

**VATSIM MINNEAPOLIS ARTCC – MINNEAPOLIS TRACON****LETTER OF AGREEMENT****EFFECTIVE: July 1, 2023****SUBJECT: TERMINAL AREA CONTROL SERVICE**

- 1. PURPOSE.** This agreement delegates authority and establishes procedures for the control of IFR and Special VFR traffic on the VATSIM network within the terminal area described herein and is supplementary to FAA Order 7110.65, Air Traffic Control Handbook and VATSIM Network Policies and Procedures.
- 2. SCOPE.** Minneapolis ARTCC (ZMP) delegates to Minneapolis Approach Control (M98) the airspace described in Attachment A for the control of IFR traffic at and below 17,000 ft MSL.
- 3. RADAR PROCEDURES.** Unless otherwise coordinated, the following procedures shall apply:
  - a. Handoffs. Aircraft entering ZMP from M98 airspace shall have at least 5 NM constant or increasing radar separation when radar vectored for the same fix on similar tracks.
  - b. Transfer of control for turns  $\pm 30$  degrees from the assigned heading to:
    - (1) M98 must occur when the arriving/overflight aircraft are within 10 NM of the M98/ZMP boundary. M98 must make any necessary point outs to other affected ZMP sectors or RST approach.
    - (2) ZMP must occur when the departing aircraft are at least 25 NM from the MSP VOR or leaving 11,000 ft. ZMP must make any necessary point outs to other affected M98 sectors.
  - c. M98 must have control for descent of satellite STAR and BITLR aircraft within 10 NM of the M98/ZMP boundary, except at AGUDE. M98 must have control for descent of 6,000 ft. satellite STAR aircraft at AGUDE within 10 NM of the M98/ZMP boundary.
  - d. M98 may apply procedures specified in FAA Order 7110.65 paragraph 5-5-4 to aircraft transitioning from M98 to ZMP Sectors 07 and 08 provided that:
    - (1) The minima (3 miles increasing to 5 miles) are applied to turbojet aircraft only.
    - (2) The minima are applied only to aircraft on courses/routes that diverge. In-trail aircraft are not included.
    - (3) M98 maintains communications with at least one of the aircraft until 3-miles lateral separation is attained, and divergence is ensured.
    - (4) ZMP must establish 5-miles lateral separation prior to the aircraft departing Sectors 07 or 08 and entering the next ZMP Sector.

- e. Beacon Code Assignments. Normal beacon codes, as assigned by vNAS, shall be used at all times except when vNAS is out of service.
- f. Departures
  - (1) M98 shall issue enroute clearance provided:
    - (a) Aircraft are cleared at 17,000 feet MSL or below.
    - (b) Departures 6,000 feet MSL and below will be as filed
    - (c) Departures filed 7,000 or 8,000 ft. must be on a heading to clear MSP and satellite STAR arrival areas.
  - (2) M98 must establish departing aircraft filed for 9,000 ft. or above in the appropriate ZMP sector, clear of STAR arrival areas on:
    - (a) The appropriate MSP/Satellite Airport SID, or
    - (b) A heading to join the appropriate SID within 50 NM of the MSP VOR, or
    - (c) For the DARWIN SID from a position at or north of INUNE, direct DWN, or
    - (d) For non-SID qualified aircraft, an assigned heading for a vector to:
      - 1 Enter ZMP Sector 10 airspace east of the GEP STAR on a heading to maintain a track of 350° to 020°. Example: Brainerd, Park Rapids, Grand Forks, Duluth, or Winnipeg.
      - 2 Enter ZMP Sector 10 airspace west of the GEP STAR on a heading to maintain a track of 290° to 300°. Example: Fargo, Alexandria, Bismarck or Jamestown.
      - 3 Enter ZMP Sector 09 airspace north of the ENCEE STAR on a heading to maintain a track of 265° to 285°. Example: Aberdeen, Watertown, or Rapid City.
      - 4 Enter ZMP Sector 08 airspace on a heading to maintain a track of 210° to 240°; e.g., O'Neill, Sioux Falls, Redwood Falls, Kansas City, Fort Dodge, Mason City, or Des Moines. Turbojet aircraft assigned a SID may be assigned a track between the SCHEP and ORSKY SIDs only when parallel SID traffic exists.
      - 5 Enter ZMP Sector 07 airspace east of the KASPR STAR on a heading to maintain a track of 140° to 160° when filed for 10,000 ft. or above. Example: Waterloo, Rochester, Dubuque, or Waukon.
      - 6 Enter ZMP Sector 21/"Red Wing" sector airspace south of the WILDD STAR on a heading to maintain a track of 100° to 130°. Example: Nodine, Dells, La Crosse, or Madison.

- 7 Enter ZMP Sector 06 airspace north of the AGUDE STAR on a heading to maintain a track of 040° to 060°. Example: Rhinelander, Sault Ste. Marie, Marquette, Iron Mountain, or Eau Claire.
- (3) Prop aircraft requesting 12,000 ft. or higher must be climbed to or level at 12,000 ft. ZMP must have control for climb of these aircraft at 25 NM from MSP VOR.
- (4) M98 departures filed for 5,000 ft. or below must enter ZMP Sector 05 at 5,000 ft. and Sectors 08, 09, and 10 at 4,000 ft.

g. Arrivals

- (1) The clearance limit fix for arrivals shall be the destination airport.
- (2) Speeds between 250 and 320 knots, if assigned, do not require coordination.
- (3) RNAV STAR Procedures:
- (a) MSP RNAV STARs and M98 airspace are depicted in Attachments D and D-1 through D-8.
- (b) MSP Runway configurations that can utilize RNAV STAR procedures:
- 1 Landing Northwest
- a Runway 30's configuration
- b Runway 30/35 configuration
- c Runway 30/17 configuration
- d Runway 35 and 35/12 configuration
- 2 Landing Southeast
- a Runway 12's configuration
- b Runway 12/17 configuration
- (c) ZMP "Descend Via" phraseology must include a runway transition. When MSP is in a landing 12L/R or 30L/R configuration as listed above, descend via instructions must be issued, except for the BLUEM/NITZR arrivals in a Runway 30/17 configuration. Runway transitions will be assigned by ZMP as follows:
- a TORGY arrival ..... Runway 12R/30L
- b BAINY Arrival ..... Runway 12L/30R
- c MUSCL Arrival ..... Runway 12L/30R
- d KKILR Arrival ..... Runway 12R/30L

- e BLUEM Arrival ..... Runway 12R/30L
    - f NITZR Arrival ..... Runway 12R/30L
    - g In a Runway 30/35 configuration, M98 CIC/TMU will coordinate with the ZMP CIC/TMU on assigning the runway 35 transition to BLUEM/NITZR arrivals.
  - (d) Transfer of communications of aircraft entering M98 airspace on an RNAV STAR must be accomplished no later than the following fixes:
    - 1 TORGY Arrival: OFSON
    - 2 BAINY Arrival: LUCCY
    - 3 MUSCL Arrival: BAYKS
    - 4 KKILR Arrival: KKILR
    - 5 BLUEM Arrival: BLUEM
    - 6 NITZR Arrival: NITZR
  - (e) ZMP must verbally coordinate any turbojet aircraft cleared via a conventional STAR with the appropriate M98 Sector and cross the boundary at LOA altitudes and de-conflicted with OPD traffic.
  - (f) ZMP must verbally coordinate any assigned speed that deviates from those published on the RNAV STAR, except those speeds that are part of a TMU initiative.
  - (g) MSP turboprop arrivals must be assigned the conventional STARS at LOA altitudes.
  - (h) When RNAV STAR arrival procedures are in effect, aircraft on the MUSCL STAR must not be cleared "Direct LOOON".
  - (i) When MSP is on Runway 30/17 configuration, Knock It Off procedures will be implemented on the NITZR and BLUEM arrivals. No "Descend Via" instructions will be issued. Runway transitions will be issued. Any speed other than published speed must be coordinated.
    - 1 NITZR Arrival ..... X WRS AW at and maintain 110
    - 2 BLUEM Arrival ..... X HHAMR at and maintain 100
- Note: M98 will verify assigned altitude.
- (j) ZMP Sector 7 must provide M98 with a minimum of 7 miles in trail or staggered spacing along the NITZR/BLUEM arrivals. For the purpose of these restrictions, the NITZR and BLUEM arrivals will be considered as one arrival.

## (k) "Knock It Off" OPD Procedures:

- 1 When MSP is landing Runway 4, 22, 17, 17/22 or anytime either facility has an operational necessity to discontinue the Optimized Profile Descent (OPD) portion of the STAR, ZMP must:
  - a On the MUSCL Arrival: Cross BAYKS at and maintain 120
  - b On the KKILR Arrival: Cross HUGGI at and maintain 100
  - c On the BLUEM Arrival: Cross HHAMR at and maintain 100
  - d On the NITZR Arrival: Cross WRSWA at and maintain 110
  - e On the TORGY Arrival: Cross OFSON at and maintain 110
  - f On the BAINY Arrival: Cross LUCCY at and maintain 110
  - g Cross the M98 boundary at the published speed of 280kts unless otherwise coordinated.
- 2 Coordination must be accomplished through M98 CIC/TMU and ZMP CIC/TMU.
- 3 ZMP/M98 may invoke "Knock It Off" OPD procedures at individual gates regardless of runway configuration when operational necessity dictates.

**EXAMPLE-**

*"Knock It Off procedures in effect due to meteorological conditions at MSP."*

- (4) All turbojet and turboprop aircraft must be routed via STAR routings. The appropriate crossing altitude restriction must be issued as follows:

(a) **MSP TURBOJET ARRIVALS:**

EAU Arrival..... X TWINZ at 110

WILDD Arrival (ATC Assigned) .....X BITLR at 100

KASPR Arrival..... X DELZY at 100

SKETR Arrival.....X SHONN at 110

GEP Arrival (RWY 30L/R)..... X GEP at 110

GEP (MSP all other RWYs)..... X OLLEE at 110

**(b) MSP TURBOPROP ARRIVALS:**

EAU Arrival..... X TWINZ at 70 except landing 12s X at 90

EAU (MSP landing RWY 22) ..... X TWINZ at 60

SKETR Arrival.....X SHONN at 70 except Landing 30 or 30/35 X at 90

GEP Arrival .....X OLLEE at 70<sup>1</sup> except Landing 30 or 30/35 X at 90

GEP (MSP landing RWY 17).....X OLLEE at 50 or as coordinated

Turboprop arrivals at 90 must be assigned the appropriate Feeder frequency.

**(c) SATELLITE AIRPORT TURBOJET ARRIVALS:**

TWOLF Arrival<sup>2</sup>.....X TRGET at 80

AGUDE Arrival .....X AGUDE at 80

ENCEE Arrival ..... X RIXIE at 80

GEP Arrival ..... X OLLEE at 70

GEP (MSP landing RWY 17).....X OLLEE at 60 or as coordinated

**(d) SATELLITE AIRPORT TURBOPROP ARRIVALS:**

TWOLF Arrival<sup>2</sup>.....X TRGET at 70

AGUDE Arrival .....X AGUDE at 60

ENCEE Arrival ..... X RIXIE at 70

GEP Arrival .....X OLLEE at 70<sup>1</sup>

GEP (MSP landing RWY 17).....X OLLEE at 50 or as coordinated

<sup>1</sup>ZMP must sequence satellite 7,000 ft. turboprops with MSP 7,000 ft. turboprops at OLLEE.

<sup>2</sup>ZMP must APREQ all satellite TWOLF traffic when MSP is landing Runway 4.

- h. STP, ANE, and FCM arrivals routed over BITLR must be assigned direct GEP and cross BITLR at 6,000 ft. FCM and LVN arrivals entering M98 south of RGK may be routed direct FGT direct destination at the following altitudes without coordination:

(a) MSP landing 30's, 30/17, 30/35 at 4,000 ft.

(b) Any other runway configuration at 4,000 ft. or 6,000 ft.

- i. FCM and LVN arrivals from ZMP Sectors 08 and 09 may be cleared direct destination at 5,000 ft. Aircraft may still be cleared via the TWOLF Arrival or the ENCEE Arrival.
- j. Except when landing Runway 35, ZMP Sector 7 must provide M98 with a minimum of 5 miles in trail or staggered spacing along the TWOLF/KASPR arrivals. For purposes of this restriction the TWOLF and KASPR arrivals must be considered as one arrival.
- k. All piston engine aircraft terminating in M98 airspace, regardless of altitude, must enter M98 airspace from ZMP as follows:
  - (a) From Sector 05: 4,000 ft.
  - (b) From Sectors 08, 09 and 10: 5,000 ft.
- l. STC departures landing MSP and M98 satellite airports must enter M98 airspace at 5,000 ft. When Runways other than 12L/R are in use, turbojet and turboprop aircraft departing STC and landing MSP must be on a STAR arrival at the appropriate altitude.
- m. MKT departures landing M98 satellite airports must enter M98 airspace at 5,000 ft. direct destination.
- n. ZMP must have control for descent to 10,000 ft. on aircraft exiting M98 airspace and landing RST Airport when the aircraft are 25 NM from MSP.
- o. Aircraft landing OEO, RNH, or RGK from the east (through Sector 5) must be level at, or descending to, 4,000 ft. M98 must have control for descent and turns, up to 30 degrees either side of course, when aircraft are within 10 NM of the M98 boundary.
- p. Aircraft landing STC or MKT will enter ZMP airspace descending to 4,000 ft. ZMP has control for descent and turns, up to 30 degrees either side of course, when the aircraft are 25 NM from the MSP VOR.
- q. Overflight aircraft that will transit M98 airspace must be on course and at the correct altitude for direction of flight, unless otherwise coordinated.
- r. During any time period in which ZMP assumes Rochester Approach Control (RST) airspace, unless otherwise coordinated, all **turboprop** aircraft routed via the KASPR STAR shall cross the DELZY intersection at 7,000 feet MSL and all piston engine aircraft terminating in M98 airspace must exit RST airspace at 6,000 feet MSL.

**4. RUNWAY 17-22 LANDING CONFIGURATION PROCEDURES.** When the Minneapolis-St. Paul Airport is in a runway 17/22 landing configuration, unless otherwise coordinated, the following procedures must apply:

- a. Departures. All existing departure routes and procedures remain unchanged except:
  - (1) Jet aircraft filed for the WLSTN SID must be vectored west of the AGUDE gate and assigned a heading to join the WLSTN SID. Normal altitudes apply.

- (2) Turboprop aircraft filed for the WLSTN SID or over EAU, 7,000 MSL or higher, must be cleared via the COULT SID to the COULT intersection, direct EAU, direct next flight planned fix.
  - (3) Jet and Turboprop aircraft filed to, or over, DLH, EVM, RZN, and HIB must be vectored west of the AGUDE gate to enter Sector 6 established on an assigned heading between 020 and 040 degrees. Normal altitudes apply.
  - (4) Jet and Turboprop aircraft filed to, or over, BRD must enter Sector 10 west of the OLLEE intersection established on a heading between 290 and 310 degrees. Normal altitudes apply.
  - (5) STP, ANE, and MIC north bound departures are exempt from the above restrictions and must exit M98 airspace established on a heading between 350 and 010 degrees.
  - (6) Departures filed at 5,000 or 6,000 feet MSL must be on a heading to clear the GOPHER and AGUDE satellite STAR arrival areas.
  - (7) M98 may clear KBREW SID traffic direct to KBREW from positions south of the SID.
- b. MSP Arrivals. Knock It Off Procedures are in effect for MSP arrivals.
- (1) Turboprops cross OLLEE at 5,000 feet MSL.
  - (2) Turboprops cross TWINZ at 6,000 feet MSL.
  - (3) KKILR/WILDD Arrivals: All KKILR/WILDD arrivals are prohibited.
- c. Satellite Arrivals.
- (1) GOPHER Satellite Arrivals:
    - (a) Jets cross OLLEE at 6,000 feet MSL.
    - (b) Turboprops cross OLLEE at 5,000 feet MSL.
    - (c) M98 must have control for descent of GEP STAR satellite traffic within 10NM of the M98/ZMP airspace boundary.
  - (2) AGUDE Satellite Arrivals:
    - (a) STP traffic must be assigned the AGUDE STAR.
    - (b) FCM traffic normally routed over AGUDE must be routed over BITLR and assigned direct FGT direct FCM and cross BITLR at 6,000 feet MSL. APREQ is not necessary.
    - (c) Jets cross AGUDE at 6,000 feet MSL.



- (d) Turboprops cross AGUDE at 5,000 feet MSL.
  - (e) Stacks at AGUDE for aircraft landing the same airport are not authorized.
  - (f) M98 must have control for descent of AGUDE traffic within 10NM of the M98/ZMP airspace boundary.
- d. Overflights. The triangular airspace north of the MSP airport between and including Runways 17 and 22 ACDAs must be avoided from all directions below 13,000 feet MSL.

**5. MIDNIGHT OPERATIONS.** When coordinated (between the hours of 2230 and 0530 local):

- a. ZMP shall clear all traffic landing at airports within M98 as follows:
  - (1) Direct to the destination airport.
  - (2) Via pilot discretion descent to 10,000 feet to all aircraft at altitudes at and above 10,000 feet.
  - (3) Arrivals at and below 10,000 feet shall remain at altitude.
  - (4) ZMP shall assign all aircraft entering M98 airspace frequency 124.7 (MSP\_R\_APP
- b. M98 shall:
  - (1) Clear departure aircraft via the first fix in the route.
  - (2) Point out departures to any affected Center position.
  - (3) Climb turboprops/props to 17,000 feet, or lower altitude if requested.

## 6. ATTACHMENTS

Attachment "A" — ZMP Area/Sector Map and Frequencies.

Attachment "B" — SIDs.

Attachment "C" — Conventional STARs

Attachment "D" — MSP RNAV STARs

Attachment D1-D11 — Approach Control Airspace and Frequencies

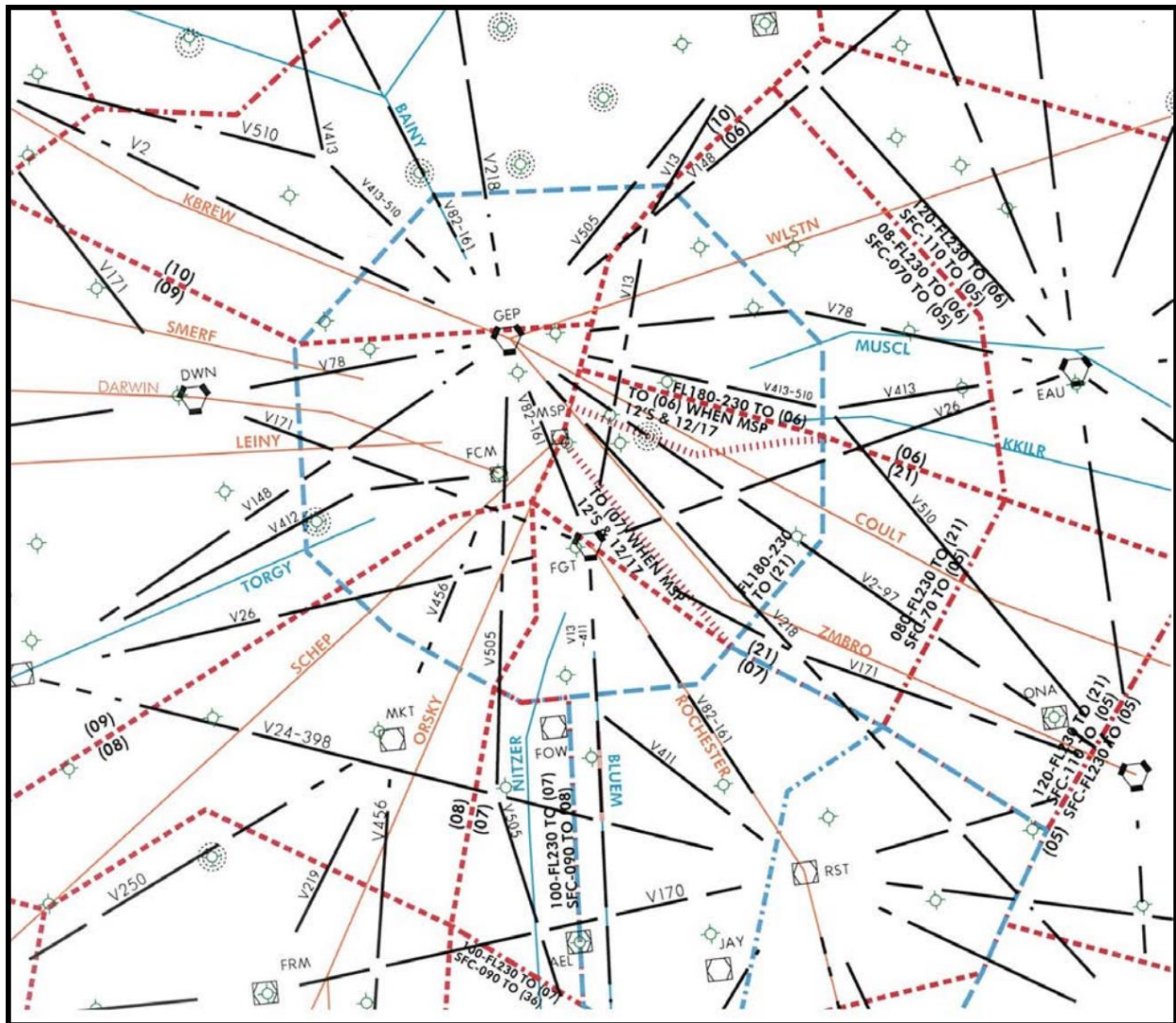
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Dhruv Kalra  
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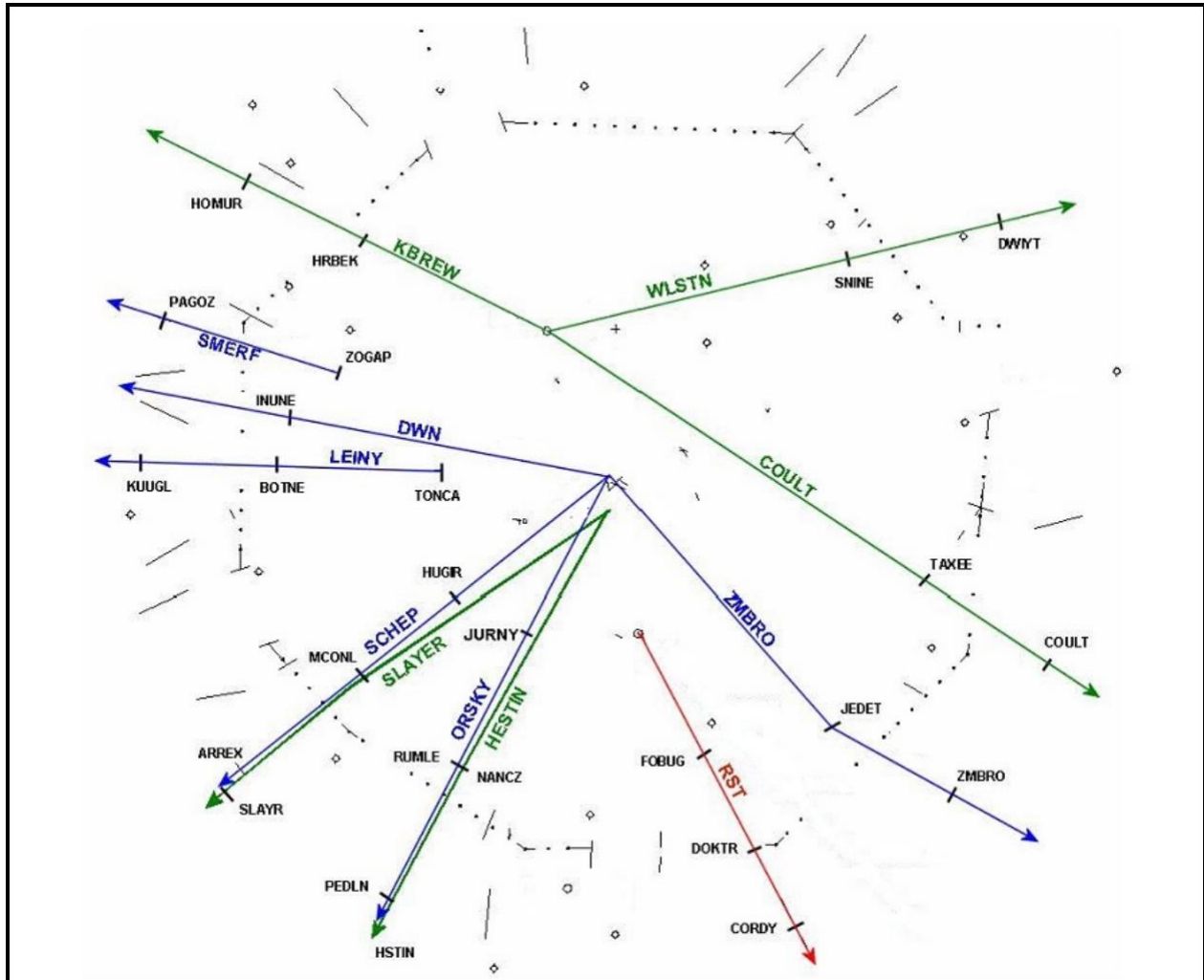
Lance Harry  
Deputy Air Traffic Manager  
VATSIM Minneapolis ARTCC

## ZMP Area/Sector Map and Frequencies



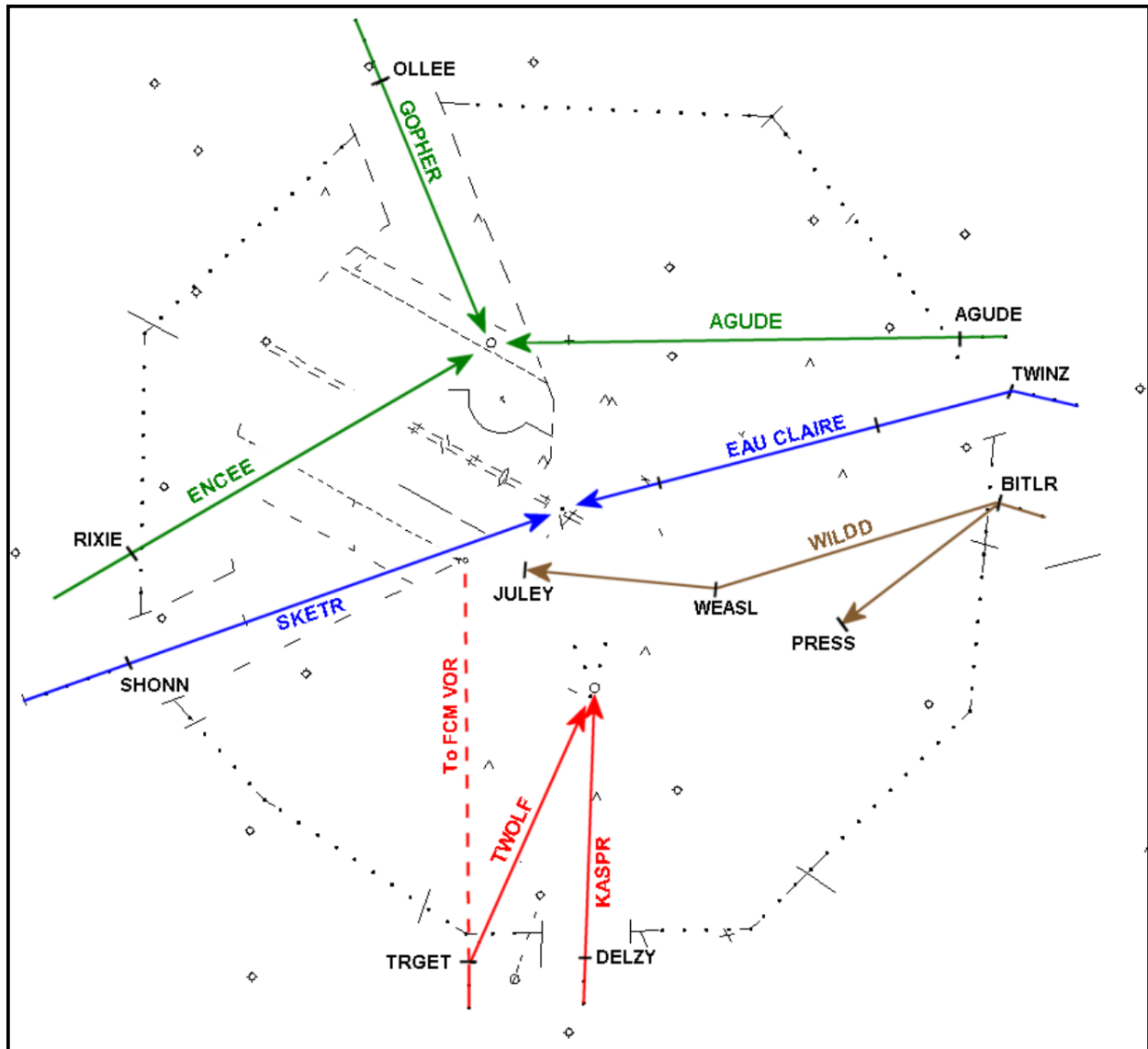
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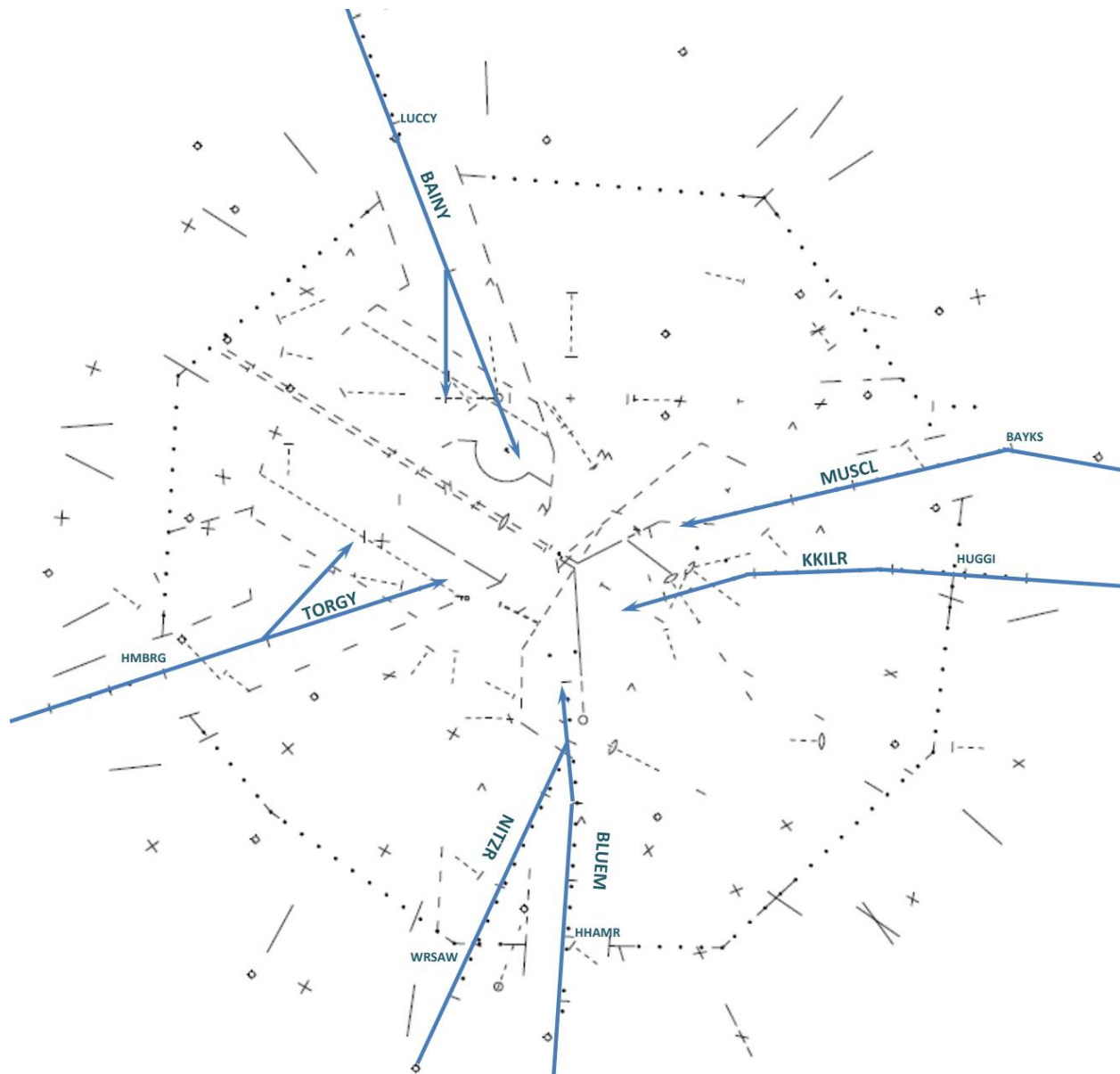
## SIDs



## ATTACHMENT "C"

## Conventional STARs

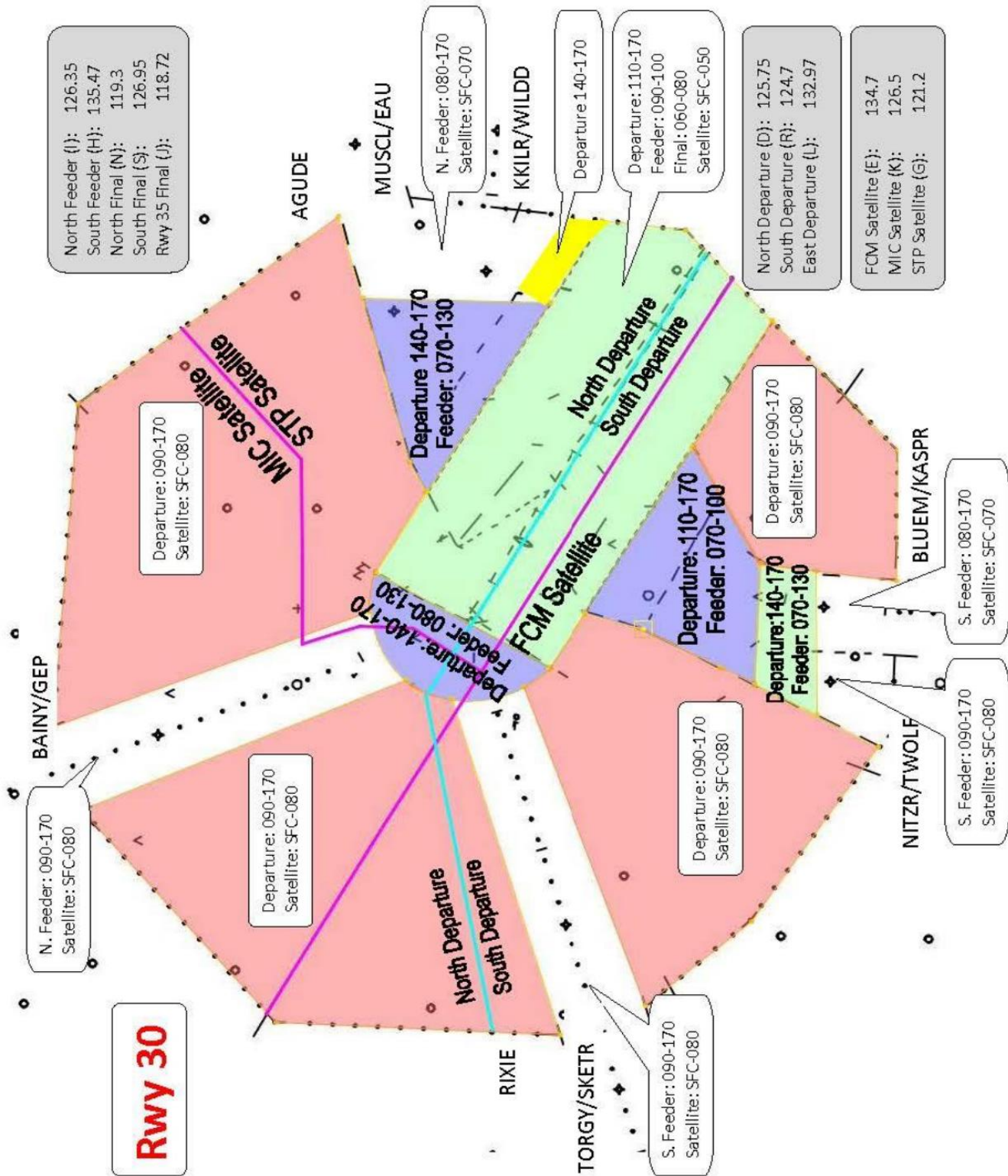


**ATTACHMENT "D"****MSP RNAV STARs**



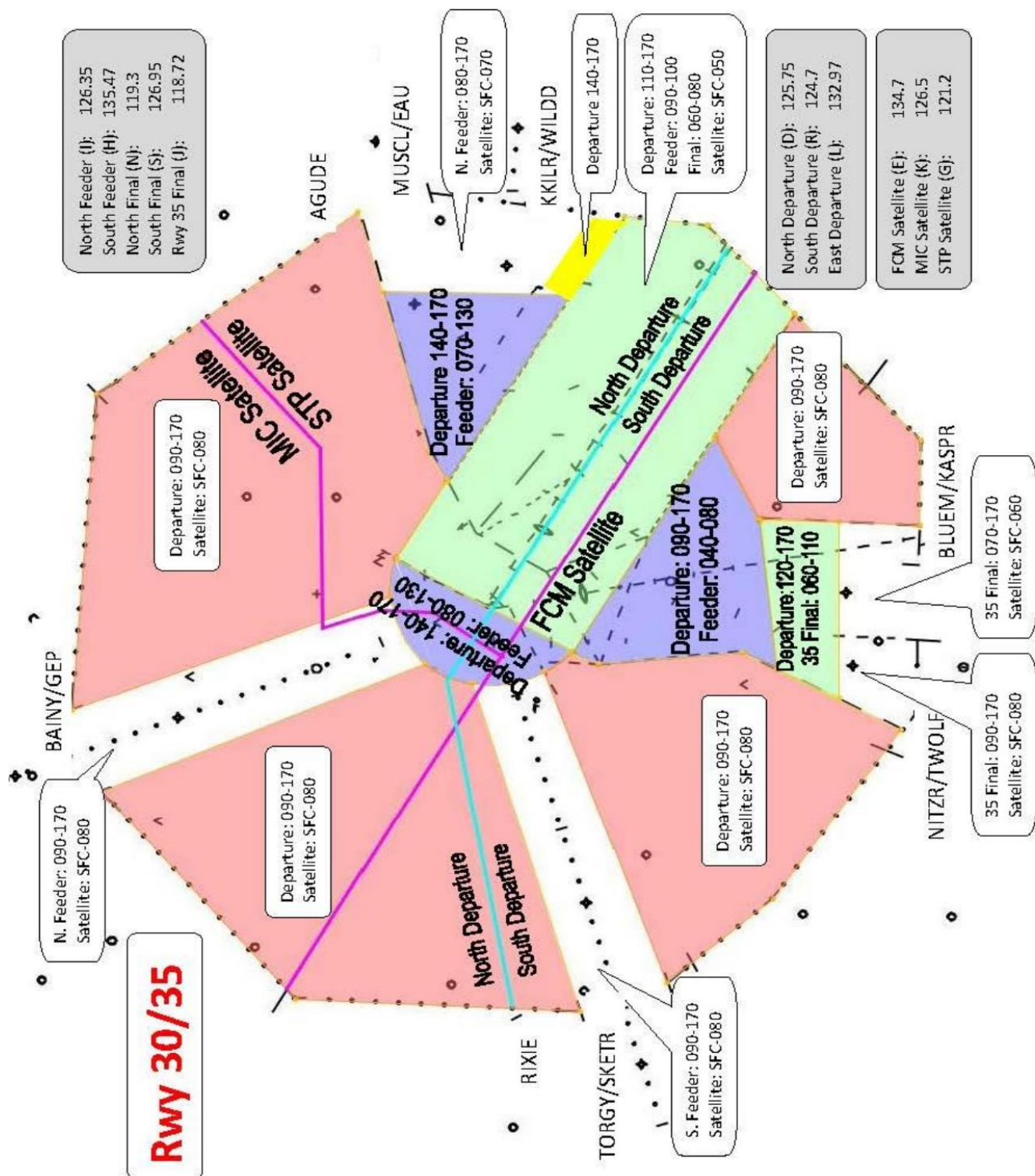
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## Approach Control Airspace and Frequencies



## Attachment D-2

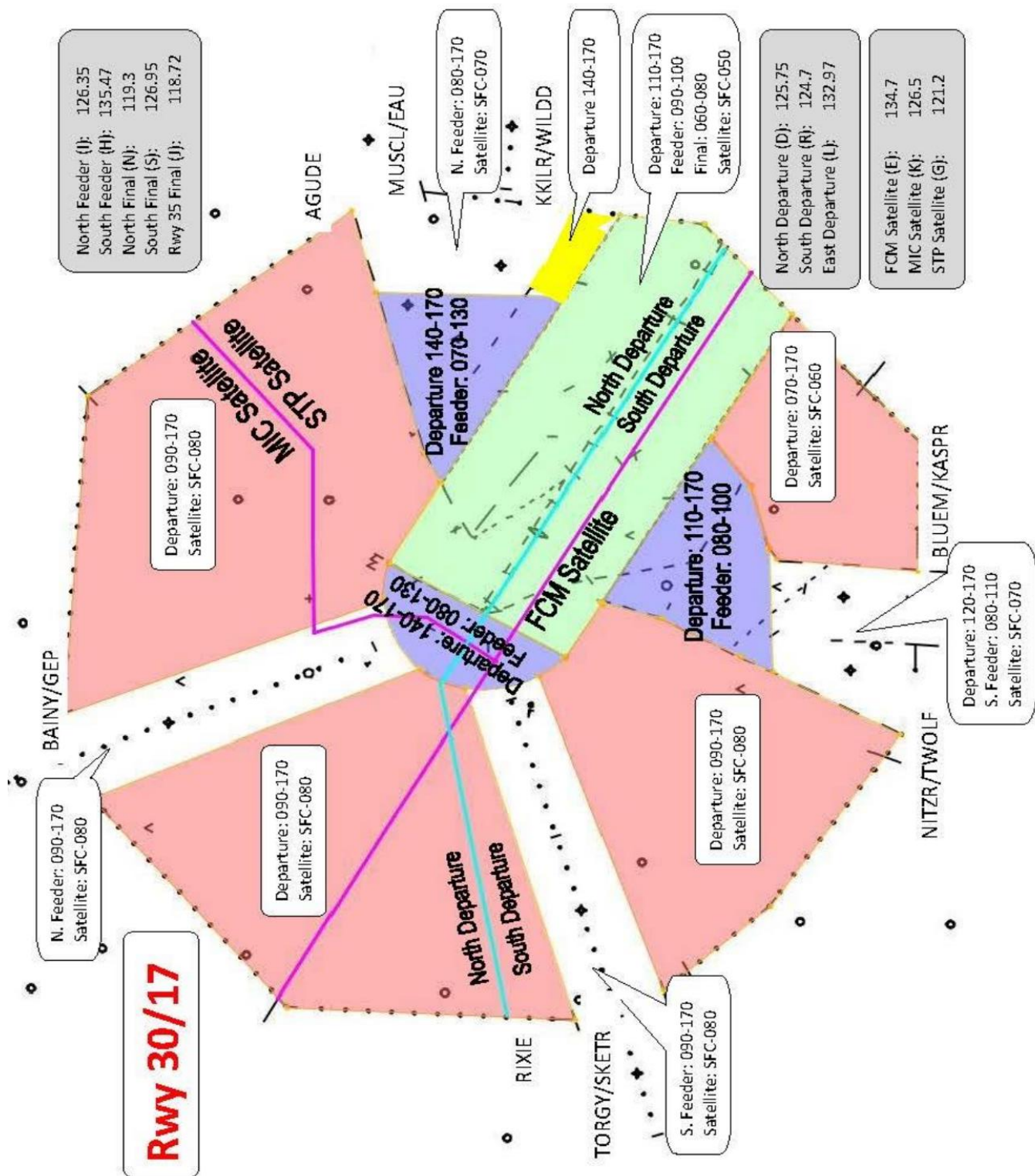
## Approach Control Airspace and Frequencies





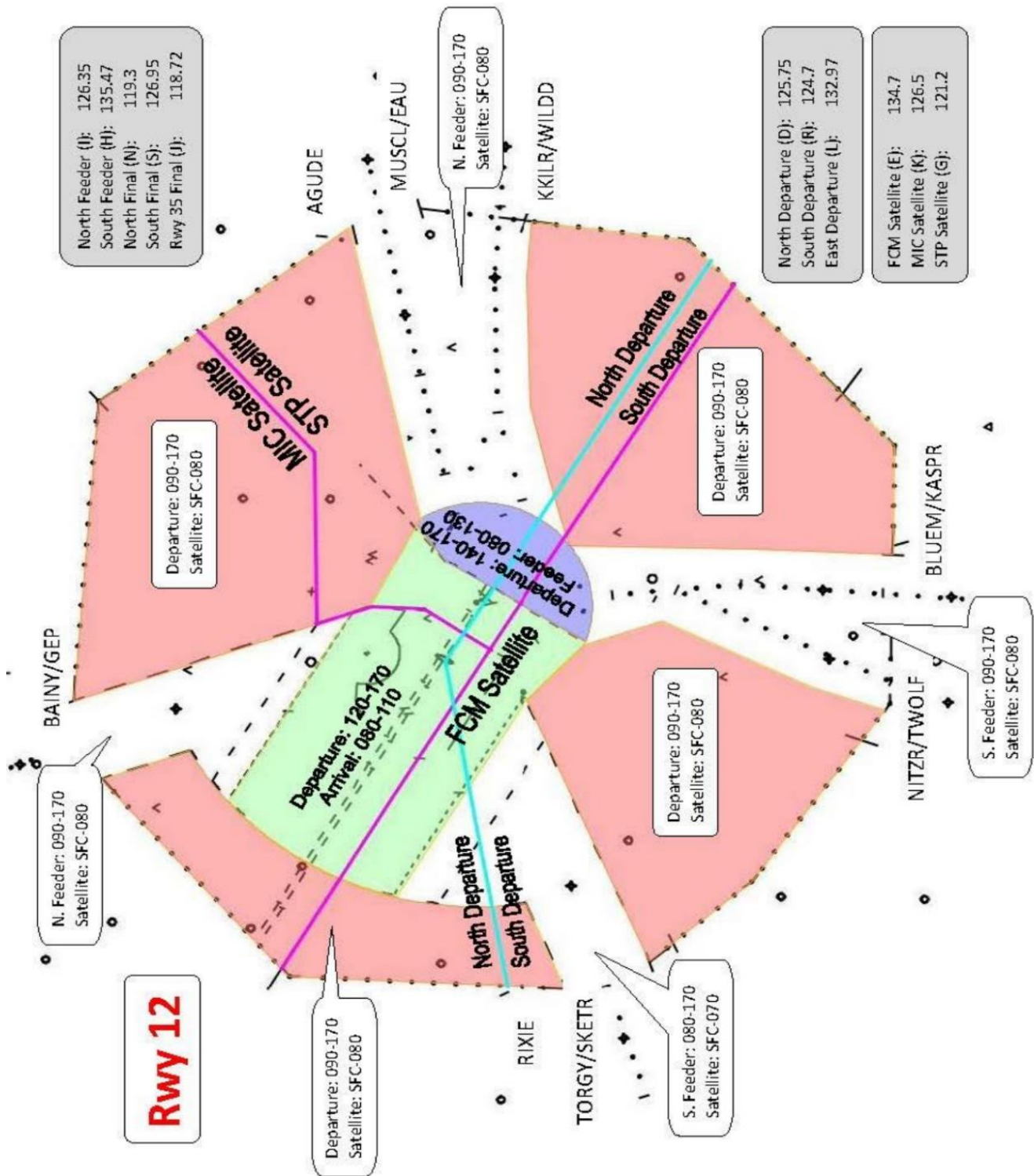
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## Approach Control Airspace and Frequencies



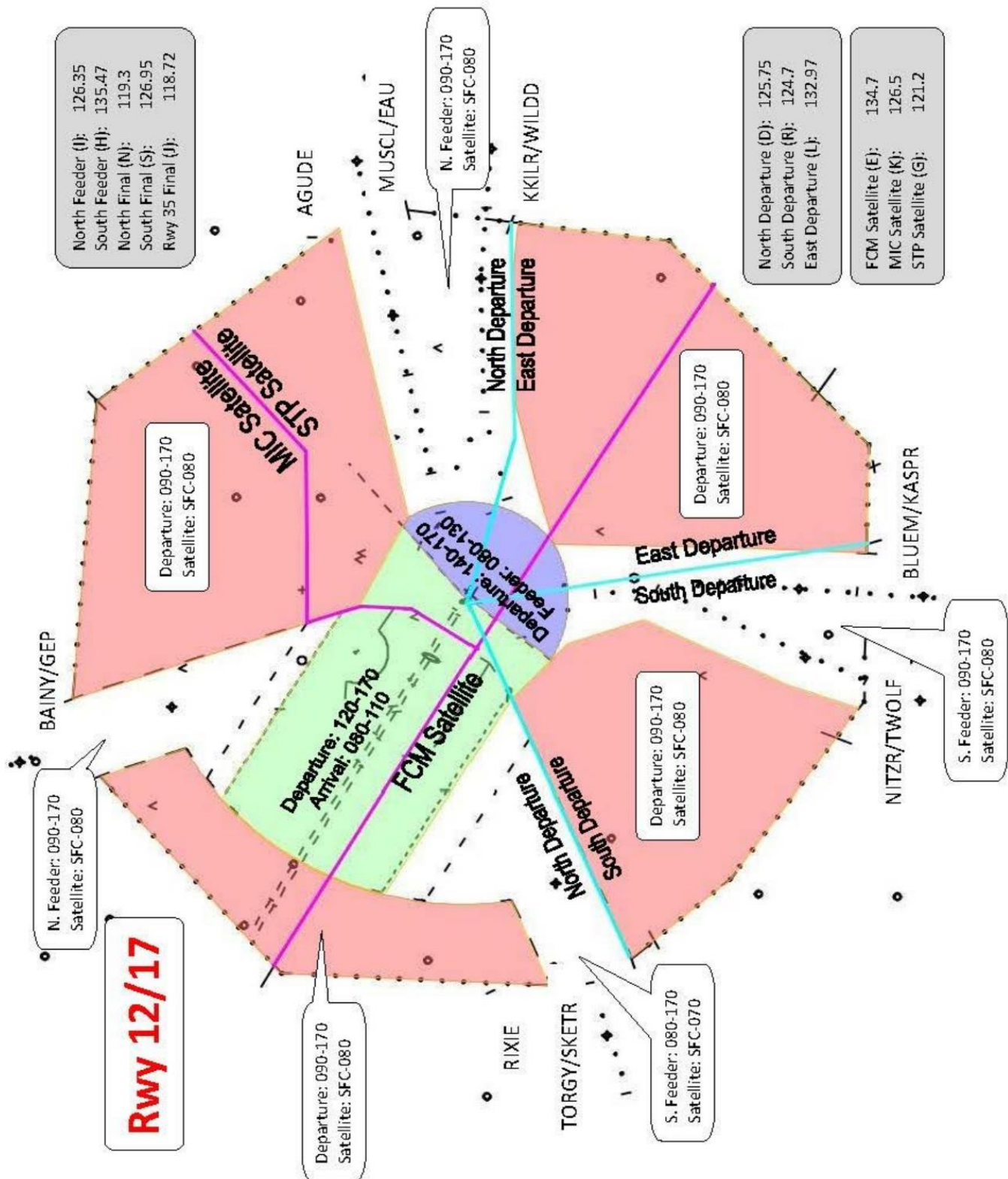
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## Approach Control Airspace and Frequencies



## Attachment D-5

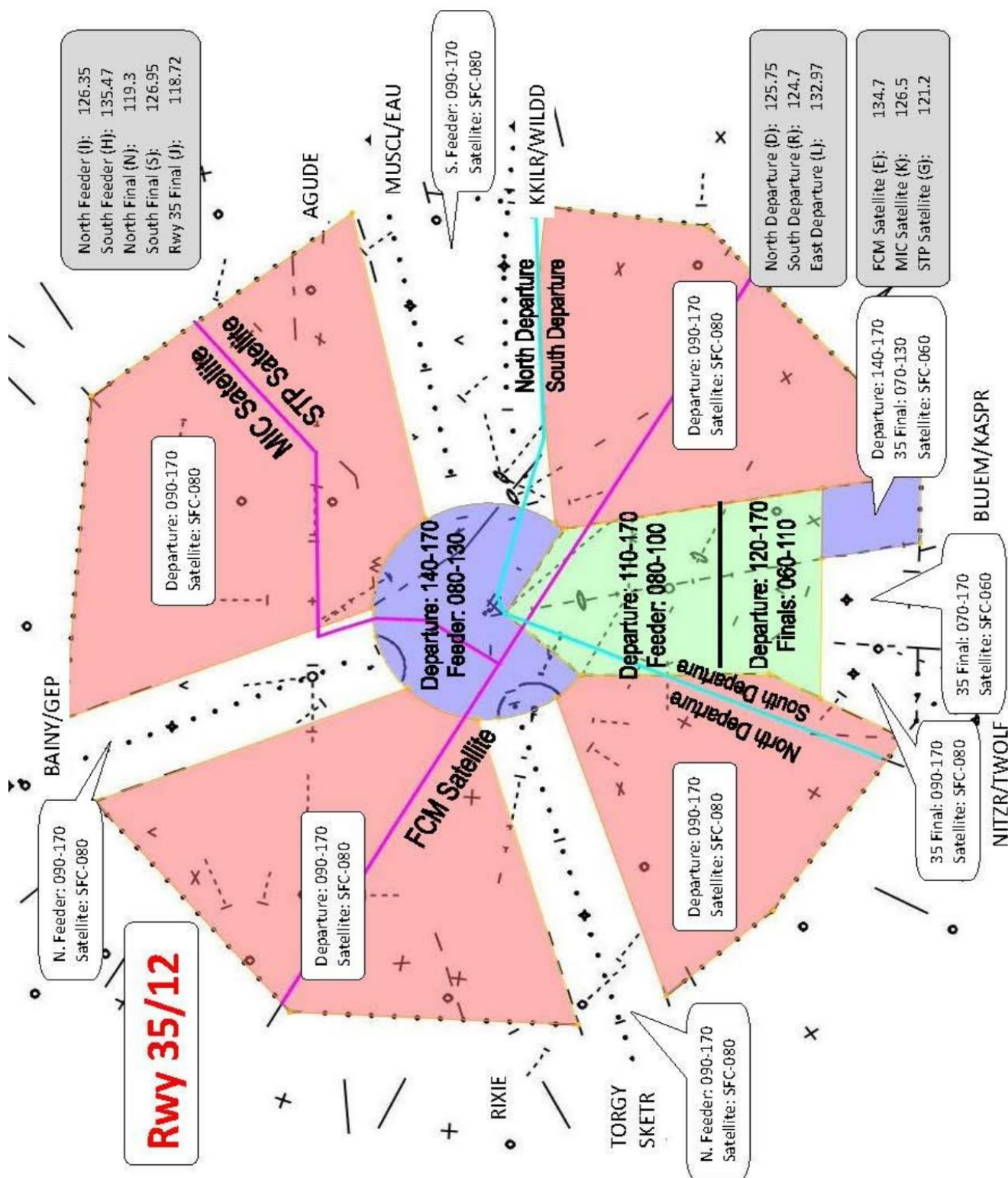
## Approach Control Airspace and Frequencies





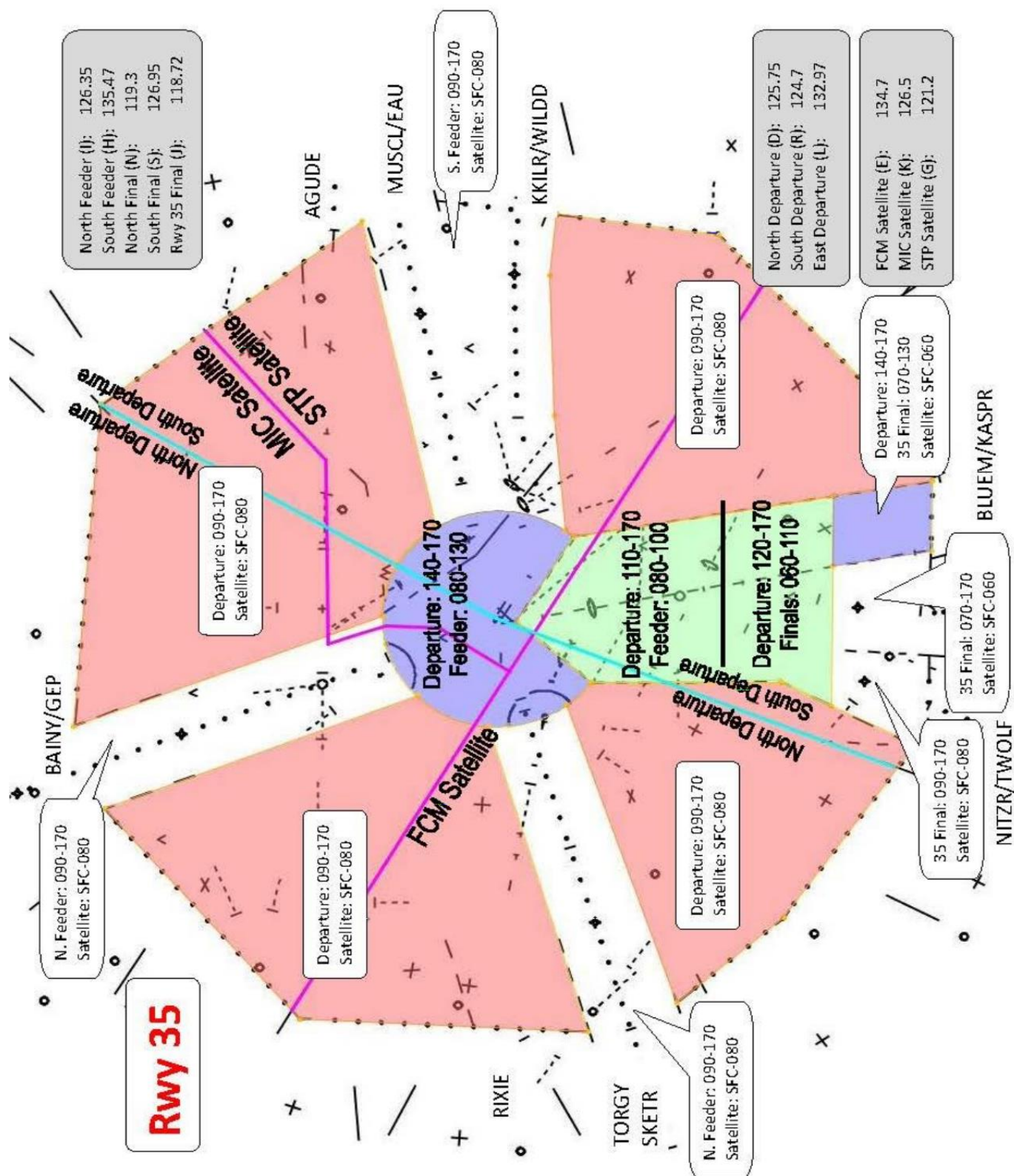
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## Approach Control Airspace and Frequencies



## Attachment D-7

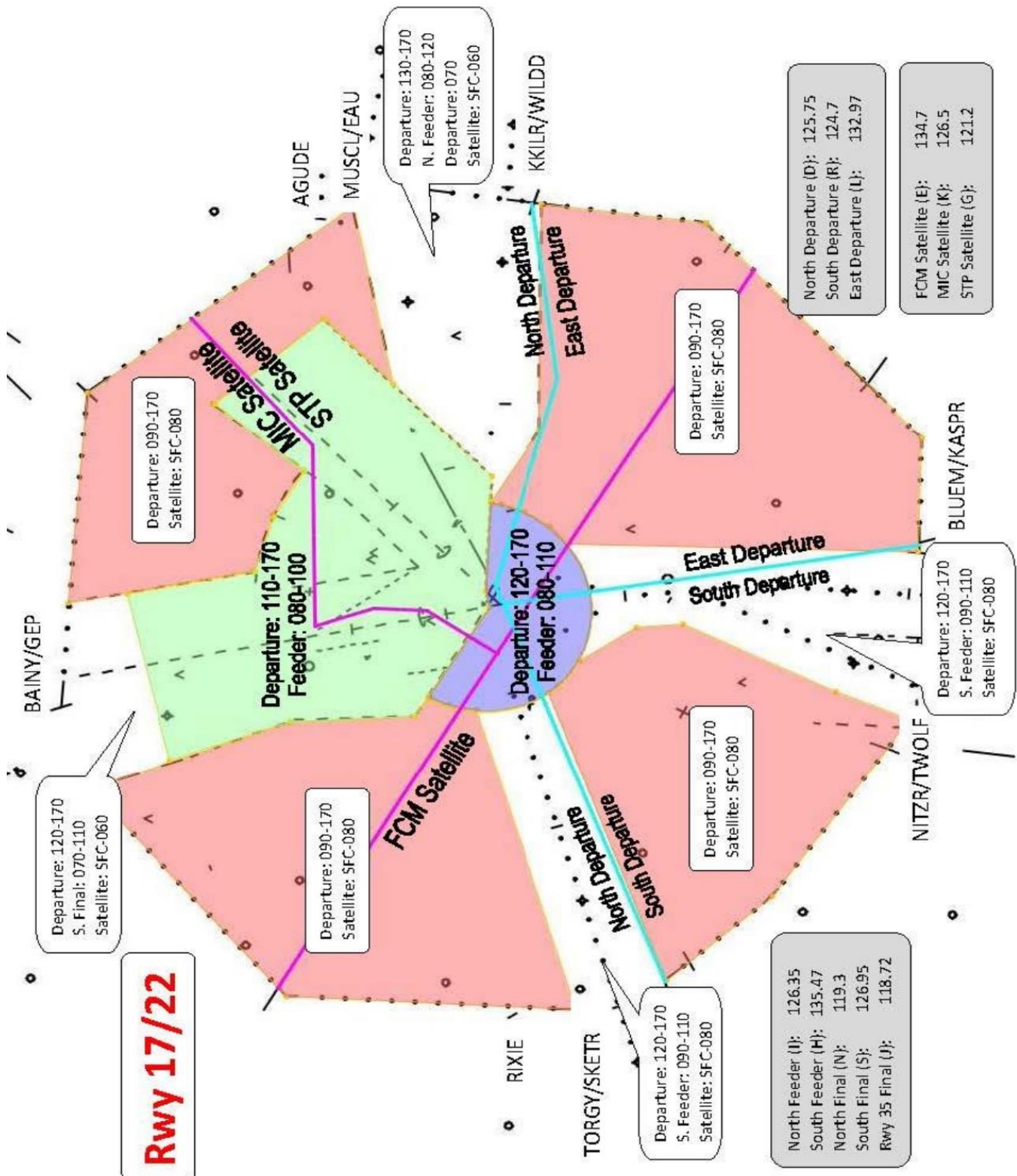
## Approach Control Airspace and Frequencies





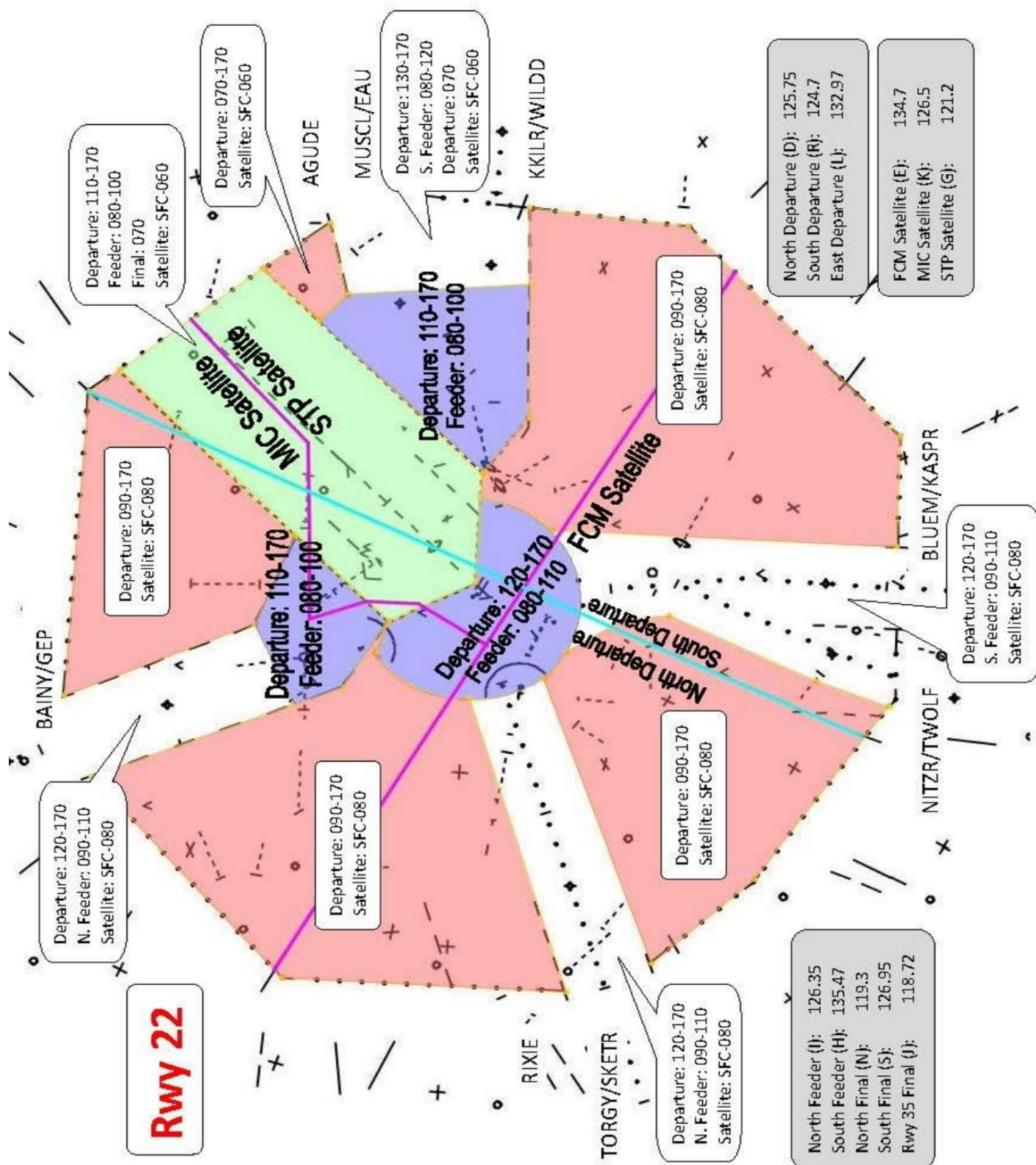
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## Approach Control Airspace and Frequencies



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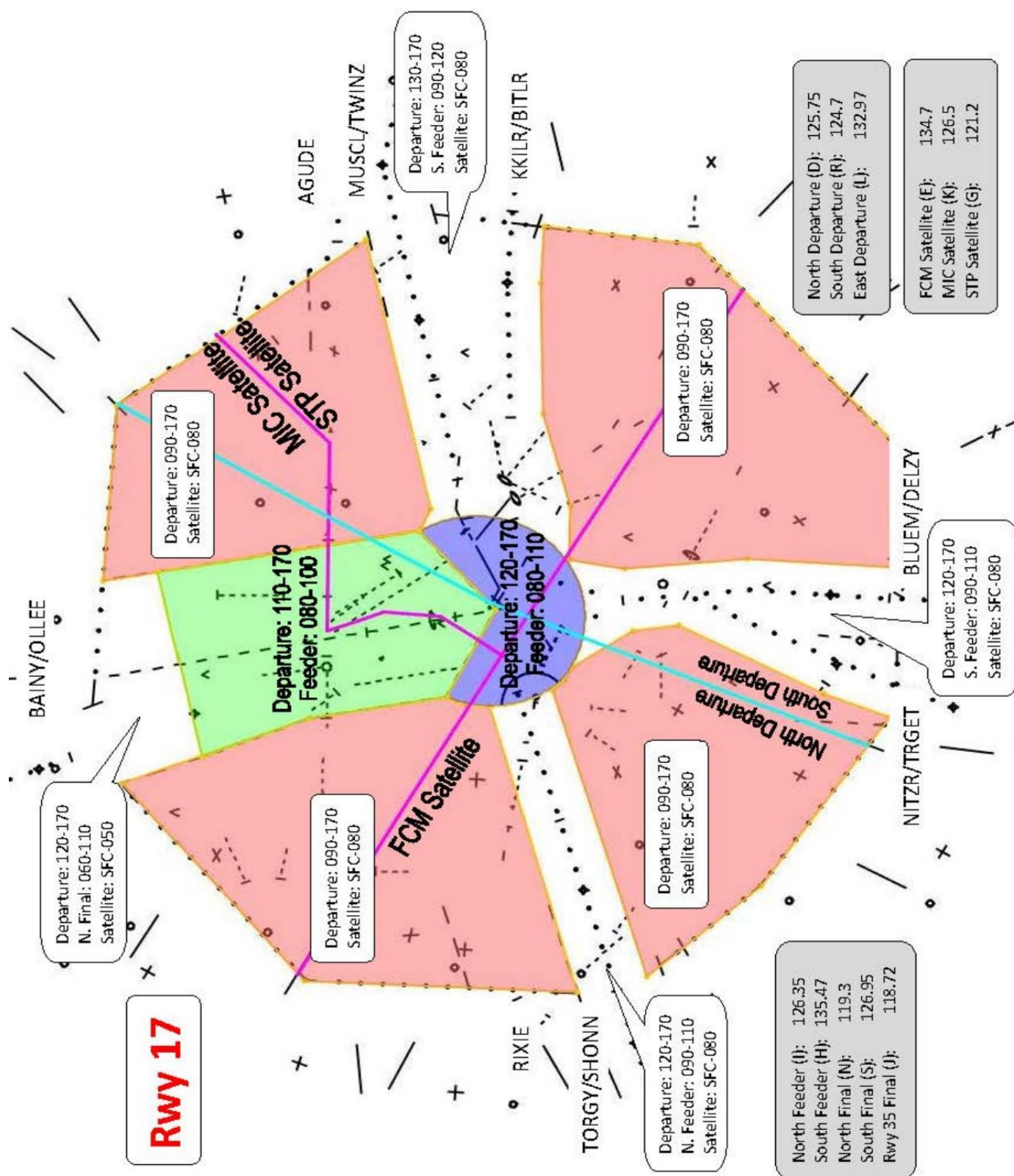
## Approach Control Airspace and Frequencies





## Attachment D-10

## Approach Control Airspace and Frequencies





## Attachment D-11

## Approach Control Airspace and Frequencies

