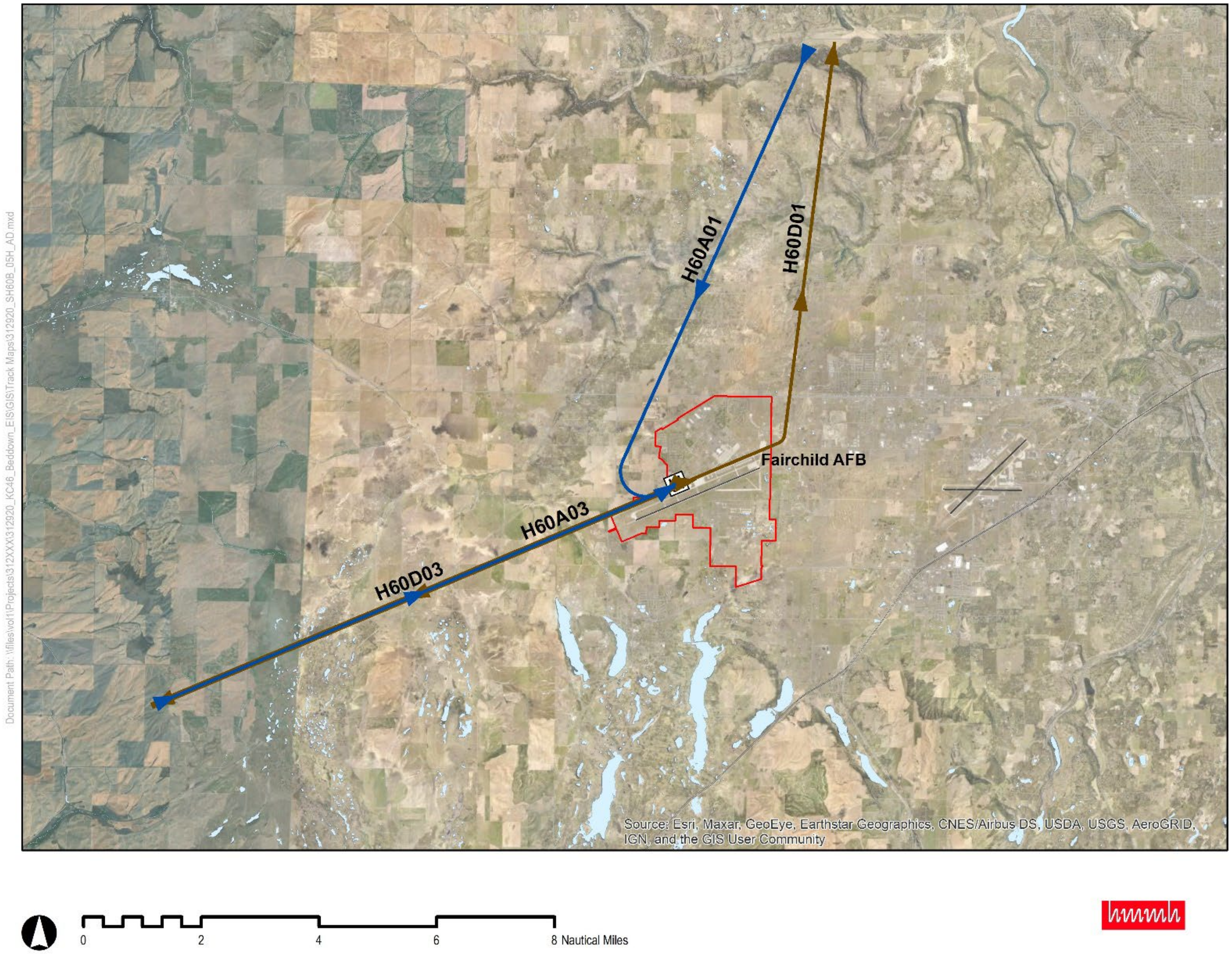


Figure 4-13. Modeled SH-60B Flight Tracks for Helipad 05HP47

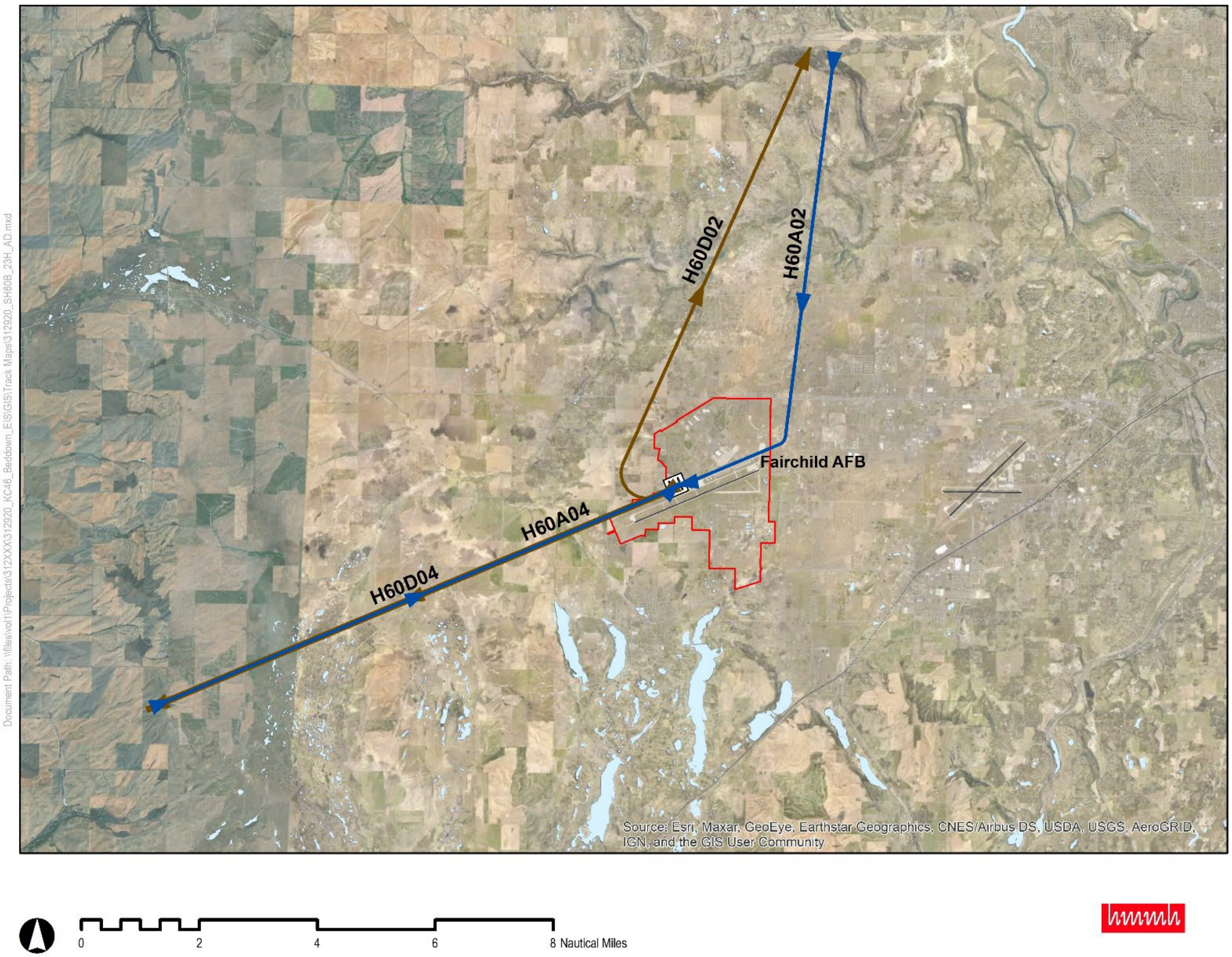


Figure 4-14. Modeled SH-60B Flight Tracks for Helipad 23HP47

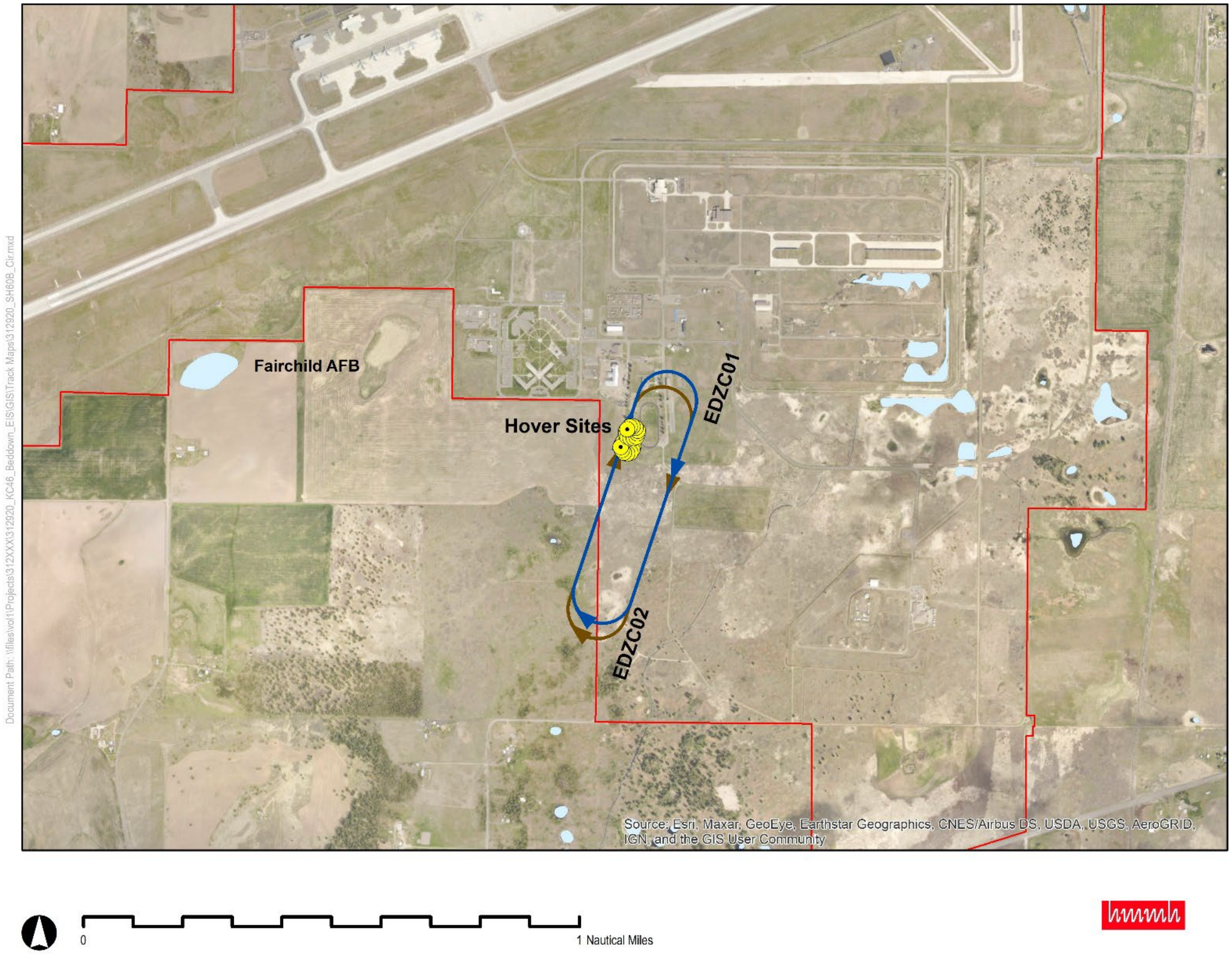


Figure 4-15. Modeled SH-60B Closed Pattern Flight Tracks

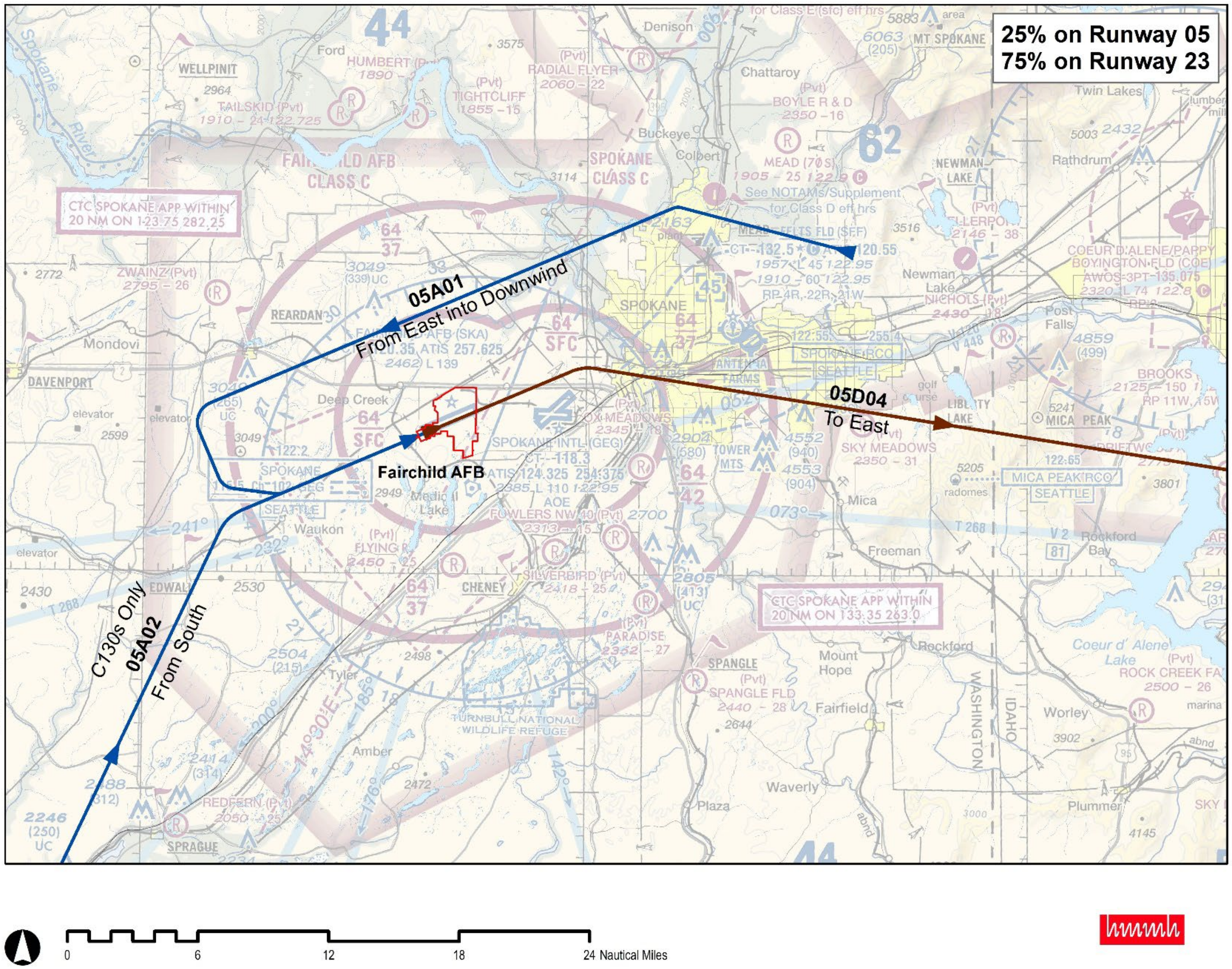


Figure 4-16. Modeled Runway 05 Transient Aircraft (Non-fighter jet) Flight Tracks

Document Path: \\files\vol1\Projects\312XXX\312920_KC46_Beddown_EIS\GIS\Track Maps\312920_KC135_Tran_05.mxd

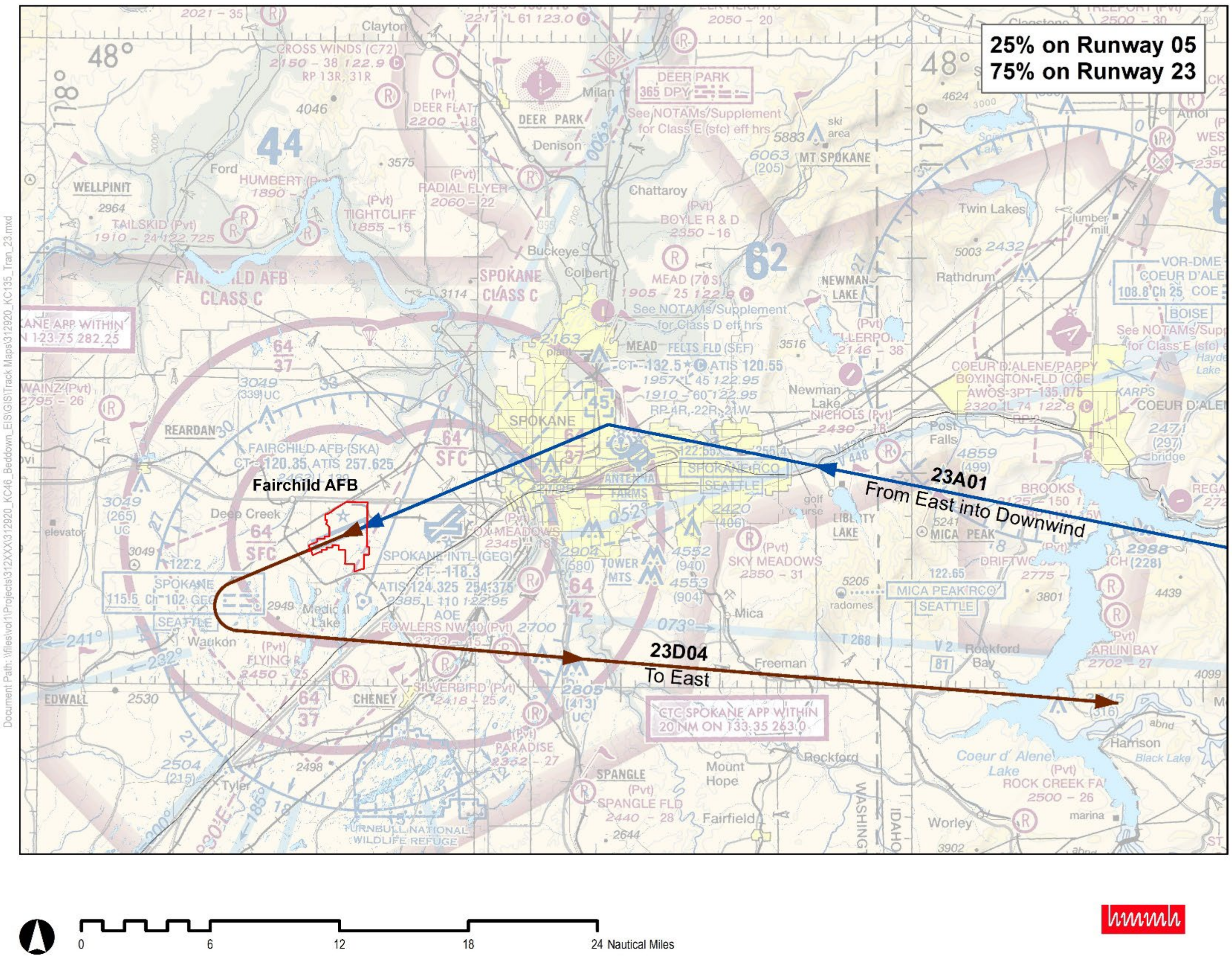


Figure 4-17. Modeled Runway 23 Transient (Non-fighter jet) Aircraft Flight Tracks

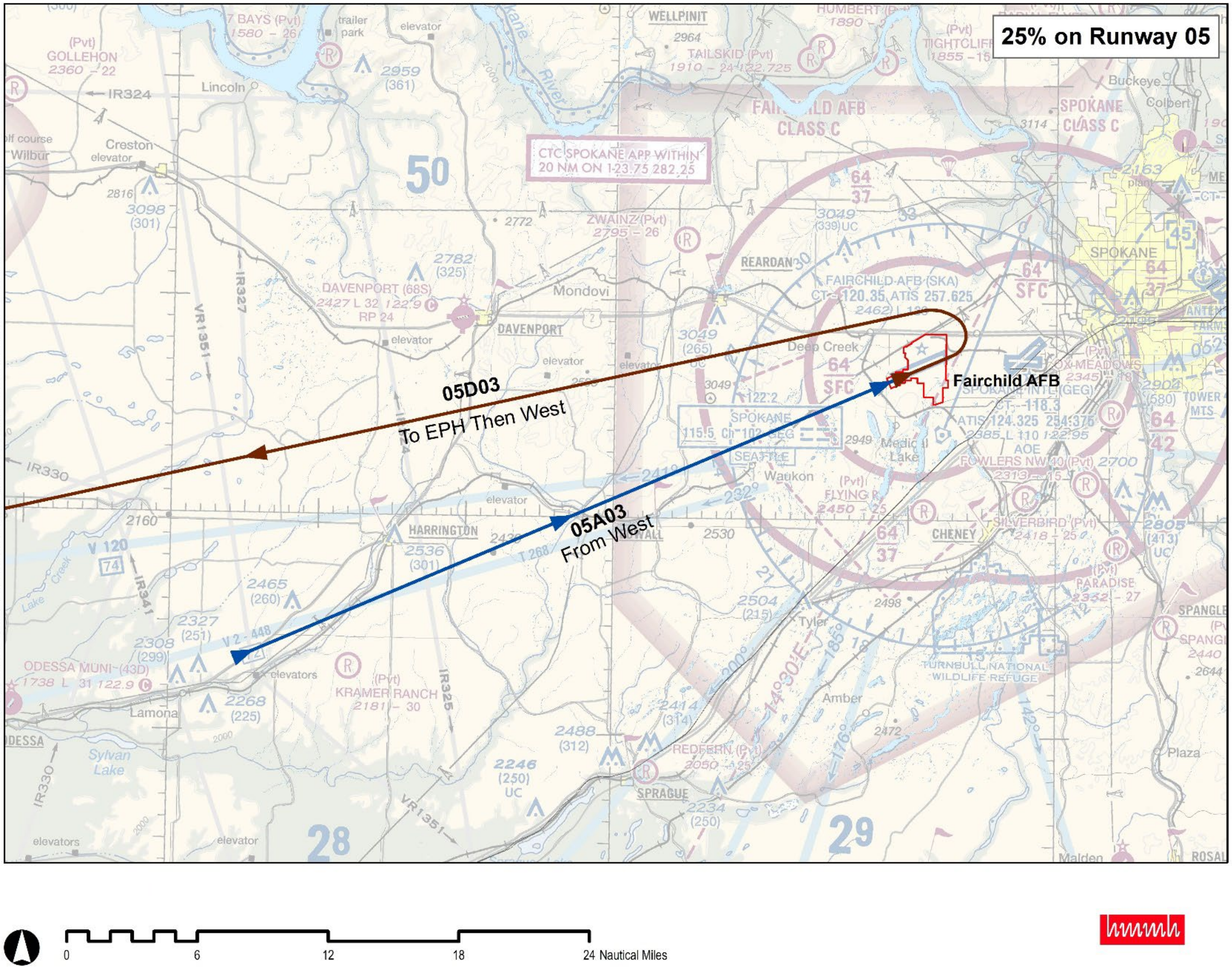


Figure 4-18. Modeled Runway 05 Transient Fighter Aircraft Flight Tracks

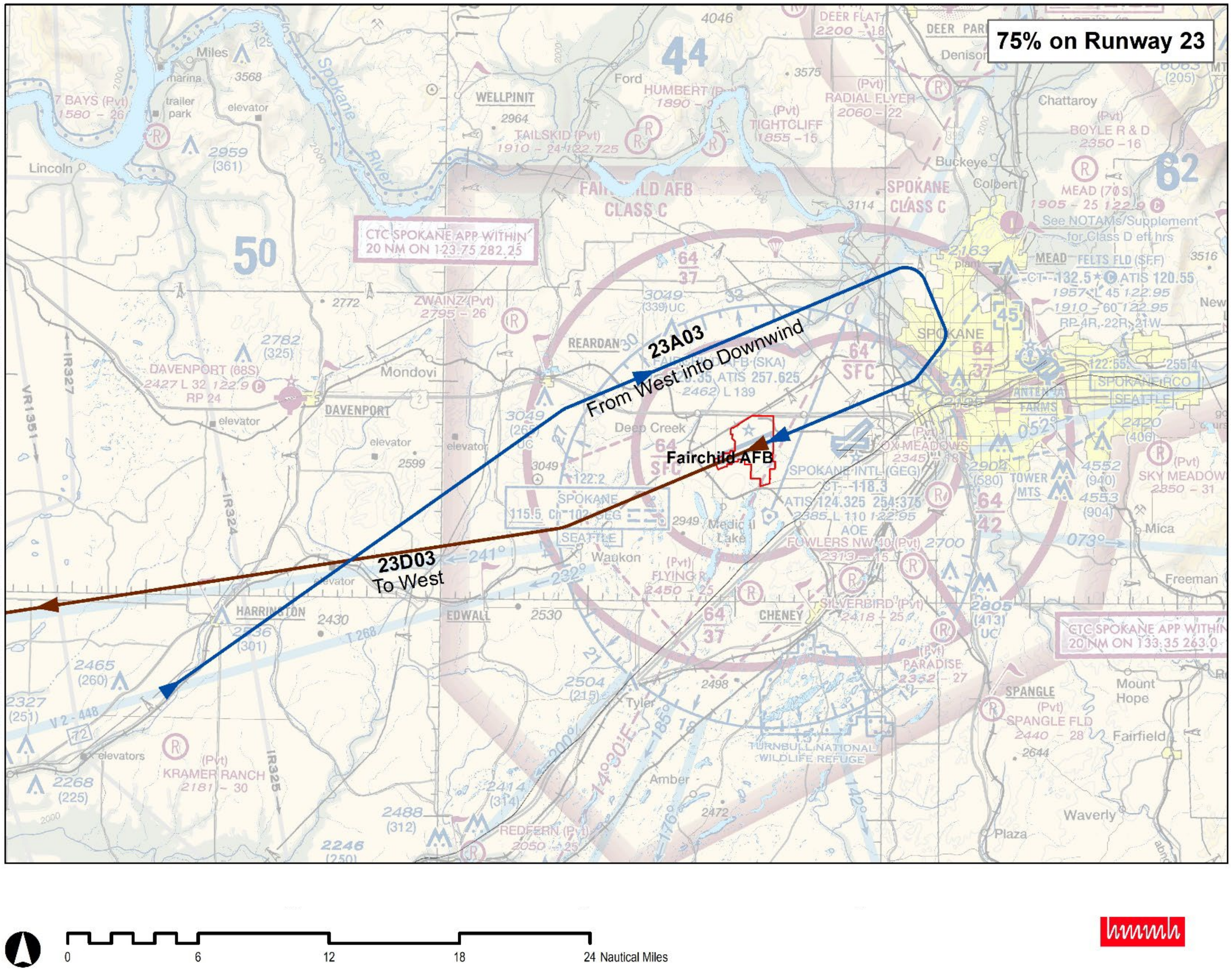


Figure 4-19. Modeled Runway 23 Transient Fighter Aircraft Flight Tracks

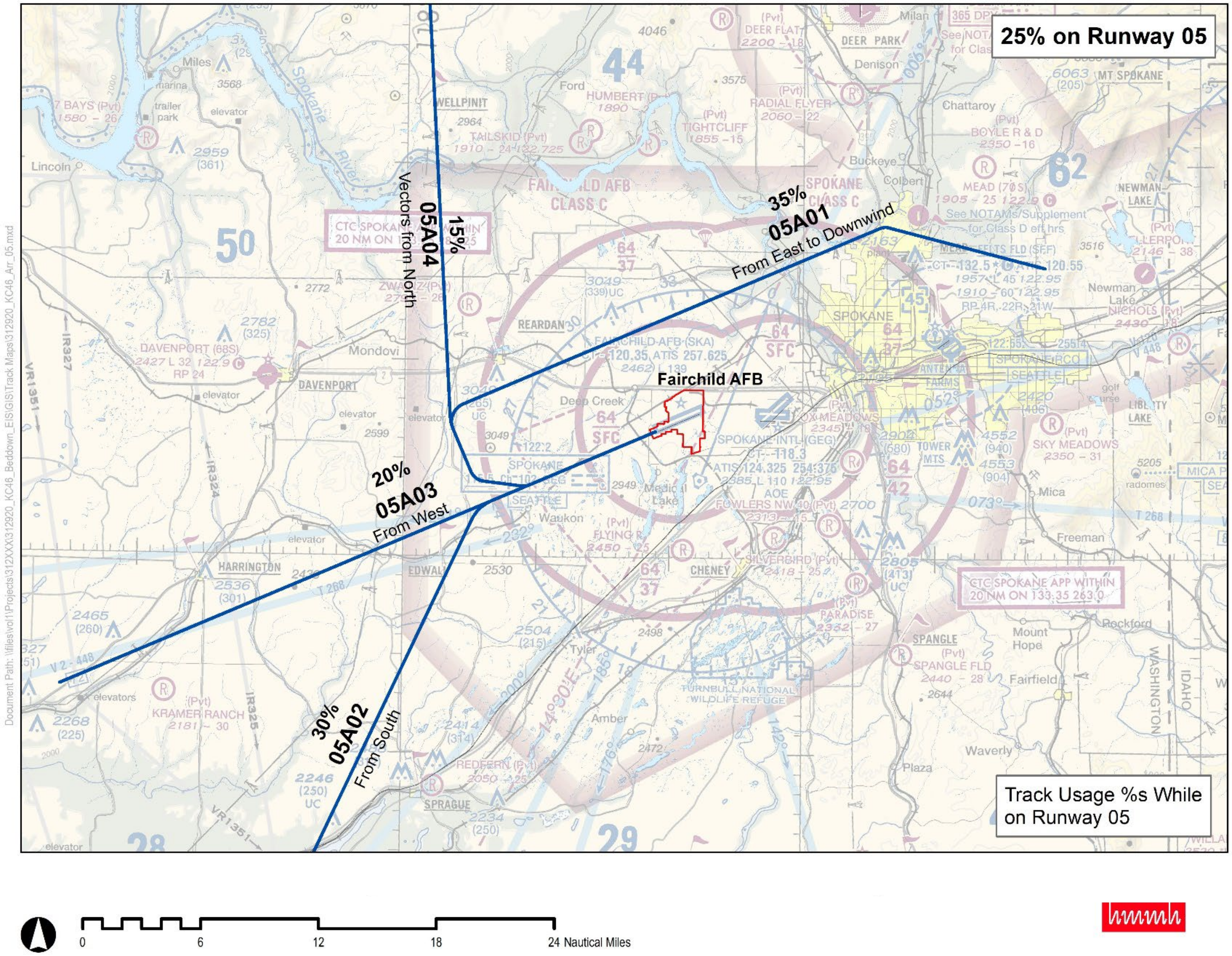


Figure 4-20. Modeled KC-46A Runway 05 Arrival Flight Tracks

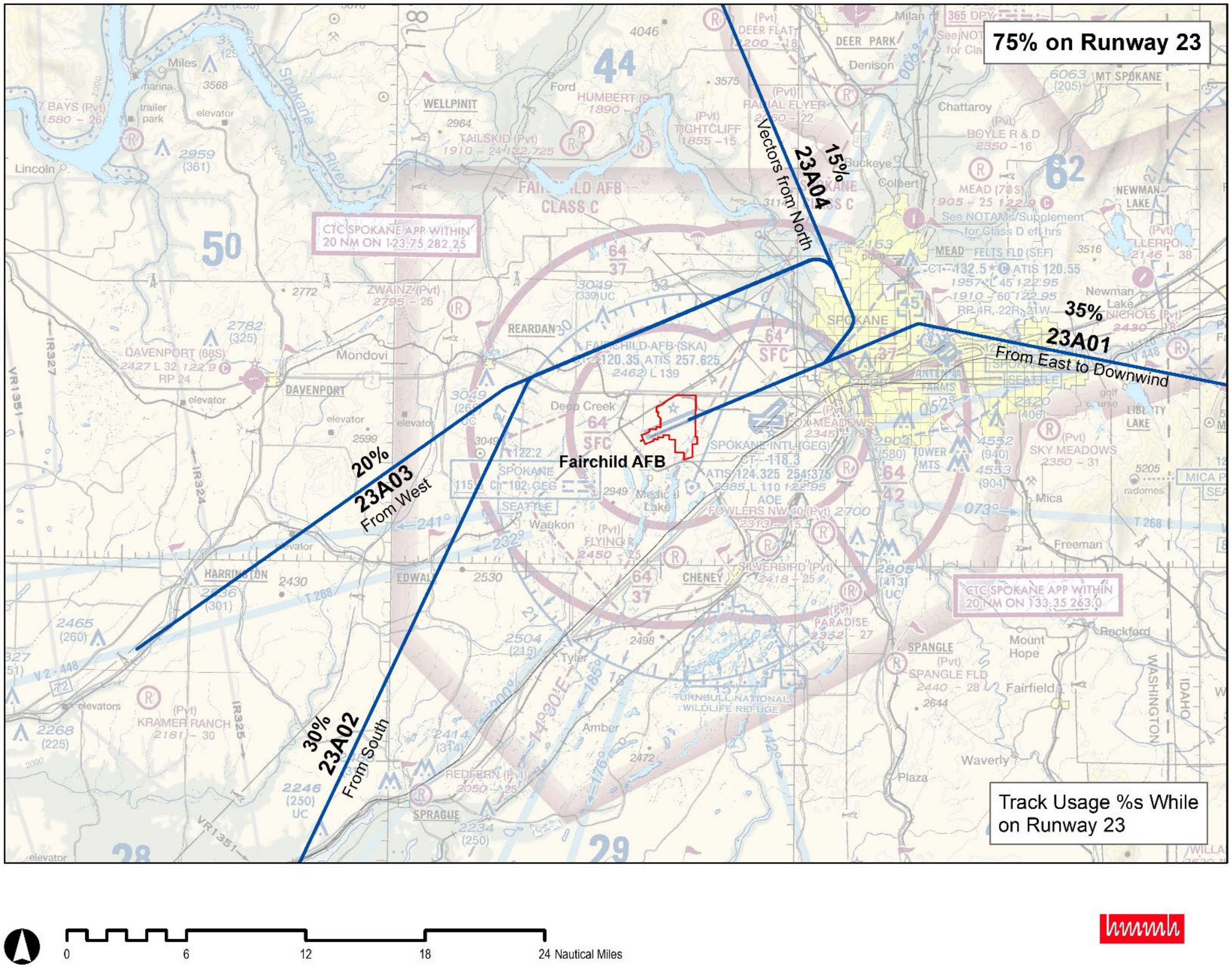


Figure 4-21. Modeled KC-46A Runway 23 Arrival Flight Tracks

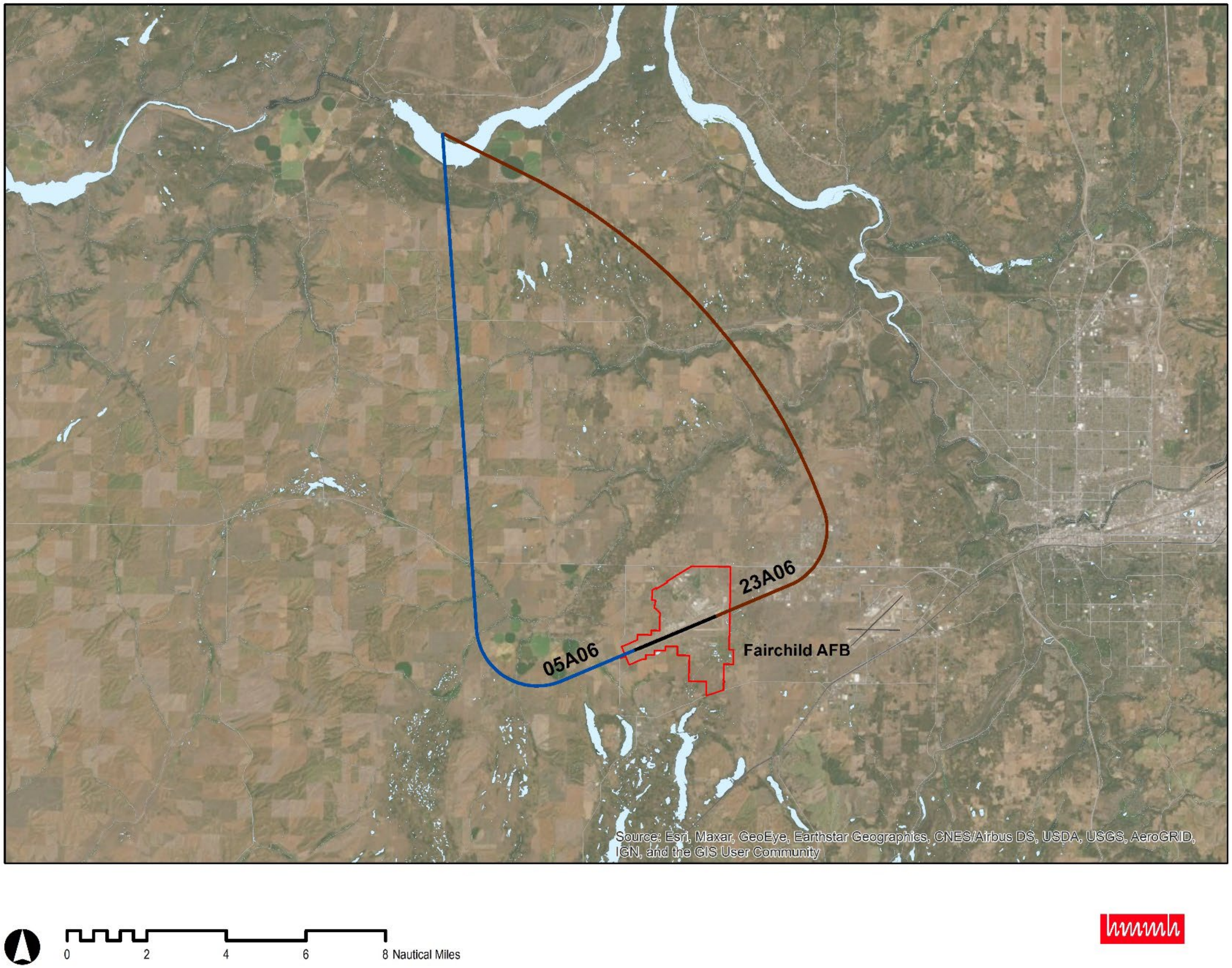


Figure 4-22. Modeled KC-46A Tactical Arrival Flight Tracks

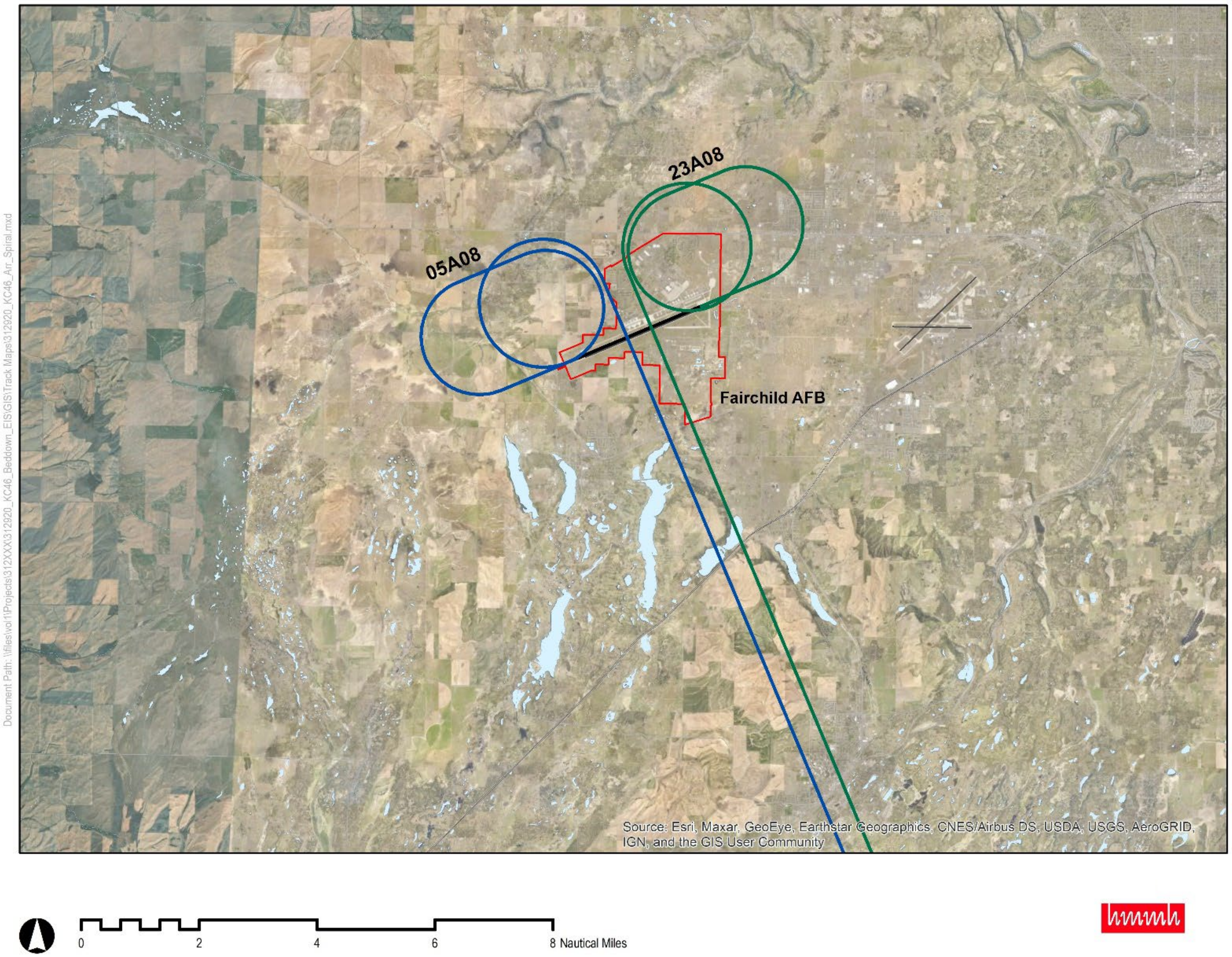


Figure 4-23. Modeled KC-46A Beam Arrival Flight Tracks

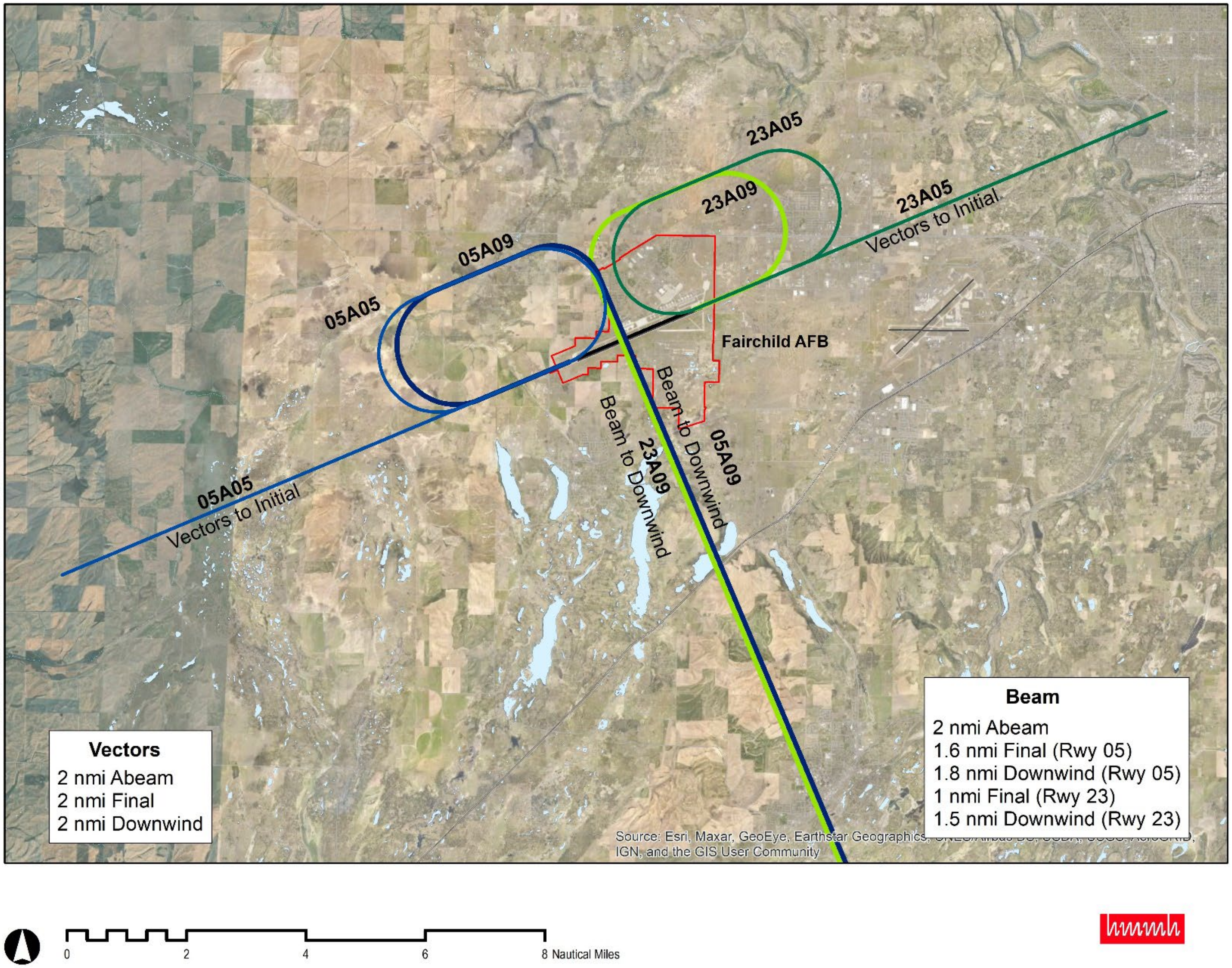


Figure 4-24. Modeled KC-46A Formation/Overhead Break Arrival Flight Tracks

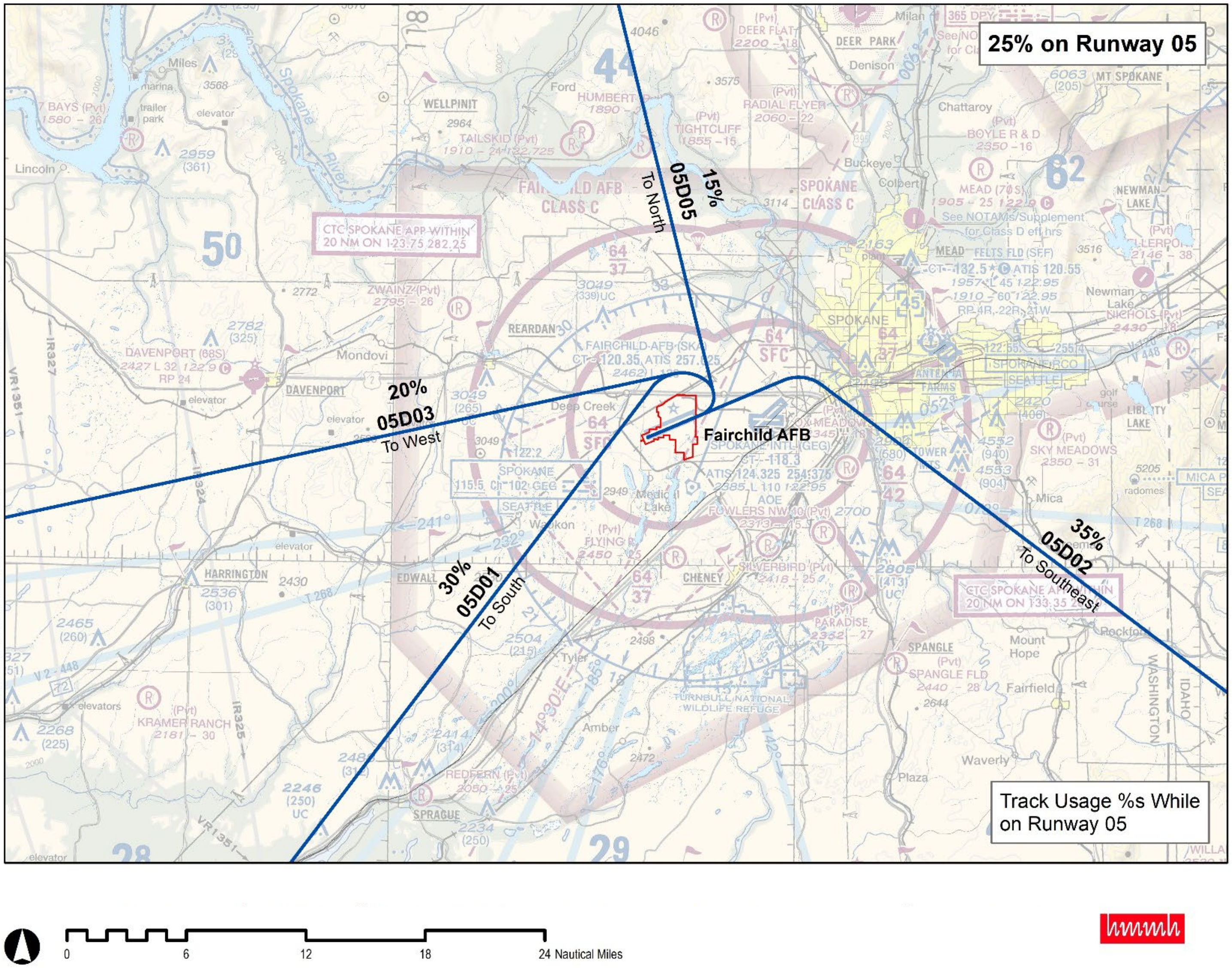


Figure 4-25. Modeled KC-46A Runway 05 Departure Flight Tracks

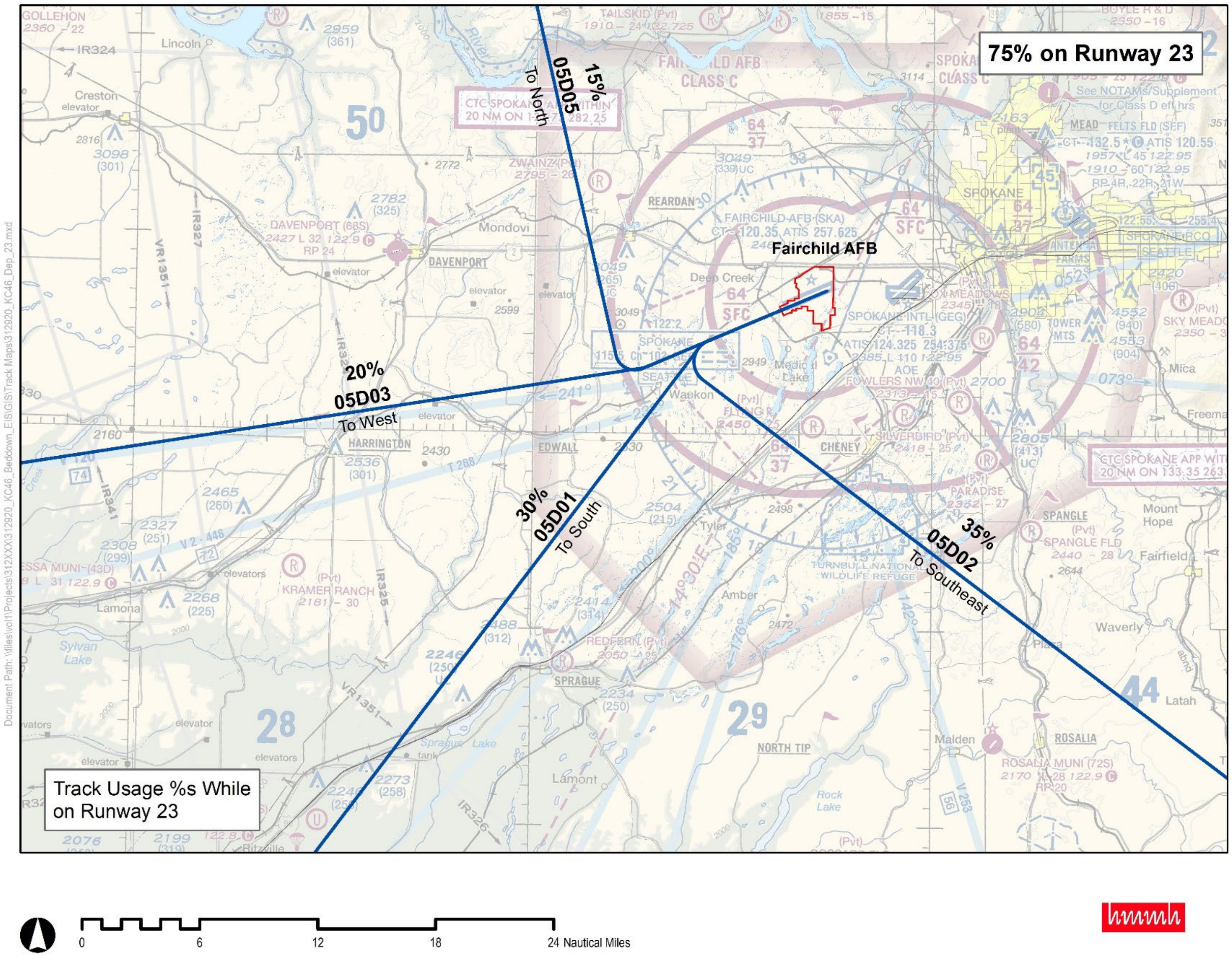


Figure 4-26. Modeled KC-46A Runway 23 Departure Flight Tracks

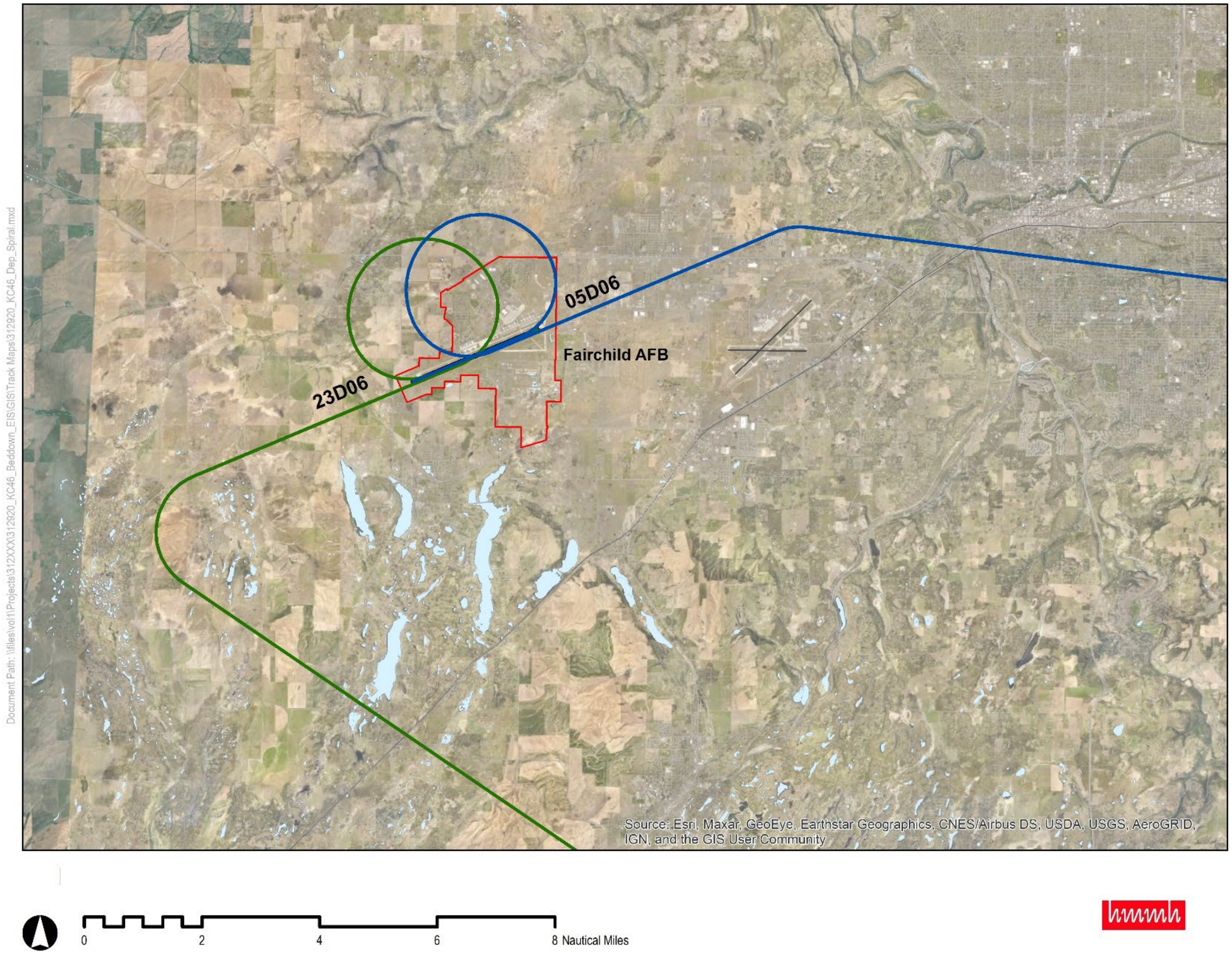


Figure 4-27. Modeled KC-46A Spiral Departure Flight Tracks

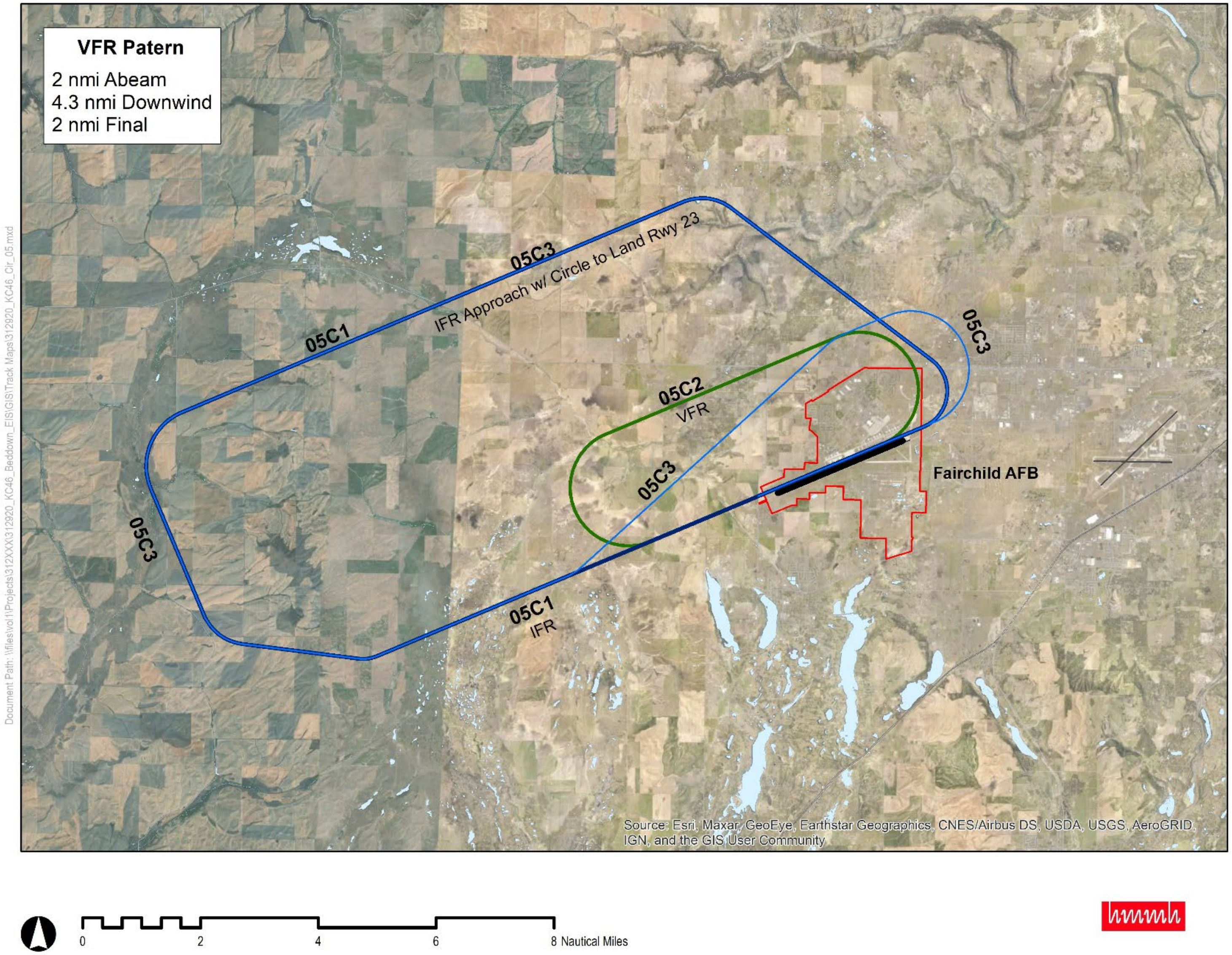


Figure 4-28. Modeled KC-46A Closed Patterns from Runway 05

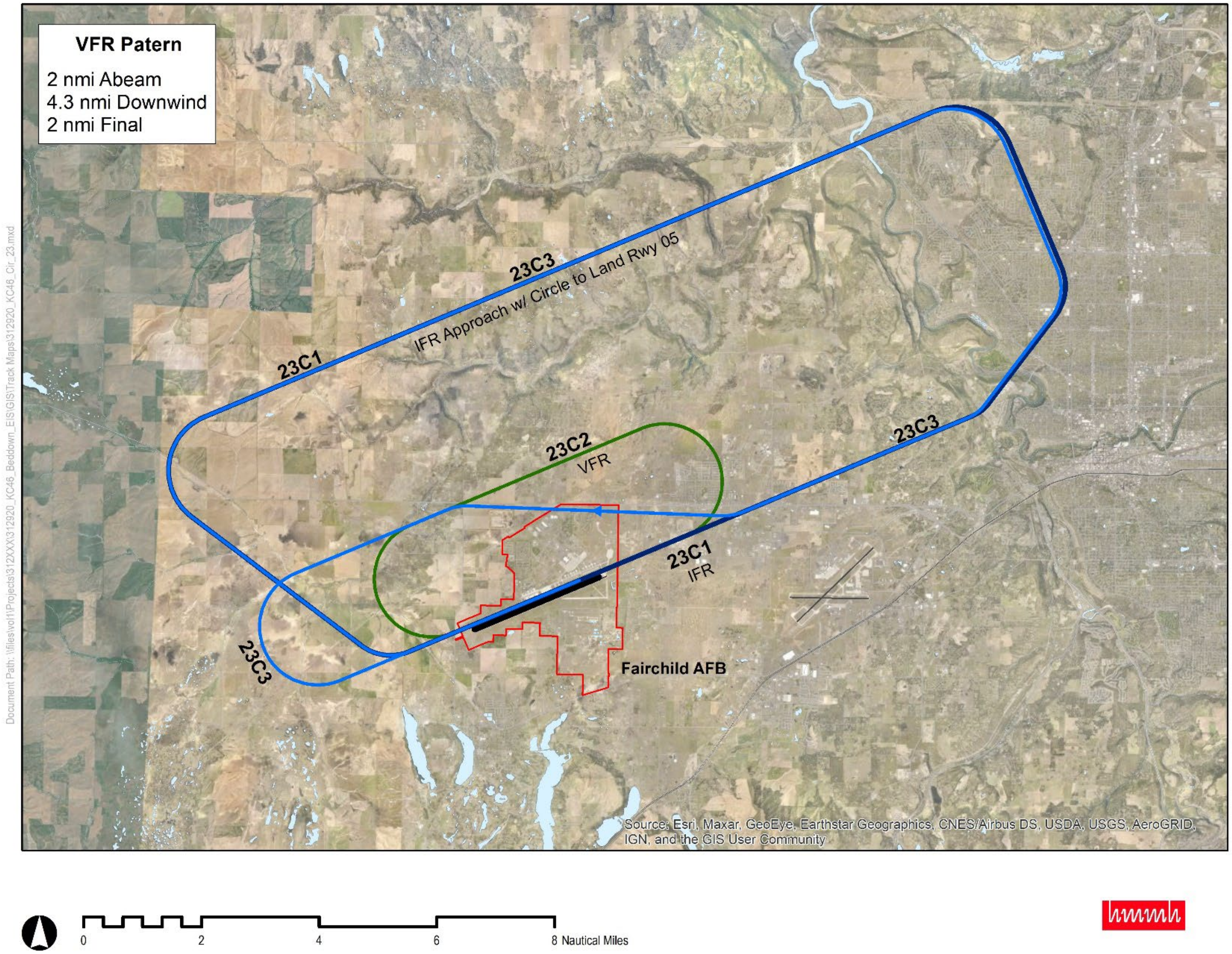


Figure 4-29. Modeled KC-46A Closed Patterns from Runway 23

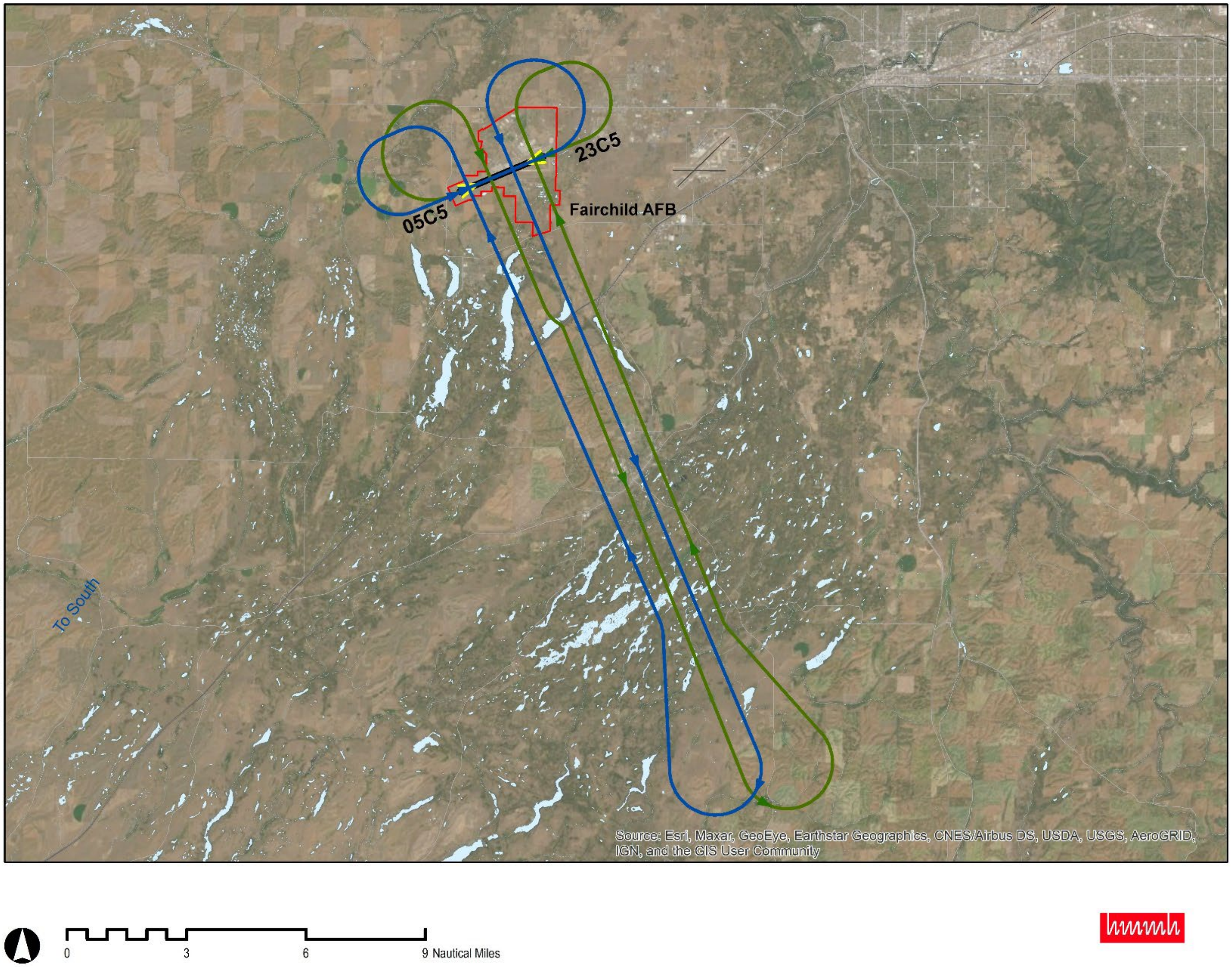


Figure 4-30. Modeled KC-46A Low Beam Closed Patterns

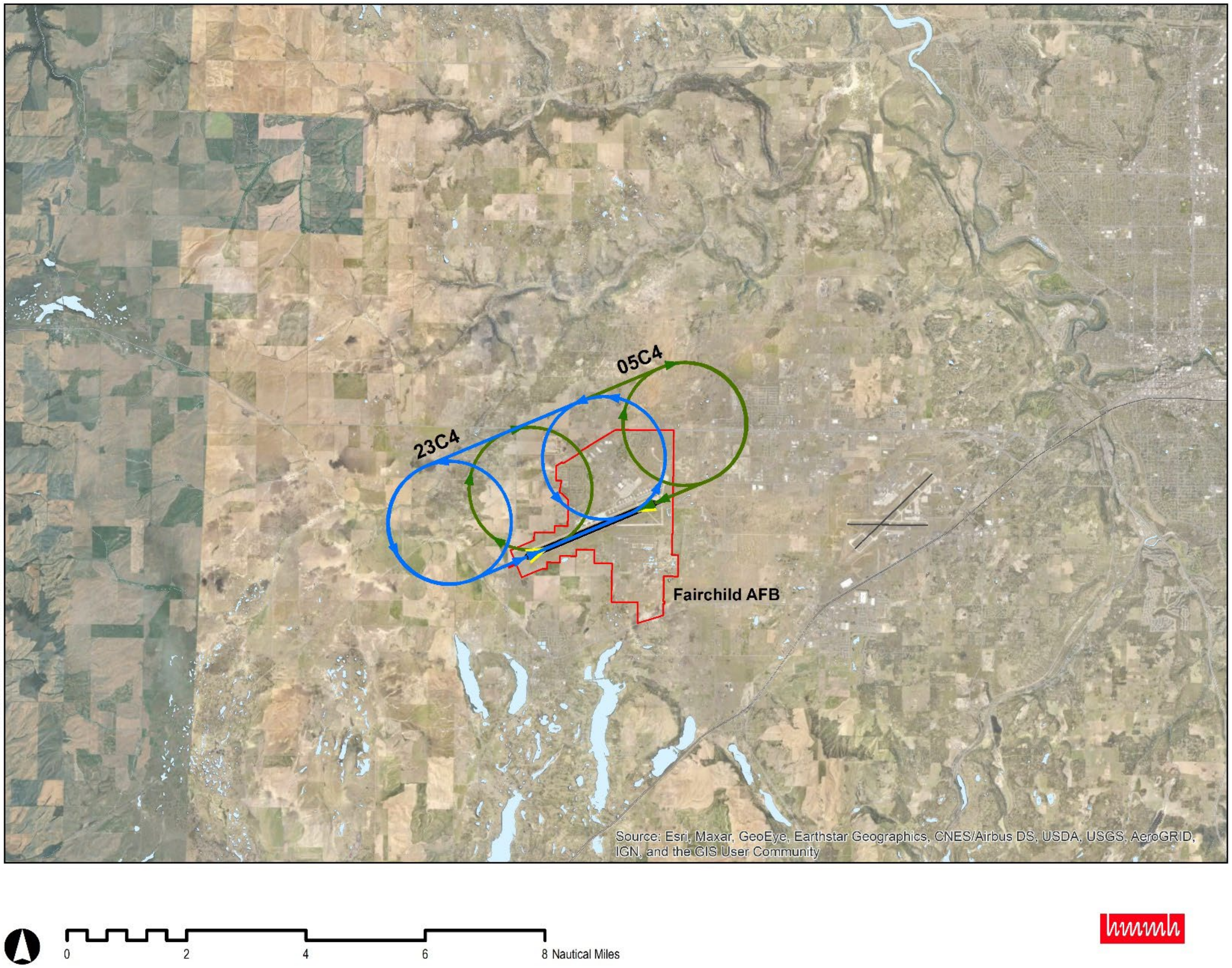


Figure 4-31. Modeled KC-46A Spiral Up/Down Closed Patterns

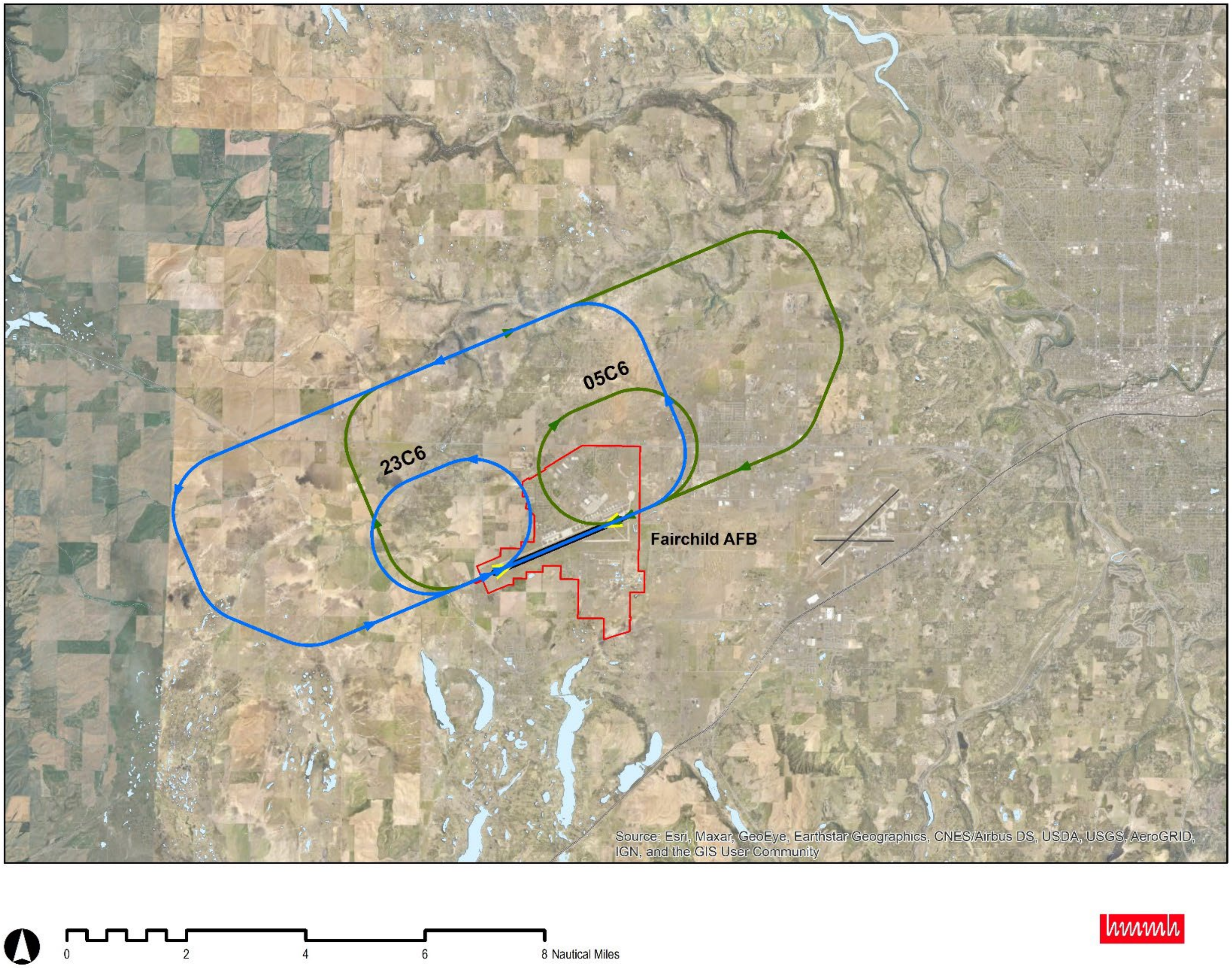


Figure 4-32. Modeled KC-46A Overhead Break Closed Patterns

5 Airfield Flight Profiles and their Utilization

Profiles data (i.e., altitude, speed, and engine power) were provided by SKA and DAF personnel for the based KC-135R and proposed KC-46A aircraft via the data collection process (interviews and follow-up data validation). Flight profiles for the transient aircraft were from either BaseOps' default flight profile database or set to match based profiles for the same aircraft (i.e., transient KC-135R and KC-46A aircraft). Flight profiles for the based helicopters were unchanged from the previous modeling.

Tables 5-1 through 5-12 show the modeled average DNL daytime and nighttime daily events modeled for each flight profile, rounded up to the nearest fourth decimal place subdivided by aircraft group. The events shown in these tables were computed by the following steps:

a) Dividing the operations shown in Table 2-2 or 2-8 by 365 (per Table 1-2).

b) Further dividing the closed pattern operations by 2.

c) Multiplying the results from (a) and (b) by the percentages shown in Table 3-1 and by the percentages shown in the maps of Section 4 for corresponding missions. Transient aircraft and KC-135/KC-46 closed pattern operations have only a single track per runway, so the percentage column is omitted for those.

5.1 Based Aircraft

5.1.1 KC-135R

Tables 5-1 through 5-3 show the modeled average daily departure, arrival, and closed pattern events, respectively, for the KC-135R.

Table 5-1. Modeled Average Daily Departure Flight Events for Based KC-135 for Baseline and Alternative 1

Runway	Track ID	Track Usage	Profile	Baseline Daytime	Baseline Nighttime	Alt 1 Daytime	Alt 1 Nighttime
05	05D01	45%	K35D01	0.4901	0.0099	0.2451	0.0050
05	05D02	5%	K35D02	0.0545	0.0011	0.0273	0.0006
05	05D03	33%	K35D03	0.3594	0.0072	0.1797	0.0036
05	05D04	15%	K35D04	0.1634	0.0033	0.0817	0.0017
05	05D05	2%	K35D05	0.0218	0.0004	0.0109	0.0002
23	23D01	48%	K35D06	1.5682	0.0316	0.7841	0.0158
23	23D02	5%	K35D07	0.1634	0.0033	0.0817	0.0017
23	23D03	30%	K35D08	0.9801	0.0197	0.4901	0.0099
23	23D04	15%	K35D09	0.4901	0.0099	0.2451	0.0050
23	23D05	2%	K35D10	0.0653	0.0013	0.0327	0.0007
Total				4.3563	0.0877	2.1784	0.0442

Table 5-2. Modeled Average Daily Arrival Flight Events for Based KC-135 for Baseline and Alternative 1

Arrival Type	Runway	Track ID	Track Usage	Profile ID	Baseline Daytime	Baseline Nighttime	Alt 1 Daytime	Alt 1 Nighttime
Vectored	05	05A01	35%	K35A01	0.3500	0	0.1750	0
Vectored	05	05A02	37%	K35A02	0.3700	0	0.1850	0
Vectored	05	05A03	20%	K35A03	0.2000	0	0.1000	0
Vectored	05	05A04	8%	K35A04	0.0800	0	0.0400	0
Vectored	23	23A01	35%	K35A05	1.0500	0	0.5250	0
Vectored	23	23A02	37%	K35A06	1.1100	0	0.5550	0
Vectored	23	23A03	20%	K35A07	0.6000	0	0.3000	0
Vectored	23	23A04	8%	K35A08	0.2400	0	0.1200	0
Tactical	05	05A06	100%	K35A11	0.0555	0	0.0278	0
Tactical	23	23A06	100%	K35A12	0.1664	0	0.0832	0
Overhead Break	05	05A05	100%	K35A10	0.0555	0	0.0278	0
Overhead Break	23	23A05	100%	K35A09	0.1664	0	0.0832	0
Total					4.4438	0	2.2220	0

Table 5-3. Modeled Average Daily Closed Pattern Flight Events Based KC-135 for Baseline and Alternative 1

Pattern Type	Runway	Track	Profile	Baseline Daytime	Baseline Nighttime	Alt 1 Daytime	Alt 1 Nighttime
IFR	05	05C1	K35C01	3.9823	0.2100	1.9912	0.1050
IFR	23	23C1	K35C04	6.2287	0.3284	3.1144	0.1642
VFR	05	05C2	K35C02	1.7021	0.0894	0.8511	0.0447
VFR	23	23C2	K35C05	5.1062	0.2682	2.5531	0.1341
Circle to Land	05	05C3	K35C03	0.1418	0.0075	0.0709	0.0038
Circle to Land	23	23C3	K35C06	0.4253	0.0226	0.2127	0.0113
Total				17.5864	0.9261	8.7934	0.4631

Note: Each closed pattern counted as one event

5.1.2 Based Helicopters

Tables 5-4 through 5-7 show the modeled average daily departure, arrival, closed pattern, and interfacility events, respectively, for the based helicopters under the Baseline and Alternative 1 scenarios. The H-60 helicopter profile altitudes were all lowered by 2,500 feet to correctly reflect the flight profiles at SKA.

Table 5-4. Modeled Average Daily Departure Flight Events for Based Helicopters for Baseline and Alternative 1

Modeled Aircraft Type	Runway	Track ID	Track Usage	Profile ID	Daytime	Nighttime
AH-1W	05H	UH1D01	34%*	UH1D01	0.0548	0.0027
AH-1W	05H	UH1D02	33%	UH1D02	0.0548	0.0027
AH-1W	05H	UH1D03	33%	UH1D03	0.0548	0.0027
AH-1W	23H	UH1D04	34%*	UH1D04	0.1644	0.0082
AH-1W	23H	UH1D05	33%	UH1D05	0.1644	0.0082
AH-1W	23H	UH1D06	33%	UH1D06	0.1644	0.0082
SH60B	05HP47	H60D01	90%	UH60D01	0.1128	0.0055
SH60B	23HP47	H60D02	10%	UH60D02	0.0125	0.0006
SH60B	05HP47	H60D03	90%	UH60D03	0.3384	0.0166
SH60B	23HP47	H60D04	10%	UH60D04	0.0376	0.0018
Total					1.1589	0.0572

Note: * Modeling reflects one-third on each track; percentage shown rounded for summation purposes

Table 5-5. Modeled Average Daily Arrival Flight Events for Based Helicopters for Baseline and Alternative 1

Modeled Aircraft Type	Runway	Track ID	Track Usage	Profile ID	Daytime	Nighttime
AH-1W	05H	UH1A01	34%*	UH1A01	0.0548	0.0027
AH-1W	05H	UH1A02	33%	UH1A02	0.0548	0.0027
AH-1W	05H	UH1A03	33%	UH1A03	0.0548	0.0027
AH-1W	23H	UH1A04	34%*	UH1A04	0.1644	0.0082
AH-1W	23H	UH1A05	33%	UH1A05	0.1644	0.0082
AH-1W	23H	UH1A06	33%	UH1A06	0.1644	0.0082
SH60B	05HP47	H60A01	90%	UH60A01	0.1128	0.0055
SH60B	23HP47	H60A03	10%	UH60A02	0.0125	0.0006
SH60B	05HP47	H60A02	90%	UH60A03	0.3384	0.0166
SH60B	23HP47	H60A04	10%	UH60A04	0.0376	0.0018
Total					1.1589	0.0572

Note: * Modeling reflects one-third on each track; percentage shown rounded for summation purposes

Table 5-6. Modeled Average Daily Closed Pattern Flight Events for Based Helicopters for Baseline and Alternative 1

Modeled Aircraft Type	Pattern Type	Track ID	Track Usage	Profile ID	Daytime	Nighttime
AH-1W	Pad 18 Ops	EDZC01	4%	EDZC01	0.0476	0.0024
AH-1W	Pad 18 Ops	EDZHOVER2	35%	UH1C08	0.4162	0.0211
AH-1W	Pad 36 Ops	EDZC02	4%	EDZC02	0.0476	0.0024
AH-1W	Pad 36 Ops	EDZHOVER1	35%	UH1C07	0.4162	0.0211
AH-1W	Pad 05 Ops	UH1C02	4%	UH1C02	0.0476	0.0024
AH-1W	Pad 05 Ops	UH1C05	4%	UH1C05	0.0476	0.0024
AH-1W	Pad 23 Ops	UH1C03	11%	UH1C06	0.1308	0.0066
AH-1W	Pad 23 Ops	UH1C04	3%	UH1C04	0.0357	0.0018
SH60B	Pad 18 Ops	EDZC01	25%	H60EDZC01	0.2267	0.0116
SH60B	Pad 18 Ops	EDZHOVER2	25%	H60HOV2	0.2267	0.0116
SH60B	Pad 36 Ops	EDZC02	25%	H60EDZC02	0.2267	0.0116
SH60B	Pad 36 Ops	EDZHOVER1	25%	H60HOV1	0.2267	0.0116
Total					2.0961	0.1066

Note: Each closed pattern counted as one event.

Table 5-7. Modeled Average Daily Interfacility Flight Events for Based Helicopters for Baseline and Alternative 1

Modeled Aircraft Type	Track ID	Track Usage	Profile ID	Daytime	Nighttime
AH-1W	UH1I01	15%	UH1I01	0.0267	0.0012
AH-1W	UH1I02	8%	UH1I02	0.0142	0.0007
AH-1W	UH1I03	46%	UH1I03	0.0819	0.0038
AH-1W	UH1I04	31%	UH1I04	0.0552	0.0025
SH60B	H60I01	13%	H60I01	0.0175	0.0007
SH60B	H60I02	25%	H60I02	0.0336	0.0014
SH60B	H60I03	37%	H60I03	0.0497	0.0020
SH60B	H60I04	25%	H60I04	0.0336	0.0014
Total				0.3124	0.0137

Note: Each interfacility counted as one event.

5.2 Transient Aircraft

Tables 5-8 and 5-9 show the modeled average daily departure and arrival events, respectively, for the transient aircraft under the Baseline and Alternative 1 scenarios.

Table 5-8. Modeled Average Daily Departure Flight Events for Transient Aircraft for Baseline and Alternative 1

Modeled Aircraft Type	Track ID	Profile ID	Daytime	Nighttime
F-18A/C	05D03	F18D1	0.0041	0
F-18A/C	23D03	F18D2	0.0123	0
C-17	05D04	C17D1	0.0048	0.0021
C-17	23D04	C17D2	0.0144	0.0062
KC-135R	05D04	T135D1	0.0644	0.0041
KC-135R	23D04	T135D2	0.1932	0.0123
KC-10A	05D04	K10D1	0.0014	0
KC-10A	23D04	K10D2	0.0041	0
KC-46X	05D04	T46D1	0.0075	0
KC-46X	23D04	T46D2	0.0226	0
C-21	05D04	C21D1	0.0027	0
C-21	23D04	C21D2	0.0082	0
C-130J	05D04	C130D1	0.0068	0
C-130J	23D04	C130D2	0.0205	0
C-12	05D04	C12D1	0.0062	0
C-12	23D04	C12D2	0.0185	0
UH60A	05D05	UH60TD1	0.0082	0
UH60A	23D05	UH60TD2	0.0247	0
Total			0.4246	0.0247

Table 5-9. Modeled Average Daily Arrival Flight Events for Transient Aircraft for Baseline and Alternative 1

Modeled Aircraft Type	Track ID	Profile ID	Daytime	Nighttime
F-18A/C	05A03	F18A1	0.0041	0
F-18A/C	23A03	F18A2	0.0123	0
C-17	05A01	C17A1	0.0048	0.0021
C-17	23A01	C17A2	0.0144	0.0062
KC-135R	05A01	T135A1	0.0616	0.0068
KC-135R	23A01	T135A2	0.1849	0.0205
KC-10A	05A01	K10A1	0.0014	0
KC-10A	23A01	K10A2	0.0041	0
KC-46X	05A01	T46A1	0.0068	0.0007
KC-46X	23A01	T46A2	0.0205	0.0021
C-21	05A01	C21A1	0.0027	0
C-21	23A01	C21A2	0.0082	0
C-130J	05A02	C130A1	0.0068	0
C-130J	23A01	C130A2	0.0205	0
C-12	05A01	C12A1	0.0062	0
C-12	23A01	C12A2	0.0185	0
UH60A	05A07	UH60TA1	0.0082	0
UH60A	23A07	UH60TA2	0.0247	0
Total			0.4107	0.0384

5.3 Proposed Based KC-46A Aircraft

Tables 5-10 through 5-12 show the modeled average daily departure, arrival, and closed pattern events, respectively, for the KC-46A under Alternative 1.

Table 5-10. Modeled Average Daily Departure Flight Events for Based KC-46 for Alternative 1

Runway	Track ID	Track Usage	Profile	Daytime	Nighttime
05	05D01	45%	K46D01	0.3073	0.0108
05	05D02	5%	K46D02	0.0341	0.0012
05	05D03	33%	K46D03	0.2253	0.0079
05	05D04	15%	K46D04	0.1024	0.0036
05	05D05	2%	K46D05	0.0137	0.0005
23	23D01	48%	K46D06	0.9833	0.0345
23	23D02	5%	K46D07	0.1024	0.0036
23	23D03	30%	K46D08	0.6146	0.0216
23	23D04	15%	K46D09	0.3073	0.0108
23	23D05	2%	K46D10	0.0410	0.0014
05	05D06*	100%	K46D11	0.1884	0
23	23D06*	100%	K46D12	0.5651	0
Total				3.4849	0.0959

Note: * Spiral-Up departure tracks

Table 5-11. Modeled Average Daily Arrival Flight Events for Based KC-46 for Alternative 1

Arrival Type	Runway	Track ID	Track Usage	Profile ID	Daytime	Nighttime
Vectored	05	05A01	35%	K46A01	0.1709	0.0357
Vectored	05	05A02	37%	K46A02	0.1807	0.0378
Vectored	05	05A03	20%	K46A03	0.0977	0.0204
Vectored	05	05A04	8%	K46A04	0.0391	0.0082
Vectored	23	23A01	35%	K46A05	0.5128	0.1072
Vectored	23	23A02	37%	K46A06	0.5421	0.1133
Vectored	23	23A03	20%	K46A07	0.293	0.0612
Vectored	23	23A04	8%	K46A08	0.1172	0.0245
Tactical	05	05A06	1%	K46A09	0.0315	0.0068
Tactical	23	23A06	1%	K46A10	0.0945	0.0205
Overhead Break	05	05A05	1%	K46A11	0.0945	0.0199
Overhead Break	23	23A05	1%	K46A12	0.2836	0.0596
Beam	05	05A09	1%	K46A13	0.063	0.013
Beam	23	23A09	1%	K46A14	0.189	0.039
Beam into Spiral	05	05A08	1%	K46A15	0.063	0.013
Beam into Spiral	23	23A08	1%	K46A16	0.189	0.039
Total					2.9616	0.6191

Table 5-12. Modeled Average Daily Closed Pattern Flight Events for Based KC-46 for Alternative 1

Pattern Type	Runway	Track ID	Profile ID	Daytime	Nighttime
IFR	05	05C1	K46C01	1.0579	0.1329
IFR	23	23C1	K46C02	3.1736	0.3986
VFR	05	05C2	K46C03	1.0894	0.1370
VFR	23	23C2	K46C04	3.2682	0.4110
Circle to Land	05	05C3	K46C05	0.0329	0.0021
Circle to Land	23	23C3	K46C06	0.0986	0.0062
Spiral Up/Down	05	05C4	K46C07	0.3630	0.0229
Spiral Up/Down	23	23C4	K46C08	1.0890	0.0688
Tactical Low Beam	05	05C5	K46C09	0.3630	0.0229
Tactical Low Beam	23	23C5	K46C10	1.0890	0.0688
Overhead Break	05	05C6	K46C11	0.3630	0.0455
Overhead Break	23	23C6	K46C12	1.0890	0.1366
Total				13.0766	1.4533

Note: Each closed pattern counted as one event

Maps of all modeled flight profiles are contained in Appendix A.

This page intentionally left blank

6 Maintenance and Preflight Runups

Sections 6.1 and 6.2 address modeled runups for the Baseline and Alternative 1 scenarios, respectively.

6.1 Baseline

Sections 6.1.1 and 6.1.2 address pre/postflight runups and maintenance runups for the Baseline scenario, respectively.

6.1.1 Pre/Postflight Runups

NMAP flight profiles include a preflight runup to model the beginning of takeoff roll and runups the pilot does prior to brake release. However, preflight runups can occur other places or have power cycles not compliant with the flight profile's preflight modeling. The latter style of preflight runups is modeled as maintenance-style runups and is described in this section.

Post flight runups are, as their name implies, associated with each flight or a proportion of flights, and are also modeled as maintenance-style runups described in this section.

Table 6-1 lists the pre/postflight runups for the KC-135R for the Baseline scenario. Figure 6-1 shows the locations of the listed runup pads with heading depicted. Modeled average daily events were assigned to each runup profile by dividing the annual operations by 365 (per Table 1-2).

Table 6-1. Baseline Annual Pre- and Post-flight Runup Operations for Based KC-135R

Type	Power Setting	# Engines Running	Duration of Each Event (Minutes)	Daytime Events (0700-2200)	Nighttime Events (2200-0700)	Total Annual Events	Location (Pad ID) and Distribution
Preflight (ARW)	18.9% NF	4	10	1,284	68	1,352	(even usage) PD03, PD15, PD18, PD21, PD29, PD24, PD33, PD36, PD51, PD54, PD56, PD59, PD61, PD64, PD67
Preflight (ANG)	18.9% NF	4	10	257	13	270	(even usage) PD38, PD40, PD41, PD42, PD43, PD44, PD45, PD46, PD47
Total Preflight				1,541	81	1,622	
Postflight (ARW)	18.9% NF	4	6	1,284	68	1,352	(even usage) PD03, PD15, PD18, PD21, PD29, PD54, PD59, PD61, PD64
Postflight (ANG)	18.9% NF	4	6	257	13	270	(even usage) PD38, PD40, PD41, PD42, PD43, PD44, PD45, PD46, PD47
Total Postflight				1,541	81	1,622	

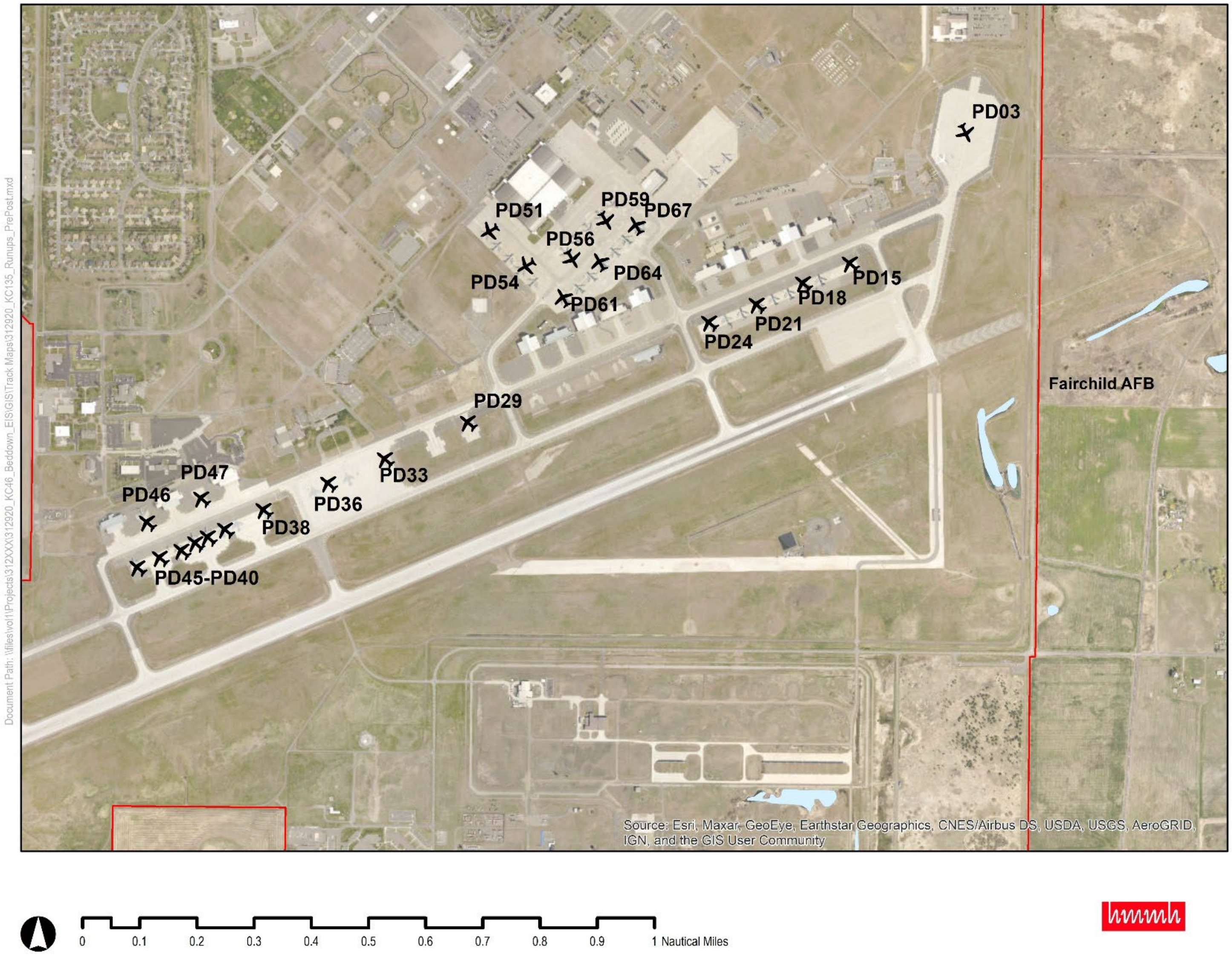


Figure 6-1. Modeled KC-135R Pre/Postflight Runup Pad Locations

6.1.2 Maintenance Runups

Table 6-2 lists the maintenance runups for the KC-135R for the Baseline scenario. The pads listed are shown in Figures 6-2 through 6-5, with the icons oriented to the heading of the static profile modeled at each pad.

Table 6-2. Baseline Annual Maintenance Runup Operations for Based KC-135R

Type	Power Setting	# Engines Running	Duration of Each Event (Minutes)	Daytime Events (0700-2200)	Nighttime Events (2200-0700)	Total Annual Events	Location (Pad ID) and Distribution
60 HR Inspection	18.9% NF	4	15	40	26	66	(even usage) PD18, PD30, PD44, PD61
120 HR Inspection	18.9% NF	4	15	40	26	66	(even usage) PD15, PD29, PD41, PD54
Defueling	18.9% NF	1	60	40	26	66	(even usage) PD24, PD33, PD64, PD51
High Power Engine Runs	See Note 1	2	15	48	32	80	See Note 1
Idle Runs for Maintenance	18.9% (idle)	See Note 2	15	156	104	260	See Note 2

Notes

1. Each event cycles through the power settings of 18.9%, 60%, 70%, 80%, 90% and back to 18.9%NF. Events are evenly spread among pads: PD17, PD18, PD19, PD20, PD21, PD22, PD23, PD24, PD29, PD33, PD34, PD35, PD36, PD37, PD38, PD39, PD40, PD41, PD43, PD44, PD45, PD100
2. 50 percent of the events have 1 engine running; 40 percent have 2 engines running and 10 percent have 4 engines running. Events are evenly spread among pads: PD21, PD29, PD41, PD67, PD56

This page intentionally left blank

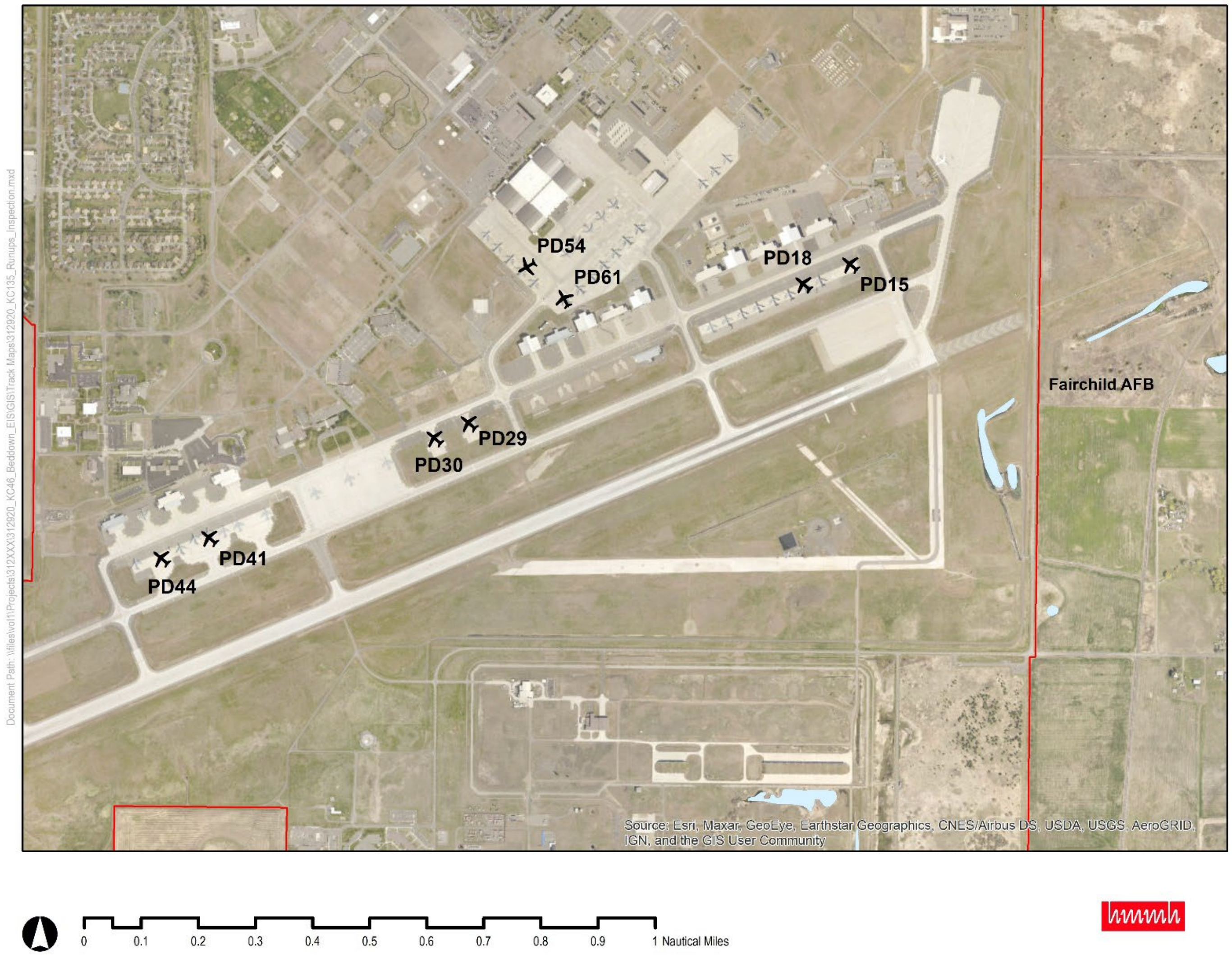


Figure 6-2. Modeled Locations for Based KC-135R 60/120 HR Inspection Maintenance Runups

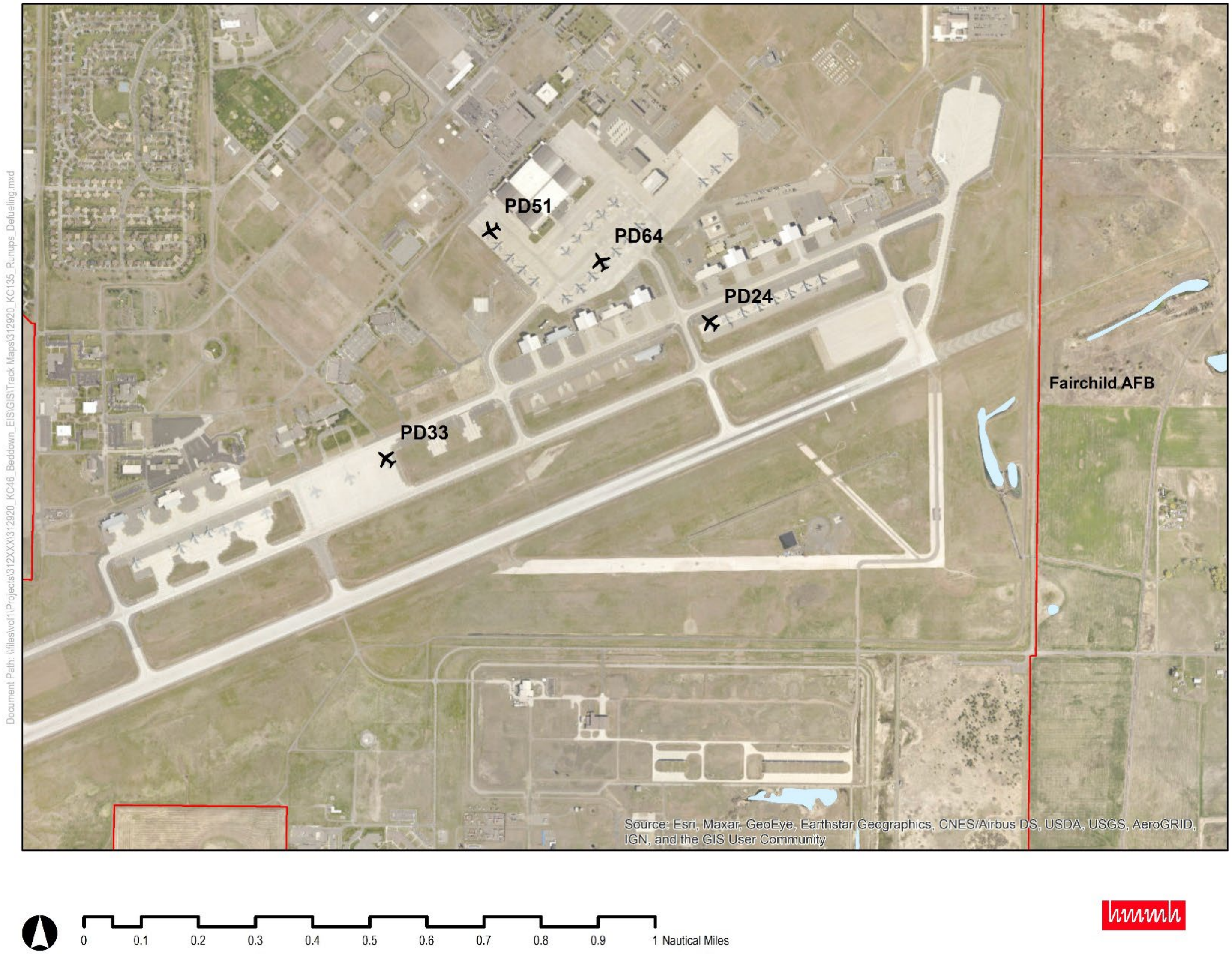


Figure 6-3. Modeled Locations for Based KC-135R Defueling Maintenance Runups

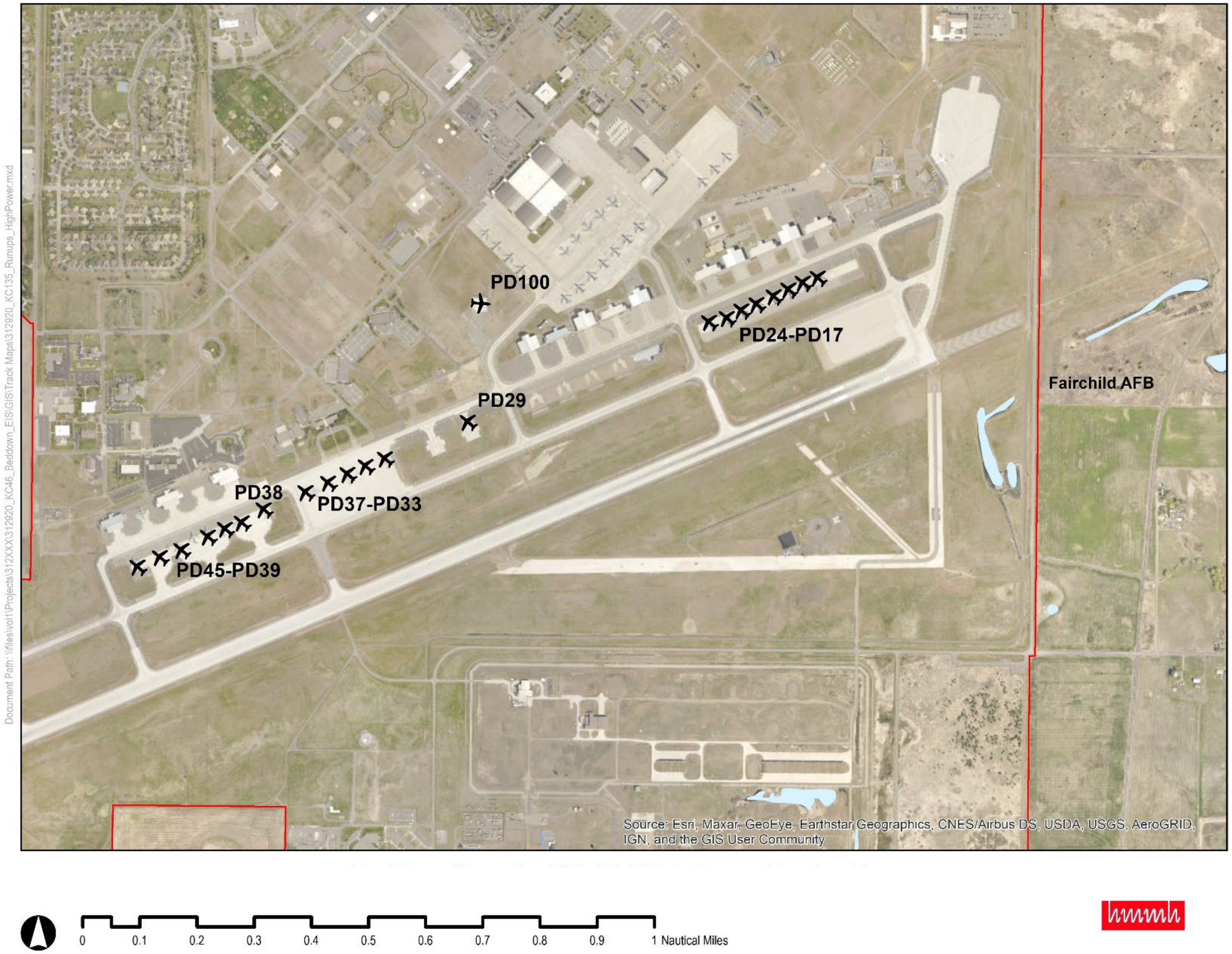


Figure 6-4. Modeled Locations for Based KC-135R for High Power Maintenance Runups

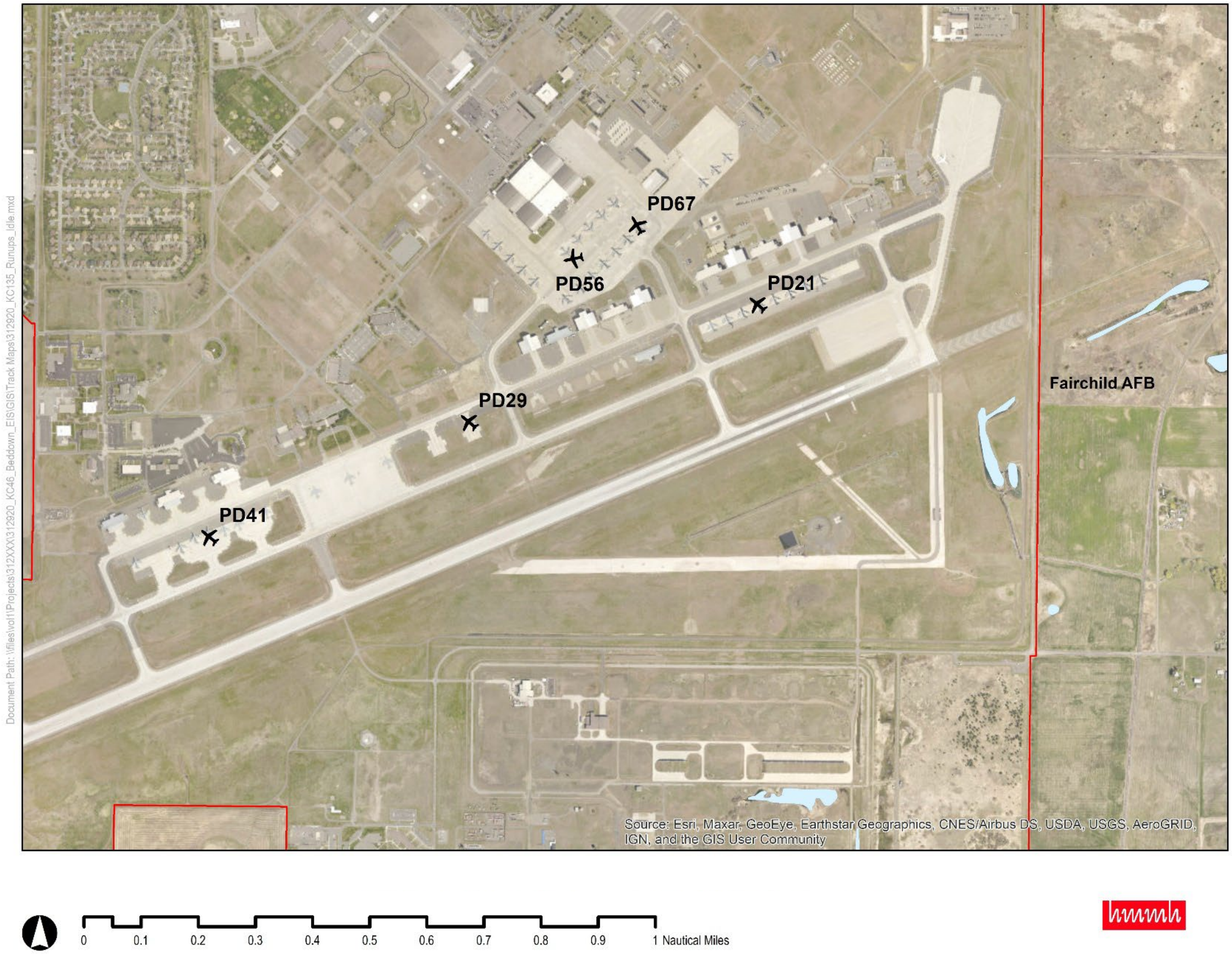


Figure 6-5. Locations for Based KC-135R Idle Maintenance Runups

6.2 Alternative 1

Runup activity for the KC-46A is currently unknown. NMAP does not contain reference acoustic data for KC-46A static/runup operations; therefore, per Air Force Civil Engineering Center (AFCEC) direction and to ensure consistency with previous MOB analyses, KC-135R reference acoustic data was used as a surrogate for KC-46A data. Also, per AFCEC direction, the KC-46A maintenance runup operations and profiles were initially assumed to be identical to the KC-135R runup profiles (AFCEC 2022).

The KC-46A can develop more thrust than the KC-135R, even though the KC-135R has twice as many engines. AFCEC notes the KC-46A can develop 50 percent more thrust from its two engines than the KC-135R can produce from its four engines. Thus, the KC-46A numbers of runups were multiplied by 1.5 in an initial attempt to account for the difference in noise output caused by the difference in thrust output (AFCEC 2022). Alternative 1 also reduces the usage of the based KC-135R by half giving a net result[2] of 1.25 times the Baseline annual events (for both day and nighttime activities). Alternative 1 uses the same runup operation profiles as Baseline otherwise.

6.2.1 Pre/Postflight Runups

The same activities listed in Table 6-1 would occur for the based KC-135R in Alternative 1, except with half of the listed numbers of events.

The KC-46A aircraft would not perform any pre- or post-flight runups.

6.2.2 Maintenance Runups

The KC-135R would perform the same maintenance runups for Alternative 1 as listed in Table 6-2 except at half the listed tempo. KC-135R runup locations would not change relative to baseline for Alternative 1.

As explained in Section 6.2 above, the KC-46A's maintenance runups would be identical to those in Table 6-2[3] (and at the same locations), but the numbers of events would be multiplied by 1.25.

[2] KC-135 halved + half replaced by KC-46
50% ops + 50% ops (x 150% thrust correction)
50% + 75% = 125%

[3] Runups utilizing four engines would be maintained for the KC-46A, even though the KC-46 only has two engines.

This page intentionally left blank

7 Noise Exposure Calculations/Results

Section 7.1 contains the DNL results and Section 7.2 addresses the supplemental noise analyses.

7.1 Primary Noise Analysis

Figures 8-1 and 8-2 show shaded DNL bands/contours for Baseline and Alternative 1, respectively. In both figures, the shaded regions represent ranges of DNL[4]: 65-70 (blue), 70-75 (green), 75-80 (yellow), 80-85 (orange), and 85+ (red). For either scenario, the 65 DNL contour would remain entirely on base property (i.e., areas outside of the base boundary would be affected by DNL less than 65 dB).

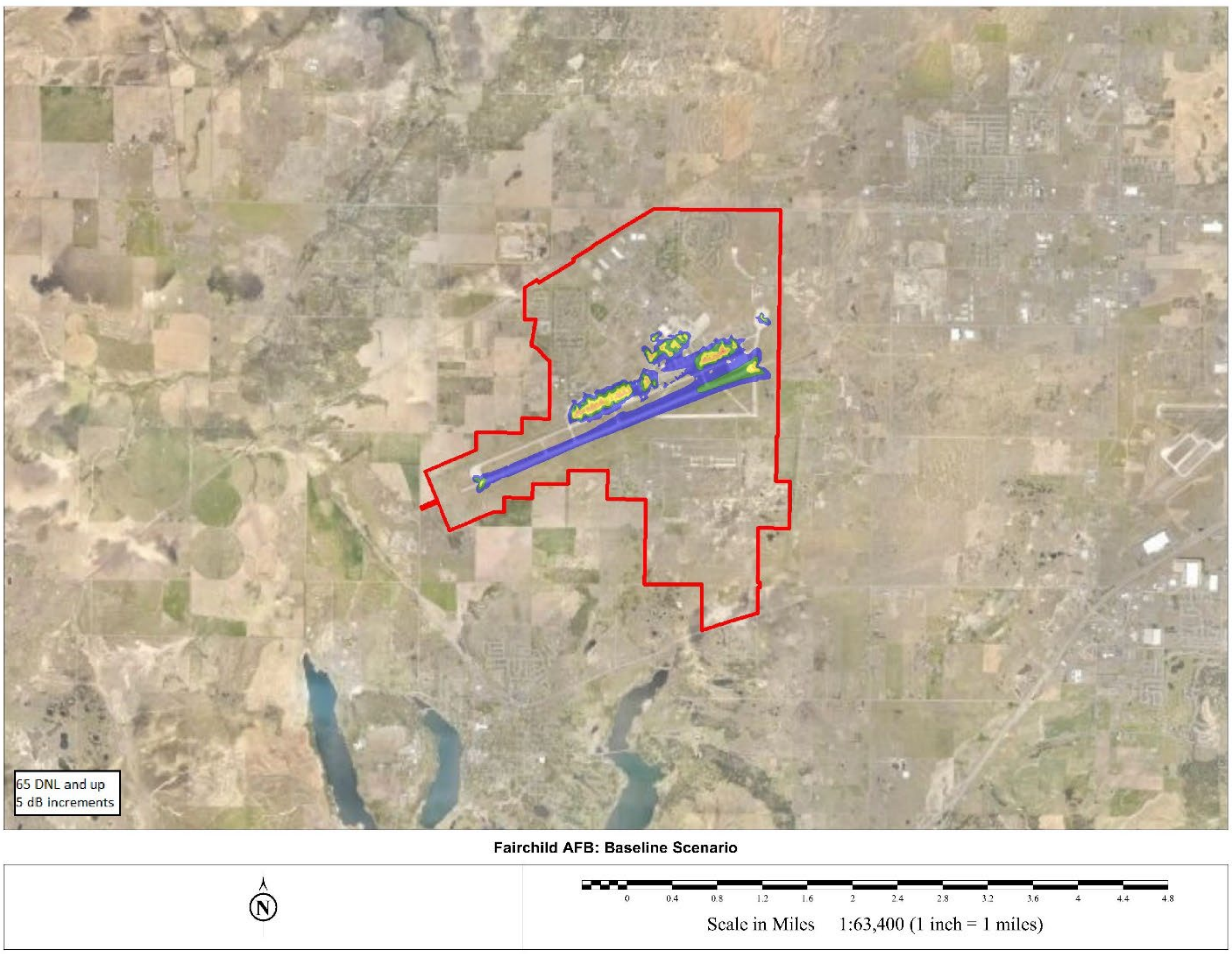


Figure 7-1. DNL Shading for Baseline Scenario

[4] Exclusive of upper bounds

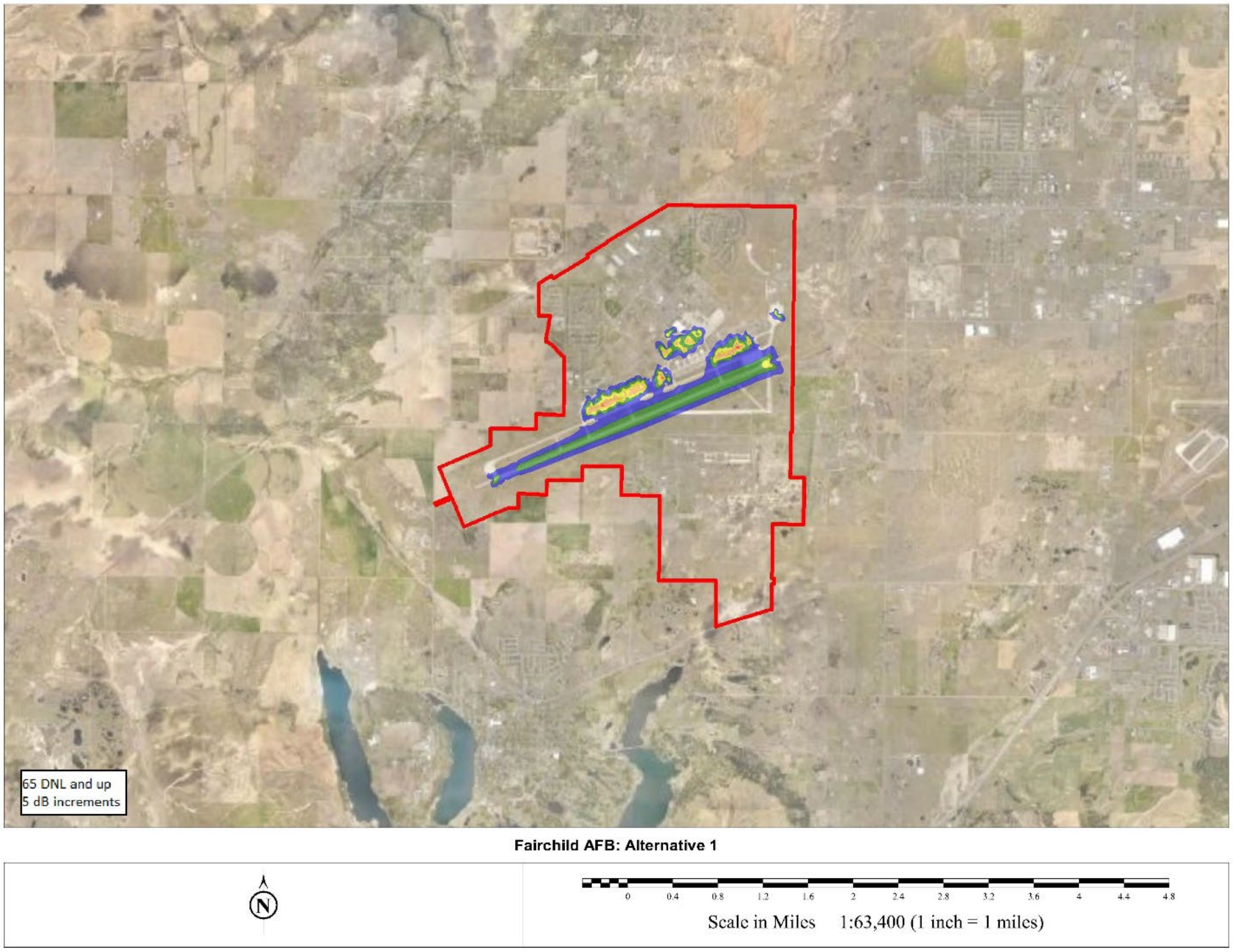


Figure 7-2. DNL Shading for Alternative 1

Figure 8-3 shows a comparison of the 65 DNL contours for both scenarios. The 65 DNL for Baseline is shown as a solid blue line and Alternative 1 is shown with a black dashed line. Alternative 1 would cause the 65 DNL contour to bulge slightly along the runway by an extent of approximately 250 feet.

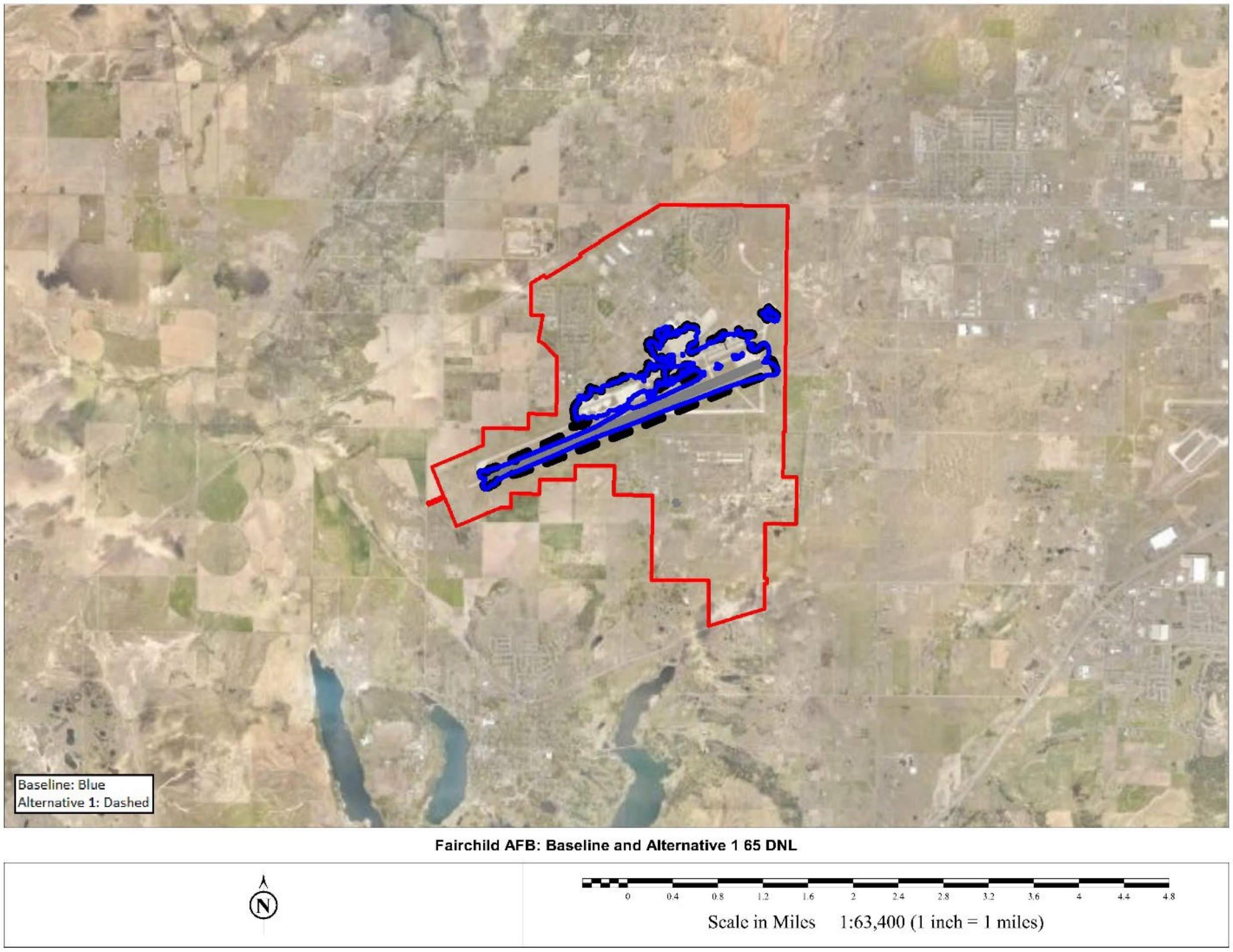


Figure 7-3. Comparison of DNL Contours for Baseline and Alternative 1

7.2 Supplemental Noise Analysis

The scope of work required analyses of noise exposure in addition to the DNL contours shown in Section 7.1. The extra analyses relate to the potential effect of the noise (i.e., sleep disturbance, hearing loss, classroom learning interference, and speech interference in Sections 7.2.1 through 7.2.4, respectively). Section 7.2.5 addresses a supplemental analysis for wildlife locations.

The DoD's guidelines for the use of supplemental metrics were used to identify metrics and their thresholds (DoD Noise Working Group 2009). Table 7-1 shows the relevant metrics and thresholds for this EIS, based on DoD guidelines. The two primary metrics for supplemental analyses are the Number of Events (at or) Above a Specified Threshold (NA) and Time (at or) Above a Maximum Sound Level (TA). NA utilizes Maximum Sound Level (L_{max}) and Sound Exposure Level (SEL). As its name implies, TA is solely based on L_{max}. Eight-hour (school-day) Equivalent Sound Level ($L_{eq(8h)}$) is also utilized. Schools with $L_{eq(8h)}$

less than 60 dB are screened out and are not likely to be affected. NA and TA metrics are computed for schools having $L_{eq(8h)}$ greater than or equal to 60 dB in any scenario.

For wildlife impact analysis, L_{max} was calculated at each wildlife monitoring site. As the NMAP cannot automatically compute the overall L_{max} for all flight/static profiles at once, the flight profile contributing the greatest SEL at each site was chosen to approximate the flight/static profile with highest overall L_{max} at that site.

The NMAP was used to compute the identified supplemental metrics.

Table 7-1. Guideline Values (Outdoor Values)

Application	Metric	Unit	Time Period	Recommended Outdoor Thresholds for Reporting Purposes
Speech Interference	NA	Number of Events	15-hr day (DNL daytime)	75 dB L_{max}
Sleep Disturbance	NA	Number of Events	9-hr night (DNL nighttime)	90 dB SEL
Classroom Speech Interference	L_{eq}	Decibel	School hours (8-hr)	60 dB (for scoping)
Classroom Speech Interference	NA	Number of Events	School hours (8-hr)	75 dB L_{max}
Classroom Speech Interference	TA	Time (minutes)	School hours (8-hr)	75 dB L_{max}
Potential for Hearing Loss	PHL	Decibel	Annual Average Day	80 dB
Wildlife Effects/impacts	L_{max}	Decibel	Overall	(species specific)

The supplemental analyses address specific Points of Interest (POI) in the vicinity of SKA. The POI provided by DAF are shown in Figures 7-4 through 7-7. The POI consist of four on-base residential-type receptors (R01 through R04), two on-base schools (S01 and S02), and seven off-base schools (S03 through S09). The on- and off-base hospitals (H01 and H02) were included in the speech interference and sleep disturbance analyses. The wildlife POI consist of one raptor nest (W01) and 14 Spalding's Catchfly Monitoring Locations (W02 through W15). The raptor nest and Spalding's Catchfly location W15 are located at the same coordinates and different altitudes. Figure 7-4 shows all POIs at an overview scale.

All POI were modeled at five feet above ground level (AGL), except the wildlife locations, which were modeled at 50 feet AGL for the raptor nest and zero feet AGL for Spalding's Catchfly with AFCEC concurrence.

The wildlife monitoring sites in the southern part of the base are shown in Figure 7-5. Figure 7-6 shows a zoomed-in map over Medical Lake showing the locations of a hospital (H02) POI and several schools

(S03, S04, S05, S09). Figure 7-7 is a zoomed-in map of the POIs on the northern part of the base with the other hospital (H01), two schools (S01 and S02) and the residential monitoring sites.

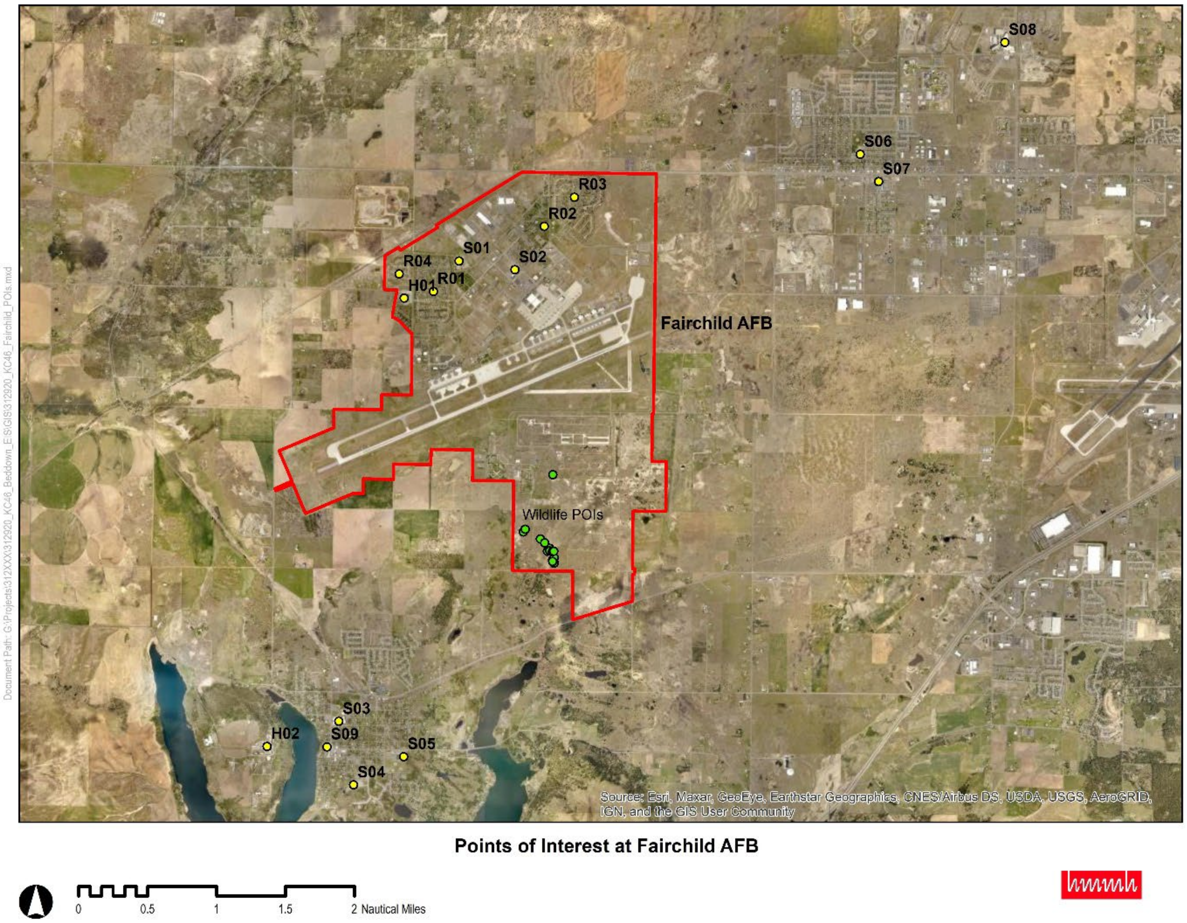


Figure 7-4. Modeled POI Locations

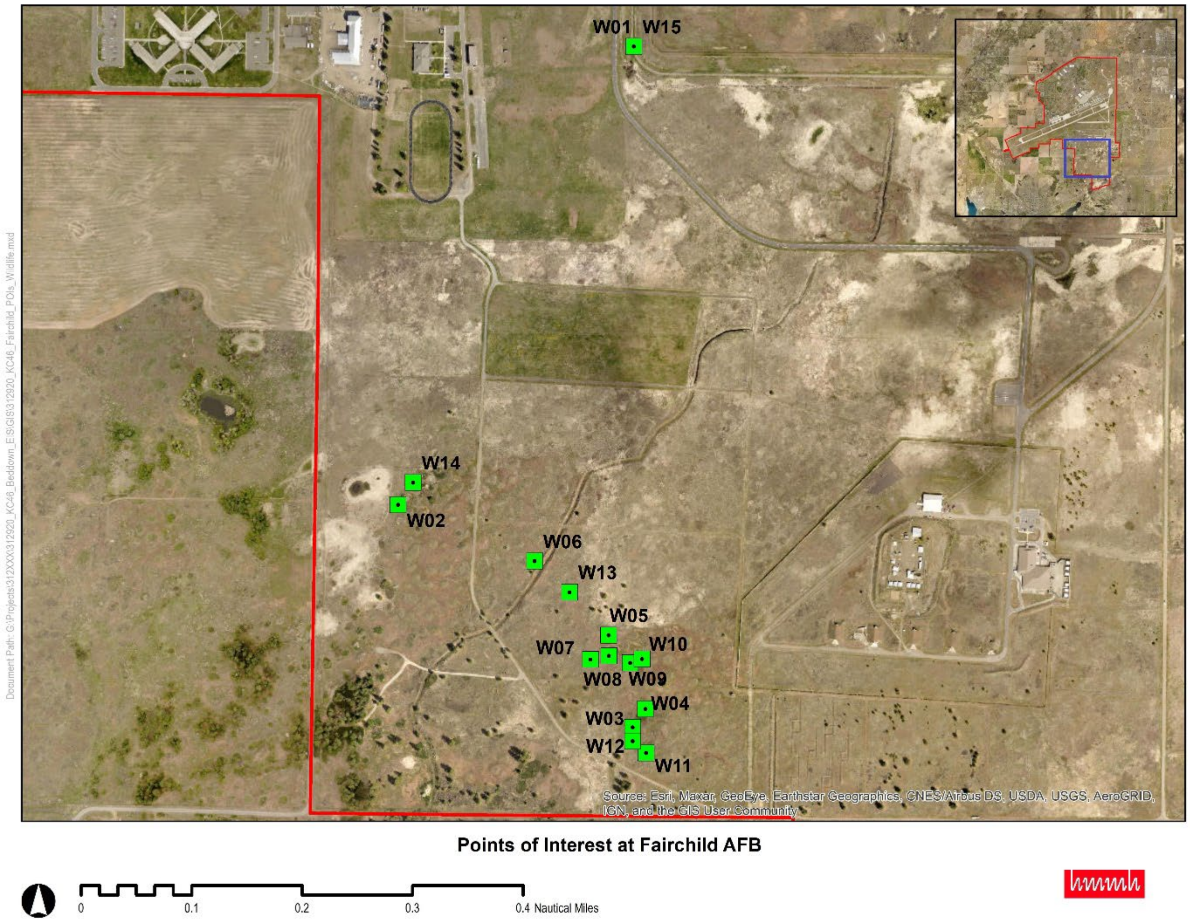


Figure 7-5. Modeled Wildlife POI Locations

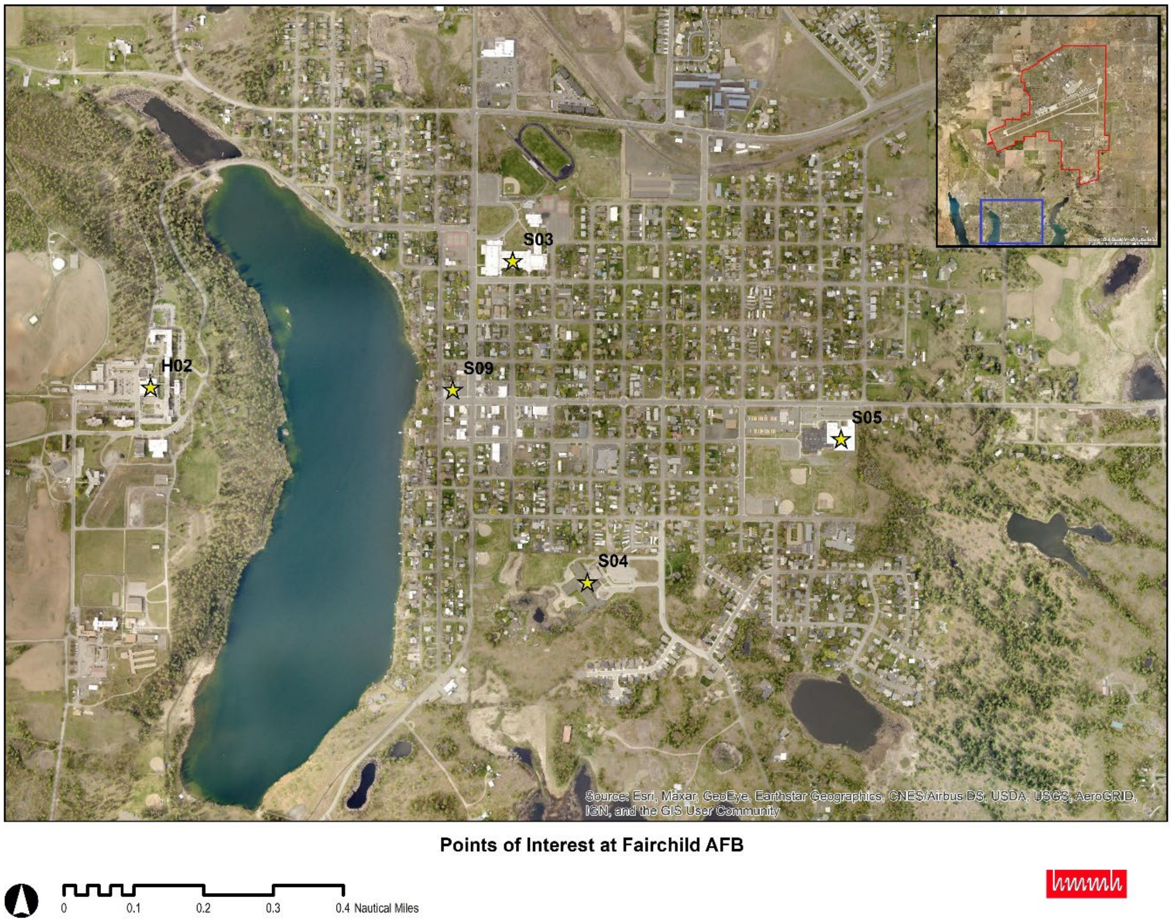


Figure 7-6. Southern POI Locations

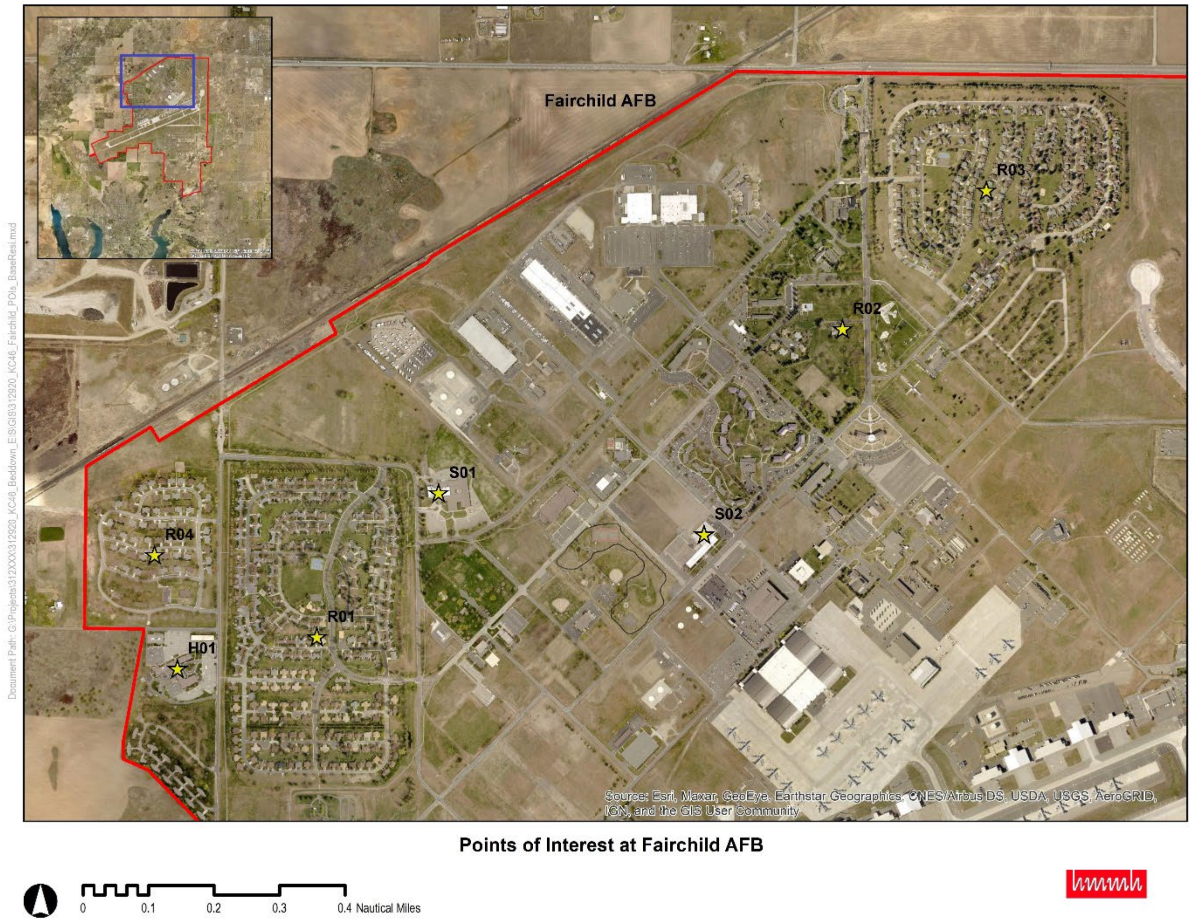


Figure 7-7. On-Base POI Locations

7.2.1 Potential for Sleep Disturbance

The residential and hospital POI are applicable for this analysis. Table 7-2 shows the results. The NA 90 SEL would not change relative to the Baseline/No Action scenarios at three of the four on-base housing POI. Under Alternative 1, R04 and H01 would experience an increase of eight potentially sleep disturbing events per year due to the KC-46 spiral closed patterns.

Table 7-2. Annual Number of Nighttime Events (at or) Above 90 dB SEL

Point of Interest	ID	Baseline Annual Events	Alternative 1 Annual Events	Increase re Baseline
On-base Family Housing Centerpoint A	R01	0	0	0
On-base Family Housing Centerpoint B	R02	0	0	0
On-base Family Housing Centerpoint C	R03	0	0	0
On-base Family Housing Centerpoint D	R04	0	8	8
Fairchild AFB Hospital	H01	0	8	8
Eastern State Hospital	H02	0	0	0

7.2.2 Potential for Hearing Loss

Residential receptors would have the potential for hearing loss (PHL) if their DNL would be 80 dB or greater. For either scenario, the 80 dB DNL contour is/would be contained to the base boundary and exclude on-base residential POI; therefore, no PHL is anticipated.

7.2.3 Classroom Learning Interference

The school-day hours were assumed to be 8 AM to 4 PM, wholly within the DNL daytime period. With the hourly distribution of the numbers of operations unknown, DNL daytime operations were assumed to be evenly distributed throughout its 15-hour daytime period. DNL daytime operations were scaled by a factor of 0.53 (=8÷15) to convert them to school-day operations.

Table 7-3 shows the $L_{eq(8h)}$ for the nine school POI. None of the schools would have $L_{eq(8h)}$ greater than or equal to 60 dB under any scenario (Baseline or Alternative 1), thus NA and TA metrics are not required and classroom learning interference is not anticipated.

Table 7-3. School-Day $L_{eq(8h)}$

Point of Interest	ID	Baseline	Alternative 1
Michael Anderson Elementary School	S01	43	48
Blair Elementary School	S02	46	48
Medical Lake High School	S03	33	34
Hallet Elementary School	S04	30	31
Medical Lake Middle School	S05	31	32
Sunset Elementary School	S06	42	44
Little Sunshine Learning Center	S07	44	45

Point of Interest	ID	Baseline	Alternative 1
Kids Quest at Northern Quest Resort	S08	38	38
Cela's Creative Learning Academy	S09	32	33

7.2.4 Speech Interference

Table 7-4 reports the annual NA 75 dB L_{max} for the speech interference analysis, which used only the DNL daytime operations at four residential locations and the two hospitals. Alternative 1 would potentially increase the number of outdoor speech interfering events for R04 and H01 by 132 per year due to the KC-46 spiral closed patterns. All other events are caused by transient F-18 operations, which would remain unchanged between the scenarios.

Table 7-4. Annual Number of Daytime Events (at or) Above Outdoor 75 dB L_{max}

Point of Interest	ID	Baseline Events	Alternative 1 Events	Increase re Baseline
On-base Family Housing Centerpoint A	R01	6	6	0
On-base Family Housing Centerpoint B	R02	11	11	0
On-base Family Housing Centerpoint C	R03	11	11	0
On-base Family Housing Centerpoint D	R04	6	138	132
Fairchild AFB Hospital	H01	6	138	132
Eastern State Hospital	H02	6	6	0

7.2.5 Noise Analysis Relating to Effects and Impacts on Wildlife

The transient F-18 departure operations from Runways 05 and 23 would have the highest SEL at all the wildlife POI for both scenarios (Baseline and Alternative 1). The maximum of the two flight profiles are listed in Table 7-5. As the transient F-18 departure operations would not change under Alternative 1, relative to Baseline, no change in wildlife effects is anticipated.

Table 7-5. Estimated Maximum Sound Levels at Wildlife POI for Baseline and Alternative 1

Wildlife Site	ID	Lmax (dB)
Raptor Nest	W01	98
Spalding's Catchfly Monitoring Location A	W02	93
Spalding's Catchfly Monitoring Location B	W03	90
Spalding's Catchfly Monitoring Location C	W04	90
Spalding's Catchfly Monitoring Location D	W05	91
Spalding's Catchfly Monitoring Location E	W06	92
Spalding's Catchfly Monitoring Location F	W07	91
Spalding's Catchfly Monitoring Location G	W08	91
Spalding's Catchfly Monitoring Location H	W09	91
Spalding's Catchfly Monitoring Location I	W10	91
Spalding's Catchfly Monitoring Location J	W11	90
Spalding's Catchfly Monitoring Location K	W12	90
Spalding's Catchfly Monitoring Location L	W13	92
Spalding's Catchfly Monitoring Location M	W14	94
Spalding's Catchfly Monitoring Location N	W15	98

8 References

AFCEC, 2022. Electronic mail from Helen Kellogg (AFCEC/CZN) to Derek Strunk AMC A5/A8PB et al., re: "RE: 312920 // Prior KC-46 Maintenance runup modeling for Travis, McGuire", June 1, 2022 (10:37 am Pacific).

Department of Defense (DoD) Noise Working Group. Technical bulletin, "Using Supplemental Noise Metrics and Analysis Tools." November 2009.

Dooling, 2021. Electronic mail from Evan Dooling to Joseph J. Czech (HMMH), re: "Fairchild", with DoD SAFE link for file named "Fairchild Baseline FEIS.baseops", December 6, 2021.

Peer, 2021. Electronic mail from Deborah Peer (HDR) to Joseph J. Czech (HMMH), with attachment named "Fairchild 2012 Final.baseops", December 22, 2021.

Peer, 2022. Electronic mail from Deborah Peer (HDR) to Joseph J. Czech (HMMH), "RE: 312920 // Prior KC-46 Maintenance runup modeling for Travis, McGuire", June 1, 2022.

Robert A. Lee and Henry T. Mohlman, *Air Force Procedure for Predicting Aircraft Noise Around Airbases: Airbase Operations Program (BaseOps) Description,* Report No. AAMRL-TR-90-012 (Wright-Patterson Air Force Base, Ohio: U.S. Air Force, 1990).

This page intentionally left blank.

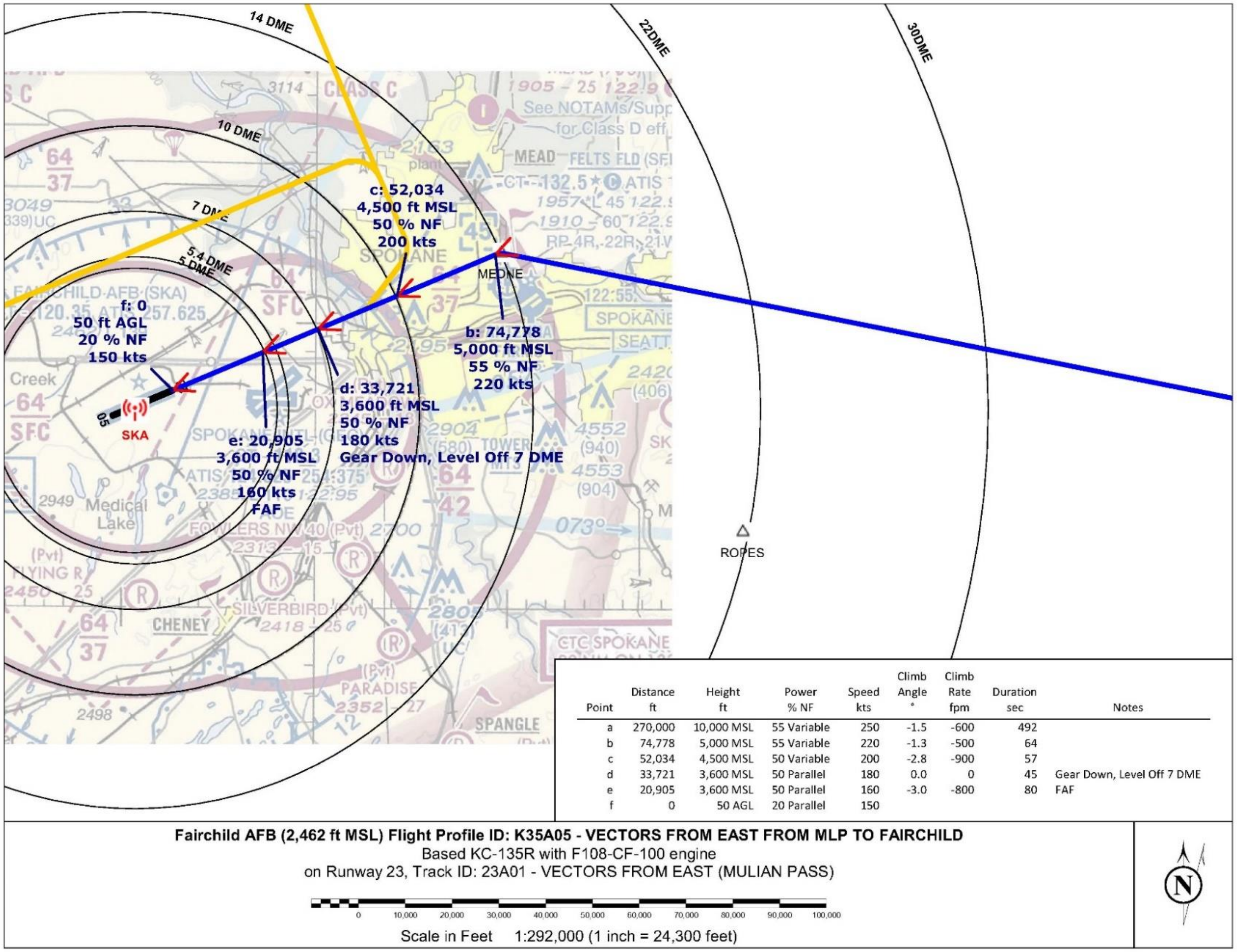
9 Acronyms

AAM	Advanced Acoustics Model
AFB	Air Force Base
AFCEC	Air Force Civil Engineering Center
AGL	Above Ground Level
ARP	Airport Reference Point
ATC	Air Traffic Control
CY	Calendar Year
DAF	United States Air Force
dB	Decibel
DNL	Day-Night Average Sound Level
DoD	Department of Defense
EIS	Environmental Impact Statement
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System
kPa-s/m^2	kilopascal-seconds per square meter
$L_{eq(8h)}$	Eight-hour (school-day) Equivalent Sound Level
L_{max}	Maximum Sound Level
MOB	Main Operating Base
MSL	Mean Sea Level
NA	Number of Events (at or) Above a Specified Threshold
NEPA	National Environmental Protection Agency
NLR	Noise Level Reduction
NMAP	NOISEMAP
NMODD	Noise Model Operational Data Documentation
PAA	Primary Authorized Aircraft
PHL	Potential for Hearing Loss
POI	Point of Interest
SEL	Sound Exposure Level
SKA	Fairchild Air Force Base
SME	Subject Matter Expert
SUA	Special Use Airspace
TA	Time (at or) Above a Maximum Sound Level
USGS	United States Geological Survey

Appendix A Airfield Flight Profile Maps

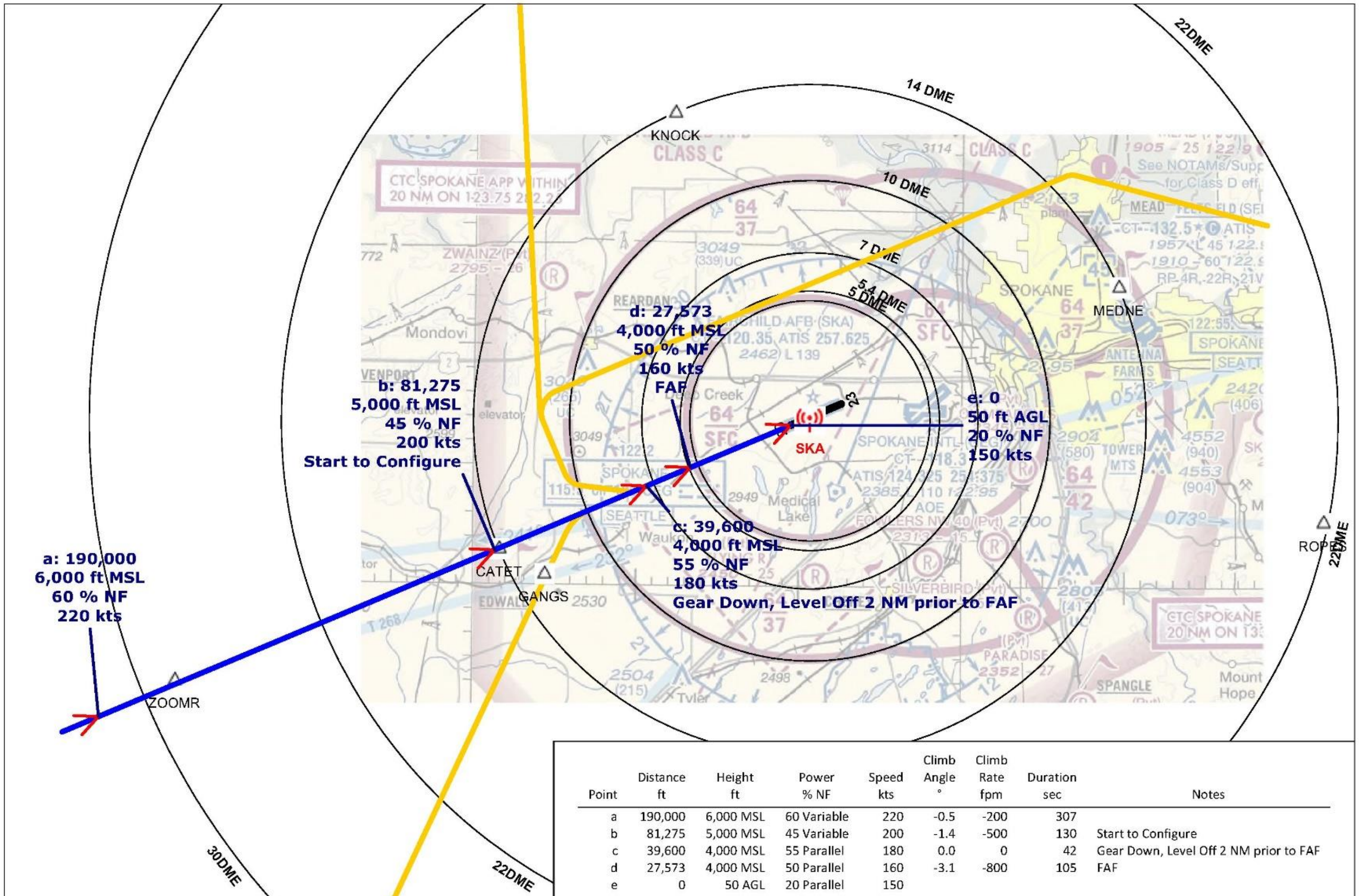
Sections A.1 through A.4 contain the flight profile maps for the KC-135, KC-46, Based Helicopters and Transient aircraft, respectively.

A.1 Airfield Flight Profile Maps for Based KC-135 Aircraft



Point	Distance ft	Height ft	Power % NF	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	270,000	10,000 MSL	55 Variable	250	-1.5	-600	492	
b	74,778	5,000 MSL	55 Variable	220	-1.3	-500	64	
c	52,034	4,500 MSL	50 Variable	200	-2.8	-900	57	
d	33,721	3,600 MSL	50 Parallel	180	0.0	0	45	Gear Down, Level Off 7 DME
e	20,905	3,600 MSL	50 Parallel	160	-3.0	-800	80	FAF
f	0	50 AGL	20 Parallel	150				

Figure A.1.1



Point	Distance ft	Height ft	Power % NF	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	190,000	6,000 MSL	60 Variable	220	-0.5	-200	307	
b	81,275	5,000 MSL	45 Variable	200	-1.4	-500	130	Start to Configure
c	39,600	4,000 MSL	55 Parallel	180	0.0	0	42	Gear Down, Level Off 2 NM prior to FAF
d	27,573	4,000 MSL	50 Parallel	160	-3.1	-800	105	FAF
e	0	50 AGL	20 Parallel	150				

Fairchild AFB (2,462 ft MSL) Flight Profile ID: K35A03 - VECTORS FROM WEST TO ZOOMR THEN FAIRCHILD
Based KC-135R with F108-CF-100 engine
on Runway 05, Track ID: 05A03 - WEST ARRIVALS VECTORS TO ZOOMR

0 20,000 40,000 60,000 80,000 100,000 120,000
Scale in Feet 1:380,000 (1 inch = 31,600 feet)

Figure A.1.2

Point	Distance ft	Height ft	Power % NF	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	105,000	5,800 MSL	55 Variable	250	-3.6	-1600	60	
b	79,476	4,200 MSL	55 Variable	250	0.0	0	41	
c	62,000	4,200 MSL	55 Variable	250	0.0	0	86	Start to Configure
d	30,850	4,200 MSL	55 Parallel	180	-3.5	-1000	68	Gear Down
e	12,000	600 AGL	52 Parallel	150	-2.6	-700	49	
f	0	50 AGL	20 Parallel	140				

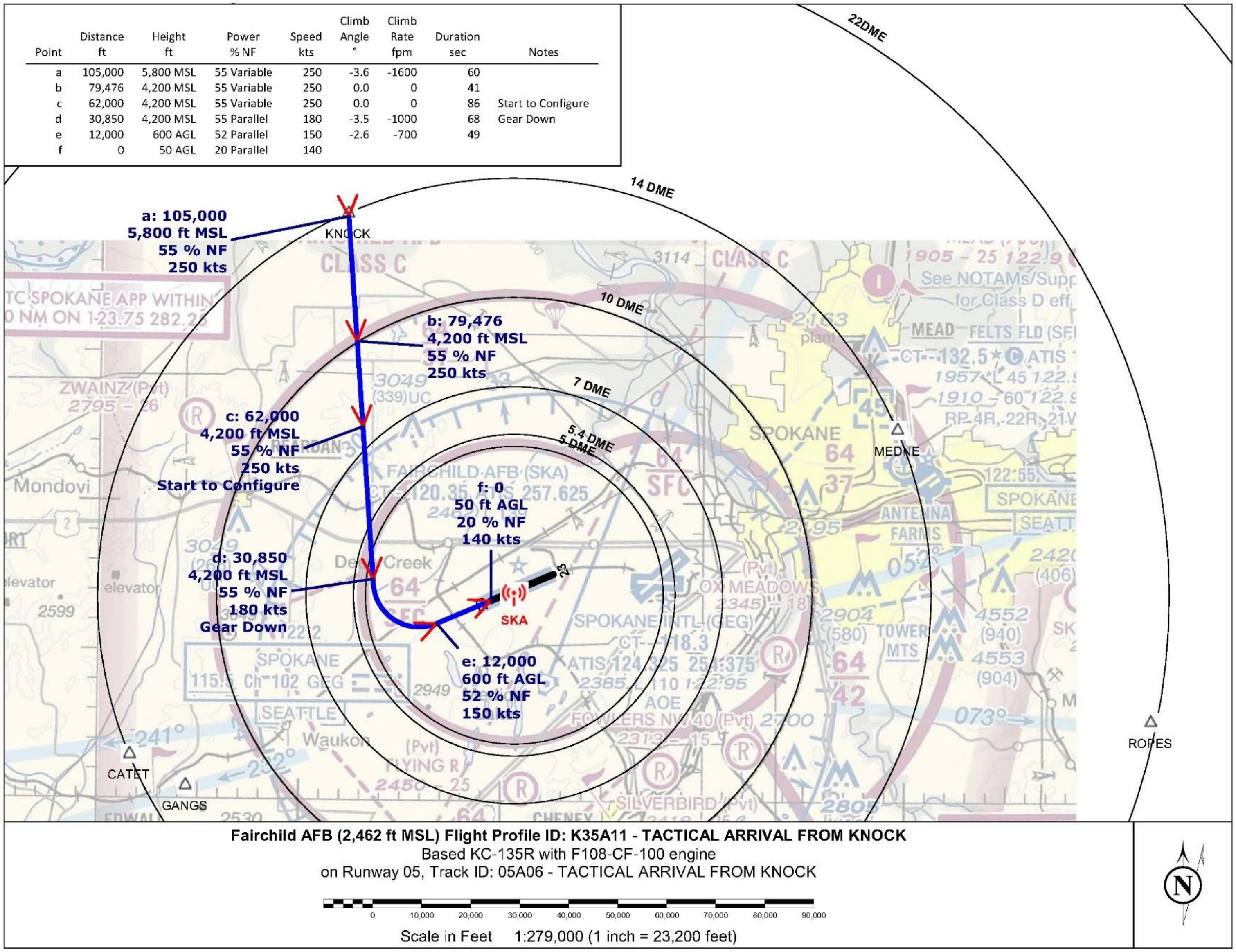
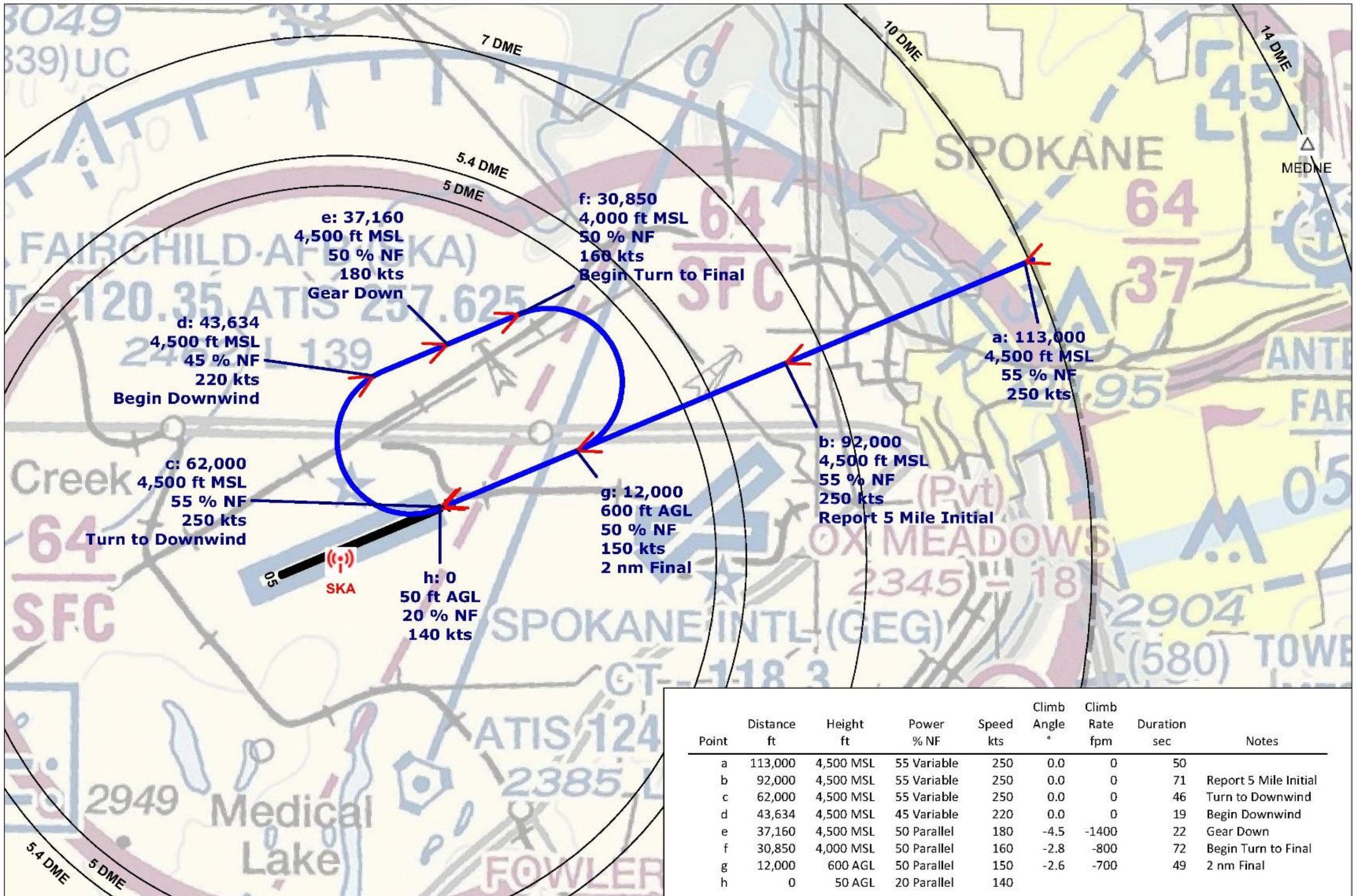


Figure A.1.3

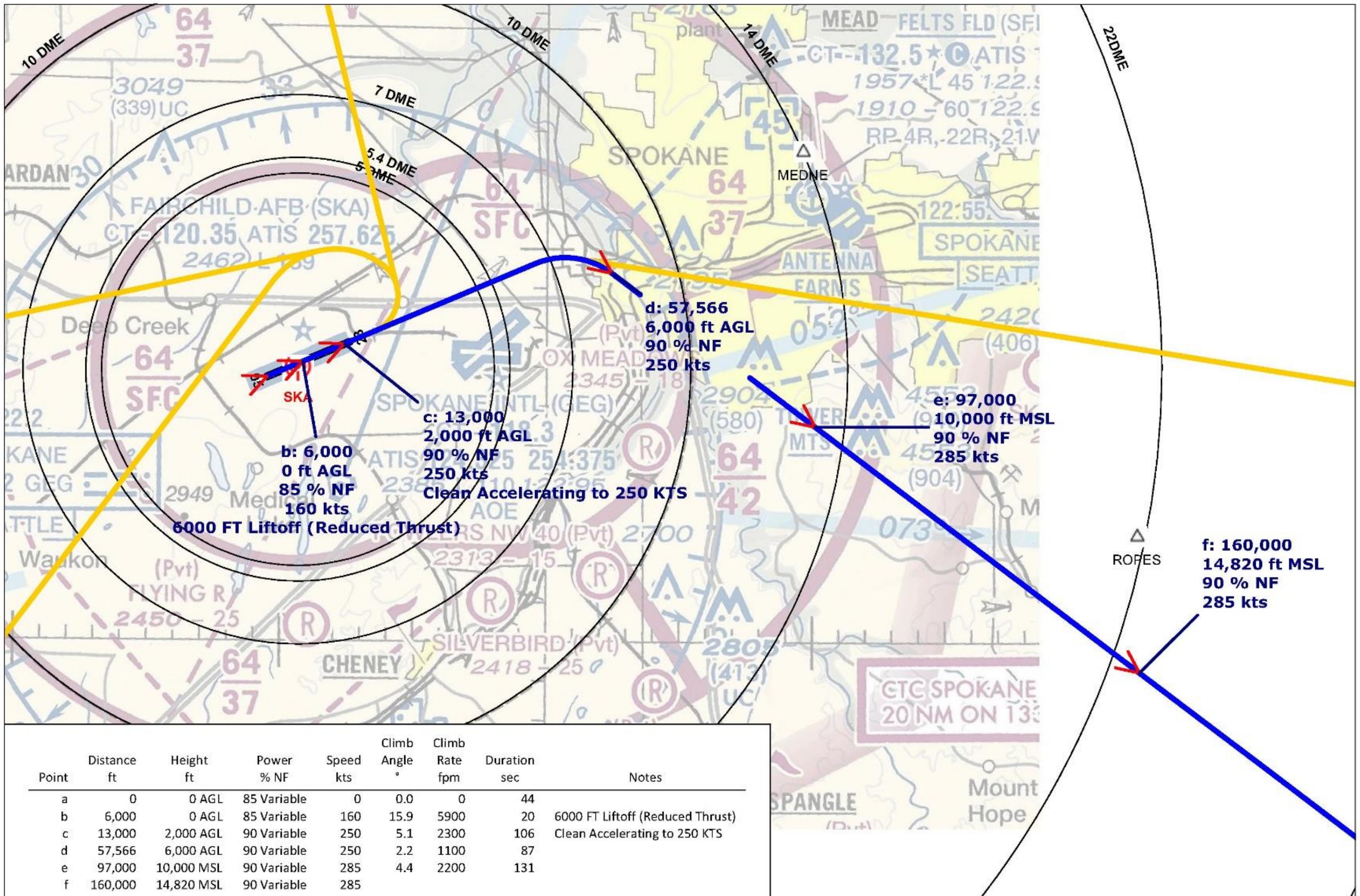


Point	Distance ft	Height ft	Power % NF	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	113,000	4,500 MSL	55 Variable	250	0.0	0	50	
b	92,000	4,500 MSL	55 Variable	250	0.0	0	71	Report 5 Mile Initial
c	62,000	4,500 MSL	55 Variable	250	0.0	0	46	Turn to Downwind
d	43,634	4,500 MSL	45 Variable	220	0.0	0	19	Begin Downwind
e	37,160	4,500 MSL	50 Parallel	180	-4.5	-1400	22	Gear Down
f	30,850	4,000 MSL	50 Parallel	160	-2.8	-800	72	Begin Turn to Final
g	12,000	600 AGL	50 Parallel	150	-2.6	-700	49	2 nm Final
h	0	50 AGL	20 Parallel	140				

Fairchild AFB (2,462 ft MSL) Flight Profile ID: K35A09 - FORMATION ARRIVAL TO INITIAL
Based KC-135R with F108-CF-100 engine
on Runway 23, Track ID: 23A05 - VECTORS TO A 5 NM INITIAL

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000 40,000
Scale in Feet 1:121,000 (1 inch = 10,100 feet)

Figure A.1.4



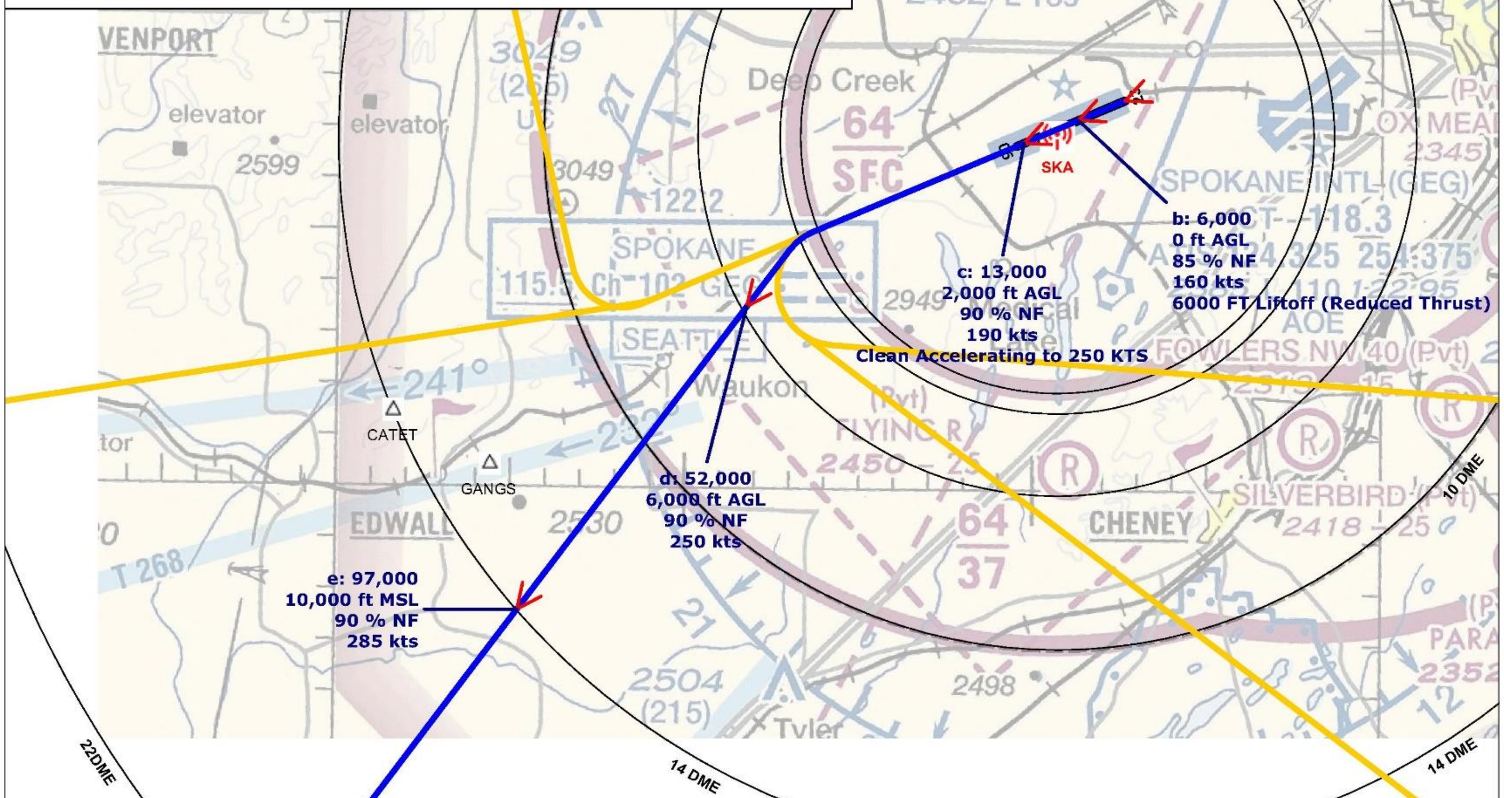
Point	Distance ft	Height ft	Power % NF	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	0 AGL	85 Variable	0	0.0	0	44	
b	6,000	0 AGL	85 Variable	160	15.9	5900	20	6000 FT Liftoff (Reduced Thrust)
c	13,000	2,000 AGL	90 Variable	250	5.1	2300	106	Clean Accelerating to 250 KTS
d	57,566	6,000 AGL	90 Variable	250	2.2	1100	87	
e	97,000	10,000 MSL	90 Variable	285	4.4	2200	131	
f	160,000	14,820 MSL	90 Variable	285				

Fairchild AFB (2,462 ft MSL) Flight Profile ID: K35D02 - DEPART TO UTAH TEST RANGE (FIGHTER SUPPORT)
Based KC-135R with F108-CF-100 engine
on Runway 05, Track ID: 05D02 - DEPARTURE TO UTAH TEST RANGE TO SUPPORT FIGHTERS

0 10,000 20,000 30,000 40,000 50,000 60,000 70,000
Scale in Feet 1:232,000 (1 inch = 19,400 feet)

Figure A.1.5

Point	Distance ft	Height ft	Power % NF	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	0 AGL	85 Variable	0	0.0	0	44	
b	6,000	0 AGL	85 Variable	160	15.9	5100	24	6000 FT Liftoff (Reduced Thrust)
c	13,000	2,000 AGL	90 Variable	190	5.9	2300	105	Clean Accelerating to 250 KTS
d	52,000	6,000 AGL	90 Variable	250	2.0	900	100	
e	97,000	10,000 MSL	90 Variable	285	4.4	2200	131	
f	160,000	14,820 MSL	90 Variable	285				

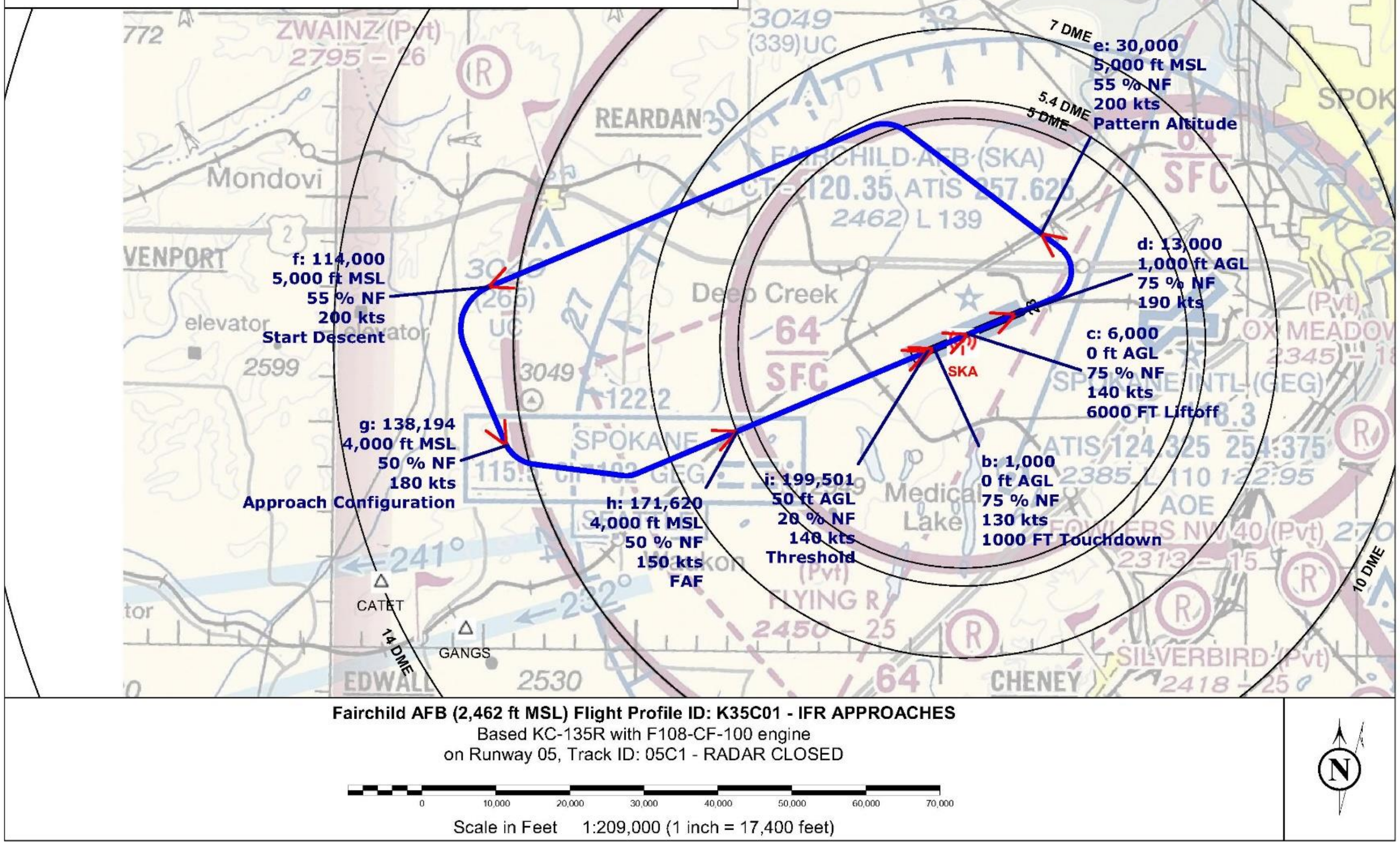


Fairchild AFB (2,462 ft MSL) Flight Profile ID: K35D06 - DEPART TO AR307/645
Based KC-135R with F108-CF-100 engine
on Runway 23, Track ID: 23D01 - DEPARTURE TO AR307/645

0 10,000 20,000 30,000 40,000 50,000 60,000
Scale in Feet 1:197,000 (1 inch = 16,400 feet)

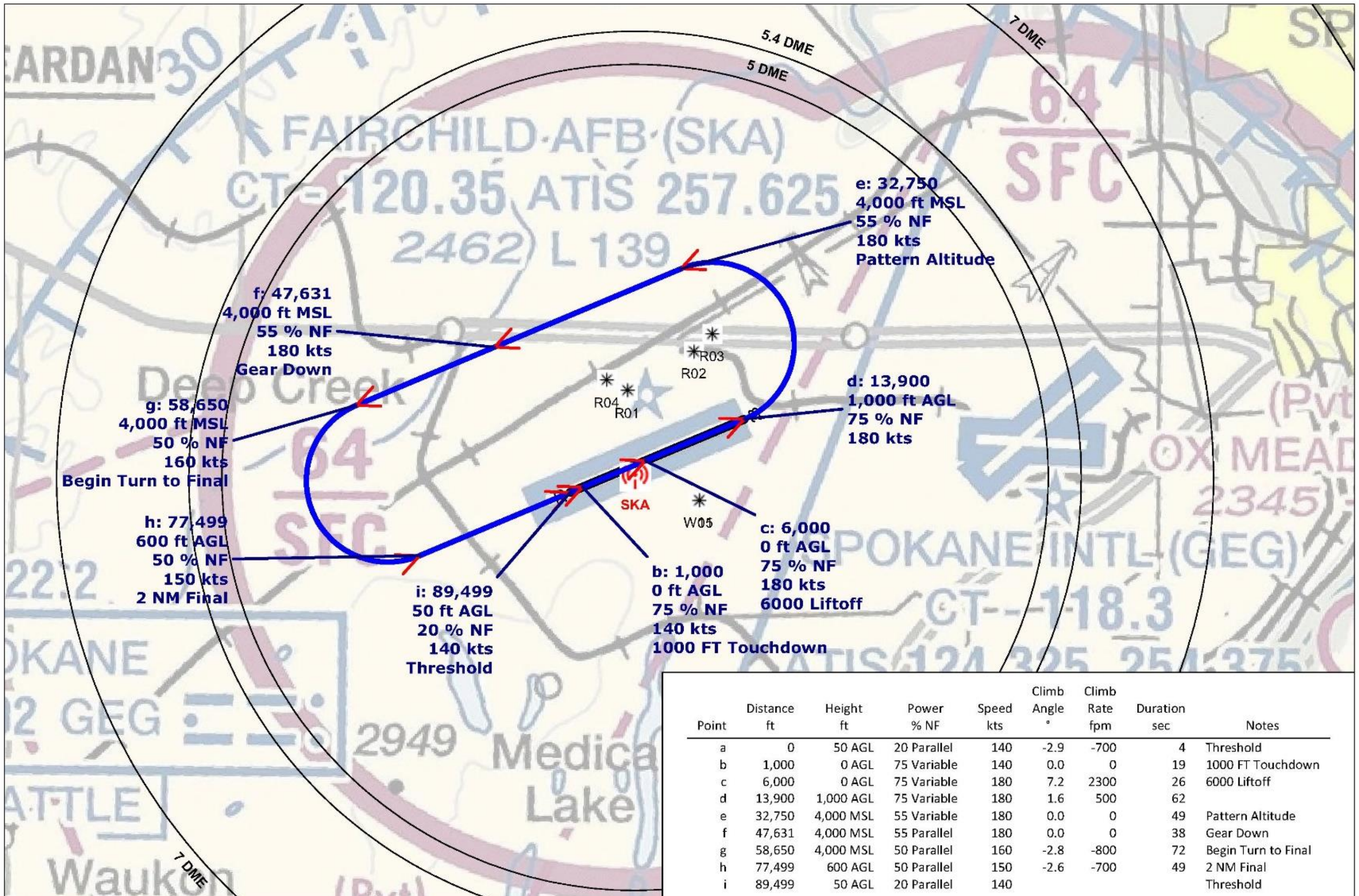
Figure A.1.6

Point	Distance ft	Height ft	Power % NF	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	50 AGL	20 Parallel	140	-2.9	-700	4	Threshold
b	1,000	0 AGL	75 Variable	130	0.0	0	22	1000 FT Touchdown
c	6,000	0 AGL	75 Variable	140	8.1	2400	25	6000 FT Liftoff
d	13,000	1,000 AGL	75 Variable	190	5.2	1800	52	
e	30,000	5,000 MSL	55 Variable	200	0.0	0	249	Pattern Altitude
f	114,000	5,000 MSL	55 Variable	200	-2.4	-800	75	Start Descent
g	138,194	4,000 MSL	50 Parallel	180	0.0	0	120	Approach Configuration
h	171,620	4,000 MSL	50 Parallel	150	-3.1	-800	114	FAF
i	199,501	50 AGL	20 Parallel	140				Threshold



Fairchild AFB (2,462 ft MSL) Flight Profile ID: K35C01 - IFR APPROACHES
Based KC-135R with F108-CF-100 engine
on Runway 05, Track ID: 05C1 - RADAR CLOSED

Figure A.1.7



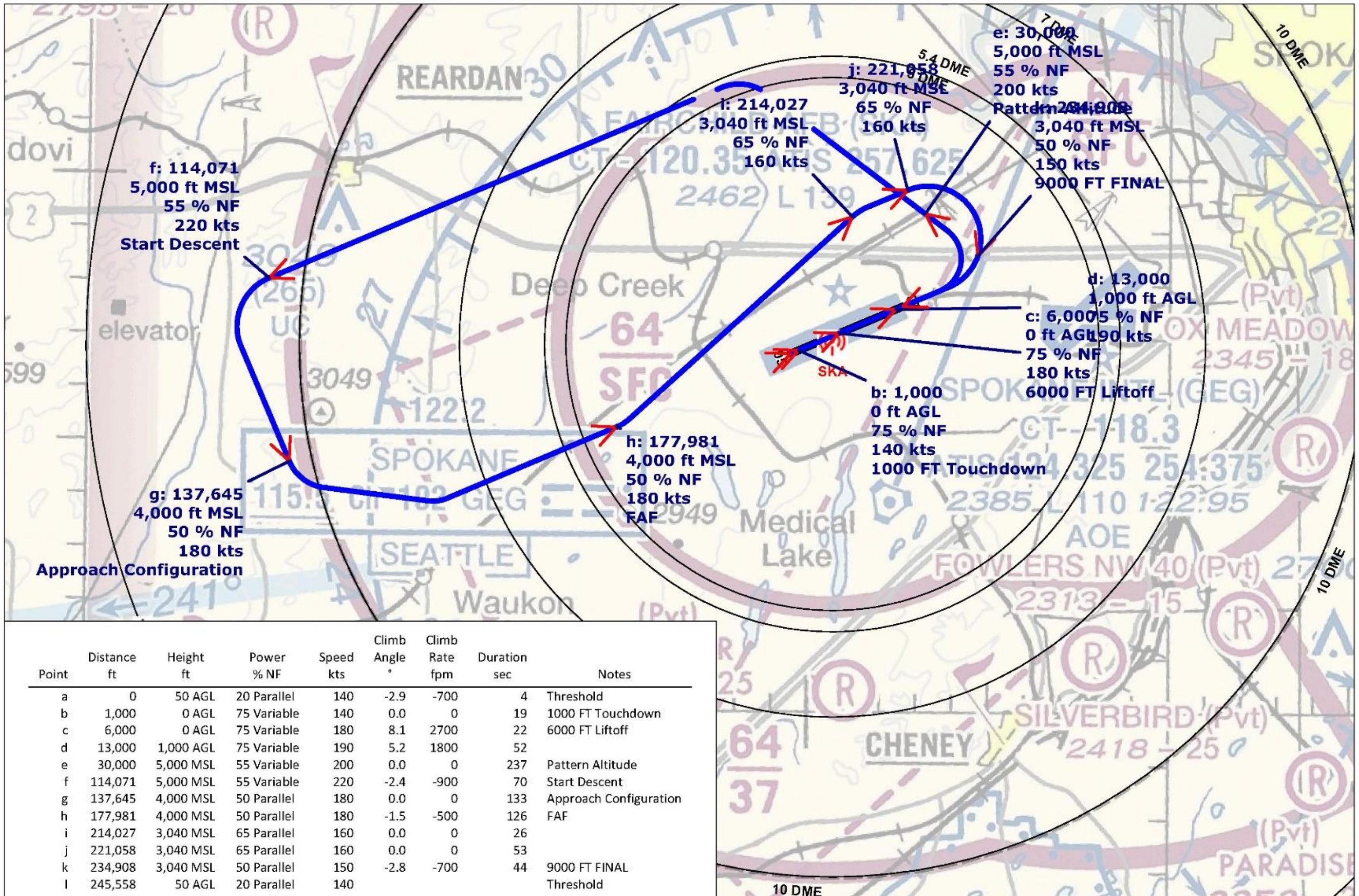
Point	Distance ft	Height ft	Power % NF	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	50 AGL	20 Parallel	140	-2.9	-700	4	Threshold
b	1,000	0 AGL	75 Variable	140	0.0	0	19	1000 FT Touchdown
c	6,000	0 AGL	75 Variable	180	7.2	2300	26	6000 Liftoff
d	13,900	1,000 AGL	75 Variable	180	1.6	500	62	
e	32,750	4,000 MSL	55 Variable	180	0.0	0	49	Pattern Altitude
f	47,631	4,000 MSL	55 Parallel	180	0.0	0	38	Gear Down
g	58,650	4,000 MSL	50 Parallel	160	-2.8	-800	72	Begin Turn to Final
h	77,499	600 AGL	50 Parallel	150	-2.6	-700	49	2 NM Final
i	89,499	50 AGL	20 Parallel	140				Threshold

Fairchild AFB (2,462 ft MSL) Flight Profile ID: K35C02 - VFR PATTERN
Based KC-135R with F108-CF-100 engine
on Runway 05, Track ID: 05C2 - VFR CLOSED

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000
Scale in Feet 1:110,000 (1 inch = 9,190 feet)

N

Figure A.1.8



Point	Distance ft	Height ft	Power % NF	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	50 AGL	20 Parallel	140	-2.9	-700	4	Threshold
b	1,000	0 AGL	75 Variable	140	0.0	0	19	1000 FT Touchdown
c	6,000	0 AGL	75 Variable	180	8.1	2700	22	6000 FT Liftoff
d	13,000	1,000 AGL	75 Variable	190	5.2	1800	52	
e	30,000	5,000 MSL	55 Variable	200	0.0	0	237	Pattern Altitude
f	114,071	5,000 MSL	55 Variable	220	-2.4	-900	70	Start Descent
g	137,645	4,000 MSL	50 Parallel	180	0.0	0	133	Approach Configuration
h	177,981	4,000 MSL	50 Parallel	180	-1.5	-500	126	FAF
i	214,027	3,040 MSL	65 Parallel	160	0.0	0	26	
j	221,058	3,040 MSL	65 Parallel	160	0.0	0	53	
k	234,908	3,040 MSL	50 Parallel	150	-2.8	-700	44	9000 FT FINAL
l	245,558	50 AGL	20 Parallel	140				Threshold

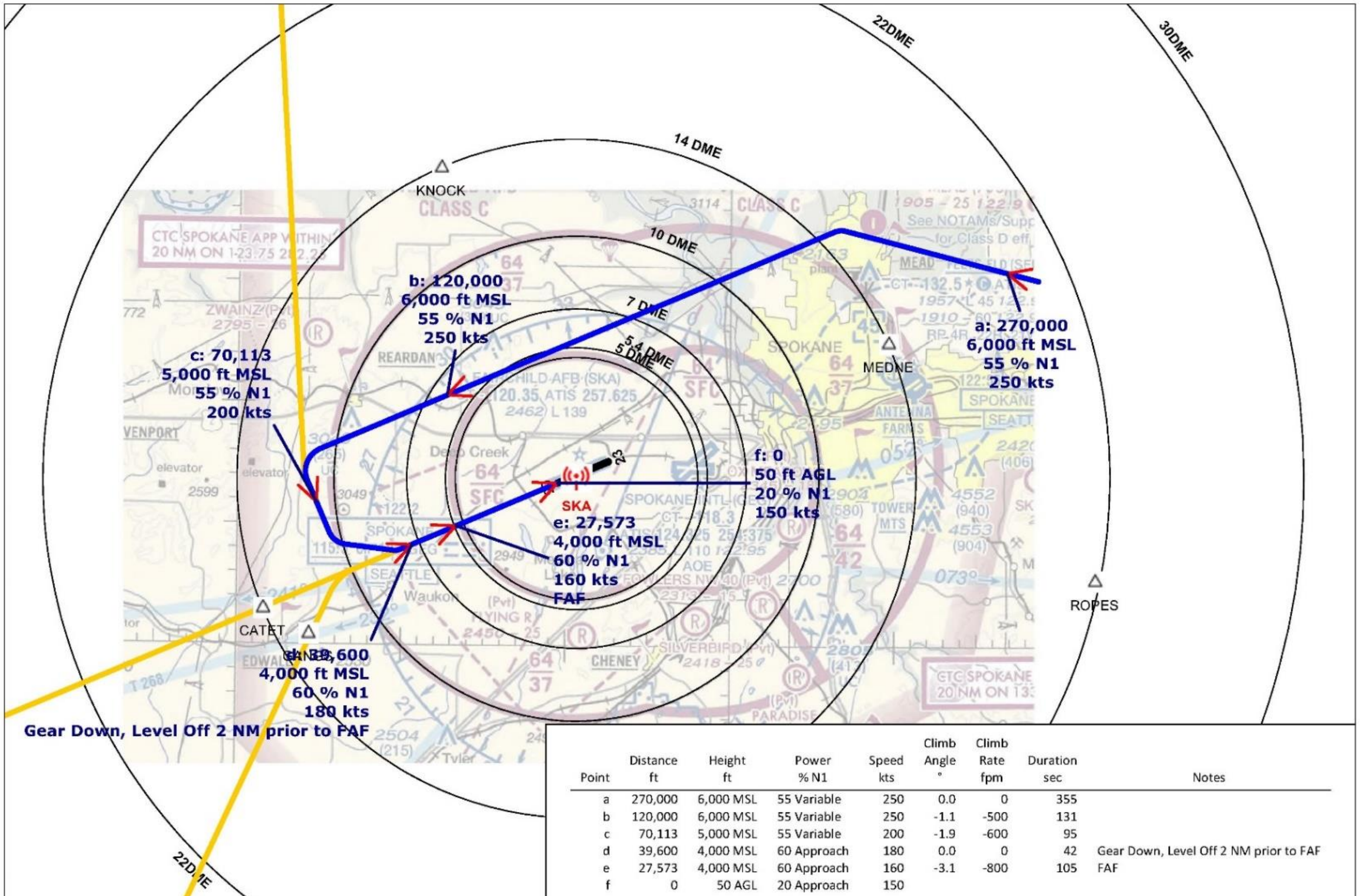
Fairchild AFB (2,462 ft MSL) Flight Profile ID: K35C03 - TACAN APP TO RWY 05 WITH VFR CIRCLE TO RWY 23
Based KC-135R with F108-CF-100 engine
on Runway 05, Track ID: 05C3 - IFR APPROACH TO RUNWAY 05 WITH VFR CIRCLE TO RWY 23

0 10,000 20,000 30,000 40,000 50,000
Scale in Feet 1:171,000 (1 inch = 14,300 feet)

N

Figure A.1.9

A.2 Airfield Flight Profile Maps for Based KC-46 Aircraft

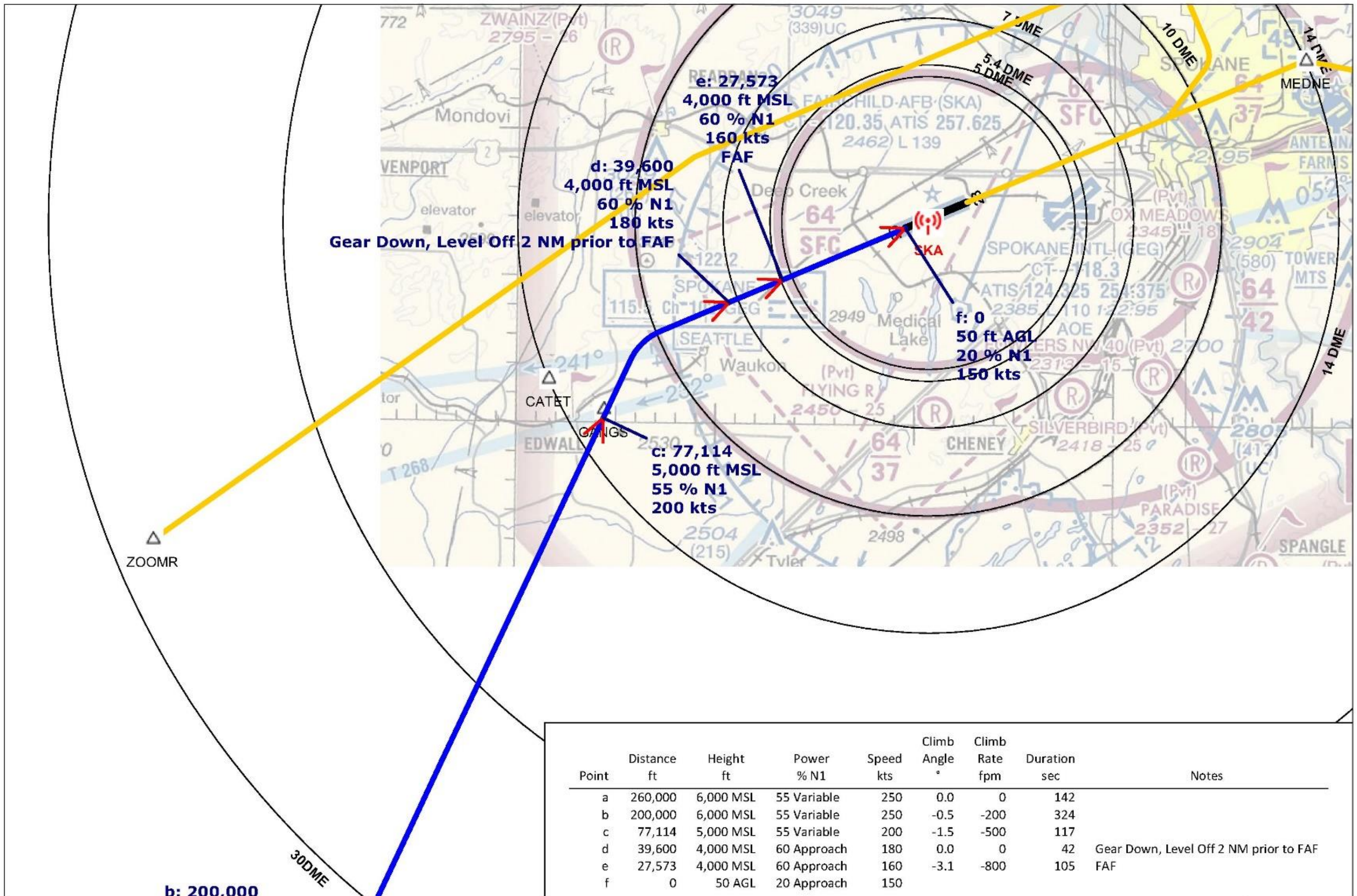


Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	270,000	6,000 MSL	55 Variable	250	0.0	0	355	
b	120,000	6,000 MSL	55 Variable	250	-1.1	-500	131	
c	70,113	5,000 MSL	55 Variable	200	-1.9	-600	95	
d	39,600	4,000 MSL	60 Approach	180	0.0	0	42	Gear Down, Level Off 2 NM prior to FAF
e	27,573	4,000 MSL	60 Approach	160	-3.1	-800	105	FAF
f	0	50 AGL	20 Approach	150				

Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46A01 - VECTORS FROM EAST INTO DOWNWIND FROM MLP TO FAIRCHILD
Based KC-46X with PW4062 engine
on Runway 05, Track ID: 05A01 - VECTORS FROM EAST INTO DOWNWIND (MULIAN PASS)

0 20,000 40,000 60,000 80,000 100,000 120,000
Scale in Feet 1:376,000 (1 inch = 31,400 feet)

Figure A.2.1



Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	260,000	6,000 MSL	55 Variable	250	0.0	0	142	
b	200,000	6,000 MSL	55 Variable	250	-0.5	-200	324	
c	77,114	5,000 MSL	55 Variable	200	-1.5	-500	117	
d	39,600	4,000 MSL	60 Approach	180	0.0	0	42	Gear Down, Level Off 2 NM prior to FAF
e	27,573	4,000 MSL	60 Approach	160	-3.1	-800	105	FAF
f	0	50 AGL	20 Approach	150				

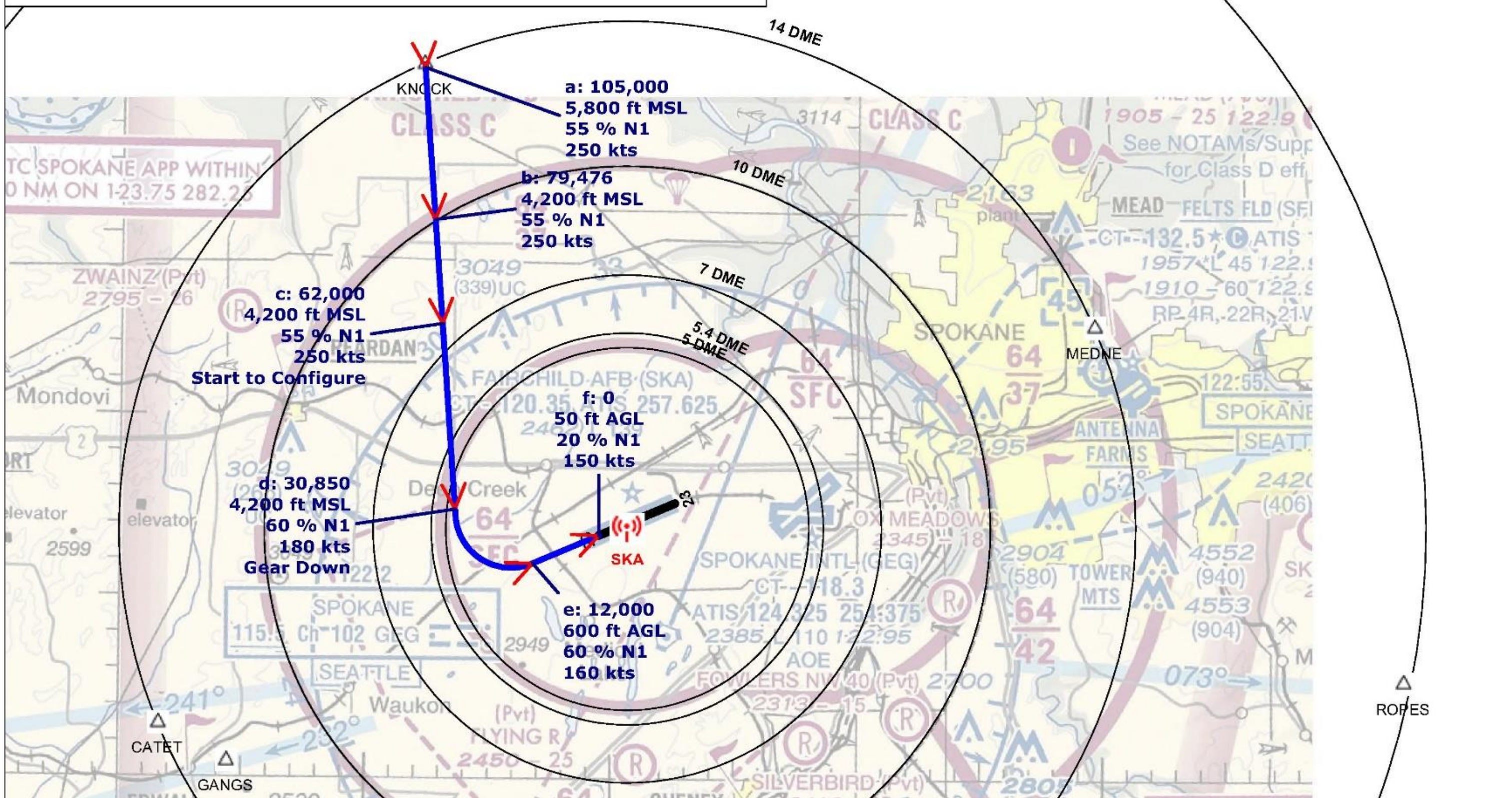
Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46A02 - VECTORS FROM PDT (PENDLETON) FAIRCHILD
Based KC-46X with PW4062 engine
on Runway 05, Track ID: 05A02 - VECTORS FROM PDT (PENDLETON)

0 10,000 20,000 30,000 40,000 50,000 60,000 70,000 80,000 90,000 100,000
Scale in Feet 1:310,000 (1 inch = 25,900 feet)

N

Figure A.2.2

Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	105,000	5,800 MSL	55 Variable	250	-3.6	-1600	60	
b	79,476	4,200 MSL	55 Variable	250	0.0	0	41	
c	62,000	4,200 MSL	55 Variable	250	0.0	0	86	Start to Configure
d	30,850	4,200 MSL	60 Approach	180	-3.5	-1000	66	Gear Down
e	12,000	600 AGL	60 Approach	160	-2.6	-700	46	
f	0	50 AGL	20 Approach	150				

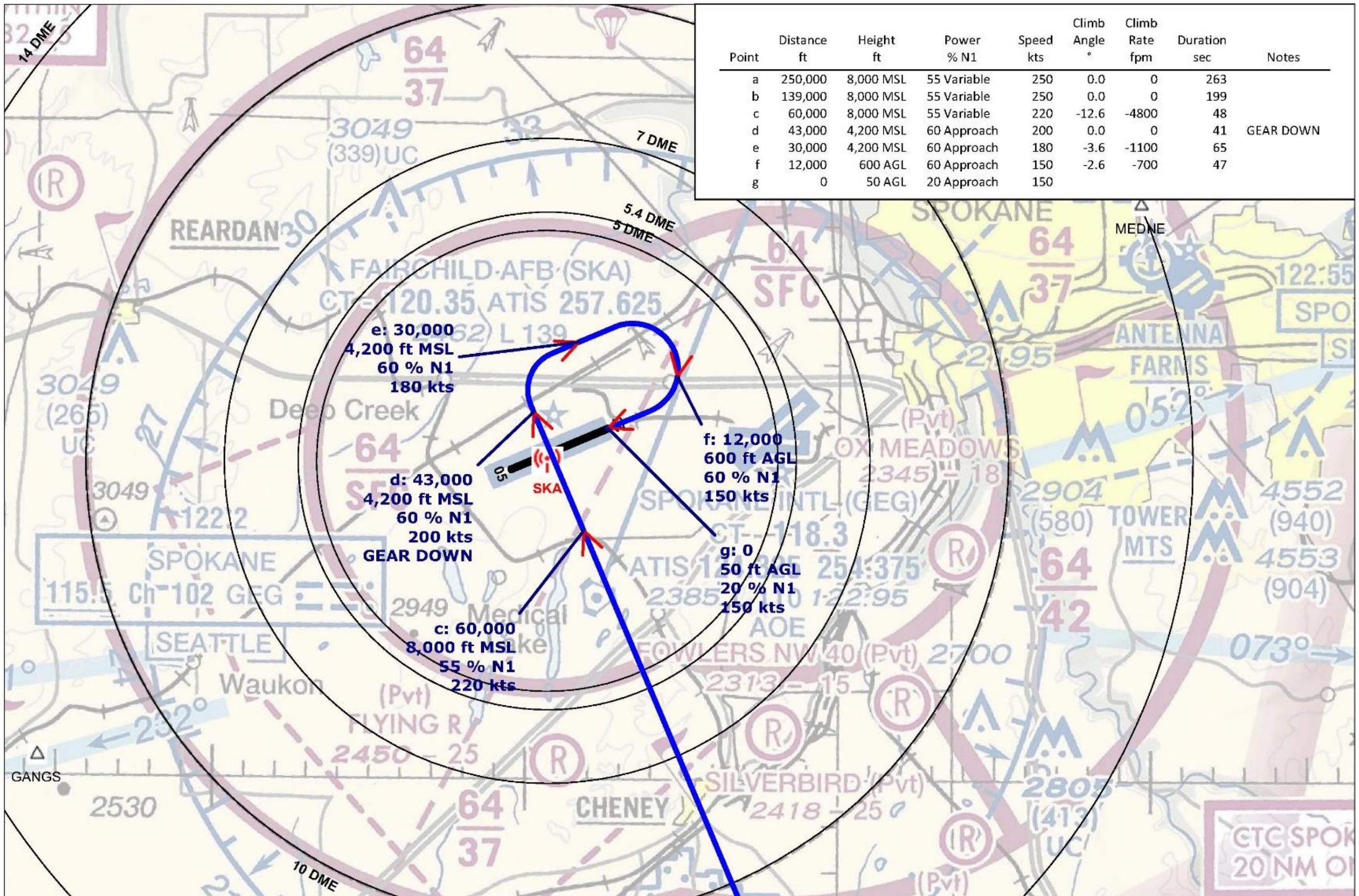


Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46A09 - TACTICAL ARRIVAL FROM KNOCK
Based KC-46X with PW4062 engine
on Runway 05, Track ID: 05A06 - TACTICAL ARRIVAL FROM KNOCK

Scale in Feet 1:279,000 (1 inch = 23,200 feet)

Figure A.2.3

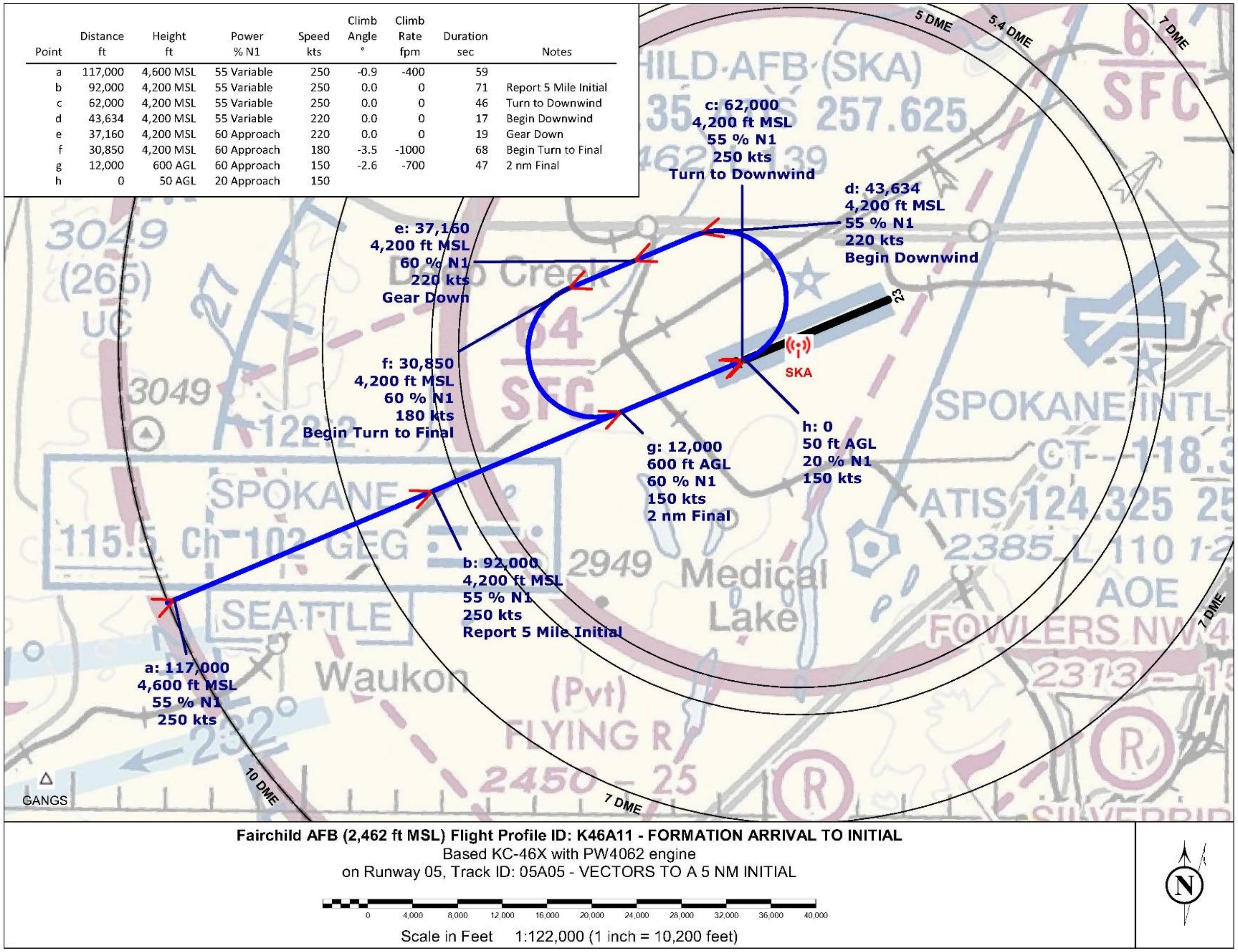
Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	250,000	8,000 MSL	55 Variable	250	0.0	0	263	
b	139,000	8,000 MSL	55 Variable	250	0.0	0	199	
c	60,000	8,000 MSL	55 Variable	220	-12.6	-4800	48	
d	43,000	4,200 MSL	60 Approach	200	0.0	0	41	GEAR DOWN
e	30,000	4,200 MSL	60 Approach	180	-3.6	-1100	65	
f	12,000	600 AGL	60 Approach	150	-2.6	-700	47	
g	0	50 AGL	20 Approach	150				



Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46A14 - TAC BEAM TO DOWNWIND
Based KC-46X with PW4062 engine
on Runway 23, Track ID: 23A09 - BEAM TO DOWNWIND

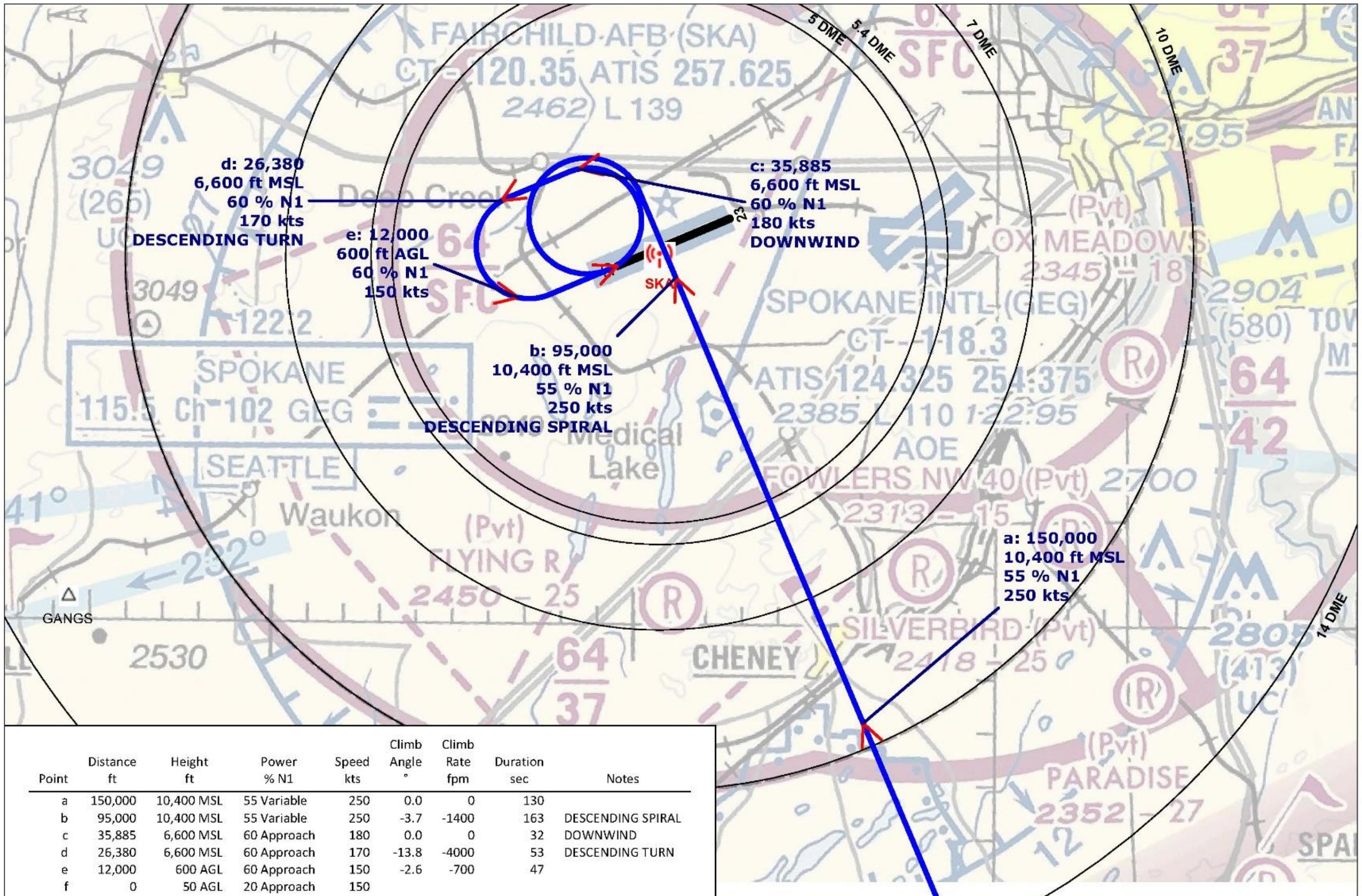
0 10,000 20,000 30,000 40,000 50,000 60,000
Scale in Feet 1:198,000 (1 inch = 16,500 feet)

Figure A.2.4



Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	117,000	4,600 MSL	55 Variable	250	-0.9	-400	59	
b	92,000	4,200 MSL	55 Variable	250	0.0	0	71	Report 5 Mile Initial
c	62,000	4,200 MSL	55 Variable	250	0.0	0	46	Turn to Downwind
d	43,634	4,200 MSL	55 Variable	220	0.0	0	17	Begin Downwind
e	37,160	4,200 MSL	60 Approach	220	0.0	0	19	Gear Down
f	30,850	4,200 MSL	60 Approach	180	-3.5	-1000	68	Begin Turn to Final
g	12,000	600 AGL	60 Approach	150	-2.6	-700	47	2 nm Final
h	0	50 AGL	20 Approach	150				

Figure A.2.5



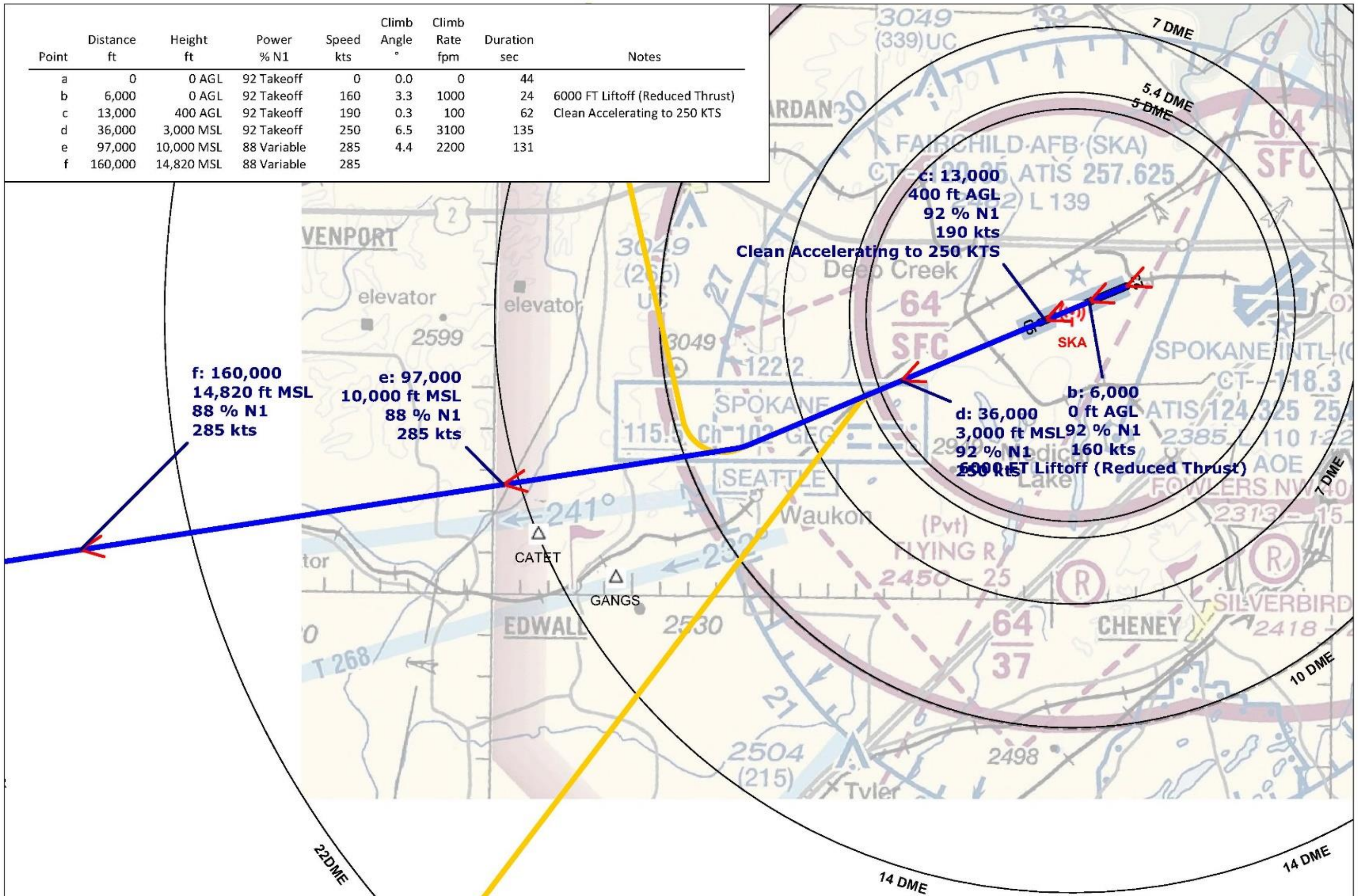
Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	150,000	10,400 MSL	55 Variable	250	0.0	0	130	
b	95,000	10,400 MSL	55 Variable	250	-3.7	-1400	163	DESCENDING SPIRAL
c	35,885	6,600 MSL	60 Approach	180	0.0	0	32	DOWNWIND
d	26,380	6,600 MSL	60 Approach	170	-13.8	-4000	53	DESCENDING TURN
e	12,000	600 AGL	60 Approach	150	-2.6	-700	47	
f	0	50 AGL	20 Approach	150				

Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46A15 - TAC BEAM APPROACH SPIRAL DOWN TO DOWNWIND
Based KC-46X with PW4062 engine
on Runway 05, Track ID: 05A08 - BEAM APPROACH SPIRAL DOWN TO DOWNWIND

0 10,000 20,000 30,000 40,000 50,000
Scale in Feet 1:171,000 (1 inch = 14,300 feet)

Figure A.2.6

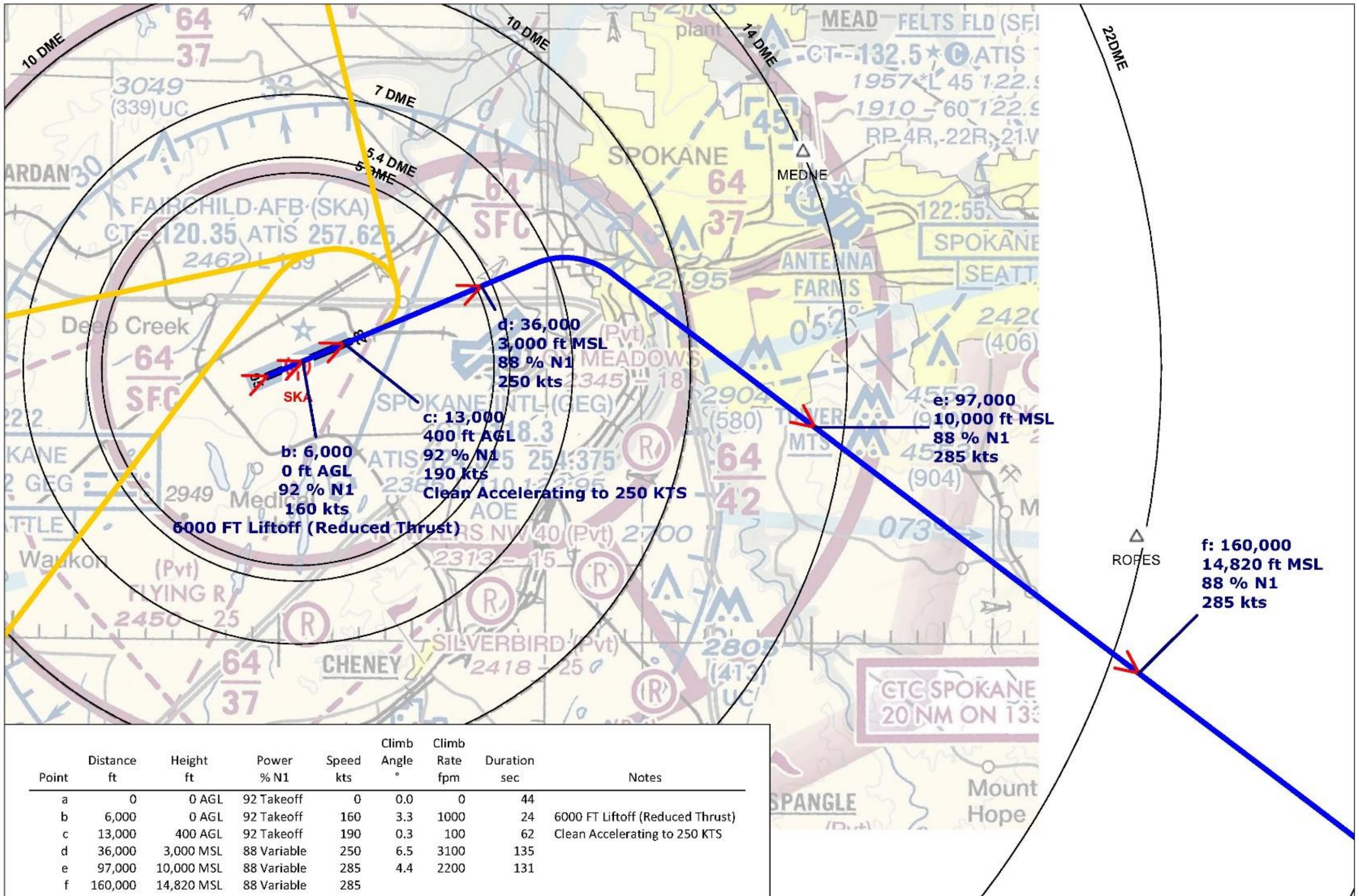
Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	0 AGL	92 Takeoff	0	0.0	0	44	
b	6,000	0 AGL	92 Takeoff	160	3.3	1000	24	6000 FT Liftoff (Reduced Thrust)
c	13,000	400 AGL	92 Takeoff	190	0.3	100	62	Clean Accelerating to 250 KTS
d	36,000	3,000 MSL	92 Takeoff	250	6.5	3100	135	
e	97,000	10,000 MSL	88 Variable	285	4.4	2200	131	
f	160,000	14,820 MSL	88 Variable	285				



Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46D08 - DEPART DIRECT EPH THEN WEST
Based KC-46X with PW4062 engine
on Runway 23, Track ID: 23D03 - DIRECT EPH THEN WEST

Scale in Feet 1:221,000 (1 inch = 18,400 feet)

Figure A.2.7



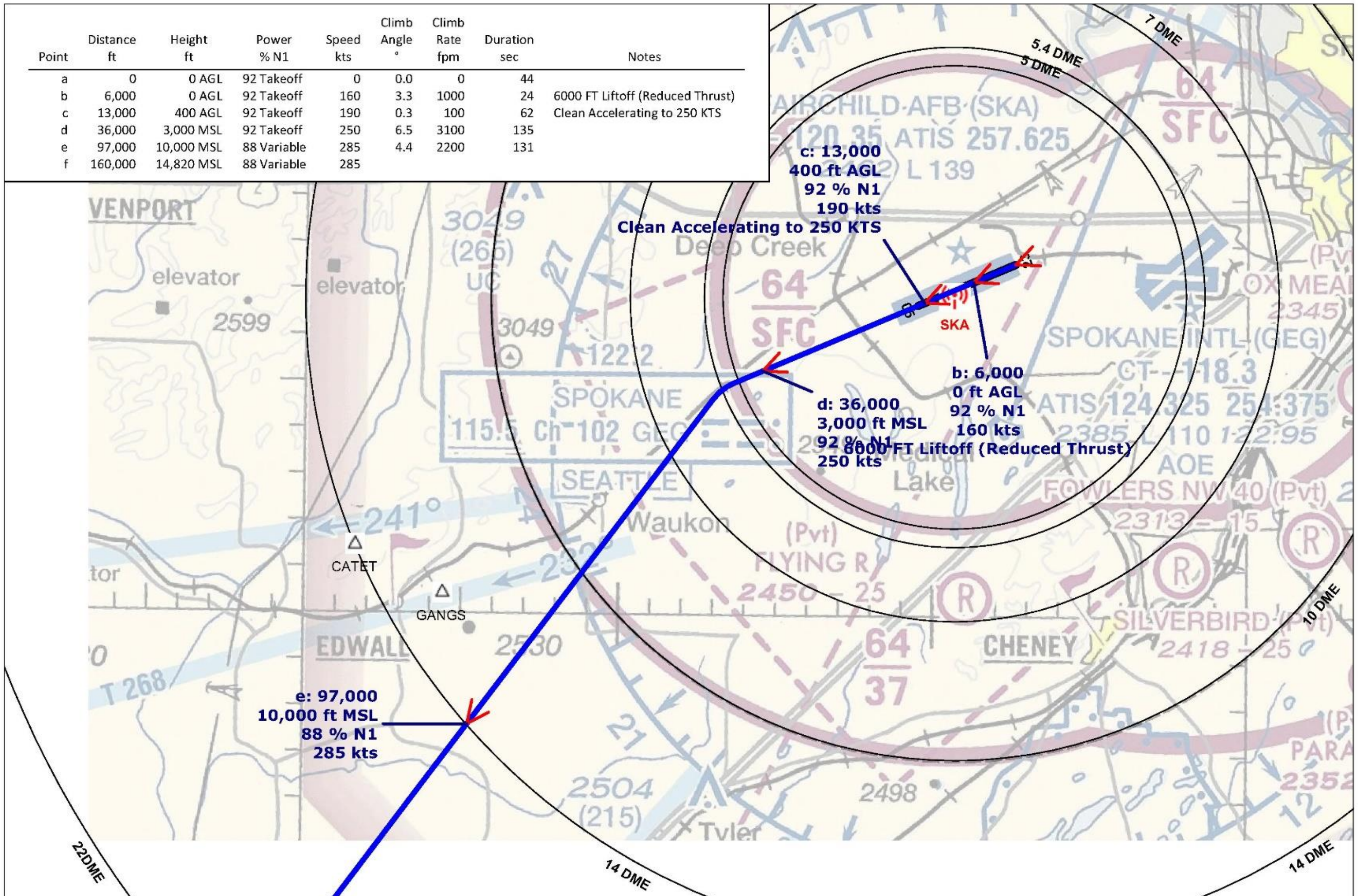
Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	0 AGL	92 Takeoff	0	0.0	0	44	
b	6,000	0 AGL	92 Takeoff	160	3.3	1000	24	6000 FT Liftoff (Reduced Thrust)
c	13,000	400 AGL	92 Takeoff	190	0.3	100	62	Clean Accelerating to 250 KTS
d	36,000	3,000 MSL	88 Variable	250	6.5	3100	135	
e	97,000	10,000 MSL	88 Variable	285	4.4	2200	131	
f	160,000	14,820 MSL	88 Variable	285				

Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46D02 - DEPART TO UTAH TEST RANGE (FIGHTER SUPPORT)
Based KC-46X with PW4062 engine
on Runway 05, Track ID: 05D02 - DEPARTURE TO UTAH TEST RANGE TO SUPPORT FIGHTERS

0 10,000 20,000 30,000 40,000 50,000 60,000 70,000
Scale in Feet 1:232,000 (1 inch = 19,400 feet)

Figure A.2.8

Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	0 AGL	92 Takeoff	0	0.0	0	44	
b	6,000	0 AGL	92 Takeoff	160	3.3	1000	24	6000 FT Liftoff (Reduced Thrust)
c	13,000	400 AGL	92 Takeoff	190	0.3	100	62	Clean Accelerating to 250 KTS
d	36,000	3,000 MSL	92 Takeoff	250	6.5	3100	135	
e	97,000	10,000 MSL	88 Variable	285	4.4	2200	131	
f	160,000	14,820 MSL	88 Variable	285				

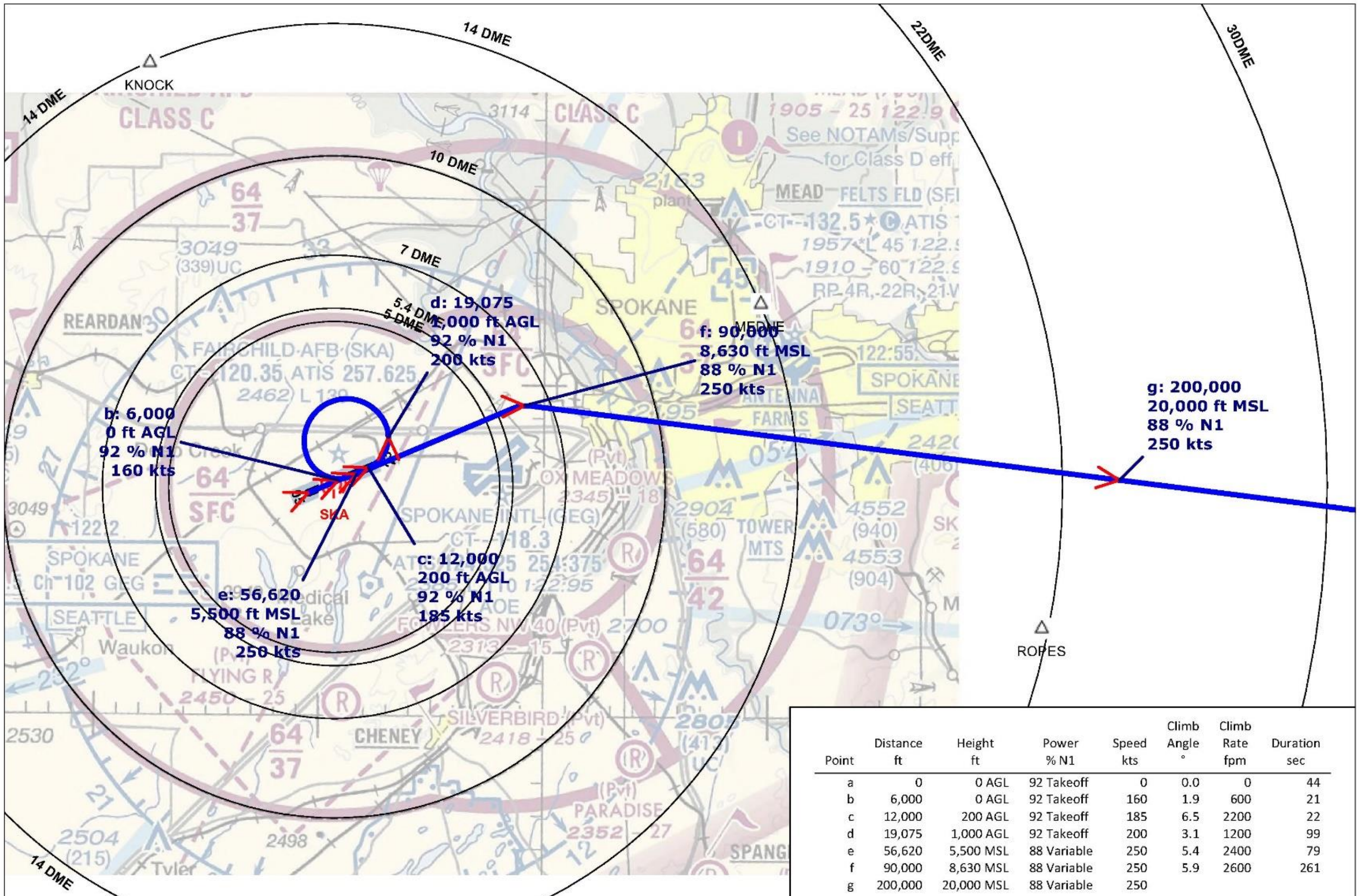


Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46D06 - DEPART TO AR307/645
Based KC-46X with PW4062 engine
on Runway 23, Track ID: 23D01 - DEPARTURE TO AR307/645

0 10,000 20,000 30,000 40,000 50,000 60,000

Scale in Feet 1:197,000 (1 inch = 16,400 feet)

Figure A.2.9



Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec
a	0	0 AGL	92 Takeoff	0	0.0	0	44
b	6,000	0 AGL	92 Takeoff	160	1.9	600	21
c	12,000	200 AGL	92 Takeoff	185	6.5	2200	22
d	19,075	1,000 AGL	92 Takeoff	200	3.1	1200	99
e	56,620	5,500 MSL	88 Variable	250	5.4	2400	79
f	90,000	8,630 MSL	88 Variable	250	5.9	2600	261
g	200,000	20,000 MSL	88 Variable	250			

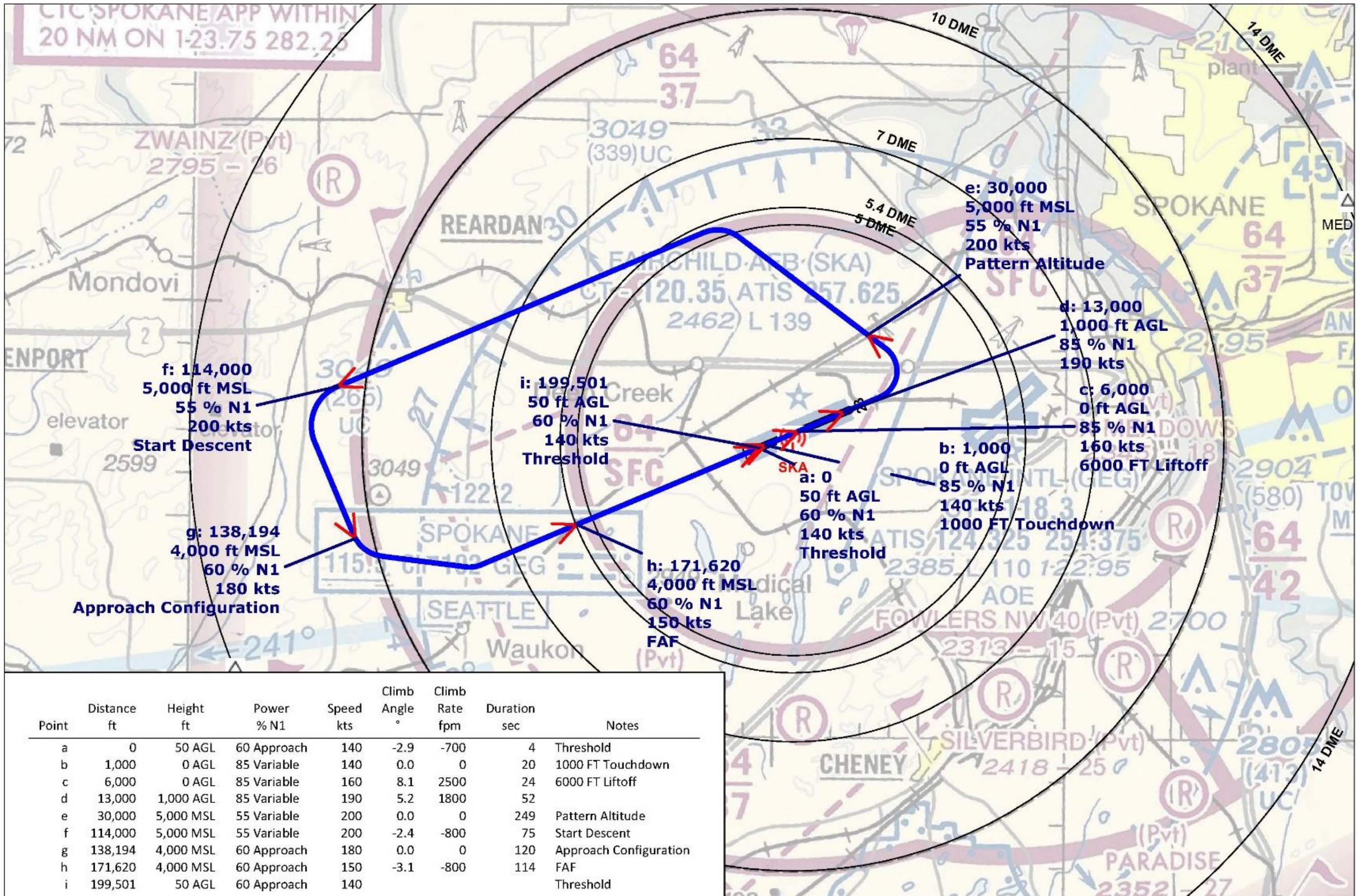
Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46D11 - SPIRAL UP DEPARTURE
Based KC-46X with PW4062 engine
on Runway 05, Track ID: 05D06 - SPIRAL-UP 270 HEADING CHANGE

0 10,000 20,000 30,000 40,000 50,000 60,000 70,000 80,000 90,000

Scale in Feet 1:276,000 (1 inch = 23,000 feet)

N

Figure A.2.10

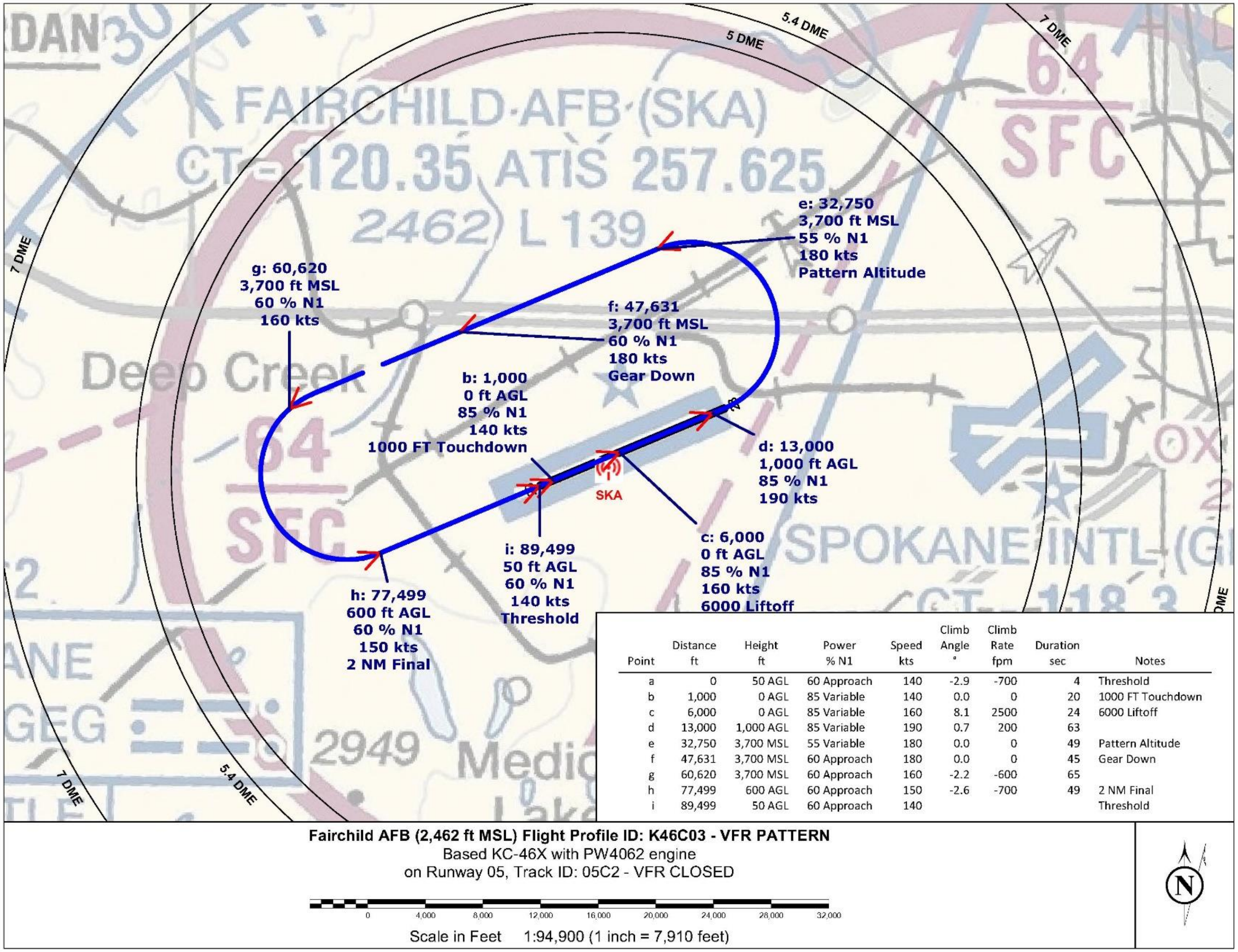


Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	50 AGL	60 Approach	140	-2.9	-700	4	Threshold
b	1,000	0 AGL	85 Variable	140	0.0	0	20	1000 FT Touchdown
c	6,000	0 AGL	85 Variable	160	8.1	2500	24	6000 FT Liftoff
d	13,000	1,000 AGL	85 Variable	190	5.2	1800	52	
e	30,000	5,000 MSL	55 Variable	200	0.0	0	249	Pattern Altitude
f	114,000	5,000 MSL	55 Variable	200	-2.4	-800	75	Start Descent
g	138,194	4,000 MSL	60 Approach	180	0.0	0	120	Approach Configuration
h	171,620	4,000 MSL	60 Approach	150	-3.1	-800	114	FAF
i	199,501	50 AGL	60 Approach	140				Threshold

Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46C01 - IFR APPROACHES
Based KC-46X with PW4062 engine
on Runway 05, Track ID: 05C1 - RADAR CLOSED

0 10,000 20,000 30,000 40,000 50,000 60,000 70,000
Scale in Feet 1:212,000 (1 inch = 17,600 feet)

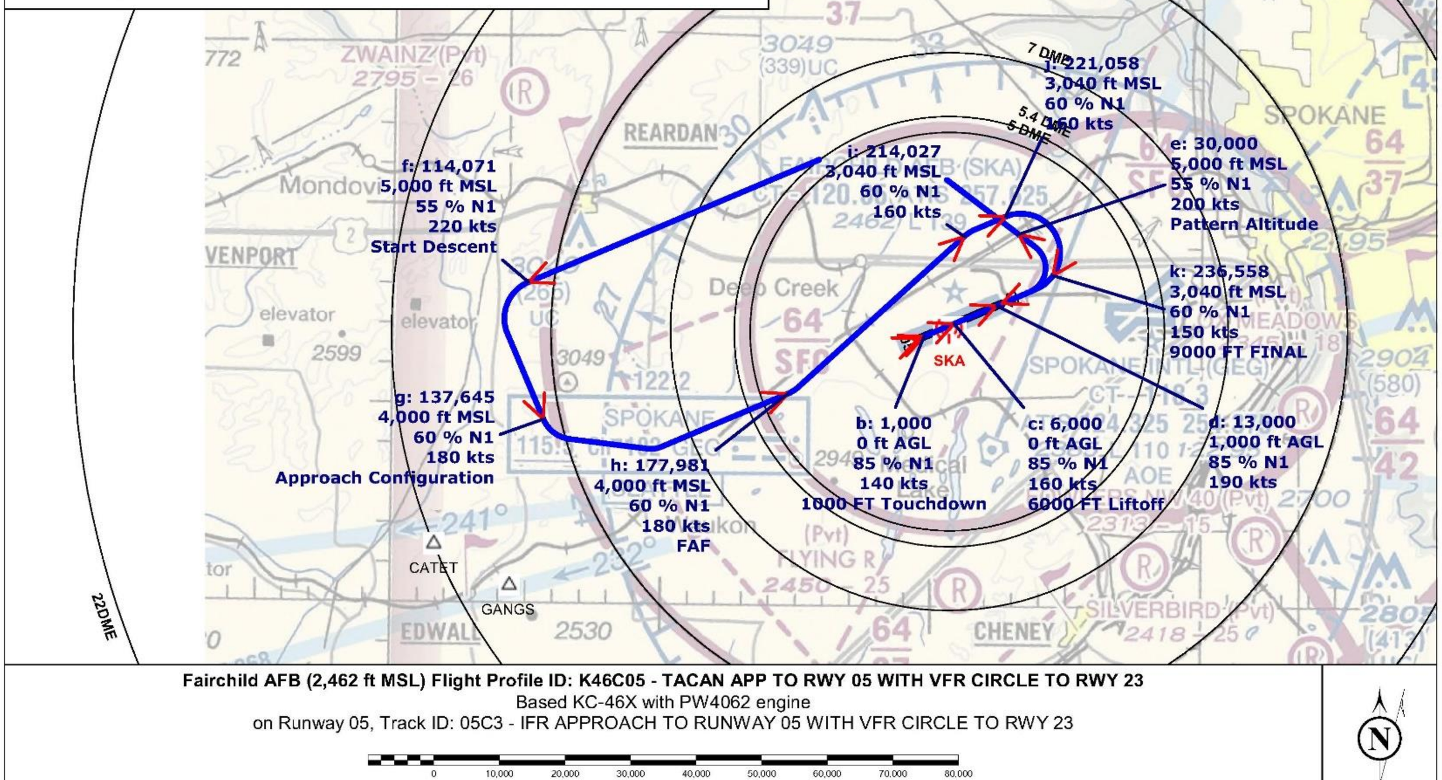
Figure A.2.11



Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	50 AGL	60 Approach	140	-2.9	-700	4	Threshold
b	1,000	0 AGL	85 Variable	140	0.0	0	20	1000 FT Touchdown
c	6,000	0 AGL	85 Variable	160	8.1	2500	24	6000 Liftoff
d	13,000	1,000 AGL	85 Variable	190	0.7	200	63	
e	32,750	3,700 MSL	55 Variable	180	0.0	0	49	Pattern Altitude
f	47,631	3,700 MSL	60 Approach	180	0.0	0	45	Gear Down
g	60,620	3,700 MSL	60 Approach	160	-2.2	-600	65	
h	77,499	600 AGL	60 Approach	150	-2.6	-700	49	2 NM Final
i	89,499	50 AGL	60 Approach	140				Threshold

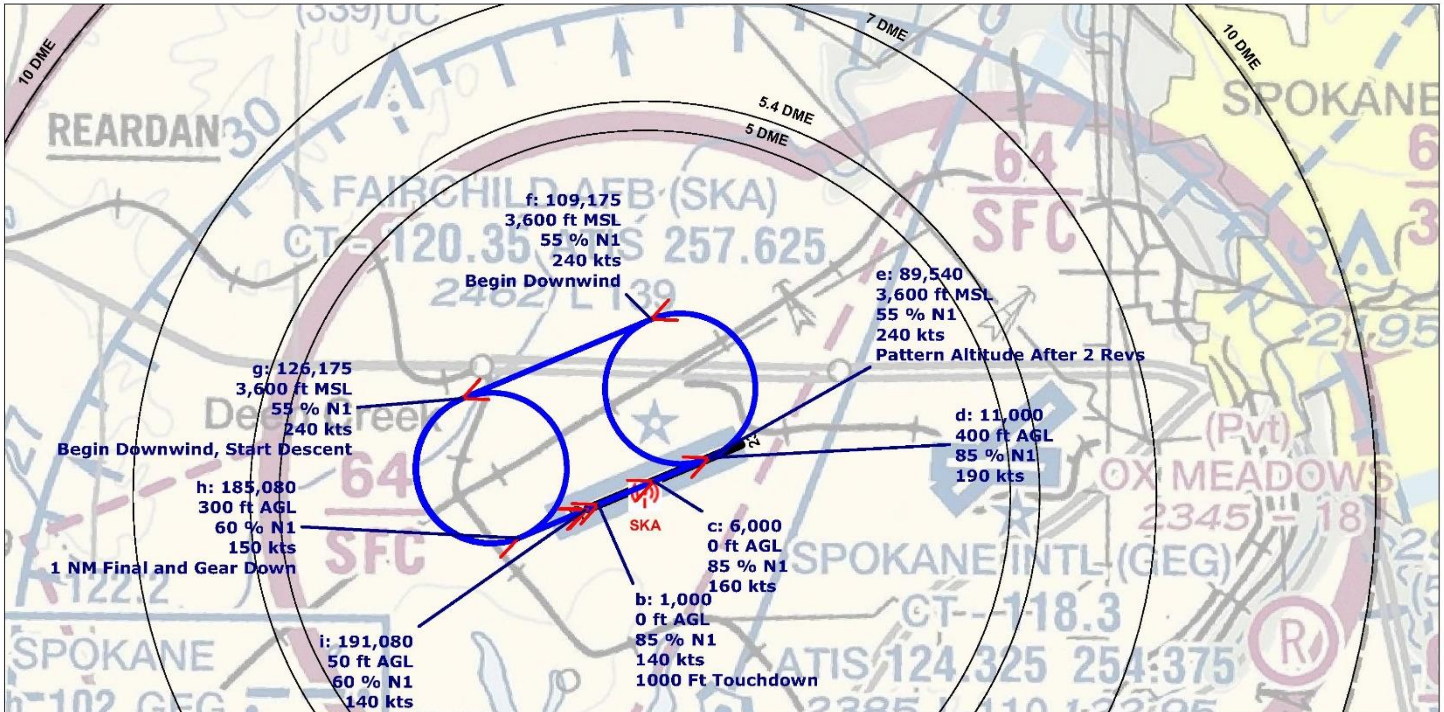
Figure A.2.12

Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	50 AGL	60 Approach	140	-2.9	-700	4	Threshold
b	1,000	0 AGL	85 Variable	140	0.0	0	20	1000 FT Touchdown
c	6,000	0 AGL	85 Variable	160	8.1	2500	24	6000 FT Liftoff
d	13,000	1,000 AGL	85 Variable	190	5.2	1800	52	
e	30,000	5,000 MSL	55 Variable	200	0.0	0	237	Pattern Altitude
f	114,071	5,000 MSL	55 Variable	220	-2.4	-900	70	Start Descent
g	137,645	4,000 MSL	60 Approach	180	0.0	0	133	Approach Configuration
h	177,981	4,000 MSL	60 Approach	180	-1.5	-500	126	FAF
i	214,027	3,040 MSL	60 Approach	160	0.0	0	26	
j	221,058	3,040 MSL	60 Approach	160	0.0	0	59	
k	236,558	3,040 MSL	60 Approach	150	-3.4	-900	37	9000 FT FINAL
l	245,558	50 AGL	60 Approach	140				Threshold



Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46C05 - TACAN APP TO RWY 05 WITH VFR CIRCLE TO RWY 23
Based KC-46X with PW4062 engine
on Runway 05, Track ID: 05C3 - IFR APPROACH TO RUNWAY 05 WITH VFR CIRCLE TO RWY 23

Figure A.2.13



Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	50 AGL	60 Approach	140	-2.9	-700	4	Threshold
b	1,000	0 AGL	85 Variable	140	0.0	0	20	1000 Ft Touchdown
c	6,000	0 AGL	85 Variable	160	4.6	1400	17	
d	11,000	400 AGL	85 Variable	190	0.5	200	216	
e	89,540	3,600 MSL	55 Variable	240	0.0	0	48	Pattern Altitude After 2 Revs
f	109,175	3,600 MSL	55 Variable	240	0.0	0	42	Begin Downwind
g	126,175	3,600 MSL	55 Variable	240	-0.8	-300	179	Begin Downwind, Start Descent
h	185,080	300 AGL	60 Approach	150	-2.4	-600	25	1 NM Final and Gear Down
i	191,080	50 AGL	60 Approach	140				Threshold

Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46C07 - TAC SPIRAL UP----SPIRAL DOWN
Based KC-46X with PW4062 engine
on Runway 05, Track ID: 05C4 - TACTICAL SPIRAL UP - SPIRAL DOWN

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000 40,000 44,000
Scale in Feet 1:133,000 (1 inch = 11,000 feet)

Figure A.2.14

Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	50 AGL	60 Approach	140	-2.9	-700	4	Threshold
b	1,000	0 AGL	85 Variable	140	0.0	0	20	1000 Ft Touchdown
c	6,000	0 AGL	85 Variable	150	4.8	1400	21	6000 Liftoff
d	12,000	500 AGL	85 Variable	190	5.7	2100	89	
e	43,505	6,090 MSL	55 Variable	230	0.0	0	530	Level Off
f	249,120	6,090 MSL	55 Variable	230	0.0	0	29	
g	260,342	6,090 MSL	55 Variable	230	0.0	0	55	
h	280,374	6,090 MSL	60 Approach	200	-7.4	-2500	53	Gear Down
i	297,276	3,900 MSL	60 Approach	180	-3.9	-1100	60	
j	314,115	300 AGL	60 Approach	150	-2.4	-600	25	1 NM
k	320,115	50 AGL	60 Approach	140				Threshold

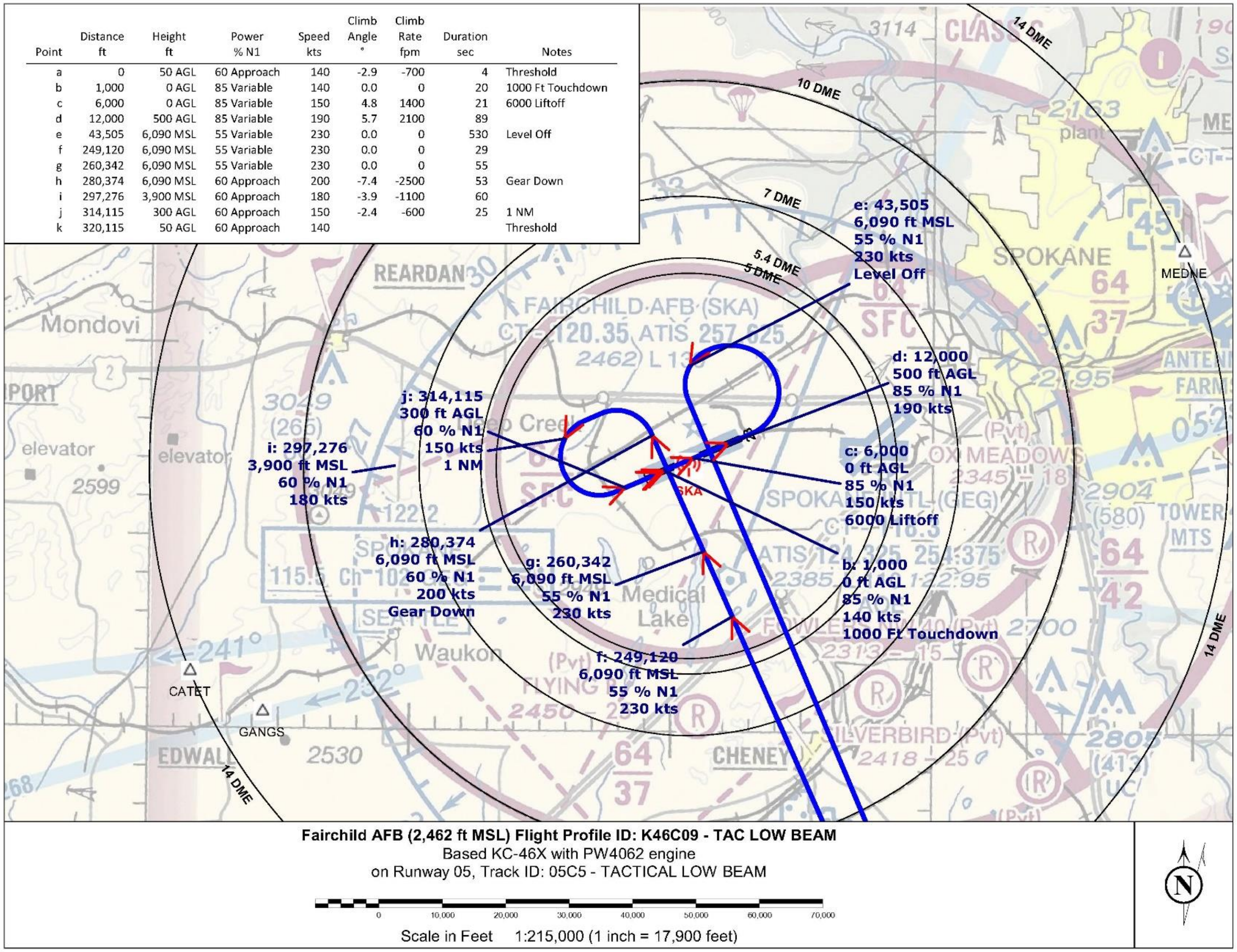
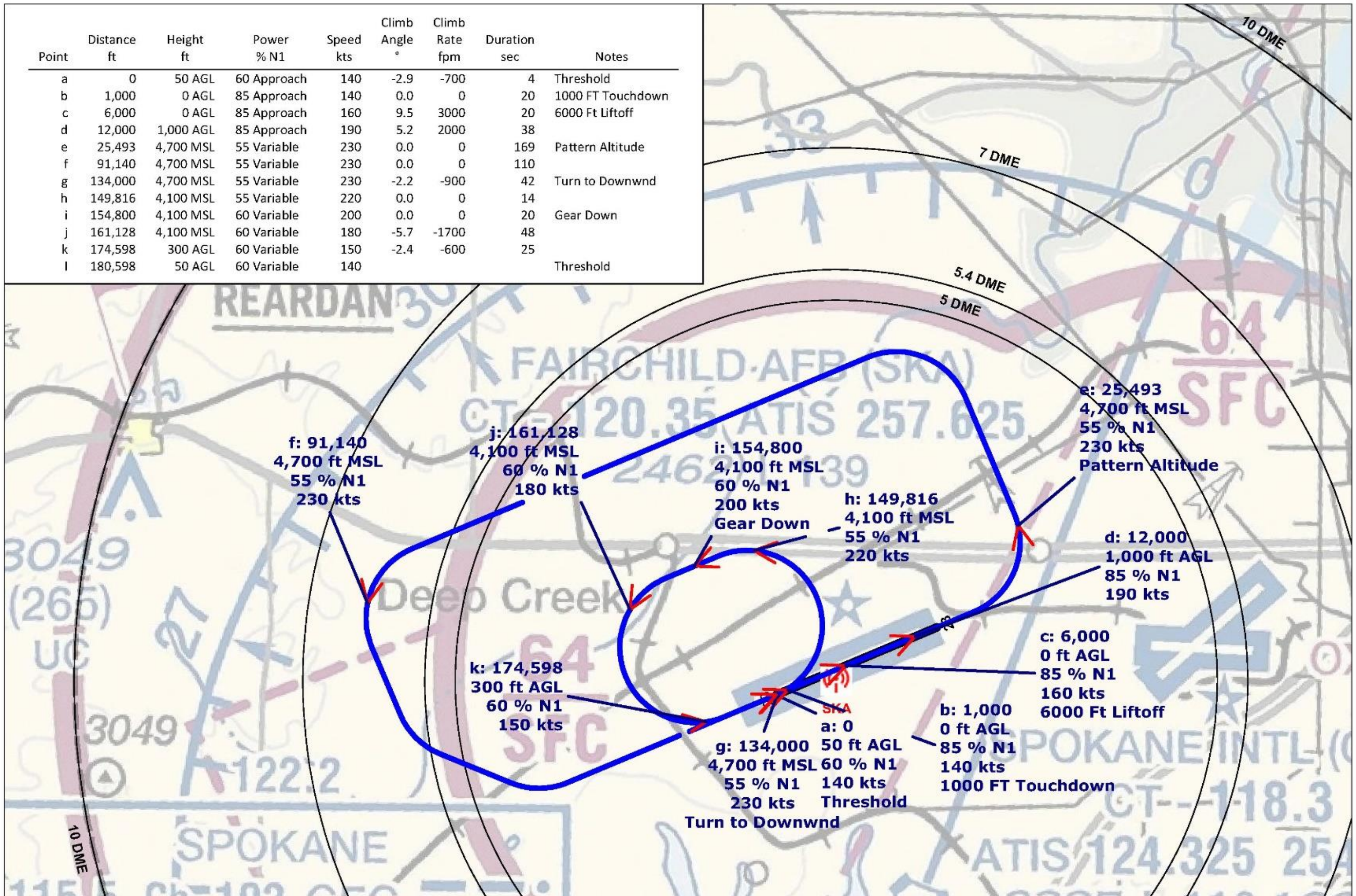


Figure A.2.15

Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec	Notes
a	0	50 AGL	60 Approach	140	-2.9	-700	4	Threshold
b	1,000	0 AGL	85 Approach	140	0.0	0	20	1000 FT Touchdown
c	6,000	0 AGL	85 Approach	160	9.5	3000	20	6000 Ft Liftoff
d	12,000	1,000 AGL	85 Approach	190	5.2	2000	38	
e	25,493	4,700 MSL	55 Variable	230	0.0	0	169	Pattern Altitude
f	91,140	4,700 MSL	55 Variable	230	0.0	0	110	
g	134,000	4,700 MSL	55 Variable	230	-2.2	-900	42	Turn to Downwnd
h	149,816	4,100 MSL	55 Variable	220	0.0	0	14	
i	154,800	4,100 MSL	60 Variable	200	0.0	0	20	Gear Down
j	161,128	4,100 MSL	60 Variable	180	-5.7	-1700	48	
k	174,598	300 AGL	60 Variable	150	-2.4	-600	25	
l	180,598	50 AGL	60 Variable	140				Threshold



Fairchild AFB (2,462 ft MSL) Flight Profile ID: K46C11 - CLOSED PATTERN INITIAL TO OVERHEAD
Based KC-46X with PW4062 engine
on Runway 05, Track ID: 05C6 - CLOSED PATTERN INITIAL TO OVERHEAD

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000 40,000
Scale in Feet 1:119,000 (1 inch = 9,950 feet)

Figure A.2.16

A.3 Airfield Flight Profile Maps for Based Helicopters

Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	36,457	1,000 AGL	100	0	0	0	0	0	0.0	0	98
b	20,000	1,000 AGL	100	0	0	0	0	0	-4.8	-800	36
c	14,000	500 AGL	100	0	0	0	0	0	-2.3	-300	42
d	9,000	300 AGL	40	0	0	-20	0	0	-1.1	-100	74
e	4,000	200 AGL	40	0	0	0	0	0	-2.7	-100	95
f	0	10 AGL	10	0	0	0	0	0			

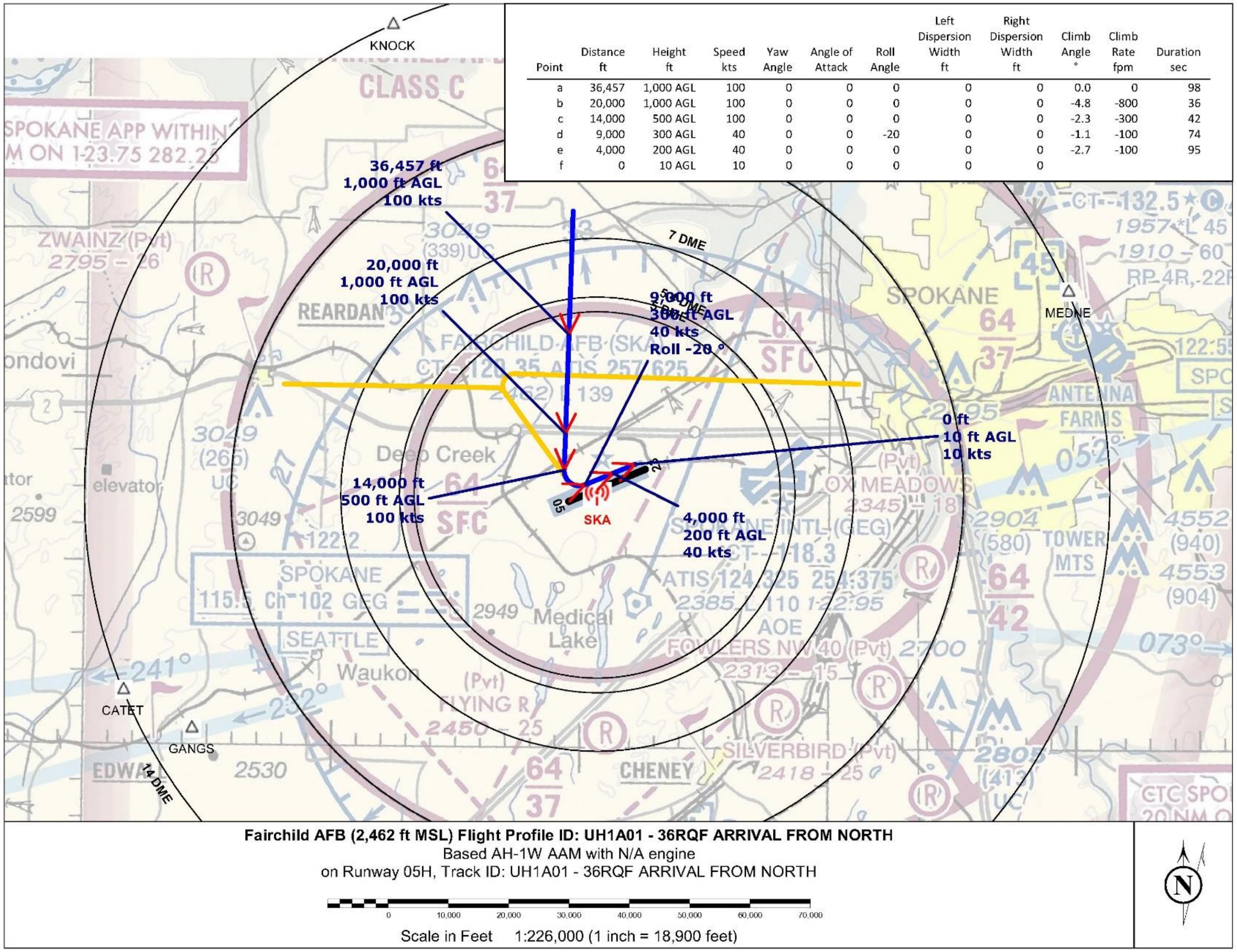
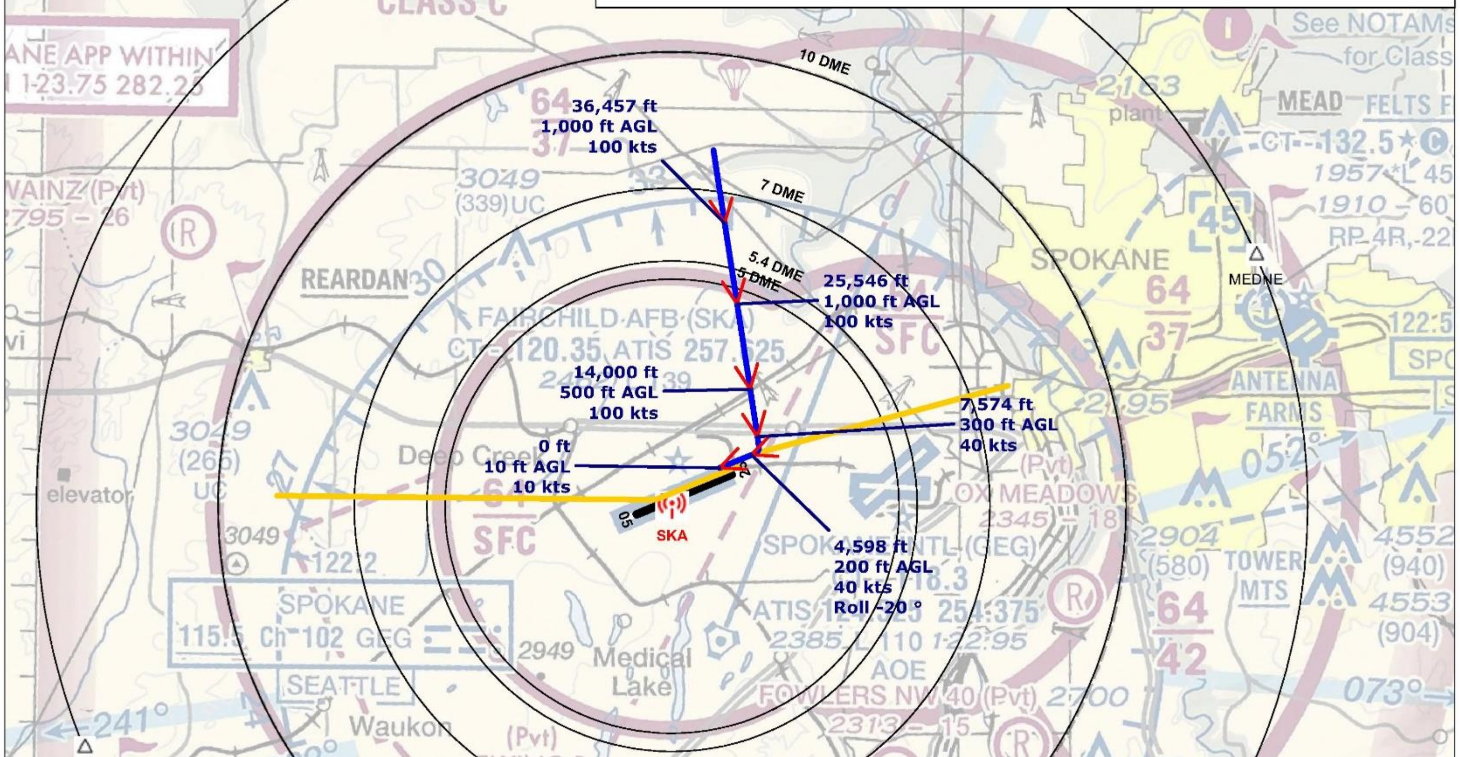


Figure A.3.1

Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	36,457	1,000 AGL	100	0	0	0	0	0	0.0	0	65
b	25,546	1,000 AGL	100	0	0	0	0	0	-2.5	-400	68
c	14,000	500 AGL	100	0	0	0	0	0	-1.8	-200	54
d	7,574	300 AGL	40	0	0	0	0	0	-1.9	-100	44
e	4,598	200 AGL	40	0	0	-20	0	0	-2.4	-100	109
f	0	10 AGL	10	0	0	0	0	0			

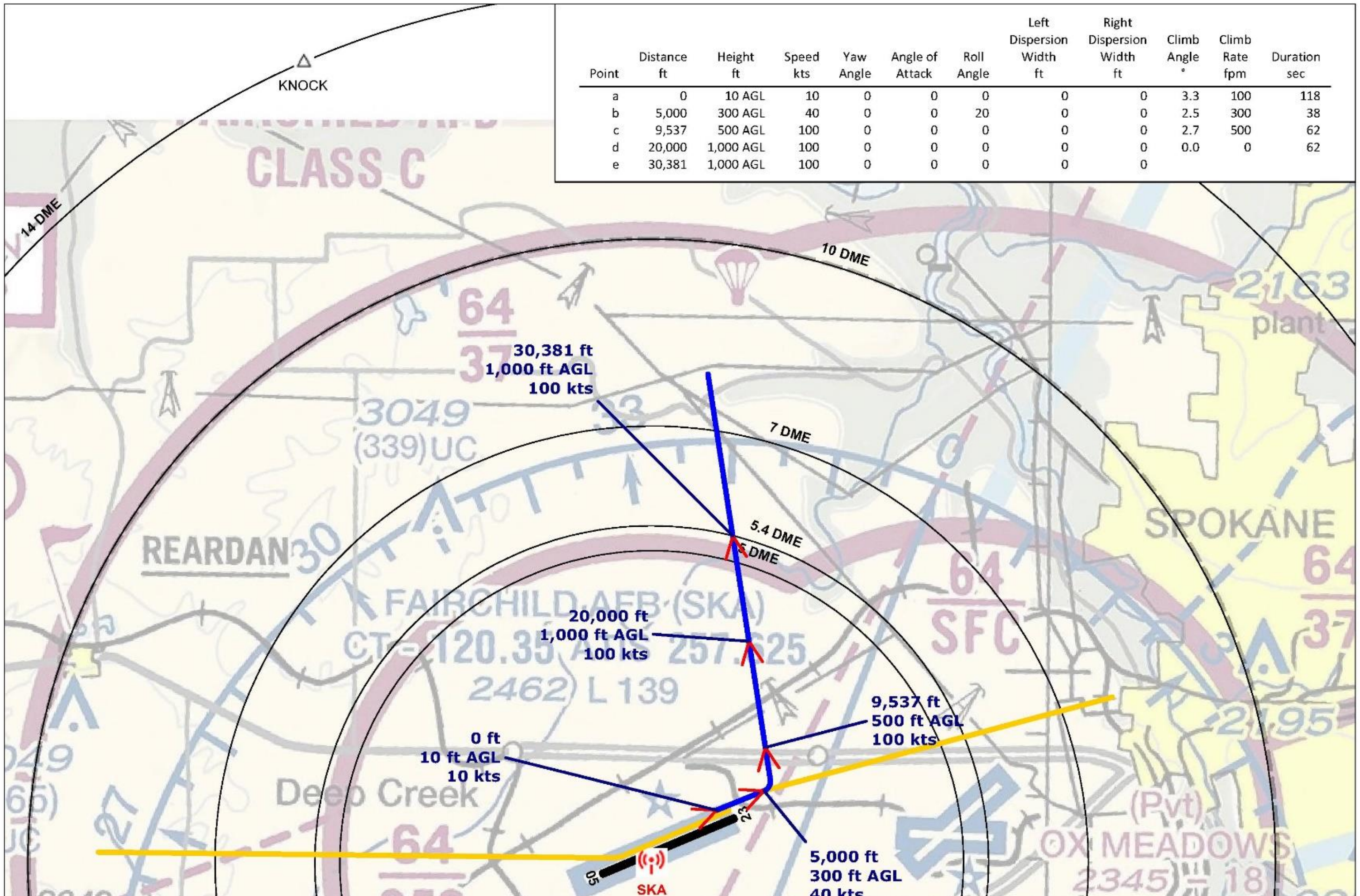


Fairchild AFB (2,462 ft MSL) Flight Profile ID: UH1A04 - 36RQF ARRIVAL FROM NORTH
Based AH-1W AAM with N/A engine
on Runway 23H, Track ID: UH1A04 - 36RQF ARRIVAL FROM NORTH

0 10,000 20,000 30,000 40,000 50,000 60,000 70,000
Scale in Feet 1:216,000 (1 inch = 18,000 feet)

Figure A.3.2

Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	0	10 AGL	10	0	0	0	0	0	3.3	100	118
b	5,000	300 AGL	40	0	0	20	0	0	2.5	300	38
c	9,537	500 AGL	100	0	0	0	0	0	2.7	500	62
d	20,000	1,000 AGL	100	0	0	0	0	0	0.0	0	62
e	30,381	1,000 AGL	100	0	0	0	0	0			

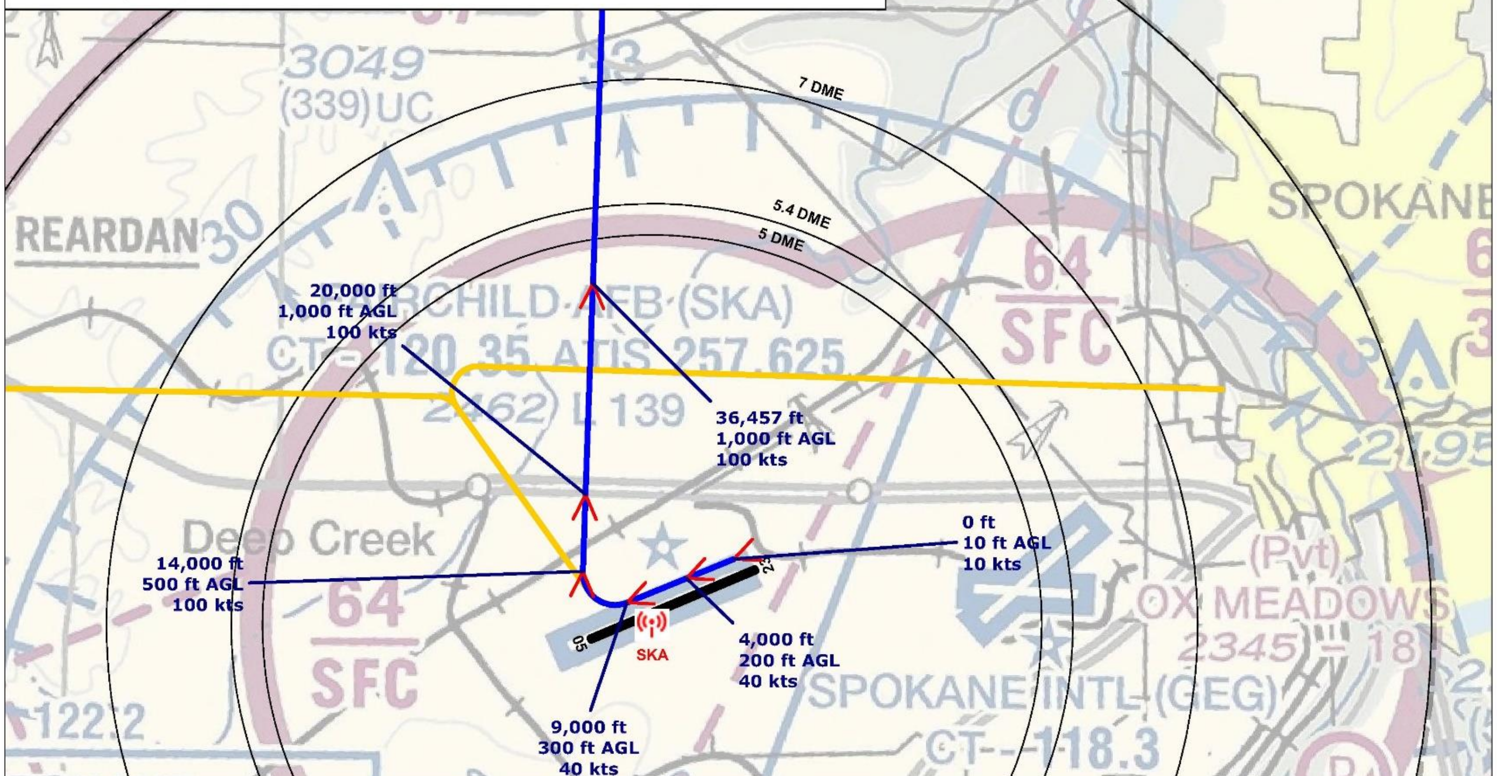


Fairchild AFB (2,462 ft MSL) Flight Profile ID: UH1D01 - 36RQF DEPARTURE TO NORTH
Based AH-1W AAM with N/A engine
on Runway 05H, Track ID: UH1D01 - 36RQF DEPARTURE TO NORTH

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000 40,000 44,000 48,000 52,000
Scale in Feet 1:146,000 (1 inch = 12,200 feet)

Figure A.3.3

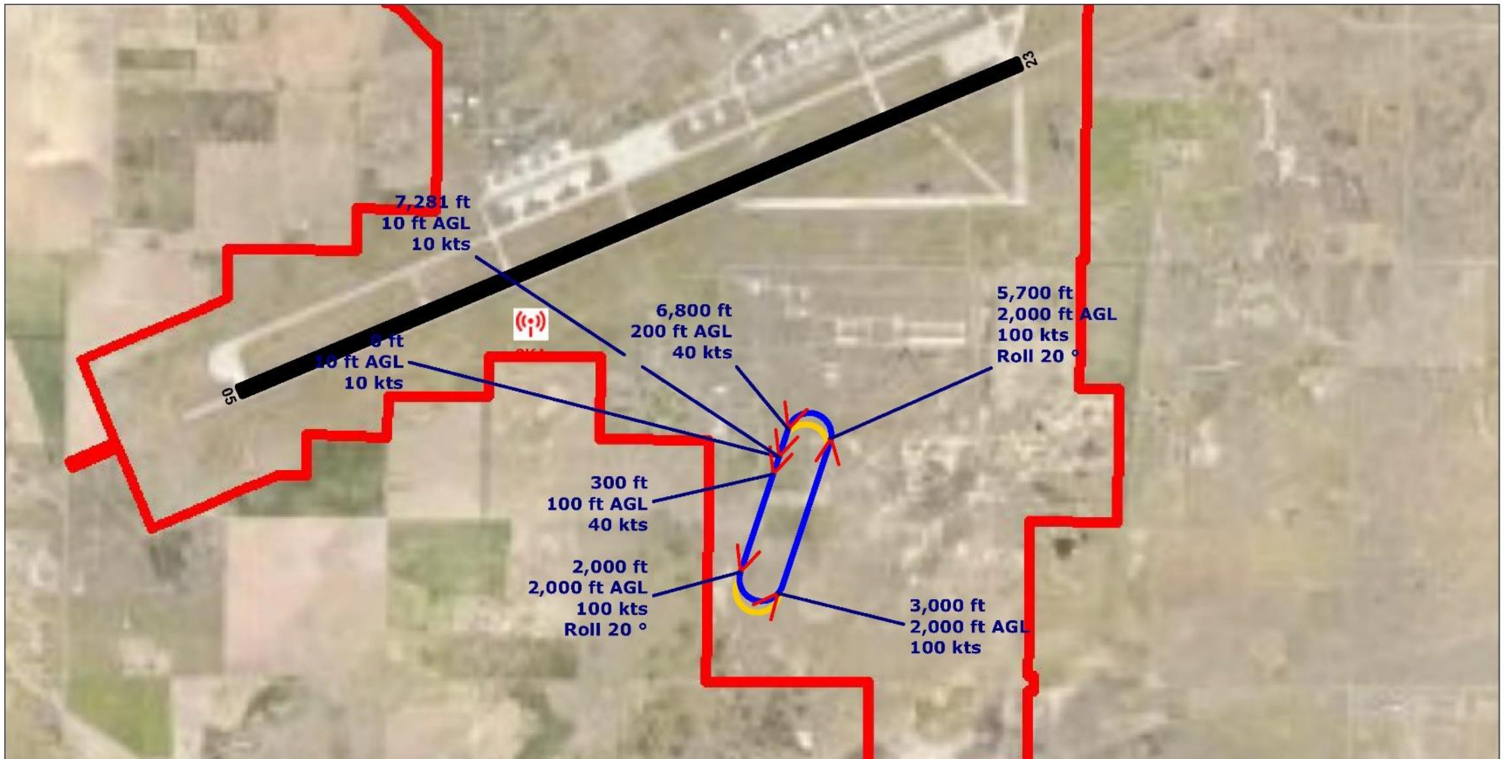
Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	0	10 AGL	10	0	0	0	0	0	2.7	100	95
b	4,000	200 AGL	40	0	0	0	0	0	1.1	100	74
c	9,000	300 AGL	40	0	0	-20	0	0	2.3	300	42
d	14,000	500 AGL	100	0	0	0	0	0	4.8	800	36
e	20,000	1,000 AGL	100	0	0	0	0	0	0.0	0	98
f	36,457	1,000 AGL	100	0	0	0	0	0			



Fairchild AFB (2,462 ft MSL) Flight Profile ID: UH1D04 - 36RQF DEPARTURE TO NORTH
Based AH-1W AAM with N/A engine
on Runway 23H, Track ID: UH1D04 - 36RQF DEPARTURE TO NORTH

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000 40,000 44,000
Scale in Feet 1:129,000 (1 inch = 10,700 feet)

Figure A.3.4



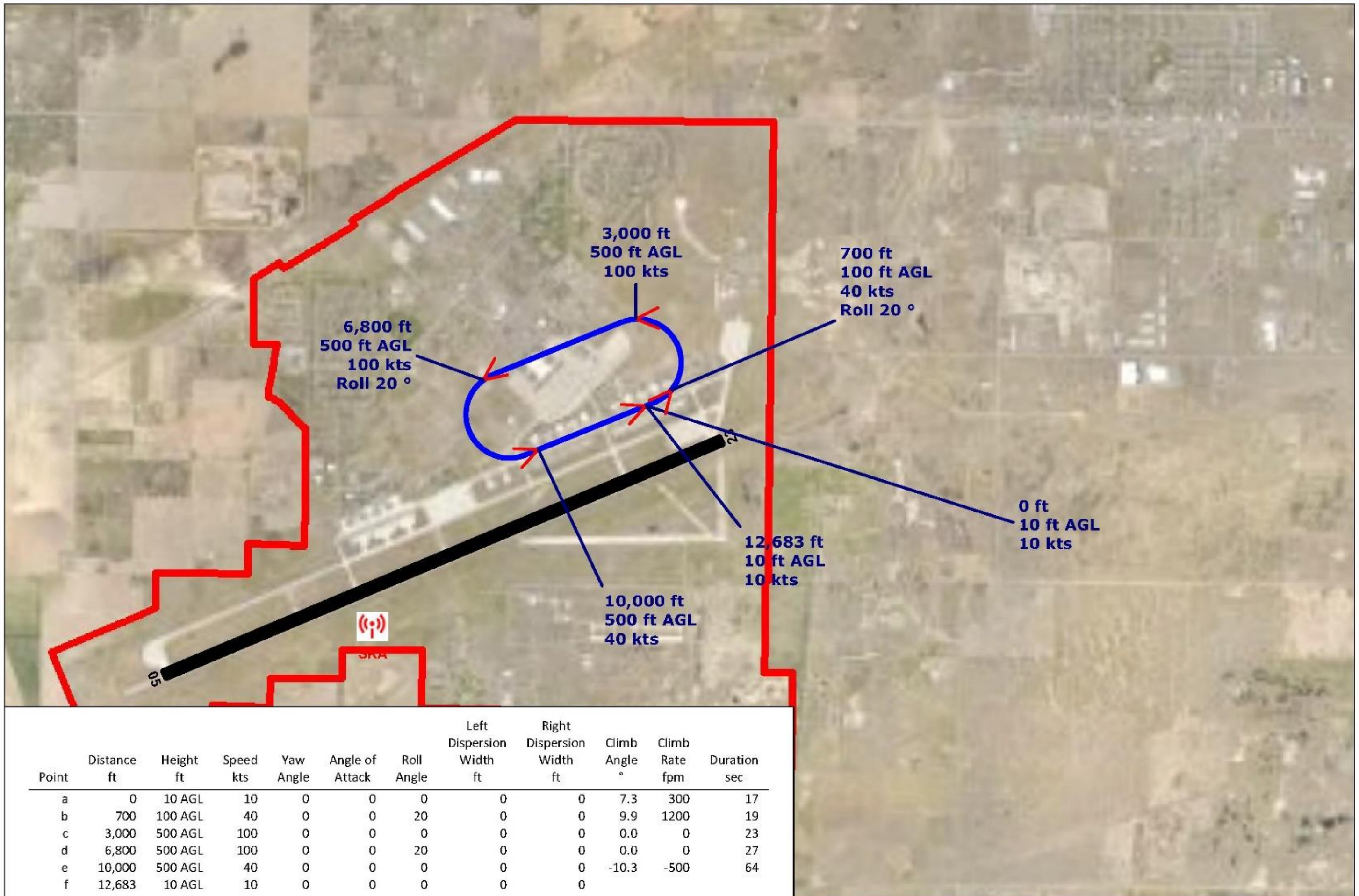
Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	0	10 AGL	10	0	0	0	0	0	16.7	800	7
b	300	100 AGL	40	0	0	0	0	0	48.2	7900	14
c	2,000	2,000 AGL	100	0	0	20	0	0	0.0	0	6
d	3,000	2,000 AGL	100	0	0	0	0	0	0.0	0	16
e	5,700	2,000 AGL	100	0	0	20	0	0	-58.6	-11600	9
f	6,800	200 AGL	40	0	0	0	0	0	-21.6	-1000	11
g	7,281	10 AGL	10	0	0	0	0	0			

Fairchild AFB (2,462 ft MSL) Flight Profile ID: EDZC01 - 36RQF DROP PATTERN AT EDZ HEADING 180
Based AH-1W AAM with N/A engine
on Runway 18PAD5, Track ID: EDZC01 - HELO DROP PATTERN AT ELLINGTON DROP ZONE

0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000
Scale in Feet 1:27,400 (1 inch = 2,280 feet)

N

Figure A.3.5



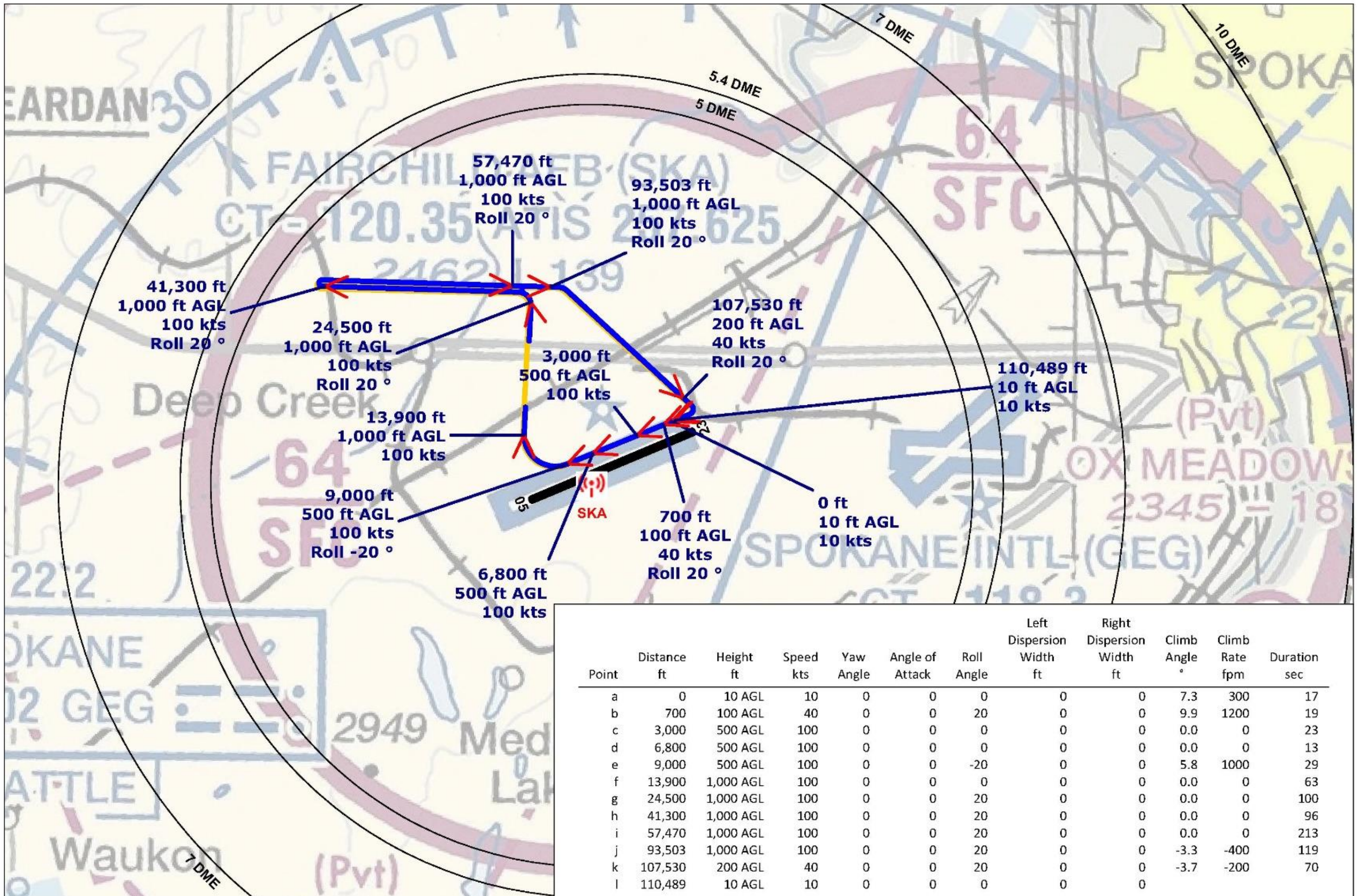
Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	0	10 AGL	10	0	0	0	0	0	7.3	300	17
b	700	100 AGL	40	0	0	20	0	0	9.9	1200	19
c	3,000	500 AGL	100	0	0	0	0	0	0.0	0	23
d	6,800	500 AGL	100	0	0	20	0	0	0.0	0	27
e	10,000	500 AGL	40	0	0	0	0	0	-10.3	-500	64
f	12,683	10 AGL	10	0	0	0	0	0			

Fairchild AFB (2,462 ft MSL) Flight Profile ID: UH1C02 - 36RQF EMERGENCY PROCEDURE AND VFR TRAINING
Based AH-1W AAM with N/A engine
on Runway 05H, Track ID: UH1C02 - 36RQF EMERGENCY PROCEDURES & VFR TRAINING

0 2,000 4,000 6,000 8,000 10,000
Scale in Feet 1:34,600 (1 inch = 2,880 feet)

N

Figure A.3.6



Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	0	10 AGL	10	0	0	0	0	0	7.3	300	17
b	700	100 AGL	40	0	0	20	0	0	9.9	1200	19
c	3,000	500 AGL	100	0	0	0	0	0	0.0	0	23
d	6,800	500 AGL	100	0	0	0	0	0	0.0	0	13
e	9,000	500 AGL	100	0	0	-20	0	0	5.8	1000	29
f	13,900	1,000 AGL	100	0	0	0	0	0	0.0	0	63
g	24,500	1,000 AGL	100	0	0	20	0	0	0.0	0	100
h	41,300	1,000 AGL	100	0	0	20	0	0	0.0	0	96
i	57,470	1,000 AGL	100	0	0	20	0	0	0.0	0	213
j	93,503	1,000 AGL	100	0	0	20	0	0	-3.3	-400	119
k	107,530	200 AGL	40	0	0	20	0	0	-3.7	-200	70
l	110,489	10 AGL	10	0	0	0	0	0			

Fairchild AFB (2,462 ft MSL) Flight Profile ID: UH1C04 - 36RQF FUNCTIONAL CHECK FLIGHT
Based AH-1W AAM with N/A engine
on Runway 23H, Track ID: UH1C04 - 36RQF FUNCTIONAL CHECK FLIGHTS

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000 40,000
Scale in Feet 1:120,000 (1 inch = 9,960 feet)

N

Figure A.3.7

Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	49,217	1,000 AGL	100	0	0	0	0	0	0.0	0	173
b	20,000	1,000 AGL	100	0	0	0	0	0	-4.8	-800	36
c	14,000	500 AGL	100	0	0	0	0	0	-2.3	-300	42
d	9,000	300 AGL	40	0	0	0	0	0	-1.1	-100	74
e	4,000	200 AGL	40	0	0	20	0	0	-2.7	-100	95
f	0	10 AGL	10	0	0	0	0	0			

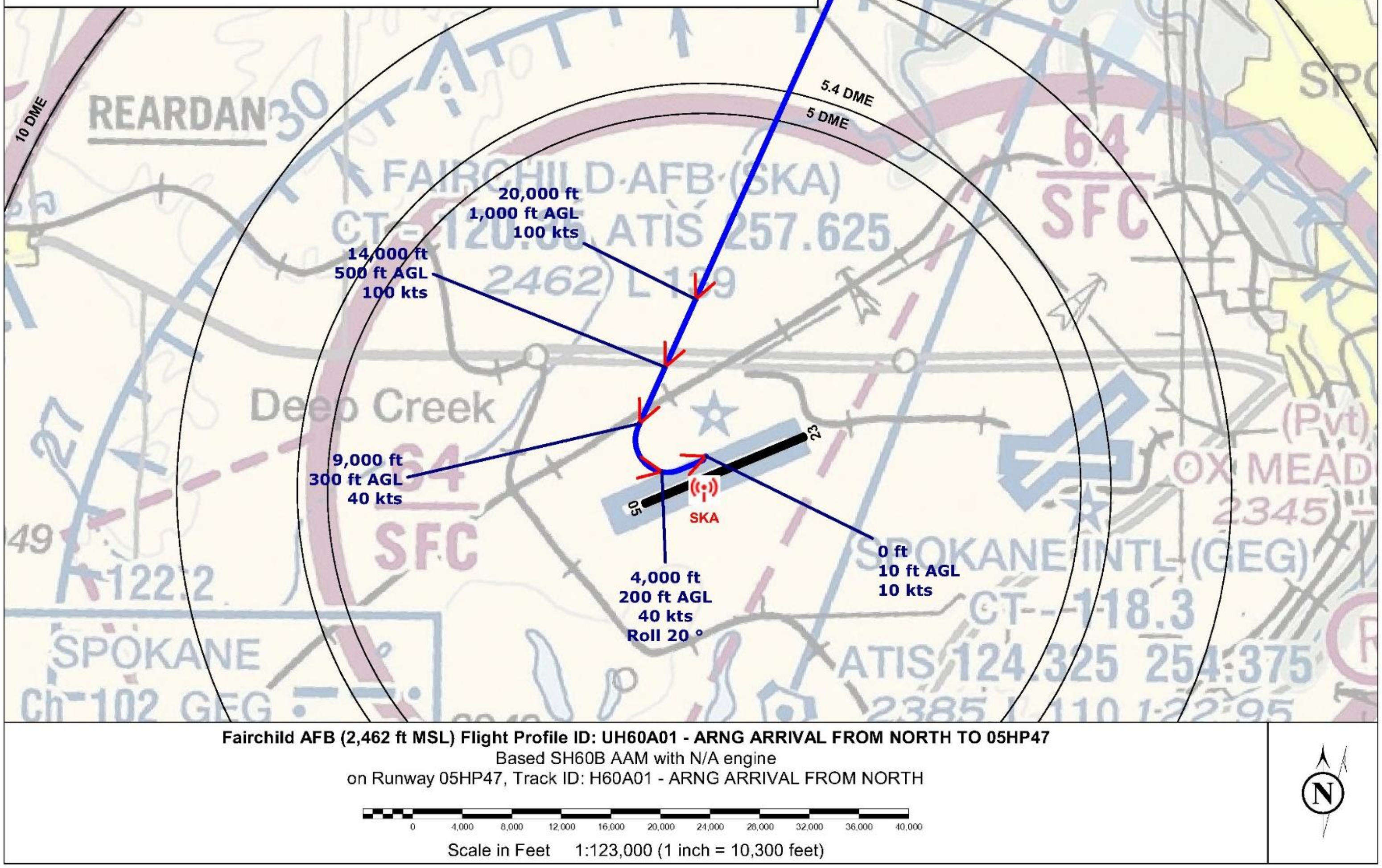
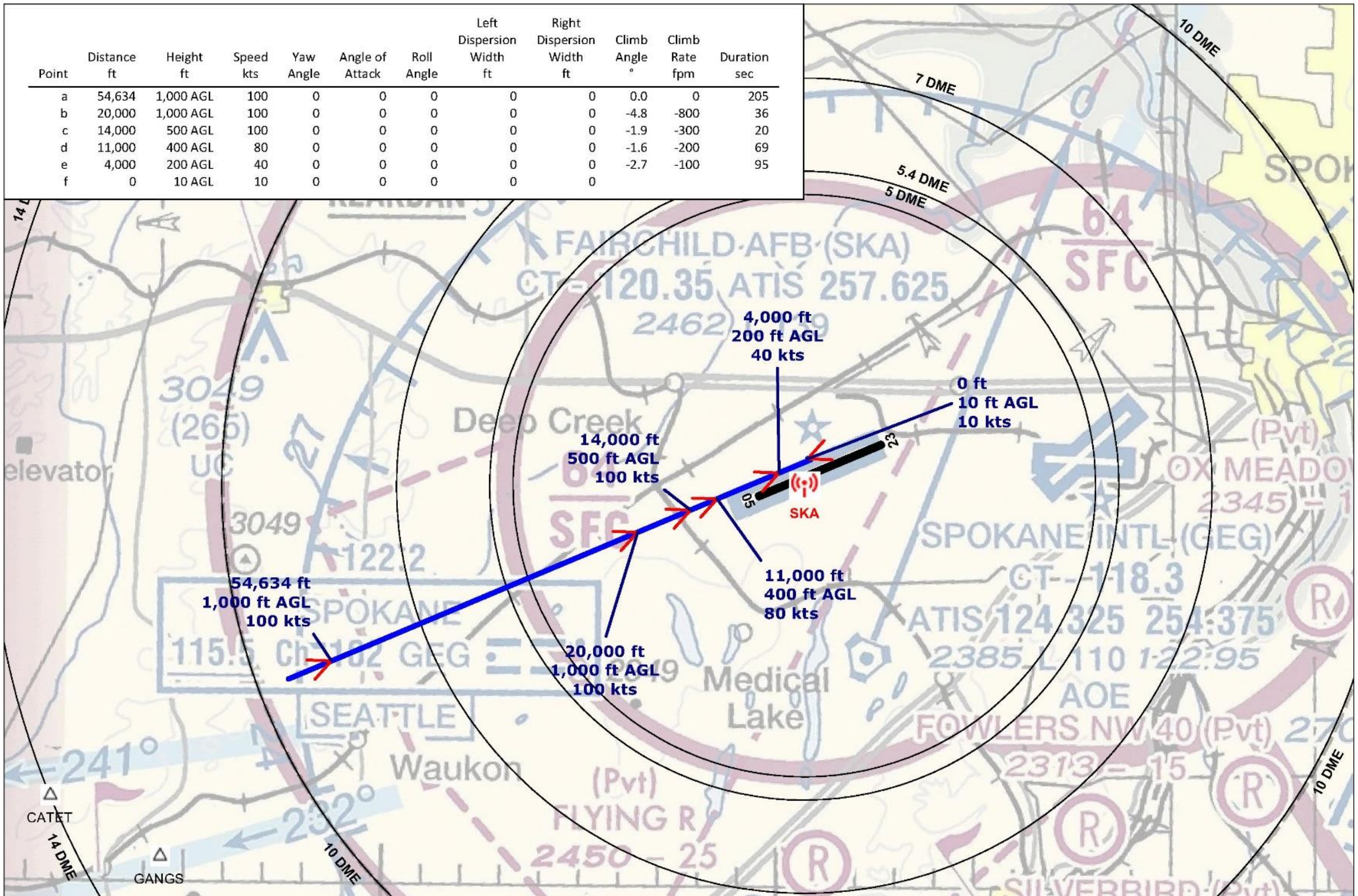


Figure A.3.8

Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	54,634	1,000 AGL	100	0	0	0	0	0	0.0	0	205
b	20,000	1,000 AGL	100	0	0	0	0	0	-4.8	-800	36
c	14,000	500 AGL	100	0	0	0	0	0	-1.9	-300	20
d	11,000	400 AGL	80	0	0	0	0	0	-1.6	-200	69
e	4,000	200 AGL	40	0	0	0	0	0	-2.7	-100	95
f	0	10 AGL	10	0	0	0	0	0			



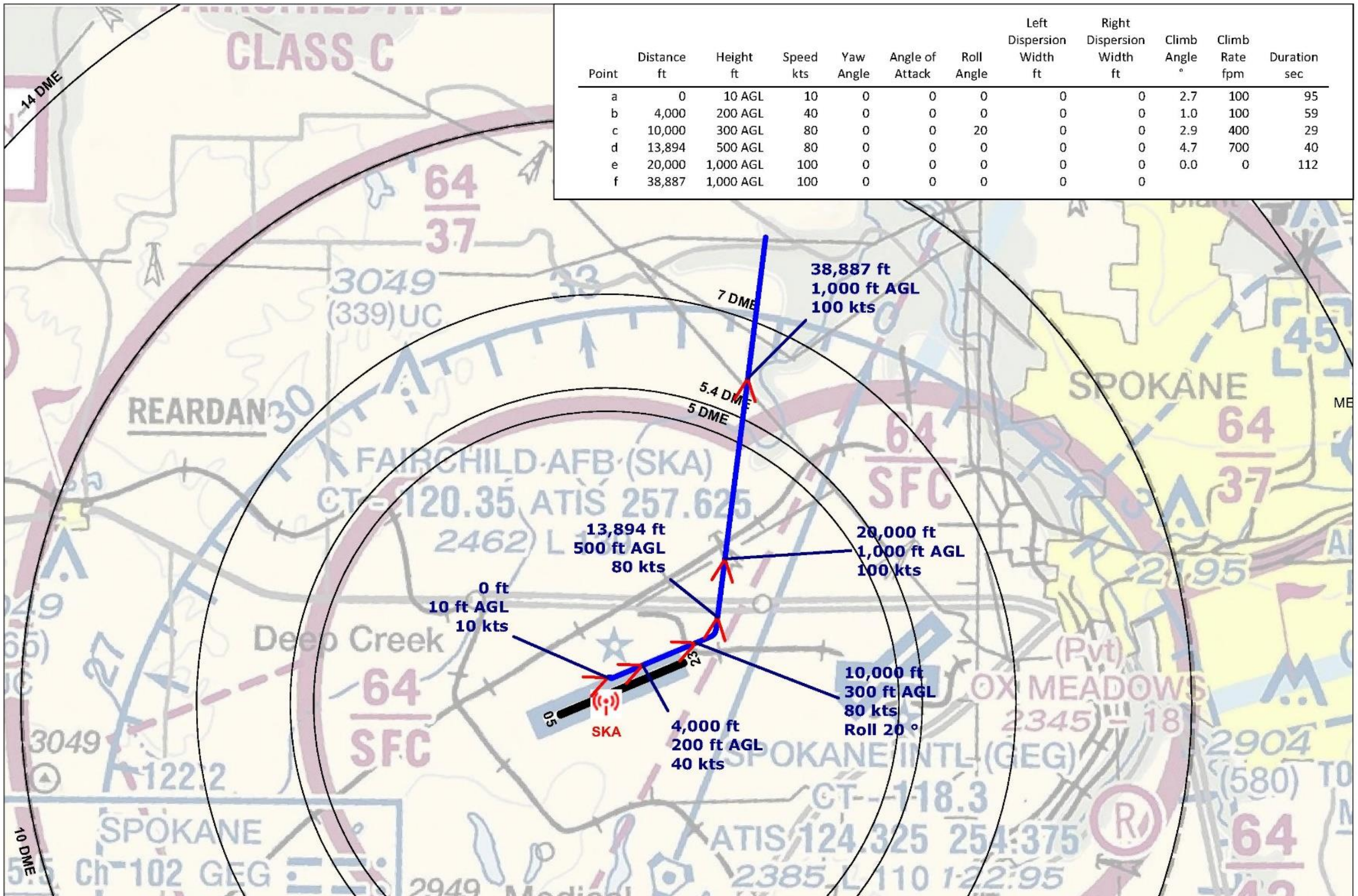
Fairchild AFB (2,462 ft MSL) Flight Profile ID: UH60A04 - ARNG ARRIVAL FROM WEST TO 23HP47
Based SH60B AAM with N/A engine
on Runway 23HP47, Track ID: H60A04 - ARNG ARRIVAL FROM MOSES LAKE

0 10,000 20,000 30,000 40,000 50,000
Scale in Feet 1:156,000 (1 inch = 13,000 feet)

N

Figure A.3.9

Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	0	10 AGL	10	0	0	0	0	0	2.7	100	95
b	4,000	200 AGL	40	0	0	0	0	0	1.0	100	59
c	10,000	300 AGL	80	0	0	20	0	0	2.9	400	29
d	13,894	500 AGL	80	0	0	0	0	0	4.7	700	40
e	20,000	1,000 AGL	100	0	0	0	0	0	0.0	0	112
f	38,887	1,000 AGL	100	0	0	0	0	0			

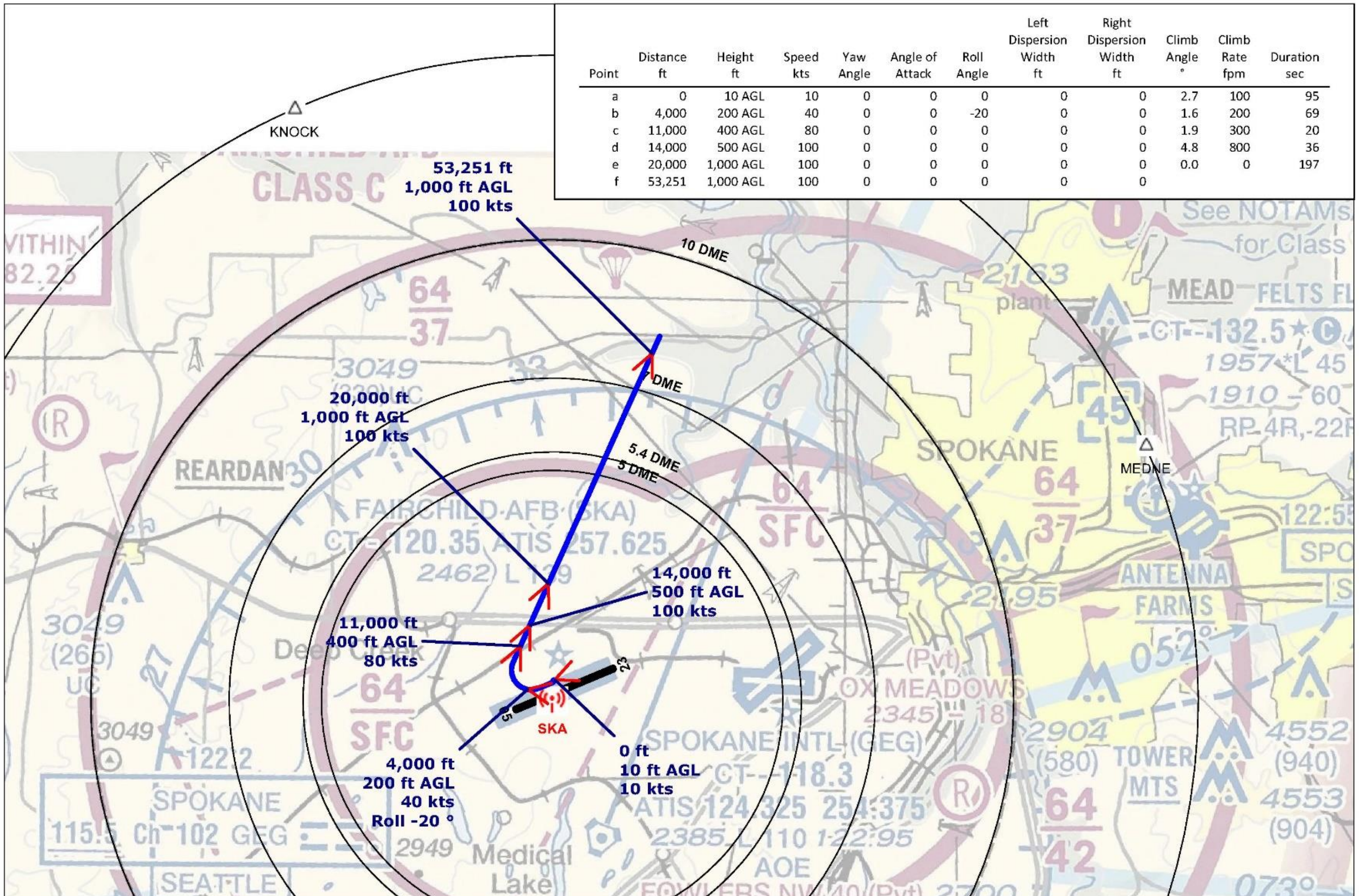


Fairchild AFB (2,462 ft MSL) Flight Profile ID: UH60D01 - ARNG DEPARTURE TO NORTH FROM 05HP47
Based SH60B AAM with N/A engine
on Runway 05HP47, Track ID: H60D01 - ARNG DEPART TO NORTH

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000 40,000 44,000 48,000 52,000
Scale in Feet 1:156,000 (1 inch = 13,000 feet)

Figure A.3.10

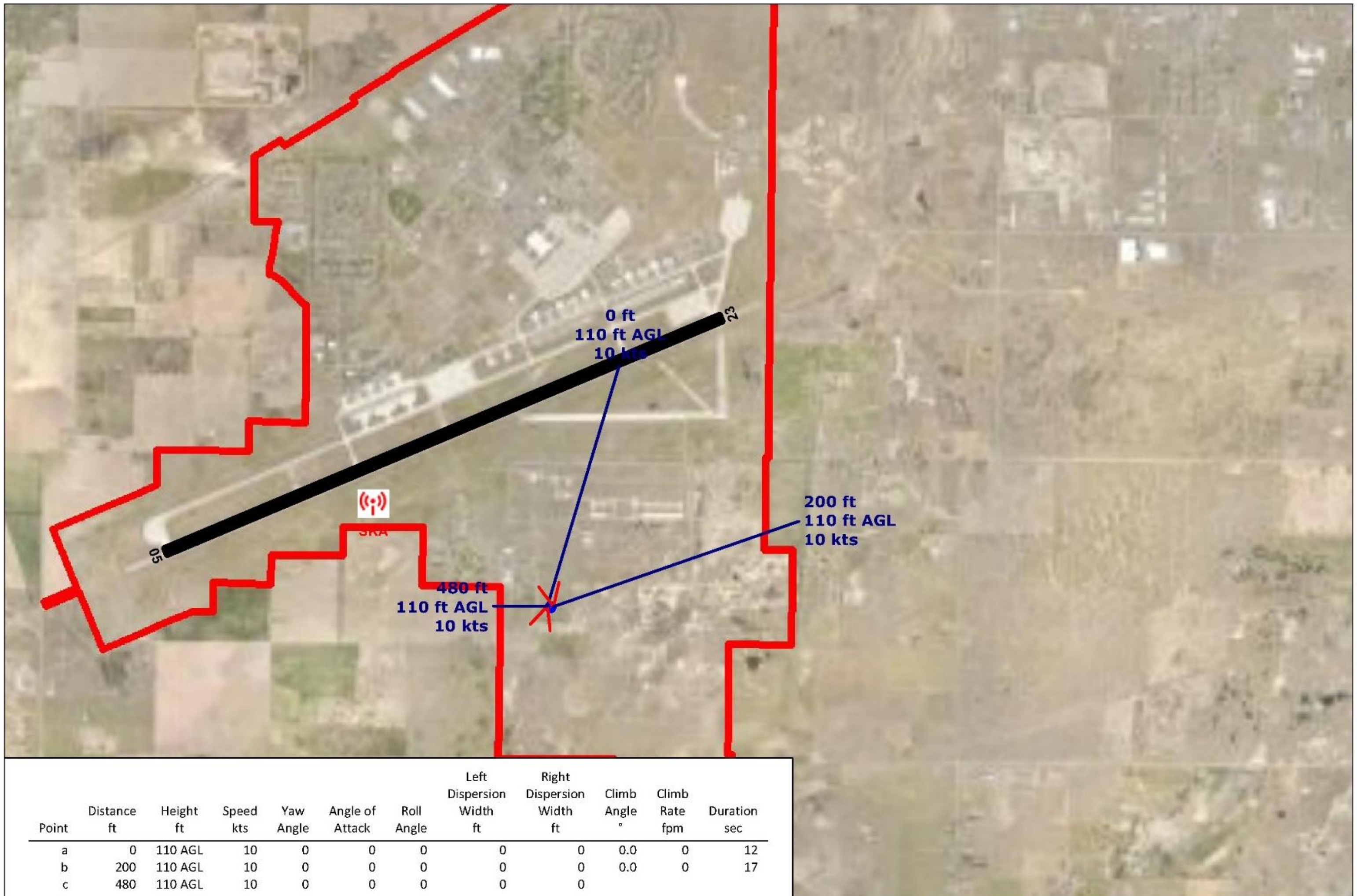
Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	0	10 AGL	10	0	0	0	0	0	2.7	100	95
b	4,000	200 AGL	40	0	0	-20	0	0	1.6	200	69
c	11,000	400 AGL	80	0	0	0	0	0	1.9	300	20
d	14,000	500 AGL	100	0	0	0	0	0	4.8	800	36
e	20,000	1,000 AGL	100	0	0	0	0	0	0.0	0	197
f	53,251	1,000 AGL	100	0	0	0	0	0			



Fairchild AFB (2,462 ft MSL) Flight Profile ID: UH60D03 - ARNG DEPARTURE TO THE NORTH FROM 23HP47
Based SH60B AAM with N/A engine
on Runway 23HP47, Track ID: H60D02 - ARNG DEPARTURE TO NORTH

0 10,000 20,000 30,000 40,000 50,000 60,000
Scale in Feet 1:198,000 (1 inch = 16,500 feet)

Figure A.3.11



Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	0	110 AGL	10	0	0	0	0	0	0.0	0	12
b	200	110 AGL	10	0	0	0	0	0	0.0	0	17
c	480	110 AGL	10	0	0	0	0	0			

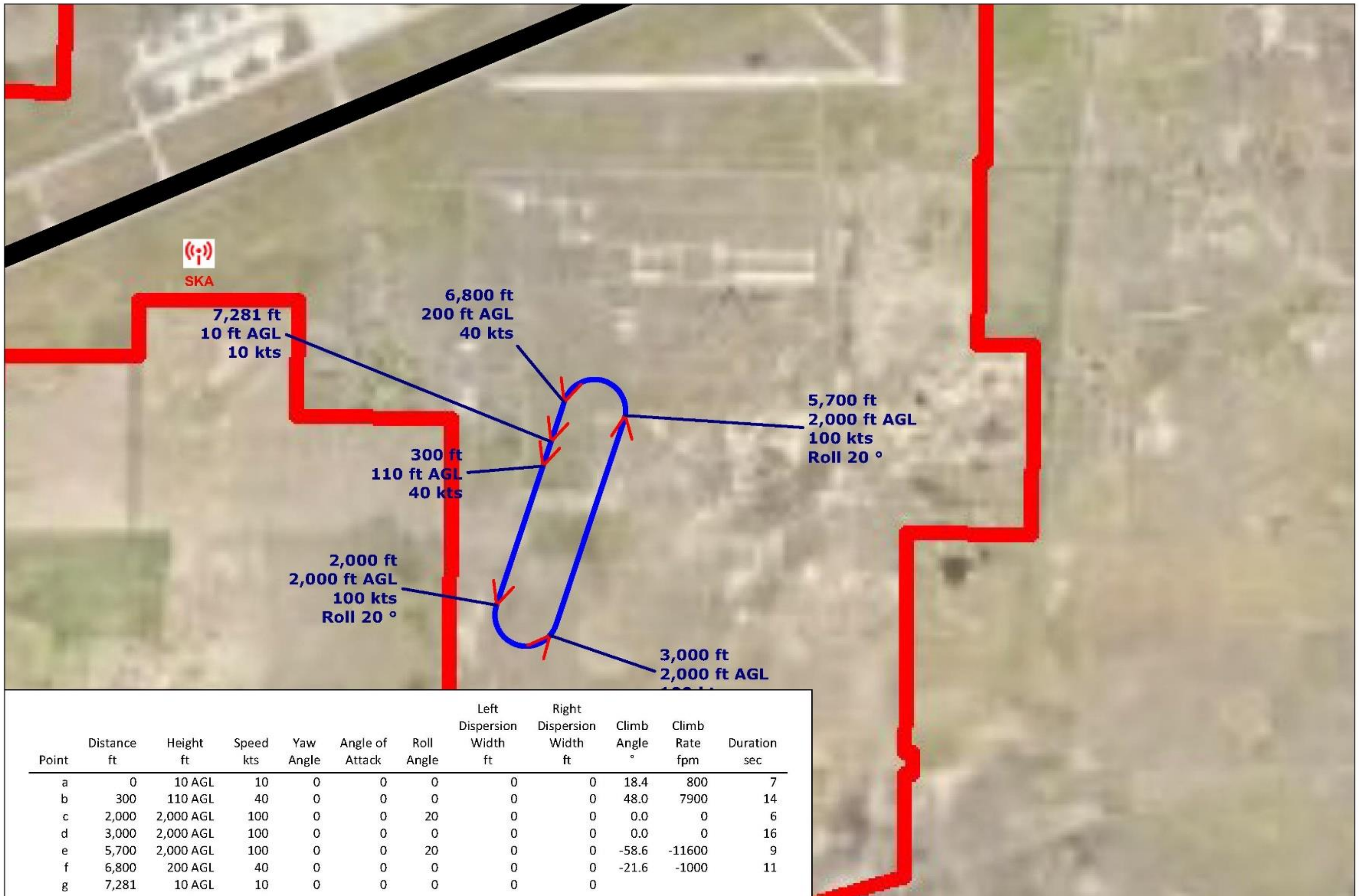
Fairchild AFB (2,462 ft MSL) Flight Profile ID: H60HOV1 - ARNG HELICOPTER HOVER OVER PAD 5 HEADING 360
Based SH60B AAM with N/A engine
on Runway 36PAD5, Track ID: EDZHOVER1 - HELO HOVER OVER PAD 5

0 2,000 4,000 6,000 8,000 10,000

Scale in Feet 1:34,600 (1 inch = 2,880 feet)

N

Figure A.3.12



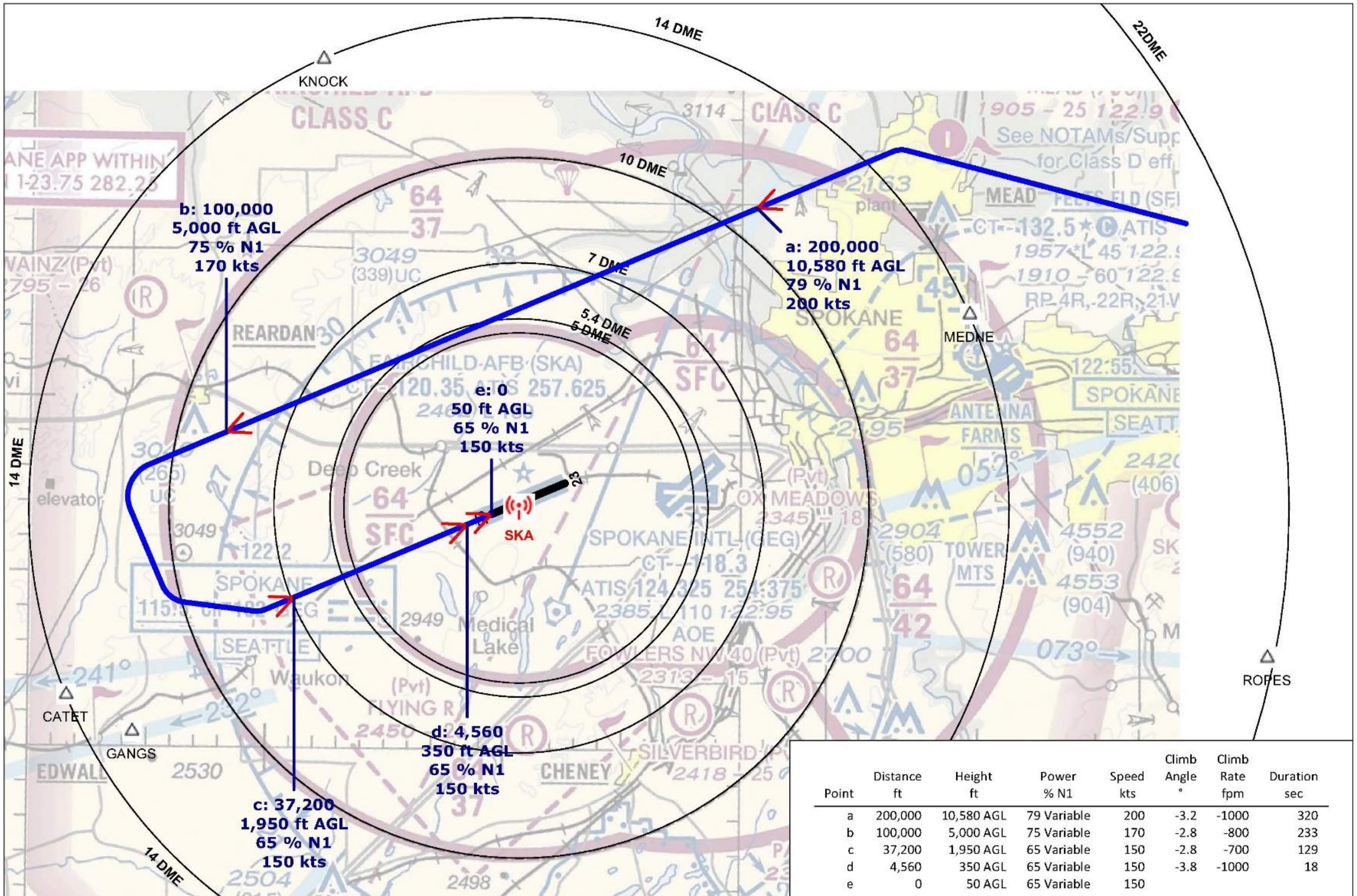
Point	Distance ft	Height ft	Speed kts	Yaw Angle	Angle of Attack	Roll Angle	Left Dispersion Width ft	Right Dispersion Width ft	Climb Angle °	Climb Rate fpm	Duration sec
a	0	10 AGL	10	0	0	0	0	0	18.4	800	7
b	300	110 AGL	40	0	0	0	0	0	48.0	7900	14
c	2,000	2,000 AGL	100	0	0	20	0	0	0.0	0	6
d	3,000	2,000 AGL	100	0	0	0	0	0	0.0	0	16
e	5,700	2,000 AGL	100	0	0	20	0	0	-58.6	-11600	9
f	6,800	200 AGL	40	0	0	0	0	0	-21.6	-1000	11
g	7,281	10 AGL	10	0	0	0	0	0			

Fairchild AFB (2,462 ft MSL) Flight Profile ID: H60EDZC01 - ARNG DROP PATTERN AT EDZ HEADING 180
Based SH60B AAM with N/A engine
on Runway 18PAD5, Track ID: EDZC01 - HELO DROP PATTERN AT ELLINGTON DROP ZONE

0 1,000 2,000 3,000 4,000 5,000
Scale in Feet 1:17,400 (1 inch = 1,450 feet)

Figure A.3.13

A.4 Airfield Flight Profile Maps for Transient Aircraft



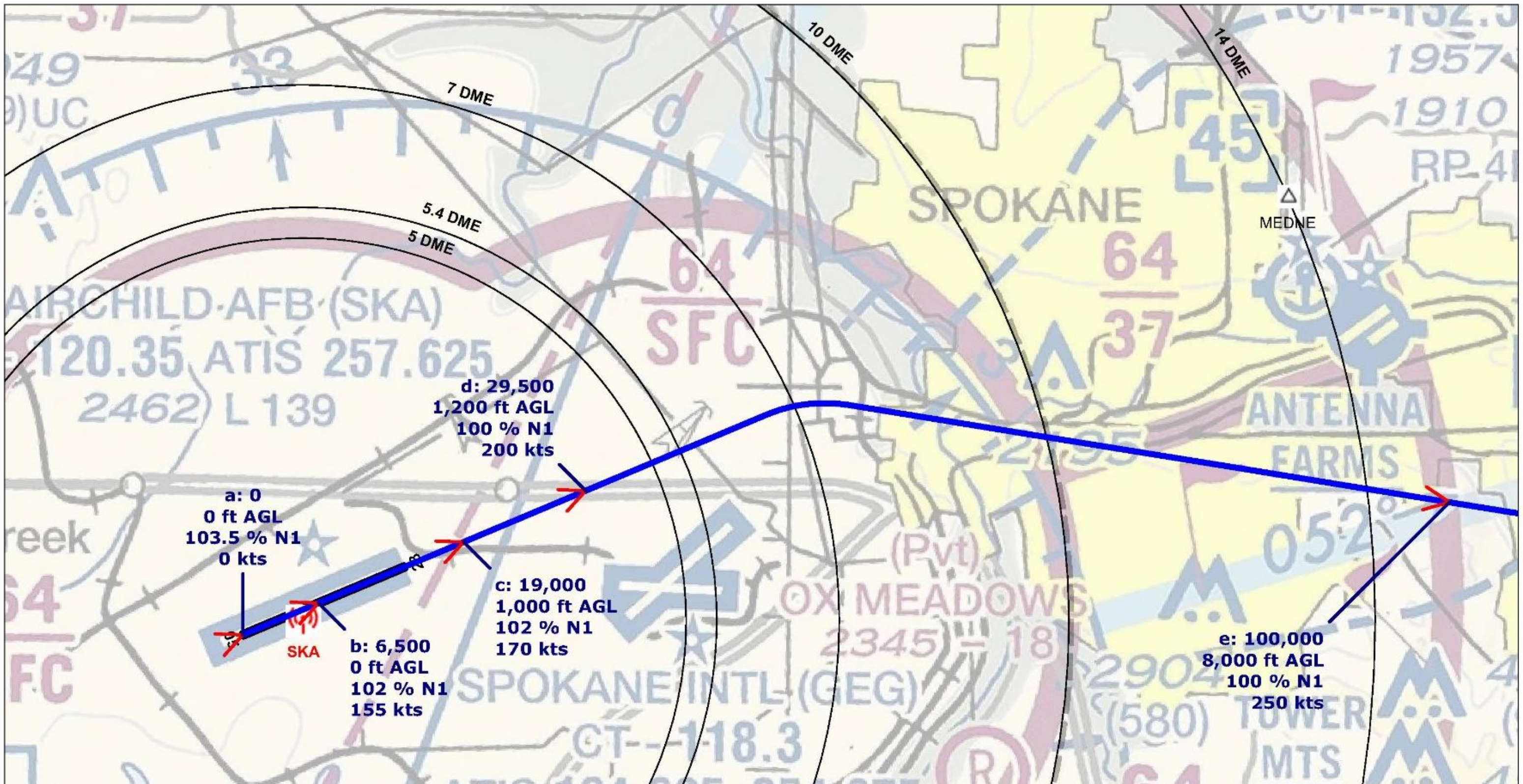
Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec
a	200,000	10,580 AGL	79 Variable	200	-3.2	-1000	320
b	100,000	5,000 AGL	75 Variable	170	-2.8	-800	233
c	37,200	1,950 AGL	65 Variable	150	-2.8	-700	129
d	4,560	350 AGL	65 Variable	150	-3.8	-1000	18
e	0	50 AGL	65 Variable	150			

Fairchild AFB (2,462 ft MSL) Flight Profile ID: K10A1 - TRANSIENT 3E Wide/Narrow Jet
Transient KC-10A with CF6-50C2 engine
on Runway 05, Track ID: 05A01 - VECTORS FROM EAST INTO DOWNWIND (MULIAN PASS)

0 10,000 20,000 30,000 40,000 50,000 60,000 70,000 80,000
Scale in Feet 1:260,000 (1 inch = 21,700 feet)

N

Figure A.4.1

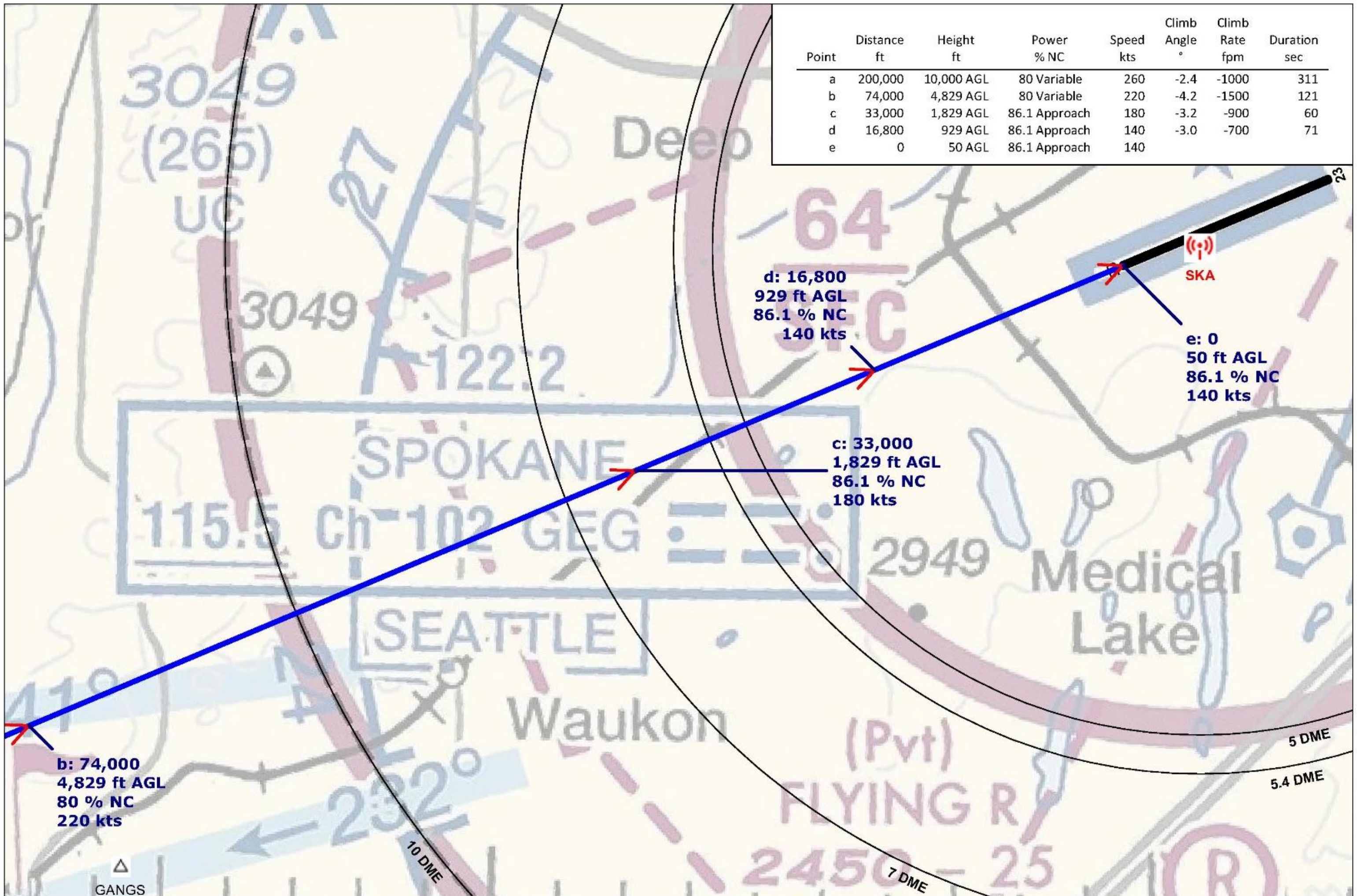


Point	Distance ft	Height ft	Power % N1	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec
a	0	0 AGL	103.5 Variable	0	0.0	0	50
b	6,500	0 AGL	102 Variable	155	4.6	1300	46
c	19,000	1,000 AGL	102 Variable	170	1.1	400	34
d	29,500	1,200 AGL	100 Variable	200	5.5	2200	186
e	100,000	8,000 AGL	100 Variable	250	4.0	2100	197
f	200,000	15,000 AGL	100 Variable	350			

Fairchild AFB (2,462 ft MSL) Flight Profile ID: K10D1 - TRANSIENT 3E Wide/Narrow Jet
Transient KC-10A with CF6-50C2 engine
on Runway 05, Track ID: 05D04 - DIRECT MLP FIX THEN TO AR604/678
Prior to brake release, aircraft sits at 103.5 % N1 Variable for 5 sec

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000 32,000 36,000 40,000 44,000
Scale in Feet 1:134,000 (1 inch = 11,100 feet)

Figure A.4.2



Point	Distance ft	Height ft	Power % NC	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec
a	200,000	10,000 AGL	80 Variable	260	-2.4	-1000	311
b	74,000	4,829 AGL	80 Variable	220	-4.2	-1500	121
c	33,000	1,829 AGL	86.1 Approach	180	-3.2	-900	60
d	16,800	929 AGL	86.1 Approach	140	-3.0	-700	71
e	0	50 AGL	86.1 Approach	140			

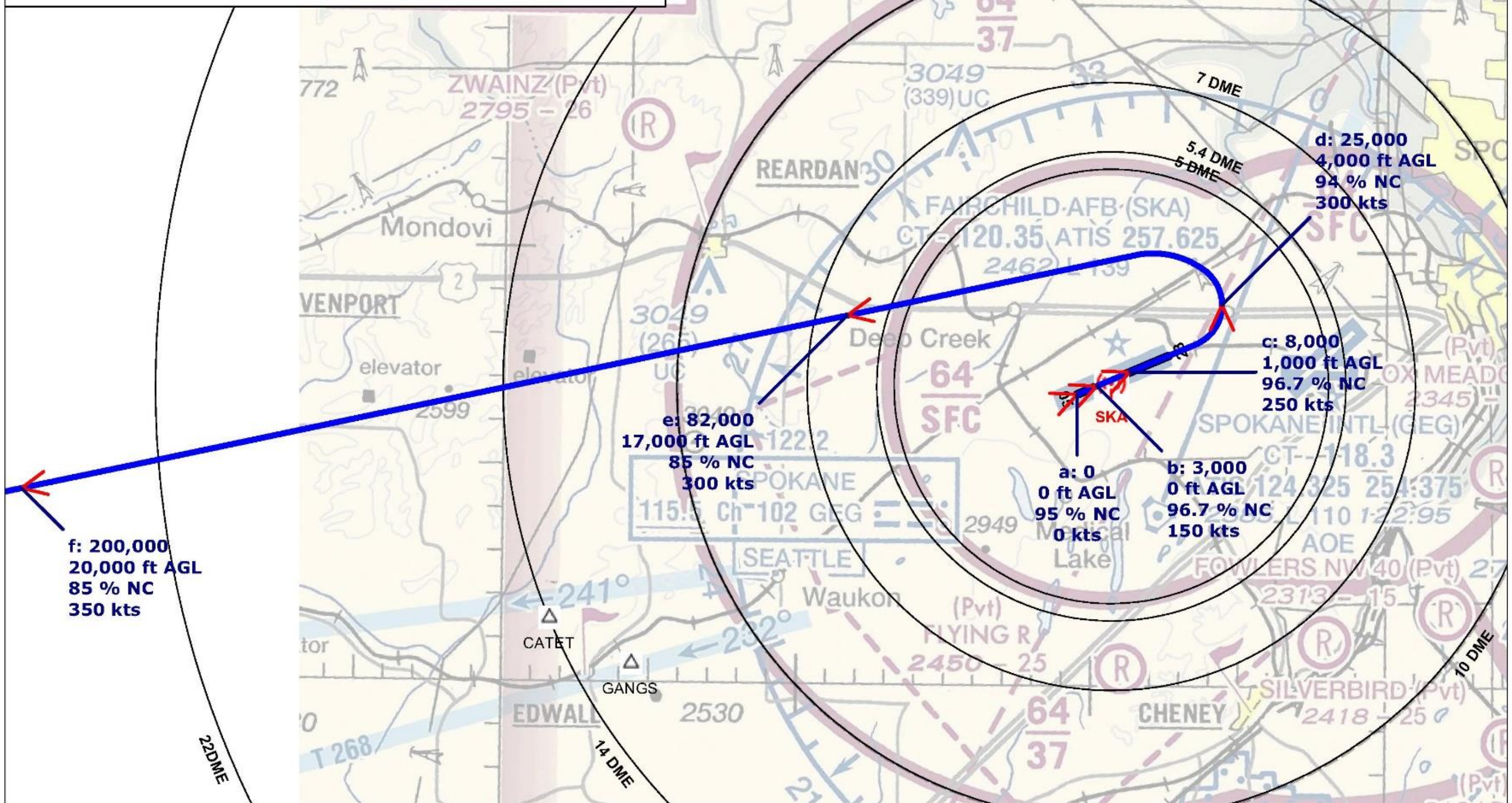
Fairchild AFB (2,462 ft MSL) Flight Profile ID: F18A1 - TRANSIENT fighter/attack
Transient F-18A/C with F404-GE-400&402 engine
on Runway 05, Track ID: 05A03 - WEST ARRIVALS VECTORS TO ZOOMR

0 4,000 8,000 12,000 16,000 20,000 24,000 28,000

Scale in Feet 1:93,400 (1 inch = 7,790 feet)

Figure A.4.3

Point	Distance ft	Height ft	Power % NC	Speed kts	Climb Angle °	Climb Rate fpm	Duration sec
a	0	0 AGL	95 Min A/B	0	0.0	0	24
b	3,000	0 AGL	96.7 Afterburner	150	11.3	4100	15
c	8,000	1,000 AGL	96.7 Takeoff	250	10.0	4900	37
d	25,000	4,000 AGL	94 Variable	300	12.8	6900	113
e	82,000	17,000 AGL	85 Variable	300	1.5	800	215
f	200,000	20,000 AGL	85 Variable	350			



Fairchild AFB (2,462 ft MSL) Flight Profile ID: F18D1 - TRANSIENT fighter/attack
Transient F-18A/C with F404-GE-400&402 engine
on Runway 05, Track ID: 05D03 - DIRECT EPH THEN WEST

Figure A.4.4