Flight Procedures Cover Page	Task Action: FLIGHT CHECK	Task Type: STAR	Estimated Chart Date: 02/20/2025	APWS Task ID: 52D95AA602FC4948883DF74084B67695	APWS Project ID: 29F5126D68D346448751AB1BA497A3D8
Procedure: STAR RAVNN EIGHT (RNAV) BALTIMORE MD KBWI		Enroute: YES	Specialist: Bradshaw, Henry		Agreement Number:
Airport ID: KBWI			Airport City: BALTIMORE		State: MD
Facility ID:	Facility Type:	Flight Inspection Remark Type: New FC Slot			

Procedure Comments:
ADD FIX ELDEE TO CAYCE AND CJAAE TRANSITIONS.

CONTACT: ALLAN WILL (AJV-A423) (405) 954-6103

Data as of: 09/12/2024 09:59:27 CDT

FIPC DME/DME FORM

PROCEDURE:	AIRPORT NAME:	AIRPORT ID:	SPECIAL CONTROL NO:
STAR RAVNN EIGHT (RNAV) BALTIMORE MD KBWI	BALTIMORE/WASHINGTON INTL	KBWI	YG-10-116-24

FAC ID: RAVNN8	CITY: BALTIMORE	ST: MD	ORIG CHART DATE: 02/20/2025

DFL TYPE:	THIRD PARTY:	EST. TIME ON SITE:	REIMB. NUMBER:	PTS TASK ID:
PROC/D	☐ YES	1.0		52D95AA602FC4948883DF74084B67695

PREFLIGHT NOTES

REVIEWER: edward w mesa	DATE: 01/15/2025
COMMENTS:	CHECK ONE: ☐ FLT CK REQ ☒ NFCR ☐ REJECT

	YES	NO
CPV COMPLETE?	X	

PROCEDURE RESULTS

INSPECTION DATE:	CREW #:	N #:	INSTRUMENT PROCEDURE STATUS:	ARINC CODING:
01/15/2025	VN283		☒ SAT ☐ SAT W/CHANGES ☐ UNSAT	☒ SAT ☐ SAT/GOLD ☐ UNSAT

FLIGHT INSPECTOR SIGNATURE:	PRINTED NAME:	NOTAM INITIATED?
edward w mesa @ 01/15/2025 09:35	MESA, EDWARD WILLIAM	☐ YES ☒ NO

FLIGHT INSPECTOR REMARKS:

DME/DME STATUS:	SPECIALIST SIGNATURE:	PRINTED NAME:
☐ SAT ☐ UNSAT		

SPECIALIST REMARKS:

IN-FLIGHT OBSTACLE REPORT

OBSTRUCTION ID #:	COORDINATES OR LOCATION:	GNSS ALTITUDE (MSL):	BAROMETRIC ALTITUDE (MSL):	HEIGHT ABOVE GROUND LEVEL:

INFO ONLY

Federal Aviation Administration

Memorandum

Date: November 8, 2023

To: Christopher Hope, Manager, Flight Technologies and Procedures Division
THRU: Romana Wolf, Manager, Flight Procedures and Airspace Group

From: Bev Bordy, Manager, Instrument Flight Procedures Coordination Team, AJV-A45

Prepared by: Jeff Rutledge, Sr. ATC Specialist, NAVTAC CTR Support

Subject: Approval Request: Baltimore, MD (KBWI) , RAVNN (RNAV) STAR

Descent Gradient

CAPKO to RAVNN Segment

The requirements stated in Order 8260.3F, (United States Standard for Terminal InstrumentProcedures (TERPS), paragraph 2-2-8.a. are:
"(1) the maximum permissible gradient 10000 MSL and above is 330 ft/NM (approximately 3.11 degrees).
"(2) The maximum permissible DG below 10000 feet MSL is 318 ft. /NM (approximately 3.0 degrees).

Paragraph 2-2-8.b states:
"When a gradient exceeds the maximum DG allowed in paragraph 2-2-8a, the STAR requires approval."

Paragraph 1-4-2. …states in part:
"**Nonstandard IFP.** …obstacles, navigation information, or traffic congestion may require special consideration where justified by operational requirements. In such cases, nonstandard IFPs that deviate from these criteria may be approved, provided they are documented, and an equivalent level of safety exists…"

RSO144: [Approval Required] The Descent Gradient (333.21) from CAPKO to RAVNN is greater than the Maximum Permissible Descent Gradient (318.0).

A computed descent gradient value from CAPKO to RAVNN of 333.21 ft./NM resulted from the descent gradient being calculated from descending from the restriction of AT 9000 at CAPKO to cross RAVNN AOB 7000 and AOA 6000 over 9 NM. The restriction after RAVNN is at MALXX at 6000. The distance required to descend from CAPKO at 9000 to MALXX at 6000 is 14 NM. Calculating a descent gradient from CAPKO to MALXX 14 NM resulted in a descent gradient of 214.29 ft./NM.

TF	CAPKO [IFPA r4 03-29-18 TO UNK]	FLY_BY	0.0		12000.0	300.0	0.0	69.45	370.41	439.86	1.8	8.03	9000.0	250.0	12.63	57.11	294.24	351.35
TF	RAVNN	FLY_BY	1.8	8.03	9000.0	250.0	12.63	57.11	294.24	351.35	0.0		7000.0	250.0	0.0	52.99	285.16	338.15
TF	MALXX	FLY_BY	0.0		7000.0	250.0	0.0	52.99	285.16	338.15	0.0		6000.0	250.0	0.0	51.37	280.77	332.15

Consideration was given to removing and or changing the restrictions at CAPKO, RAVNN, and MALXX. However, due to airspace constraints and traffic flows it was decided that the restrictions are necessary to prevent aircraft from entering adjacent airspace, prevent confliction from other traffic and procedures, and reduce ATC workload due to required coordination, (point outs).

INFO ONLY

Federal Aviation Administration

Memorandum

Date: November 8, 2023

To: Christopher Hope, Manager, Flight Technologies and Procedures Division
THRU: Romana Wolf, Manager, Flight Procedures and Airspace Group

From: Bev Bordy, Manager, Instrument Flight Procedures Coordination Team, AJV-A45

Prepared by: Jeff Rutledge, Sr. ATC Specialist, NAVTAC CTR Support

Subject: Approval Request: Baltimore, MD (KBWI) , RAVNN (RNAV) STAR

Descent Gradient

DFORT to WALKN Segment

The requirements stated in Order 8260.3F, (United States Standard for Terminal Instrument Procedures (TERPS), paragraph 2-2-8.a. are:

"(1) the maximum permissible gradient 10000 MSL and above is 330 ft/NM (approximately 3.11 degrees).

"(2) The maximum permissible DG below 10000 feet MSL is 318 ft. /NM (approximately 3.0 degrees).

"(3) When a STAR contains a descent between fixes that passes through 10000 feet MSL, themaximum permissible DG is between 318 ft. /NM and 330 ft. /NM and is in proportion to theamount of the altitude change that is below/above 10000 feet MSL. Use formula 2-2-1 to determine the maximum DG (DGmax) between fixes that contain a descent that passes through 10000 feet MSL."

Paragraph 2-2-8.b states:
"When a gradient exceeds the maximum DG allowed in paragraph 2-2-8a, the STAR requires approval."

Paragraph 1-4-2. …states in part:
"**Nonstandard IFP.** …obstacles, navigation information, or traffic congestion

may require special consideration where justified by operational requirements. In such cases, nonstandardIFPs that deviate from these criteria may be approved, provided they are documented, and an equivalent level of safety exists…"

RSO144: [Approval Required] The Descent Gradient (355.99) from DFORT to WALKN is greater than the Maximum Permissible Descent Gradient (330.0).

A computed descent gradient value from DFORT to WALKN of 355.99 ft./NM resulted from the descent gradient being calculated from descending from the restriction of At FL180 at DFORT to cross WALKN AOB 17000 and AOA 15000 over 8.42 NM. The restriction after WALKN is JAYOH AOB 12000 and AOA 11000. The restriction after JAYOH is CAPKO At 9000. The distance required to descend from DFORT at FL180 to CAPKO at 9000 is 34.7 NM. Calculating a descent gradient from DFORT to CAPKO resulted in a descent gradient of 320.66 ft./NM.

TF	DFORT [IFPA r1 12-10-15 TO UNK]	FLY_BY	0.0		21000.0	280.0	0.0	89.34	401.87	495.76	0.0		18000.0	280.0	0.0	72.23	381.75	453.98
TF	WALKN [IFPA r0 03-05-15 TO UNK]	FLY_BY	0.0		18000.0	280.0	0.0	72.23	381.75	453.98	2.82	13.7	15372.85	280.0	11.62	74.27	365.33	439.6
TF	JAYOH [IFPA r1 12-10-15 TO UNK]	FLY_BY	2.82	13.7	15372.85	280.0	11.62	74.27	365.33	439.6	0.0	28.1	12000.0	280.0	5.0	65.05	345.72	410.77
TF	CAPKO [IFPA r4 03-29-18 TO UNK]	FLY_BY	0.0	28.1	12000.0	280.0	5.0	65.05	345.72	410.77	1.8	11.62	9000.0	250.0	8.8	57.11	294.24	351.35

Consideration was given to removing and or changing the restrictions at DFORT, WALKN, JAYOH and CAPKO. However, due to airspace constraints and traffic flows it was decided that the restrictions are necessary to prevent aircraft from entering adjacent airspace, prevent conflictions from other traffic and procedures, and reduce ATC workload due to required coordination, (point outs).

INFO ONLY

Federal Aviation Administration

Memorandum

Date: November 8, 2023

To: Christopher Hope, Manager, Flight Technologies and Procedures Division
THRU: Romana Wolf, Manager, Flight Procedures and Airspace Group

From: Bev Bordy, Manager, Instrument Flight Procedures Coordination Team, AJV-A45

Prepared by: Jeff Rutledge, Sr. ATC Specialist, NAVTAC CTR Support

Subject: Approval Request: Baltimore, MD (KBWI) , RAVNN (RNAV) STAR

Descent Gradient

FIMBO to UDUDE Segment

The requirements stated in Order 8260.3F, (United States Standard for Terminal Instrument Procedures (TERPS), paragraph 2-2-8.a. are:

"(1) the maximum permissible gradient 10000 MSL and above is 330 ft/NM (approximately 3.11 degrees).

"(2) The maximum permissible DG below 10000 feet MSL is 318 ft. /NM (approximately 3.0 degrees).

"(3) When a STAR contains a descent between fixes that passes through 10000 feet MSL, themaximum permissible DG is between 318 ft. /NM and 330 ft. /NM and is in proportion to theamount of the altitude change that is below/above 10000 feet MSL. Use formula 2-2-1 to determine the maximum DG (DGmax) between fixes that contain a descent that passes through 10000 feet MSL."

Paragraph 2-2-8.b states:
"When a gradient exceeds the maximum DG allowed in paragraph 2-2-8a, the STARrequires approval."

Paragraph 1-4-2. …states in part:
“Nonstandard IFP. …obstacles, navigation information, or traffic congestion may require special consideration where justified by operational requirements. In such cases, nonstandard IFPs that deviate from these criteria may be approved, provided they are documented, and an equivalent level of safety exists…”

RSO144: [Approval Required] The Descent Gradient (459.79) from FIMBO to UDUDE is greater than the Maximum Permissible Descent Gradient (330.0).

A computed descent gradient value from FIMBO to UDUDE of 459.79 ft./NM resulted from the descent gradient being calculated from descending from the restriction of AT 16000 at FIMBO to cross UDUDE AOA 13000 over a distance of 6.52 NM. The restriction after UDUDE is at REXEE at 12000. The restriction after REXEE is at CAPKO at 9000. The distance required to descend from FIMBO at 16000 to CAPKO at 9000 is 27.02 NM. Calculating a descent gradient from FIMBO to CAPKO 27.02 NM resulted in a descent gradient of 328.29 ft./NM.

TF	FIMBO [IFPA r3 12-10-15 TO UNK]	FLY_BY	3.64	38.59	19000.0	300.0	5.39	99.25	416.03	500.0	0.0	38.66	16000.0	300.0	5.0	86.26	395.52	481.7
TF	UDUDE [IFPA r3 12-10-15 TO UNK]	FLY_BY	0.0	38.66	16000.0	300.0	5.0	86.26	395.52	481.78	0.0		13863.24	300.0	0.0	77.53	381.81	459.3
TF	REXEE [IFPA r3 12-10-15 TO UNK]	FLY_BY	0.0		13863.24	300.0	0.0	77.53	381.81	459.34	0.0		12000.0	300.0	0.0	69.45	370.41	439.8
TF	CAPKO [IFPA r4 03-29-18 TO UNK]	FLY_BY	0.0		12000.0	300.0	0.0	69.45	370.41	439.86	1.8	8.03	9000.0	250.0	12.63	57.11	294.24	351.3

Consideration was given to removing and or changing the restrictions at FIMBO, UDUDE, REXEE and CAPKO. However, due to airspace constraints and traffic flows it was decided that the restrictions are necessary to prevent aircraft from entering adjacent airspace, prevent confliction from other traffic and procedures, and reduce ATC workload due to required coordination, (point outs).

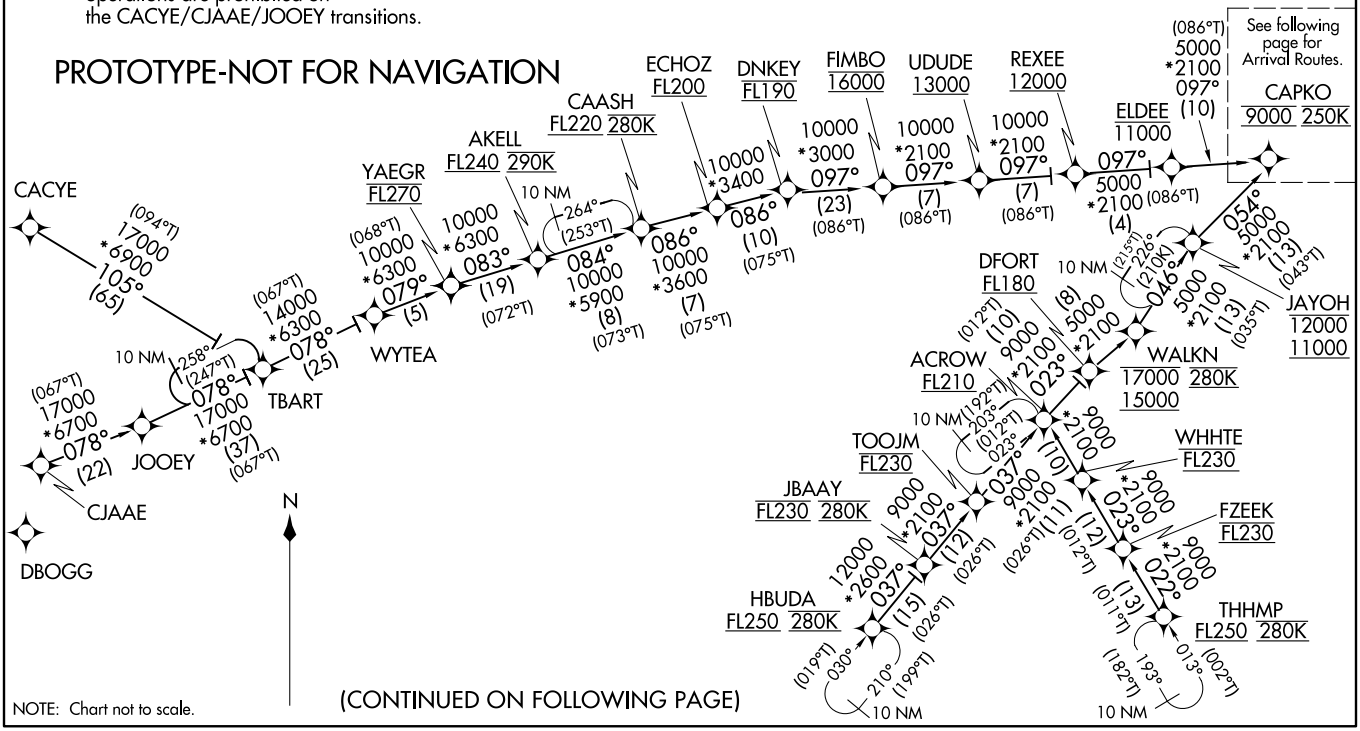
POTOMAC APP CON
128.35 270.275
BWI D-ATIS
115.1 127.8
MTN ATIS 124.925

RNAV 1 - DME/DME/IRU or GPS.
RADAR required.

NOTE: Jet aircraft only.
NOTE: All part 91, 101, 103, 105, 125, 133, 135, and 137 flight operations are prohibited on the CACYE/CJAAE/JOOEY transitions.

CACYE TRANSITION (CACYE.RAVNN8)
CJAAE TRANSITION (CJAAE.RAVNN8)
HBUDA TRANSITION (HBUDA.RAVNN8): (ATC assigned only).
JOOEY TRANSITION (JOOEY.RAVNN8): (ATC assigned only).
THHMP TRANSITION (THHMP.RAVNN8)

PROTOTYPE-NOT FOR NAVIGATION



NOTE: Chart not to scale.

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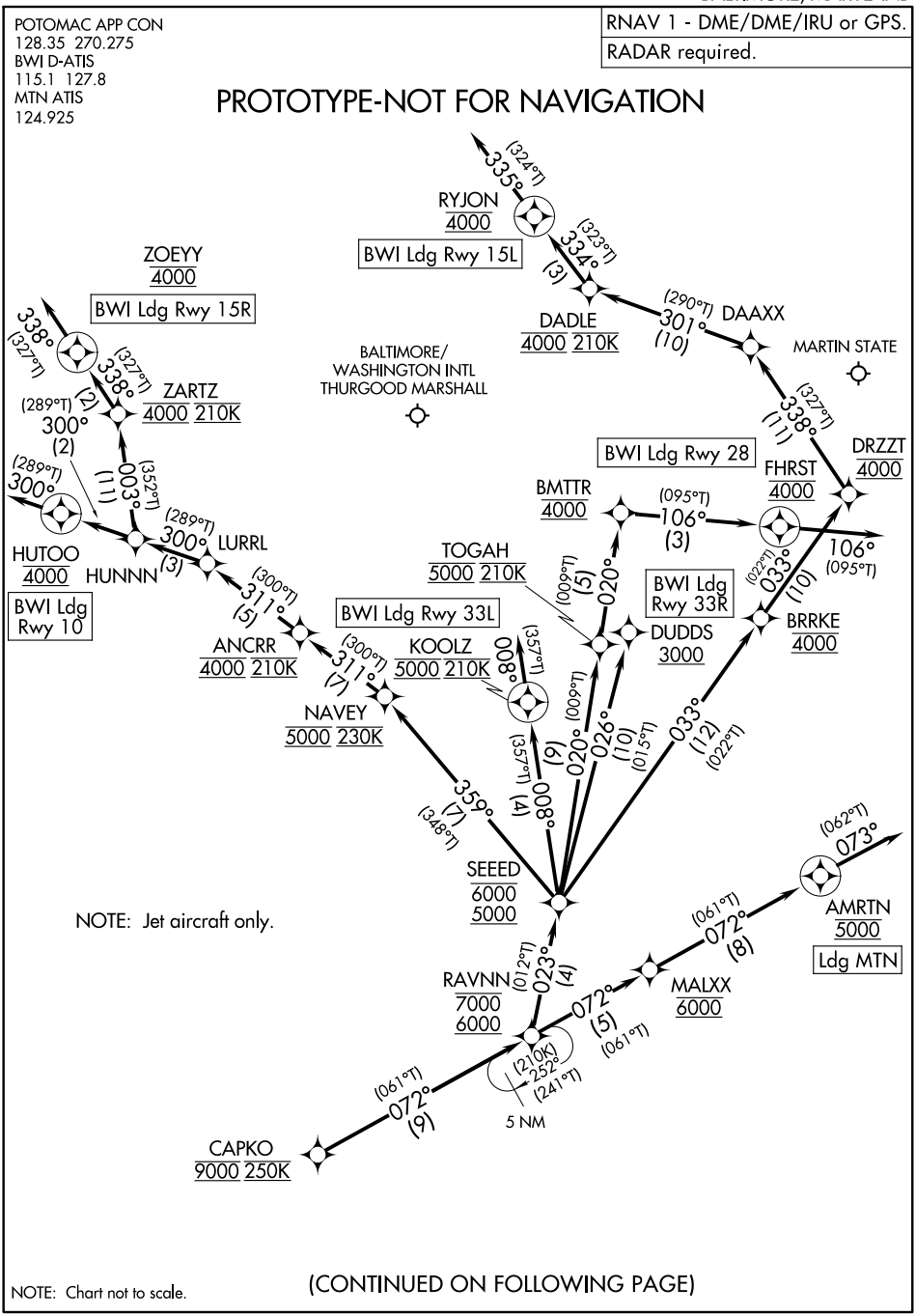
(CAPKO.RAVNN8) FIG
RAVNN EIGHT ARRIVAL (RNAV) Transition Routes
BALTIMORE, MARYLAND


POTOMAC APP CON
128.35 270.275
BWI D-ATIS
115.1 127.8
MTN ATIS
124.925
RNAV 1 - DME/DME/IRU or GPS.
RADAR required.
PROTOTYPE-NOT FOR NAVIGATION
RYJON
4000
BWI Ldg Rwy 15L
ZOEYY
4000
BWI Ldg Rwy 15R
DADLE
4000 210K
DAAXX
MARTIN STATE
BALTIMORE/
WASHINGTON INTL
THURGOOD MARSHALL
ZARTZ
4000 210K
BWI Ldg Rwy 28
DRZZT
4000
FHRST
4000
BMTTR
4000
TOGAH
5000 210K
BWI Ldg
Rwy 33R
BRRKE
4000
DUDDS
3000
HUTOO
4000
HUNNN
BWI Ldg
Rwy 10
LURRL
BWI Ldg Rwy 33L
ANCRR
4000 210K
KOOLZ
5000 210K
NAVEY
5000 230K
SEEED
6000
5000
AMRTN
5000
Ldg MTN
RAVNN
7000
6000
MALXX
6000
CAPKO
9000 250K
5 NM
NOTE: Jet aircraft only.
NOTE: Chart not to scale.
(CONTINUED ON FOLLOWING PAGE)

ARRIVAL ROUTE DESCRIPTION

BWI: From CAPKO on track 072° to cross RAVNN between 6000 and 7000.

LANDING BWI RUNWAY 10: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 359° to cross NAVEY at 5000 and at 230K, then on track 311° to cross ANCRR at 4000 and at 210K, then on track 311° to LURRL, then on track 300° to HUNNN, then on track 300° to cross HUTOO at 4000, then on track 300°. Expect RADAR vectors to final approach course.

LANDING BWI RUNWAY 15L: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 033° to cross BRRKE at 4000, then on track 033° to cross DRZZT at 4000, then on track 338° to DAAXX, then on track 301° to cross DADLE at 4000 and at 210K, then on track 334° to cross RYJON at 4000, then on track 335°. Expect RADAR vectors to final approach course.

LANDING BWI RUNWAY 15R: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 359° to cross NAVEY at 5000 and at 230K, then on track 311° to cross ANCRR at 4000 and at 210K, then on track 311° to LURRL, then on track 300° to HUNNN, then on track 003° to cross ZARTZ at 4000 and at 210K, then on track 338° to cross ZOEYY at 4000, then on track 338°. Expect RADAR vectors to final approach course.

LANDING BWI RUNWAY 28: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 020° to cross TOGAH at 5000 and at 210K, then on track 020° to cross BMTTR at 4000, then on track 106° to cross FHRST at 4000, then on track 106°. Expect RADAR vectors to final approach course.

LANDING BWI RUNWAY 33L: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 008° to cross KOOLZ at 5000 and at 210K, then on track 008°. Expect RADAR vectors to final approach course.

LANDING BWI RUNWAY 33R: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 026° to cross DUDDS at or above 3000. Expect ILS or LOC Rwy 33R approach.

LANDING MTN: From CAPKO on track 072° to cross RAVNN between 6000 and 7000, then on track 072° to to cross MALXX at 6000, then on track 072° to cross AMRTN at 5000, then on heading 073°. Expect RADAR vectors to final approach course.

RAVNN SEVEN ARRIVAL (RNAV) Transition Routes

(CAPKO.RAVNN7) 05SEP24

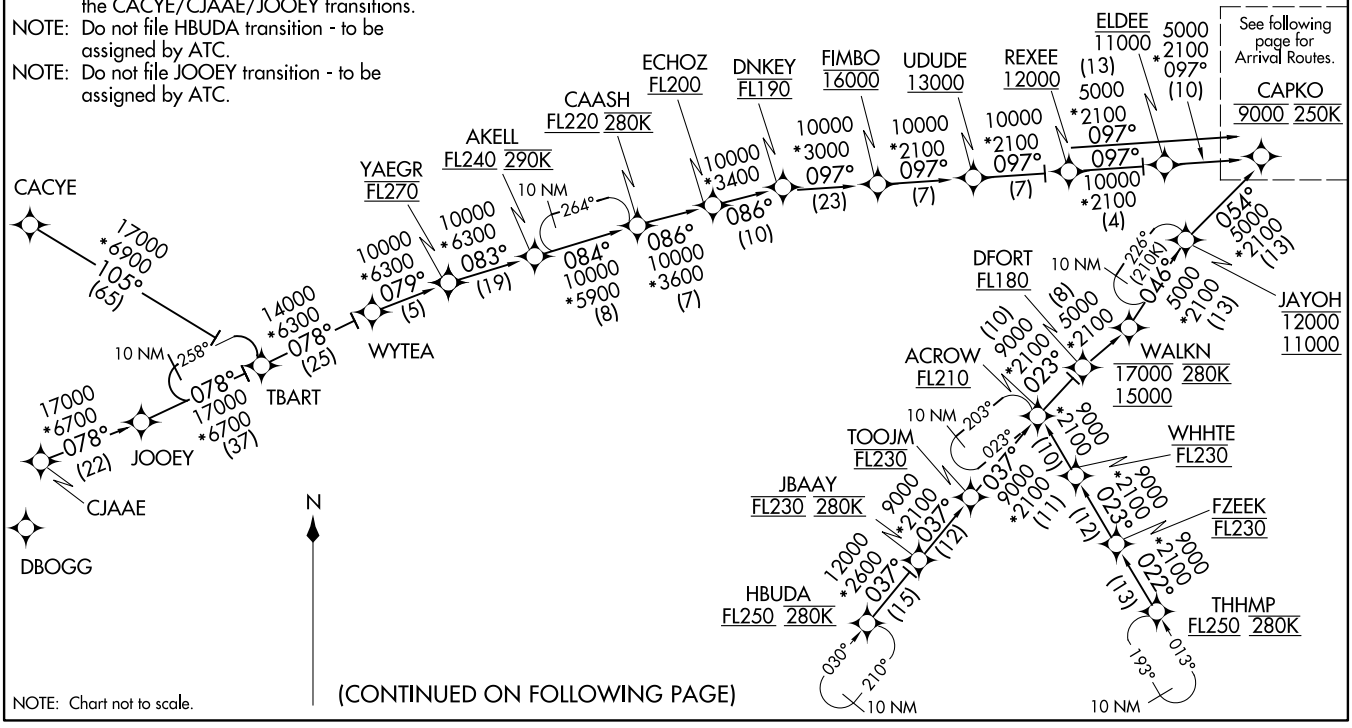
BALTIMORE, MARYLAND

POTOMAC APP CON
128.35 270.275
BWI D-ATIS
115.1 127.8
MTN ATIS 124.925

RNAV 1 - DME/DME/IRU or GPS.
RADAR required.

NOTE: Jet aircraft only.
NOTE: All part 91, 101, 103, 105, 125, 133, 135, and 137 flight operations are prohibited on the CACYE/CJAAE/JOOEY transitions.
NOTE: Do not file HBUDA transition - to be assigned by ATC.
NOTE: Do not file JOOEY transition - to be assigned by ATC.

CACYE TRANSITION (CACYE.RAVNN7)
CJAAE TRANSITION (CJAAE.RAVNN7)
HBUDA TRANSITION (HBUDA.RAVNN7): (ATC assigned only).
JOOEY TRANSITION (JOOEY.RAVNN7): (ATC assigned only).
THHMP TRANSITION (THHMP.RAVNN7)



NOTE: Chart not to scale.

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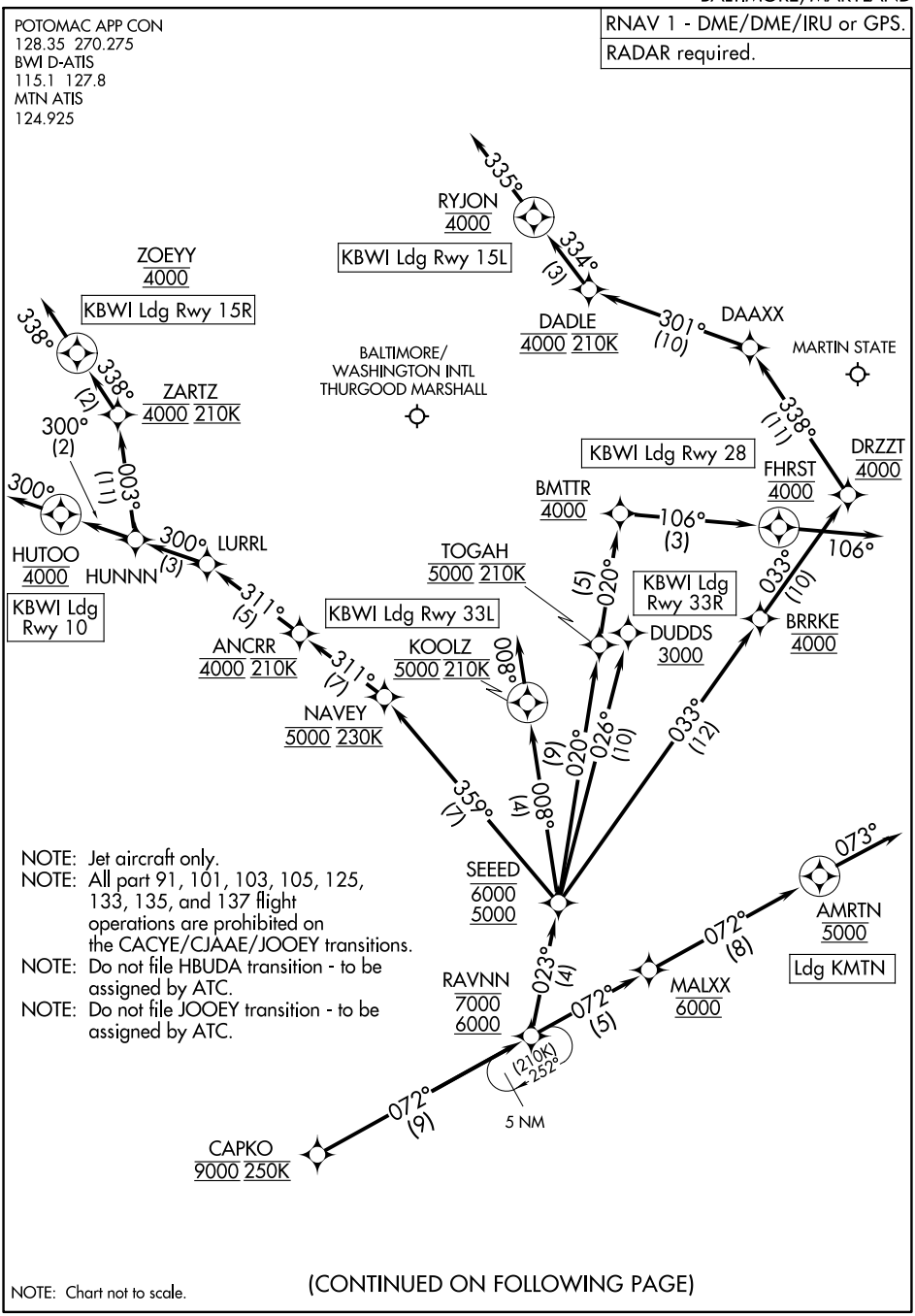
RAVNN SEVEN ARRIVAL (RNAV) Transition Routes

(CAPKO.RAVNN7) 24249

AL-804 (FAA)

OLD

BALTIMORE, MARYLAND



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NE-3, 05 SEP 2024 to 03 OCT 2024

NE-3, 05 SEP 2024 to 03 OCT 2024

ARRIVAL ROUTE DESCRIPTION

KBWI: From CAPKO on track 072° to cross RAVNN between 6000 and 7000.

LANDING KBWI RUNWAY 10: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 359° to cross NAVEY at 5000 and at 230K, then on track 311° to cross ANCRR at 4000 and at 210K, then on track 311° to LURRL, then on track 300° to HUNNN, then on track 300° to cross HUTOO at 4000, then on track 300°. Expect RADAR vectors to final approach course.

LANDING KBWI RUNWAY 15L: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 033° to cross BRRKE at 4000, then on track 033° to cross DRZZT at 4000, then on track 338° to DAAXX, then on track 301° to cross DADLE at 4000 and at 210K, then on track 334° to cross RYJON at 4000, then on track 335°. Expect RADAR vectors to final approach course.

LANDING KBWI RUNWAY 15R: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 359° to cross NAVEY at 5000 and at 230K, then on track 311° to cross ANCRR at 4000 and at 210K, then on track 311° to LURRL, then on track 300° to HUNNN, then on track 003° to cross ZARTZ at 4000 and at 210K, then on track 338° to cross ZOEYY at 4000, then on track 338°. Expect RADAR vectors to final approach course.

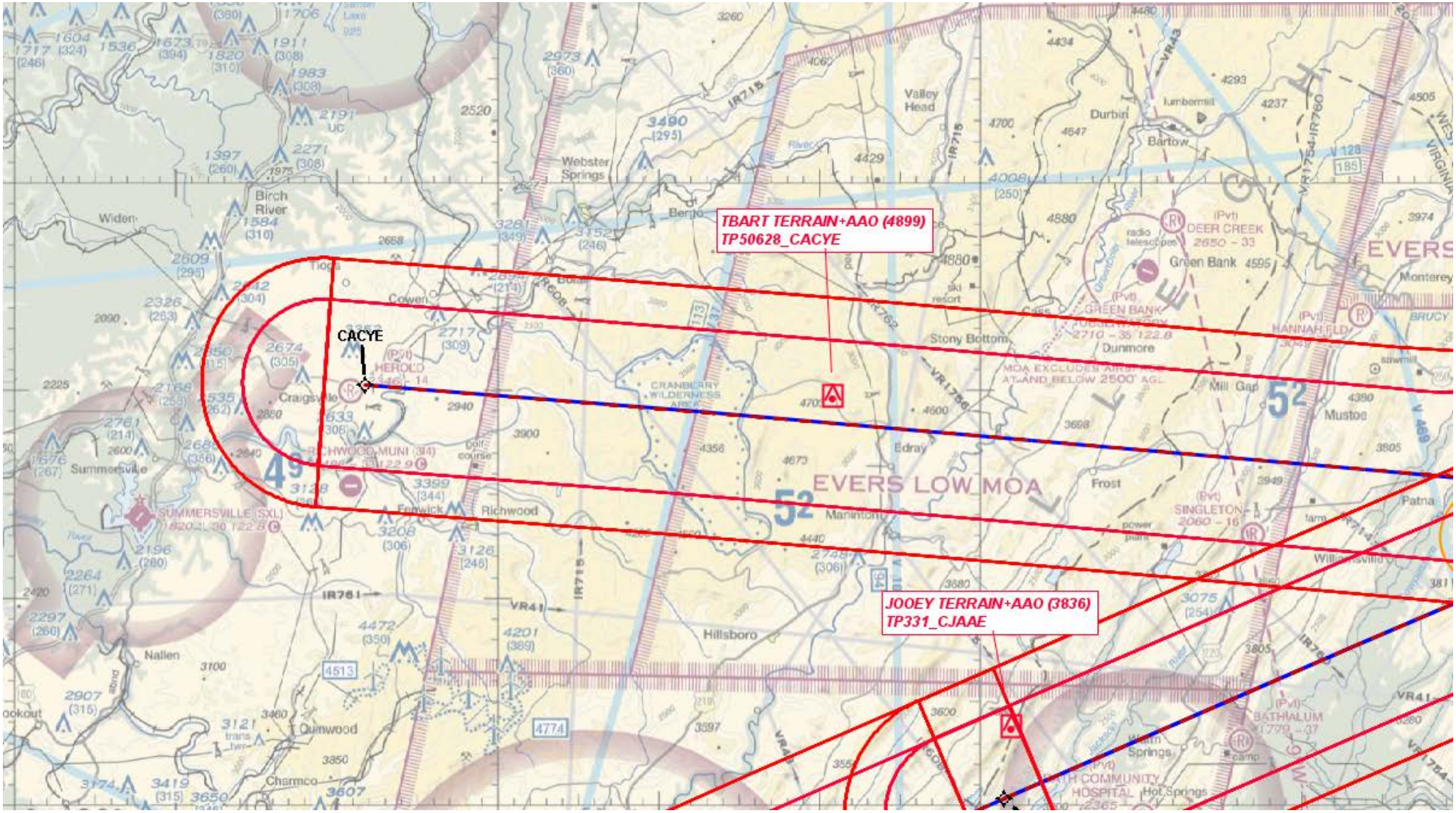
LANDING KBWI RUNWAY 28: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 020° to cross TOGAH at 5000 and at 210K, then on track 020° to cross BMTTR at 4000, then on track 106° to cross FHRST at 4000, then on track 106°. Expect RADAR vectors to final approach course.

LANDING KBWI RUNWAY 33L: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 008° to cross KOOLZ at 5000 and at 210K, then on track 008°. Expect RADAR vectors to final approach course.

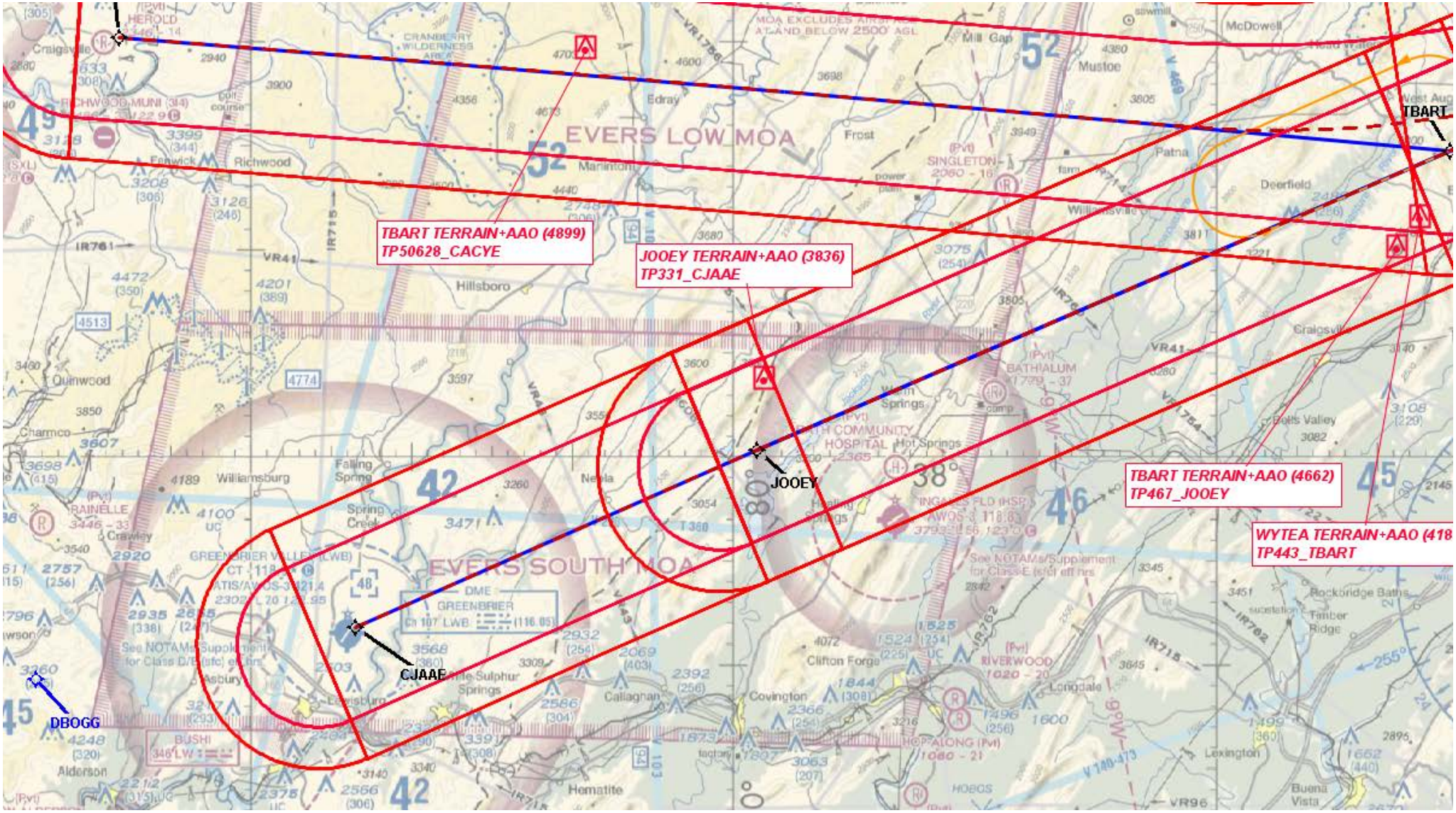
LANDING KBWI RUNWAY 33R: From RAVNN on track 023° to cross SEEED between 5000 and 6000, then on track 026° to cross DUDDS at or above 3000. Expect ILS or LOC Rwy 33R approach.

LANDING KMTN: From CAPKO on track 072° to cross RAVNN between 6000 and 7000, then on track 072° to to cross MALXX at 6000, then on track 072° to cross AMRTN at 5000, then on heading 073°. Expect RADAR vectors to final approach course.

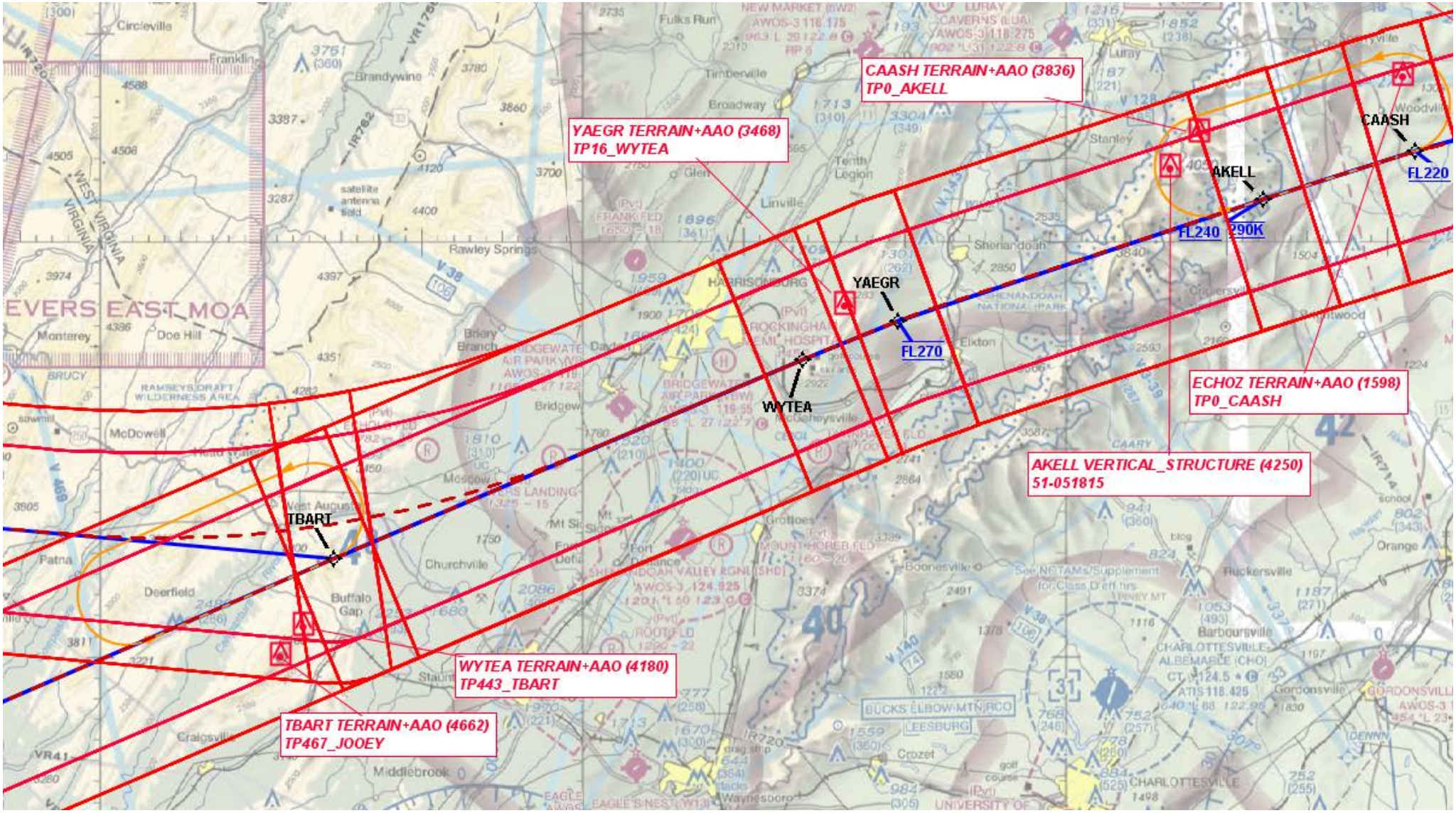
NE-3, 05 SEP 2024 to 03 OCT 2024



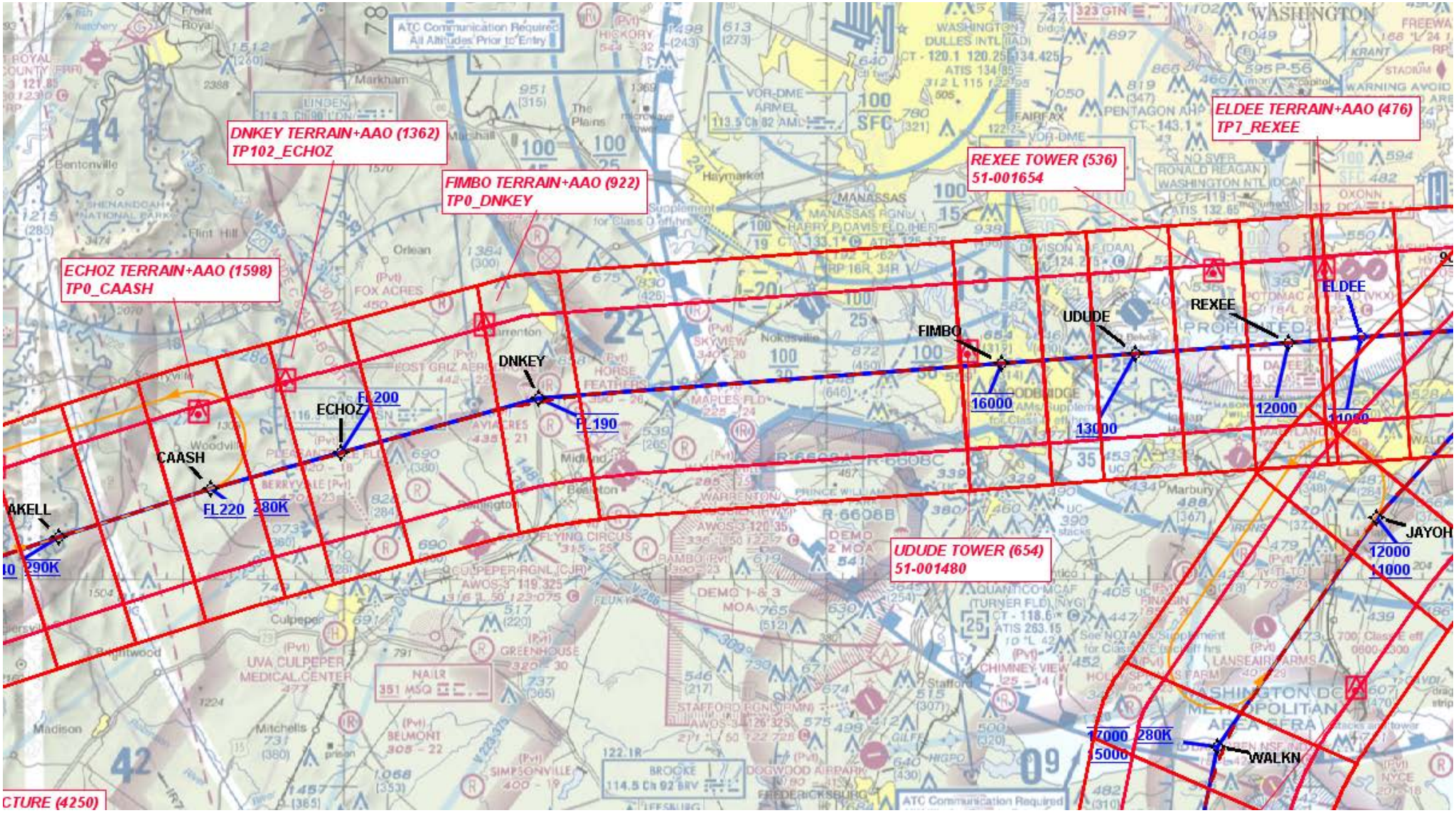
KBWI - BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT
BALTIMORE, MD
RAVNN EIGHT ARRIVAL (RNAV)
SCALE 1:500,000
PAGE 1 OF 8



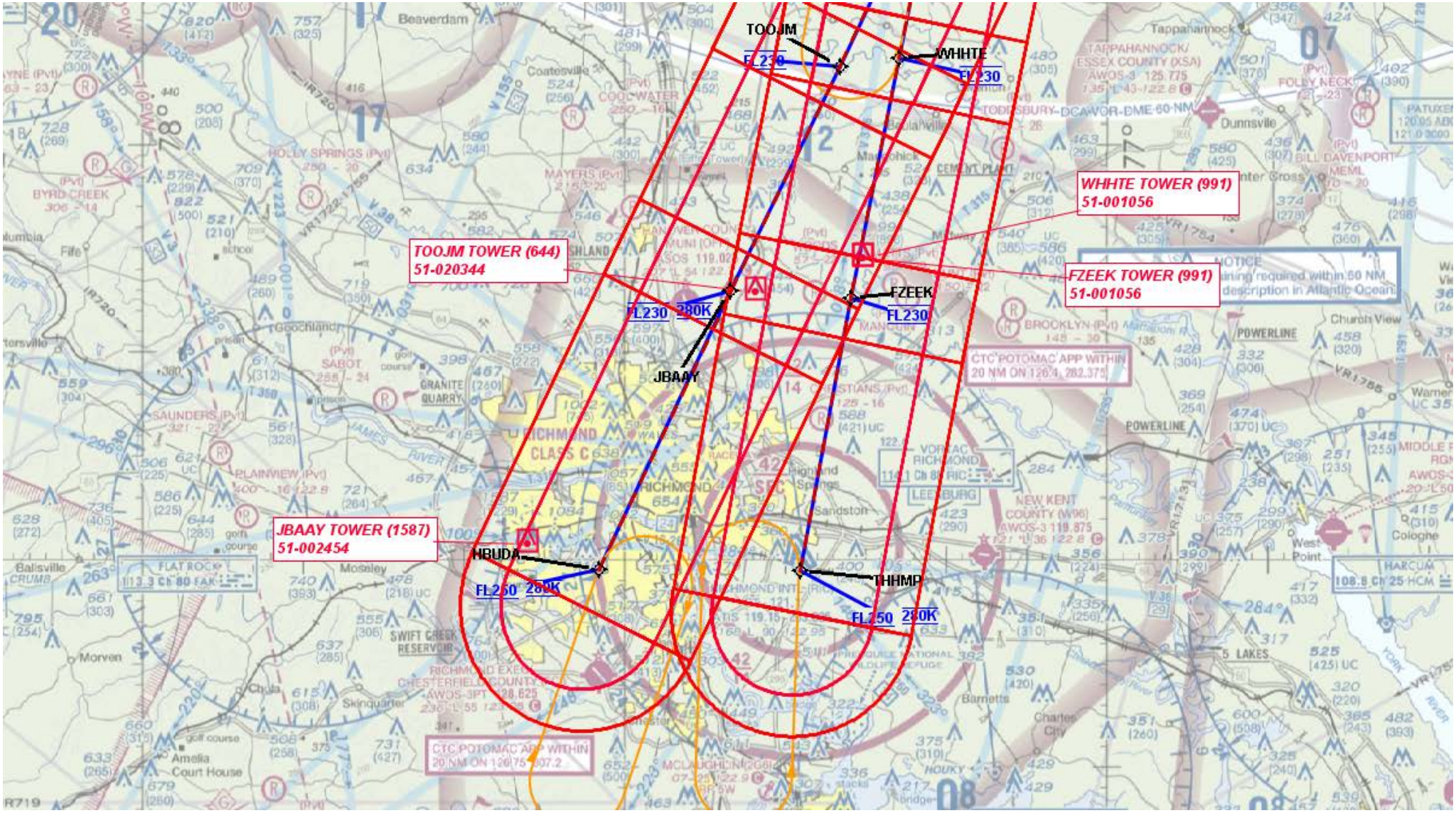
KBWI - BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT
BALTIMORE, MD
RAVNN EIGHT ARRIVAL (RNAV)
SCALE 1:500,000
PAGE 2 OF 8



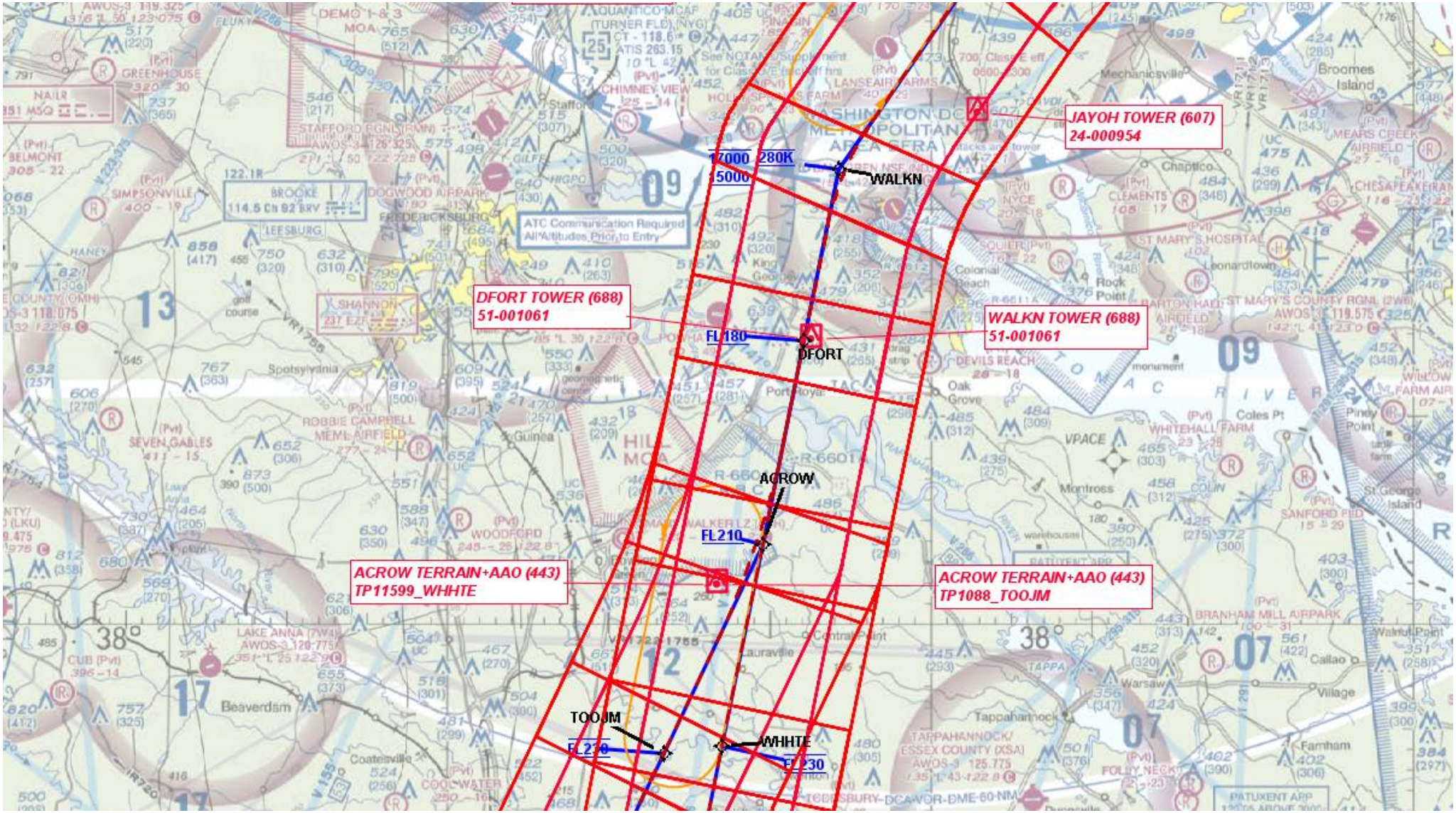
KBWI - BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT
BALTIMORE, MD
RAVNN EIGHT ARRIVAL (RNAV)
SCALE 1:500,000
PAGE 3 OF 8



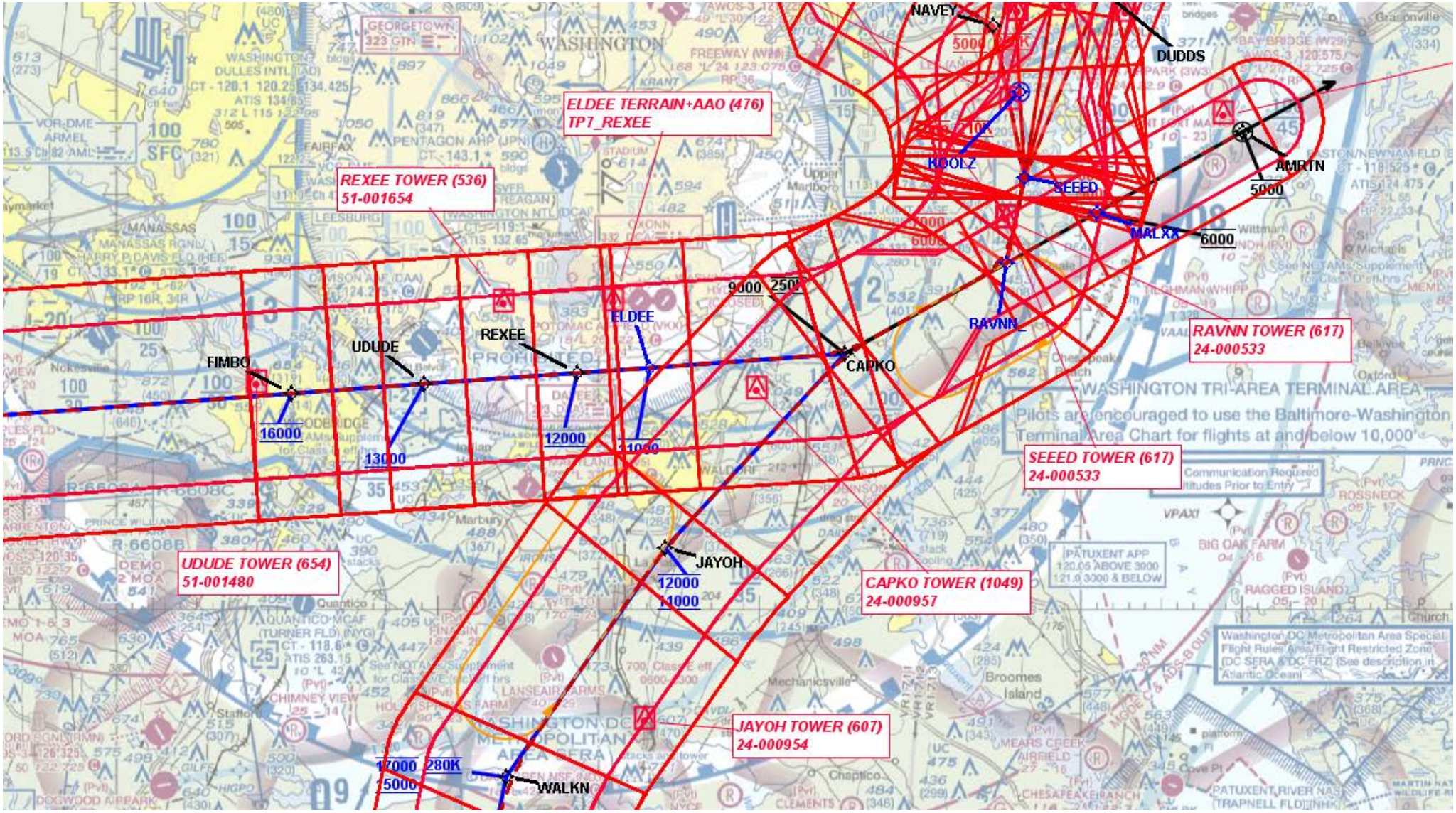
KBWI - BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT
BALTIMORE, MD
RAVNN EIGHT ARRIVAL (RNAV)
SCALE 1:500,000
PAGE 4 OF 8



KBWI - BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT
BALTIMORE, MD
RAVNN EIGHT ARRIVAL (RNAV)
SCALE 1:500,000
PAGE 5 OF 8



KBWI - BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT
BALTIMORE, MD
RAVNN EIGHT ARRIVAL (RNAV)
SCALE 1:500,000
PAGE 6 OF 8



KBWI - BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT
BALTIMORE, MD
RAVNN EIGHT ARRIVAL (RNAV)
SCALE 1:500,000
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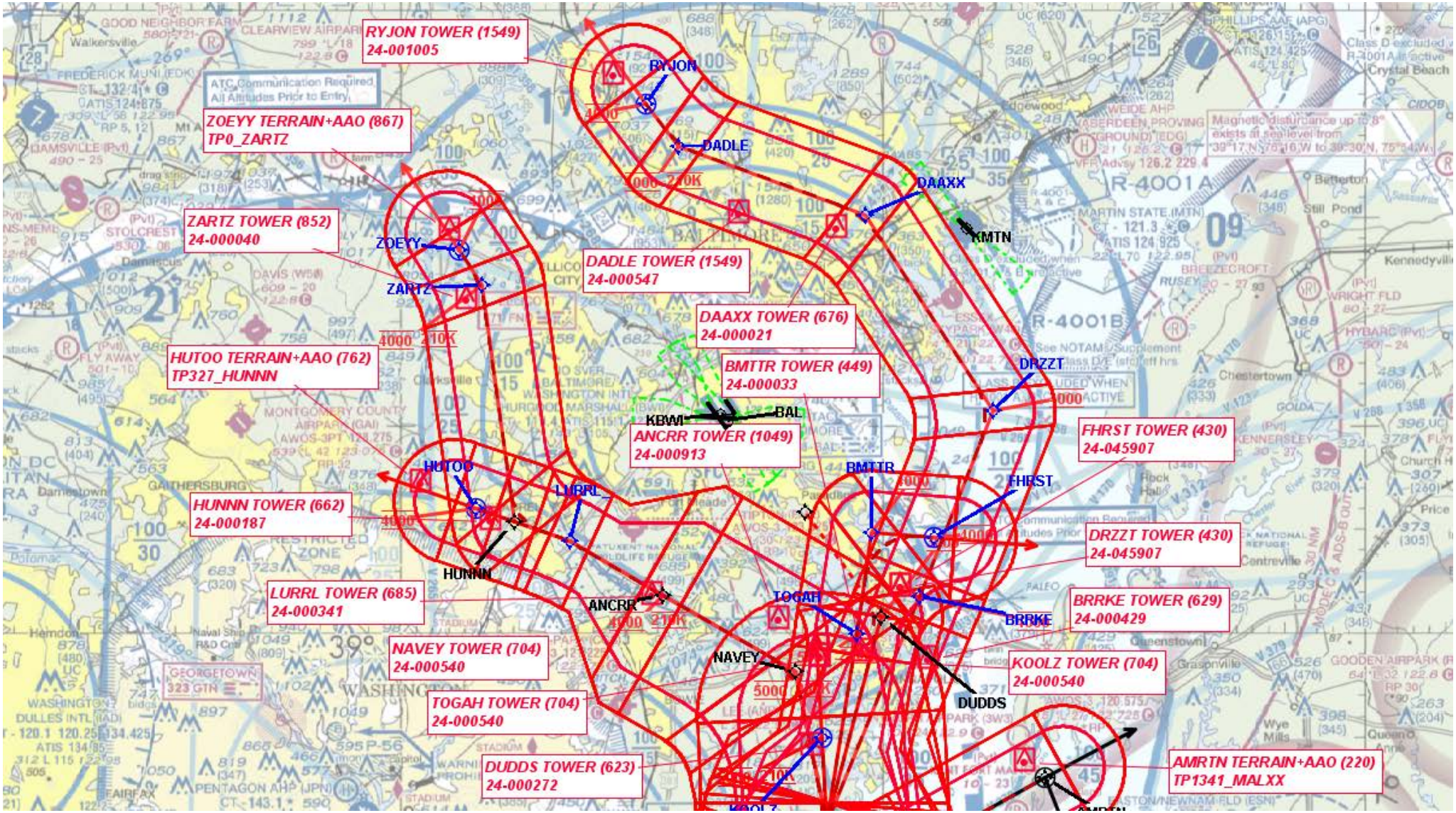

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