Flight Procedure Tracking Form	Action: FLIGHT CHECK	Task Type: IAP	Date Open: 05/11/2012	Task #: 2011100529630803002	Request #: 20111005296308
Procedure: RNAV (RNP) Z RWY 5 R AMDT 2		Airport ID: KRDU	Airport: RALEIGH-DURHAM INTL		Reimbursable #:
City: RALEIGH/DURHAM	ST: NC	GPS #:		Estimated Chart Date: 01/10/2013	FICO #:
Fac ID:	Fac. Type: RNP	Specialist: RONALD SALPINO			

Procedure Review

	Rec'd	Rel'd	Full Name	Comments
Lead:	07/03/2012	10/11/2012	DAVID PUGLISI	
QA:	10/11/2012	10/11/2012	DAVID PUGLISI	
Liaison:	10/11/2012		Spurlin	WAIVER

P1

Procedure Comments: ENROUTE **Remark Type:** INFORMATION

pkg 3 of 4

RALEIGH/DURHAM, NC RALEIGH-DURHAM INTL (KRDU) RNAV (RNP) Z RWY 5R, AMDT 2 ENROUTE-YES FC: 11.13.12 PUB: 1.10.13

ATTACHED FORMS: 8260-3; 8260-10; 8260-9; 8260-2(S): CFVVM, ORIG; OTTOS, ORIG; STANZ, REV 1; UKAME, ORIG; WOSBO, ORIG; (INFO ONLY) HIKOR-INT, REV 1; HOKEB, REV 1; PECIT-INT, REV 1; STINT, ORIG; TOYER, ORIG.

CONTACT: DON SMITH/MARLON ROBINSON-AJV-352 LEADS, 405.954.1036 / 405.954.3636

APP CRS	Rwy ldg	7500
052°	THRE	397
	Apt Elev	435

FIG

RNAV (RNP) Z RWY 5R

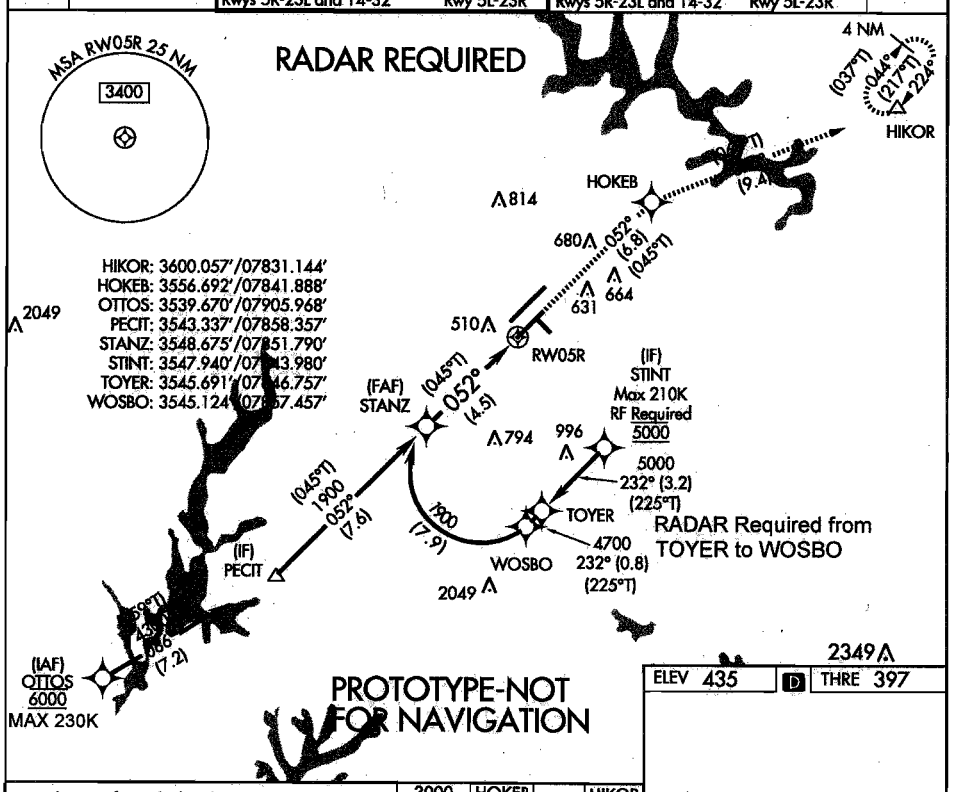
RALEIGH-DURHAM INTL (RDU)

For uncompensated Baro-VNAV systems, procedure NA below -9°C (16°F) or above 54°C (130°F). GPS required. Simultaneous approach authorized with ILS or LOC Rwy 5L, RNAV (GPS) Y Rwy 5L. Use of FD or AP providing RNAV track guidance required during simultaneous operations. For inoperative MALSR, increase RNP 0.30 all Cats visibility to 1.

MALSR

MISSED APPROACH: Climb to 3000 on track 052° to HOKEB and on track 076° to HIKOR and hold.

ATIS	RALEIGH APP CON	RALEIGH TOWER (EAST)	RALEIGH TOWER (WEST)	GND CON (EAST)	GND CON (WEST)	CLNC DEL
123.8	128.3 307.9	127.45 257.8 Rwys 5R-23L and 14-32	119.3 257.8 Rwy 5L-23R	121.9 348.6 Rwys 5R-23L and 14-32	121.7 348.6 Rwy 5L-23R	120.1

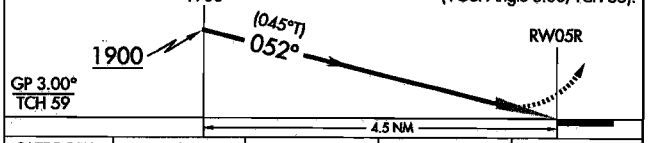


ELEV 435	D	THRE 397

See planview for multiple IF locations.

3000	HOKEB		HIKOR
tr 052°		tr 076°	

VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 55).



CATEGORY	A	B	C	D
RNP 0.30 DA	709/24 312 (300-½)			

AUTHORIZATION REQUIRED

052° to RW05R

REIL Rwy 32
MIRL Rwy 14-32
HIRL Rwy 5R-23L and 5L-23R
TDZ/CL Rwys 5L, 23L, and 23R

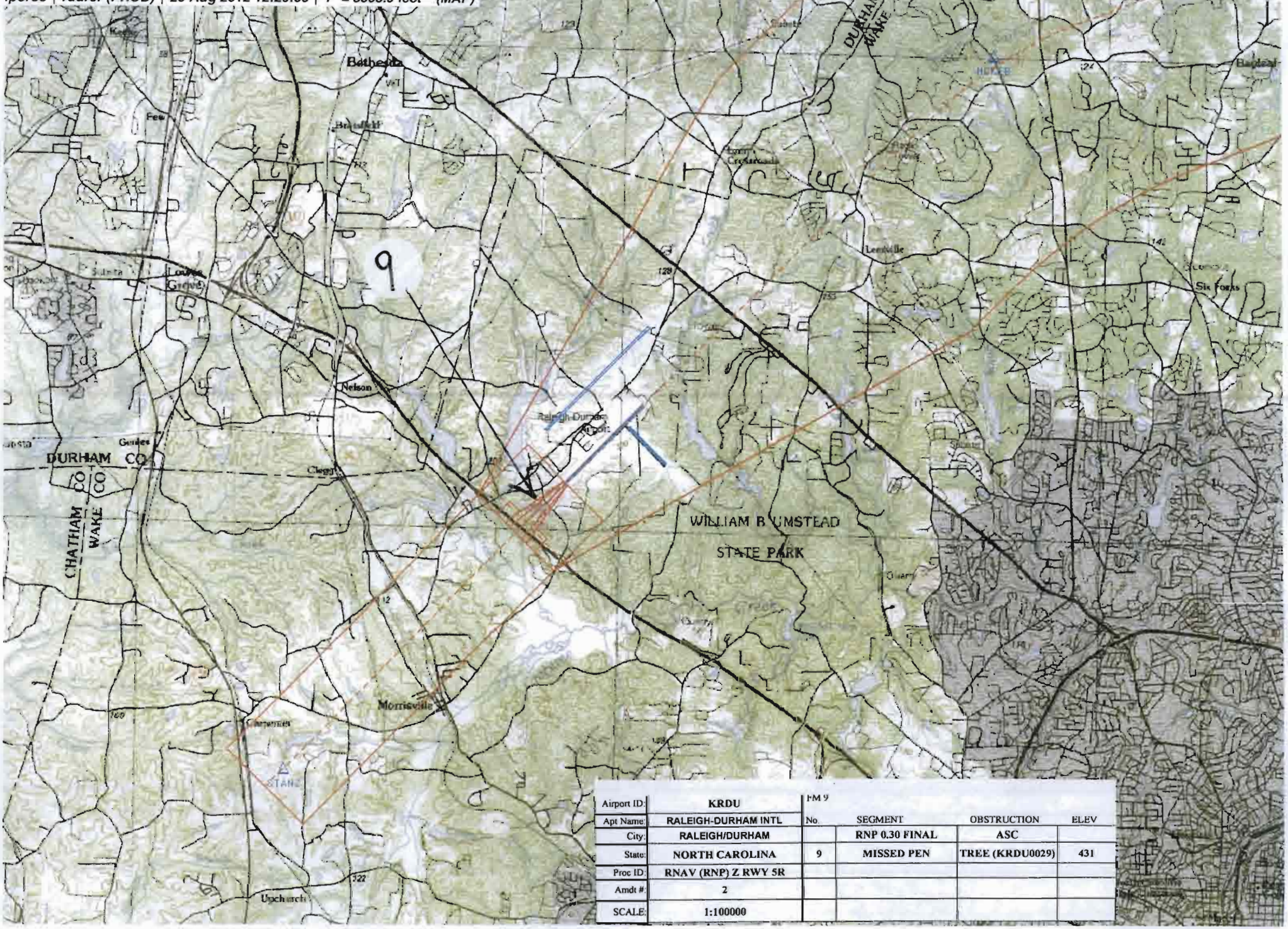
35°53'N-78°47'W

RALEIGH-DURHAM INTL (RDU)
RNAV (RNP) Z RWY 5R

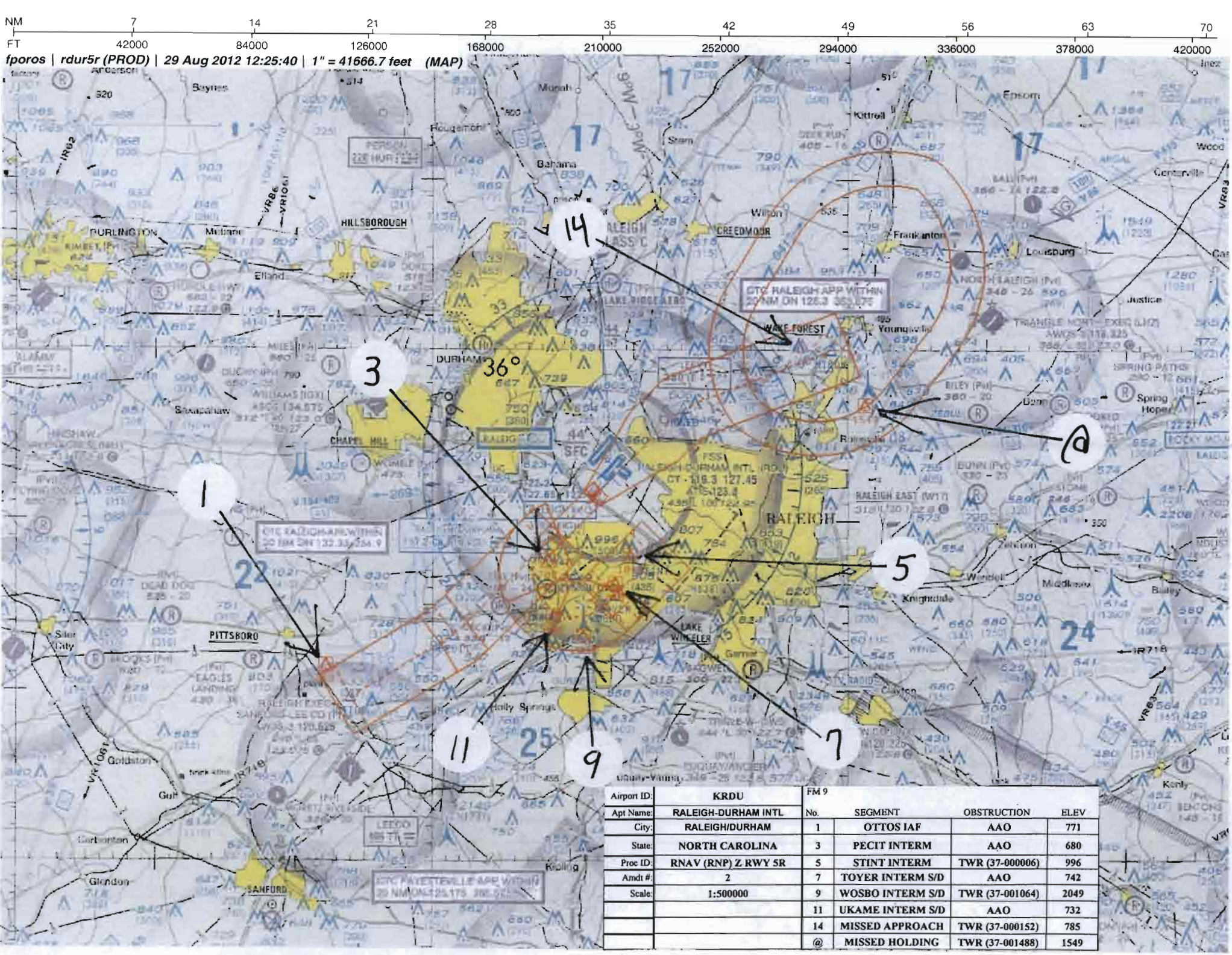
NM 1 2 3 4 5 6 7 8 9 10 11 12 13 14

FT 8000 16000 24000 32000 40000 48000 56000 64000 72000 80000

fporos | rdur5r (PROD) | 29 Aug 2012 12:25:05 | 1" = 8333.3 feet (MAP)



		FM 9			
Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM		RNP 0.30 FINAL	ASC	
State:	NORTH CAROLINA	9	MISSED PEN	TREE (KRDU0029)	431
Proc ID:	RNAV (RNP) Z RWY 5R				
Amdt #:	2				
SCALE:	1:100000				



Airport ID:	KRDU
Apt Name:	RALEIGH-DURHAM INTL
City:	RALEIGH/DURHAM
State:	NORTH CAROLINA
Proc ID:	RNAV (RNP) Z RWY 5R
Amdt #:	2
Scale:	1:500000

FM 9

No.	SEGMENT	OBSTRUCTION	ELEV
1	OTTOS IAF	AAO	771
3	PECIT INTERM	AAO	680
5	STINT INTERM	TWR (37-000006)	996
7	TOYER INTERM S/D	AAO	742
9	WOSBO INTERM S/D	TWR (37-001064)	2049
11	UKAME INTERM S/D	AAO	732
14	MISSED APPROACH	TWR (37-000152)	785
@	MISSED HOLDING	TWR (37-001488)	1549

US DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

RNAV (RNP) - STANDARD, INSTRUMENT APPROACH PROCEDURE, TITLE 14 CFR PART 97.33

Bearings, headings, courses, and radials are magnetic. Elevations and altitudes are in feet, MSL, except HAT, HAA, TCH, and RA. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles unless otherwise indicated, except visibilities which are in statute miles or in feet RVR.

TERMINAL ROUTES

FROM	TO	COURSE AND DISTANCE	ALTITUDE
OTTOS (IAF)	PECIT (TF) (FB) (RNP 1.00)	066.40 / 7.20	4300
PECIT (IF)	STANZ (TF) (FB) (RNP 1.00)	052.04 / 7.55	1900
STINT (IF)	TOYER (TF) (FB) (RNP 1.00)	232.19 / 3.19	5000
TOYER	WOSBO (TF) (FB) (RNP 1.00)	232.22 / 0.80	4700
WOSBO	UKAME (RF) (FB) (RNP 1.00)	(2.50 NM RADIUS CW (CFVVM))/3.97	3200
(SEE FORM 8260-10)			

MISSED APPROACH

RNP: DA

CLIMB TO 3000 ON TRACK 052.13 TO HOKEB AND ON TRACK 075.88 TO HIKOR AND HOLD.

1. PT ____ SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT STANZ
3. FAC: 052.10 FAF: ____ DIST FAF TO MAP: ____ THLD: ____
4. MIN. ALT: STANZ 1900
5. DIST TO THLD FROM OM: 4.53 MM: ____ IM: ____ 150 HAT: ____ 100 HAT: ____ GS ANT: ____
6. MIN GS INCPT: 1900 GS ALT AT: STANZ 1900 OM: ____ MM: ____ IM: ____
7. GS ANGLE: 3.00 TCH: 59.3# 34:1 IS CLEAR
8. MSA FROM: RW05R 3400

ADDITIONAL FLIGHT DATA:
HOLD NE, RT, 223.98 INBOUND.
DISTANCE TO THLD FROM 312 HATH: 0.79 NM.
CHART MANDATORY 6000 AT OTTOS.
CHART MANDATORY 5000 AT STINT.
TCH 456.7 MSL (DO NOT CHART).
ROUTE TYPE: A, H.
ROUTE TYPE QUALIFIER 1: F
ROUTE TYPE QUALIFIER 2: S
CHART LOC RWY 5L

MAG VAR: 7W EPOCH YEAR: 1985

MINIMUMS

TAKEOFF: SEE FAA FORM 8260-15A FOR THIS AIRPORT ALTERNATE: N A STANDARD

CATEGORY =====>	A			B			C			D			E		
	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA	DH/MDA	VIS	HAT/HAA
AUTHORIZATION REQUIRED															
RNP 0.30 DA	709	2400	312	709	2400	312	709	2400	312	709	2400	312			

NOTES:
CHART NOTE: FOR UNCOMPENSATED BARO-VNAV SYSTEMS, PROCEDURE NA BELOW -9C (16F) OR ABOVE 54C (130F).
CHART PROFILE NOTE: VGSI AND RNAV GLIDEPATH NOT COINCIDENT.
CHART PLANVIEW NOTE AT STINT: MAX 210 KIAS.
CHART PLANVIEW NOTE AT OTTOS: MAX 230 KIAS.
(SEE FORM 8260-10)

QUALITY CHECKED

CITY AND STATE	ELEVATION: 435 THRE: 397	FACILITY IDENTIFIER:	PROCEDURE NO./AMDT NO./EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 5R, AMDT 2	AMDT: 1B
				DATED 01/12/2012

ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
[ ] YES [X] NO		ROUTINE

COORDINATED WITH:

ATA	AAT	ALPA	APA	AOPA	NBAA	OTHER (specify)
X		X	X	X	X	X ZDC, RDU APP CON, RDU ATCT, EASTERN FPT, AMGR.

FLIGHT CHECKED BY		
NAME: CURT E. DRAPER	FIFO	DATE: 11/6/12

DEVELOPED BY		
NAME: RONALD SALPINO	FIFO AJV-352	DATE: 08/07/2012

APPROVED BY		
NAME: DARRYEL ADAMS MANAGER	FIFO AJV-352	DATE:

CHANGES:

1. RF SEGMENT FIX CHANGES, IF CHANGED FROM BOTKN TO STINT, BRING CHANGED TO TOYER, AND STEPDOWN FIXES WOSBO AND UKAME ADDED.
2. CHANGED RNP LEVEL FOR THE RF SEGMENT FROM 0.50 TO 1.00 AND RF TURN RADIUS CHANGED FROM 2.85 TO 2.5.
3. RF SEGMENT SPEED CHANGED FROM 180 TO 210.
4. PFAF ALTITUDE RAISED FROM 1700 TO 1900.
5. DISTANCE PFAF TO THRESHOLD CHANGED FROM 3.9 TO 4.5.
6. IAF CHANGED FROM NEDIE TO OTTOS.
7. CHARTED MANDATORY ALTITUDE 6000 AT OTTOS.
8. ADDED STEPDOWN FIX (UKAME) ON THE RF SEGMENT.
9. FINAL COURSE CHANGED FROM 052.11 TO 052.10.
10. HAT CHANGED FROM 289 TO 312.
11. HIGH TEMP CHANGED FROM 47C (117F) TO 54C (130F).
12. TCH CHANGED FROM 55.2 TO 59.3.

REASONS:

1, 6, 7. TO COINCIDE WITH THE STARS BEING DEVELOPED FOR KRDU.
2, 3. REQUEST BY THE USERS AND DUE TO CHANGES IN CRITERIA ALLOWING FOR INCREASED BANK ANGLE.
4. TO MINIMIZE EXCESSIVE DESCENT GRADIENT FROM THE RF SEGMENT.
5. DISTANCE INCREASED DUE TO PFAF ALTITUDE BEING RAISED.
8. TO ALLOW FOR DESCENT TO PFAF ALTITUDE.
9. DUE TO PFAF LOCATION CHANGE.
10. HAT MEASURED FROM TCH INSTEAD OF TDZE.
11. NEW HIGH TEMP CALCULATION PER AFS.
12. TO MATCH ILS TCH.

12/17/12: THIS IS AN UPDATED COPY OF THE FORM DEVELOPED ON 08/07/12.

1. ADDED CHART PLANVIEW NOTE: RADAR REQUIRED FROM TOYER TO WOSBO.
2. CORRECTED SPELLING OF THE WORD MANDATORY IN ADDITIONAL FLIGHT DATA.
3. CORRECTED THE SPELLING OF CRITERIA AND RADIUS IN CHANGES AND REASONS ITEMS 2 AND 3..

QUALITY CHECKED

TERMINAL ROUTES, (CONT.):

FROM	TO	COURSE AND DISTANCE	ALTITUDE
UKAME	STANZ (RF) (FB) (RNP 1.00)	(2.50 NM RADIUS CW (CFVVM) / 3.88	1900
STANZ (FAF)	RW05R (MAP) (TF) (FO)	052.10 / 4.53	
RW05R (MAP)	HOKEB (TF) (FB) (RNP 1.00)	052.13 / 6.82	
HOKEB	HIKOR (TF) (FO) (RNP 1.00)	075.88 / 9.35	3000

NOTES, (CONT.):
CHART PROFILE NOTE: SEE PLANVIEW FOR MULTIPLE IF LOCATIONS.
CHART PLANVIEW NOTE ADJACENT TO STINT: RF REQUIRED.
CHART NOTE: GPS REQUIRED.
CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED WITH ILS OR LOC RWY 5L, RNAV (GPS) Y RWY 5L, EXCEPT FOR ARRIVALS AT STINT.
CHART NOTE: USE OF FD OR AP PROVIDING RNAV TRACK GUIDANCE REQUIRED DURING SIMULTANEOUS OPERATIONS.
CHART NOTE: FOR INOPERATIVE MALSR, INCREASE RNP 0.30 ALL CATS VISIBILITY TO RVR 5000.
CHART PLANVIEW NOTE: RADAR REQUIRED FROM TOYER TO WOSBO.

QUALITY CHECKED

ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
☐ YES ☐ NO		

COORDINATED WITH:

ATA	AAT	ALPA	APA	AOPA	NBAA	OTHER (specify)
☐	☐	☐	☐	☐	☐	☐ _____

FLIGHT CHECKED BY		
NAME:	FIFO	DATE:
DEVELOPED BY		
NAME:	FIFO	DATE:
APPROVED BY		
NAME:	FIFO	DATE:

CHANGES:

REASONS:

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

RNAV (RNP) STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICES - **FAR PART 97.33**

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ARINC PACKET - 424-18 - RNAV (RNP)

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                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        --------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   CFVVM K70    W     N35465408W078493728                      W0090     NAR           CNF(CFVVM)
        SUSAEAENRT   HIKOR K70    C   L N36000342W078310865                      W0092     NAR           HIKOR
        SUSAEAENRT   HOKEB K70    W     N35564153W078415328                      W0091     NAR           HOKEB
        SUSAEAENRT   OTTOS K70    W     N35394018W079055805                      W0088     NAR           OTTOS
        SUSAEAENRT   PECIT K70    C   L N35432019W078582139                      W0088     NAR           PECIT
        SUSAEAENRT   STANZ K70    W     N35484051W078514741                      W0089     NAR           STANZ
        SUSAEAENRT   STINT K70    W     N35475639W078435877                      W0090     NAR           STINT
        SUSAEAENRT   TOYER K70    W     N35454144W078464542                      W0090     NAR           TOYER
        SUSAEAENRT   UKAME K70    W     N35450989W078515007                      W0089     NAR           UKAME
        SUSAEAENRT   WOSBO K70    W     N35450745W078472744                      W0090     NAR           WOSBO

                 1         2         3         4         5         6         7         8         9         0         1         2         3
AIRPORT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        --------------------------------------------------------------------------------------------------------------------------------
        SUSAP KRDUK7ARDU     0     100YHN35523950W078471490W007000435         1800018000C    MNAR    RALEIGH-DURHAM INTL

                 1         2         3         4         5         6         7         8         9         0         1         2         3
SEGMENT 123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        --------------------------------------------------------------------------------------------------------------------------------
        SUSAP KRDUK7FH05RZ AOTTOS 010OTTOSK7EA0E  A    IF                                 06000    18000230              A-FS
        SUSAP KRDUK7FH05RZ AOTTOS 020PECITK7EA0E  B 010TF                               + 04300                          A FS
        SUSAP KRDUK7FH05RZ AOTTOS 030STANZK7EA0EE   010TF                               + 01900                          A FS
        SUSAP KRDUK7FH05RZ ASTINT 010STINTK7EA0E  B    IF                                 05000    18000210              A-FS
        SUSAP KRDUK7FH05RZ ASTINT 020TOYERK7EA0E    010TF                               + 05000                          A FS
        SUSAP KRDUK7FH05RZ ASTINT 030WOSBOK7EA0E    010TF                               + 04700                          A FS
        SUSAP KRDUK7FH05RZ ASTINT 040UKAMEK7EA0E   R010RF       0025002322    32310040  + 03200                CFVVM K7EAA FS
        SUSAP KRDUK7FH05RZ ASTINT 050STANZK7EA0EE  R010RF       0025003231    05210039  + 01900                CFVVM K7EAA FS
        SUSAP KRDUK7FH05RZ H      020STANZK7EA1E  F    IF                               + 01900    18000       RW05R K7PGA FS
        SUSAP KRDUK7FH05RZ H      020STANZK7EA2W                                            A031                           FS
        SUSAP KRDUK7FH05RZ H      030RW05RK7PG0GY M 031TF                                 00457            -300          A FS
        SUSAP KRDUK7FH05RZ H      040HOKEBK7EA0E M  010TF                                                                A FS
        SUSAP KRDUK7FH05RZ H      050HIKORK7EA0EY   010TF                               + 03000                          A FS
        SUSAP KRDUK7FH05RZ H      060HIKORK7EA0EE  R020HM                     22400040  + 03000                          A FS

                 1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        --------------------------------------------------------------------------------------------------------------------------------
        SUSAP KRDUK7GRW05R   0075000521 N35515267W078475042+0400     +0089100397000059150IIRDU1

                 1         2         3         4         5         6         7         8         9         0         1         2         3
MSA     123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
```

QUALITY CHECKED

CITY AND STATE	ELEVATION: 435 THRE: 397	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 5R, AMDT 2	AMDT: 1B
				DATED: 01/12/2012

ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
☐ YES ☐ NO		

COORDINATED WITH:

ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER (specify) ☐ _____

FLIGHT CHECKED BY		
NAME:	FIFO	DATE:
DEVELOPED BY		
NAME:	NFPG	DATE:
APPROVED BY		
NAME:	NFPG	DATE:

CHANGES:

REASONS:

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SUSAP KRDUK7SRW05RK7PG          0   18018003425                                                    M
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CITY AND STATE	ELEVATION: 435 THRE: 397	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 5R, AMDT 2	AMDT: 1B
				DATED: 01/12/2012

ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
☐ YES ☐ NO		

COORDINATED WITH:

ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER (specify) ☐ _____

FLIGHT CHECKED BY		
NAME:	FIFO	DATE:
DEVELOPED BY		
NAME:	NFPG	DATE:
APPROVED BY		
NAME:	NFPG	DATE:

CHANGES:

REASONS:

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

RNAV (RNP) STANDARD INSTRUMENT APPROACH PROCEDURE

FLIGHT STANDARDS SERVICES - **FAR PART 97.33**

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ARINC SUMMARY - 424-18 - RNAV (RNP)

ROUTES	TRANSITION	FIX	SEQ	USE	PATH	TURN	FO/FB	RNP	MAG(TRUE)	DISTANCE	ALTITUDE	SPEED
	OTTOS	OTTOS	010	IAF	IF		FB				AT 06000	AB 230
	OTTOS	PECIT	020		TF		FB	1.0			AA 04300	
	OTTOS	STANZ	030		TF		FB	1.0			AA 01900	
	STINT	STINT	010		IF		FB				AT 05000	AB 210
	STINT	TOYER	020		TF		FB	1.0			AA 05000	
	STINT	WOSBO	030		TF		FB	1.0			AA 04700	
	STINT	UKAME	040		RF	R	FB	1.0		004.0	AA 03200	
	STINT	STANZ	050		RF	R	FB	1.0		003.9	AA 01900	
		STANZ	020	FAF	IF		FB				AA 01900	
		RW05R	030	MAP	TF		FO	0.3			AT 00457	

MISSED APPROACH	FIX	SEQ	USE	PATH	TURN	FO/FB	RNP	MAG(TRUE)	DISTANCE	ALTITUDE	SPEED
	HOKEB	040		TF		FB	1.0				
	HIKOR	050		TF		FO	1.0			AA 03000	
	HIKOR	060		HM	R	FO	2.0	224.0(217.0T)	004.0	AA 03000	

POINT DATA	WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
	CFVVM	N354654.08	W0784937.28	N3546.901	W07849.621
	HIKOR	N360003.42	W0783108.65	N3600.057	W07831.144
	HOKEB	N355641.53	W0784153.28	N3556.692	W07841.888
	OTTOS	N353940.18	W0790558.05	N3539.670	W07905.968
	PECIT	N354320.19	W0785821.39	N3543.337	W07858.357
	STANZ	N354840.51	W0785147.41	N3548.675	W07851.790
	STINT	N354756.39	W0784358.77	N3547.940	W07843.980
	TOYER	N354541.44	W0784645.42	N3545.691	W07846.757
	UKAME	N354509.89	W0785150.07	N3545.165	W07851.835
	WOSBO	N354507.45	W0784727.44	N3545.124	W07847.457
	RW05R	N355152.67	W0784750.42	N3551.878	W07847.840

RUNWAY DATA	RWY	THRESHOLD ELEVATION	TCH
	RW05R	00397	59

QUALITY CHECKED 1

CITY AND STATE	ELEVATION: 435 THRE: 397	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 5R, AMDT 2	AMDT: 1B
				DATED: 01/12/2012

ALL AFFECTED PROCEDURES REVIEWED?	COORDINATES OF FACILITIES	REQUIRED EFFECTIVE DATE
☐ YES ☐ NO		

COORDINATED WITH:

ATA ☐ AAT ☐ ALPA ☐ APA ☐ AOPA ☐ NBAA ☐ OTHER ☐ (specify) _____

FLIGHT CHECKED BY		
NAME:	FIFO	DATE:
DEVELOPED BY		
NAME:	NFPG	DATE:
APPROVED BY		
NAME:	NFPG	DATE:

CHANGES:

REASONS:

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

PART - A OBSTRUCTION DATA

1. APP SEGMENT	FROM	TO	OBSTRUCTION	COORDINATES	ELEV. MSL	ROC	ALT. ADJUSTMENTS	MIN. ALT.
INITIAL	OTTOS	PECIT	1. AAO	354106.00N/0790748.00W	771 (4E)	1000	AC98 AT2431	4300
(RNP 1.00)			2. TERRAIN	354130.00N/0790700.00W	506 (500)		AS1500	2000
INTERMEDIATE	PECIT	STANZ	3. AAO	354715.00N/0785136.00W	680 (4E)	500	AC98 AT622	1900
(RNP 1.00)			4. TERRAIN	354715.00N/0785136.00W	480 (500)		AS1000	1500
INTERMEDIATE	STINT	TOYER	5. TOWER (37-000006)	354736.00N/0784540.00W	996 (3D)	500	AC50 AT3454	5000
(RNP 1.00)			6. TERRAIN	354636.00N/0784700.00W	562 (600)		AS1500	2100
INTERMEDIATE:	TOYER	WOSBO	7. AAO	354557.00N/0784645.00W	742 (4E)	500	AC98 AT3360	4700
STEPDOWN			8. TERRAIN	354515.00N/0784654.00W	519 (500)		AS1500	2000
(RNP 1.00)								
INTERMEDIATE:	WOSBO	UKAME	9. TOWER (37-001064)	354251.00N/0784903.00W	2049 (5D)	500	AT601 AC50	3200
STEPDOWN			10. TERRAIN	354239.00N/0784824.00W	539 (500)		AS1500	2000
(RNP 1.00)								
INTERMEDIATE:	UKAME	STANZ	11. AAO	354403.00N/0785112.00W	732 (4E)	500	AC98 AT557 VEB13	1900
STEPDOWN			12. TERRAIN	354533.00N/0785121.00W	496 (500)		AS1000	1500
(RNP 1.00)								
FINAL: RNP 0.30	STANZ	RW05R				ASC	MA13	709/312
2. PROCEDURE TURN	NA							
3. MISSED APPROACH MAP:								
ELEV:								

4. CIRCLING AREA	DISTANCE	HT. ABV. ARPT. REQUIRED	HT. ABV. ARPT. ACTUAL
CATEGORY A	1.3 NM	350	
CATEGORY B	1.5 NM	450	
CATEGORY C	1.7 NM	450	
CATEGORY D	2.3 NM	550	
CATEGORY E	4.5 NM	550	

5. MINIMUM SAFE ALTITUDES — PRIMARY NAVAID: RW05R

SECTOR	OBSTRUCTION	BRG/DIST	ELEVATION (MSL)	M S A	SECTOR	OBSTRUCTION	BRG/DIST	ELEVATION (MSL)	M S A
360-360	TWR (37-002504)	138/ 17.4	2349 (1A)	3400					

CITY AND STATE	ELEVATION: 435 / AIRPORT NAME:	FACILITY	PROCEDURE AND AMENDMENT NO:	REGION
RALEIGH/DURHAM, NC	RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 5R, AMDT 2	ASO

PART B - SUPPLEMENTAL DATA

1. COMMUNICATIONS WITH:	2. WEATHER SERVICE			3. ALTIMETER SETTING
RDU APP CON RDU TOWER ZDC ARTCC		N W S	OTHER: ASOS	SOURCE: KRDU
		F A A		DISTANCE: 0
SATISFACTORY ON:		A / C		HOURS REMOTE OPERATION: 0
X V H F X U H F H F	LOCATION: KRDU			ADJUSTMENT: 0

4. MONITOR STATUS	PRIMARY NAVAID:	
	MONITOR POINT:	
	HRS OPTN:	CAT 1
		CAT 3
5. APPROACH & RUNWAY LIGHTING	X	ALSF-2 23R
		(S) SALS
	X	MALSR 05R, 05L, 23L
	X	HIRL 05R, 05L, 23R, 23L
	X	MIRL 14, 32
	X	REIL 32
	X	TDZ 05L, 23R, 23L
	X	C/L 05R, 05L, 23R, 23L
	X	OTHER (SPECIFY) TAXI WAY 05L PAPI-4L 05R, 05L, 23R, 23L, 32
6. RUNWAY MARKINGS	BASIC	
	ALL WEATHER	PIR-G 05R, 05L, 23R, 23L
	INSTRUMENT	NPI-G 14, 32
7. RUNWAY VISUAL RANGE	APPROACH	05R, 05L, 23R, 23L
	MIDFIELD	05L, 23R
	ROLL OUT	05R, 05L, 23R, 23L
8. GLIDE PATH	GP ANGLE: 3.00	ELEV RWY THRESHOLD: 397.4
	DISTANCE FROM RWY:	ELEV GP ANTENNA:
		THRESHOLD CROSSING HEIGHT: 59.3
9. FINAL APPROACH COURSE AIMING	X	RUNWAY THRESHOLD — FT. FROM THRESHOLD
	X	ON CENTERLINE — FT. FROM CENTERLINE

10. WAIVERS: 2

ORDER 8260.52, PARAGRAPH 2.3; RNP SEGMENT LENGTH.
ORDER 8260.52, PARAGRAPH 2.4; TABLE 2-1 RNP SEGMENT DESCENT GRADIENT.

PART D - PREPARED BY:	DATE:
RONALD SALPINO	08/07/2012
TITLE: AERONAUTICAL INFORMATION SPECIALIST	OFFICE: AJV-352

PART C - REMARKS:

ACTUAL HIGH TEMP: 54C (130F)

ISA DEVIATION USED: -23.13

PRECIPITOUS TERRAIN EVALUATION COMPLETED.

SEE ATTACHED AIRSPACE LETTER.

MAX SPEED STINT TO STANZ - 210 KIAS.

MAX SPEED OTTOS TO STANZ - 230 KIAS.

RF TURN RADIUS/BANK ANGLE COMPUTATIONS:

SEGMENT: UKAME - STANZ, ALT: 3135, KIAS: 210. KTAS: 223.17, HAA: 2700', VKTW: 53, TR: 2.5NM.
RF CENTER POINT: CFVVM 354654.08N/0784937.28W
BA: 23.99

SEGMENT: WOSBO - STANZ, ALT: 4713.29, KIAS: 210. KTAS: 228.46, HAA: 4278.29', VKTW: 53, TR: 2.5 NM.
RF CENTER POINT: CFVVM 354654.08N/0784937.28W
BA: 24.81

TF - TF TURN SEGMENT:

SEGMENT: OTTOS - PECIT, ALT: 6100, KIAS: 230, KTAS: 257.60, HAA: 5665', VKTW: 75.65, BA: 18.00.

AVERAGE COLD TEMPERATURE BASED ON 5 YEAR HISTORY. (2007 - 2011)

CONNECTS TO BLOGS AND KAROO RNAV STARS.

VKTW WINDS OBTAINED FROM MITRE DATA.

VGSI DATA: 3.00/55 TCH

QUALITY CHECKED 4

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

PART - A OBSTRUCTION DATA

1. APP SEGMENT	FROM	TO	OBSTRUCTION	COORDINATES	ELEV. MSL	ROC	ALT. ADJUSTMENTS	MIN. ALT.
MISSED APPROACH:	**DA**	**RW05R**				**ASC**		
(RNP 0.30 - 1.00)		**(40:1)**						
MISSED APPROACH:	**RW05R**	**HOKEB**				**ASC**		
(RNP 1.00)		**(40:1)**						
MISSED APPROACH:	**HOKEB**	**HIKER**				**ASC**		
(RNP 1.00)		**(40:1)**						

3. MISSED APPROACH									
	MAP:	**DA**	**HIKOR**	**13. TREE (KRDU0029)**	**355129.47N/0784811.11W**	**431 (1A)**	**ASC**	**AC3**	**3000**
				14. TWR (37-000152)	**355956.00N/0783315.00W**	**785 (1D)**	**1000**	**AC50**	**1900**
	ELEV:	**410**		**15. TERRAIN**	**360127.00N/0783336.00W**	**545 (500)**		**AS1500**	**2000**

4. CIRCLING AREA	DISTANCE	HT. ABV. ARPT. REQUIRED	HT. ABV. ARPT. ACTUAL
CATEGORY A	1.3 NM	350	
CATEGORY B	1.5 NM	450	
CATEGORY C	1.7 NM	450	
CATEGORY D	2.3 NM	550	
CATEGORY E	4.5 NM	550	

5. MINIMUM SAFE ALTITUDES — PRIMARY NAVAID:

SECTOR	OBSTRUCTION	BRG/DIST	ELEVATION (MSL)	M S A	SECTOR	OBSTRUCTION	BRG/DIST	ELEVATION (MSL)	M S A

CITY AND STATE		FACILITY	PROCEDURE AND AMENDMENT NO:	REGION
RALEIGH/DURHAM, NC	**ELEVATION: 435** AIRPORT NAME: **RALEIGH-DURHAM INTL**	**RNAV**	**RNAV (RNP) Z RWY 5R, AMDT 2**	**ASO**

PART B - SUPPLEMENTAL DATA

1. COMMUNICATIONS WITH:	2. WEATHER SERVICE		3. ALTIMETER SETTING
SATISFACTORY ON:	N W S	OTHER:	SOURCE:
	F A A		DISTANCE:
	A / C		HOURS REMOTE OPERATION:
V H F / U H F / H F	LOCATION:		ADJUSTMENT:

4. MONITOR STATUS	PRIMARY NAVAID:	
	MONITOR POINT:	
	HRS OPTN: CAT 1	
	HRS OPTN: CAT 3	

5. APPROACH & RUNWAY LIGHTING		**ALS**
		(S) SALS
		MALS
		HIRL
		MIRL
		REIL
		TDZ
		C/LINE
		OTHER (SPECIFY)

6. RUNWAY MARKINGS	BASIC	
	ALL WEATHER	
	INSTRUMENT	
7. RUNWAY VISUAL RANGE	APPROACH	
	MIDFIELD	
	ROLL OUT	
8. GLIDE PATH	GP ANGLE:	ELEV RWY THRESHOLD:
	DISTANCE FROM RWY:	ELEV GP ANTENNA:
		THRESHOLD CROSSING HEIGHT:

9. FINAL APPROACH COURSE AIMING		RUNWAY THRESHOLD	FT. FROM THRESHOLD
		ON CENTERLINE	FT. FROM CENTERLINE

10. WAIVERS:

PART D - PREPARED BY:	DATE:
TITLE:	OFFICE:

PART C - REMARKS:
CONTINUED.

RADIO FIX AND HOLDING DATA RECORD

NAME: CFVVM **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 354654.08N/0784937.28W **TYPE:** CNF

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (RNP) Z RWY 5L			KRDU	RALEIGH/DURHAM	NC (US)

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 01/10/2013

DEVELOPED BY: **DATE:** 08/31/2012 **OFFICE:** AJV-352 **NAME:** RONALD SALPINO

APPROVED BY: **DATE:** **OFFICE:** AJV-352 **NAME:** DARRYEL ADAMS

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: EST
ARTCC: ZDC
ATC FACILITY: RDU APP CON
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: OTTOS **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 353940.18N/0790558.05W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (RNP) Z RWY 5L			KRDU	RALEIGH/DURHAM	NC (US)
IAP	RNAV (RNP) Z RWY 5R			KRDU	RALEIGH/DURHAM	NC (US)
STAR	MALNR (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: STAR, IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 01/10/2013

DEVELOPED BY: **DATE:** 08/02/2012 **OFFICE:** AJV-352 **NAME:** RONALD SALPINO

APPROVED BY: **DATE:** **OFFICE:** AJV-352 **NAME:** DARRYEL ADAMS

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: EST
ARTCC: ZDC
ATC FACILITY: RDU APP CON
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: STANZ **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 354840.51N/0785147.41W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** MODIFY

HOLDING: **HOLDING TYPE OF ACTION:** NO CHANGE

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (RNP) Z RWY 5R			KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 1 **DATE OF REVISION:** 01/10/2013

REASON FOR REVISION:
FIX MOVED 3990.07 FEET SOUTHWEST.
CHANGED ATL FPO TO EASTERN FPO.

DEVELOPED BY: **DATE:** 08/03/2012 **OFFICE:** AJV-352 **NAME:** RONALD SALPINO

APPROVED BY: **DATE:** **OFFICE:** AJV-352 **NAME:** DARRYEL ADAMS

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: EST
ARTCC: ZDC
ATC FACILITY: RDU APP CON
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: UKAME **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 354509.89N/0785150.07W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (RNP) Z RWY 5R			KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 01/10/2013

DEVELOPED BY: **DATE:** 08/29/2012 **OFFICE:** AJV-352 **NAME:** RONALD SALPINO

APPROVED BY: **DATE:** **OFFICE:** AJV-352 **NAME:** DARRYEL ADAMS

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: EST
ARTCC: ZDC
ATC FACILITY: RDU APP CON
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: WOSBO **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 354507.45N/0784727.44W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (RNP) Z RWY 5R			KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 01/10/2013

DEVELOPED BY: **DATE:** 08/22/2012 **OFFICE:** AJV-352 **NAME:** RONALD SALPINO

APPROVED BY: **DATE:** **OFFICE:** AJV-352 **NAME:** DARRYEL ADAMS

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: EST
ARTCC: ZDC
ATC FACILITY: RDU APP CON
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: HIKOR **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 360003.42N/0783108.65W **TYPE:** WP, DME

INFO ONLY

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** NO CHANGE

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM FAC NM	FEET	MRA	MAA
1	RALEIGH/DURHAM	RDU	VORTAC	H	063.06	059.06	15.00	15.00		2500	17500

HOLDING: **HOLDING TYPE OF ACTION:** NO CHANGE

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	DME	HOLDING ALTITUDES MIN	MAX	TEMPLATES MIN	MAX
1	NE		WP	043.98	223.98	R		4	3000	6000	5	6

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	TOWER (37-001488)	355626.00N/0782844.00W	1549	5D

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN

REMARKS:
PRECIPITOUS TERRAIN EVALUATION COMPLETED

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
EN ROUTE	V66-615	1				NC (US)
IAP	RNAV (RNP) Z RWY 5R		1	KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: IAP, EN ROUTE LOW

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 1 **DATE OF REVISION:** 11/18/2010

REASON FOR REVISION:
UPDATED REQUIRED CHARTING.

DEVELOPED BY: **DATE:** 03/12/2010 **OFFICE:** AVN-110 **NAME:** HOWARD HAWKINS

APPROVED BY: **DATE:** 10/06/2010 **OFFICE:** AVN-110 **NAME:** GEORGE DAVIS

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: ATL
ARTCC: ZDC
ATC FACILITY: RDU
OTHER:

QUALITY 4 CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: HOKEB **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 355641.53N/0784153.28W **TYPE:** WP

INFO ONLY

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** NO CHANGE

HOLDING: **HOLDING TYPE OF ACTION:** NO CHANGE

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (RNP) Z RWY 5R			KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 1 **DATE OF REVISION:** 11/18/2010

REASON FOR REVISION:
UPDATED REQUIRED CHARTING.

DEVELOPED BY: **DATE:** 03/12/2010 **OFFICE:** AVN-110 **NAME:** HOWARD HAWKINS

APPROVED BY: **DATE:** 10/06/2010 **OFFICE:** AVN-110 **NAME:** GEORGE DAVIS

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: ATL
ARTCC: ZDC
ATC FACILITY: RDU
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: PECIT **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 354320.19N/0785821.39W **TYPE:** WP, RADAR, DME

INFO ONLY

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** MODIFY

FIX MAKE-UP FACILITIES:

FAC	NAME	IDENT	TYPE	CLASS	MAG BRG	TRUE BRG	DME	DIST FROM FAC NM	DIST FROM FAC FEET	MRA	MAA
1	RALEIGH/DURHAM	I-RDU	LOC		232.14	225.14		13.48		4000	4900
2	RALEIGH/DURHAM	RDU	VORTAC	H	229.80	225.80	12.90	12.90		4000	17500

HOLDING: **HOLDING TYPE OF ACTION:** MODIFY

PATTERNS:

PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	SW		WP	232.04	052.04	R		4	3300	6000	5	6

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	COOL TWR (37-000881)	353805.00N/0785704.00W	786	5D

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN.

REMARKS:
ENROUTE CHARTING (FAC 2)
ILS OR LOC RWY 5R FAC 2 DME ONLY.
PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
EN ROUTE	V3-66-155	2				(US)
IAP	ILS OR LOC RWY 5R	1, 2		KRDU	RALEIGH/DURHAM	NC (US)
IAP	RNAV (GPS) Y RWY 5R		1	KRDU	RALEIGH/DURHAM	NC (US)
IAP	RNAV (RNP) Z RWY 23L		1	KRDU	RALEIGH/DURHAM	NC (US)
IAP	RNAV (RNP) Z RWY 5R			KRDU	RALEIGH/DURHAM	NC (US)
STAR	RASKL (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: IAP, EN ROUTE LOW

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 1 **DATE OF REVISION:** 08/27/2009

REASON FOR REVISION:
CORRECTED FIX MAKE UP.
UPDATED HOLDING SPEEDS, ALTITUDES AND OBSTACLE INFORMATION.
FIX MOVED 486.60' TO CENTERLINE LOCATION

DEVELOPED BY: **DATE:** 01/21/2009 **OFFICE:** AVN-110 **NAME:** TONY LAWSON

APPROVED BY: **DATE:** 07/14/2009 **OFFICE:** AVN-110 **NAME:** PETER GETZ

SIGNATURE:

DISTRIBUTION: **NFDC**
FPO: EST
ARTCC: ZDC
ATC FACILITY: RDU
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: STINT **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 354756.39N/0784358.77W **TYPE:** WP

INFO ONLY

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (RNP) Z RWY 5R			KRDU	RALEIGH/DURHAM	NC (US)
STAR	BLOGS (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)
STAR	KAROO (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: STAR, IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 01/10/2013

DEVELOPED BY: **DATE:** 07/13/2012 **OFFICE:** AJV-352 **NAME:** PETER GUIMOND

APPROVED BY: **DATE:** **OFFICE:** AJV-352 **NAME:** DARRYEL ADAMS

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: EST
ARTCC: ZDC
ATC FACILITY: RDU APP CON
OTHER:

QUALITY CHECKED

RADIO FIX AND HOLDING DATA RECORD

NAME: TOYER **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 354541.44N/0784645.42W **TYPE:** WP

AIRSPACE DOCKET: **FIX TYPE OF ACTION:** ESTABLISH

INFO ONLY

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	RNAV (RNP) Z RWY 5R			KRDU	RALEIGH/DURHAM	NC (US)
STAR	BLOGS (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)
STAR	KAROO (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: STAR, IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: ORIG **DATE OF REVISION:** 01/10/2013

DEVELOPED BY: **DATE:** 07/13/2012 **OFFICE:** AJV-352 **NAME:** PETER GUIMOND

APPROVED BY: **DATE:** **OFFICE:** AJV-352 **NAME:** DARRYEL ADAMS

SIGNATURE:

DISTRIBUTION:
NFDC
FPO: EST
ARTCC: ZDC
ATC FACILITY: RDU APP CON
OTHER:

TERMINAL AIRSPACE DATA REQUIREMENTS

CITY: **RALEIGH-DURHAM INTL** STATE: **NC**

AIRPORT NAME: **RALEIGH/DURHAM** ID: **KRDU**

PROCEDURE: **RNAV (RNP) Z RWY 5R** AMDT: **2**

DOCKET#: **NOT REQUIRED**
(96-AXX-X/Required/Not Required)

ALL DIST TO 1/100 NM; ELEV TO NEAREST FT; COORD TO 1/100 SEC; DEG TO 1/100 DG.

1. Distance from **THLD** to 1000' point **2.84**
   (Enter THLD, FAF, ARP, FACILITY, as appropriate)
2. Width of **FINAL** segment at 1000' point **1.20**
   (Enter appropriate segment, final, intermediate, etc.)
3. True Course of **FINAL** segment containing 1000' point **045.10**
4. High Terrain in **FINAL** segment containing 1000' point **437**
5. Distance from **THLD** to 1500' point **5.90**
   (If 1500' point in PT maneuvering area or holding pattern note in remarks)
6. Width of **INTERMEDIATE** segment at 1500' point **4.00**
7. True Course of **INTERMEDIATE** segment containing 1500' point *****
8. High Terrain in **INTERMEDIATE** segment containing 1500' point **496**
9. Threshold Coordinates (if straight-in) ... **355152.67N / 0784750.42W**
10. ARP Coordinates ..... **355239.50N / 0784714.90W**
11. Runway Approach End and distance furthest from ARP ..... RWY **23R**
    Distance **1.07** NM
12. FAF Coordinates ..... **354840.51N / 0785147.41W**

REMARKS: Approach/Drawing attached.

***RF SEGMENT WOSBO TO STANZ, RADIUS TURN CENTERPOINT CNF (CFVVM) ARC RADIUS 2.50 NM, THIS IS AIRSPACE LETTER 1 OF 2.**

TERMINAL AIRSPACE DATA REQUIREMENTS

CITY: **RALEIGH-DURHAM INTL** STATE: **NC**

AIRPORT NAME: **RALEIGH/DURHAM** ID: **KRDU**

PROCEDURE: **RNAV (RNP) Z RWY 5R** AMDT: **2**

DOCKET#: **NOT REQUIRED**
(96-AXX-X/Required/Not Required)

ALL DIST TO 1/100 NM; ELEV TO NEAREST FT; COORD TO 1/100 SEC; DEG TO 1/100 DG.

1. Distance from **THLD** to 1000' point **2.84**
   (Enter THLD, FAF, ARP, FACILITY, as appropriate)
2. Width of **FINAL** segment at 1000' point **1.20**
   (Enter appropriate segment, final, intermediate, etc.)
3. True Course of **FINAL** segment containing 1000' point **045.10**
4. High Terrain in **FINAL** segment containing 1000' point **437**
5. Distance from **THLD** to 1500' point **5.90**
   (If 1500' point in PT maneuvering area or holding pattern note in remarks)
6. Width of **INTERMEDIATE** segment at 1500' point **4.00**
7. True Course of **INTERMEDIATE** segment containing 1500' point **045.20**
8. High Terrain in **INTERMEDIATE** segment containing 1500' point **480**
9. Threshold Coordinates (if straight-in) ... **355152.67N** / **0784750.42W**
10. ARP Coordinates ..... **355239.50N** / **0784714.90W**
11. Runway Approach End and distance furthest from ARP ..... RWY **23R**
    Distance **1.07** NM
12. FAF Coordinates ..... **354840.51N** / **0785147.41W**

REMARKS: Approach/Drawing attached.

***RF SEGMENT WOSBO TO STANZ, RADIUS TURN CENTERPOINT CNF (CFVVM) ARC RADIUS 2.50 NM, THIS IS AIRSPACE LETTER 1 OF 2.**

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURES STANDARDS WAIVER

FLIGHT STANDARDS USE ONLY

CONTROL NO:

1. Flight Procedure Identification:
Raleigh/Durham, NC
Raleigh-Durham INTL (KRDU)
RNAV (RNP) Z RWY 05R

2. Waiver Required and Applicable Standard:

8260.52 PARA 2.3 RNP Segment Length, minimum straight segment (any segment) length is 2 times RNP value or 1 NM, which ever is less. The minimum calculated length for initial segment is less than the required.

3. Reason for Waiver *(Justification for nonstandard treatment)*:

Ground track/procedure design is a collaboration between air carriers, RDU ATC, and FAA PBN Office. Segment length between TOYER and WOSBO is 0.97 NM. Minimum segment length is 1 NM. TOYER is located at an airspace boundary with a required altitude. The beginning of the RF segment could not be collocated at TOYER due to excessive DG.

4. Equivalent Level of Safety Provided:

1. Validated in simulator with satisfactory results.
2. Controllers are required to radar monitor these procedures and are trained to assist aircraft to return to the lateral path when deviations from the designed path may compromise separation standards.
3. Authorization required for this procedure.
4. The intermediate segment was satisfactorily for obstacles based on RNP value of 1.00.

5. How Relocation or Additional Facilities Will Affect Waiver Requirement:

N/A - RNAV procedure

6. Coordination With User Organizations *(Specify)*:

AJV-352 _____

7. SUBMITTED BY

DATE:	Office Identification:	Title:	Signature:
	AJV-35	**MANAGER, TERMINAL PROCEDURES GROUP**	**GREGORY YAMAMOTO**

FAA FORM 8260 - 1 / July 2003 (computer generated)

8. CONTINUATION
Comments:

9. AFS ACTION		
		Approved
		Disapproved
		Not Required

Comments:		
Date:	Routing Symbol:	Signature:

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURES STANDARDS WAIVER

FLIGHT STANDARDS USE ONLY

CONTROL NO:

1. Flight Procedure Identification:
RALEIGH/DURHAM, NC
RALEIGH-DURHAM INTL (KRDU)
RNAV (RNP) Z RWY 5R

2. Waiver Required and Applicable Standard:
Design instrument approach procedure segments to provide descent at the standard gradient. FAAO 8260.52 paragraph 2.4 table 2-1. The descent gradient in the intermediate stepdown segment exceeds that of the final segment. The final segment descent is 318.14 FT/NM (3 degrees). The intermediate stepdown descent gradient from TOYER TO STANZ is 358.38 FT/NM (3.38 degrees).

3. Reason for Waiver *(Justification for nonstandard treatment)*:
Ground track/descent gradient is collaboration between two legacy carriers, Raleigh-Durham air traffic, FAA required Navigation Performance office and Terminal Procedures & Charting Services Team. Procedures provide optimum fuel economy on a repeatable ground track that procedurally separates and blends into existing traffic flow. This procedure is connected to RNAV (GPS) STARs that provide stabilized optimum descent, and predictable operation from the enroute environment to landing. ATC/carriers estimate high use among properly equipped authorized users.

4. Equivalent Level of Safety Provided:
1. Authorization required for this procedure.
2. Procedure provides a shallow straight segment, allowing decel and configuration prior to the RF entry where descent exceeds maximum.
3. Procedure validated in simulator test with satisfactory results.

5. How Relocation or Additional Facilities Will Affect Waiver Requirement:
NA - RNAV Procedure.

6. Coordination With User Organizations *(Specify)*:

AJV-352 _____

7. SUBMITTED BY

DATE:	Office Identification:	Title:	Signature:
	AJV-35	**MANAGER, TERMINAL PROCEDURES GROUP**	**GREGORY YAMAMOTO**

8. CONTINUATION
Comments:

9. AFS ACTION		
		Approved
		Disapproved
		Not Required

Comments:		
Date:	Routing Symbol:	Signature:

DO NOT REMOVE FROM PACKAGE

K~~PDX RNP RWY~~ 10R
SCA~~PO TRANS~~TION
INTERMEDIATE S/D TO PFAF SEGMENT

UKAME → STANZ

PFAF
Calculations

Min Intermediate Segment Alt (a):	
LTP MSL Elevation (b):	
TCH:	
Glidepath Angle (Θ):	
Distance from LTP to PFAF (D):	0.00
	0.00 NM
LTP/FTP Latitude:	
LTP/FTP Longitude:	
True RWY Bearing/True Course:	
PFAF Latitude:	000° 00' 00.00"
PFAF Longitude:	000° 00' 00.00"

Latitude/Longitude valid for straight segment only

VEB
OCS Origin & Slope

Intermediate Segment Altitude:	1900
LTP Elevation:	397.4
Glidepath Angle:	3
TCH:	59.3
RNP Value:	0.30
Δ ISA:	-23.13

Straight In Segment

(*Wingspan =<262*) **LTP to Origin:**	3,588.72'
(*Wingspan =<136*) **LTP to Origin:**	3,378.73'
OCS Slope Ratio:	21.00 : 1

RF Turn Segment | **Bank angle:**

(*Wingspan =<262*) **LTP to Origin:**	NA
(*Wingspan =<136*) **LTP to Origin:**	NA
OCS Slope Ratio:	NA

Version 20

VEB
Temperature Limits

Glidepath Angle:		
Max Glidepath Angle:		
PFAF Elevation:		
LTP Elevation:		
ACT:		
Min Glidepath Angle	#DIV/0!	
NA Below	#DIV/0!	#DIV/0!
NA Above	#DIV/0!	#DIV/0!

Intermediate Segment
VEB ROC

Glidepath Angle	3.00°
LTP MSL Elevation	397.40
TCH (ft)	59.30
OCS Slope	21.00
OCS Origin Distance (ft) *(measured along-track from LTP)*	3,588.72
Obstacle Distance (ft) *(measured along-track from LTP)*	57,083.67
VEB ROC *(at obstacle)*	**513**
Glidepath MSL altitude at Obstacle	3,526.41
OCS MSL altitude at Obstacle	3,013.35

DO NOT REMOVE FROM PACKAGE

KPDX RNP RWY 10R
BCAPOTRANSITION
INTERMEDIATE S/D TO PFAF SEGMENT

PEC IT → STANZ

PFAF
Calculations

Min Intermediate Segment Alt (a):	
LTP MSL Elevation (b):	
TCH:	
Glidepath Angle (Θ):	
Distance from LTP to PFAF (D):	0.00
	0.00 NM
LTP/FTP Latitude:	
LTP/FTP Longitude:	
True RWY Bearing/True Course:	
PFAF Latitude:	000° 00' 00.00"
PFAF Longitude:	000° 00' 00.00"

Latitude/Longitude valid for straight segment only

VEB
OCS Origin & Slope

Intermediate Segment Altitude:	1900
LTP Elevation:	397.4
Glidepath Angle:	3
TCH:	59.3
RNP Value:	0.30
Δ ISA:	-23.13

Straight In Segment

(*Wingspan =<262*) **LTP to Origin:**	3,588.72'
(*Wingspan =<136*) **LTP to Origin:**	3,378.73'
OCS Slope Ratio:	21.00 : 1

RF Turn Segment | Bank angle:	
(*Wingspan =<262*) **LTP to Origin:**	NA
(*Wingspan =<136*) **LTP to Origin:**	NA
OCS Slope Ratio:	NA

Version 2.0

VEB
Temperature Limits

Glidepath Angle:		
Max Glidepath Angle:		
PFAF Elevation:		
LTP Elevation:		
ACT:		
Min Glidepath Angle	#DIV/0!	
NA Below	#DIV/0!	#DIV/0!
NA Above	#DIV/0!	#DIV/0!

Intermediate Segment
VEB ROC

Glidepath Angle	3.00°
LTP MSL Elevation	397.40
TCH (ft)	59.30
OCS Slope	21.00
OCS Origin Distance (ft) *(measured along-track from LTP)*	3,588.72
Obstacle Distance (ft) *(measured along-track from LTP)*	33,137.00
VEB ROC *(at obstacle)*	**394**
Glidepath MSL altitude at Obstacle	2,219.65
OCS MSL altitude at Obstacle	1,825.38