

Flight Procedures Cover Page	Task Action: FLIGHT CHECK	Task Type: STAR	Estimated Chart Date: 05/16/2024	APWS Task ID: CF5D5971A7704B4FB3C44888039C63E9	APWS Project ID: C8A3FC612D90423BACA36CE7005F18A4
Procedure: FRDMM SIX RNAV STAR		Enroute: YES	Specialist: Copeland, Guy		Agreement Number:
Airport ID: KDCA			Airport City: WASHINGTON		State: DC
Facility ID:	Facility Type:	Flight Inspection Remark Type: New FC Slot			
<div>Procedure Comments:</div> <div>CONTACT: ROBERT HAMILTON 405-954-4608</div> <div>WAIVERS (2): RWY TRANSITIONS, NAMING CONVENTION</div> <div>LOA: DESCENT GRADIENT</div> <div>01/23/2024 THIS IS AN UPDATED COPY OF THE FORM DEVELOPED ON 12/19/2023</div> <div>1. REMOVED NOTE MAINTAIN LAST ASSIGNED ALTITUDE UNTIL CLEARED TO "DESCEND VIA" THE FRDMM SIX. ARTCC WILL ISSUE LANDIND DIRECTION ASSIGNMENT (NORTH OR SOUTH) AND POTOMAC TRACON WILL ISSUE RUNWAY ASSIGNMENTS.</div> <div>2. ADDED NOTE LANDING SOUTH AT DCA USE RUNWAY 19 TRANSITION, LANDING NORTH USE RUNWAY 1 TRANSITION. LANDING SOUTH AT ADW USE RUNWAY 19R TRANSITION, LANDING NORTH USE RUNWAY 1L TRANSITION. EXPECT RUNWAY ASSIGNMENT FROM TRACON PRIOR TO FORGT.</div> <div>01/24/2024</div> <div>QUALITY 41 CHECKED</div> <div>QUALITY 14 CHECKED</div>					

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FIPC DME/DME FORM						
PROCEDURE: FRDMM SIX RNAV STAR			AIRPORT NAME: RONALD REAGAN WASHINGTON		AIRPORT ID: KDCA	SPECIAL CONTROL NO: YG-01-110-24
FAC ID: FRDMM6		CITY: WASHINGTON			ST: DC	ORIG CHART DATE: 05/16/2024
DFL TYPE: PROC/D	THIRD PARTY: <input type="checkbox"/> YES	EST. TIME ON SITE: 1.0	REIMB. NUMBER:	PTS TASK ID: CF5D5971A7704B4FB3C44888039C63E9		
PREFLIGHT NOTES						
REVIEWER:					DATE:	
COMMENTS:					CHECK ONE: <input type="checkbox"/> FLT CK REQ <input type="checkbox"/> NFCR <input type="checkbox"/> REJECT	
					YES	NO
					CPV COMPLETE?	X
PROCEDURE RESULTS						
INSPECTION DATE: 01/19/2024	CREW #: VN324	N #:	INSTRUMENT PROCEDURE STATUS: <input checked="" type="checkbox"/> SAT <input type="checkbox"/> SAT W/CHANGES <input type="checkbox"/> UNSAT		ARINC CODING: <input type="checkbox"/> SAT <input type="checkbox"/> SAT/GOLD <input type="checkbox"/> UNSAT	
FLIGHT INSPECTOR SIGNATURE: stephen bauer @ 01/19/2024 09:32			PRINTED NAME: BAUER, STEPHEN CHRISTOPHER			NOTAM INITIATED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
FLIGHT INSPECTOR REMARKS:						
DME/DME STATUS: <input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT	SPECIALIST SIGNATURE: david c-ctr cook @ 01/29/2024 06:04				PRINTED NAME: Dave Cook	
SPECIALIST REMARKS:						
IN-FLIGHT OBSTACLE REPORT						
OBSTRUCTION ID #:	COORDINATES OR LOCATION:	GNSS ALTITUDE (MSL):	BAROMETRIC ALTITUDE (MSL):	HEIGHT ABOVE GROUND LEVEL:		

1. FLIGHT PROCEDURE IDENTIFICATION:

WASHINGTON DC
FRDMM (RNAV) ARRIVAL

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

FAA Order 8260.3E, paragraph 2-2-3. b. Runway Transitions may only be established for a single airport served by the STAR.

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

The FRDMM Standard Terminal Arrival Route (STAR) serves RONALD REAGAN WASHINGTON INTL (KDCA), JOINT BASE ANDREWS (KADW) and DAVISON AAF (KDAA). The current procedure has Runway Transitions coded for KDCA and KADW.

A full amendment for the FRDMM (RNAV) STAR requires the removal of the Runway Transitions that serve KADW and the creation of a separate STAR. The current design allows flight crews to code the FMS for the appropriate airport and runway in use.

This procedure has been in use for more than eleven (11) years and has proven to be satisfactory to Industry and ATC without any design or operational issues. Under current criteria this design is not authorized.

To maintain the current level of safety, service, and continuity this procedure provides, a Waiver is requested to allow separate Runway Transitions to be developed and coded for multiple airports (KDCA/KADW) on the same procedure.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

The FRDMM (RNAV) STAR has been in effect for more than eleven (11) years without any design or operational issues. Industry and other users are currently able to code the appropriate KADW Runway Transition in the aircraft FMS without any issues.

The runway transitions were designed and coded so traffic for KDCA and KADW could be routed on the same track. This allows for a more consistent and predictable feed to the respective airports in an already congested and complicated section of airspace which is in close proximity to restricted/special use airspace with national security concerns.

Utilizing the same procedure versus developing a separate STAR for KADW allows ATC to sequence aircraft more effectively instead of trying to blend two different flows. Currently when arrival sectors are saturated with traffic ATC will use FRDMM and/or ALWYZ as reference points for issuing vectors to achieve additional spacing and provide for more effective sequencing to the respective airports (i.e., "depart FRDMM heading 140 or depart ALWYZ heading 070). Additionally, this would require supplemental training and familiarization for ATC and aircrews.

RADAR is required for this procedure and controllers will intervene if an aircraft deviates from course. The Runway Transitions for each airport were evaluated separately using TARGETS Reference Software resulting in satisfactory outcomes for both airports.

TARGETS Reference Software evaluation was completed separately for each airport resulting in satisfactory outcomes for both. Coordination with American Airlines Principal Navigation Specialist revealed this type of coding was currently utilized (coding spreadsheet attached) and was satisfactory for Industry use.

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

The FRDMM (RNAV) STAR is a legacy procedure in honor of the events that occurred on 9/11/2001. This procedure was coordinated in conjunction with the White House and FAA Public Affairs Office.

Creating a separate STAR for KADW would result in increased funding for the Agency and could create additional workload for the aircrews and ATC personnel.

A request to amend criteria to allow multiple Runway Transitions for secondary airports on a procedure will be submitted to MITRE for consideration. Once MITRE has completed their evaluation and an approval for this type of design has been established the procedure will be compliant.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

ESA PBN Co-Leads
WASHINGTON (ZDC) ARTCC
POTOMAC (PCT) TRACON
American Airlines, Delta Air Lines and United Airlines

7. SUBMITTED BY:

DATE OFFICE IDENTIFICATION TITLE

SIGNATURE

8. AFS ACTIONS:

☐ APPROVED ☐ DISAPPROVED ☐ NOT REQUIRED

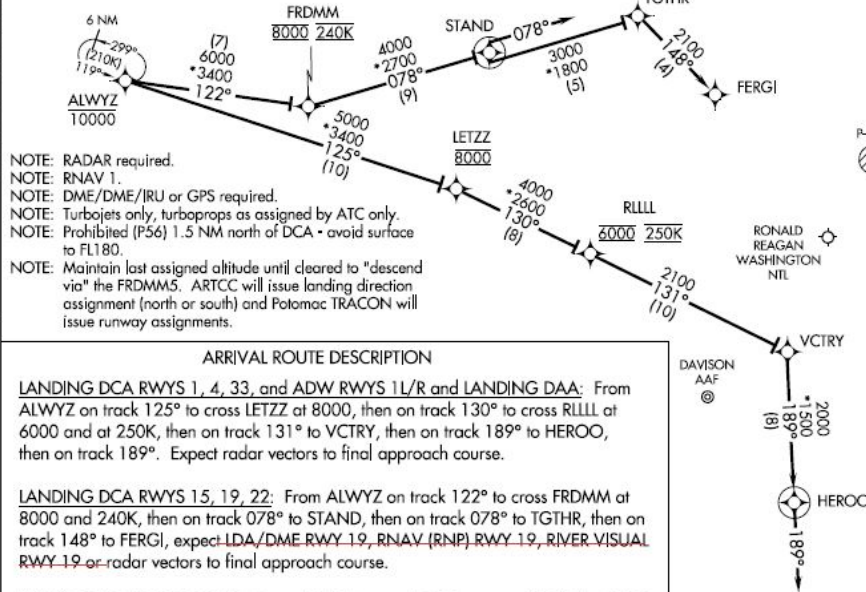
COMMENTS:

DATE ROUTING SYMBOL SIGNATURE

American Airlines KADW Coding

Sequence	Path Terminator	Fix	Flyover	Course	Turn Direction	Altitude Description	Altitude 1	Altitude 2	Speed Limit Description	Speed Limit	Recommended Navaid	
^ BUCKO Enroute Transition												
10	IF	BUCKO				At	31000 ft					
20	TF	DRRON				Between	31000 ft	27000 ft				
30	TF	HONNR				Between	28000 ft	24000 ft	At	280 kt		
40	TF	BRVRY				Between	26000 ft	22000 ft				
50	TF	COURG				Between	23000 ft	20000 ft	At	280 kt		
60	TF	PLDGE				Between	17000 ft	15000 ft	At	280 kt		
70	TF	WEWIL				At or Above	14000 ft					
80	TF	NEVVR				At or Above	12000 ft					
90	TF	FORGT				At or Above	11000 ft		At	250 kt		
100	TF	SEPII				At or Above	10000 ft		At	250 kt		
110	TF	ALWYZ				At or Below	10000 ft					
^ RW01B Runway Transition												
10	IF	ALWYZ				At or Below	10000 ft					
20	TF	LETZZ				At	8000 ft					
30	TF	RLLLL				At	6000 ft		At	250 kt		
40	TF	VCTRY										
50	TF	HEROO	✓									
60	FM	HEROO		189.0° M							BAL	
^ RW19B Runway Transition												
10	IF	ALWYZ				At or Below	10000 ft					
20	TF	FRDMM				At	8000 ft		At	240 kt		
30	TF	STAND	✓									
40	FM	STAND		78.0° M							BAL	

FRDMM FIVE ARRIVAL (RNAV) Arrival Routes
(ALWYZ,FRDMM5) 20JUN19



NOTE: RADAR required.
NOTE: RNAV 1.
NOTE: DME/DME/IRU or GPS required.
NOTE: Turboprops only, turboprops as assigned by ATC only.
NOTE: Prohibited (P56) 1.5 NM north of DCA - avoid surface to FL180.
NOTE: Maintain last assigned altitude until cleared to "descend via" the FRDMM5. ARTCC will issue landing direction assignment (north or south) and Potomac TRACON will issue runway assignments.

ARRIVAL ROUTE DESCRIPTION

LANDING DCA RWYS 1, 4, 33, and ADW RWYS 1L/R and LANDING DAA: From ALWYZ on track 125° to cross LETZZ at 8000, then on track 130° to cross RLLLL at 6000 and at 250K, then on track 131° to VCTRY, then on track 189° to HEROO, then on track 189°. Expect radar vectors to final approach course.

LANDING DCA RWYS 15, 19, 22: From ALWYZ on track 122° to cross FRDMM at 8000 and 240K, then on track 078° to STAND, then on track 078° to TGTHR, then on track 148° to FERGI, expect LDA/DME RWY 19, RNAV (RNP) RWY 19, RIVER VISUAL RWY 19 or radar vectors to final approach course.

LANDING ADW RWYS 19L/R: From ALWYZ on track 122° to cross FRDMM at 8000 and at 240K, then on track 078° to STAND, then on track 078°. Expect radar vectors to final approach course.

NOTE: Chart not to scale.

(ALWYZ,FRDMM5) 21168
FRDMM FIVE ARRIVAL (RNAV) Arrival Routes
AL-443 (FAA)

WASHINGTON, DC

1. FLIGHT PROCEDURE IDENTIFICATION:

WASHINGTON DC
FRDMM (RNAV) ARRIVAL

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

FAA Order 8260.19I paragraph 4-5-2 p. STAR must be named to correspond with a waypoint, fix, or NAVAID on the common route, normally where the common route begins, (i.e., "NASCR ONE ARRIVAL").

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

The FRDMM Standard Terminal Arrival Route (STAR) serves RONALD REAGAN WASHINGTON INTL (KDCA), JOINT BASE ANDREWS (KADW) and DAVISON AAF (KDAA). This procedure has been an effective tool in the application of air traffic procedures for aircraft landing at these airports.

The changes to this procedure were minimal and did not include any track changes. Retaining the name will preserve familiarity and reduce the possibility of confusion for the aircrews and air traffic personnel.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

The FRDMM (RNAV) STAR has been in effect for more than eleven (11) years without any design or operational issues. Retaining the current name will not cause any confusion for the aircrews and/or air traffic personnel.

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

The FRDMM (RNAV) STAR is a legacy procedure in honor of the events that occurred on 9/11/2001. This procedure was coordinated in conjunction with the White House and FAA Public Affairs Office.

Renaming the STAR was deemed undesirable. Based on current operational practices retaining the names and locations as currently published will reduce the possibility of confusion for aircrews and air traffic personnel.

Currently when arrival sectors are saturated with traffic ATC will use FRDMM and/or ALWYZ as reference points for issuing vectors to achieve additional spacing and provide for more effective sequencing to the respective airports (i.e., "depart FRDMM heading 140 or depart ALWYZ heading 070).

If waypoint's location were changed this could result in incorrect headings being issued due to past practices which could result in additional risk to the NAS.

Additionally, this would require supplemental training and familiarization for ATC and aircrews.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

ESA PBN Co-Leads
WASHINGTON (ZDC) ARTCC
POTOMAC (PCT) TRACON
American Airlines, Delta Air Lines and United Airlines

7. SUBMITTED BY:

DATE OFFICE IDENTIFICATION TITLE

SIGNATURE

8. AFS ACTIONS:

☐ **APPROVED** ☐ **DISAPPROVED** ☐ **NOT REQUIRED**

COMMENTS:



Federal Aviation Administration

Memorandum

Date: October 23, 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: Washington DC (KDCA), FRDMM (RNAV) STAR
Descent Gradient

WEWIL to NEVVR 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).

Paragraph 2-2-8.b states:

“When a gradient exceeds the maximum DG allowed in paragraph 2-2-8.a, 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 (331.47) from WEWIL to NEVVR is greater than the Maximum Permissible Descent Gradient (330.0). Flight Standards approval is required.

A computed descent gradient value from WEWIL to NEVVR of 331.47 ft./NM resulted from the descent gradient being calculated from descending from the restriction AOB 14000 at WEWIL to cross NEVVR AOA 12000. Calculating a descent gradient from of BETWEEN 15000 and 17000 at PLDGE to cross NEVVR AOA 12000 over 18.38 NM resulted in a descent gradient of 325.098 ft.

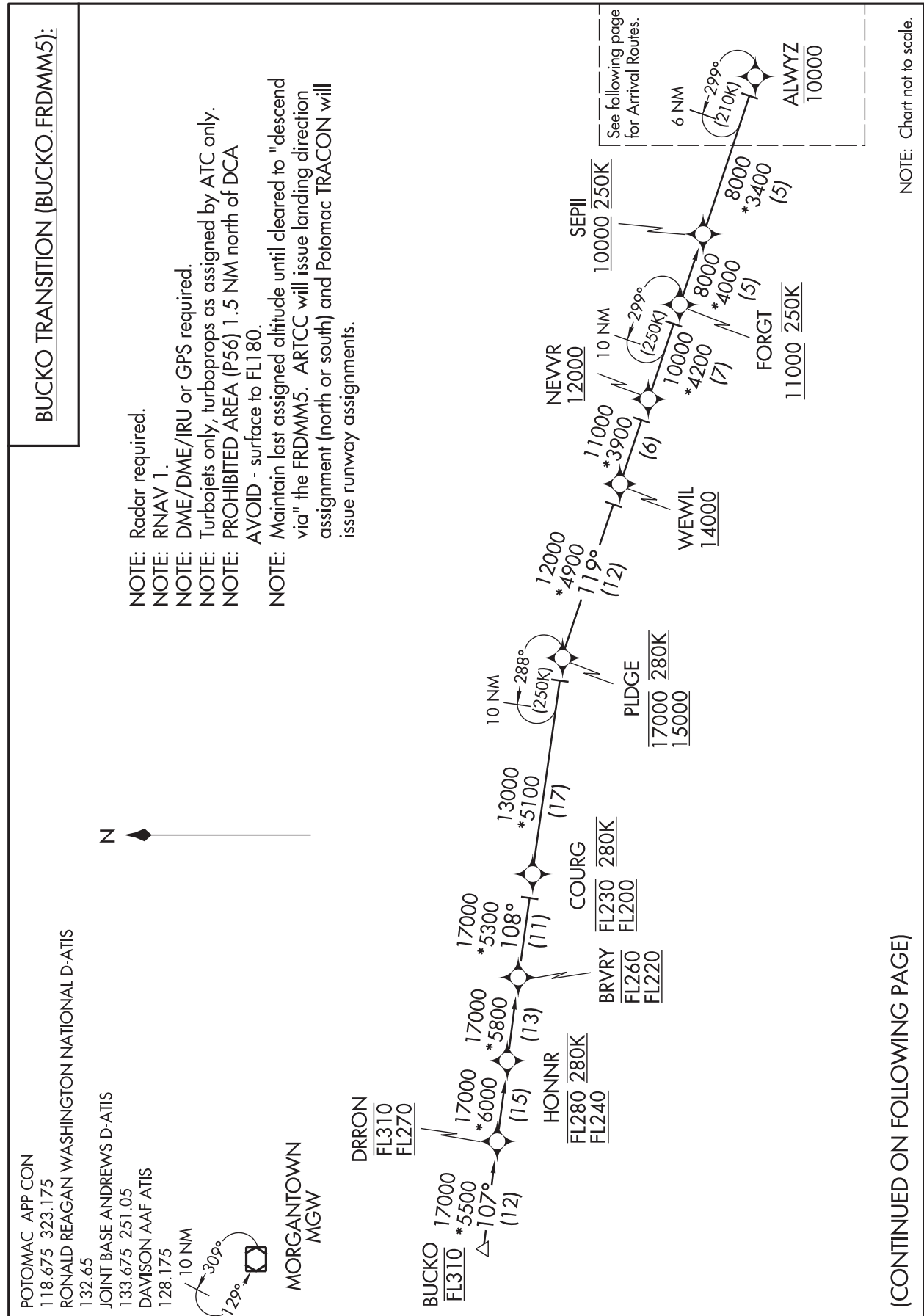
TF	PLDGE [IFPA r2 03-29-18 TO UNK]	FLY_BY	+15000.00	-17000.0	280.0	10.22	17.06	3.03	292.84	330.0	0.0
TF	WEWIL [IFPA r1 06-27-13 TO UNK]	FLY_BY	+14000.00			0.32	12.35	3.03	80.94	330.0	0.0
TF	NEVVR [IFPA r0 07-26-12 TO UNK]	FLY_BY	+12000.00			0.0	6.03	1.0	331.47	330.0	0.0
TF	FORGT [IFPA r1 03-29-18 TO UNK]	FLY_BY	+11000.00		250.0	0.0	6.71	1.0	148.95	330.0	6.03

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

FRDMM FIVE ARRIVAL (RNAV) Transition Route

WASHINGTON, DC

NE-3, 20 JUN 2019 to 18 JUL 2019



FRDMM FIVE ARRIVAL (RNAV) Transition Route

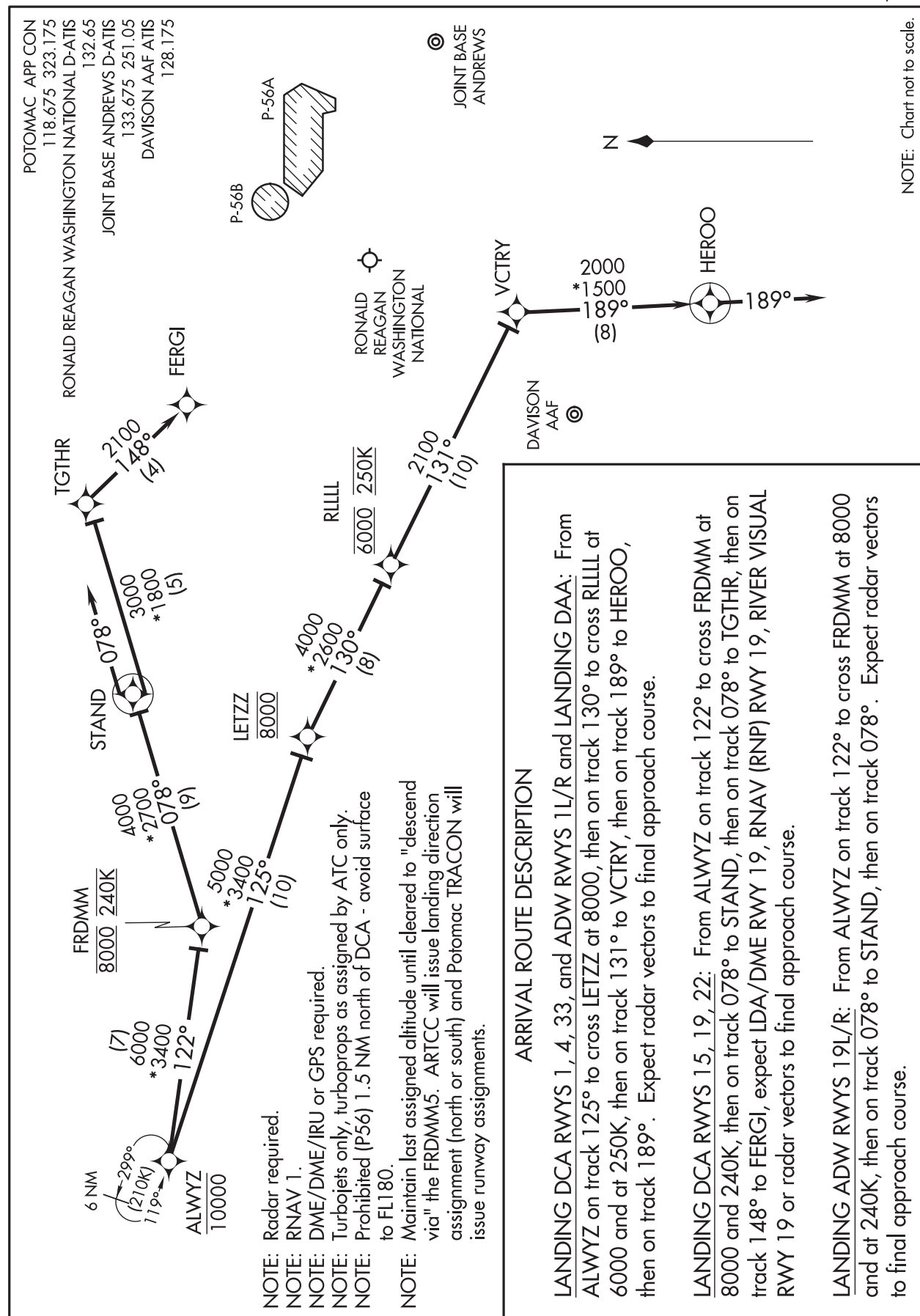
WASHINGTON, DC

NE-3, 20 JUN 2019 to 18 JUL 2019

FRDMM FIVE ARRIVAL (RNAV) Arrival Routes

WASHINGTON, DC

NE-3, 20 JUN 2019 to 18 JUL 2019



FRDMM FIVE ARRIVAL (RNAV) Arrival Routes

(ALWYZ.FRDM5) 20JUN19

WASHINGTON, DC

NE-3, 20 JUN 2019 to 18 JUL 2019

