

**Minneapolis Airport Traffic Control Tower – Minneapolis Terminal Radar
Approach Control**

LETTER OF AGREEMENT

EFFECTIVE: 07/28/24

SUBJECT: TERMINAL OPERATIONS

1. **PURPOSE.** To prescribe procedures for the control of IFR and VFR air traffic at Minneapolis Saint Paul International Airport.
2. **CANCELLATION.** MSP/M98 7110.26F CHG 2, dated 1/19/2024, is cancelled.
3. **SCOPE.** This agreement between Minneapolis Airport Traffic Control Tower (MSP) and Minneapolis Terminal Radar Approach Control (M98) establishes responsibilities and procedures for handling IFR and VFR air traffic at MSP Airport. These procedures are supplementary to FAA Order JO 7110.65, Air Traffic Control.
4. **POSITION IDENTIFIERS.**
 - a. LC: Local Control.
 - b. CIC: Controller-in-Charge.
 - c. TMU: Traffic Management Unit.
5. **GENERAL.**
 - a. **MSP Airspace** is delegated by M98 as follows, and it depicted in Attachment 4 of this letter.
 - 1) The airspace from the surface up to and including 3,000 ft. within the 6-mile ring of the Minneapolis Class B Airspace, including, where applicable, the airspace within 1.5 NM either side of the localizer(s) from the 6-mile ring to final approach fix(es).m
 - 2) When landing Runways 30L/R and Runway 35, the airspace within the 6-mile Class B ring between the eastern boundary of the satellite “corridor” over MSP west to the departure dispersal area, from the surface up to and including 4,000 ft.
 - 3) In the Departure Dispersal Area (DDA), the airspace from the surface up to and including 7,000 ft., and over the FCM and MIC satellite cutouts from 3,500 ft. up to and including 7,000 ft.
 - 4) The airspace within DDA extensions from 4,000 ft. up to and including 7,000 ft.
 - 5) The airspace within the Runway 35-12 configuration ACDA cutout from the surface up to and including 5,000 ft.
 - 6) For VFR operations, each M98 position is delegated VFR altitudes to the base of overlying airspace and down to 500 feet above MSP airspace.

- 7) M98 may transition VFR aircraft not cleared for an instrument approach through the DDA outside of the Class B Airspace without coordination. Aircraft that will loiter in the DDA (e.g. photo missions, tours, surveys, etc.) must be coordinated on an individual basis. M98 assumes separation responsibility with MSP departure traffic.
- b. Visual Separation.** MSP and M98 are authorized to apply visual separation between aircraft under the control of either facility in order to maintain efficiency at MSP Airport. Both facilities must ensure that visual separation is applied only when weather conditions do not obscure visibility affecting the application of visual separation.
- c. Traffic Management Initiatives (TMIs).** Both MSP and M98 must adhere to posted TMIs.

6. COORDINATION.

- a. Flying Cloud Runway 28 RNAV Arrivals When MSP is Departing Runway 17.**
 - 1) M98 must verbally point out the aircraft to MSP in a timely manner.
 - 2) MSP must transfer communication of departure aircraft after separation is ensured.
- b. Runway Change Procedures.** The following coordination procedures must be used during runway changes at MSP:
 - 1) M98 and MSP must use the appropriate runway change checklists.
 - 2) M98 and MSP CICs must coordinate a runway change time and a new runway configuration in accordance with section 8 of this letter.
 - 3) Arrivals and departures must be handled in the following manner:
 - a) A time must be coordinated between M98 TMU/CIC and MSP TMU/CIC when the last departure is estimated to be airborne. MSP CIC must notify M98 CIC of the call sign on the last departure off the former runway configuration.
 - b) A time must be coordinated between M98 TMU/CIC and MSP TMU/CIC when the last arrival is estimated at the Final Approach Fix. M98 CIC must notify MSP CIC of the call sign of the last arrival to the former runway configuration.

NOTE-

If practicable, the last aircraft to use the former runway configuration should be an arrival.

- 4) When runway 17/35 is used in conjunction with 30s or 12s, departure headings may be restricted to accommodate the new configuration.
- c. Runway Closure/Opening Procedures.**
 - 1) Runway closures and openings must be verbally coordinated between MSP and M98 CICs.

- 2) M98 must not allow aircraft to continue past the transfer-of-control point unless the runway has been verbally coordinated open.

7. **ARRIVALS.**

- a. Arrival Scratch Pad Entries are listed in Attachment 8 of this letter.
- b. To facilitate automatic data transfer, LC must quick look the appropriate Arrival Control full data blocks.
- c. M98 must coordinate with MSP on all non-STARS tracked aircraft landing at MSP airport.
- d. M98 delegates control and responsibility to MSP for separation of aircraft within MSP delegated airspace on same, parallel, and/or converging finals.
- e. The Transfer of Control Point for MSP Arrivals must be as follows:
 - 1) Instrument Approach: the Final Approach Fix.
 - 2) Visual Approach: the point at which the aircraft on final enters the MSP airspace lateral boundary.
- f. **Communications Transfer.** M98 must instruct aircraft to contact MSP on the appropriate LC frequency between 6 and 8 miles from the runway.
- g. **Short Approaches.** To mitigate ASDE-X Taxiway Arrival Prediction (ATAP) initiated go-arounds, instruct all aircraft turning inside the FAF to join at or outside a 2 mile final.

Example:

“BMJ47 make at least a 2 mile final.”

- h. **Missed Approach and Go-Around Procedures.** MSP must:
 - 1) Issue headings as necessary to ensure separation from other arriving and departing aircraft within MSP delegated airspace.
 - 2) Traffic permitting, climb to an initial altitude of 3,000 ft. and scan the over-the-top corridor.
 - 3) Determine if the aircraft will be vectored to the departure dispersal area or into satellite airspace.
 - (a) If the aircraft will enter the dispersal area, climb to 6,000 ft. and issue an “inside” heading if possible.
 - (b) If the aircraft will enter satellite airspace coordinate a heading and altitude with the satellite controller.

NOTE-

Under normal circumstances, the go-around aircraft should be vectored to the dispersal area. Satellite airspace may be used if the dispersal area is not available due to traffic. If necessary, an aircraft may be vectored in the ACDA if it will not enter satellite or departure airspace, or back to the ACDA with a point out to satellite if special circumstances warrant. If the aircraft will be vectored within or back to the ACDA, a heading and altitude must be coordinated with AO.

- 4) Make a handoff to the receiving controller. An automated hand off may be used.

EXAMPLES-

The go-around aircraft is issued a heading of 260°, an altitude of 6,000 ft., and handed off to Departure.

(CC) "R, CC, Handoff."

(R) "R"

(CC) "One mile west MSP, DAL123, go-around, heading 260 climbing to 6,000."

(R) "DAL123, Radar Contact. FQ"

(CC) "OE"

The go-around aircraft is issued a 040° heading, an altitude of 4,000 ft., and handed off to Satellite.

(CC) "G, CC, Handoff."

(G) "G"

(CC) "One mile north MSP, DAL123, go-around, heading 040 climbing to 4,000."

(G) "DAL123, Radar Contact. MA"

(CC) "JB"

- 5) Assign the go-around aircraft the receiving controller’s frequency.

- i. **Runways 30L/R and 35 Converging Runway Operations (CRO).** Simultaneous operations to converging runways are authorized for Runways 30L/R and Runway 35.

- 1) Definitions.

- (a) Arrival Departure Window (ADW). A depiction presented on an air traffic control display, used by the controller to prevent possible conflicts between arrivals to, and departures from, a runway. The ADW identifies the point on the final approach course by which a departing aircraft must have begun takeoff.

| Runway Pair | Front Gate (NM) | Rear Gate (NM) |
|--------------------|------------------------|-----------------------|
| 35/30L | 2.26 | .39 |
| 35/30R | 2.35 | .32 |

- (b) Converging Runway Display Aid (CRDA). A STARS tool which projects an aircraft's position on final onto another final using a "ghost" target.
 - (c) No Departure Zone (NDZ). The area not within the ADW. If an arrival to RWY 35 is in this area while an aircraft departs RWY 30L/R, the risk of collision should a RWY 35 arrival go-around increases exponentially.
 - (d) CRO is defined as landing Runway 35 while departing Runway 30L/R.
- 2) Criteria for Runways 30L/R and Runway 35 CRO. The need to use CRO is inherently based on airport demand, and the availability of three landing runways is integral in maintaining the traffic density that warrants its own use. Demand should be moderate to heavy.
- (a) The MSP and M98 CICs, with input from TMU, must determine if traffic needs dictate the application of Converging Runway Procedures.
 - (b) The ceiling must be 2,200 ft. or higher.

NOTE – A ceiling refers to cloud coverage of 4/8s or greater. Clouds may hinder the viability of CRO while not qualifying as a ceiling, or being reported higher than 2,200 ft.

- (c) The visibility must be 5 miles or greater.
- (d) Wind requirements for Runway 35.

(1) Tailwind: Wind gusts must be included when referencing the wind charts. If the runway is contaminated, there will be no tailwind.

REFERENCE – Pilot/Controller Glossary "Contaminated Runway."

(2) Crosswind: Wind gusts must be included when referencing the wind charts for Runway 35 only. The crosswind component (including gust values) must be within the parameters of the Attachment 7 wind chart.

- 3) Procedures.
- (a) When weather is forecast to be conducive for a 30s/35 configuration, MSP and M98 must advertise 30s/35 on the ATIS as live as the weather remains conducive. The configuration must not alternate between 30s/35 and 30s/17.
 - (b) Heavy aircraft and props must land the parallels unless otherwise coordinated.
 - (c) CRDA must be used at the J Position to ghost 30L aircraft onto the 35 final.

NOTE – Runway 35 traffic may be ghosted on the Runway 30L final, this may be useful to S and N controllers.

- (d) M98 must provide balanced arrivals to RWY 30L, RWY 30R, and RWY 35. Balanced is defined as matched sets to RWY 30R, RWY 30L, RWY 35, without creating undue delay to arriving aircraft.

- (e) Aircraft landing RWY 35 must be within 0.5NM of the ghost target when 30L traffic reaches 2 mile final. The ghost target is automatically offset 1.5NM behind the aircraft on 30L. In the event there is no 30L ghost available, the 35 arrival must be 5NM behind the preceding 35 arrival at 170 KTS or less assigned airspeed, when the preceding 35 arrival touches down.
 - (f) Aircraft landing RWY 30R should be as close to 1NM behind aircraft landing 30L as practicable.
 - (g) Required spacing to RWY 30L/30R must be no less than 5NM at touchdown, 170 KTS or less assigned airspeed. MSP CIC/TMU will advise M98 CIC/TMU when increased spacing is required.
- 4) Transitioning from the use of CRO:
- (a) When converging runway operations are no longer conducive due to the criteria listed above, a transition period is needed to allow M98 to safely evolve to an alternate runway configuration. M98 may continue arriving on the Runways 30L/30R and 35 configuration with the traffic currently within the confines of M98 airspace while actively emphasizing the transition to the alternate configuration.
 - (b) Coordination must be made between MSP and M98 TMU regarding the urgency of the transition period.

EXAMPLE – During low ceiling conditions.

- (c) During this transition period, LC must comply with Arrival Departure Window (ADW), or stop departing Runway 30L and 30R until there are no more arrivals on Runway 35.
- j. Runway 35 Reduced Separation on Final** is approved when Runway 35 is the only advertised landing runway at MSP. Separation between aircraft may be reduced to 2.5NM in-trail on the final approach course within 10NM of the runway.

8. DEPARTURES.

- a. Departure Data Block Display.** LC must ensure that the correct full STARS data block is displayed on the CTRD on all departures receiving radar services. LC must ensure that Departure Control is advised of any departure that has not auto acquired within two miles from the airport.
- b.** Departure/Satellite Control must be responsible for ensuring that auto-acquisition of the departure tracks has occurred.
- c.** Departure and Satellite may alter the initial heading of any MSP departure provided separation from any preceding/succeeding departure is ensured.

- d. Departure Control may climb MSP departures (initially assigned 5,000 ft. or higher) within the dispersal area provided separation from any preceding/succeeding traffic is ensured.
- e. MSP must inform the affected Satellite position of any departing aircraft unable to meet a published crossing restriction or climb gradient.

EXAMPLES-

A Runway 12R departure will not be able to meet the published climb gradient.

(CC) "G, CC, Info."

(G) "G."

(CC) "DAL123 Heavy departing 12R in about 5 minutes unable to make the climb gradient."

(G) "Roger, JR."

(CC) "OX."

- f. **MSP Departures Landing FCM or STP.** MSP must advise the appropriate M98 Satellite controller prior to departing an IFR aircraft landing at FCM or STP.
- g. **Departure Headings.** LC must issue initial headings that ensure departures remain in the appropriate Departure Delegated Airspace as depicted in Attachment 1, and in accordance with the following procedures.
 - 1) **Depart Runways 12L/R.** Regardless of landing runways, coordination must be completed when departing Runway 12L or 12R during the following conditions:
 - (a) If LC issues "R" traffic departing Runway 12L/R a heading that tracks on or north of 105°, LC must coordinate with "D."
 - (b) If LC issues "D" traffic departing Runway 12L/R a heading that tracks south of a 105°, LC must coordinate with "R."
 - 2) **Land Runways 12L/R, Depart Runways 12L/R and 17.**
 - (a) LC must assign Runway 12L/R departures (FOD or ONL) a 230° heading for a turn at three miles from the departure end of the runway. LC must ensure 3 Miles-in-Trail (MIT) for same fix with departures off different runways.
 - (b) M98 has control for left turns of "D" traffic (ABR, FAR, WLSTN, etc.) off Runway 17 regardless of assigned heading.
 - (c) When a Runway 12/17 configuration is in use, the maximum Runway 17 departure track must be 215°.
 - (d) When landing Runways 12L/R and departing Runways 12L/R and 17, the common (joint-use) track for Runways 12L/R departures must be 105°.
 - (1) If LC issues "L" traffic departing Runway 12L/R a heading that tracks north of 105° LC must coordinate the traffic with "D".

- (2) If LC issues “D” traffic departing Runway 12L/R a heading that tracks south of 105° LC must coordinate the traffic with “L”.
- 3) Depart Runway 30L/R.** Regardless of landing runways, coordination must be completed when departing Runway 30L/R during the following conditions:
- (a) If LC issues “R” traffic departing Runway 30L/R a heading that tracks on or north of 300°, LC must coordinate with “D.”
 - (b) If LC issues “D” traffic departing Runway 30L/R a heading that tracks south of 300°, LC must coordinate with “R.”
- 4) Land Runways 30L/R, Depart Runways 30L/R and 17.**
- (a) When a Runway 17 departure will depart simultaneously with a same-fix Runway 30L/R departure, the aircraft must be 3 MIT, no visual separation, and no divergence. Visual separation or divergence may be used under unusual circumstances.
 - (b) M98 has control for right turns of “D” traffic (ABR, FAR, WLSTN, etc.) off Runway 17 regardless of assigned heading. In this situation, M98 ensures separation from preceding Runway 30L/R departures in the dispersal area, and MSP ensures separation between subsequent Runway 30L/R departures and the Runway 17 departure turning north.
 - (c) Divergence or visual separation is acceptable for ONL traffic provided that the third aircraft is 3 MIT of the second aircraft.
 - (d) On a Runway 30/17 Configuration, all Runway 17 departures must be issued a heading to track no less than 170°.
- 5) Runway 17 Same-Fix Departure Spacing.** When landing 12L/R or 30L/R and departing Runway 17, LC must provide 3 MIT turbojet-to-turbojet and turboprop-to-turboprop spacing over the same fix, no divergence. Under unusual circumstances, LC may use divergence provided the third aircraft is 3 MIT of the second aircraft.
- 6) Land Runway 30L/R and 35, Depart Runway 30L/R.** Turboprop aircraft assigned ODI and RST filed for 110 and above must be issued a 260° track and treated as one fix, 3 MIT, and no visual separation.
- 7) Land Runway 35, Depart Runways 12L/R.**
- (a) LC must APREQ with “G” all non-noise aircraft assigned headings from 360° clockwise to 060°.
 - (b) The maximum departure track southeast of MSP must be 135° from Runway 12R departure end.
 - (c) Non-turbojet aircraft assigned routings into Sector 8 (FOD, ONL) airspace that are turned right must be assigned to “E”.

(d) KBREW, SMERF, DWN, LEINY, SCHEP, and ORSKY turbojet traffic must be treated as one fix and provided a minimum 3 MIT initial departure spacing.

h. Initial Departure Altitudes. MSP must use the following procedures when assigning initial departure altitudes:

- 1) Turbojet departures requesting 9,000 ft. and higher must be assigned 7,000 ft. and assigned to Departure Control.
- 2) Turbojet departures requesting 8,000 ft. and lower must be assigned 4,000 ft. and assigned to Satellite Control.
- 3) Turboprop departures requesting 11,000 ft. and higher must be assigned 5,000 ft. and assigned to Departure Control.
- 4) Turboprop departures requesting 10,000 ft. and lower must be assigned 4,000 ft. and assigned to Satellite Control.
- 5) Piston-engine aircraft, regardless of requested altitude, must be assigned 4,000 ft. and assigned to Satellite Control.
- 6) Any aircraft departing MSP and assigned a heading in the pie area must be coordinated with the appropriate control position(s), stopped at 4,000 ft. and assigned to Satellite Control.
- 7) Any altitudes other than those listed above must be verbally coordinated.

i. MSP CIC must coordinate departures from non-advertised runways with all affected M98 positions.

j. VFR Departures:

- 1) Aircraft requesting VFR clearance to leave the Class B airspace, without additional traffic advisories, must be issued an altitude at or below 2,700 ft.
- 2) VFR aircraft requesting radar advisory service within M98 airspace must be issued “at or below 3,500 ft.” and assigned to the appropriate satellite position on a discrete beacon code.

k. LEINY, DWN, and SMERF SID Procedures.

- 1) MSP must consider LEINY/DWN or SMERF/DWN as one fix and provide a minimum 3 MIT initial departure spacing.
- 2) Visual separation must not be applied.
- 3) There are no initial departure restrictions between LEINY and SMERF traffic.

9. RUNWAY USE, NOISE ABATEMENT, AND MIDNIGHT OPERATIONS.

- a. The guidelines for the issuance of air traffic control instructions relating to noise abatement for all turbojet aircraft and all other Group IV and V aircraft must be according to the procedures stated in this section.
- b. **Runway Selection.** Runway selection must be determined in accordance with FAA Order 8400.9, National Safety and Operational Criteria for Runway Use Program.
 - 1) Parallel runway selection must be based on, but not limited to, wind, weather, and traffic conditions.
 - 2) The M98 and MSP CICs must collaboratively determine the arrival and departure runways.
- c. The RUS gives ATC guidance on noise-sensitive runway selection.
 - 1) Departures are considered noisier than arrivals and must be considered first when selecting a runway configuration. Departure runway/runways should be considered in descending preference from the chart below based on wind, weather, and airport demand.
 - 2) Once a departure runway configuration has been selected, a corresponding arrival runway configuration must be selected in descending preference from the chart below based on wind, weather, and airport demand.

| | |
|-----------------------|-----------------------|
| Departure Preference: | Arrival Preference: |
| Runways 12L/12R | Runways 30L/30R |
| Runway 17 | Runway 35 |
| Either Runway 4 or 22 | Either Runway 22 or 4 |
| Runways 30L/30R | Runways 12L/12R |
- d. **Runway 30L/R Arrivals.** Aircraft south of Runway 30L localizer arriving on 30L and 30R must be vectored to at least a 4 mile final. When issuing a visual approach clearance to these arrivals, the pilot must also be advised to make at least a 4 mile final.

EXAMPLE-

"Cleared visual approach Runway 30L, make at least a 4 mile final for noise abatement."

- e. **Runway 30L/R Turbojet Dispersal Procedures.** Unless otherwise required by other traffic or weather, MSP must assign initial departure headings to approximate the tracks listed below for aircraft on the following departure SIDs:
 - 1) KBREW Departure – Assign headings that will approximate a 320° track.
 - 2) WLSTN Departure – Assign headings that will approximate a 340° track.
 - 3) COULT Departure – Assign headings that will approximate a 360° track.
 - 4) MINNEAPOLIS Nine or subsequent versions of this SID with initial fixes as follows:

- (a) FAR – Assign headings that will approximate a 320° track.
- (b) BRD, DLH, HYR, EAU or GRB – Assign headings that will approximate a 340° track.
- (c) DLL – Assign headings that will approximate a 360° track.

f. Runway 4 and 22 Departures.

- 1) Aircraft departing Runway 22 and making a right turn must:
 - (a) Be instructed to remain on runway heading until leaving 1,500 ft. MSL.
 - (b) Not be issued a heading greater than 350° until past the 12L localizer course.
- 2) Aircraft departing Runway 4 must be issued headings that avoid overflying the Veterans' Administration Hospital as much as possible.

g. Quiet Hours Procedures. During quiet hours (2230 until 0600 local) maximize the use of the Mendota Heights/ Eagan corridor as much as feasible by departing Runways 12L/R, and landing Runways 30L/R.

- 1) The RUS preferences for midnight operations are as follows:
 - (a) Land 30L/R– Depart 12L/R (opposite direction).
 - (b) Land 35– Depart 12L/R or Land 30L/R– Depart 17.
 - (c) 12L/R.
 - (d) 30L/R.
- 2) If Runway 4/22 usage is required, give equal priority to either end.
- 3) Quiet hour procedures should be applied to all aircraft when feasible, and must be applied to all aircraft with noise characteristics similar to or greater than a C130 or turbojet aircraft.
- 4) Departures with noise characteristics may be issued a heading to remain over the river basin until leaving 3,000 ft. or higher before proceeding on course.

h. Midnight Operations.

- 1) Opposite-Direction operations.
 - (a) Opposite direction operations will be utilized when wind and weather permit as per FAA Order 8400.9 and local runway use and noise abatement procedures.
 - (b) When MSP is in a land 30L/R-depart 12L/R configuration, for opposite direction purposes, the advertised landing runway must be considered the configuration.
 - (c) MSP must ensure that all noise sensitive departures will remain within the noise corridor.

- (d) If MSP anticipates more than a 15-minute total relay or 5-minute delay at the runway for departure aircraft, coordinate with M98 as necessary for possible change to the preferred cross runway operation.

10. OPPOSITE DIRECTION OPERATIONS (ODO).

a. Definitions.

- 1) Opposite Direction Operations: IFR/VFR Operations conducted to the same or parallel runway where an aircraft is operating in a reciprocal direction of another aircraft arriving, departing, or conducting an approach.
- 2) Cutoff Point: The Cutoff Point is 10 NM from the threshold of the runway of intended landing.

NOTE- Aircraft on a downwind or on a vector away from the airport are not considered within the Cutoff Point until established on a base leg that falls within the Cutoff Point.

b. Responsibilities.

- 1) MSP and M98 share the responsibilities to coordinate ODO and issue traffic advisories as prescribed in this agreement.
- 2) MSP is responsible to apply the cutoff point(s) between arriving and departing aircraft.
- 3) M98 is responsible to apply the cutoff point(s) between successive ODO arrivals.

c. Procedures for Aircraft Receiving IFR Services. These procedures apply when there are two aircraft receiving IFR services.

- 1) ODO procedures in this paragraph are applicable when two aircraft will execute approaches to opposite ends of the same runway, or an aircraft will depart prior to an arrival on an opposite direction approach to the same or parallel runway.
- 2) Traffic advisories must be issued to both aircraft.
- 3) Do not allow opposite direction same runway operations with opposing traffic inside the cutoff point unless an emergency situation exists.
- 4) Use of visual separation is not authorized for aircraft receiving IFR services that are conducting ODO to the same runway.
- 5) Ensure that ODO conducted from parallel runways provide for a turn away from the opposing traffic when inside of the cutoff point to the other runway. Visual separation may be applied after the turn away from conflicting traffic is issued.

d. Coordination.

- 1) The MSP Controller and the M98 Controller are responsible for initiating coordination required to accomplish an opposite direction arrival or departure.

- 2) The MSP Controller must verbally request opposite direction departures with the M98 Controller.
 - 3) The M98 Controller must verbally request opposite direction arrivals with the MSP Controller.
- e. Cutoff Procedures** for aircraft receiving IFR services and conducting opposite direction same runway operations:
- 1) A departing aircraft must be airborne and issued a turn to avoid conflict prior to an aircraft reaching the Cutoff Point.
 - 2) An aircraft performing a go-around, low approach, or missed approach must be issued a turn to avoid conflict prior to an aircraft reaching the Cutoff Point.
 - 3) An arriving aircraft must cross the runway threshold prior to an aircraft reaching the Cutoff Point.
 - 4) If the above conditions are not met, action must be taken to ensure control instructions are issued to protect the integrity of the cut off points.
- f. Procedures for VFR/VFR and VFR/IFR Operations.**
- 1) Ensure VFR aircraft are issued a turn to avoid conflict with opposing IFR/VFR traffic.
 - 2) If coordination with another position is required, LC must state the phrase "OPPOSITE DIRECTION."
 - 3) LC must issue traffic to both aircraft and indicate the direction that the departure will turn (arrival/departure) or the location of the opposing aircraft on final (arrival/arrival).
 - 4) If the above conditions are not met, action must be taken to ensure control instructions are issued to protect the integrity of the cut off points.

11. DEPART RUNWAY 17-ARRIVE RUNWAY 17/22 PROCEDURES.

- a. Weather Criteria.** The weather must be at least 1400 ft. ceilings and 4 miles visibility.
- b. LAHSO PROCEDURES.**
- 1) Runway 17 arrival spacing must provide 4 miles spacing at touchdown. This spacing is not required when there is no traffic landing Runway 22.
 - 2) Runway 22 arrival spacing must provide 6 miles spacing at touchdown. This spacing is not required when there is no departure traffic.
 - 3) M98 must advise MSP of aircraft landing Runway 22 that will not LAHSO.

c. Departures.

- 1) LEINY, DWN, and SMERF traffic must be treated as one fix and provided 3 MIT initial departure spacing (jet-jet/prop-prop).
- 2) FAR and BRD traffic must be treated as one fix and provided 3 MIT initial departure spacing (jet-jet/prop-prop).
- 3) Tower must turn DLH/WLSTN traffic east and provide a minimum 3 MIT initial departure spacing (jet-jet/prop-prop).

d. Go Arouds. Traffic permitting, all Runway 17 or Runway 22 go around traffic should make a right turn and return to Runway 17 regardless of the initially assigned landing runway.

12. ATTACHMENTS.

Attachment 1 M98 Airspace

Attachment 2 Departure Configurations

Attachment 3 Satellite Airspace Split and Class D Airspace

Attachment 4 MSP Airspace

Attachment 5 MVA Chart

Attachment 6 Preferential Tower Assigned Headings

Attachment 7 Runway Use Wind Charts

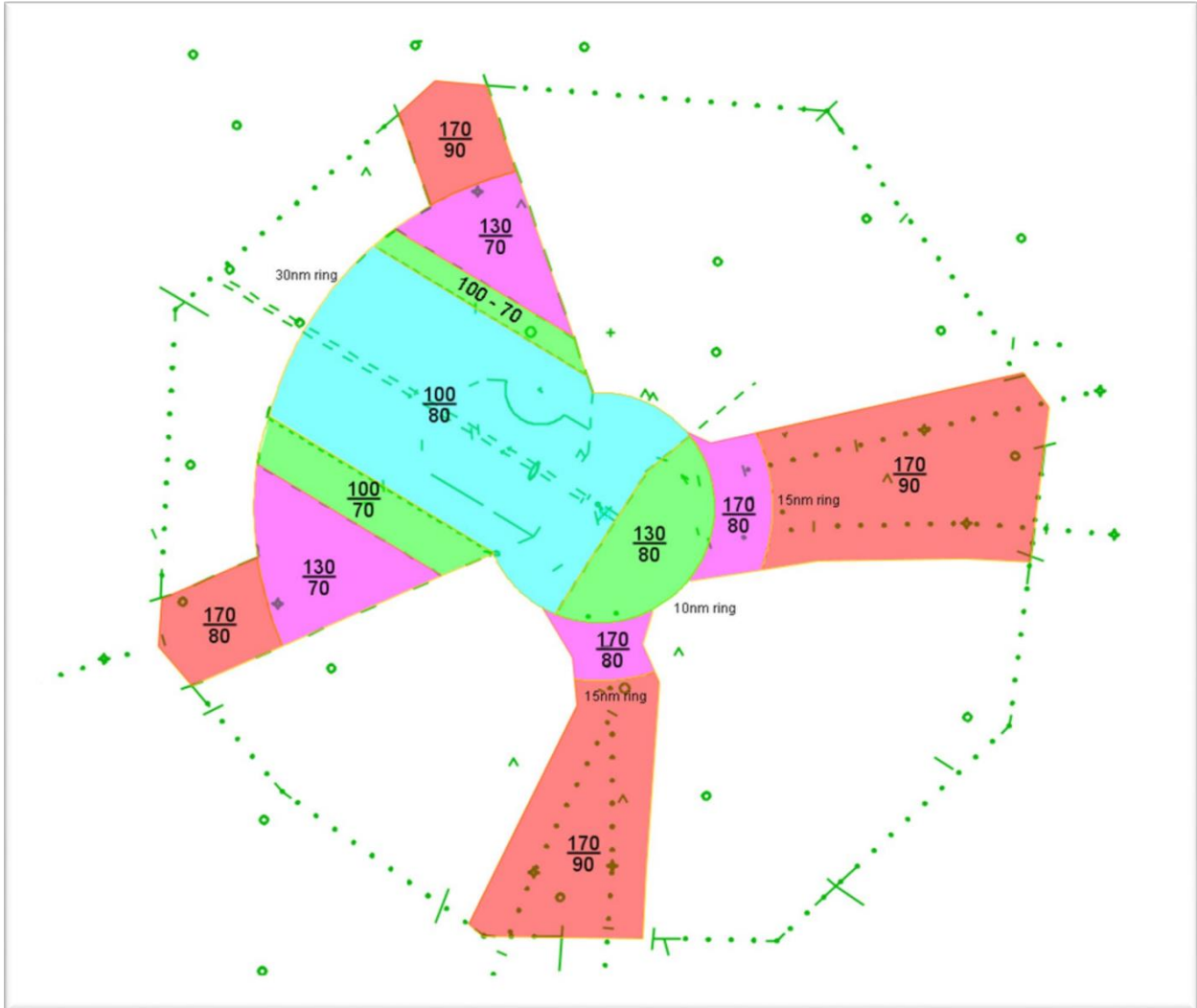
Attachment 8 Scratch Pad Entries

Dhruv Kalra
Air Traffic Manager
VATSIM Minneapolis ARTCC

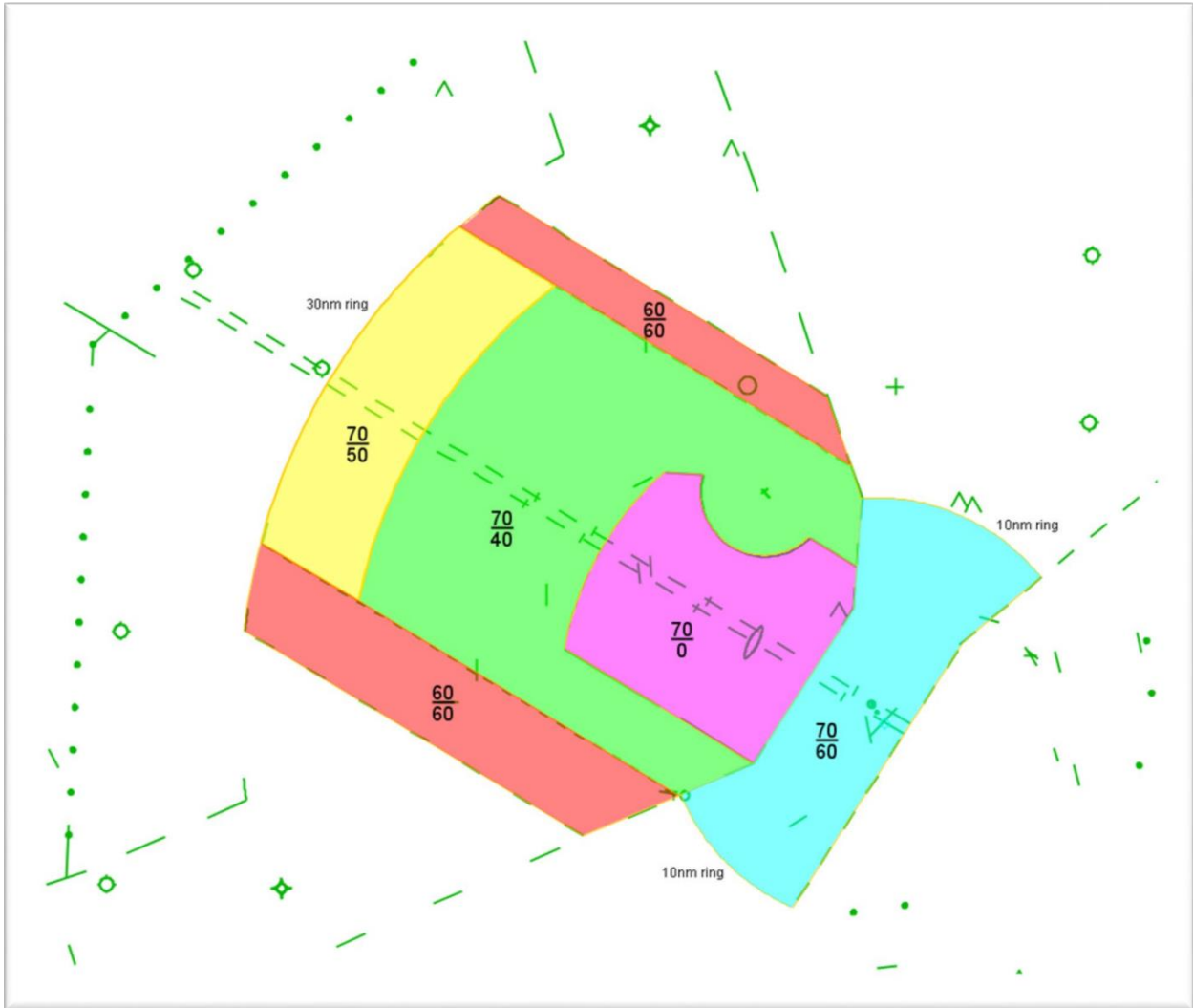
Lance Harry
Deputy Air Traffic Manager
VATSIM Minneapolis ARTCC

Attachment 1: M98 Airspace

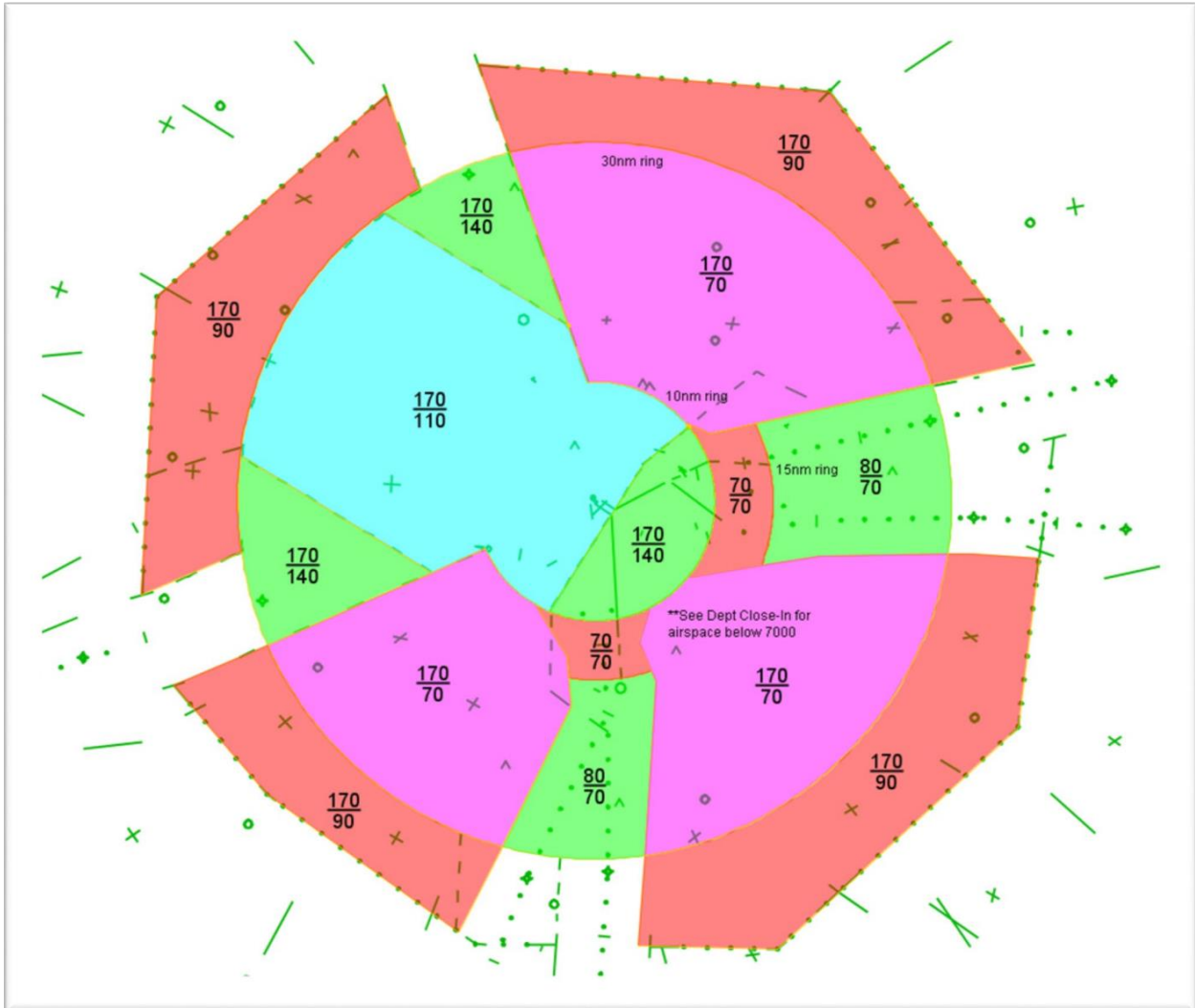
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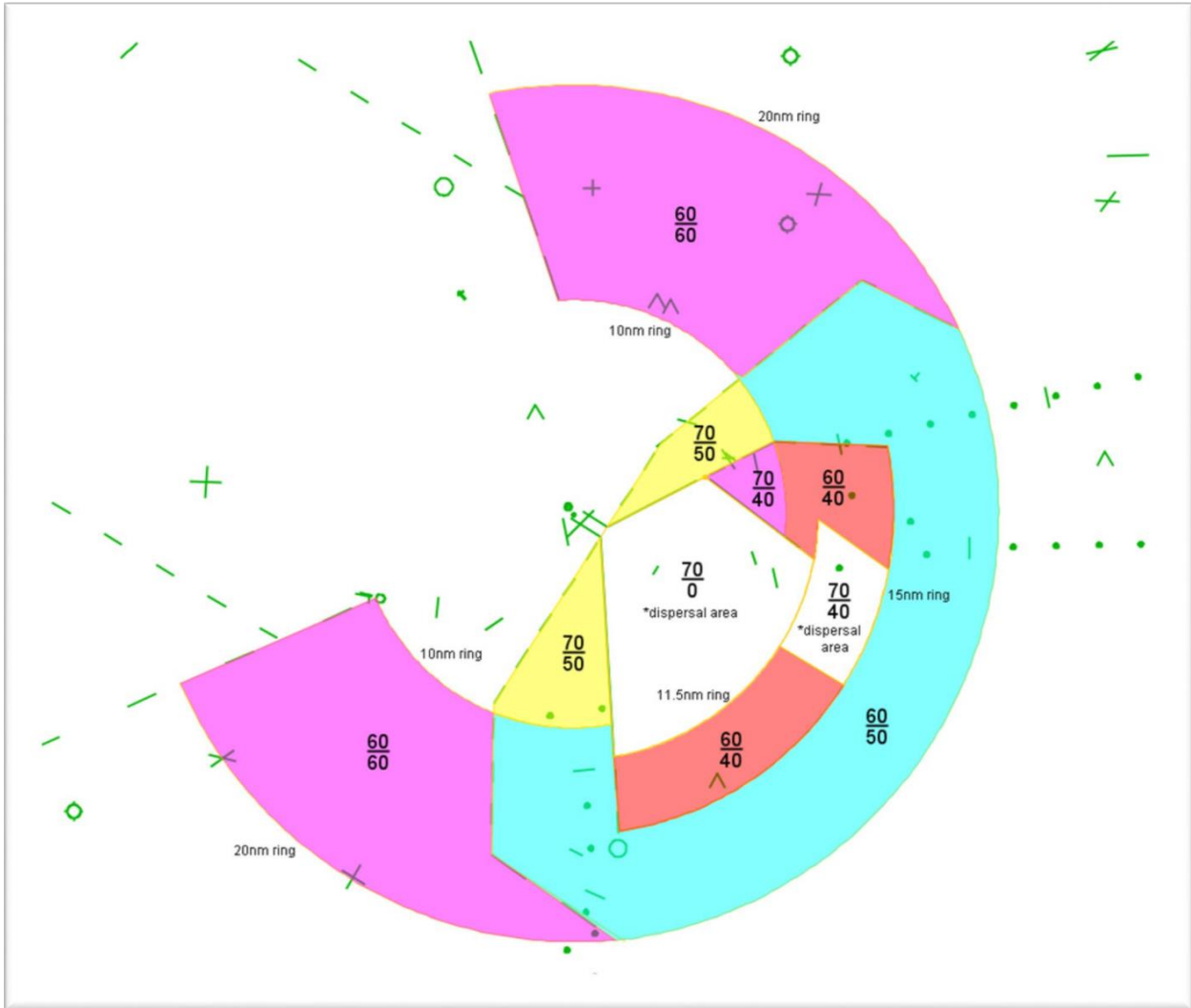
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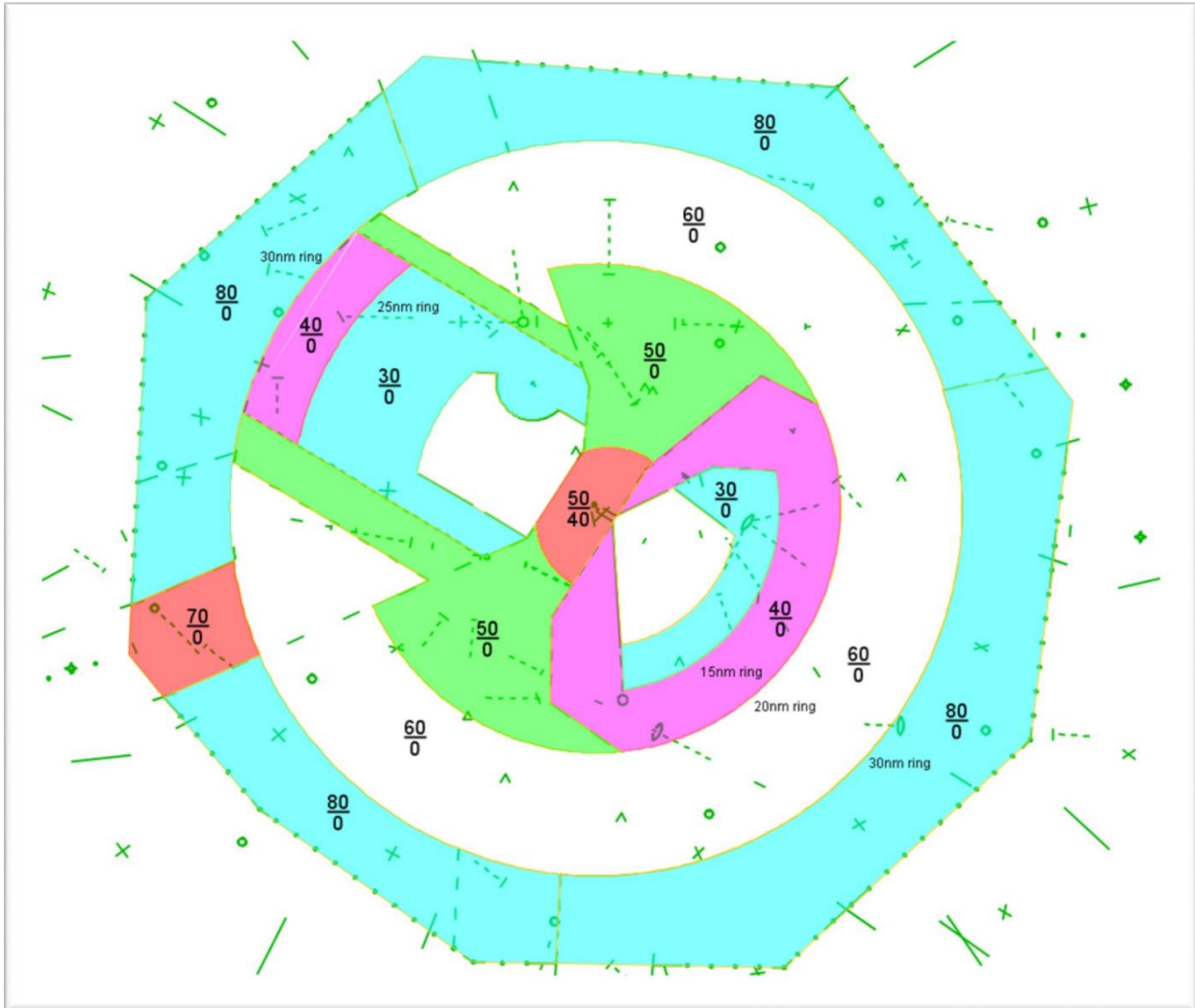
RUNWAY 12 DEPARTURE



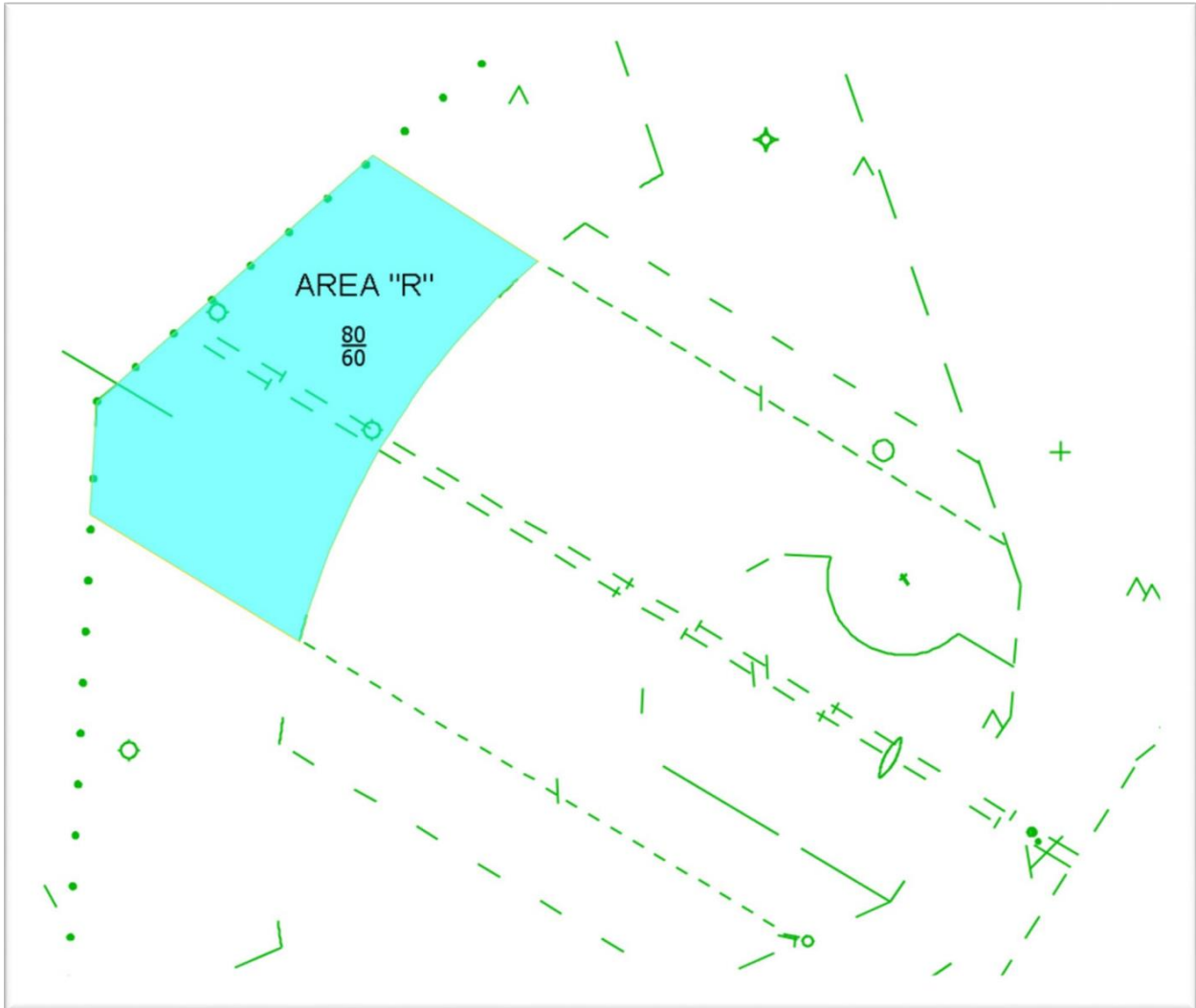
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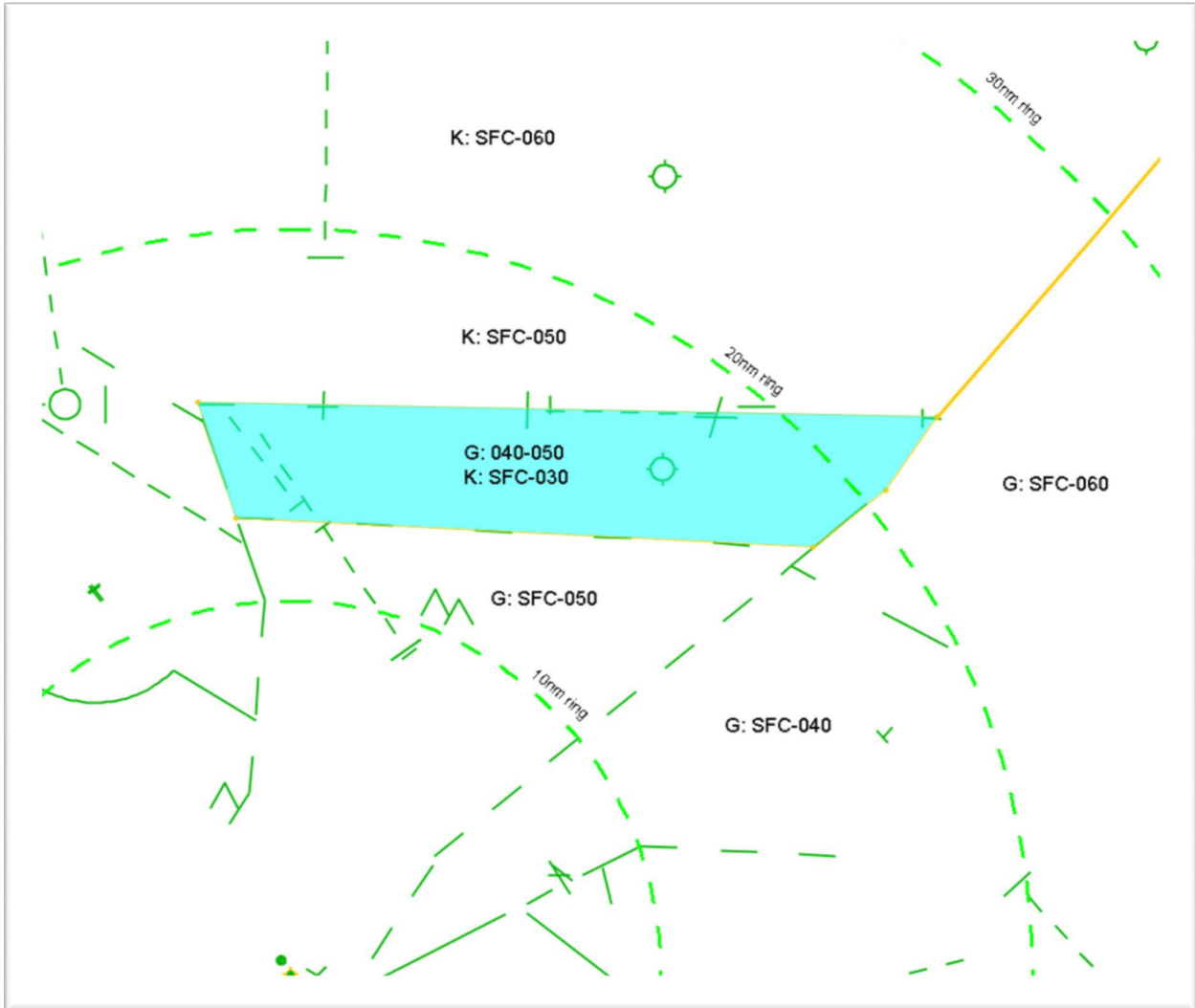
RUNWAY 12 SATELLITE



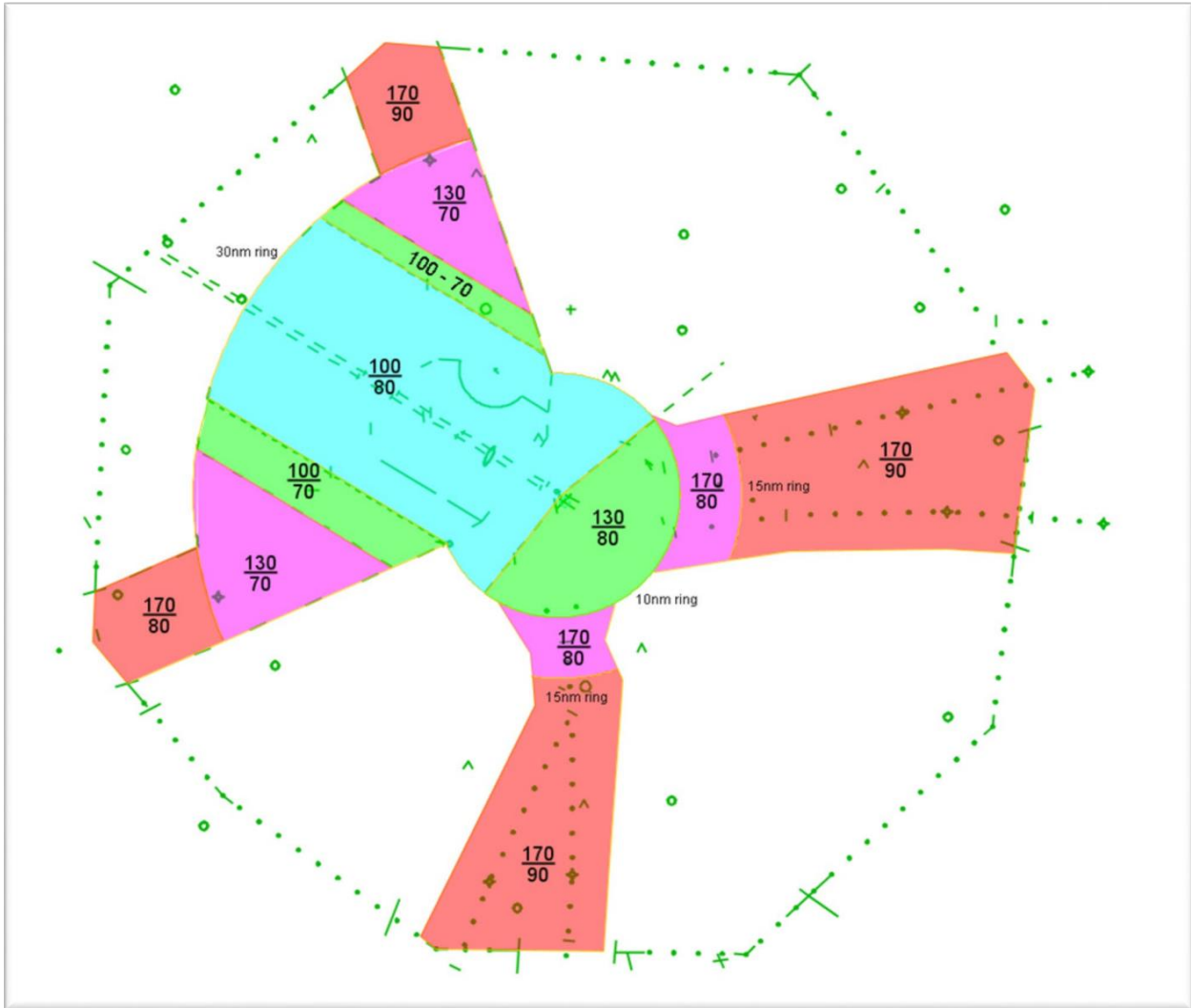
**RUNWAY 12 and 12-17
AREA 'R'**



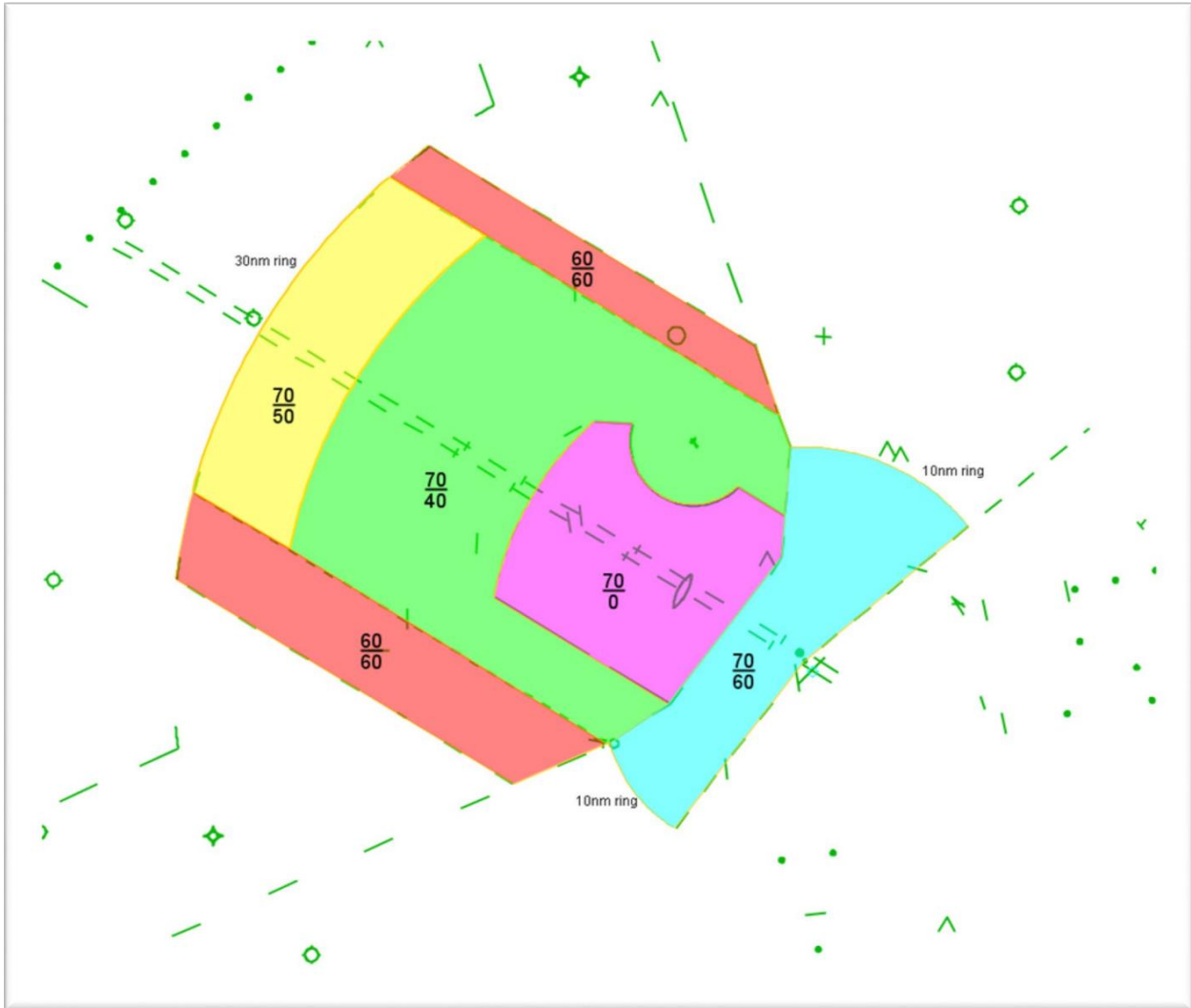
RUNWAY 12 and 12-17 STP Shelf



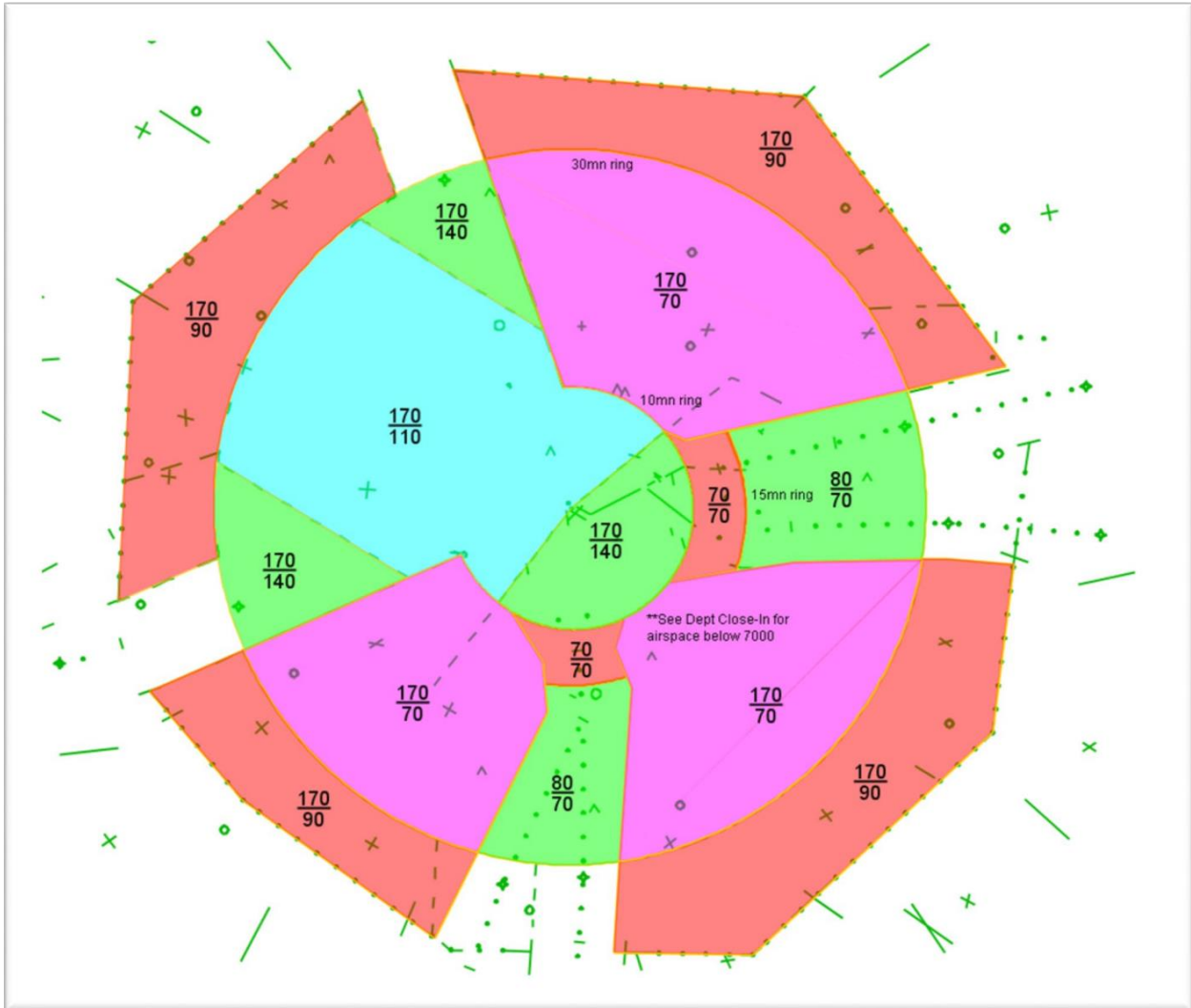
LAND 12s – DEPART 12s and 17 FEEDER



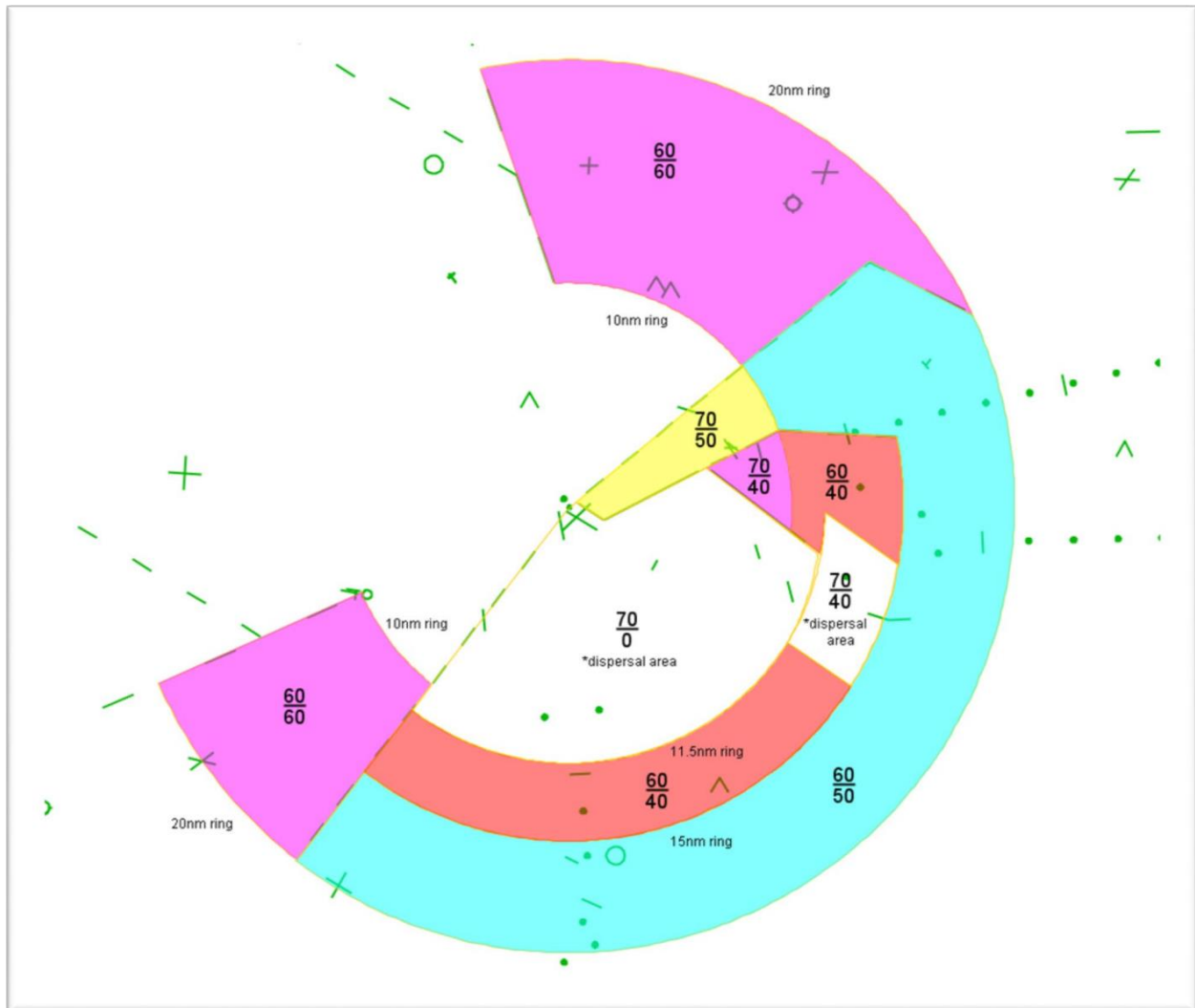
LAND 12 – DEPART 12s and 17 ACDA



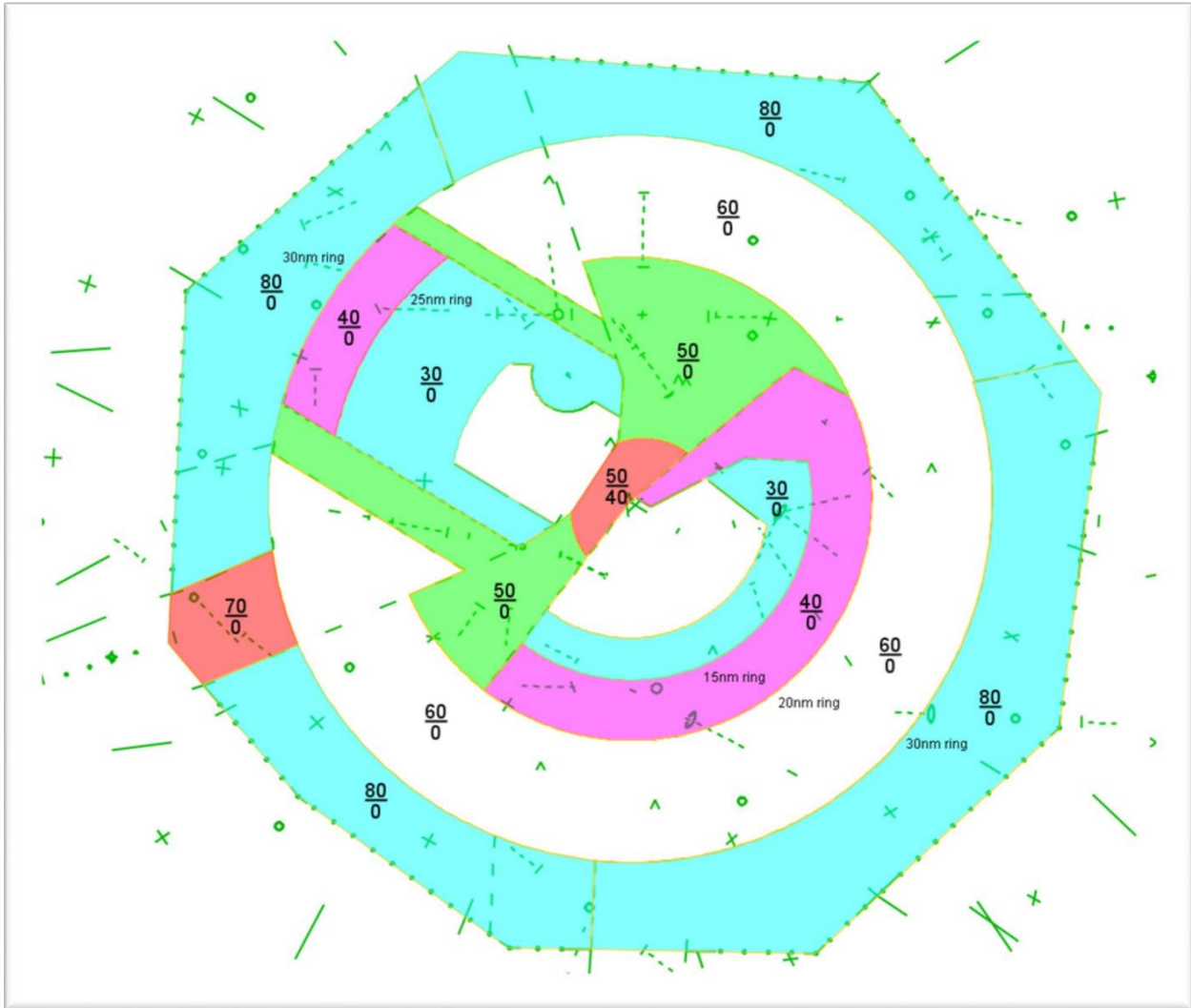
LAND 12s – DEPART 12s and 17 DEPARTURE



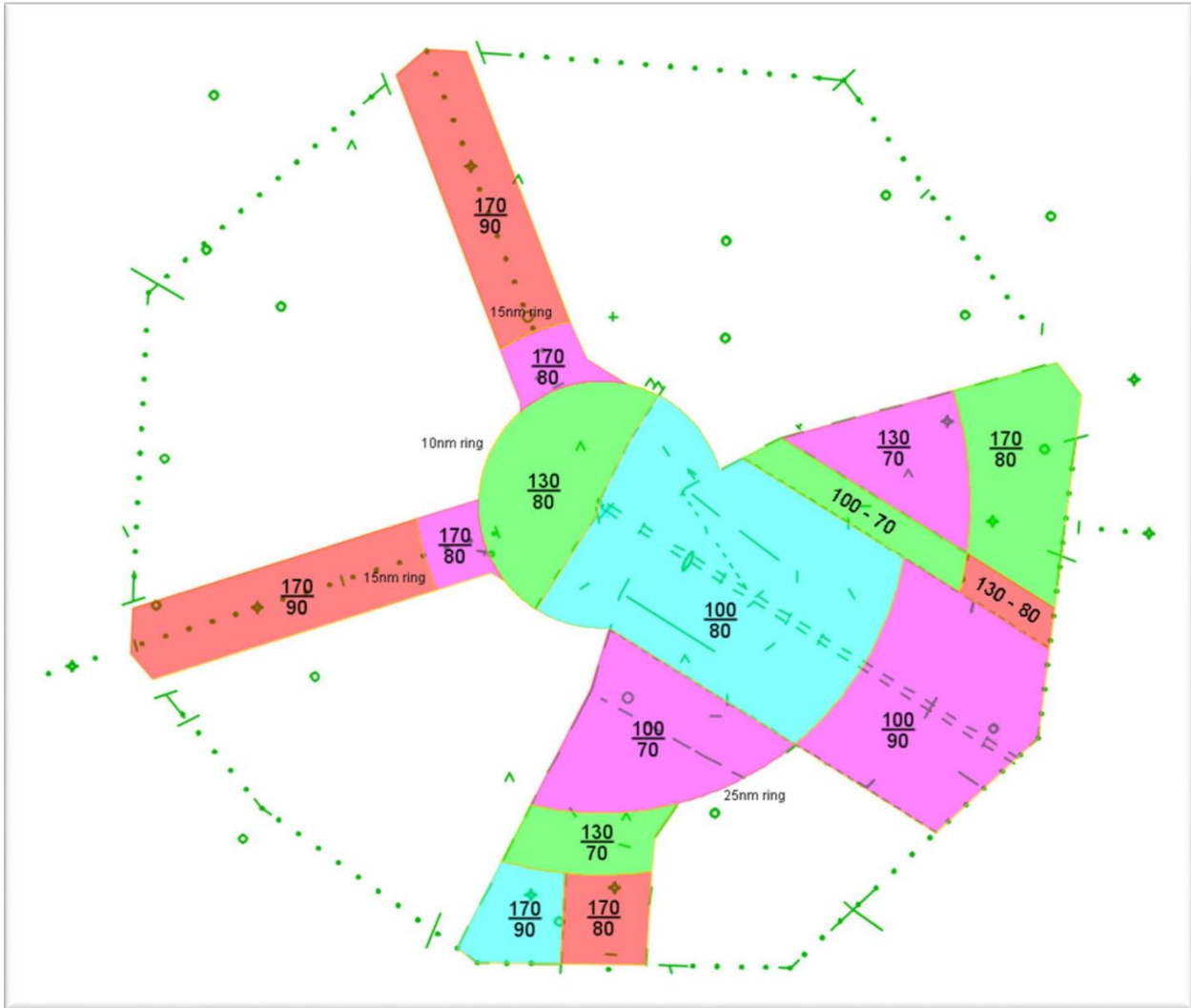
LAND 12s – DEPART 12s and 17 DEPARTURE CLOSE IN



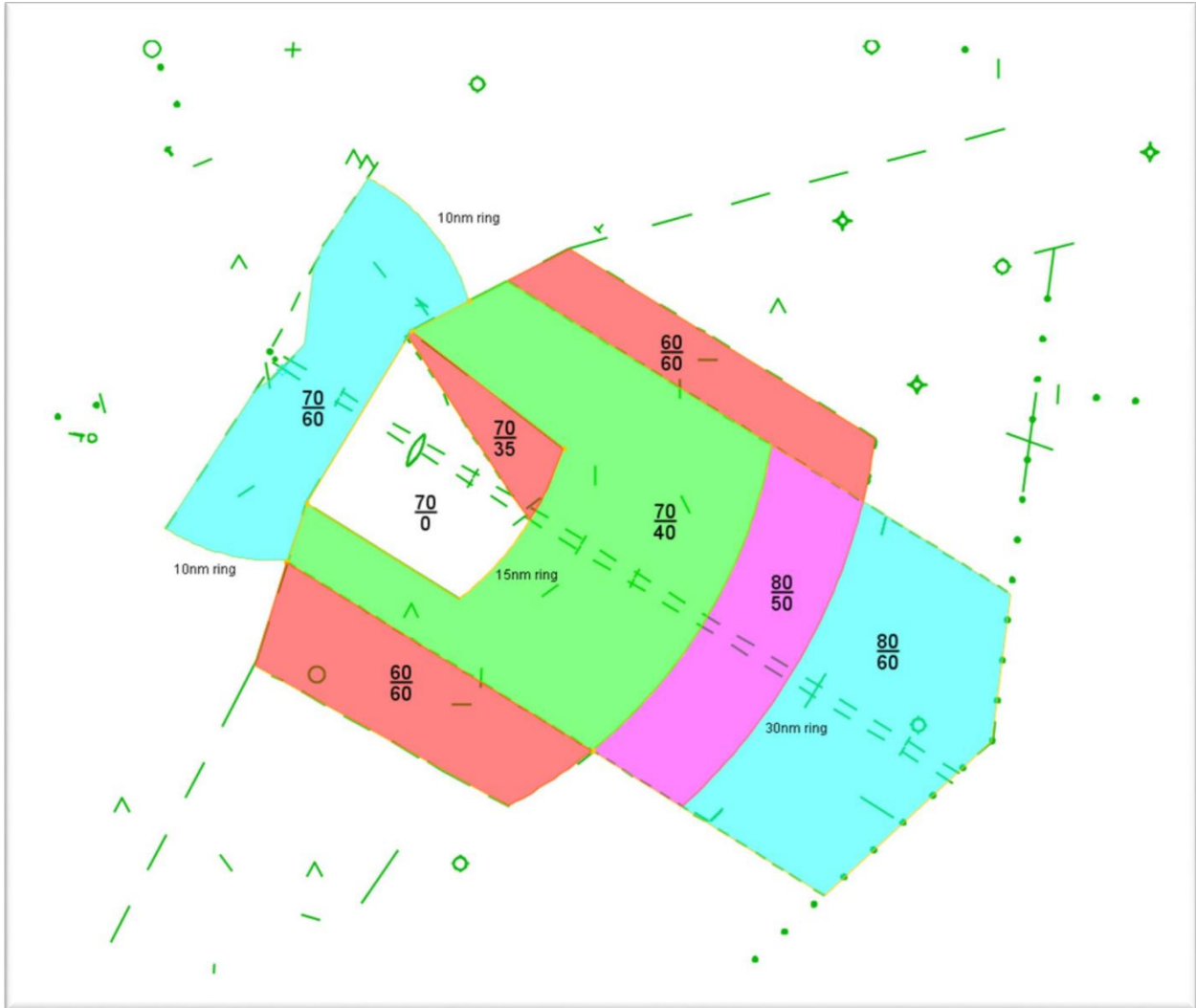
LAND 12s – DEPART 12s and 17 SATELLITE



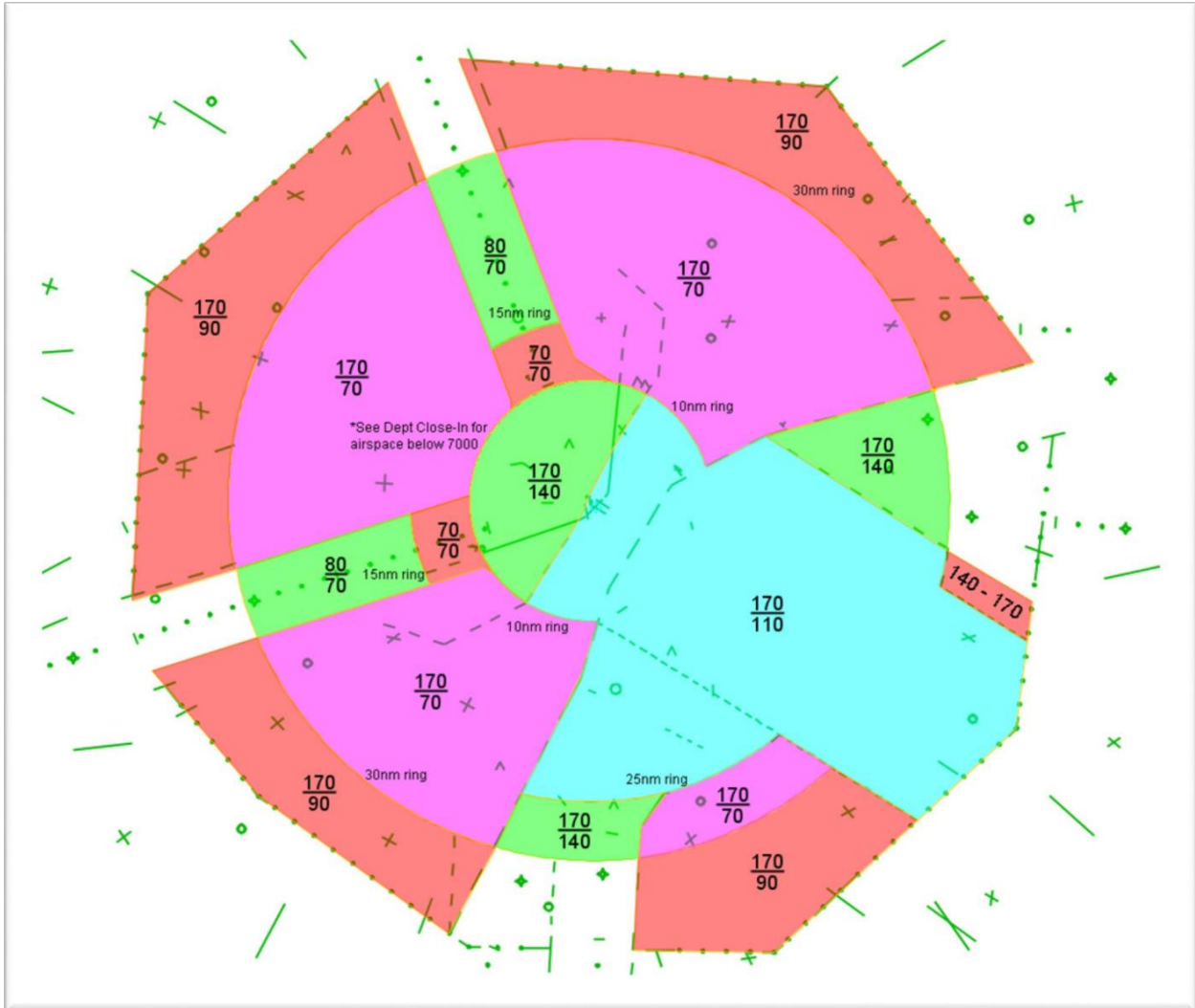
RUNWAY 30 FEEDER



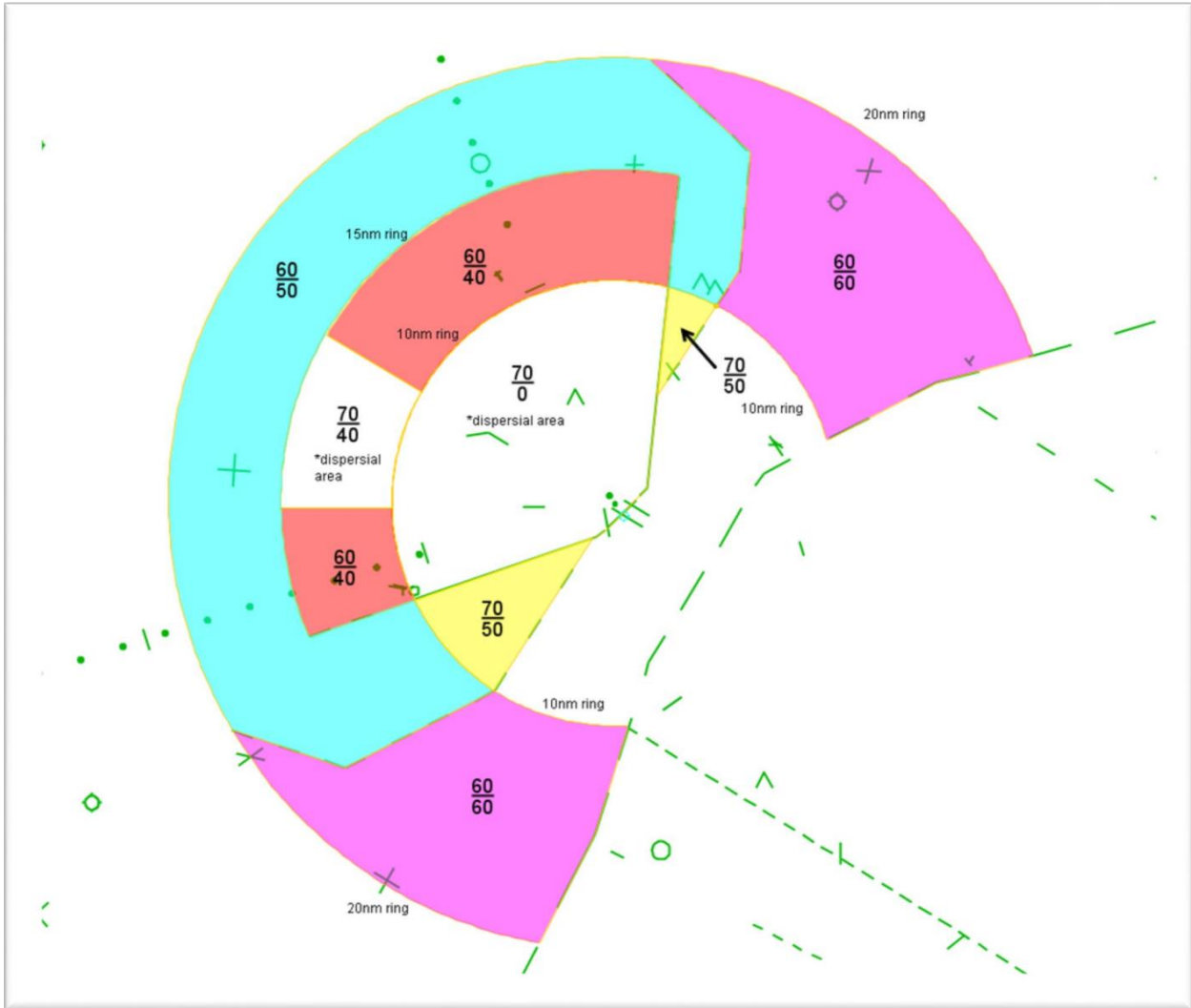
RUNWAY 30 ACDA



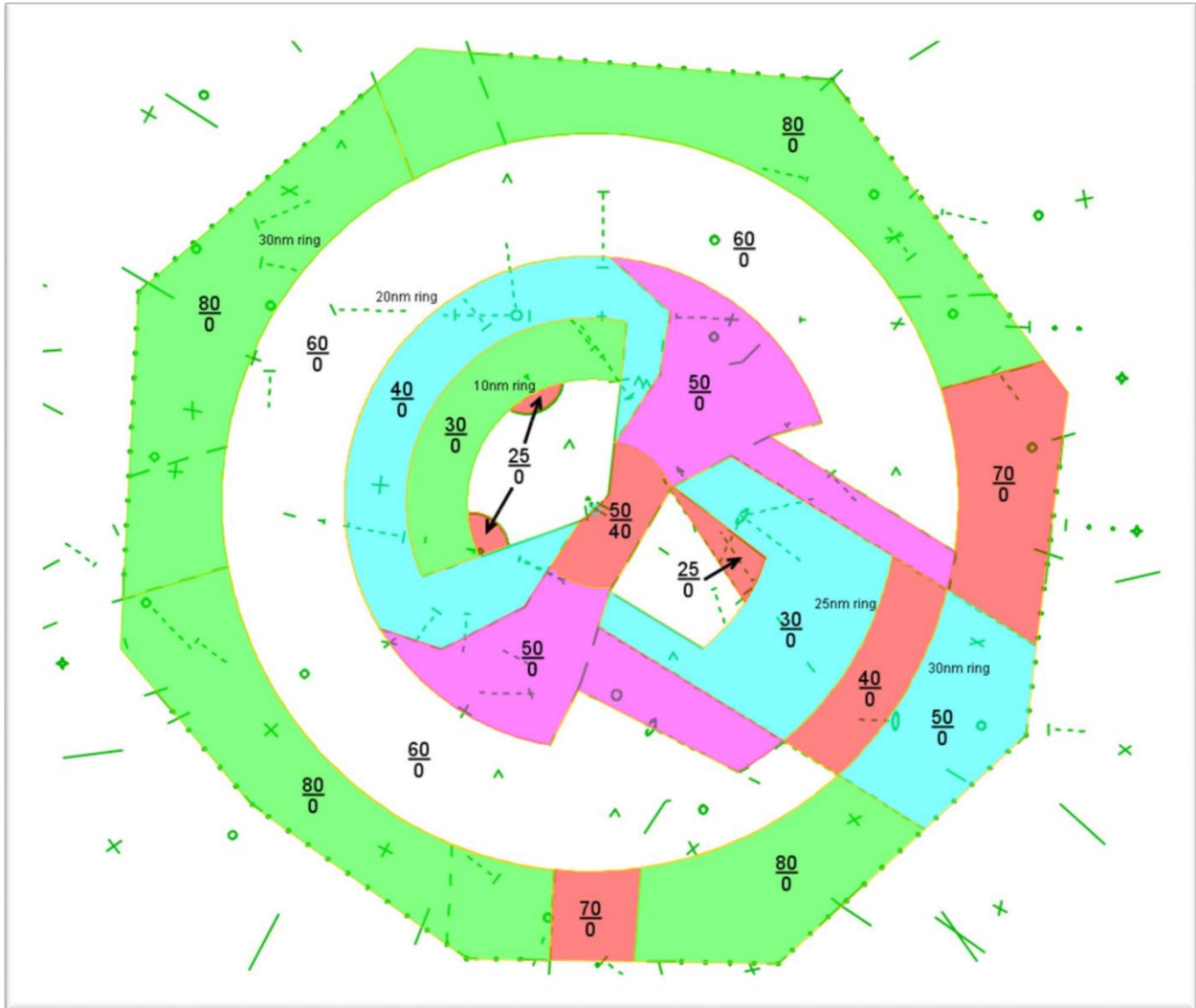
RUNWAY 30 DEPARTURE



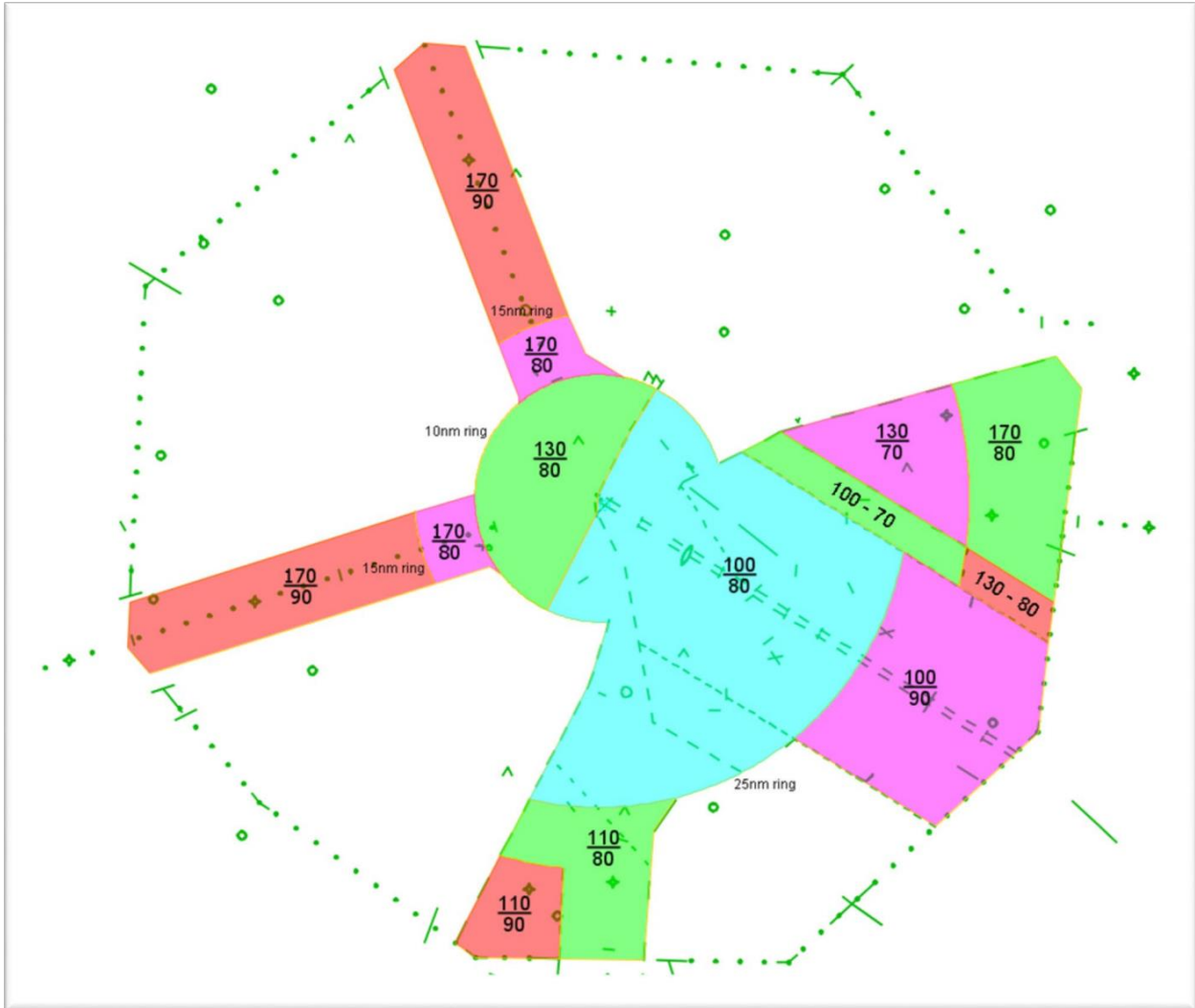
RUNWAY 30 DEPARTURE CLOSE IN



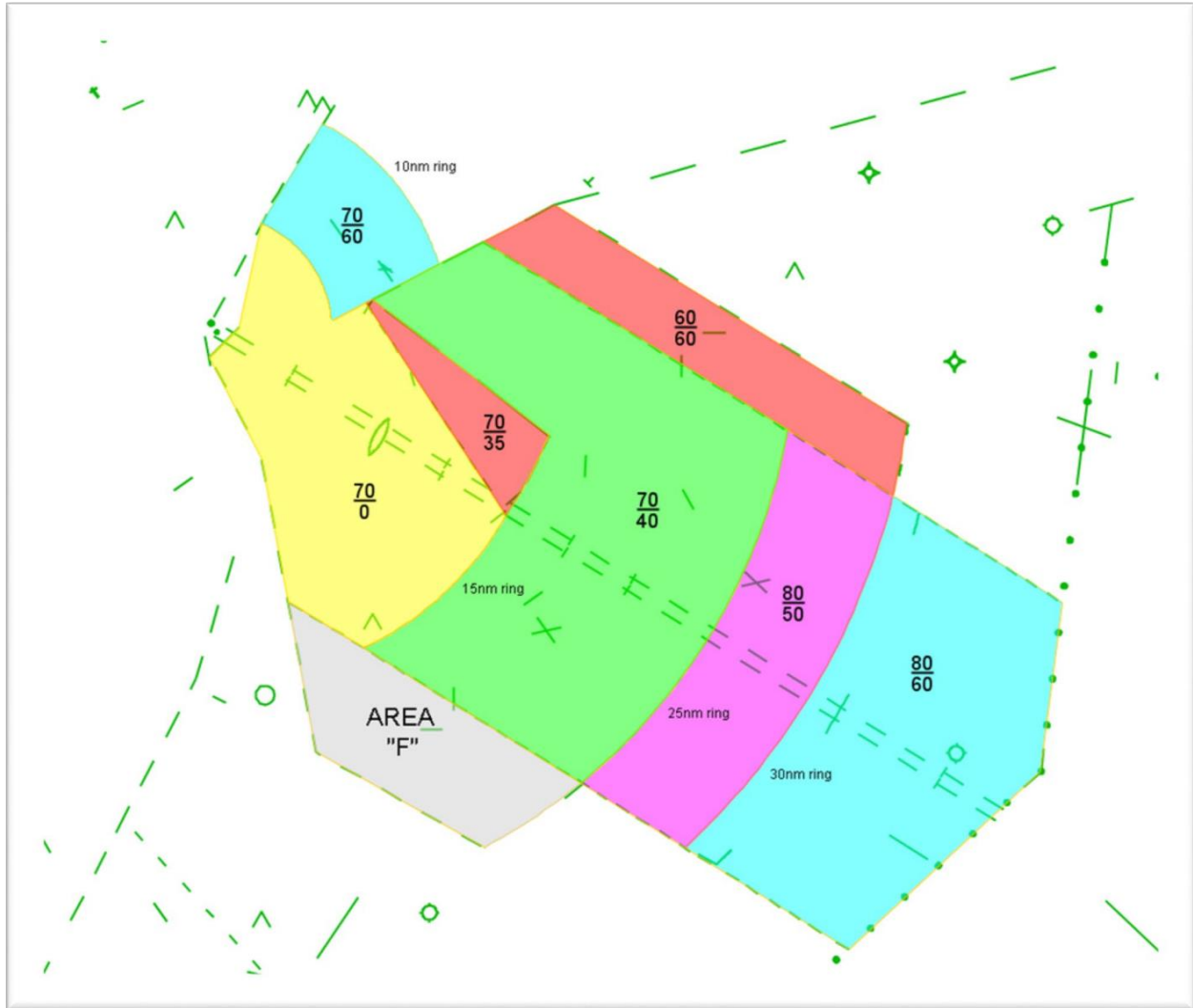
RUNWAY 30 SATELLITE



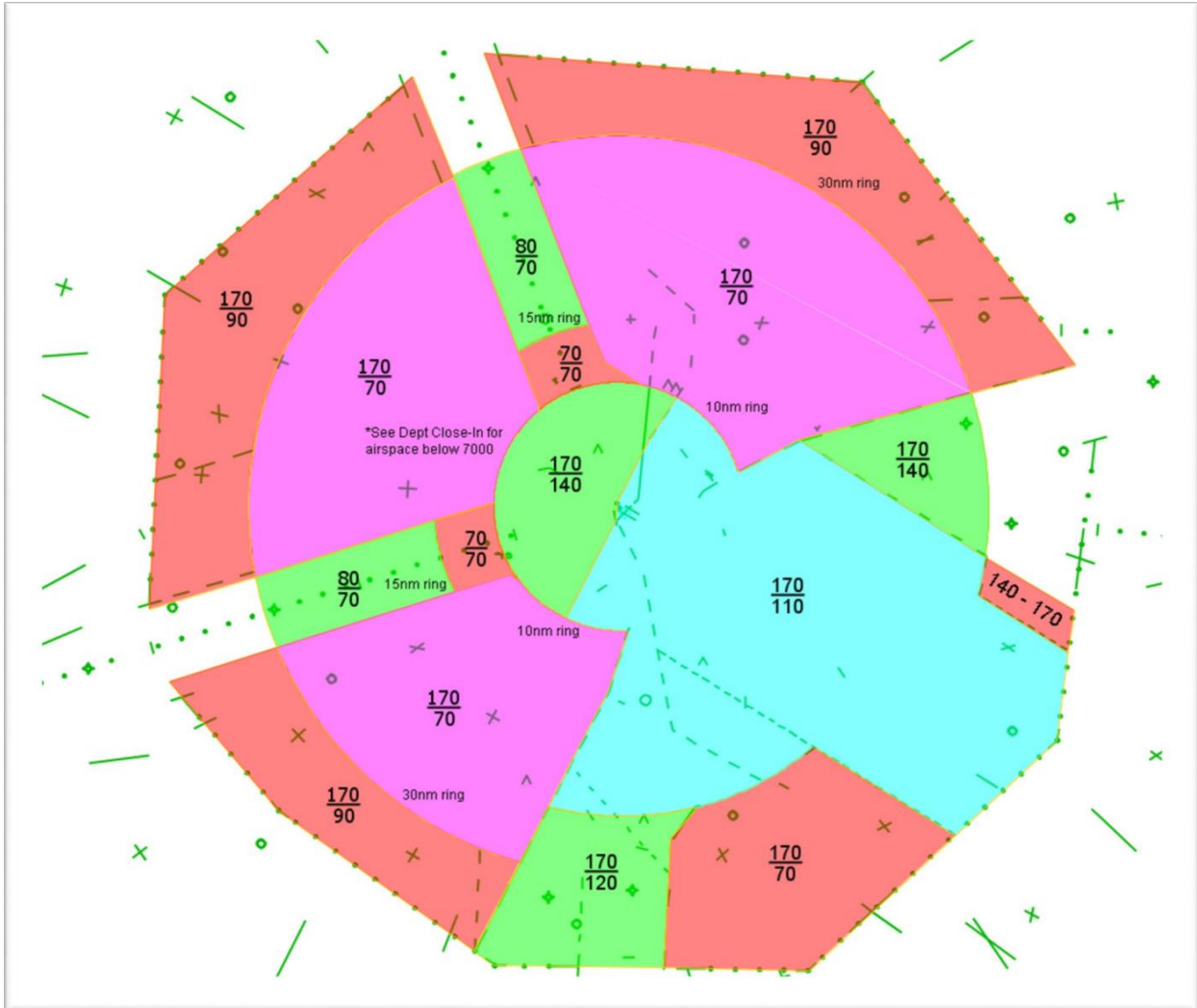
LAND 30s – DEPART 30s and 17 FEEDER



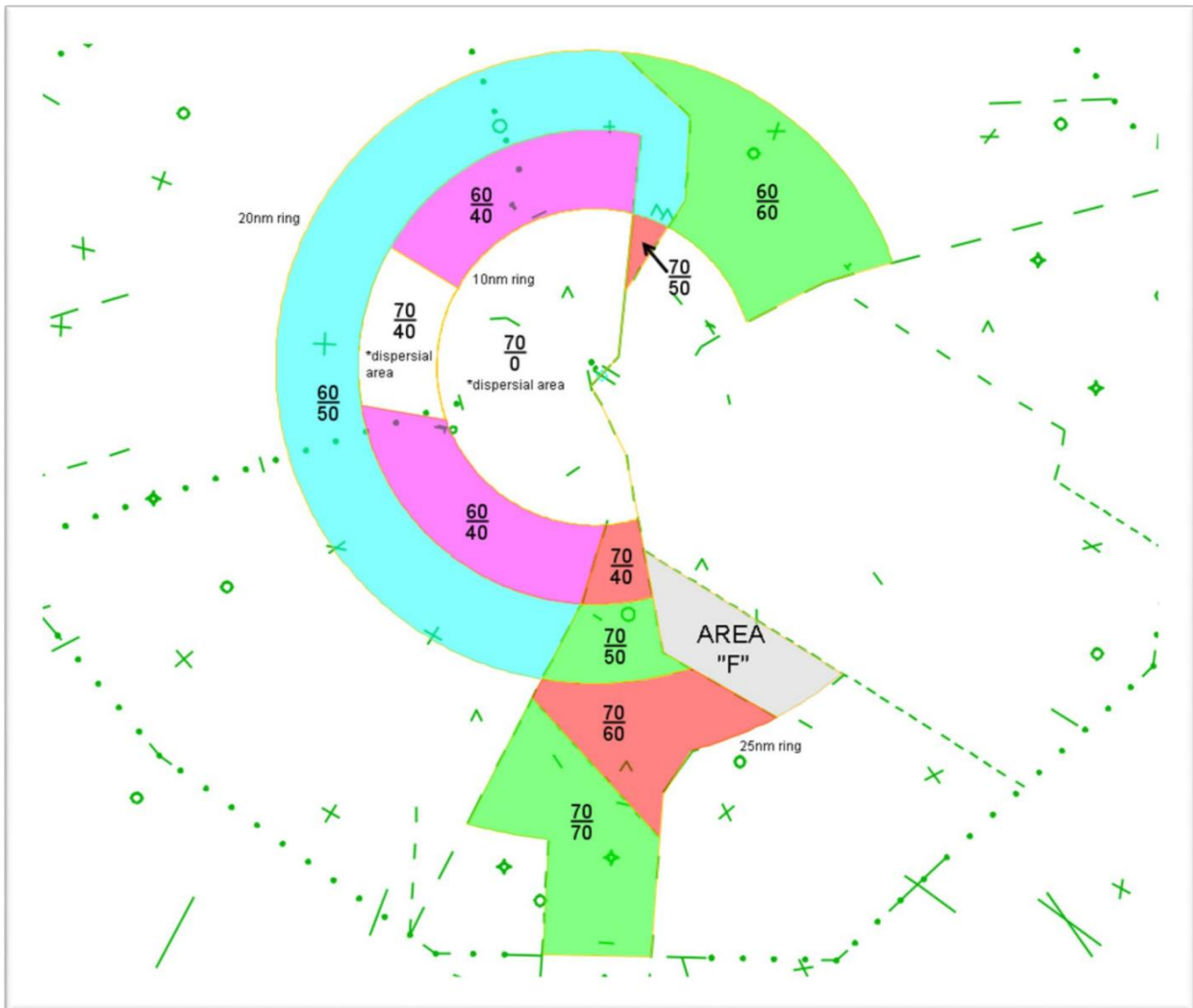
LAND 30s – DEPART 30s and 17 ACDA



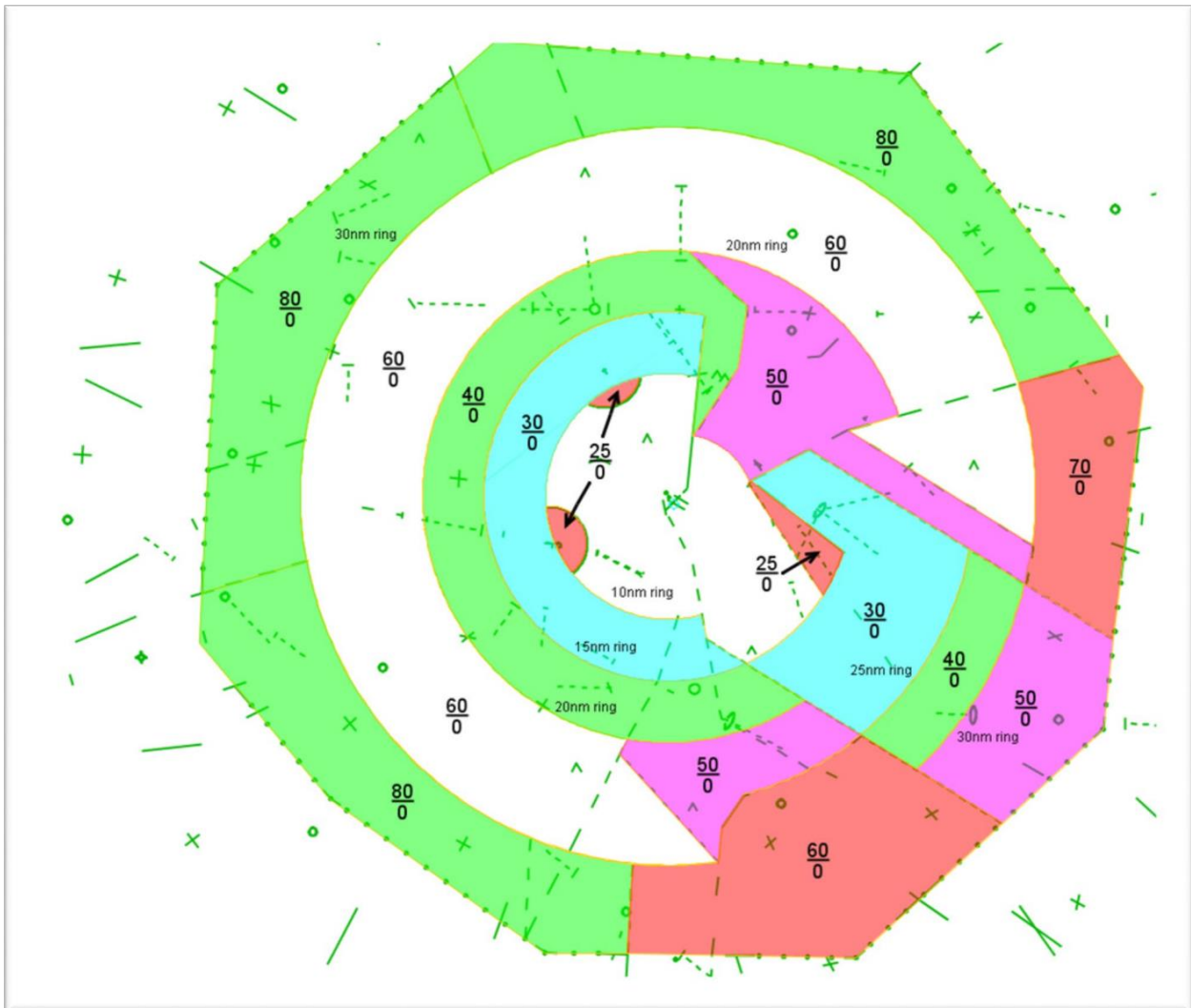
LAND 30s – DEPART 30s and 17 DEPARTURE



LAND 30s – DEPART 30s and 17 DEPARTURE CLOSE IN



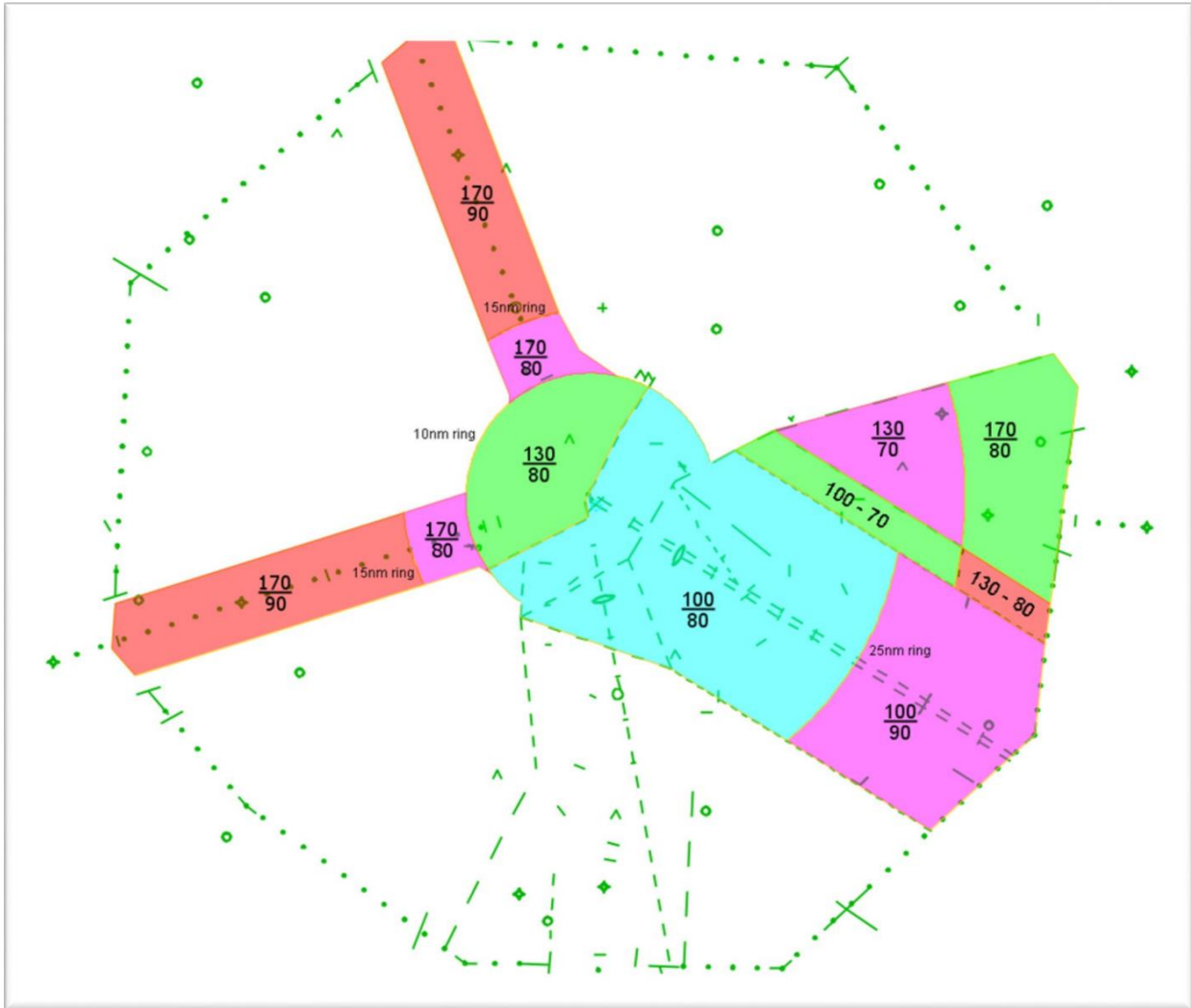
LAND 30s – DEPART 30s and 17 SATELLITE



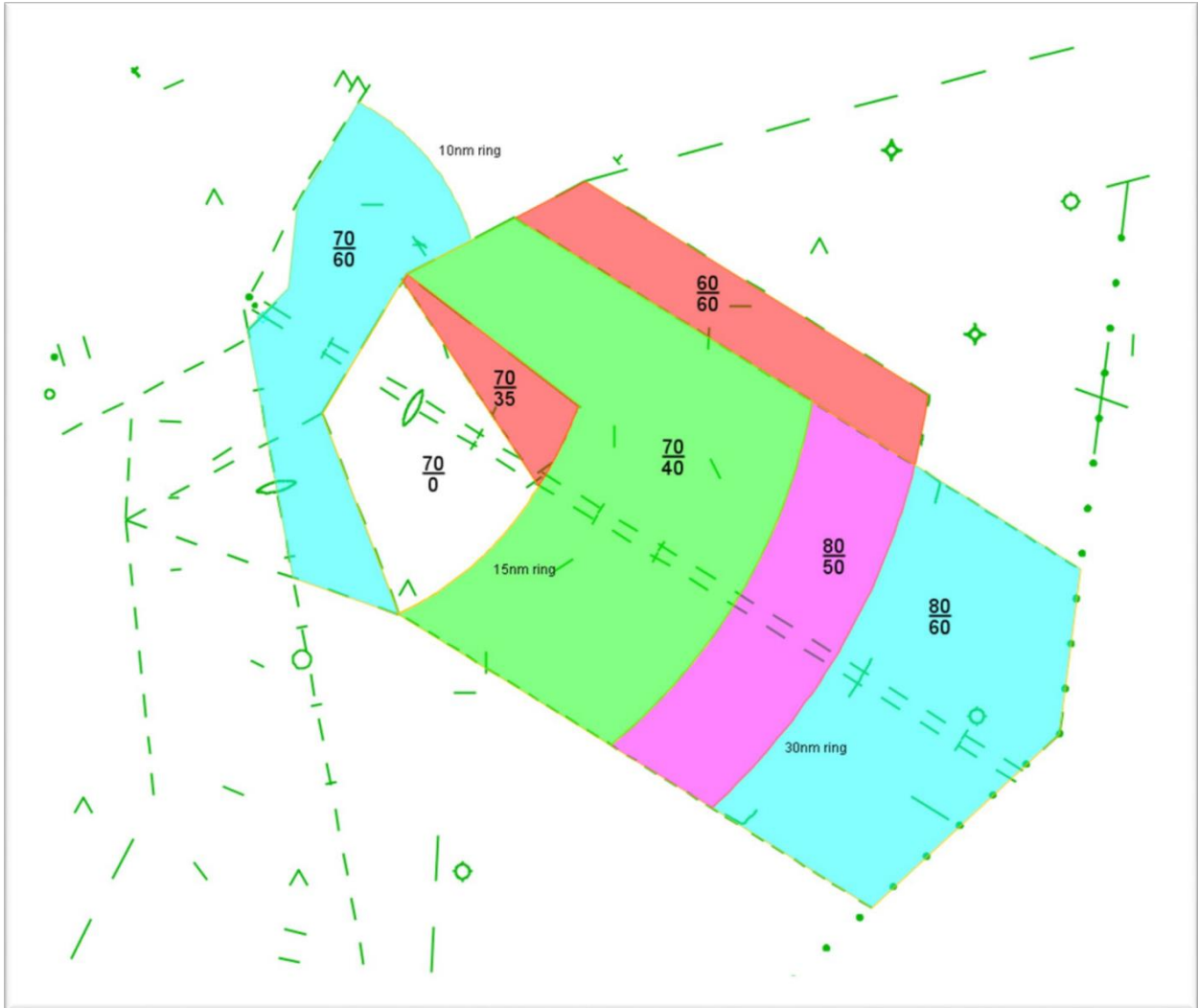
**LAND 30s – DEPART 30s and 17
AREA F**



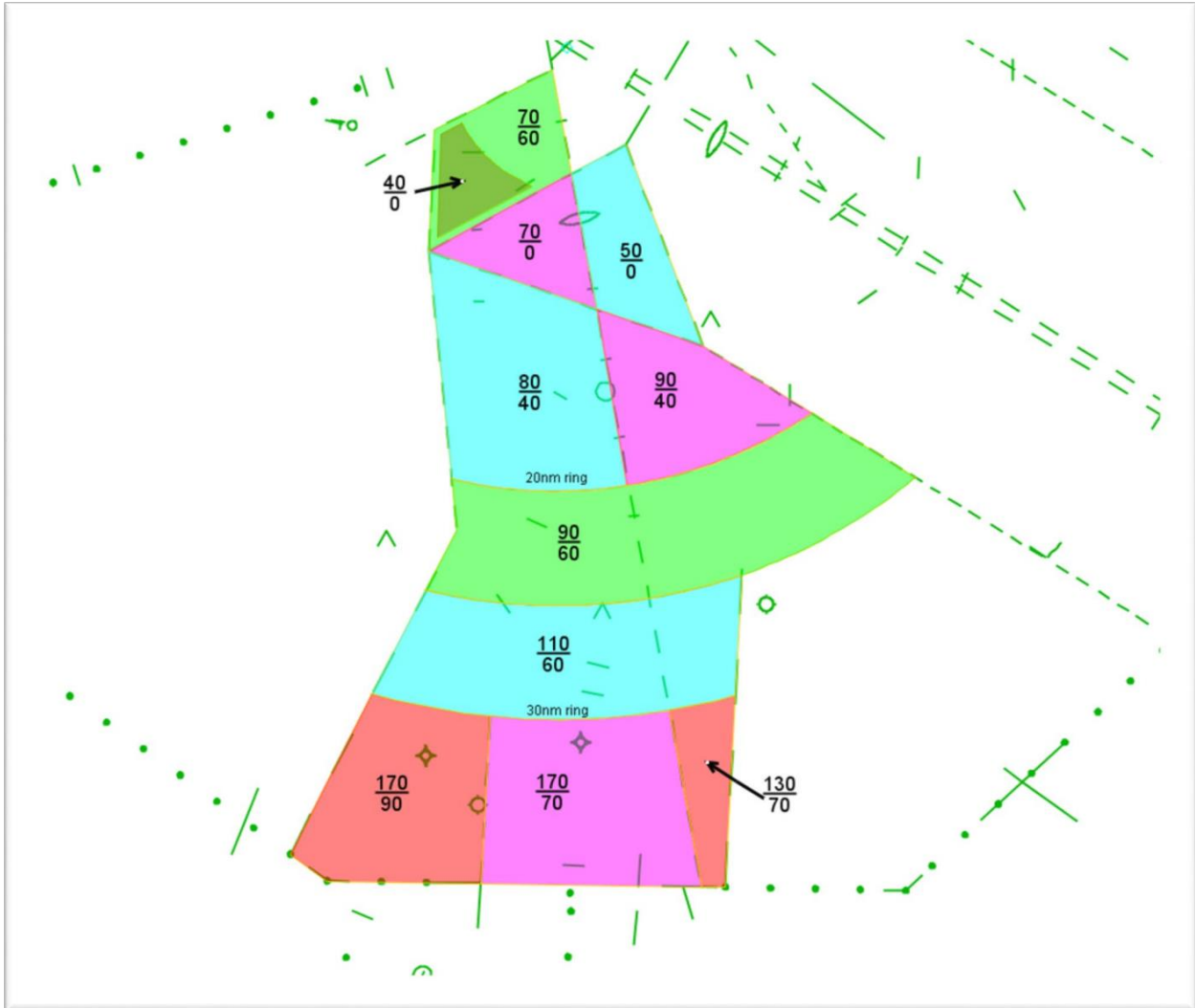
LAND 30s and 35 – DEPART 30s FEEDER



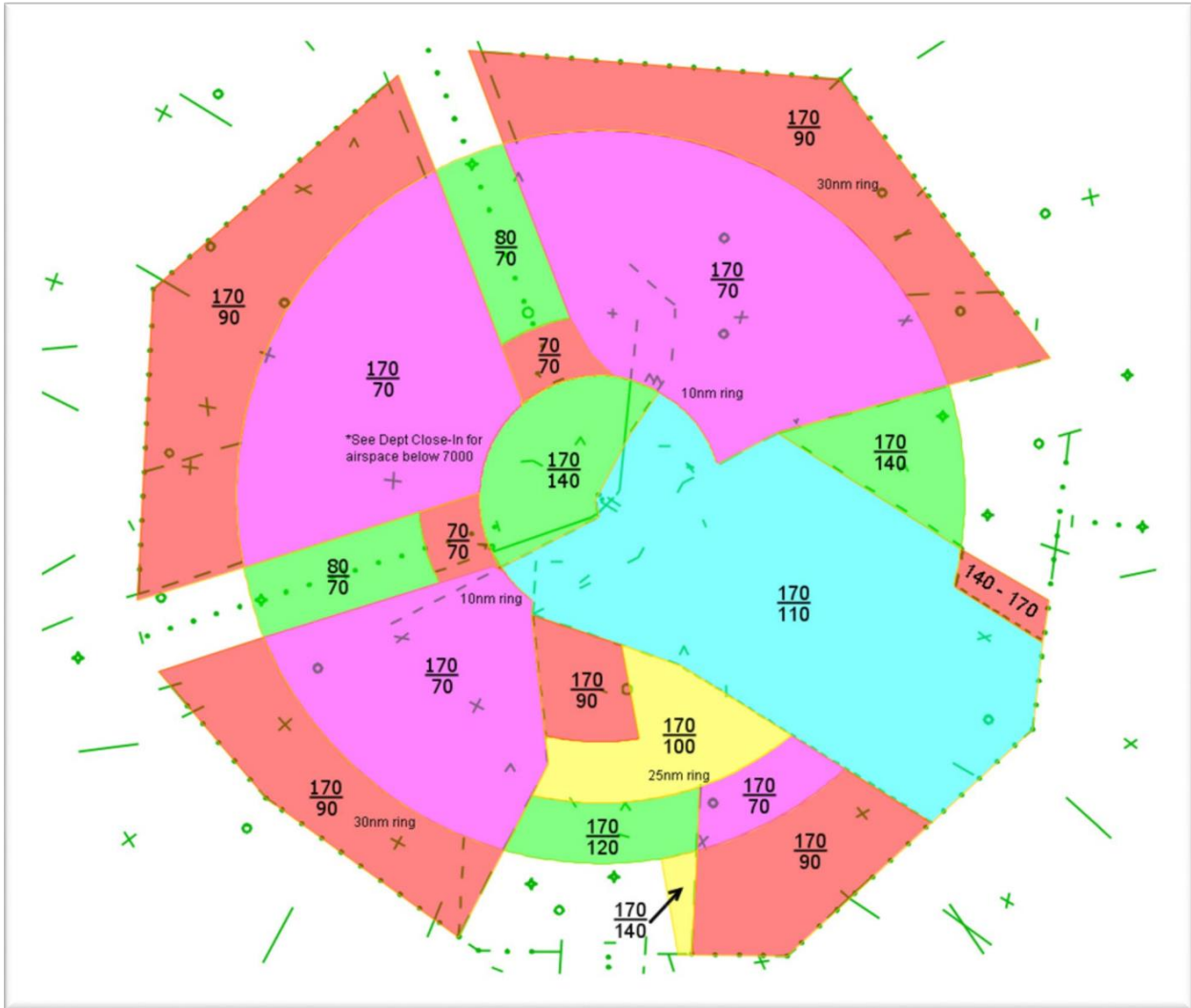
LAND 30s and 35 – DEPART 30s 30s ACDA



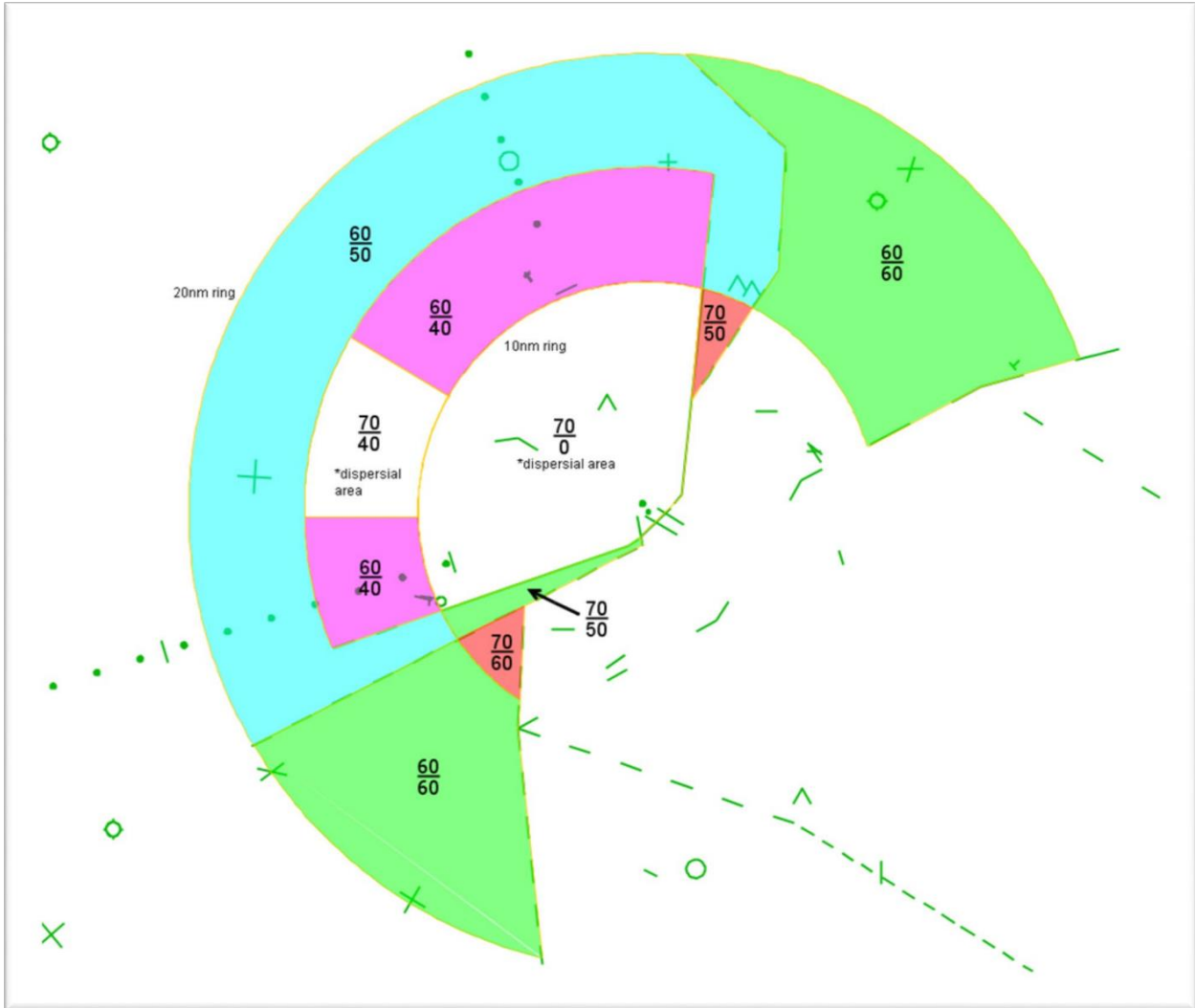
LAND 30s and 35 – DEPART 30s 35 ACDA



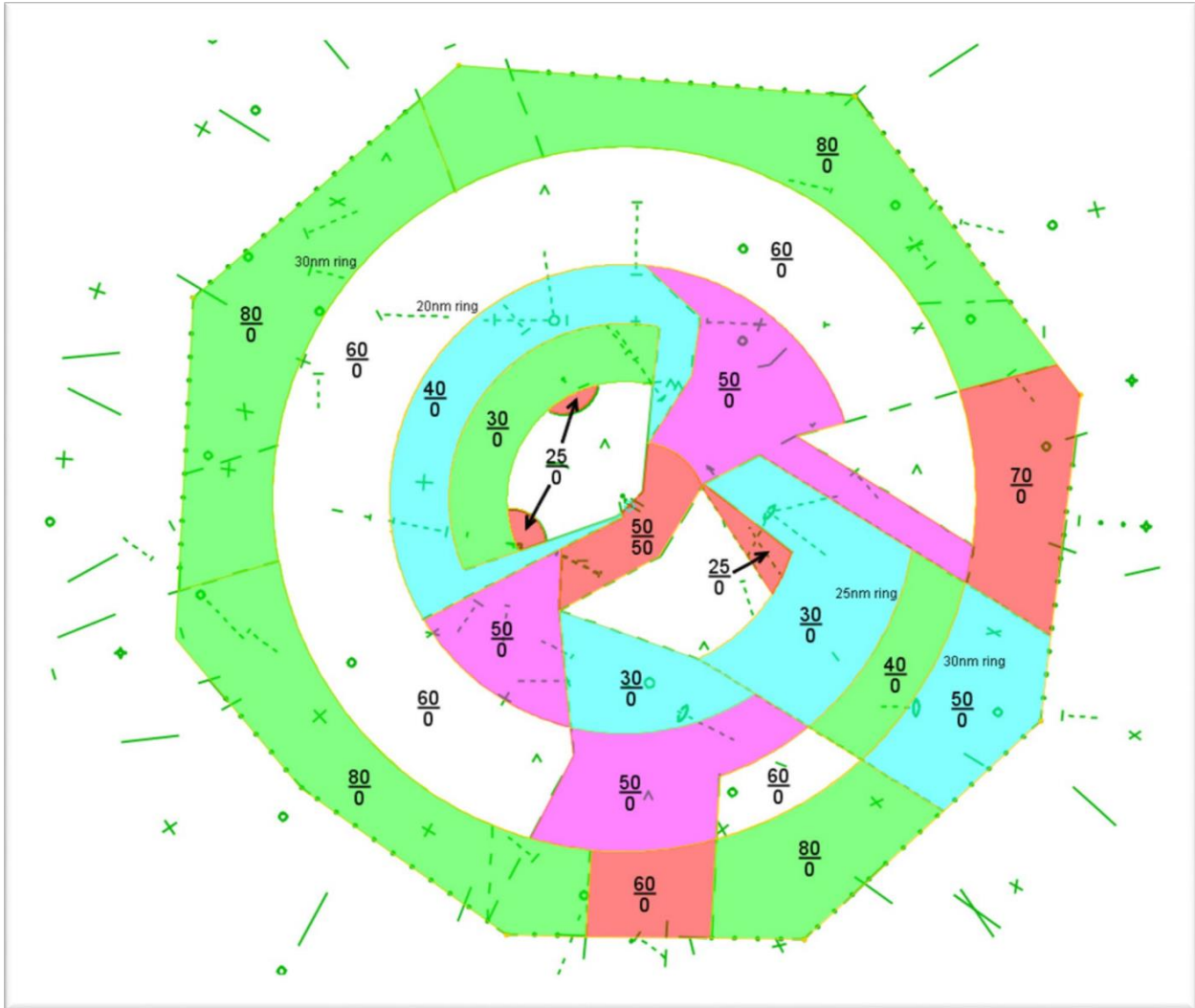
LAND 30s and 35 – DEPART 30s DEPARTURE



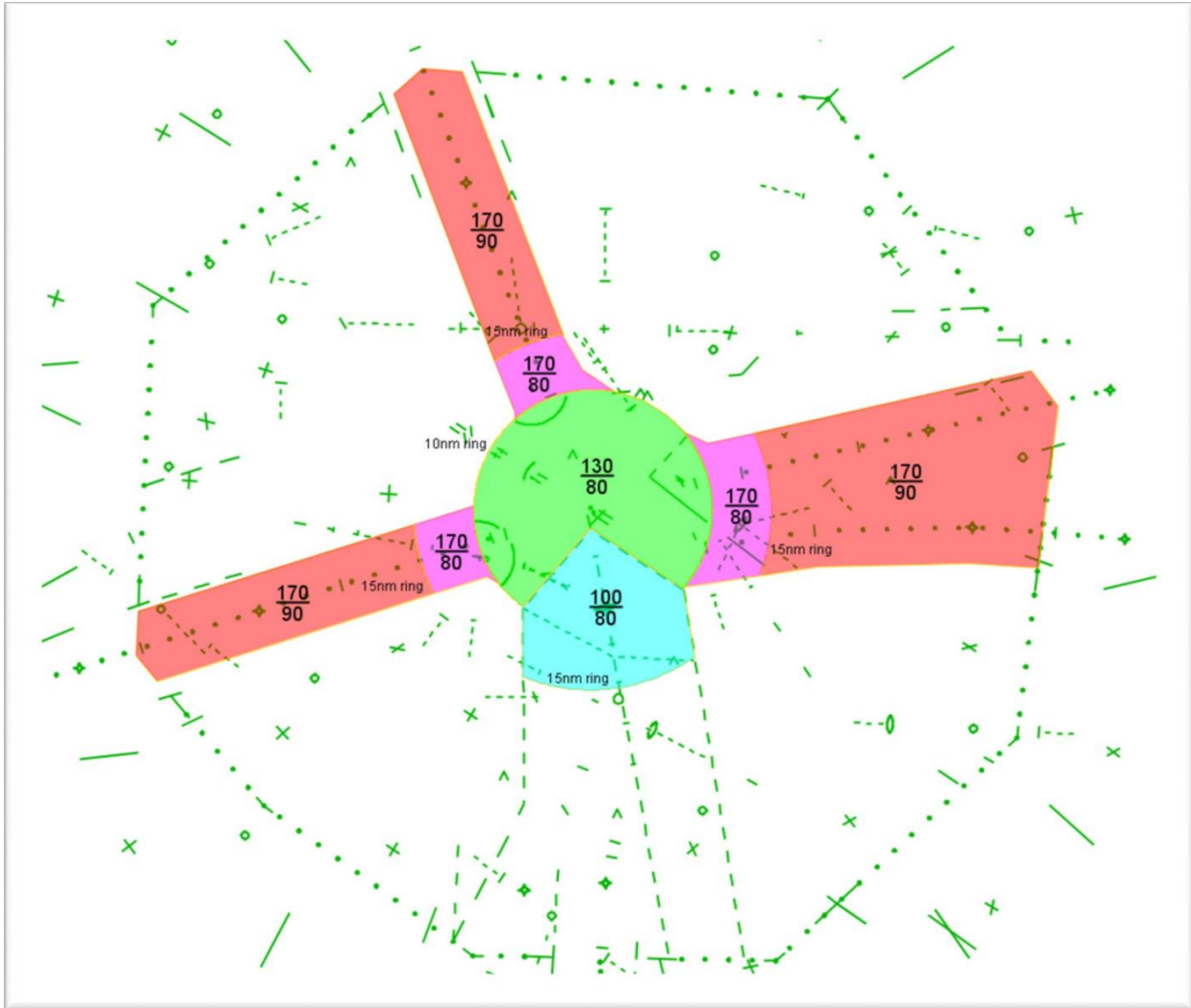
LAND 30s and 35 – DEPART 30s DEPARTURE CLOSE IN



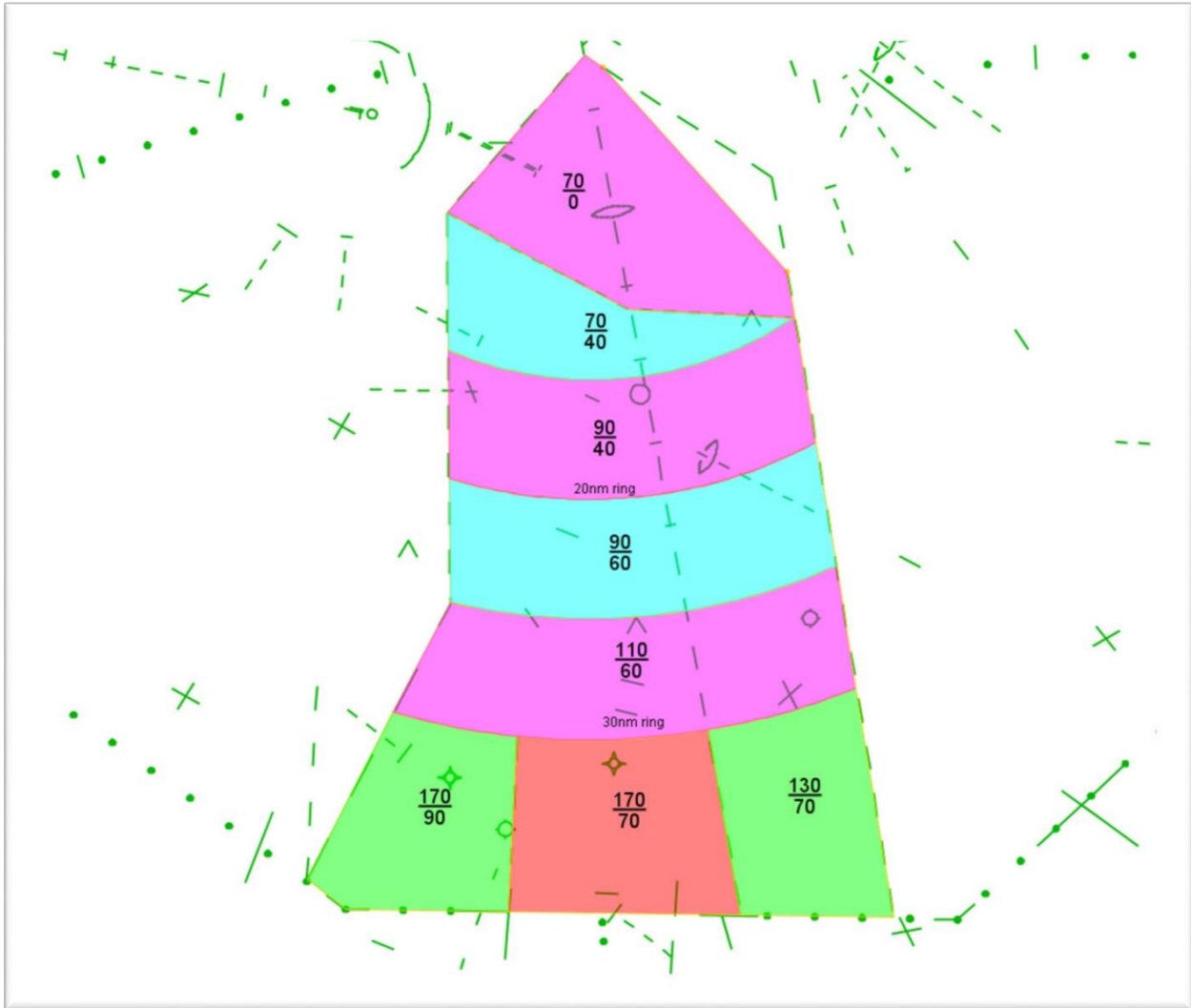
LAND 30s and 35 – DEPART 30s SATELLITE



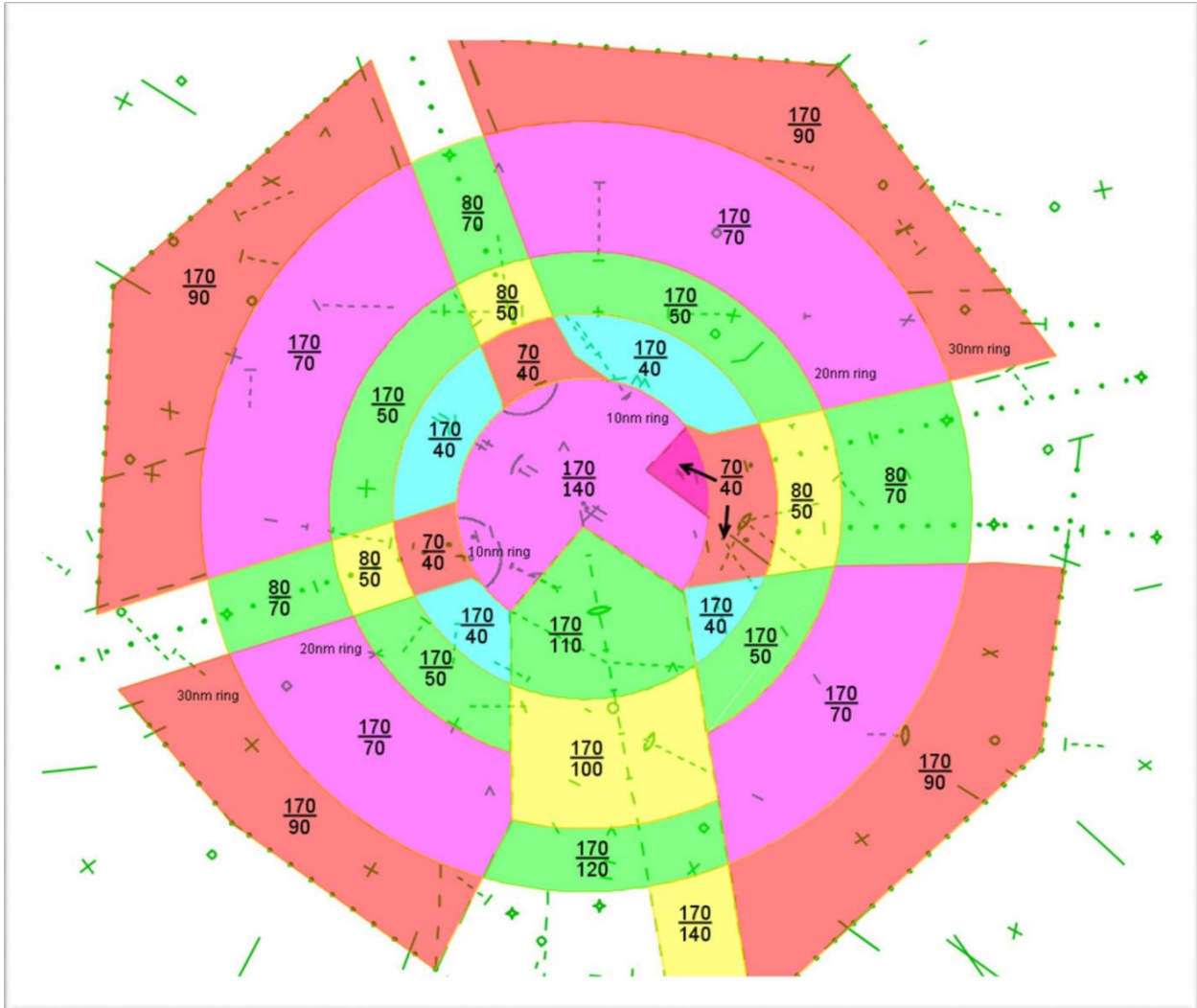
LAND 35 – DEPART 35, 30 or 4 FEEDER



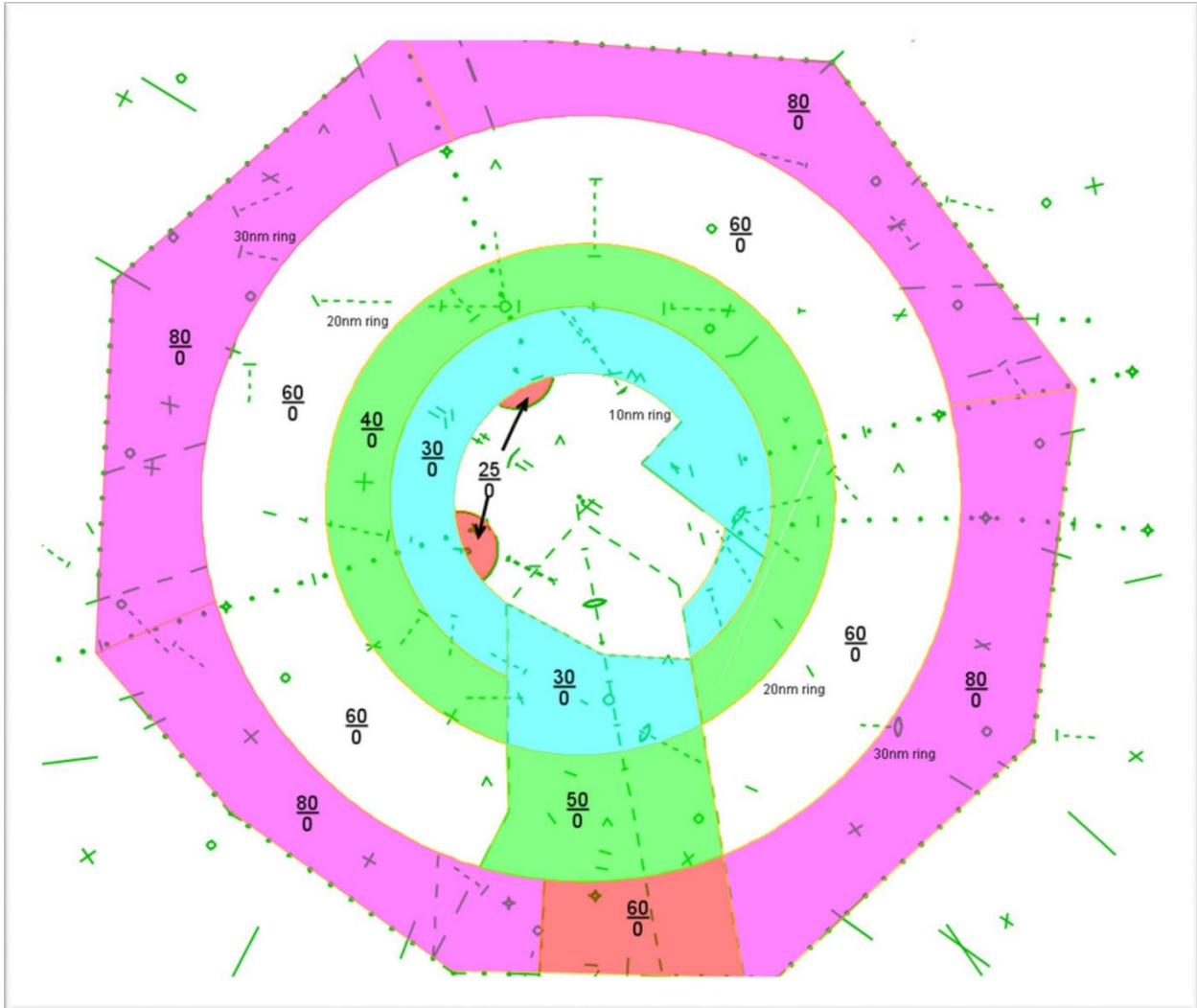
LAND 35 – DEPART 35, 30, or 4 ACDA



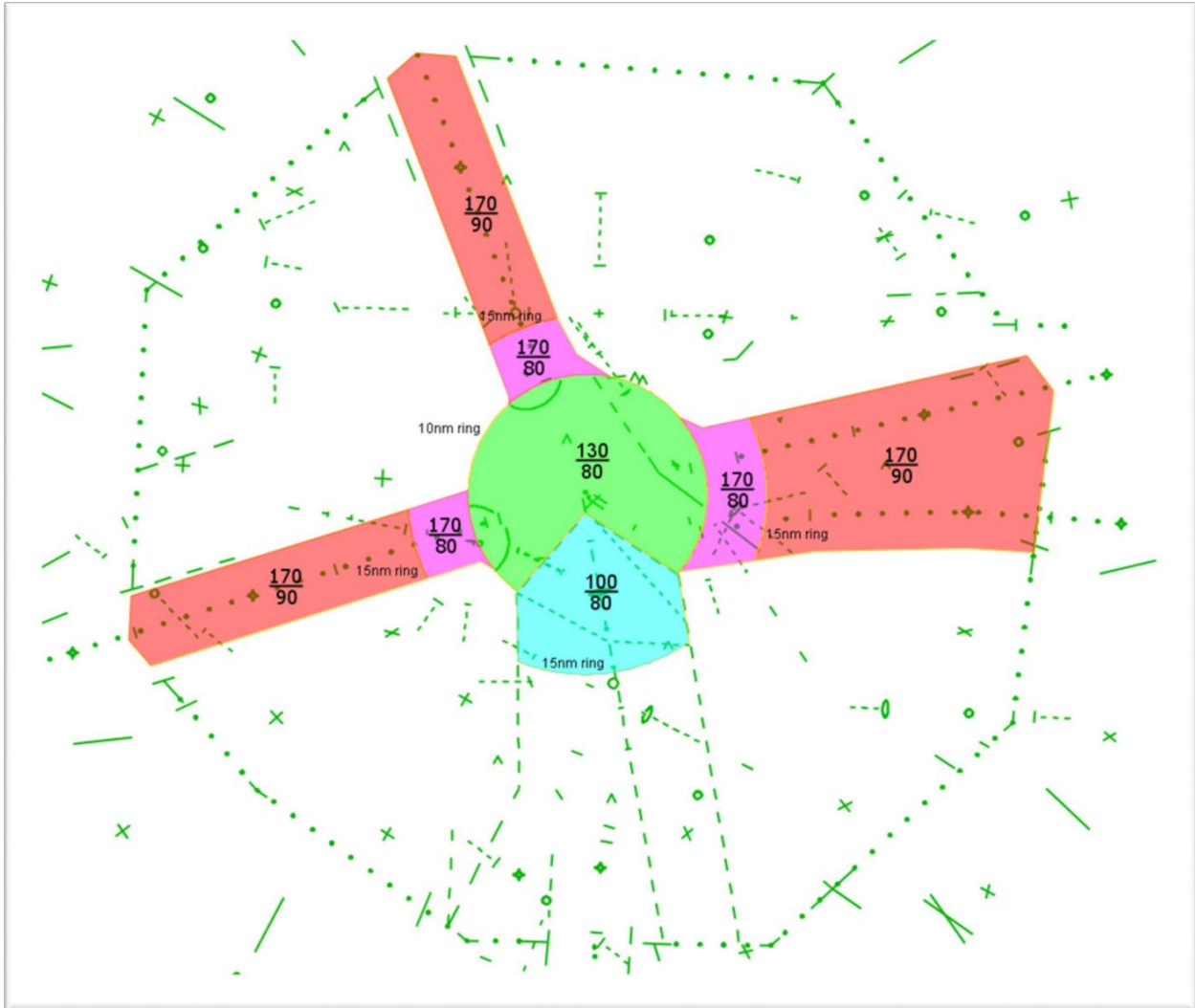
LAND 35 – DEPART 35, 30, or 4 DEPARTURE



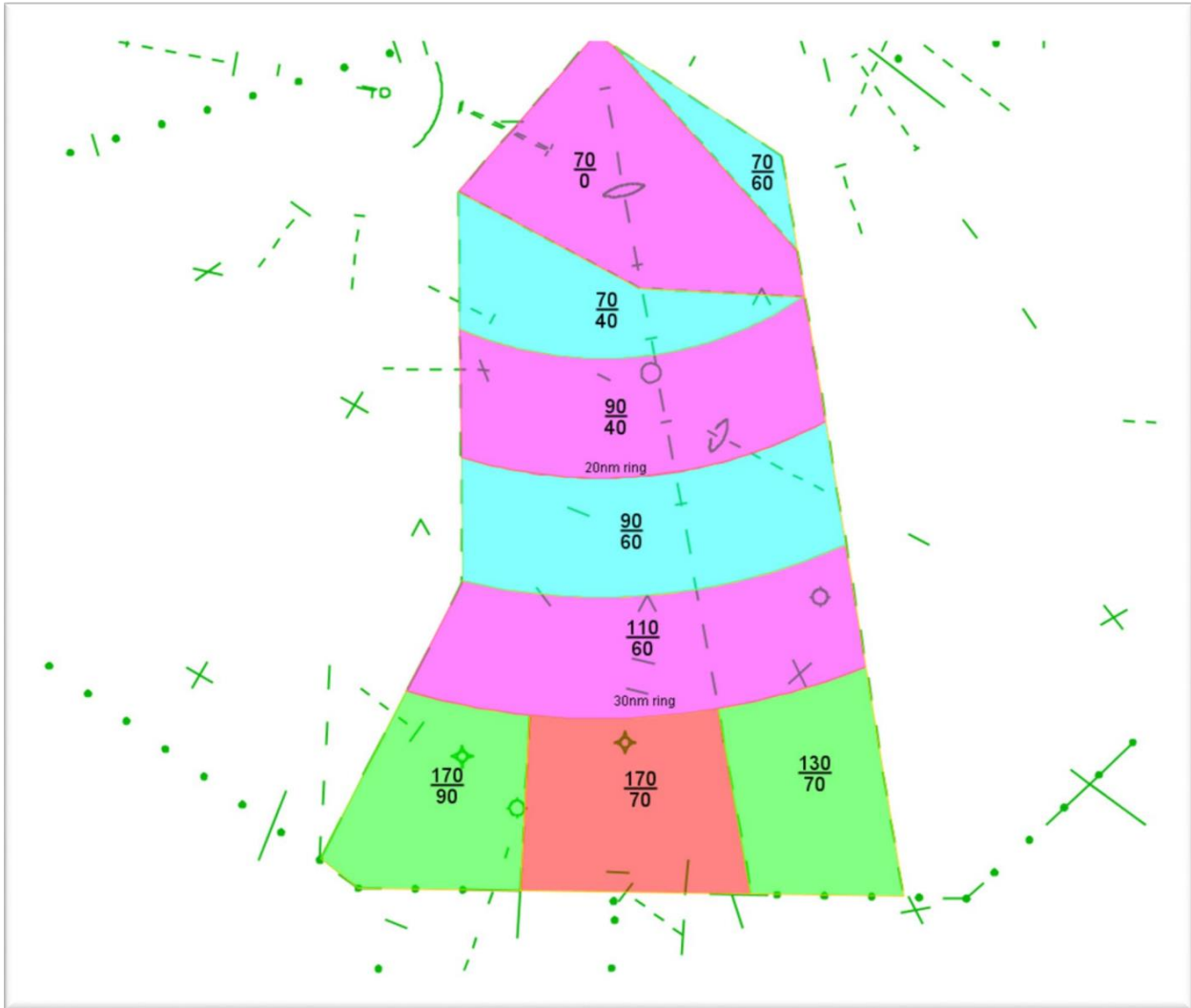
LAND 35 – DEPART 35, 30, or 4 SATELLITE



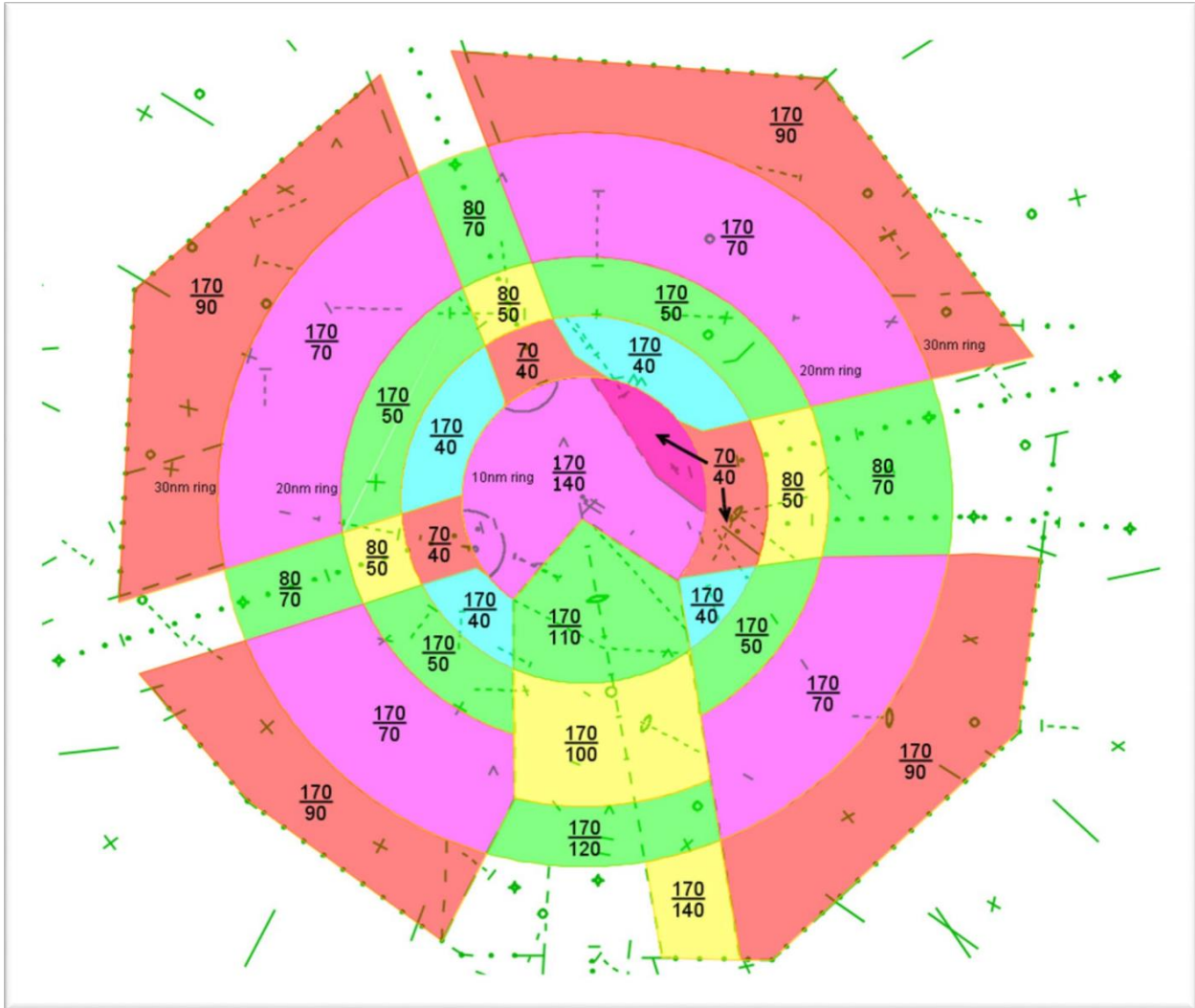
LAND 35 – DEPART 12 FEEDER



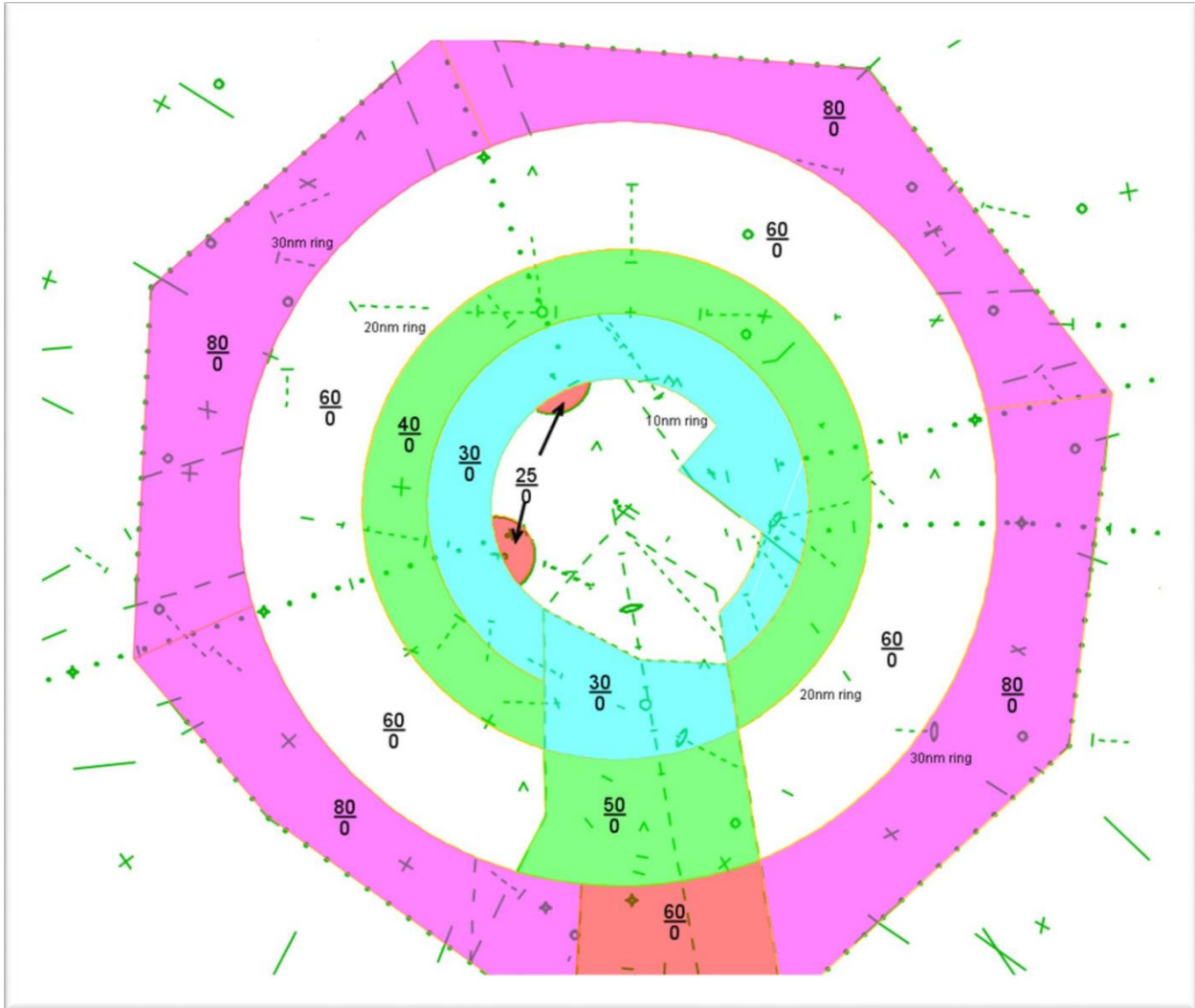
LAND 35 – DEPART 12 ACDA



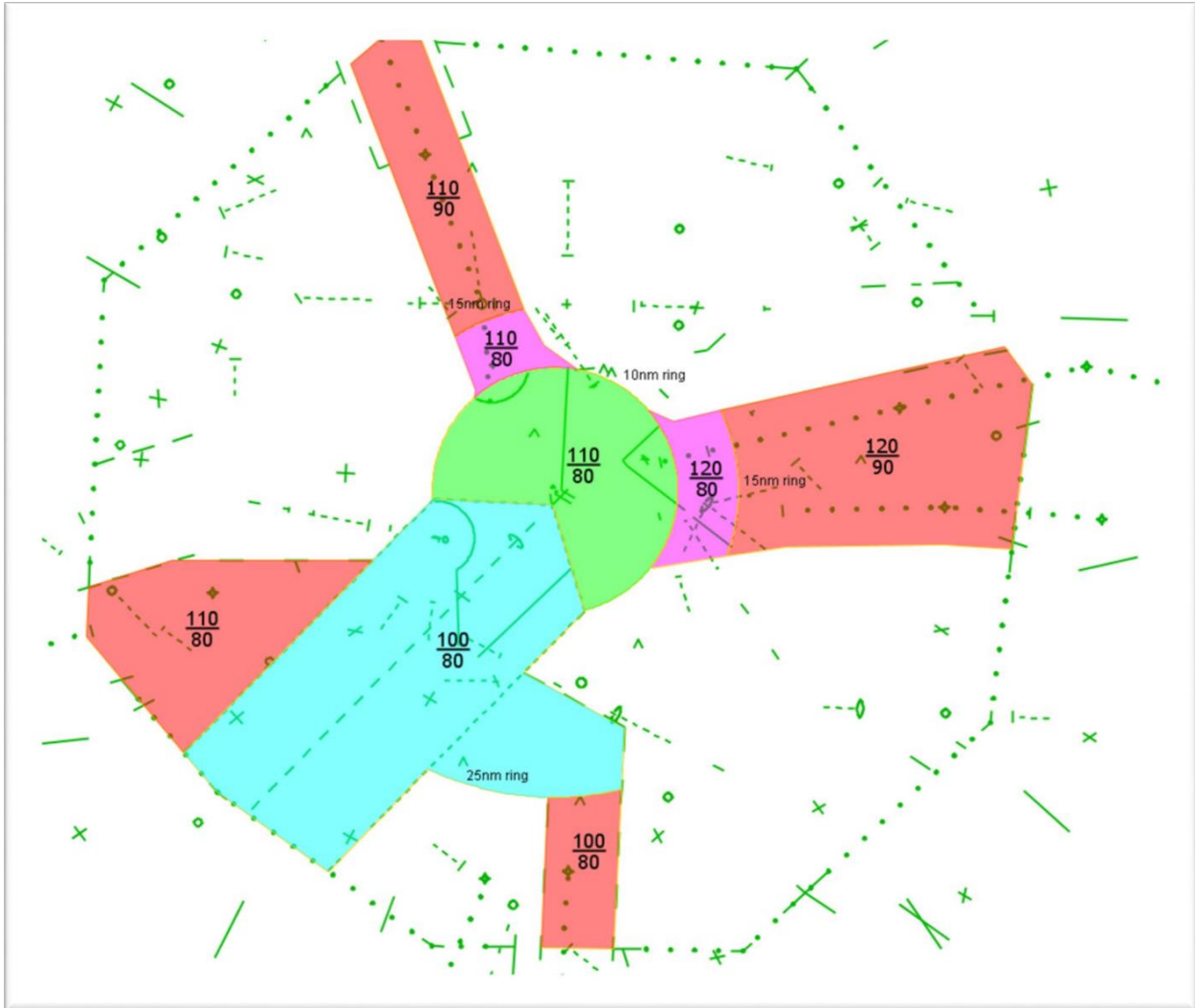
LAND 35 – DEPART 12 DEPARTURE



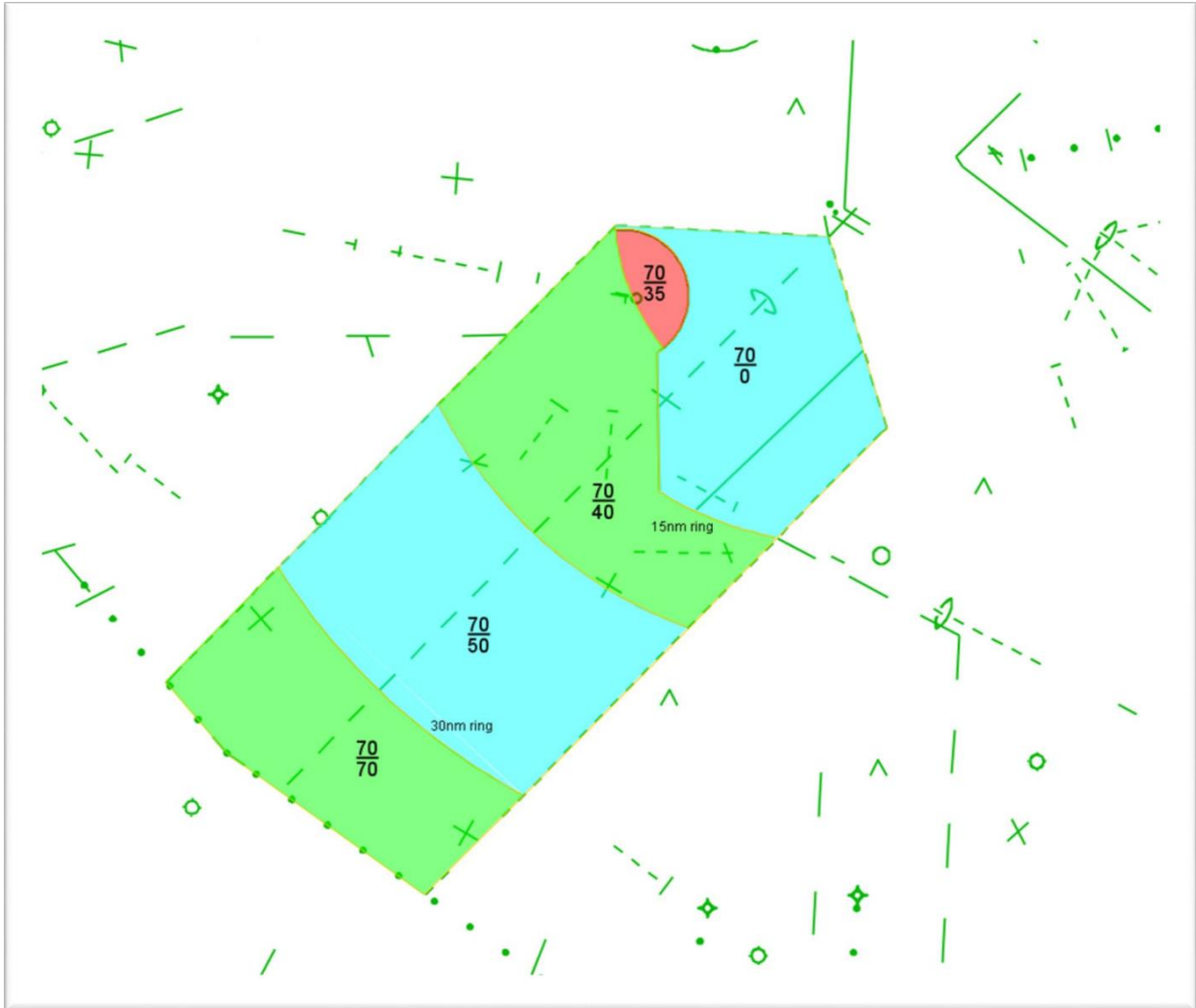
LAND 35 – DEPART 12 SATELLITE



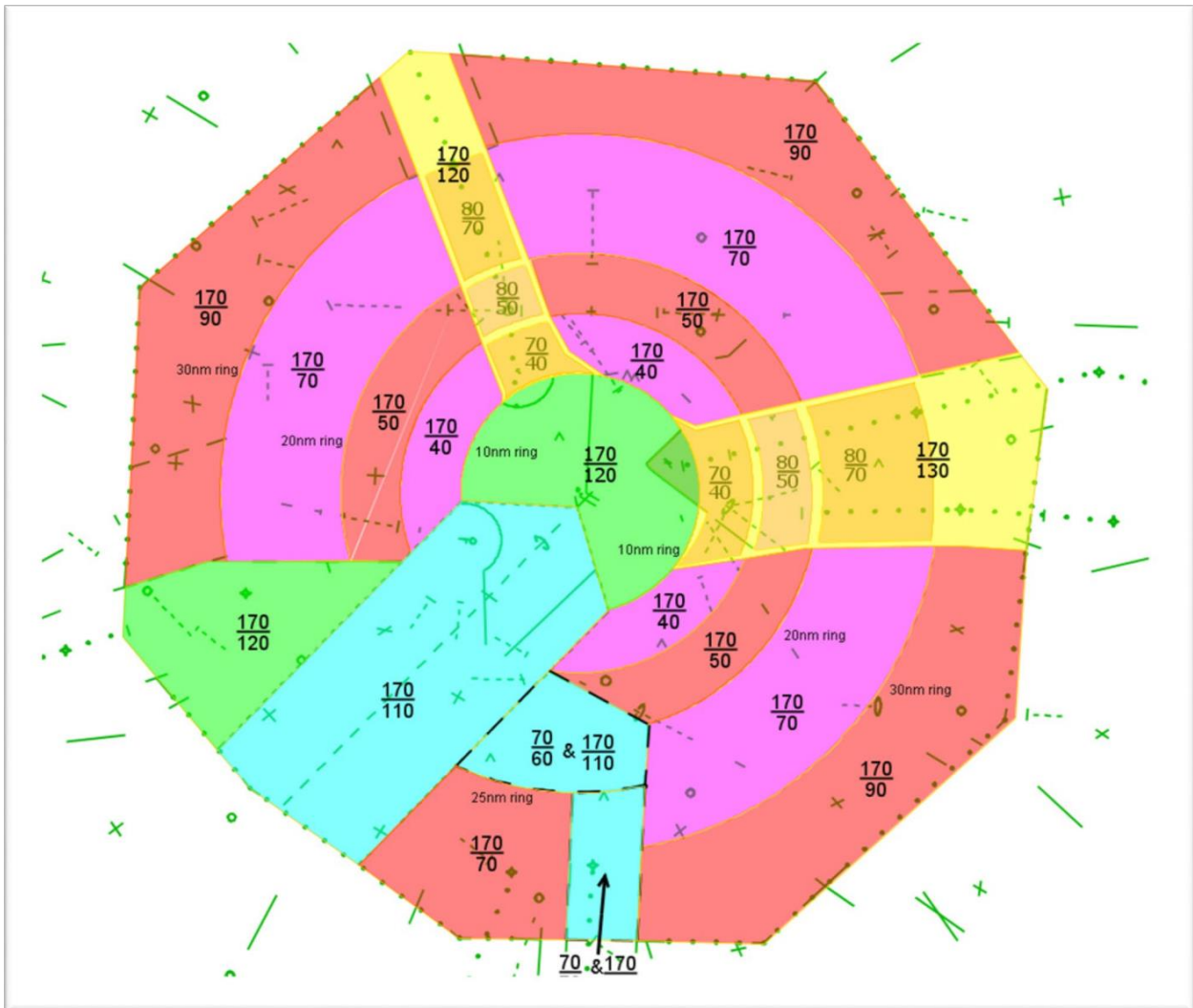
RUNWAY 4 FEEDER



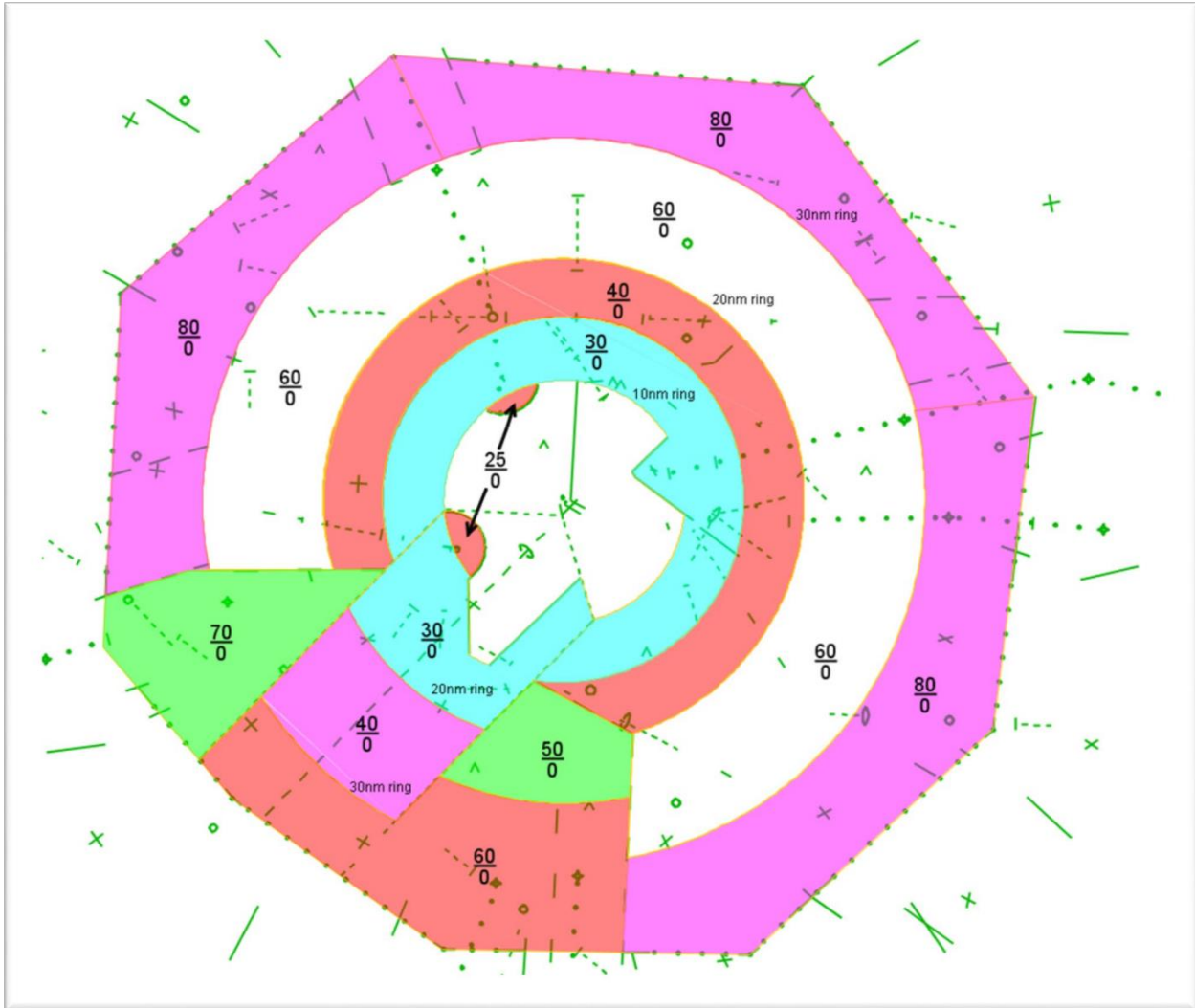
RUNWAY 4 ACDA



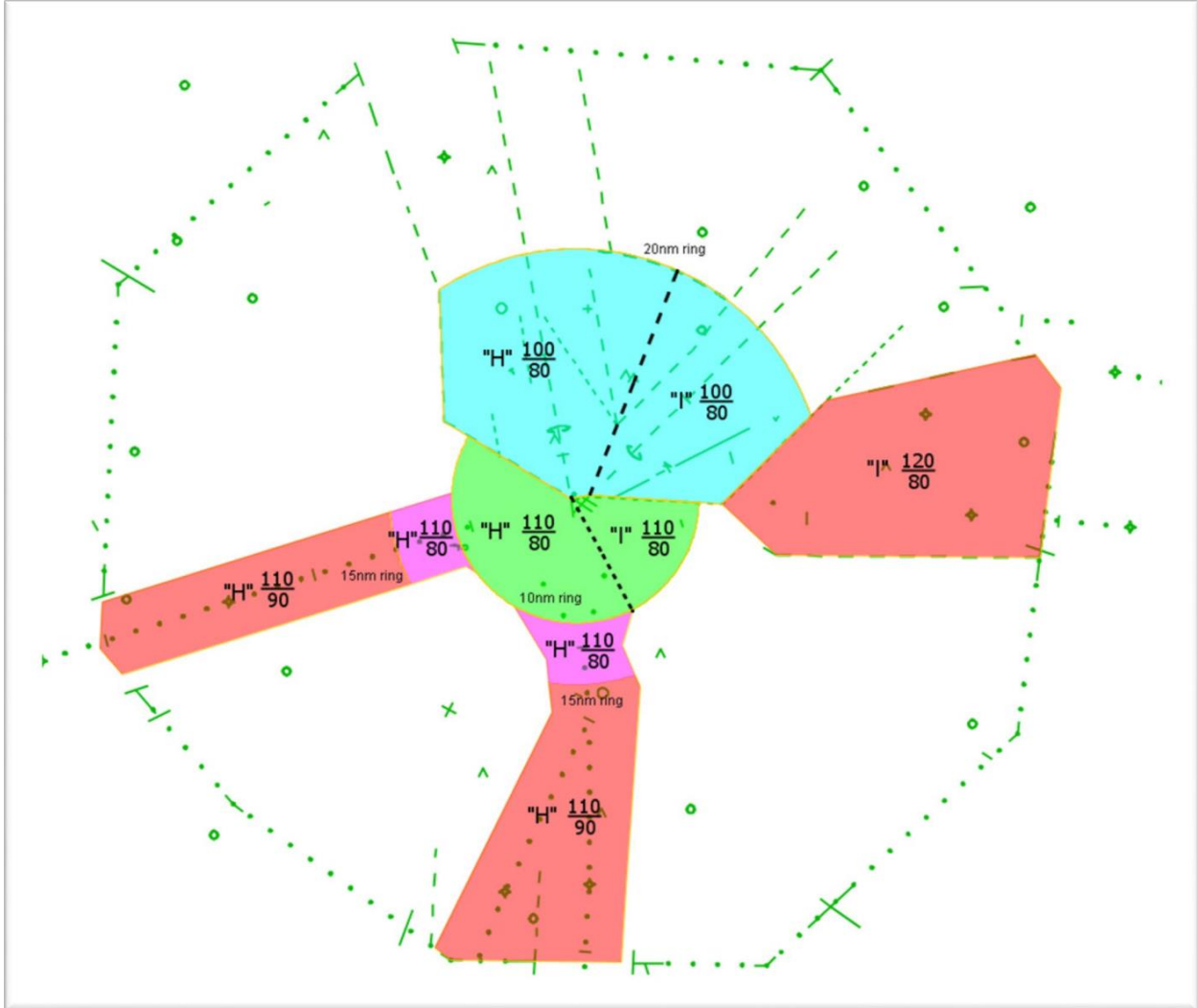
LAND 4 – DEPART 4, 12, 30, or 35 DEPARTURE



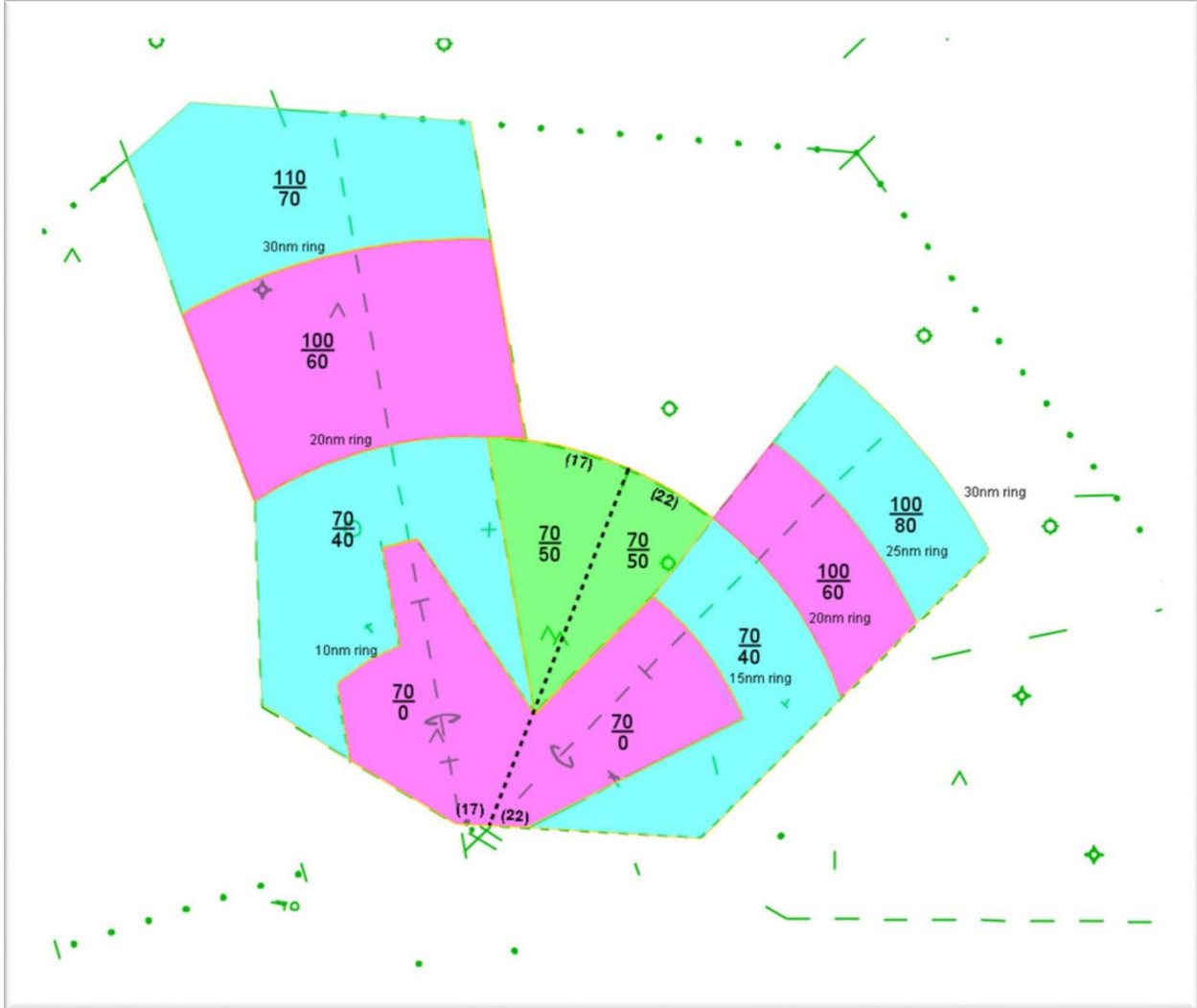
LAND 4 – DEPART 4, 12, 30, or 35 SATELLITE



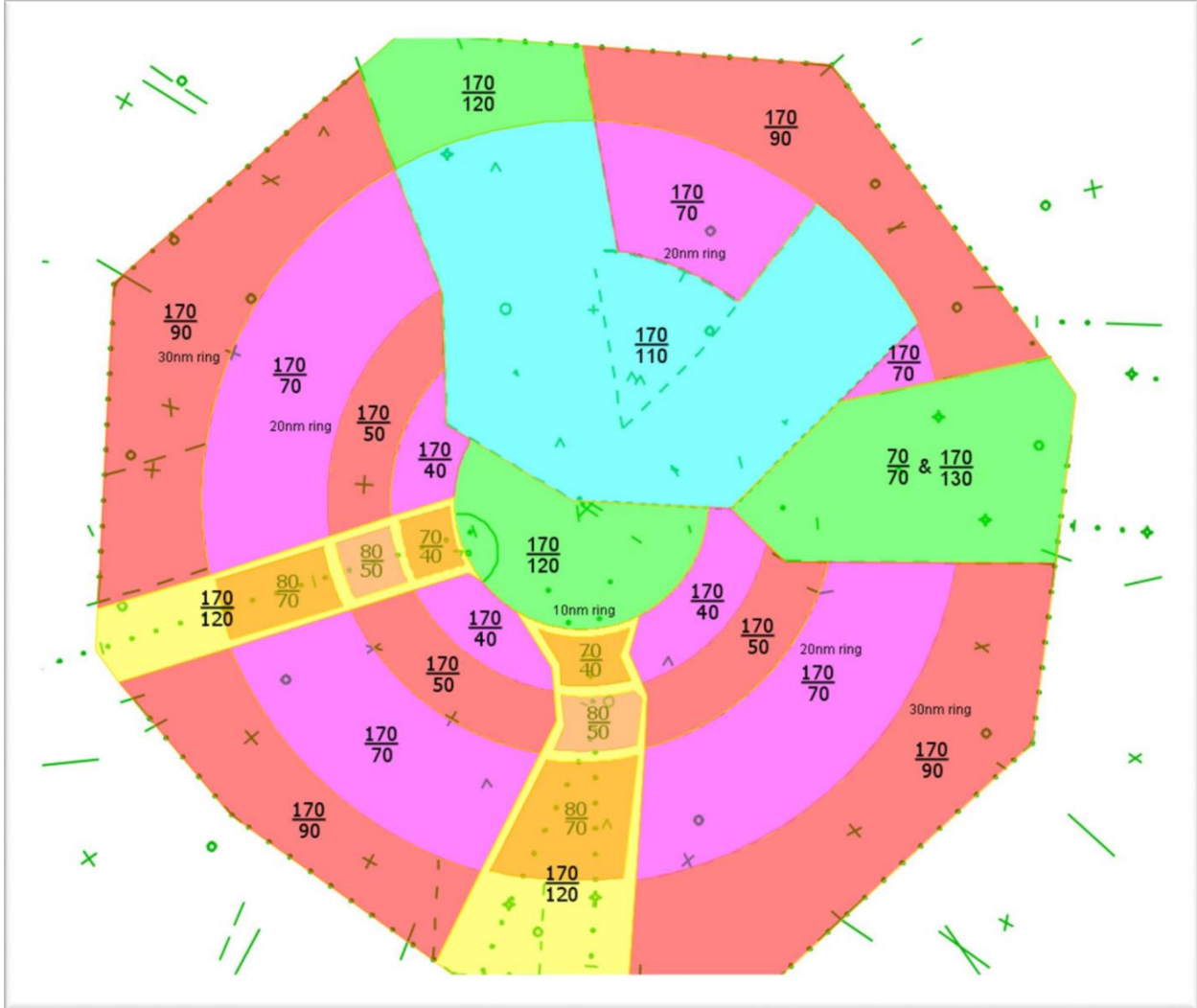
**LAND 17 and 22
DEPART 17, 22, 12L/R
FEEDER**



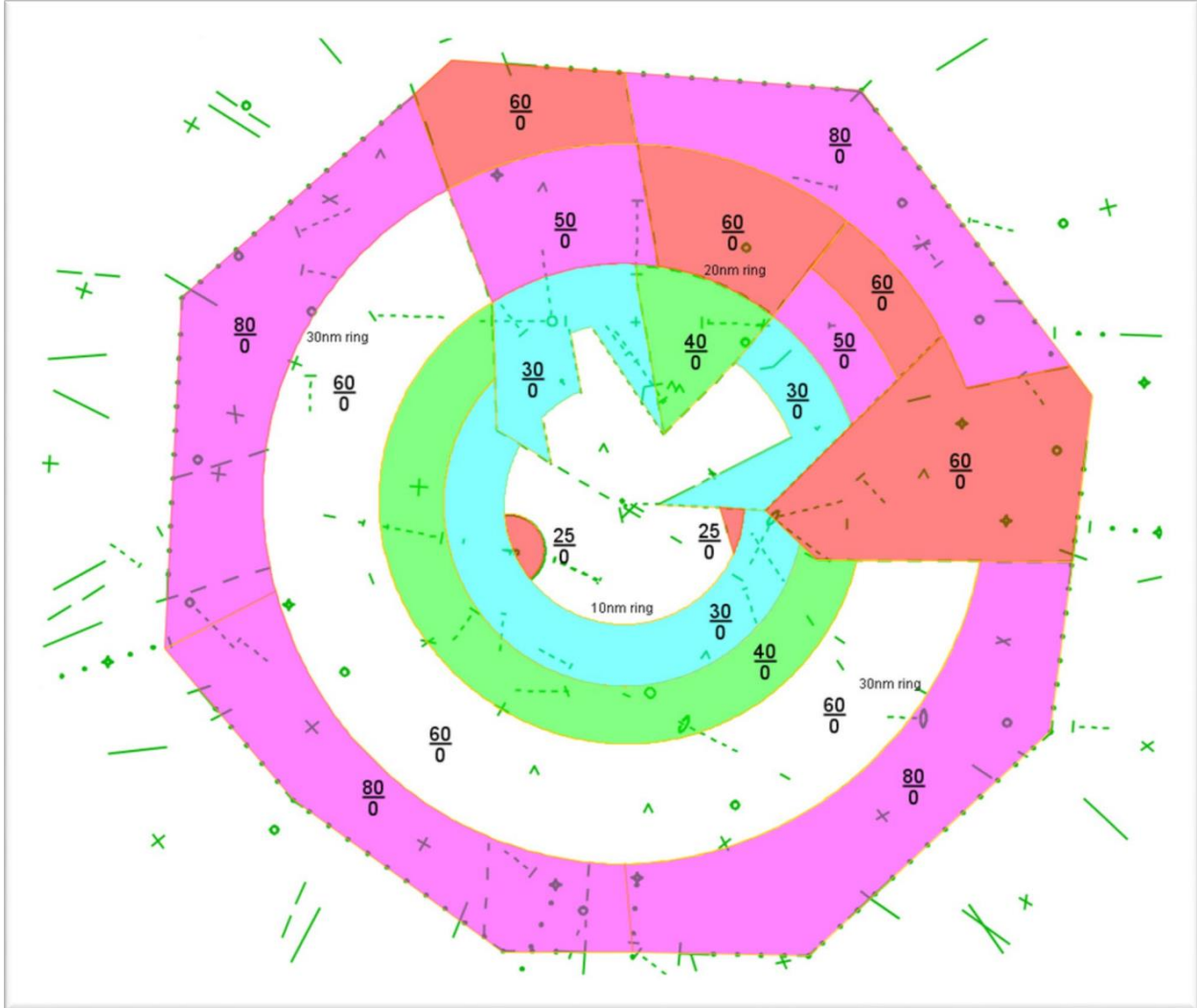
**LAND 17 and 22
DEPART 17, 22, 12L/R
ACDA**



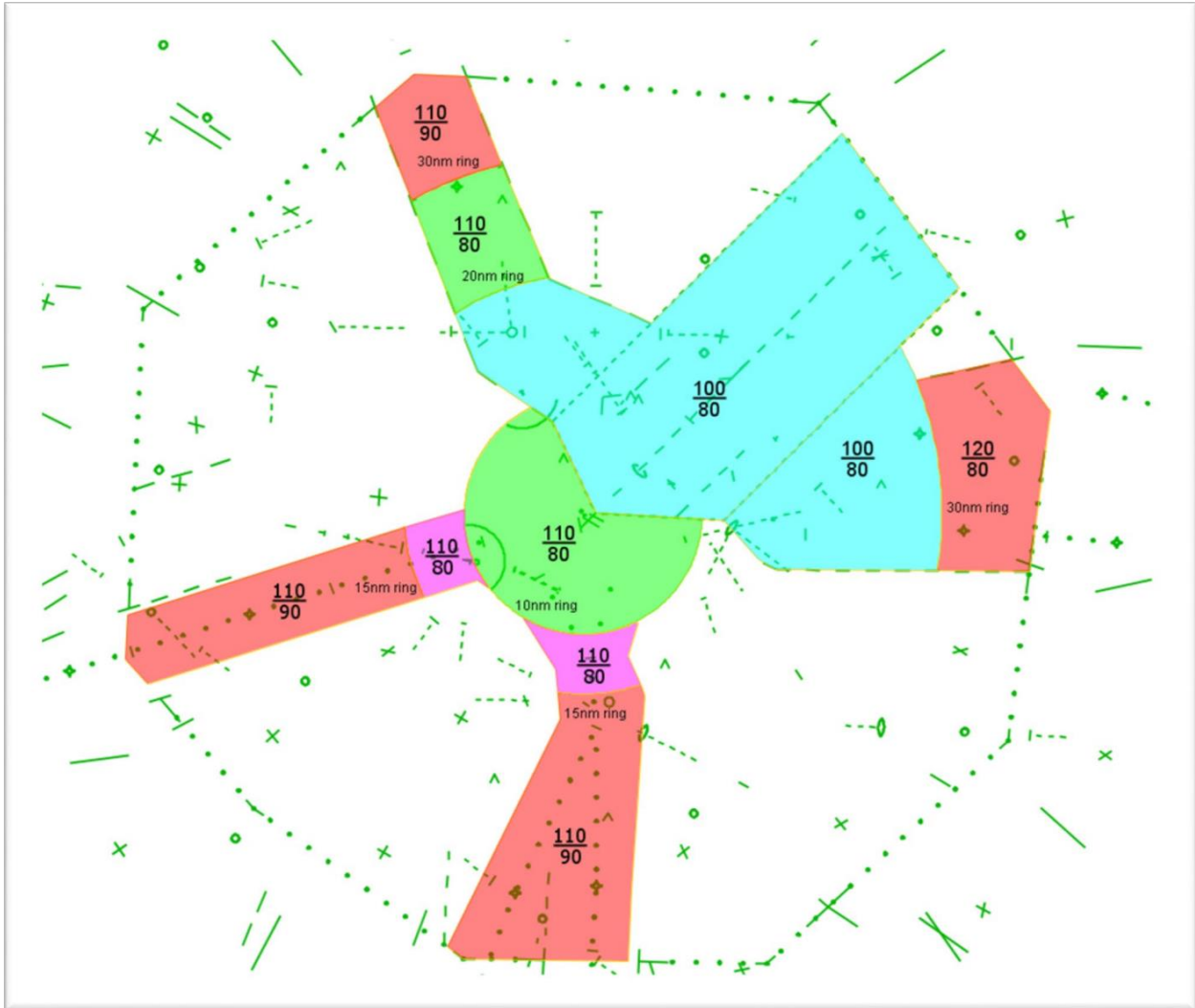
**LAND 17 and 22
DEPART 17, 22, 12L/R
DEPARTURE**



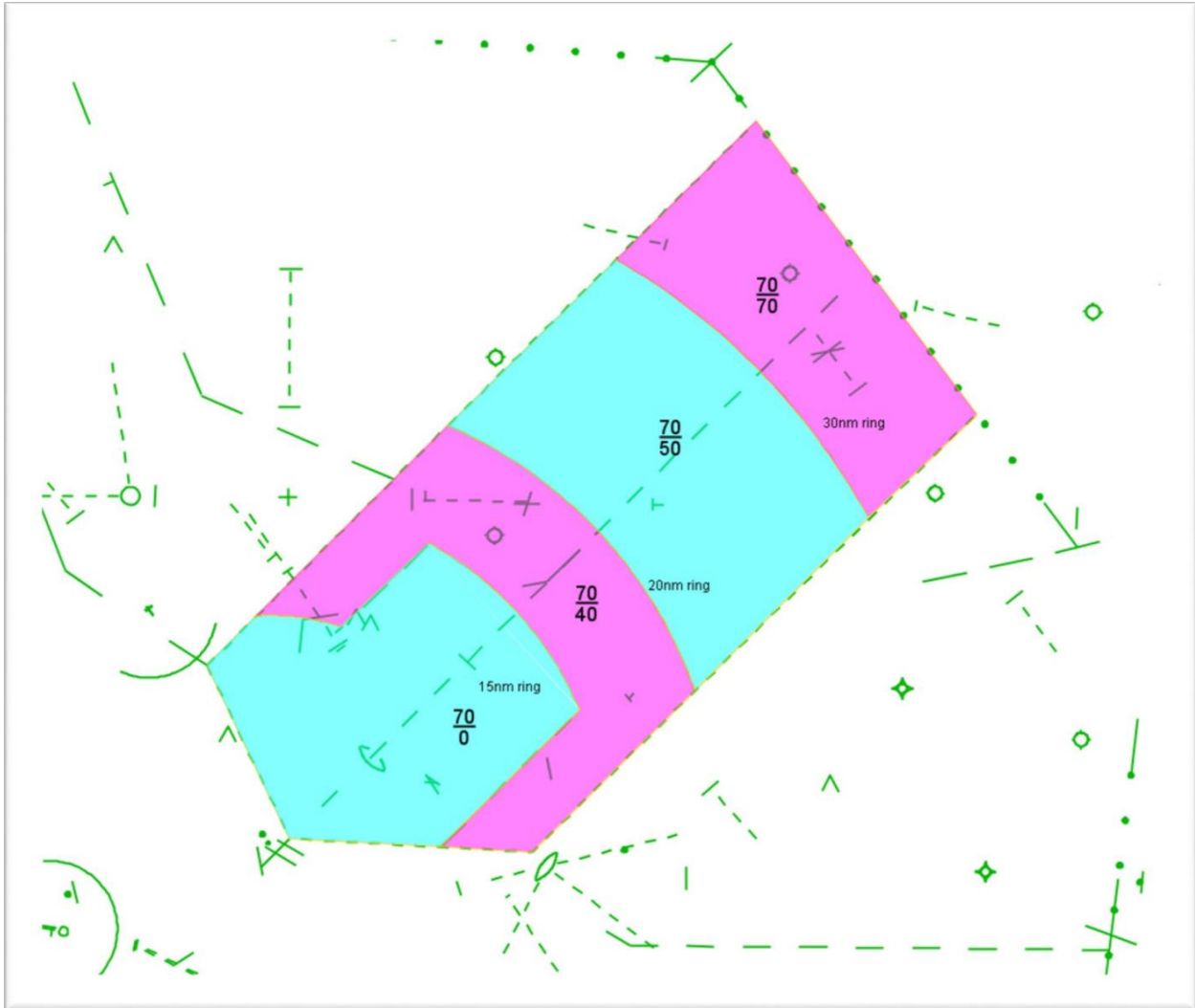
**LAND 17 and 22
DEPART 17, 22, 12L/R
SATELLITE**



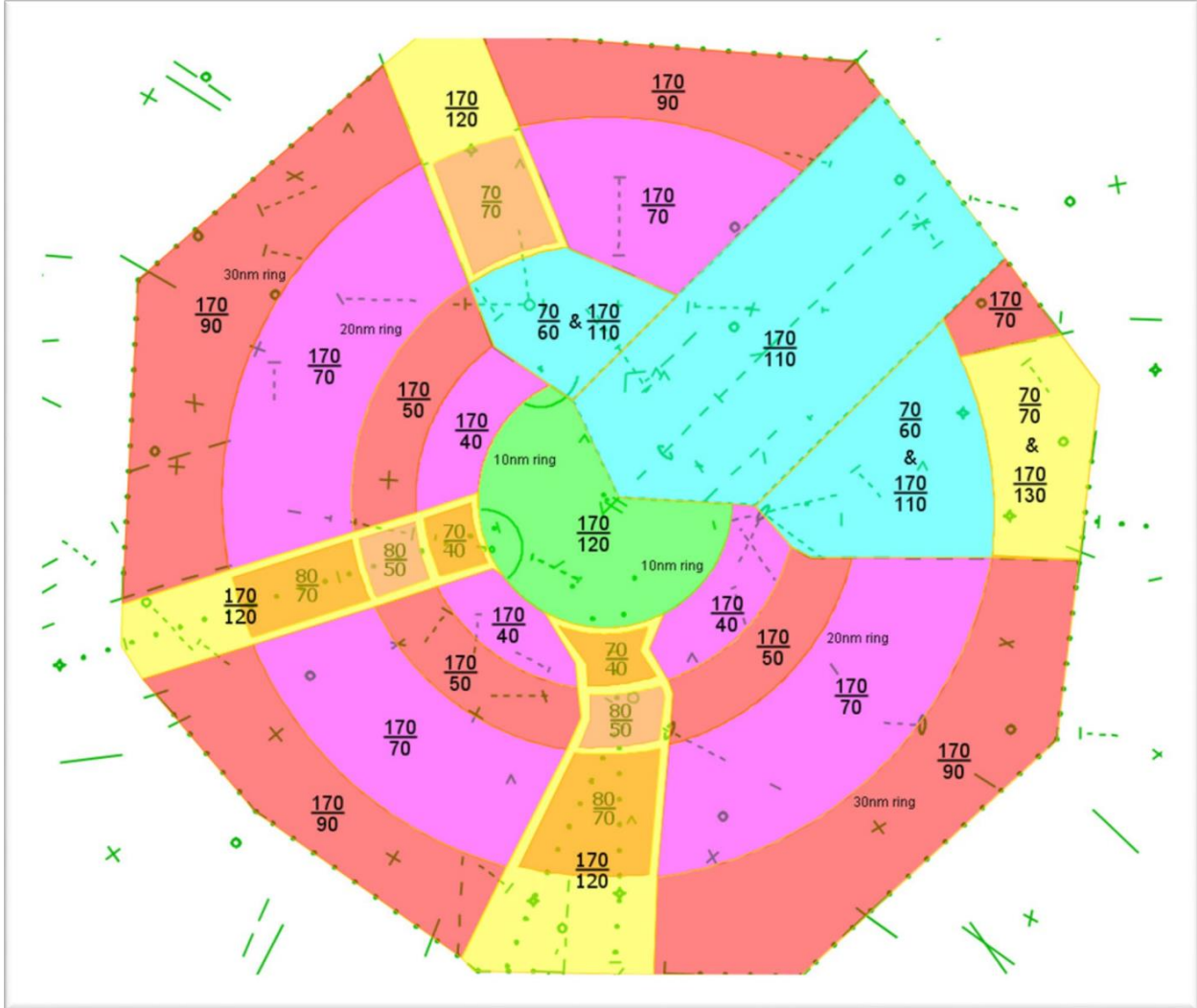
RUNWAY 22 FEEDER



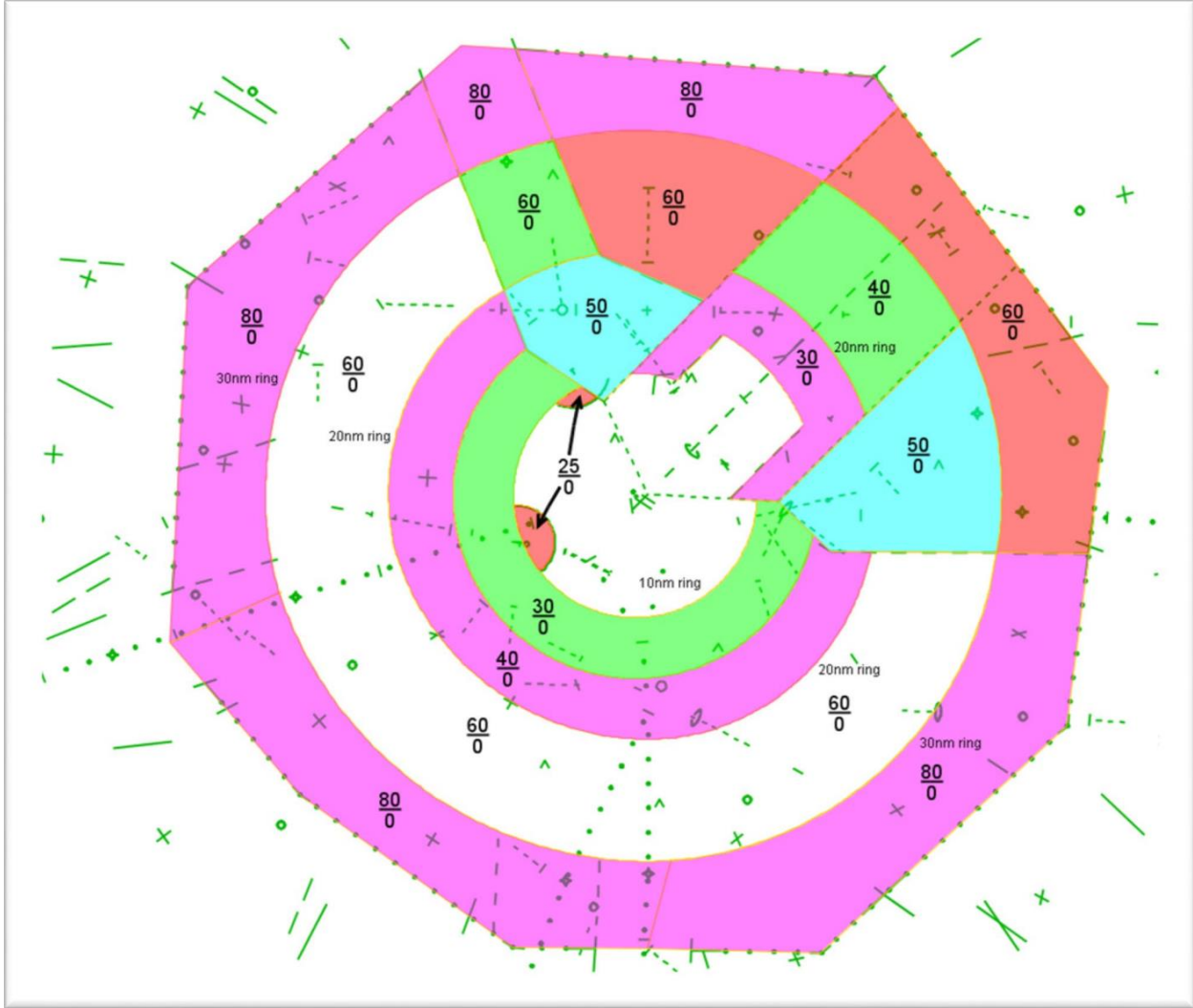
RUNWAY 22 ACDA



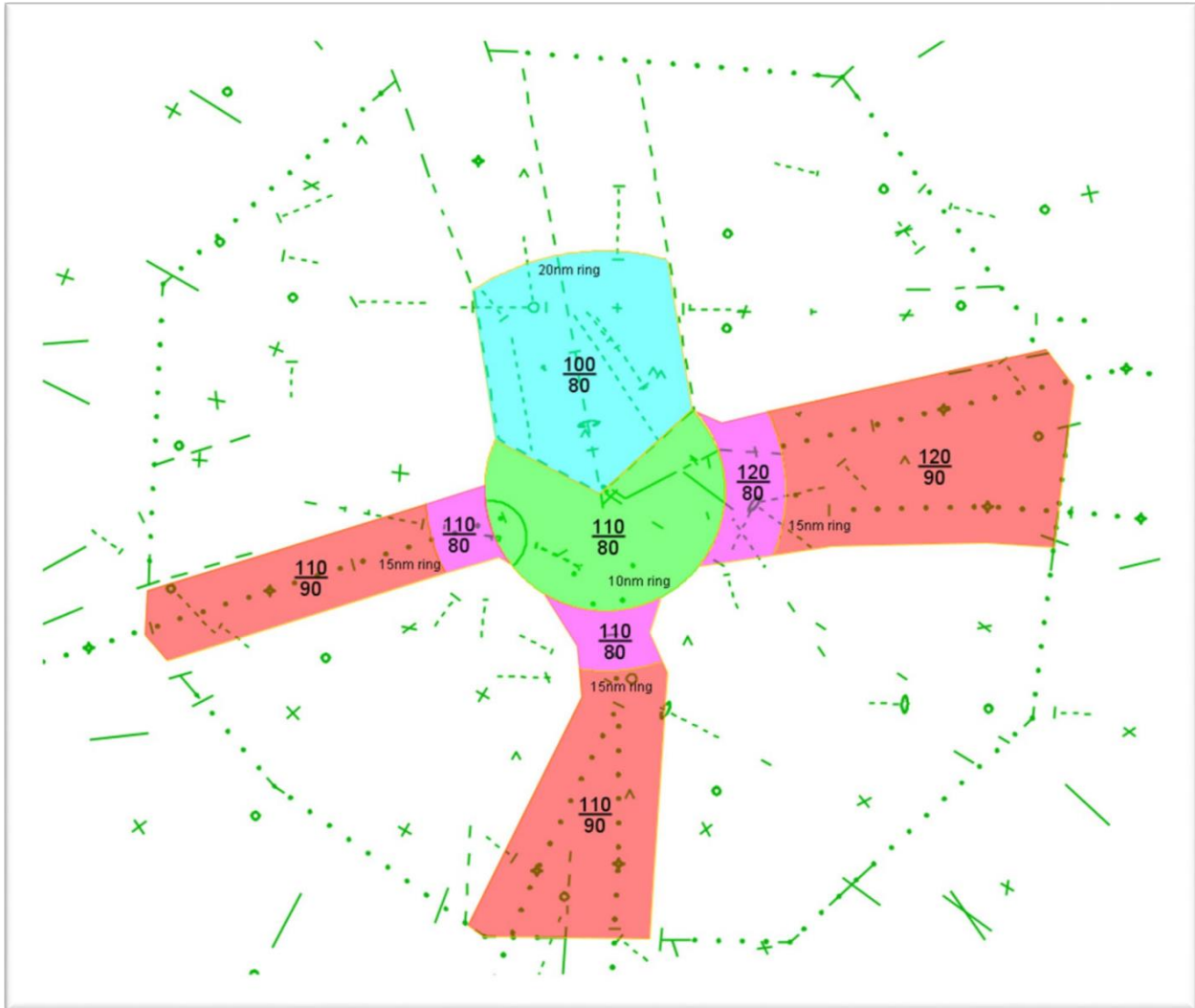
LAND 22
DEPART 22, 12, 17, or 30
DEPARTURE



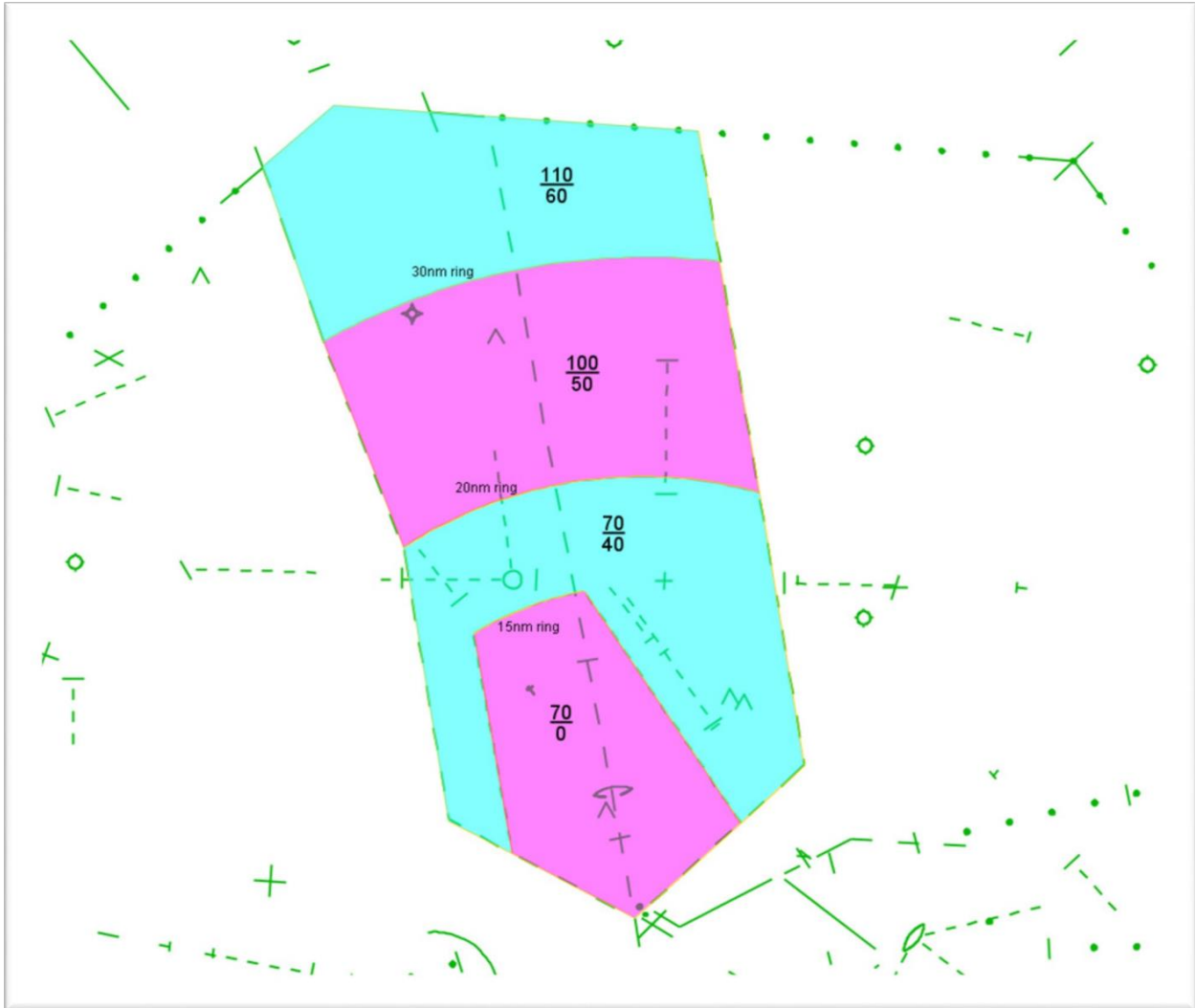
LAND 22
DEPART 22, 12, 17, or 30
SATELLITE



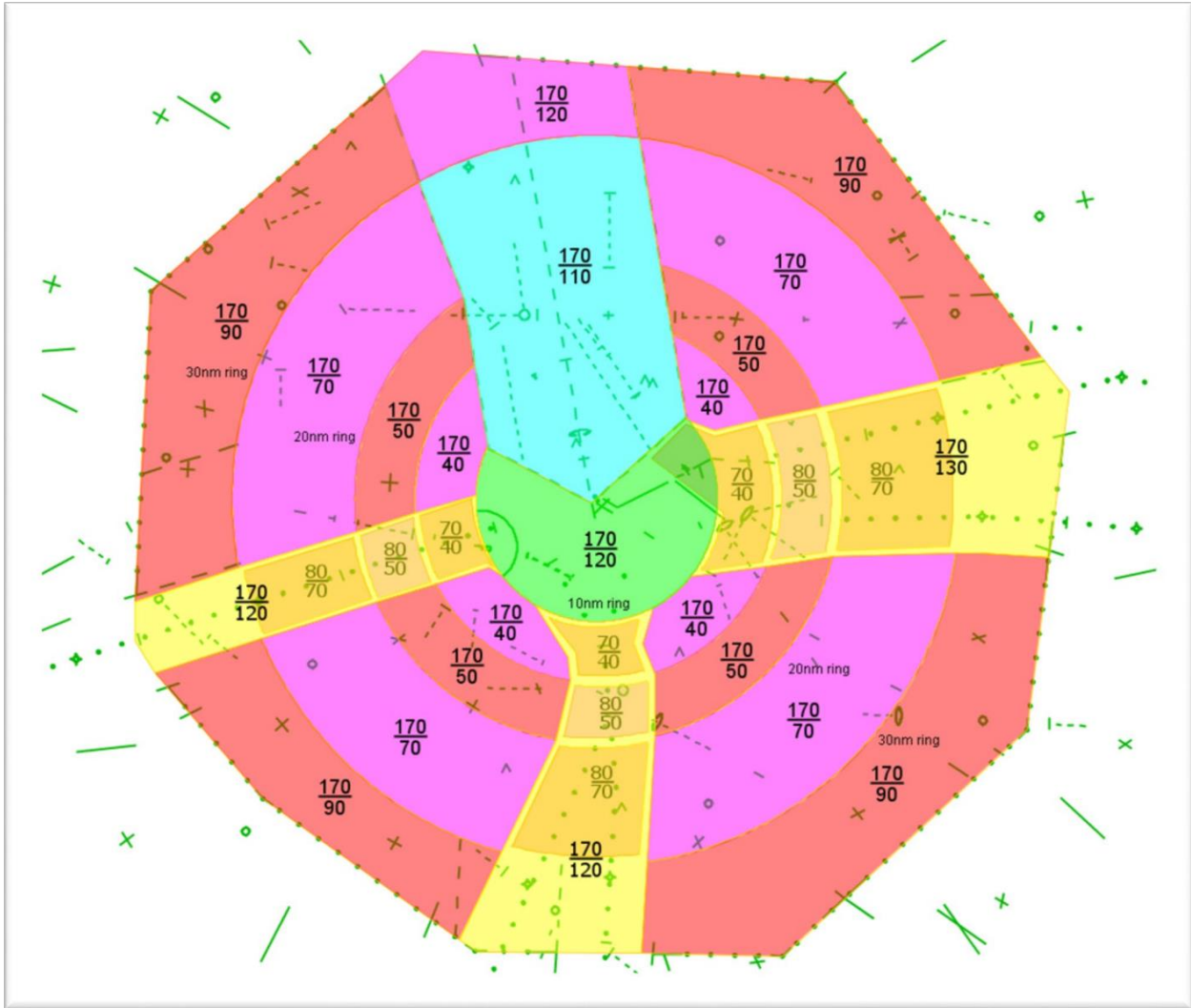
LAND 17 – DEPART 12s, 22, or 17 FEEDER



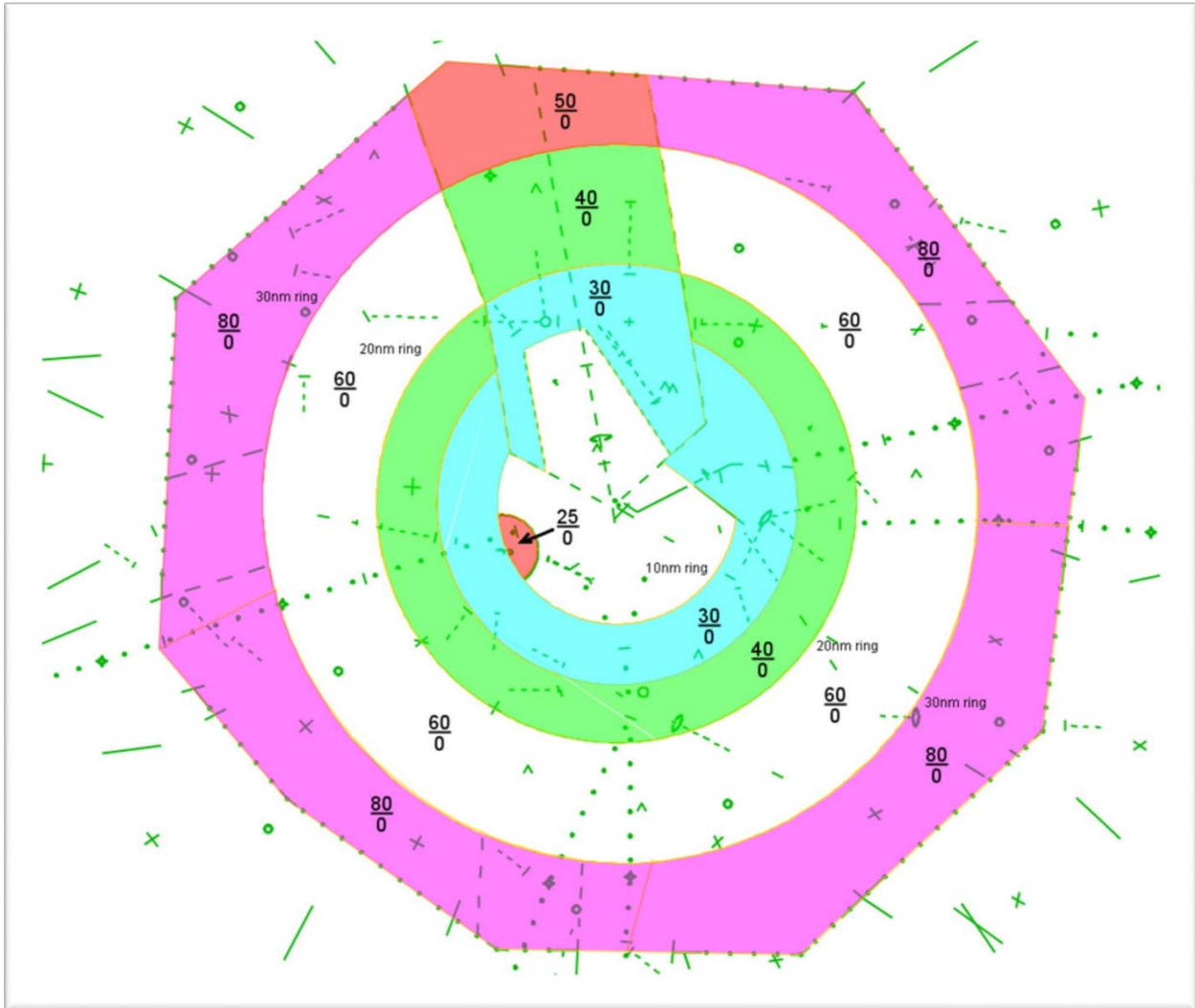
LAND 17 – DEPART 12s, 22, or 17 ACDA



LAND 17 – DEPART 12s, 22, or 17 DEPARTURE

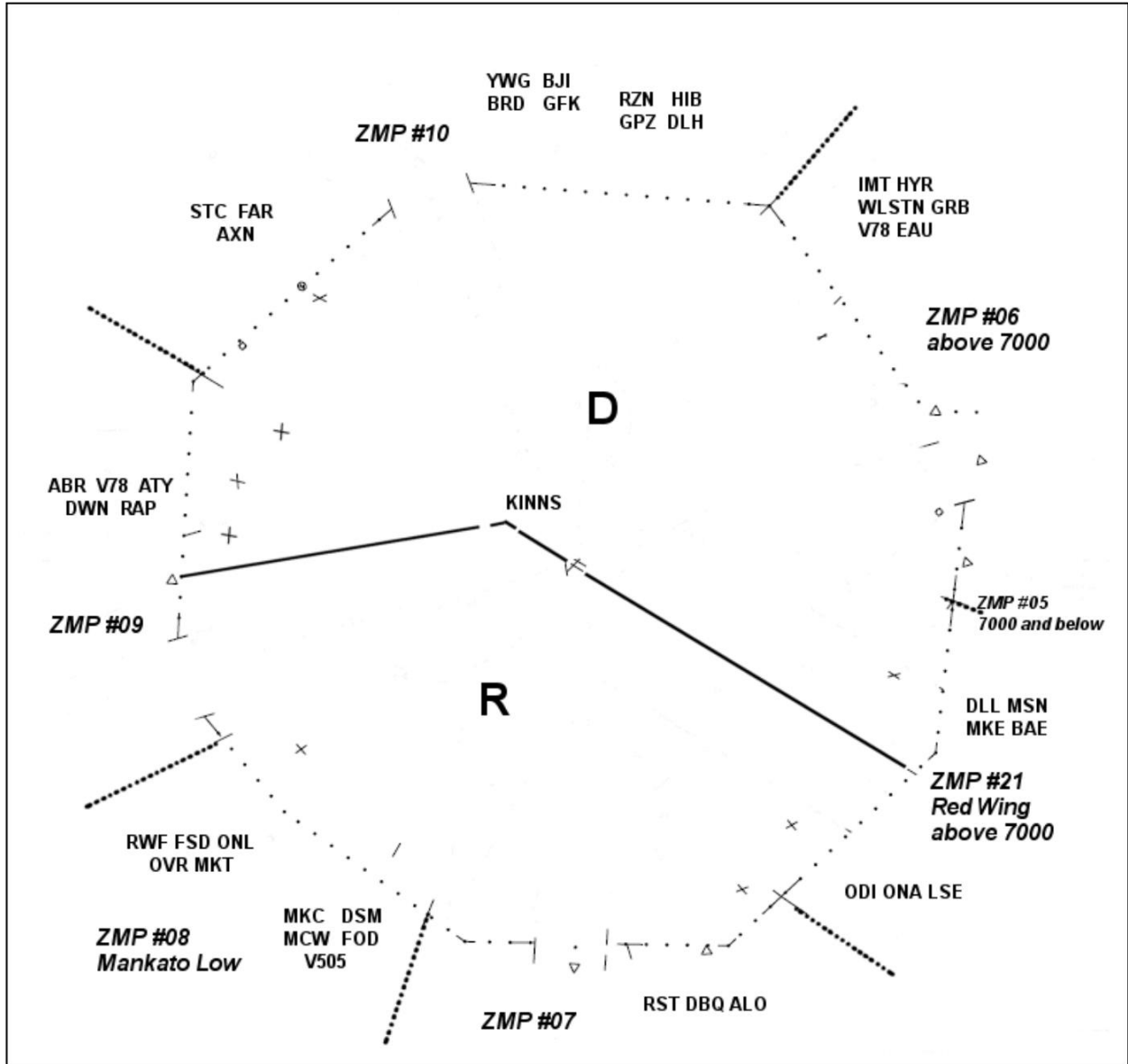


LAND 17 – DEPART 12s, 22, or 17 SATELLITE

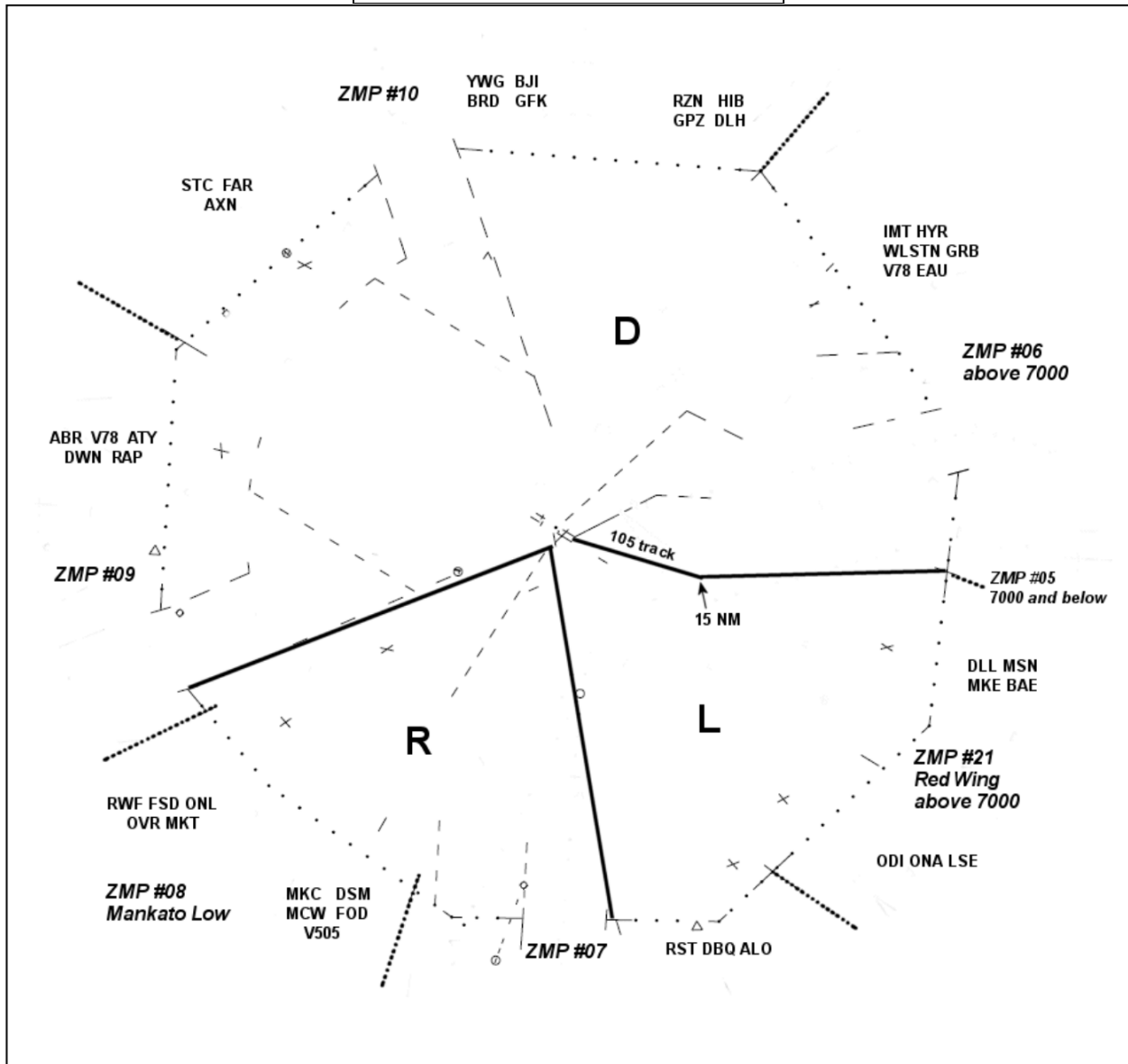


Attachment 2: Departure Configurations

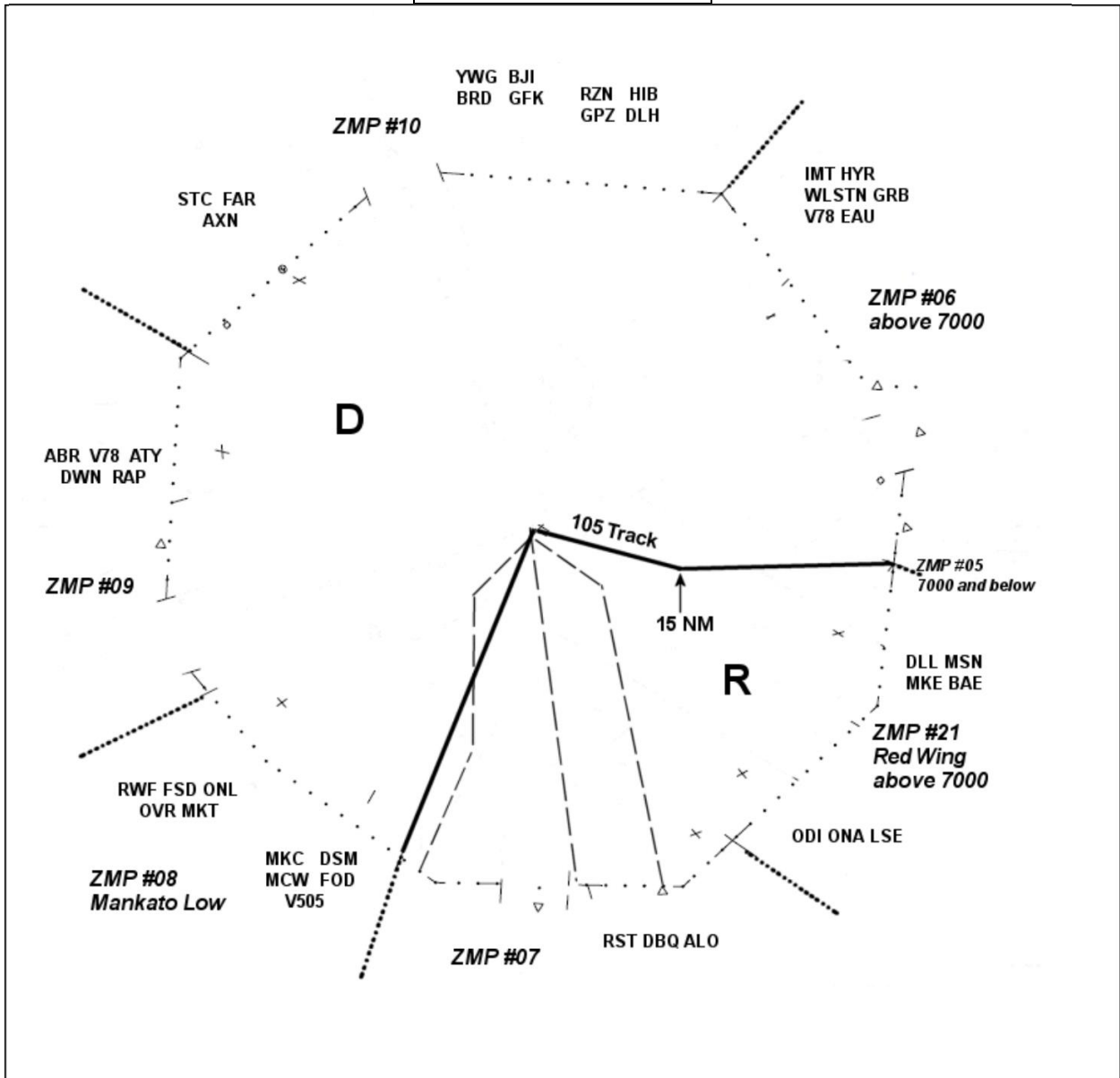
Land and Depart 12s
Land and Depart 30s
Land 30s and 35 – Depart 30s
Land 30s – Depart 30s and 17



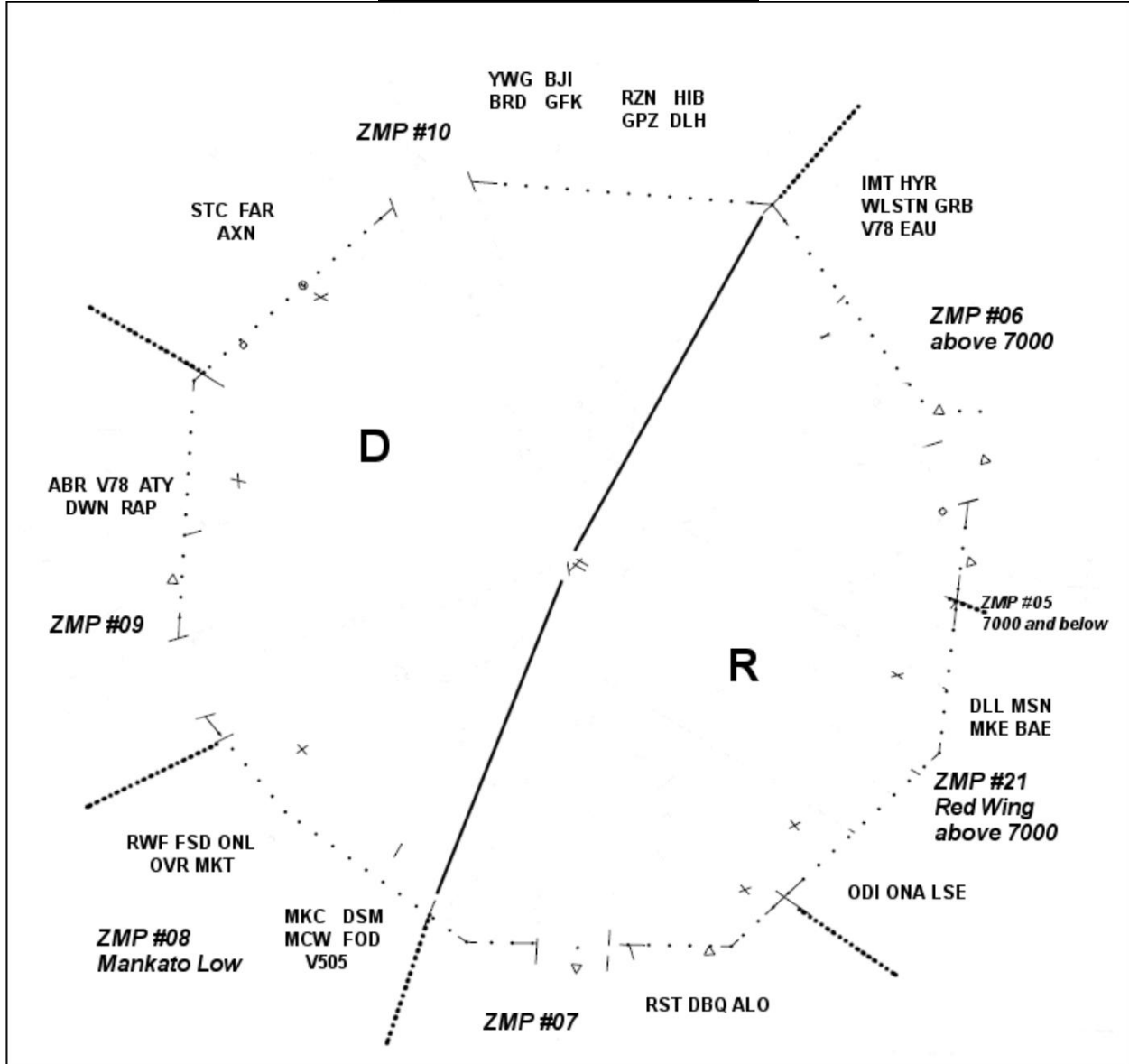
**Land 12s – Depart 12s and 17
Three Departure Split**



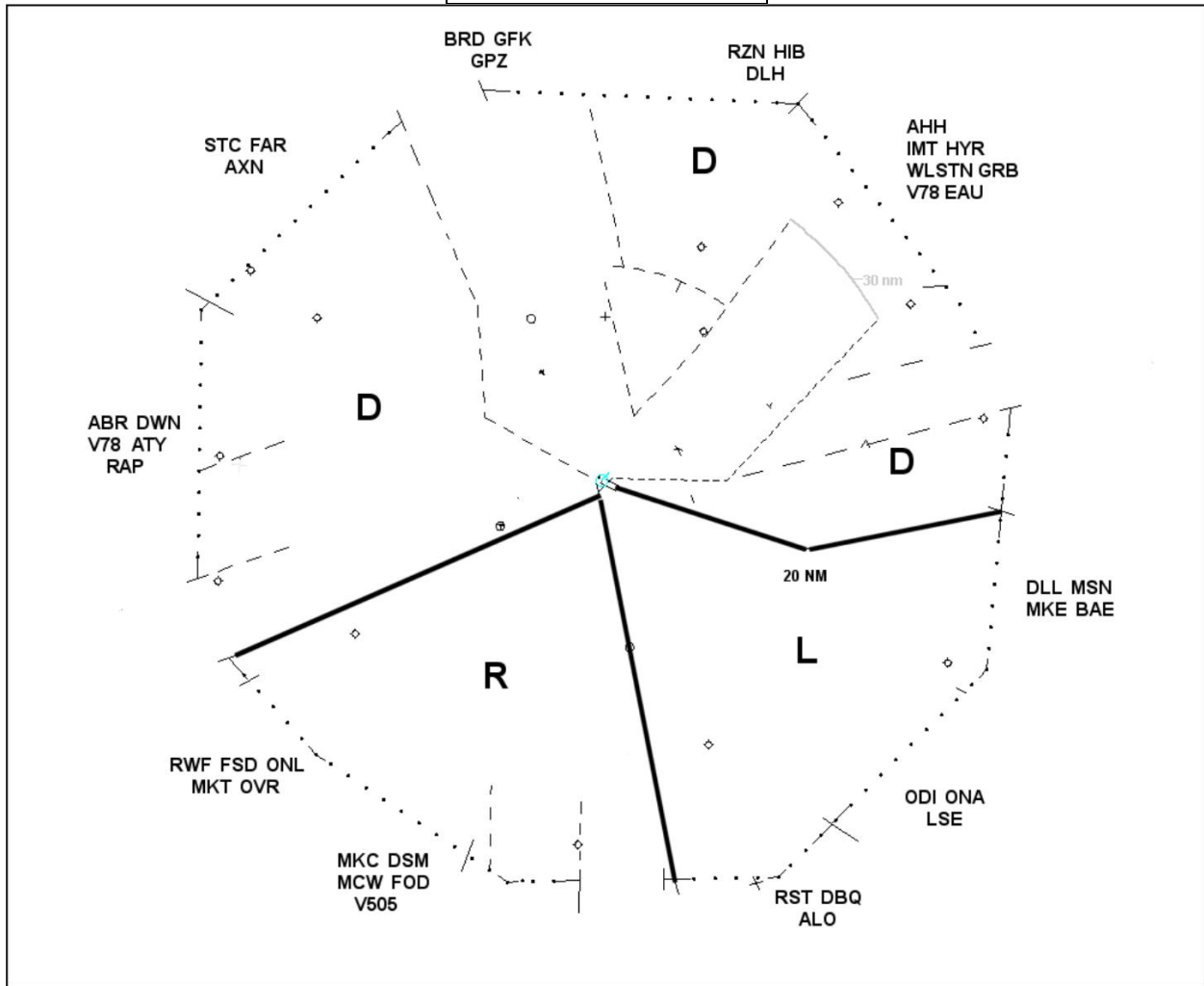
**Land 35 – Depart 12
(Configuration #3)**



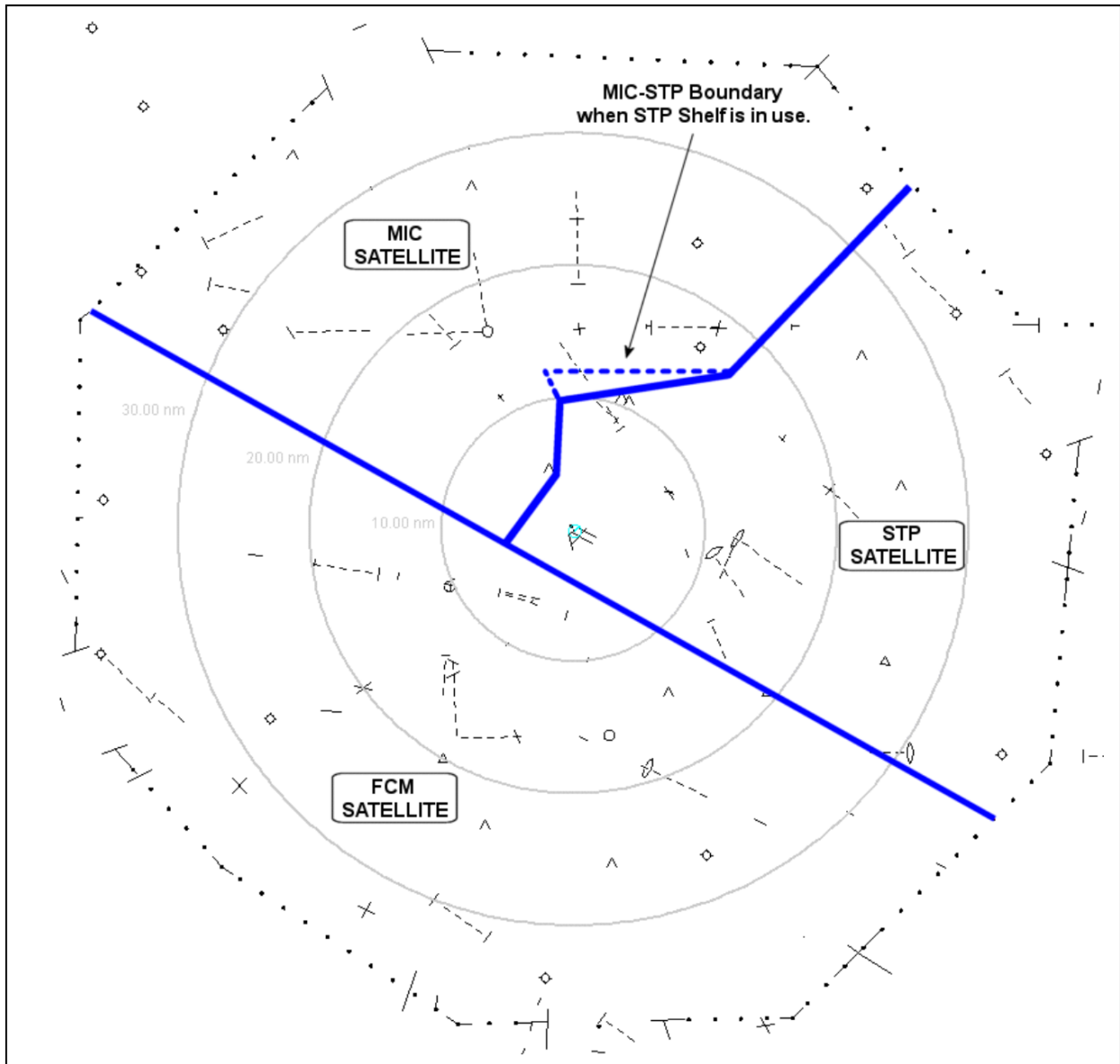
Land 35 – Depart 35, 30, 4
Land 17 – Depart 17
Land 22 – Depart Any
Land 4 – Depart Any



Land 17 and 22
Depart 17, 22, 12L/R

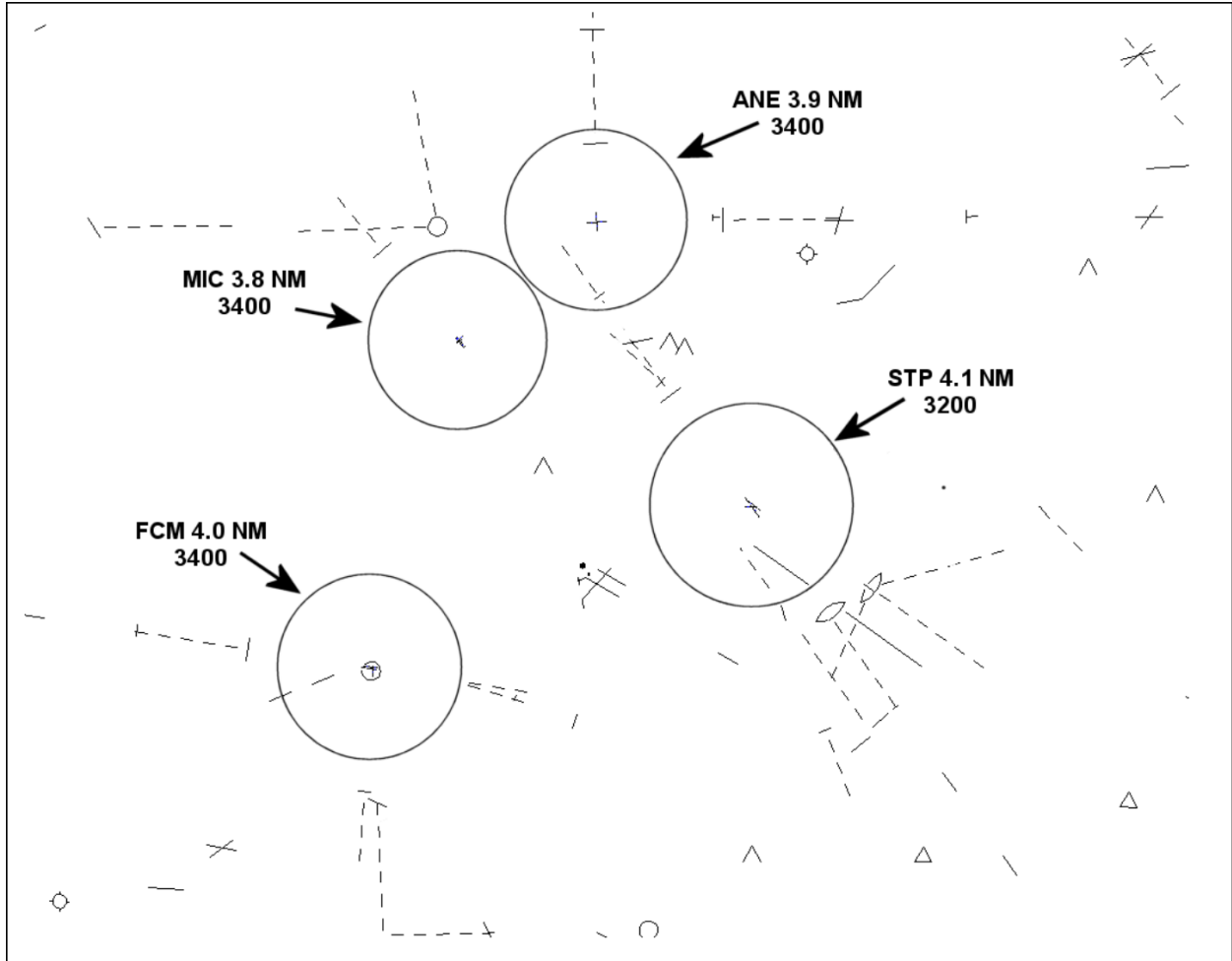


Attachment 3: Satellite Airspace Split and Class D Airspace

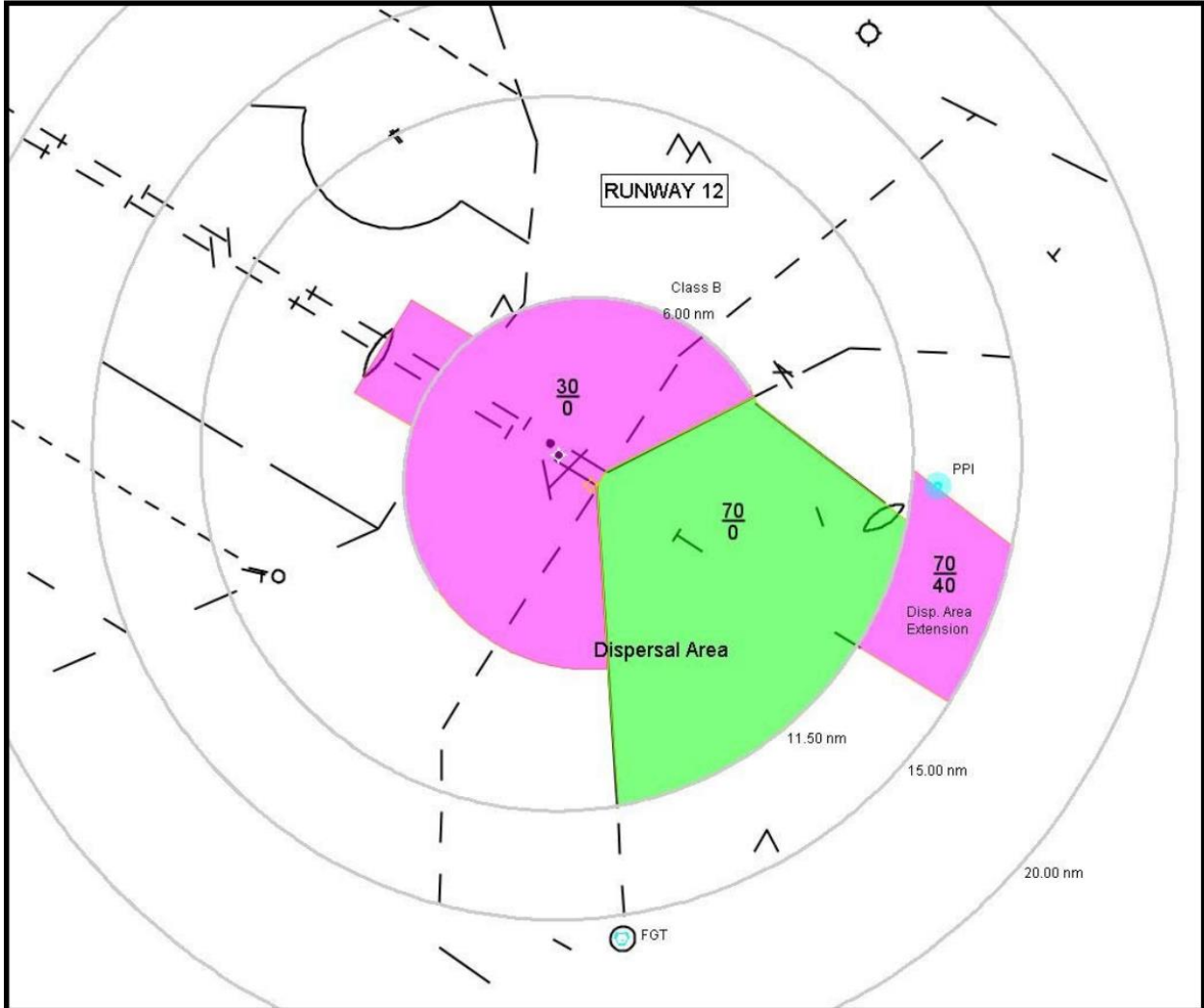


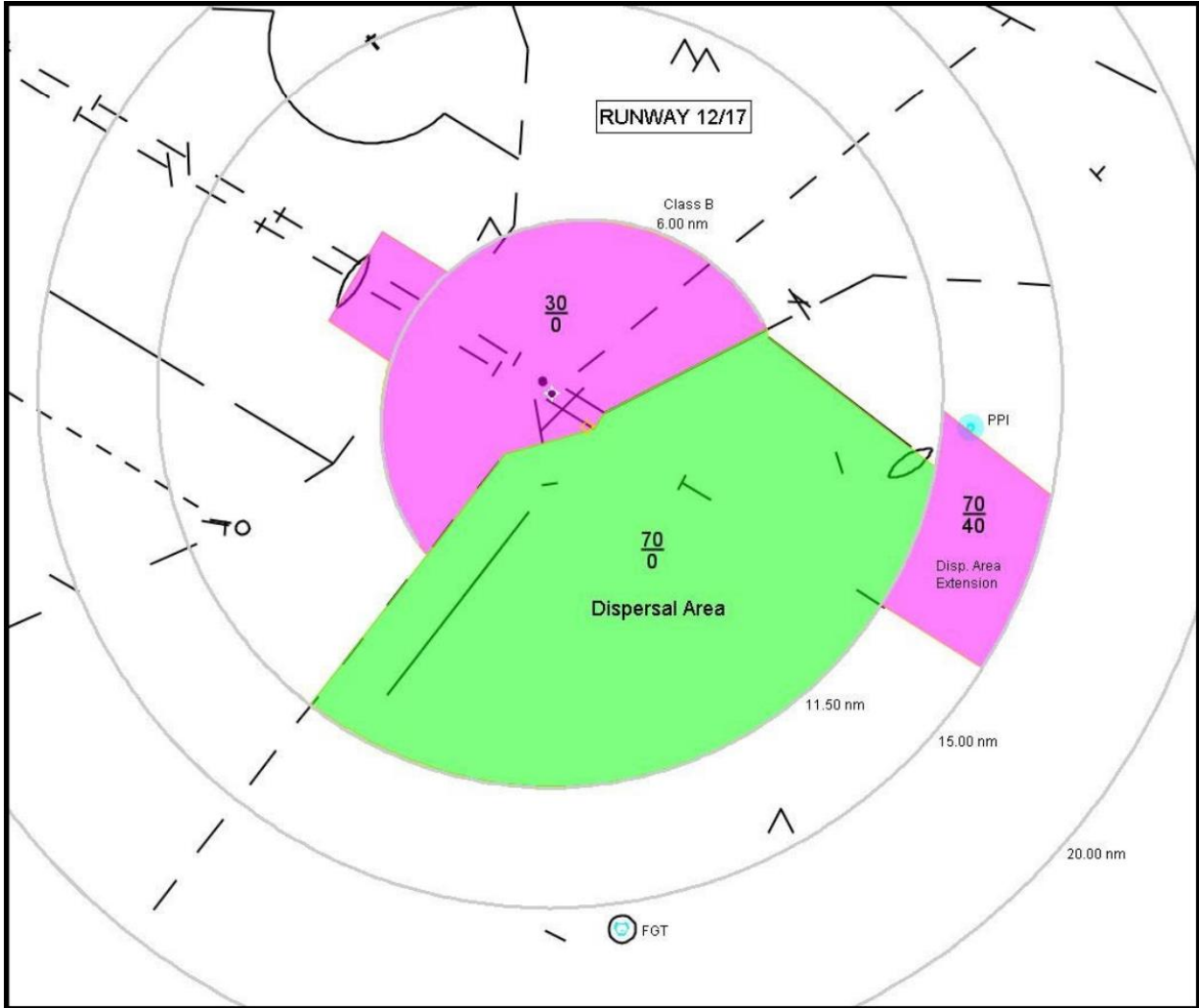
Class D Airspace Dimensions

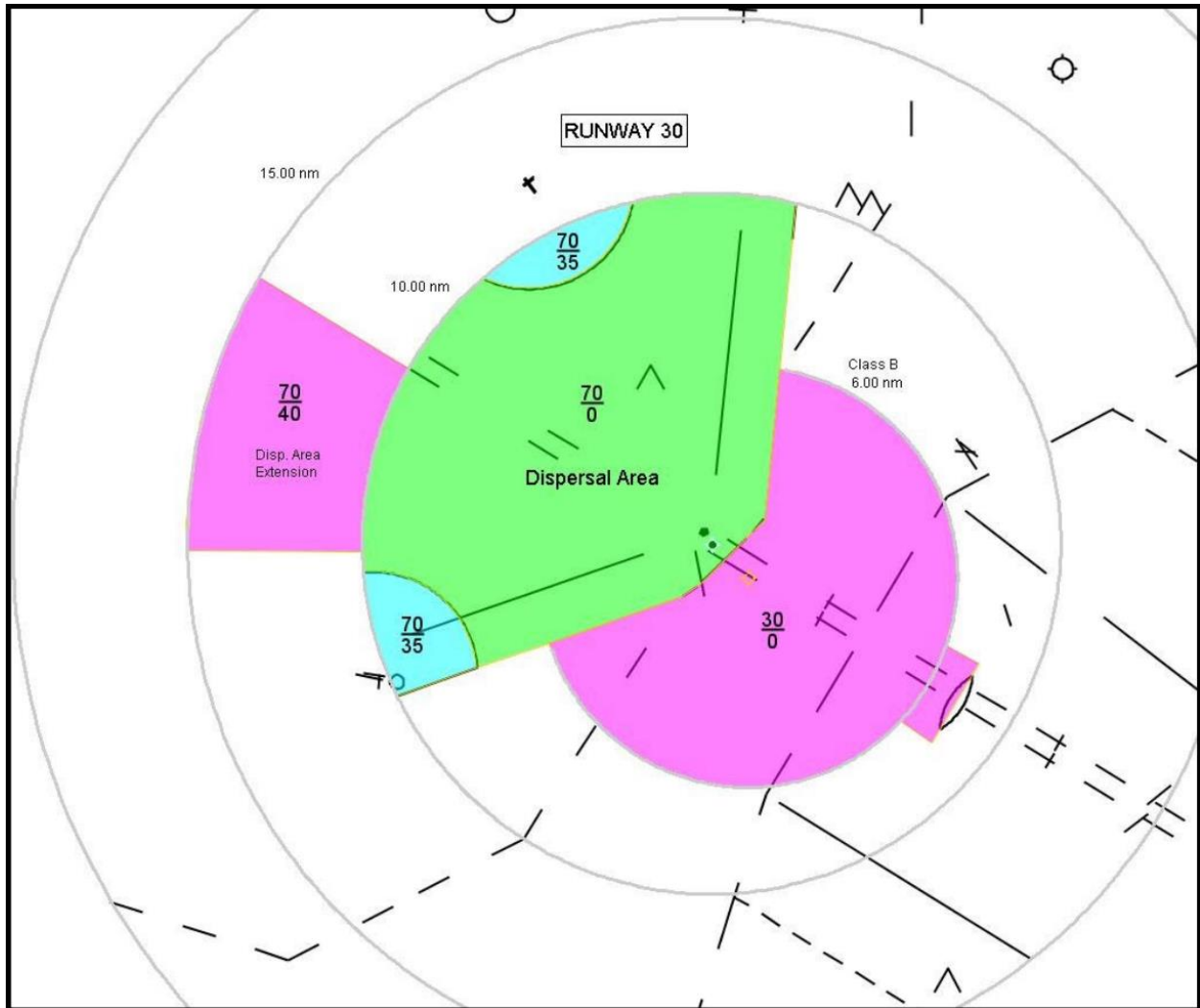
(Ceiling in Feet MSL)

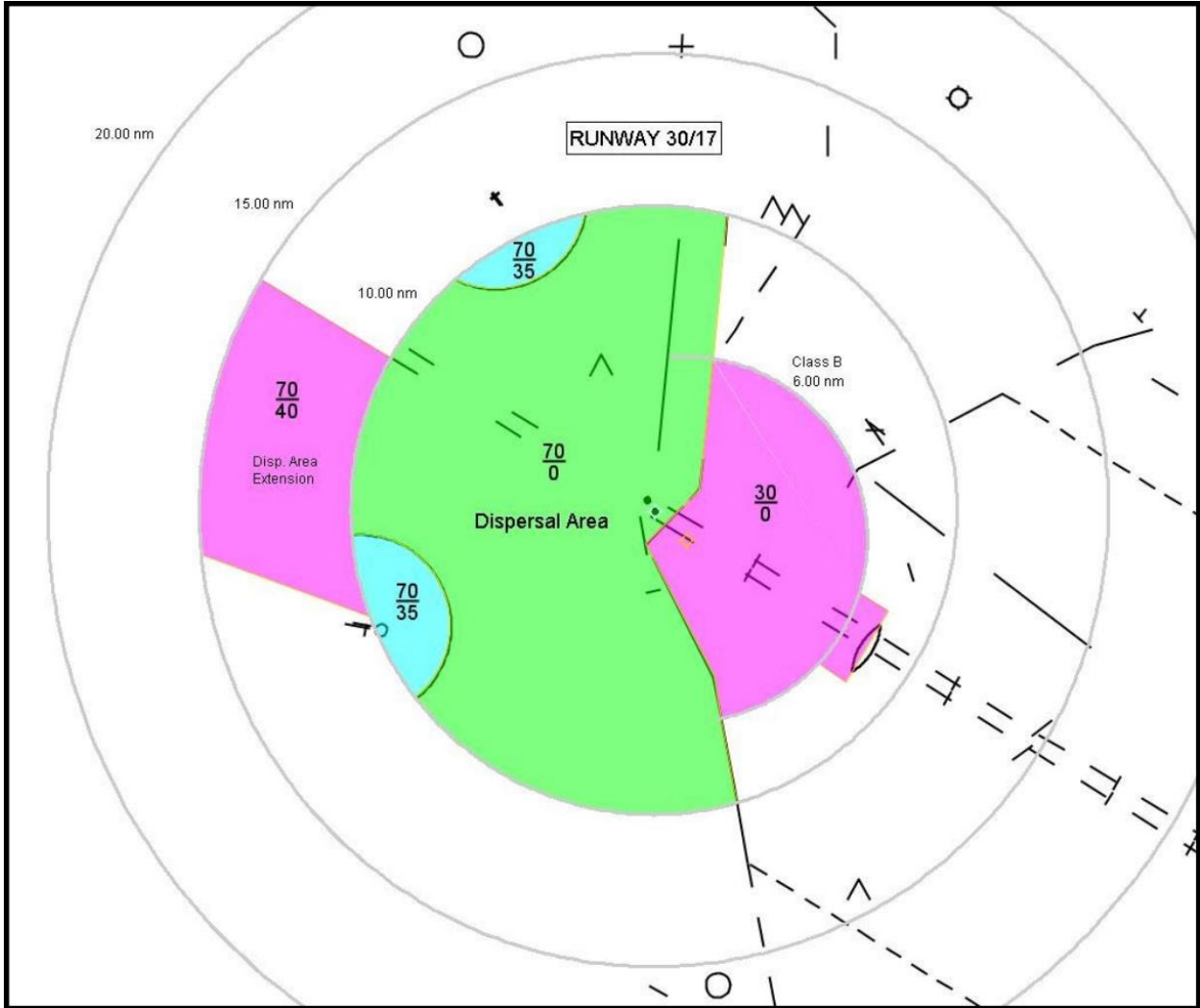


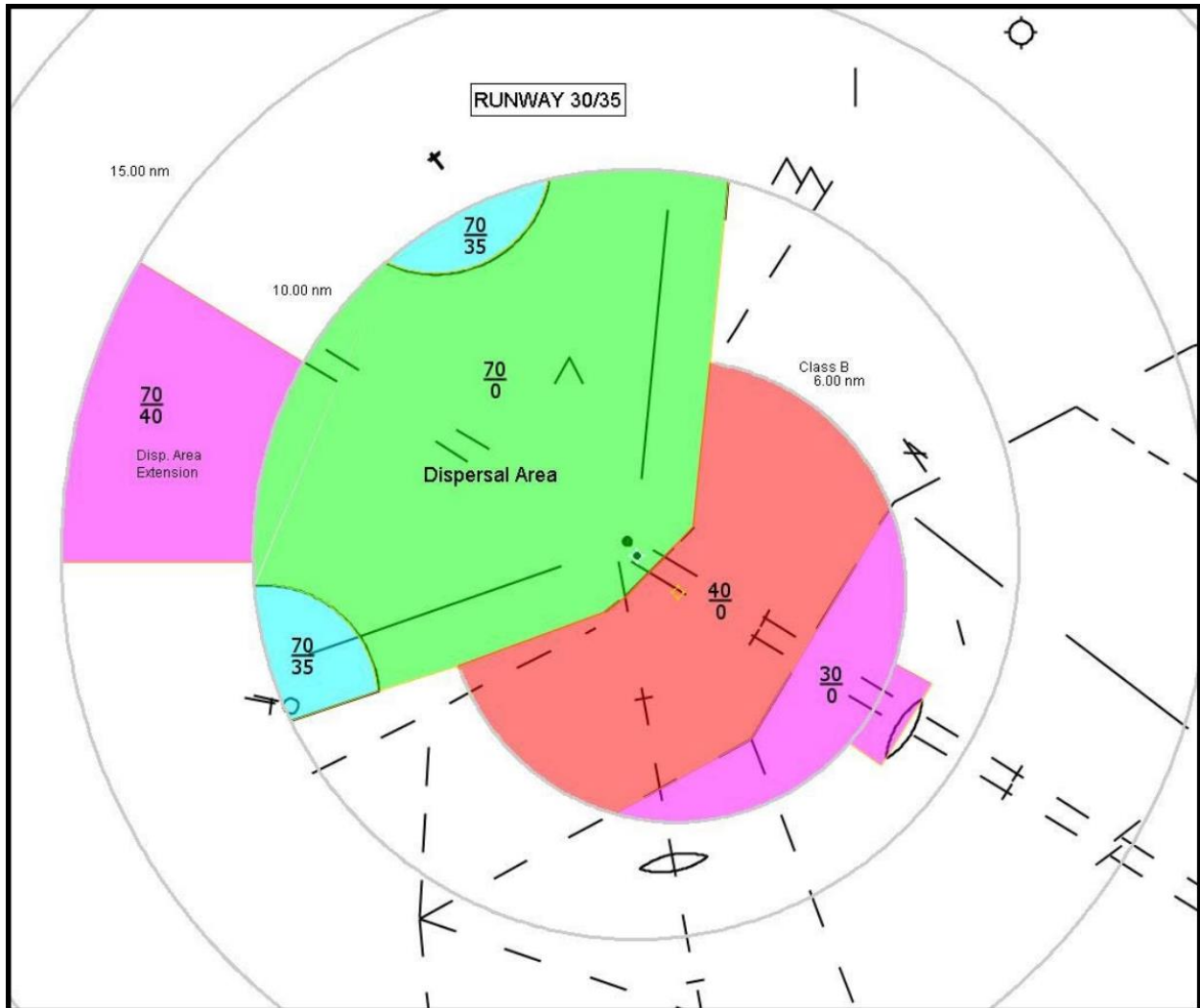
Attachment 4: MSP Airspace

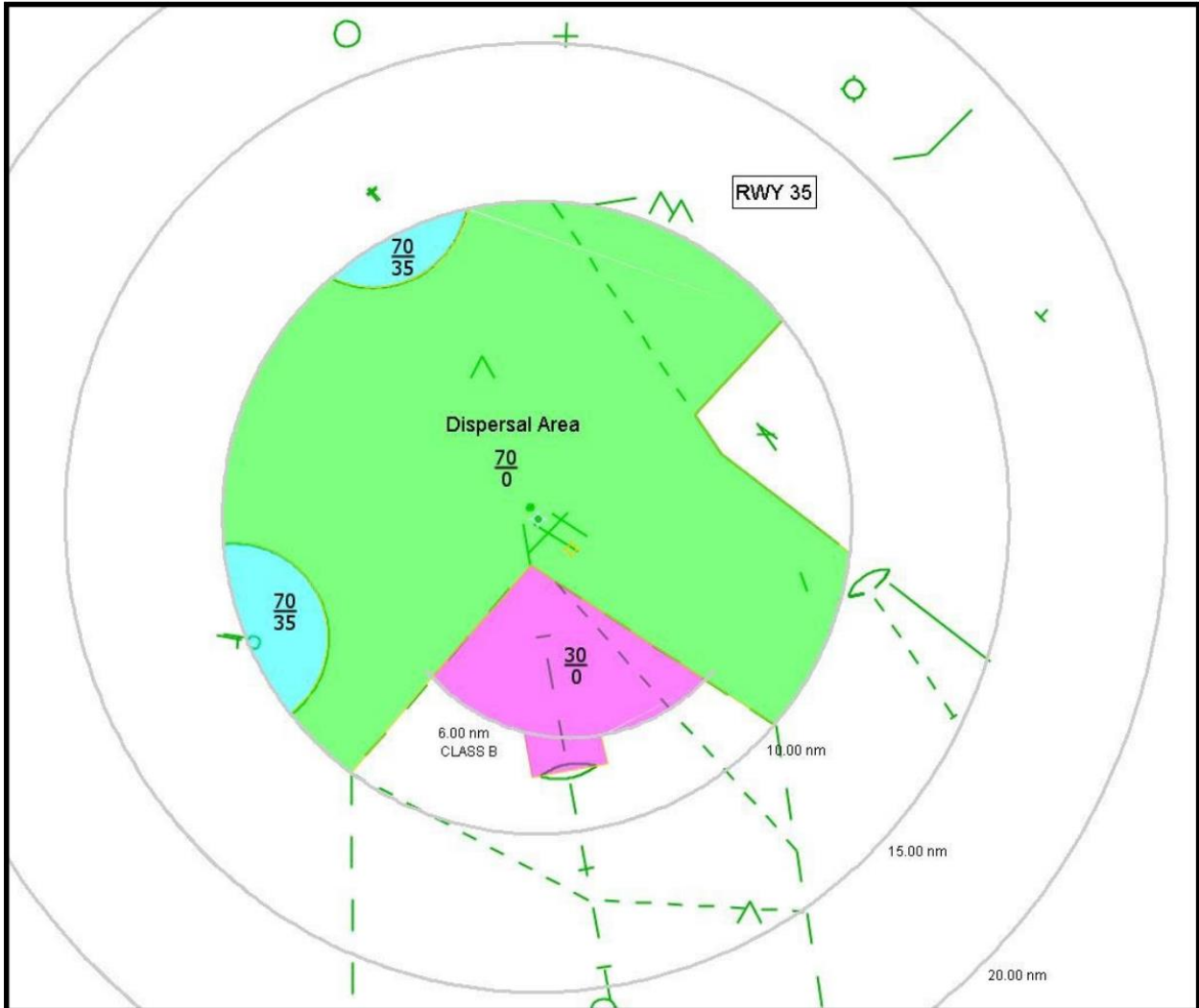


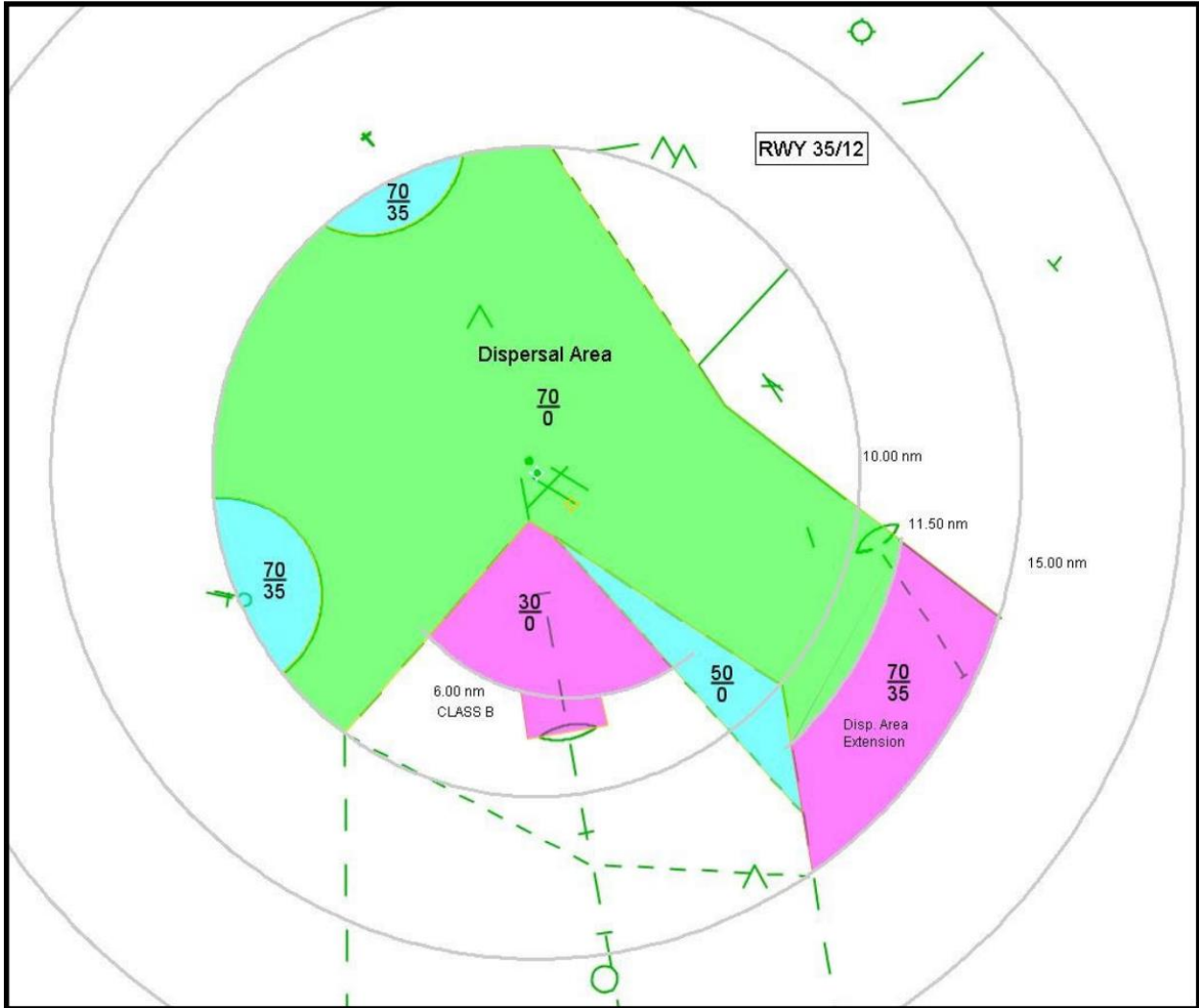


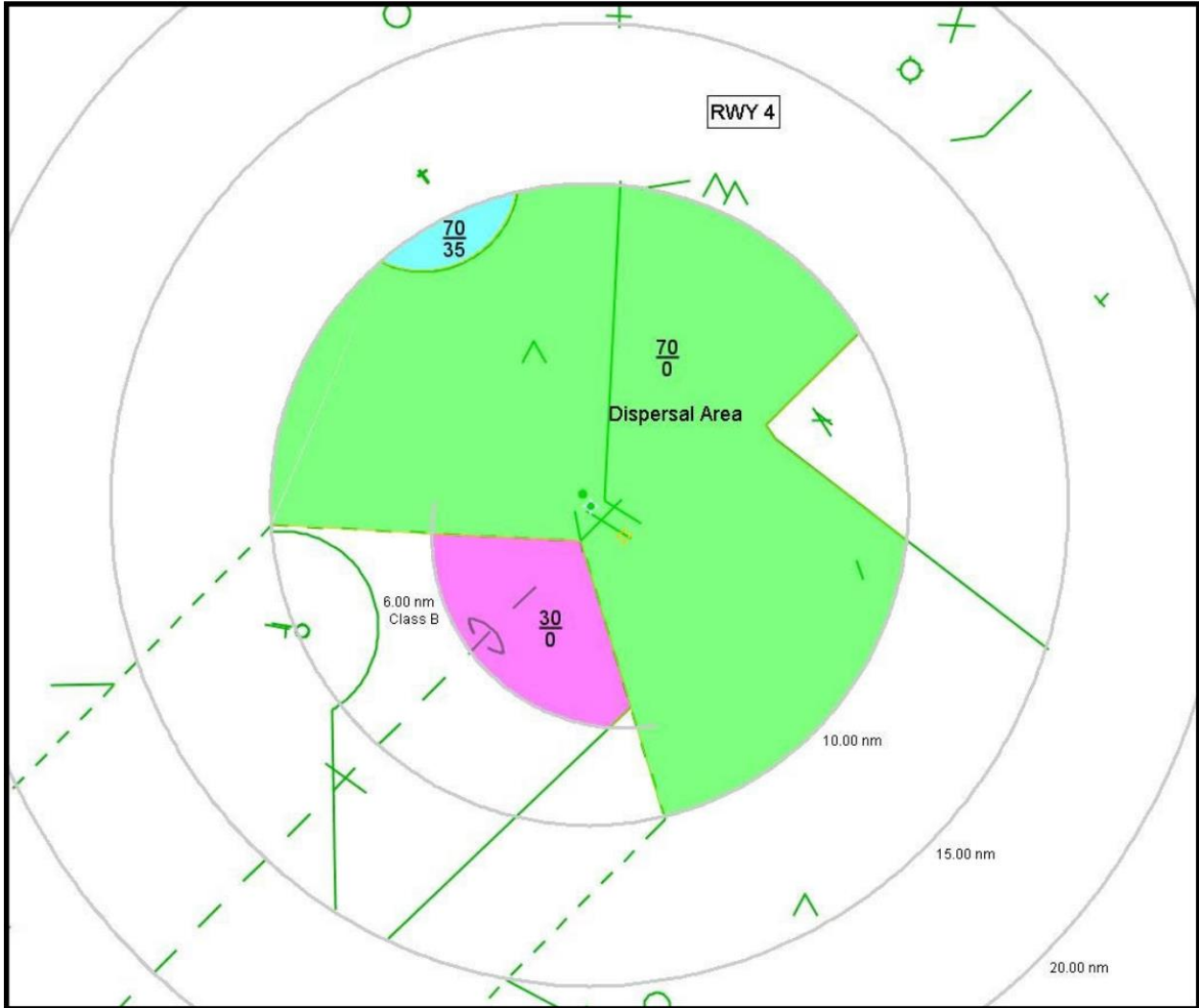




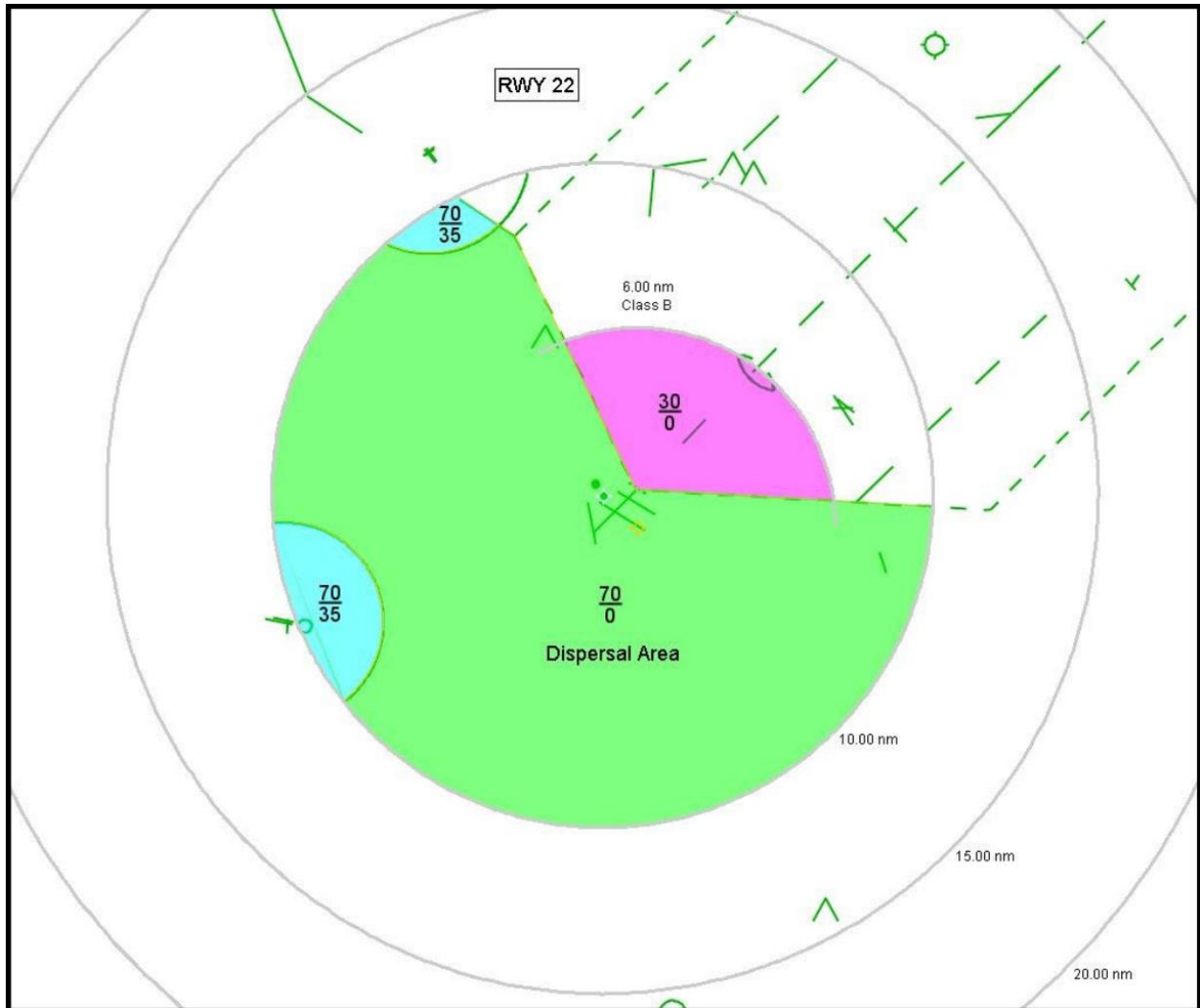


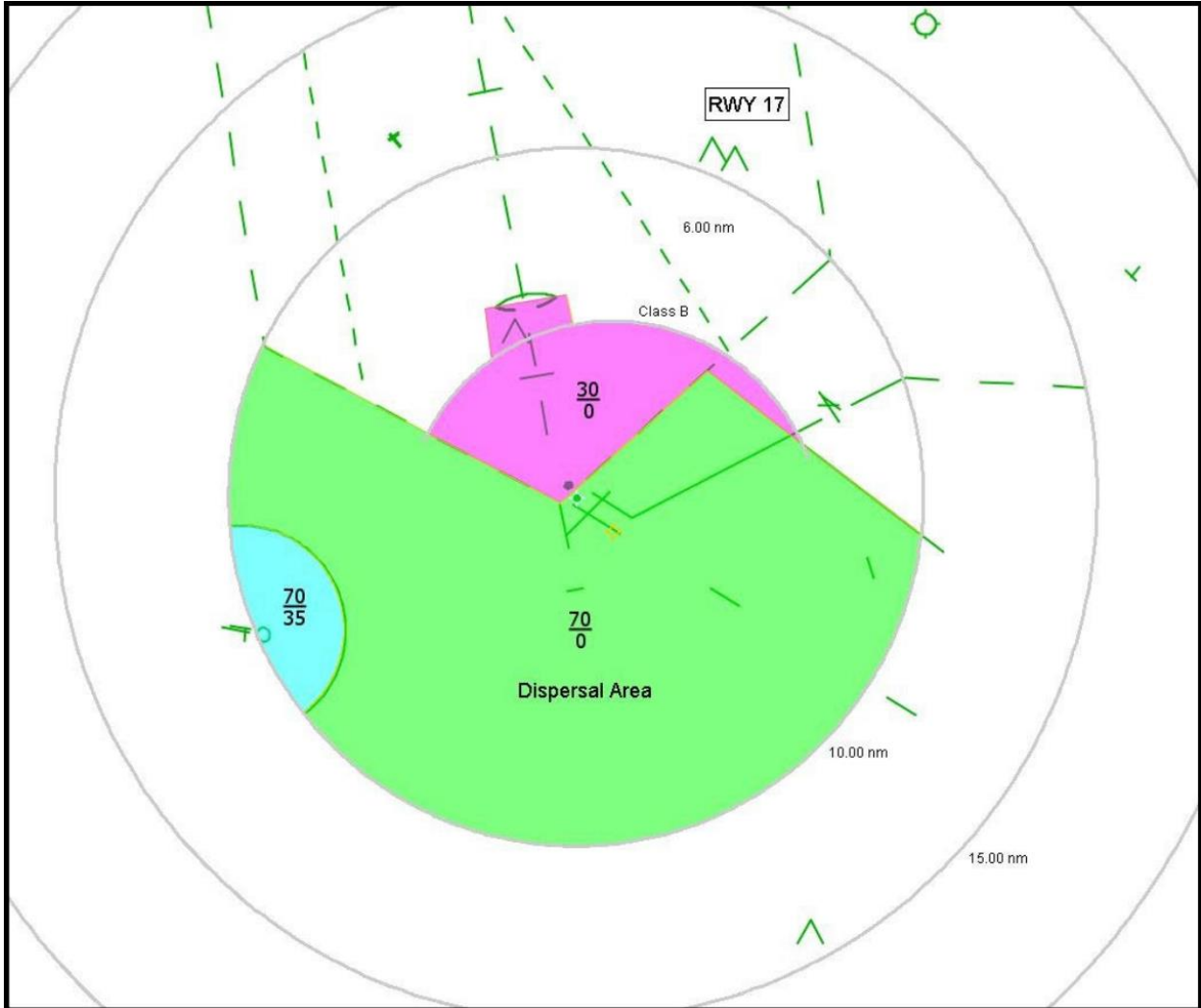




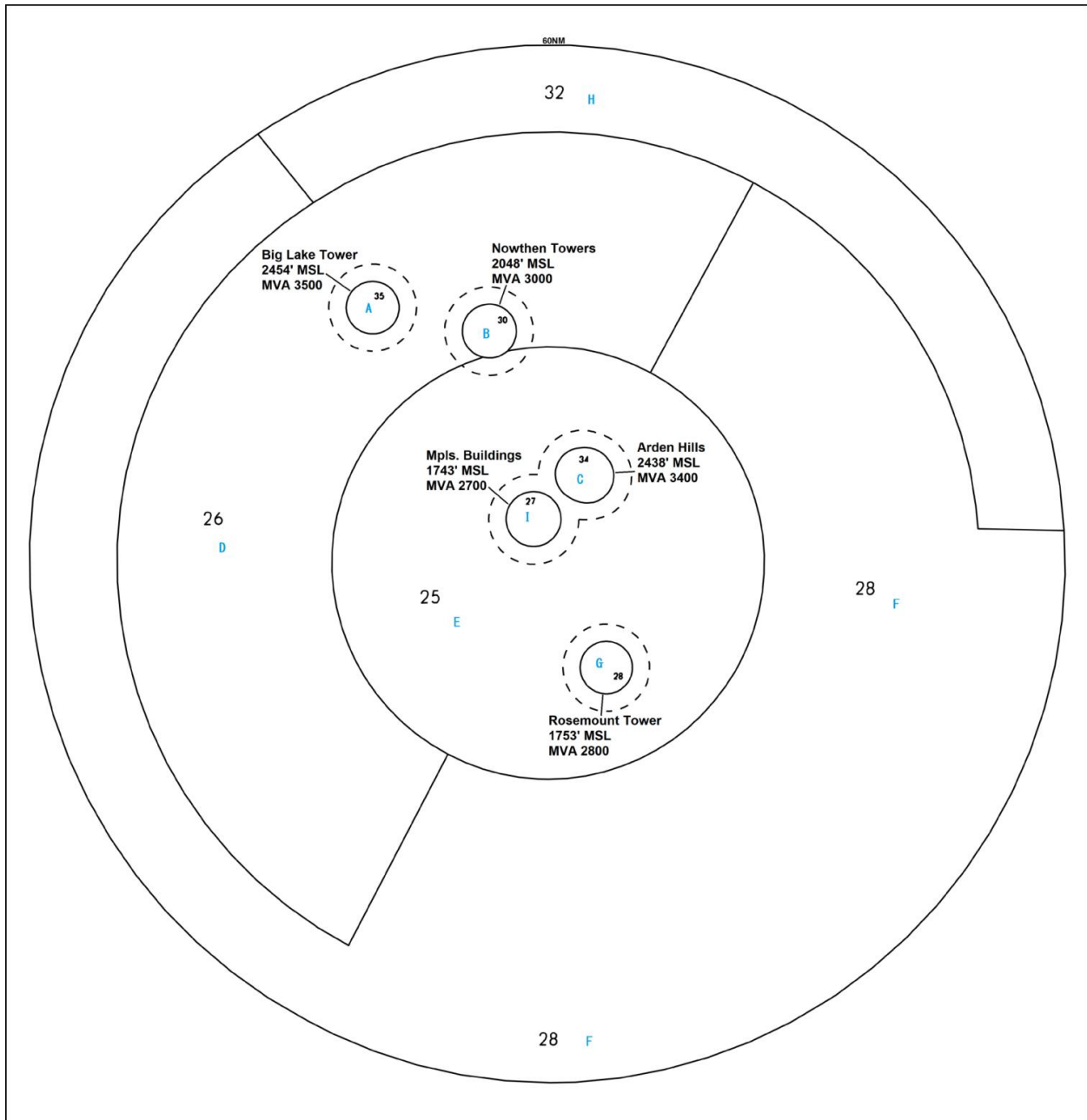




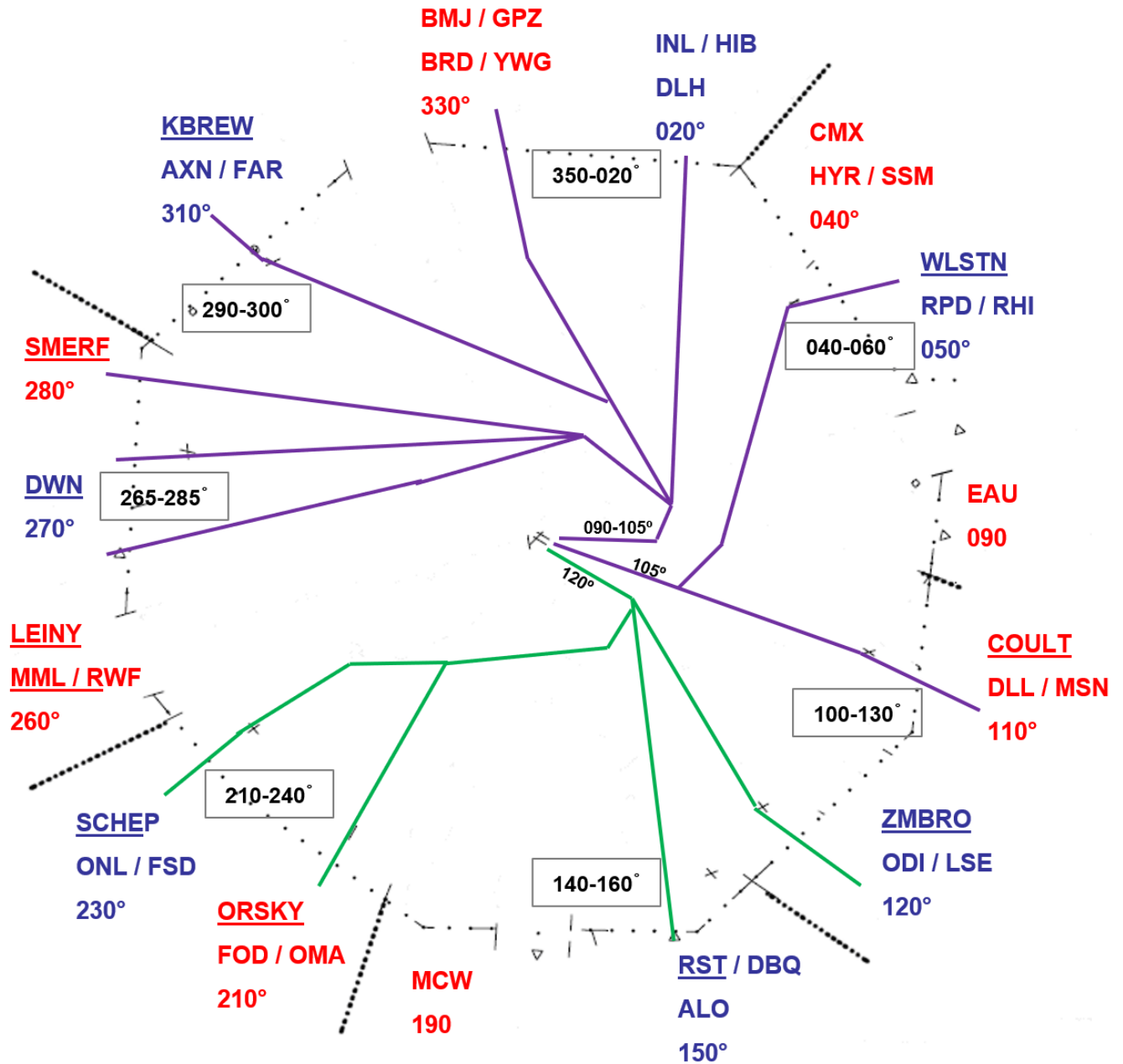




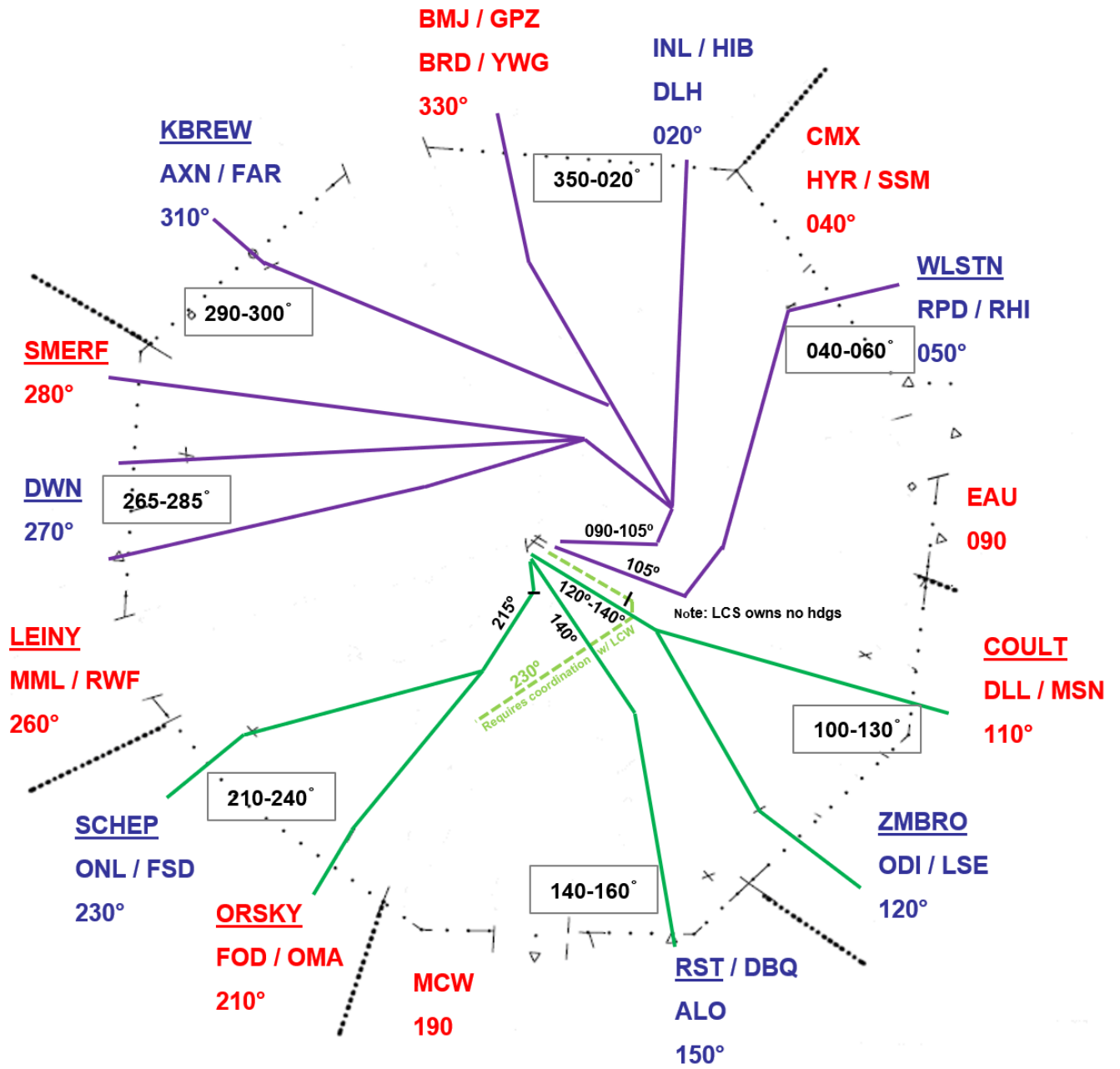
Attachment 5: MVA Chart



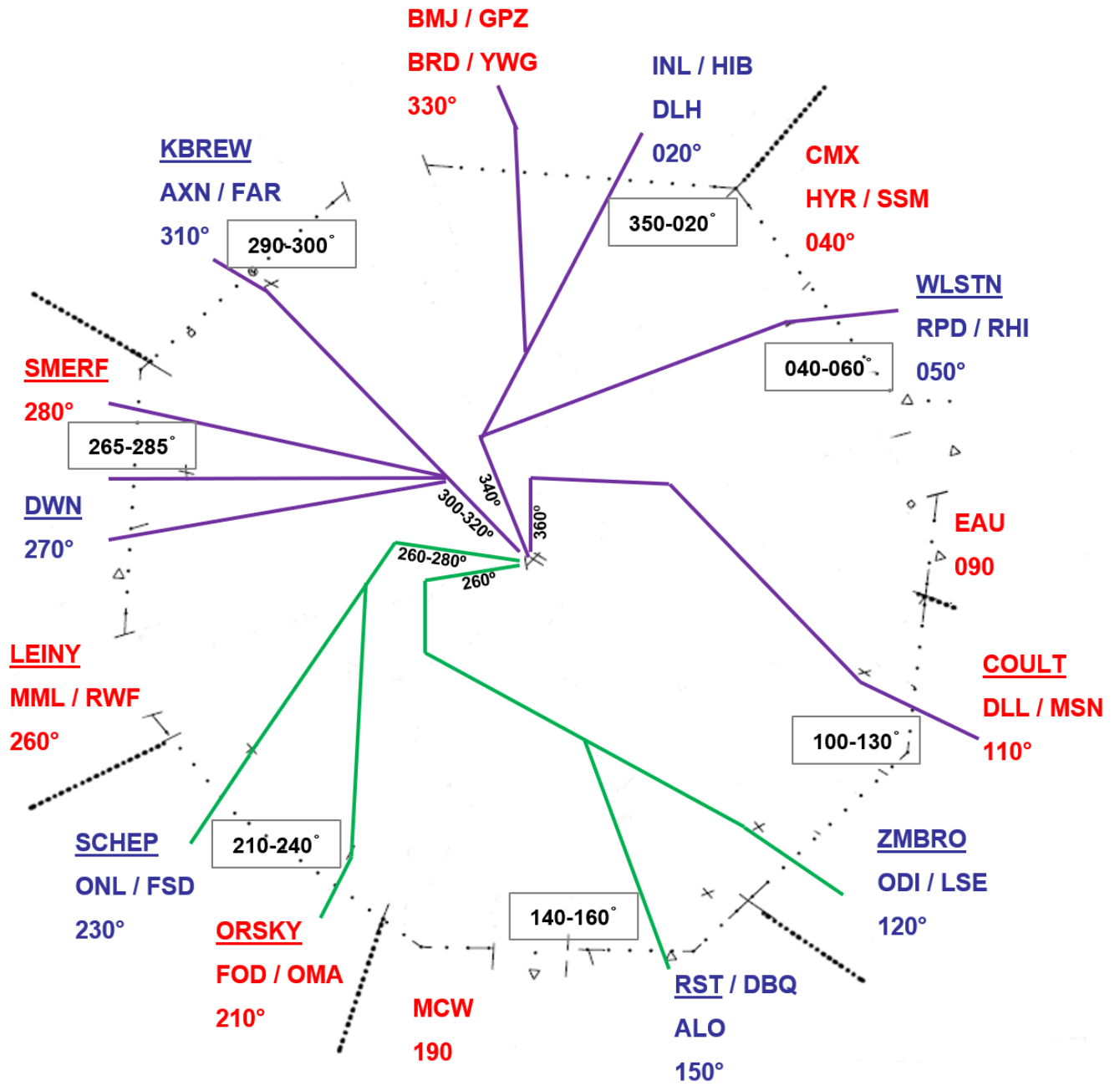
Attachment 6: Preferential Tower Assigned Headings Runway 12



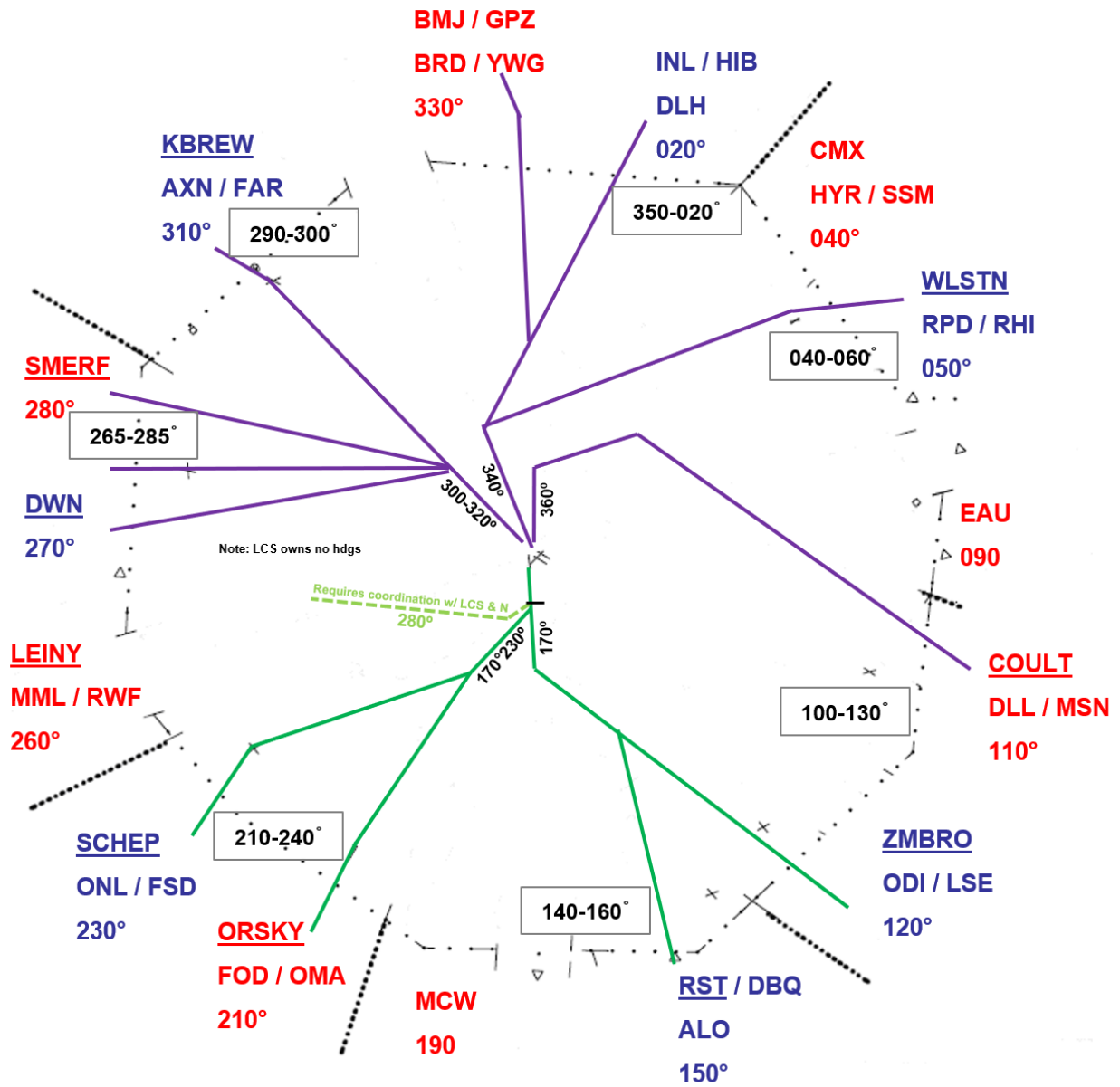
Runway 12-17



Runway 30 and 30/35

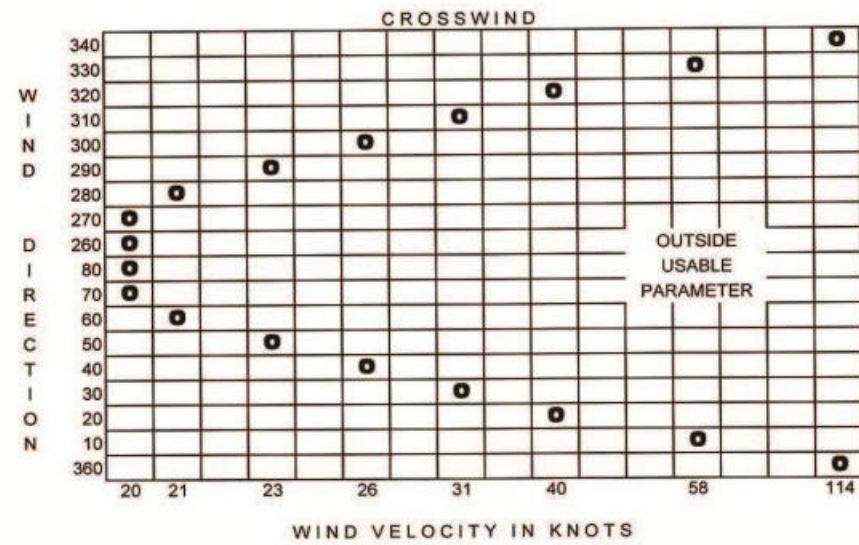
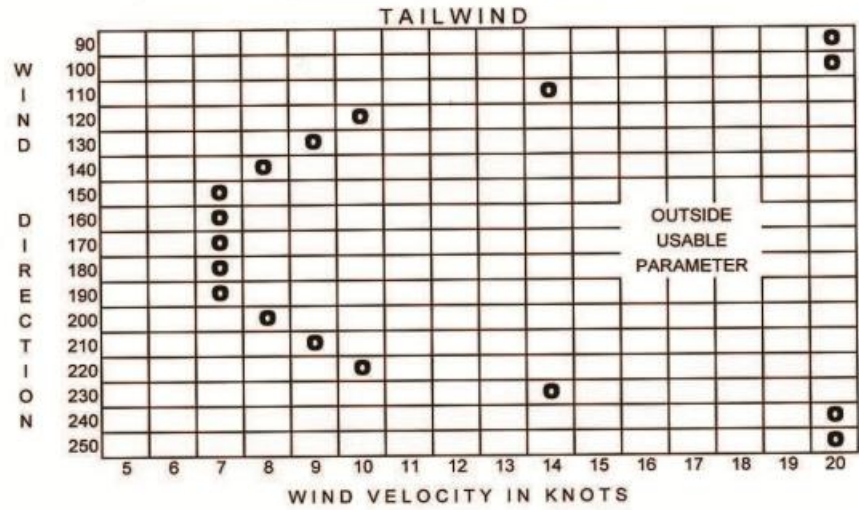


Runway 30-17



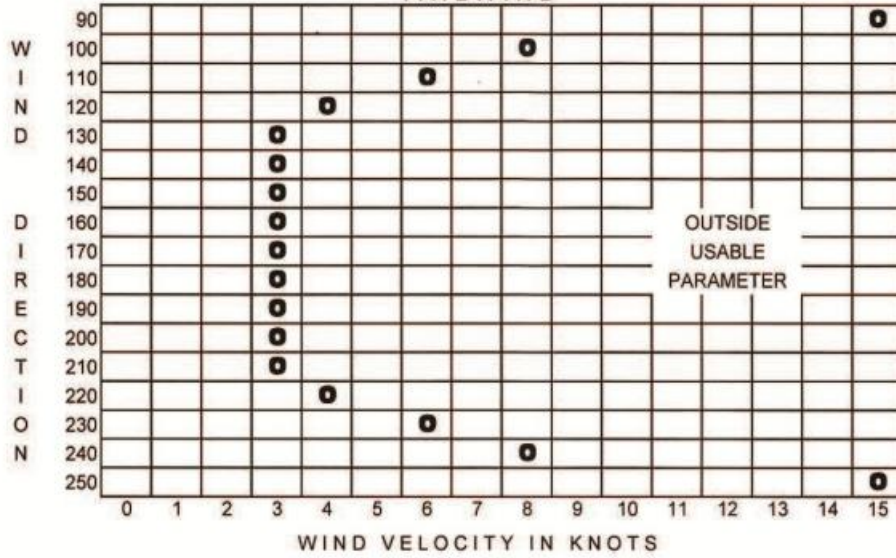
Attachment 7: Runway Use Wind Charts

RUNWAY 35 DRY

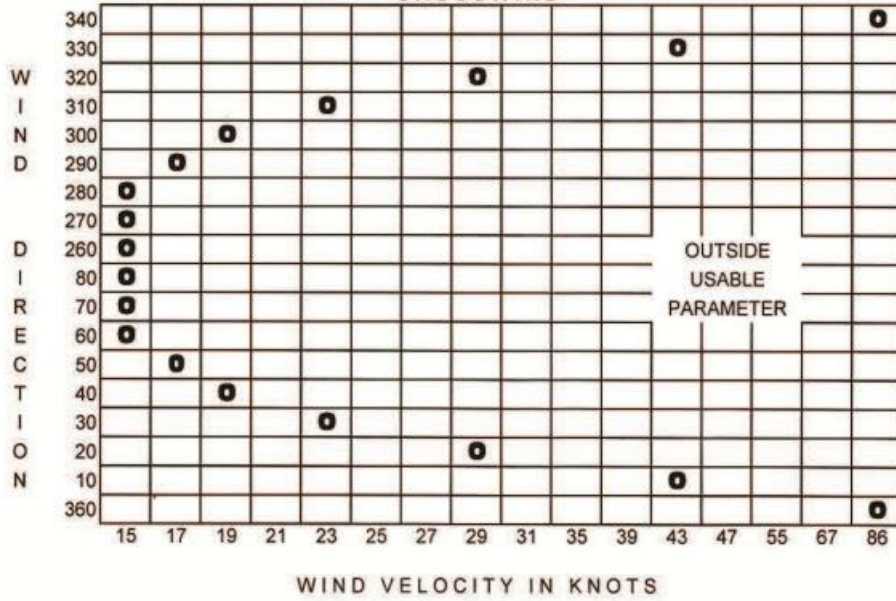


RUNWAY 35 WET

TAILWIND

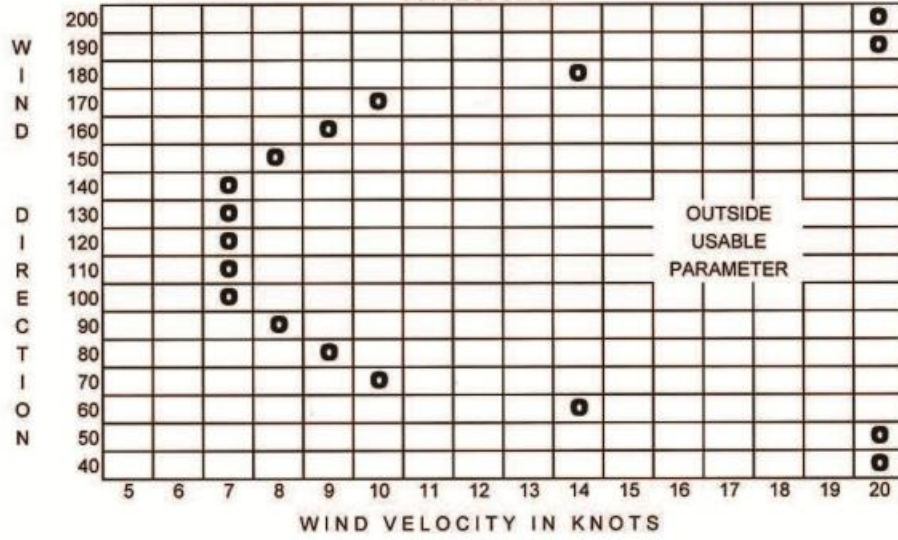


CROSSWIND

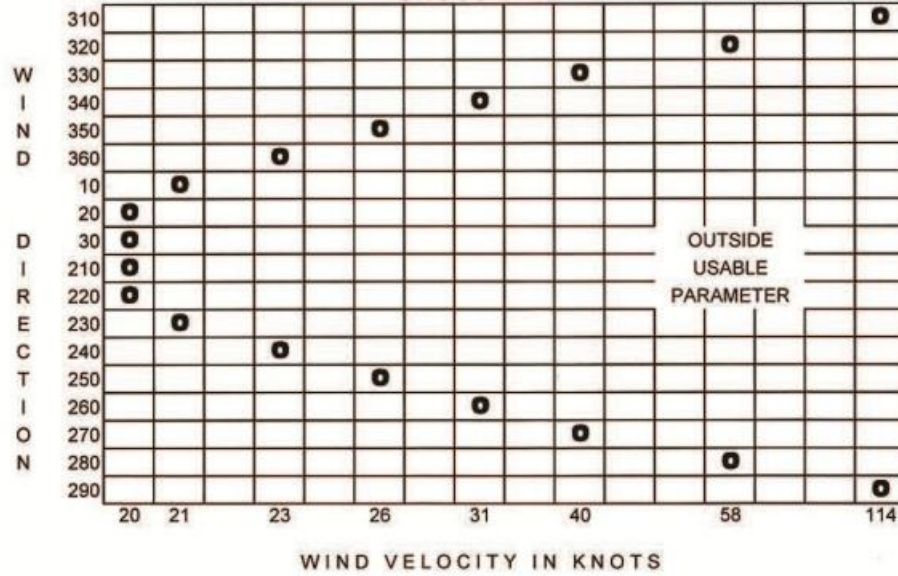


RUNWAY 30 DRY

TAILWIND

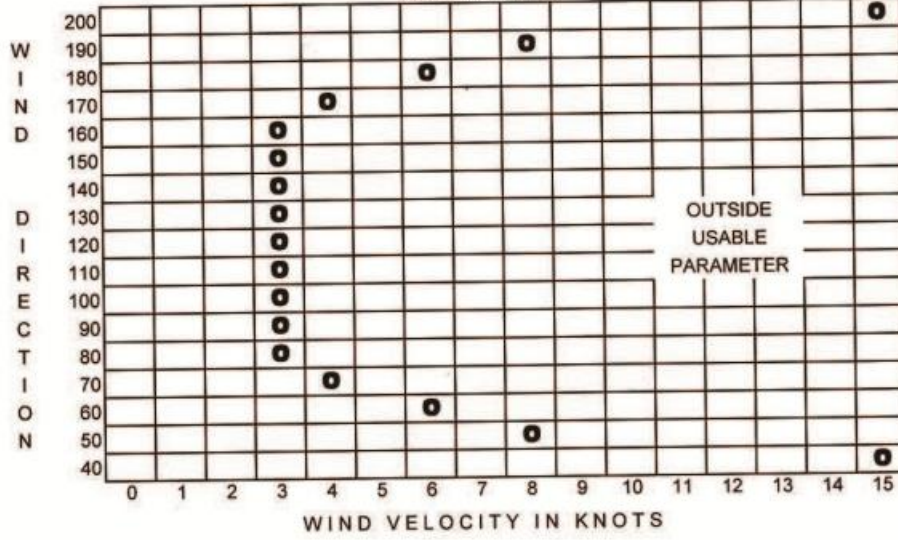


CROSSWIND

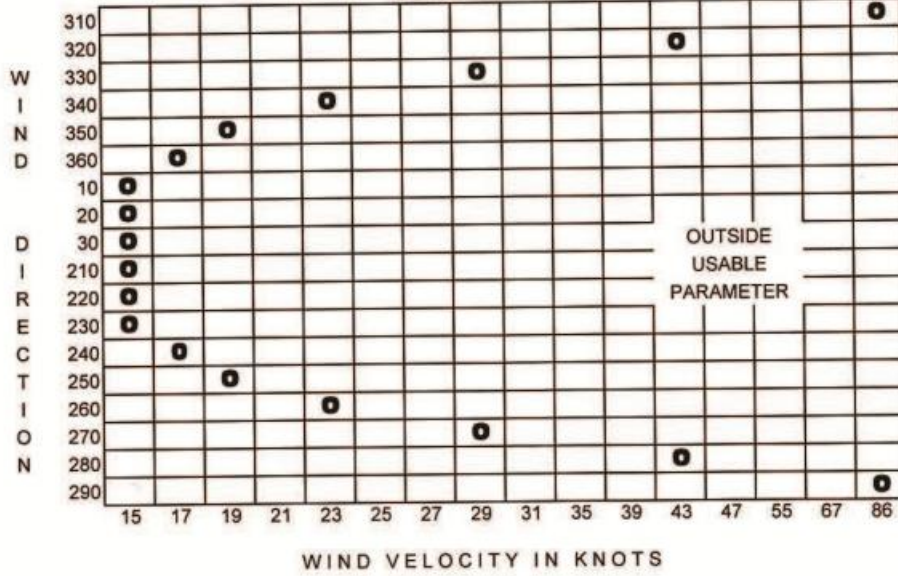


RUNWAY 30 WET

TAILWIND

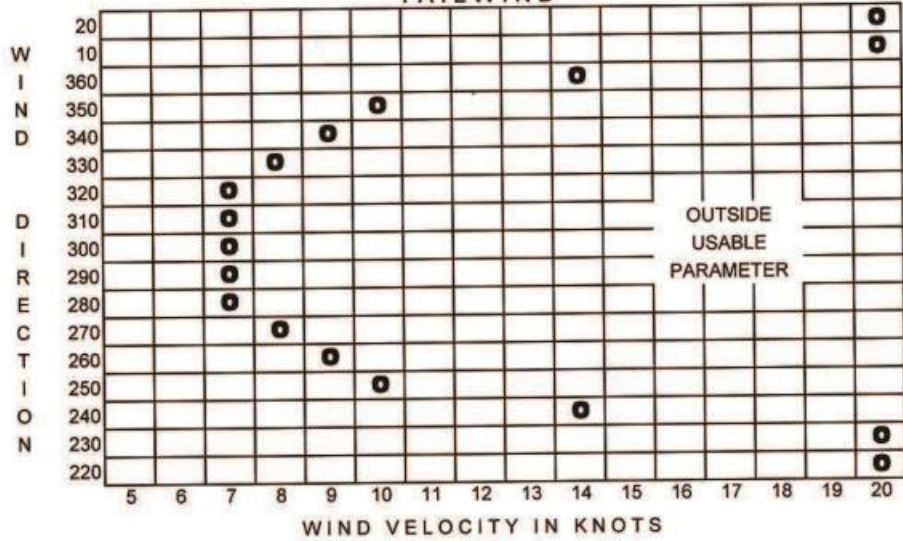


CROSSWIND

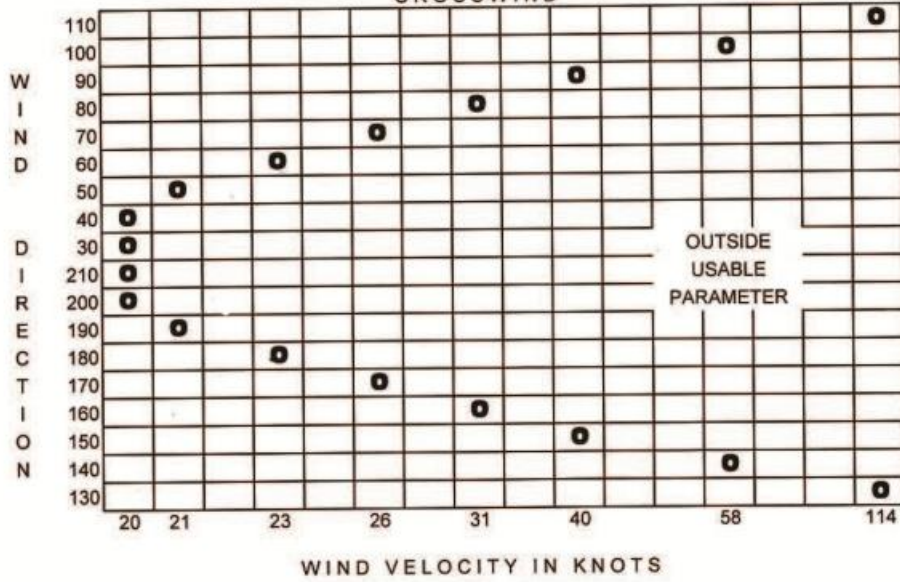


RUNWAY 12 DRY

TAILWIND

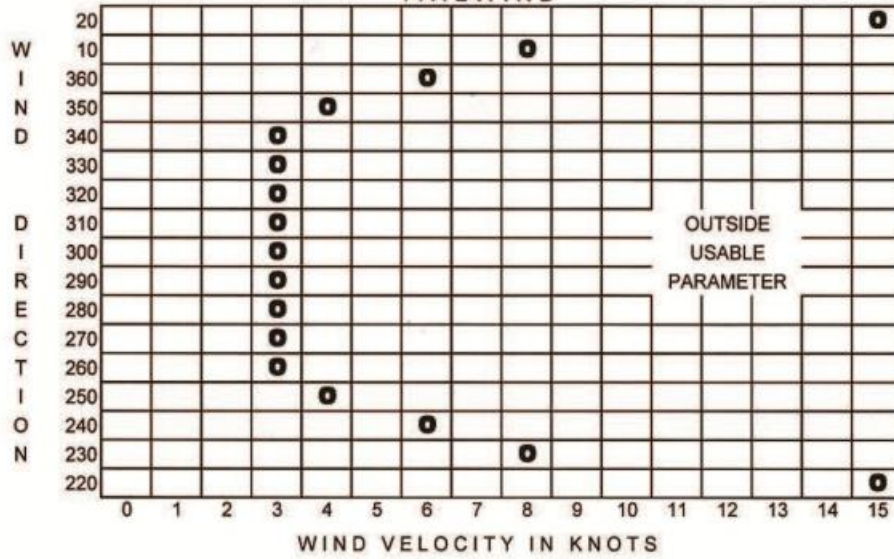


CROSSWIND

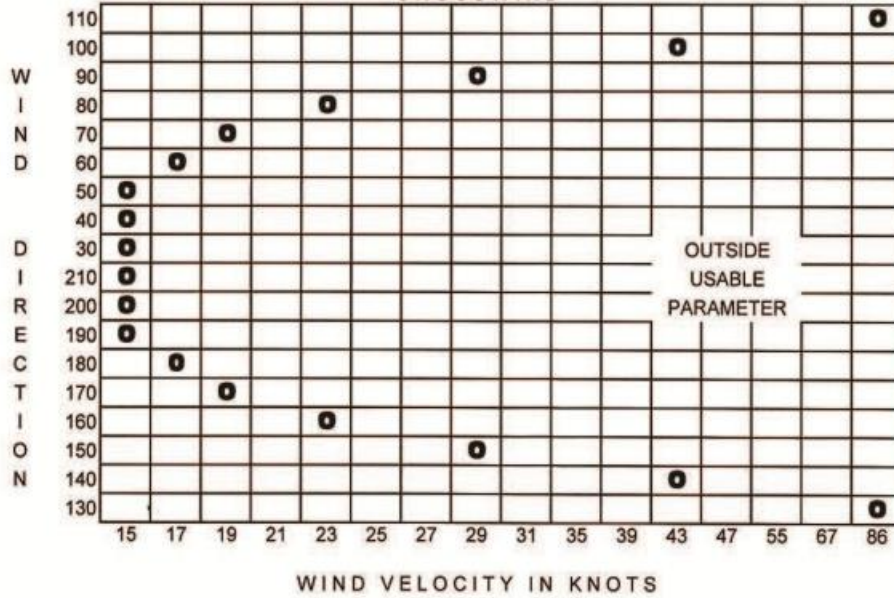


RUNWAY 12 WET

TAILWIND

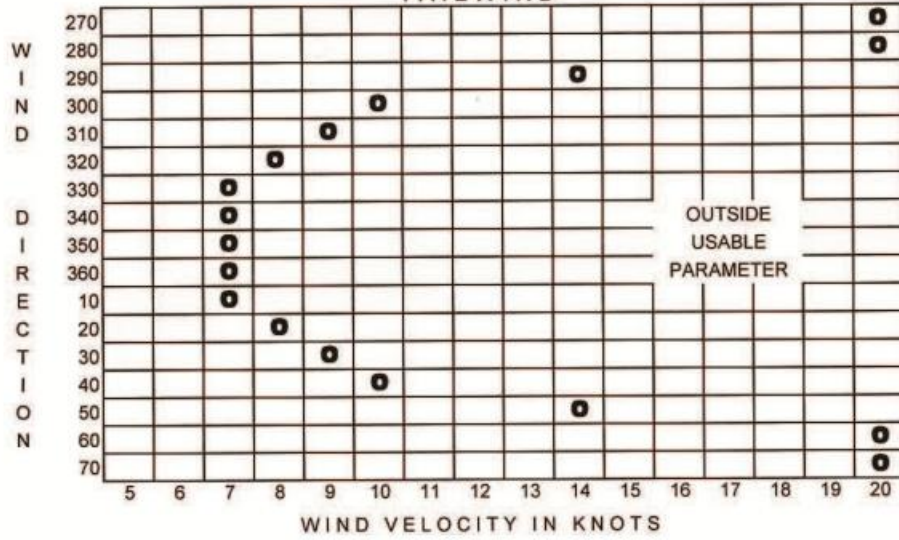


CROSSWIND

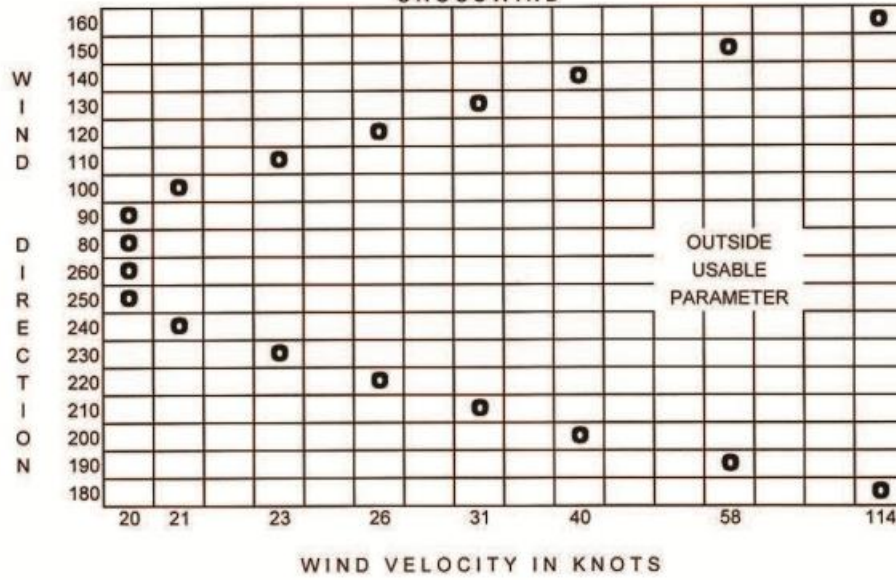


RUNWAY 17 DRY

TAILWIND

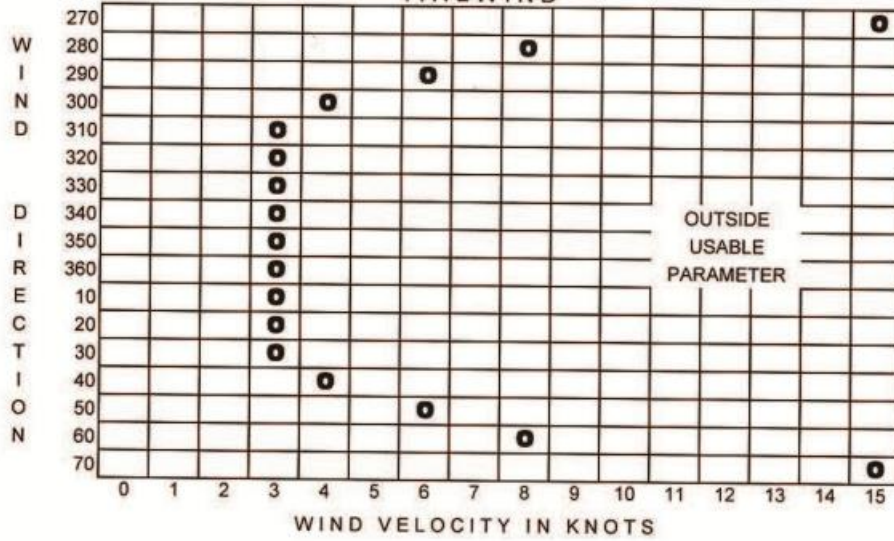


CROSSWIND

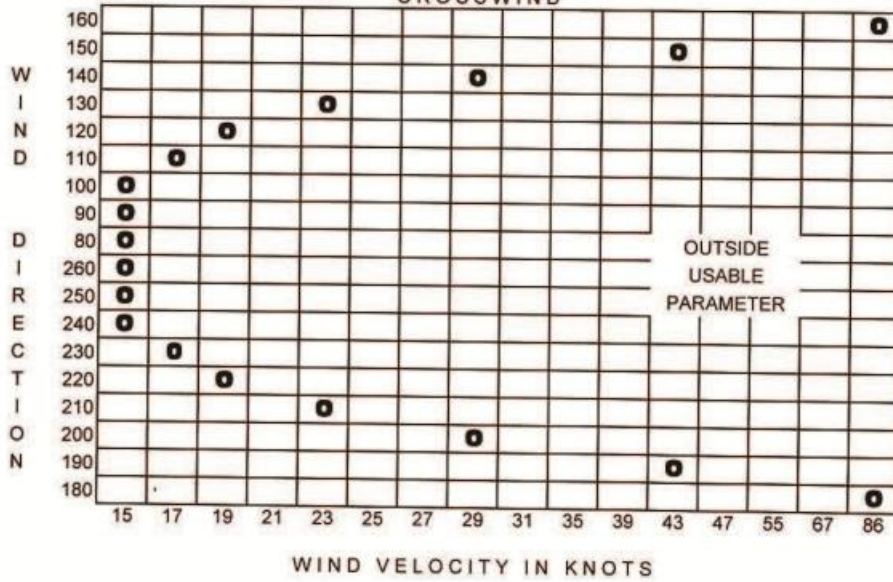


RUNWAY 17 WET

TAILWIND

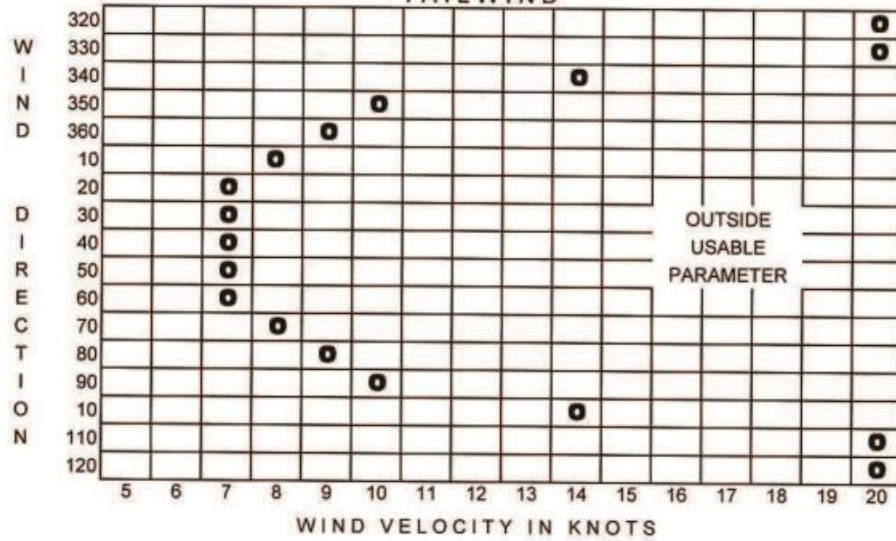


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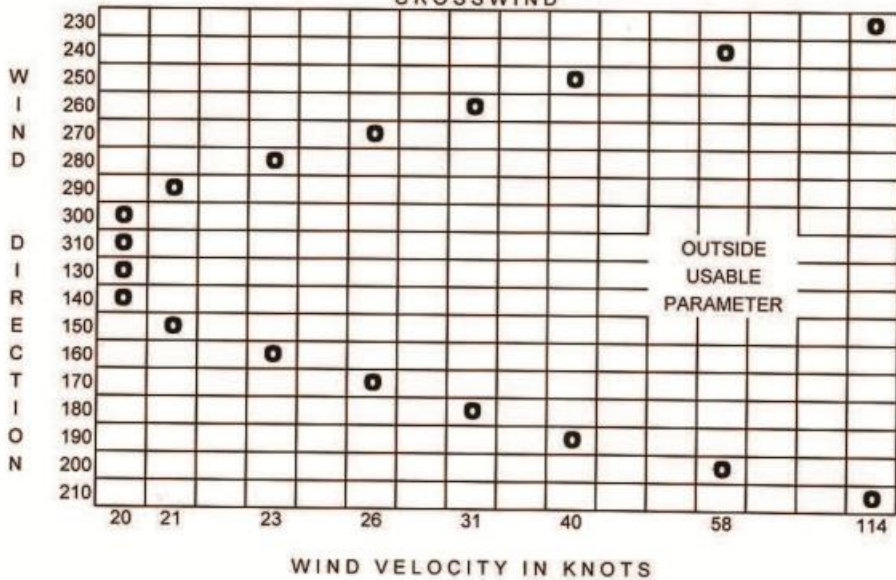


RUNWAY 22 DRY

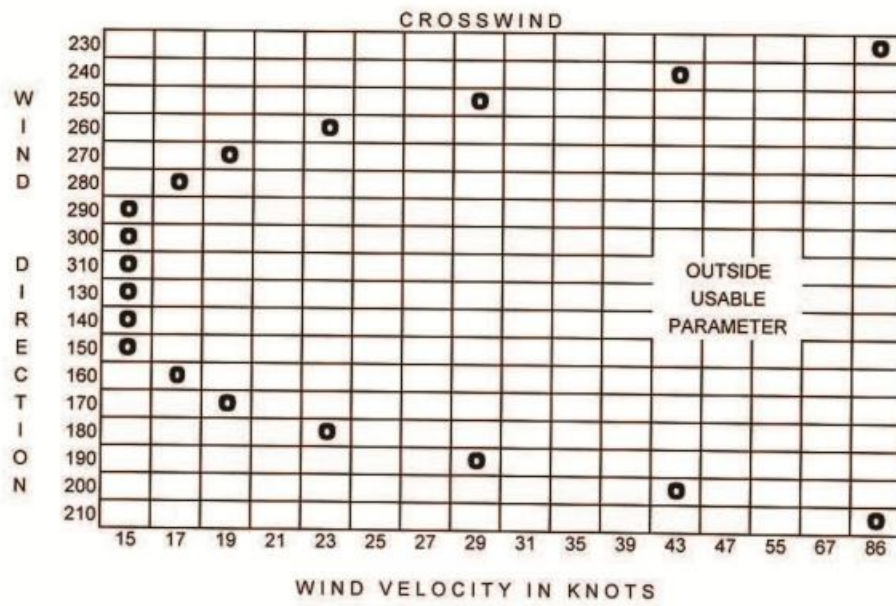
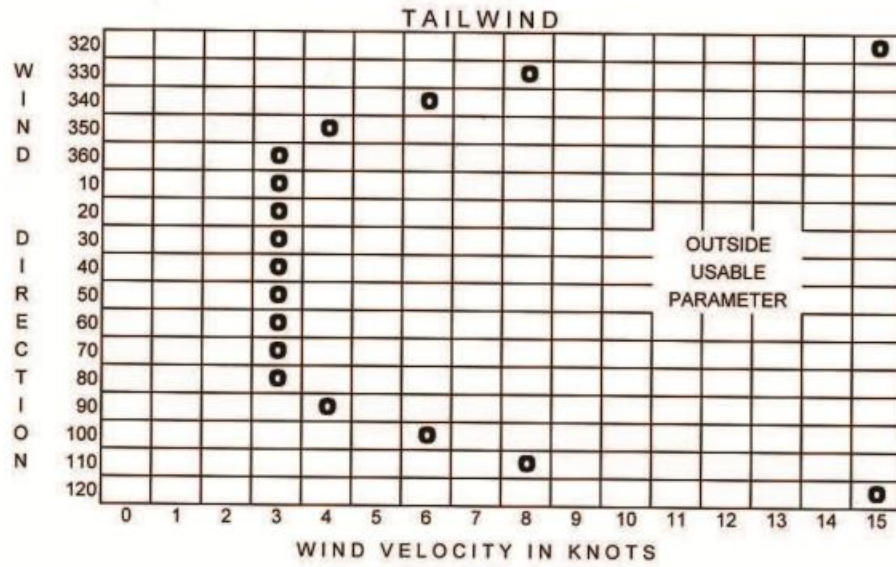
TAILWIND



CROSSWIND

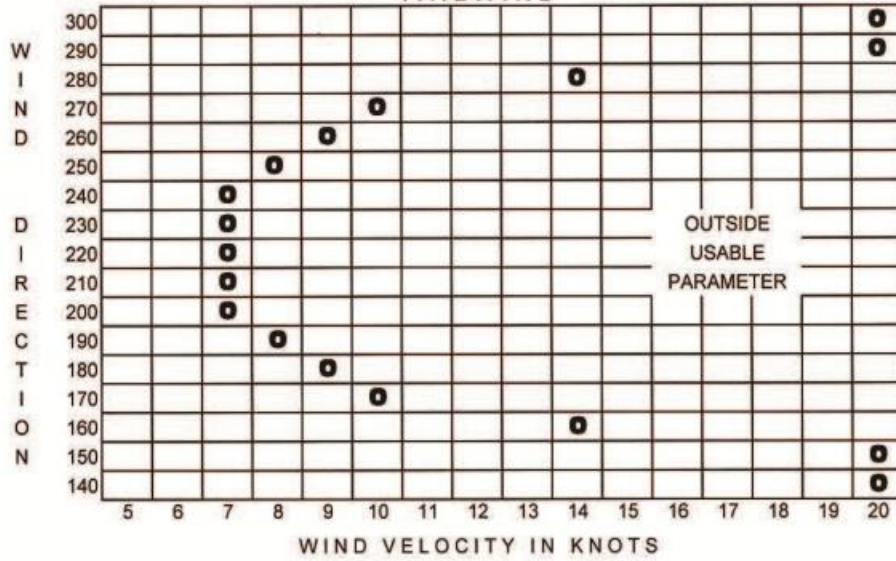


RUNWAY 22 WET

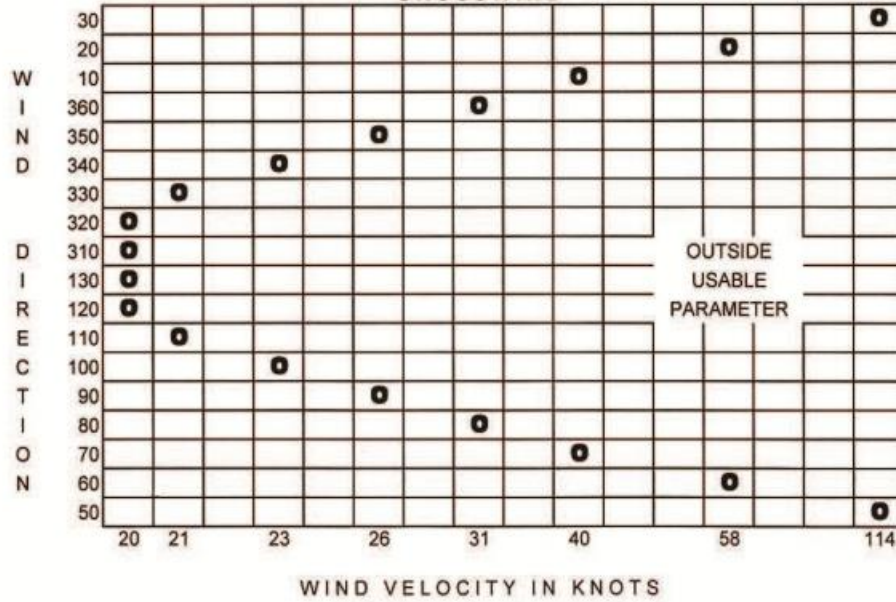


RUNWAY 4 DRY

TAILWIND

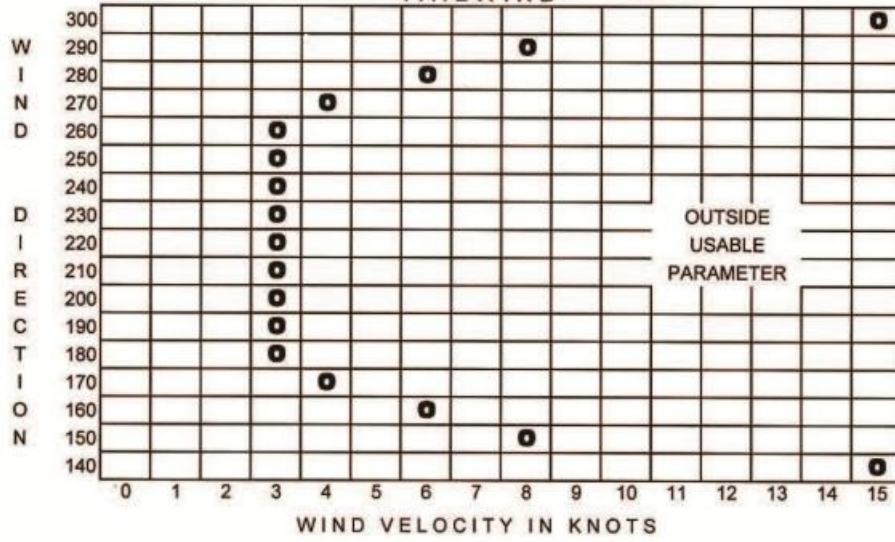


CROSSWIND

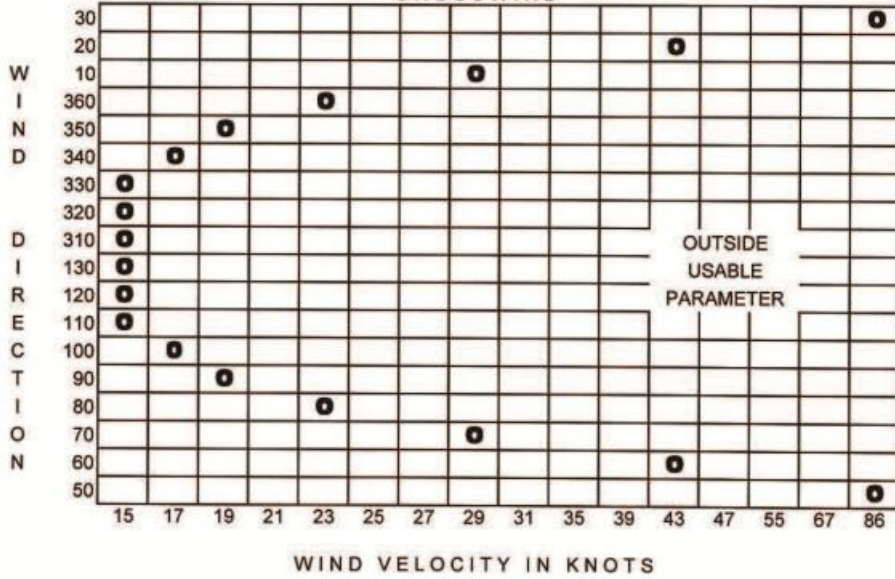


RUNWAY 4 WET

TAILWIND



CROSSWIND



Attachment 8: Scratch Pad Entries

MSP Arrivals

For aircraft executing a visual approach, instrument approach, and for VFR arrival aircraft, use the following scratch pad entries:

| RUNWAY | RNAV(GPS) | RNAV(RNP) | ILS/LOC | VISUAL |
|---------------|------------------|------------------|----------------|---------------|
| 12L | ZL1 | YL1 | 12L | VL1 |
| 12R | ZR1 | YR1 | 12R | VR1 |
| 30L | ZL3 | YL3 | 30L | VL3 |
| 30R | ZR3 | YR3 | 30R | VR3 |
| 17 | | | L17 | V17 |
| 35 | Z35 | Y35 | I35 | V35 |
| 4 | G04 | | L04 | V04 |
| 22 | G22 | | L22 | V22 |

Visual Separation

When an aircraft has been cleared for a visual approach, and the pilot has assumed responsibility for separation from the preceding aircraft, the letters “VV” must be entered as follows:

| MSP Arrivals | |
|---------------------|------------|
| Runways 12L and 30R | VVN |
| Runways 12R and 30L | VVS |
| Runway 4 | VV4 |
| Runway 22 | VV2 |
| Runway 35 | VV5 |
| Runway 17 | VV7 |

Other Approved Entries

| | |
|----------------|------------|
| Air Work | A/W |
| Holding | HLD |
| Photo Flight | PIX |
| Holding at GEP | GEP |
| Holding at FGT | FGT |
| Tour | 2ER |