Flight Procedure Tracking Form	Action: FLIGHT CHECK	Task Type: IAP	Date Open: 05/11/2012	Task #: 2011100529630803001	Request #: 20111005296308
Procedure: RNAV (RNP) Z RWY 5 L 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 4 of 4

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

ATTACHED FORMS: 8260-3; 8260-10; 8260-9; 8260-2(S): CFVVL, ORIG; ESTMA-INT, REV 1; HEAVE, ORIG; JEMMY, ORIG; MAPPI, REV 1; OTTOS, ORIG; VANZI, REV 1; ZOSAP, ORIG; (INFO ONLY) SCHOO-INT, REV 3.

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

FIG

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

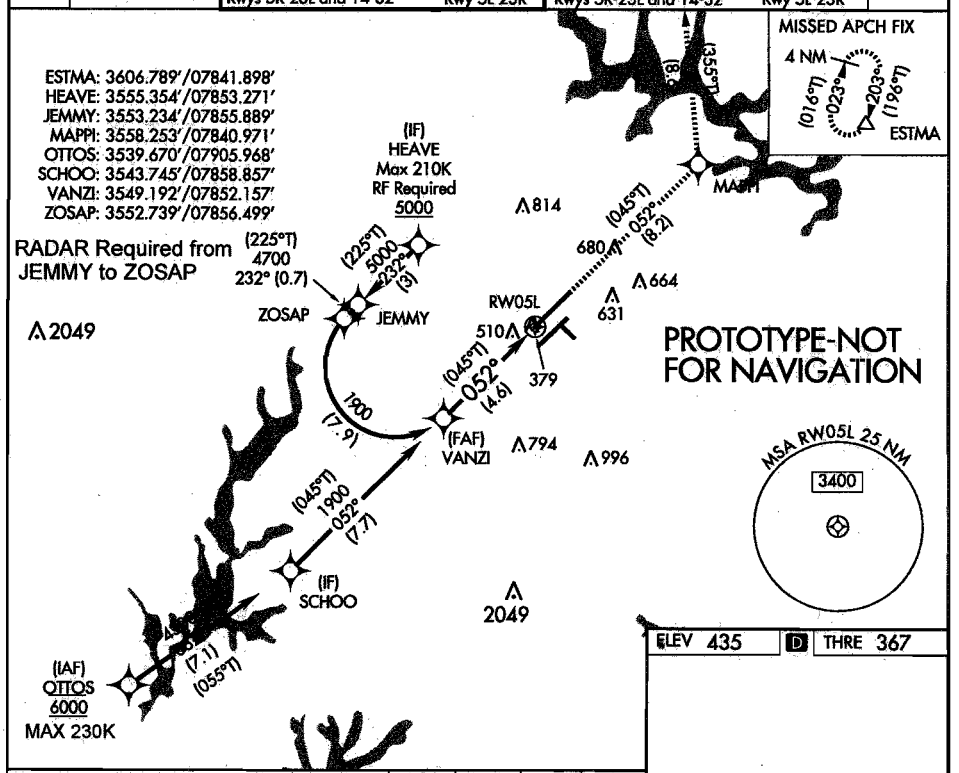
APP CRS	Rwy ldg	10000
052°	THRE	367
	Apt Elev	435

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 5R, RNAV (GPS) Y Rwy 5R. Use of FD or AP providing RNAV track guidance required during simultaneous operations. For inoperative MALSR, increase RNP 0.10 all Cats visibility to 1⅛ and RNP 0.30 all Cats visibility to 1⅜.

MALSR

MISSED APPROACH: Climb to 3000 on track 052° to MAPPI and on track 002° to ESTMA 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

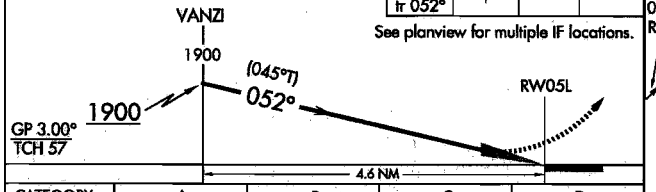


ELEV 435 | D | THRE 367

VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 72).

3000	MAPPI	tr 002°	ESTMA
tr 052°			

See planview for multiple IF locations.

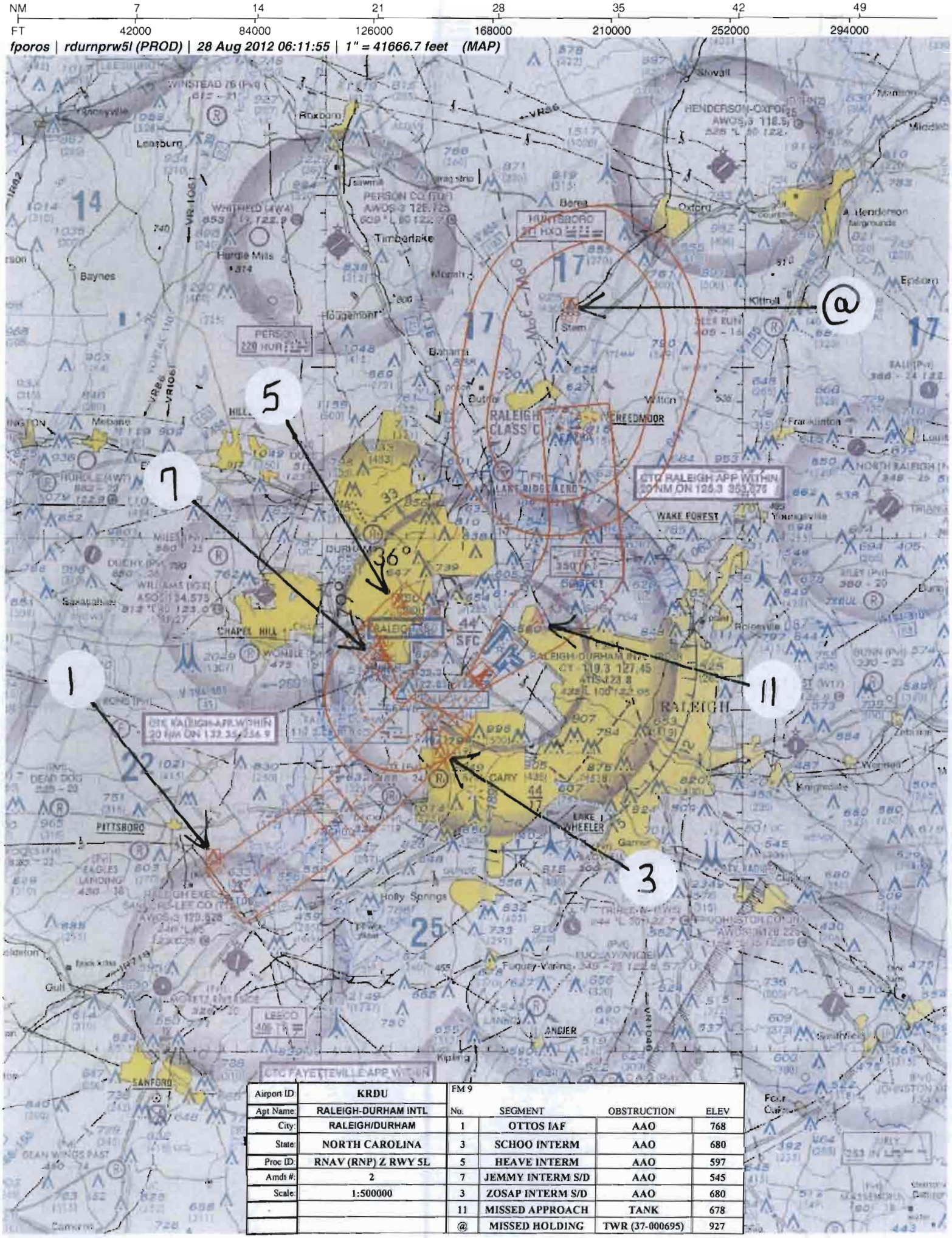


052° to RW05L

CATEGORY	A	B	C	D
RNP 0.10 DA	709/30 342 (300-⅝)			
RNP 0.30 DA	803/50 436 (400-1)			

AUTHORIZATION REQUIRED

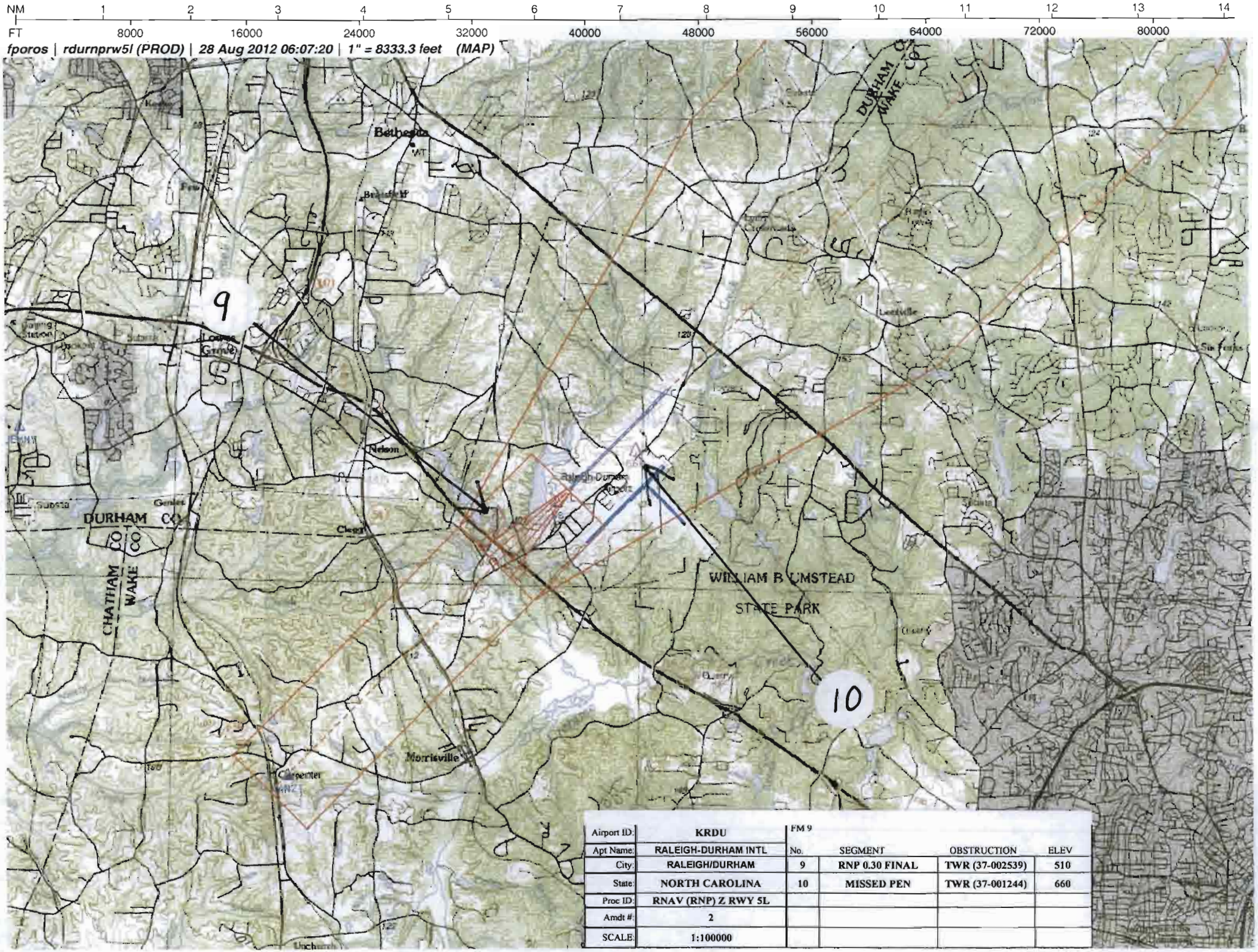
REIL Rwy 32
MIRL Rwy 14-32
HIRL Rwys 5R-23L and 5L-23R
TDZ/CL Rwys 5L, 23L, and 23R



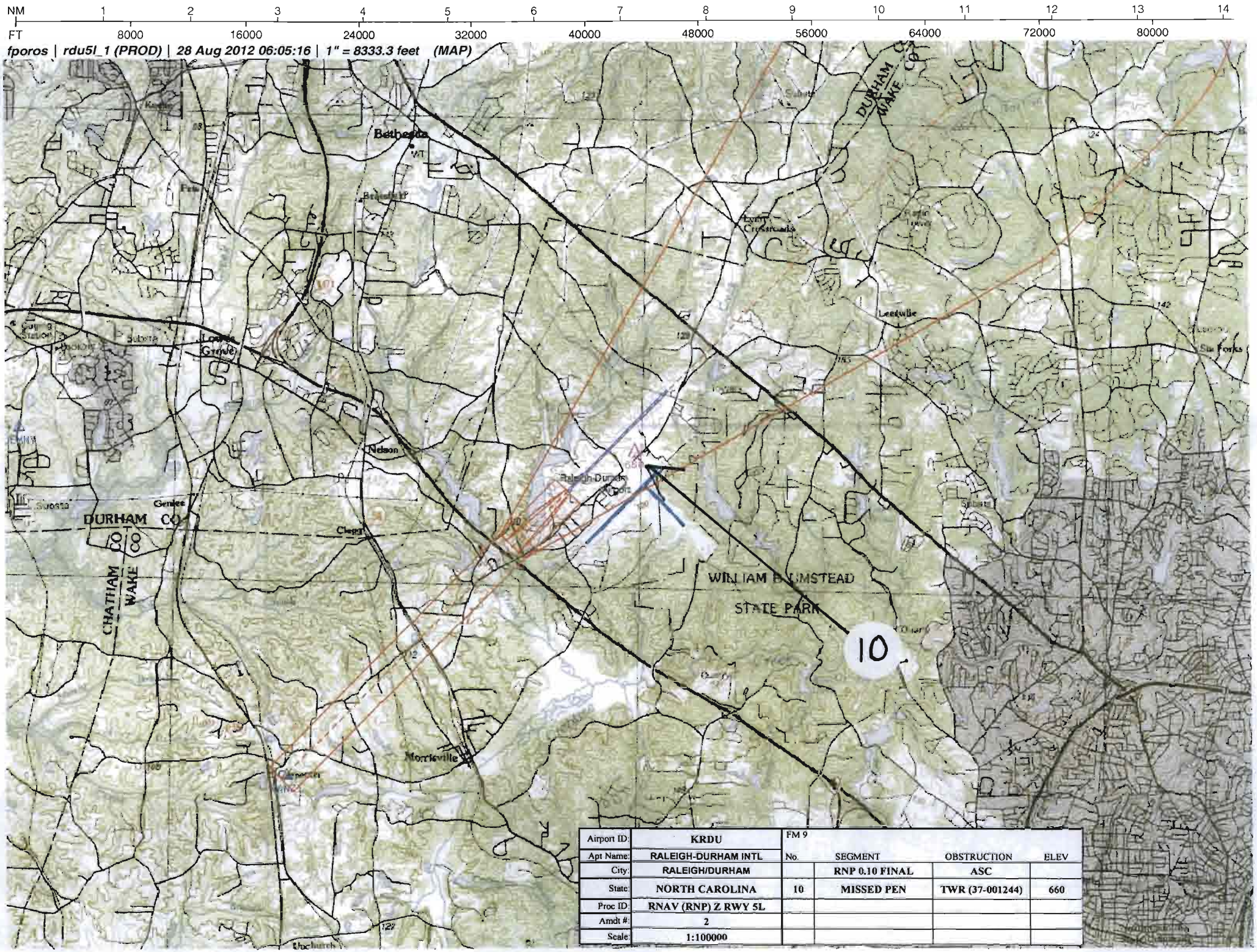
Airport ID:	KRDU
Apt Name:	RALEIGH-DURHAM INTL
City:	RALEIGH/DURHAM
State:	NORTH CAROLINA
Proc ID:	RNAV (RNP) Z RWY 5L
Amdt #:	2
Scale:	1:500000

FM 9

No.	SEGMENT	OBSTRUCTION	ELEV
1	OTTOS IAF	AAO	768
3	SCHOO INTERM	AAO	680
5	HEAVE INTERM	AAO	597
7	JEMMY INTERM S/D	AAO	545
3	ZOSAP INTERM S/D	AAO	680
11	MISSED APPROACH	TANK	678
@	MISSED HOLDING	TWR (37-000695)	927



Airport ID:	KRDU	FM 9			
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM	9	RNP 0.30 FINAL	TWR (37-002539)	510
State:	NORTH CAROLINA	10	MISSED PEN	TWR (37-001244)	660
Proc ID:	RNAV (RNP) Z RWY 5L				
Amdt #:	2				
SCALE:	1:100000				



Airport ID:	KRDU	FM 9			
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM		RNP 0.10 FINAL	ASC	
State:	NORTH CAROLINA	10	MISSED PEN	TWR (37-001244)	660
Proc ID:	RNAV (RNP) Z RWY 5L				
Amdt #:	2				
Scale:	1:100000				

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)	SCHOO (TF) (FB) (RNP 1.00)	061.87 / 7.08	4300
SCHOO (IF)	VANZI (TF) (FB) (RNP 1.00)	052.04 / 7.70	1900
HEAVE (IF)	JEMMY (TF) (FB) (RNP 1.00)	232.19 / 3.01	5000
JEMMY	ZOSAP (TF) (FB) (RNP 1.00)	231.94 / 0.70	4700
ZOSAP	VANZI (RF) (FB) (RNP 1.00)	(2.50 NM RADIUS CCW CFVVL)/7.85	1900
(SEE FORM 8260-10)			

MISSED APPROACH

RNP: DA

CLIMB TO 3000 ON TRACK 052.15 TO MAPPI AND ON TRACK 001.97 TO ESTMA AND HOLD.

1. PT ____ SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT VANZI
3. FAC: 052.10 FAF: ____ DIST FAF TO MAP: ____ THLD: ____
4. MIN. ALT: VANZI 1900
5. DIST TO THLD FROM OM: 4.63 MM: ____ IM: ____ 150 HAT: ____ 100 HAT: ____ GS ANT: ____
6. MIN GS INCPT: 1900 GS ALT AT: VANZI 1900 OM: ____ MM: ____ IM: ____
7. GS ANGLE: 3.00 TCH: 57.4# 34:1 IS CLEAR
8. MSA FROM: RW05L 3400

ADDITIONAL FLIGHT DATA:
HOLD NE, RT, 203.00 INBOUND.
CHART FAS OBST: 510 TOWER 355208N/0784907W
CHART: 379 OL LOC 355221N/0784815W
DISTANCE TO THLD FROM 342 HATH: 0.89 NM.
TCH 424.3 MSL (DO NOT CHART).
CHART MINIMUM 5000 AT HEAVE.
CHART MANDATORY 6000 AT OTTOS.
ROUTE TYPE: A, H.
ROUTE TYPE QUALIFIER 1: F
ROUTE TYPE QUALIFIER 2: S
CHART LOC RWY 5R

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 0.10 DA	709	3000	342	709	3000	342	709	3000	342	709	3000	342			
RNP 0.30 DA	803	5000	436	803	5000	436	803	5000	436	803	5000	436			

NOTES:
CHART PLANVIEW NOTE AT HEAVE: MAX 210 KIAS.
CHART PROFILE NOTE: VGSI AND RNAV GLIDEPATH NOT COINCIDENT.
CHART NOTE: FOR UNCOMPENSATED BARO-VNAV SYSTEMS, PROCEDURES NA BELOW -9C (16F) OR ABOVE 47C (130F).
(SEE FORM 8260-10)

QUALITY CHECKED

CITY AND STATE	ELEVATION: 435 THRE: 367 AIRPORT NAME:	FACILITY IDENTIFIER:	PROCEDURE NO./AMDT NO./EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 5L, 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: 08/21/2012

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

CHANGES:

1. RF SEGMENT CHANGED IF NAME CHANGED FROM TRANE TO HEAVE, FLOWW CHANGED TO JEMMY AND FIX ZOSAP ADDED.
2. AIR SPEED RESTRICTION ON THE RF SEGMENT CHANGED FROM 180 TO 210.
3. PFAF ALTITUDE RAISED FROM 1700 TO 1900.
4. DISTANCE PFAF TO THRESHOLD CHANGED FROM 3.96 TO 4.63.
5. IAF NEDIE CHANGE TO OTTOS SEGMENT RAISED FROM 3000 TO 4300.
6. CHANGED MINIMUM FINAL RNP LEVEL FROM 0.15 TO 0.10.
7. CHARTED MANDATORY CROSSING ALTITUDE AND AIRSPEED 230 AT OTTOS.
8. RF TURN SEGMENT CHANGED FROM 2.85 NM RADIUS TO 2.5 NM RADIUS.
9. FINAL APPROACH COURSE CHANGED FROM 052.11 TO 052.10.
10. HAT CHANGED FROM 367 TO 436.
11. HIGH TEMP CHANGED FROM 47C (117F) TO 54C (130F).
12. CNF NAME CHANGED FROM OWLSS TO CFVVL.

REASONS:

1, 5, 7. TO COINCIDE WITH THE STARS BEING DEVELOPED FOR KRDU.
2, 8. REQUEST BY THE USERS AND DUE TO CHANGES IN CRITERA ALLOWING FOR INCREASED BANK ANGLE.
3. TO MINIMIZE EXCESSIVE DESCENT GRADIENT FROM THE RF SEGMENT.
4. DISTANCE INCREASED DUE TO ALTITUDE BEING RAISED.
6. TO ACHIEVE PREVIOUS MINIMUMS AND VISIBILITY.
9. DUE TO PFAF MOVING.
10. HAT MEASURED FROM THRESHOLD INSTEAD OF TDZE.
11. NEW TEMPERATURE CALCULATION.
12. CRITERIA TO HAVE CNF FIXES AS UNPRONOUNCEABLE NAMES.

12/4/12: THIS IS AN UPDATED COPY OF THE FORM DEVELOPED ON 08/21/12.
CHANGED THE TF-TF BUILD ALTITUDE FROM 4637.43' TO 4700' LOCATED ON THE BACK OF THE 8260-9.

12/17/12: THIS IS AN UPDATED COPY OF THE FORM DEVELOPED ON 08/21/12.
1. ADDED CHART PLANVIEW NOTE: RADAR REQUIRED FROM JEMMY TO ZOSAP.
2. CHANGED DISTANCE IN CHANGES ITEM 4 FROM 4.96 TO 3.96.

QUALITY CHECKED

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TERMINAL ROUTES, (CONT.):

FROM	TO	COURSE AND DISTANCE	ALTITUDE
VANZI (FAF)	RW05L (MAP) (TF) (FO)	052.10 / 4.63	
RW05L (MAP)	MAPPI (TF) (FB) (RNP 1.00)	052.15 / 8.18	
MAPPI	ESTMA (TF) (FO) (RNP 1.00)	001.97 / 8.57	3000

NOTES, (CONT.):
CHART PLANVIEW NOTE ADJACENT TO HEAVE: RF REQUIRED.
CHART PROFILE NOTE: SEE PLANVIEW FOR MULTIPLE IF LOCATIONS.
CHART NOTE: GPS REQUIRED.
CHART PLANVIEW NOTE AT OTTOS : MAX 230 KIAS.
CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED WITH ILS OR LOC RWY 5R, RNAV (GPS) Y RWY 5R, EXCEPT FOR ARRIVALS AT HEAVE.
CHART NOTE: USE OF FD OR AP PROVIDING RNAV TRACK GUIDANCE REQUIRED DURING SIMULTANEOUS OPERATIONS.
CHART NOTE: FOR INOPERATIVE MALSR, INCREASE RNP 0.10 ALL CATS VISIBILITY TO RVR 6000 AND RNP 0.30 ALL CATS VISIBILITY TO 1 3/8.
CHART PLANVIEW NOTE: RADAR REQUIRED FROM JEMMY TO ZOSAP.

QUALITY CHECKED

CITY AND STATE	ELEVATION: 435 THRE: 367	FACILITY IDENTIFIER:	PROCEDURE NO./ AMDT NO./EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 5L, 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:	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)

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   CFVVL K70    W     N35505793W078541965                        W0089     NAR           CNF(CFVVL)
        SUSAEAENRT   ESTMA K70    C   L N36064736W078415386                        W0091     NAR           ESTMA
        SUSAEAENRT   HEAVE K70    W     N35552122W078531624                        W0089     NAR           HEAVE
        SUSAEAENRT   JEMMY K70    W     N35531385W078555374                        W0089     NAR           JEMMY
        SUSAEAENRT   MAPPI K70    W     N35581460W078405825                        W0091     NAR           MAPPI
        SUSAEAENRT   OTTOS K70    W     N35394018W079055805                        W0088     NAR           OTTOS
        SUSAEAENRT   SCHOO K70    C     N35434471W078585142                        W0088     NAR           SCHOO
        SUSAEAENRT   VANZI K70    W     N35491154W078520940                        W0089     NAR           VANZI
        SUSAEAENRT   ZOSAP K70    W     N35524401W078563033                        W0089     NAR           ZOSAP

                 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 KRDUK7FH05LZ AHEAVE 010HEAVEK7EA0E  B    IF                                + 05000     18000210              A-FS
        SUSAP KRDUK7FH05LZ AHEAVE 020JEMMYK7EA0E    010TF                                + 05000                           A FS
        SUSAP KRDUK7FH05LZ AHEAVE 030ZOSAPK7EA0E    010TF                                + 04700                           A FS
        SUSAP KRDUK7FH05LZ AHEAVE 040VANZIK7EA0EE  L010RF       0025002319    05210079    + 01900                 CFVVL K7EAA FS
        SUSAP KRDUK7FH05LZ AOTTOS 010OTTOSK7EA0E  A    IF                                  06000     18000230              A-FS
        SUSAP KRDUK7FH05LZ AOTTOS 020SCHOOK7EA0E  B 010TF                                + 04300                           A FS
        SUSAP KRDUK7FH05LZ AOTTOS 030VANZIK7EA0EE   010TF                                + 01900                           A FS
        SUSAP KRDUK7FH05LZ H      020VANZIK7EA1E  F    IF                                + 01900     18000       RW05L K7PGA FS
        SUSAP KRDUK7FH05LZ H      020VANZIK7EA2W                                              A031A011                      FS
        SUSAP KRDUK7FH05LZ H      030RW05LK7PG0GY M 031TF                                  00424             -300          A FS
        SUSAP KRDUK7FH05LZ H      040MAPPIK7EA0E M  010TF                                                                  A FS
        SUSAP KRDUK7FH05LZ H      050ESTMAK7EA0EY   010TF                                + 03000                           A FS
        SUSAP KRDUK7FH05LZ H      060ESTMAK7EA0EE  R020HM                     20300040    + 03000                           A FS

                 1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KRDUK7GRW05L   0100000521 N35522802W078480707+0400    +0079800367000057150IIGKK1

                 1         2         3         4         5         6         7         8         9         0         1         2         3
MSA     123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KRDUK7SRW05LK7PG                0   18018003425                                                                    M
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QUALITY CHECKED

CITY AND STATE	ELEVATION: 435 THRE: 367	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 5L, 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
	HEAVE	HEAVE	010		IF		FB				AA 05000	AB 210
	HEAVE	JEMMY	020		TF		FB	1.0			AA 05000	
	HEAVE	ZOSAP	030		TF		FB	1.0			AA 04700	
	HEAVE	VANZI	040		RF	L	FB	1.0		007.9	AA 01900	
	OTTOS	OTTOS	010	IAF	IF		FB				AT 06000	AB 230
	OTTOS	SCHOO	020		TF		FB	1.0			AA 04300	
	OTTOS	VANZI	030		TF		FB	1.0			AA 01900	
		VANZI	020	FAF	IF		FB				AA 01900	
		RW05L	030	MAP	TF		FO	0.3			AT 00424	

MISSED APPROACH	FIX	SEQ	USE	PATH	TURN	FO/FB	RNP	MAG(TRUE)	DISTANCE	ALTITUDE	SPEED
	MAPPI	040		TF		FB	1.0				
	ESTMA	050		TF		FO	1.0			AA 03000	
	ESTMA	060		HM	R	FO	2.0	203.0(196.0T)	004.0	AA 03000	

POINT DATA	WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
	CFVVL	N355057.93	W0785419.65	N3550.966	W07854.328
	ESTMA	N360647.36	W0784153.86	N3606.789	W07841.898
	HEAVE	N355521.22	W0785316.24	N3555.354	W07853.271
	JEMMY	N355313.85	W0785553.74	N3553.231	W07855.896
	MAPPI	N355814.60	W0784058.25	N3558.243	W07840.971
	OTTOS	N353940.18	W0790558.05	N3539.670	W07905.968
	SCHOO	N354344.71	W0785851.42	N3543.745	W07858.857
	VANZI	N354911.54	W0785209.40	N3549.192	W07852.157
	ZOSAP	N355244.01	W0785630.33	N3552.734	W07856.506
	RW05L	N355228.02	W0784807.07	N3552.467	W07848.118

RUNWAY DATA	RWY	THRESHOLD ELEVATION	TCH
	RW05L	00367	57

QUALITY CHECKED

CITY AND STATE	ELEVATION: 435 THRE: 367	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 5L, 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	SCHOO	1. AAO	354103.00N/0790748.00W	768 (4E)	1000	AC98 AT2434	4300
(RNP 1.00)			2. TERRAIN	354130.00N/0790700.00W	506 (500)		AS1500	2000
INTERMEDIATE	SCHOO	VANZI	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	HEAVE	JEMMY	5. AAO	355600.00N/0785430.00W	597 (4E)	500	AC98 AT3805	5000
(RNP 1.00)			6. TERRAIN	355603.00N/0785430.00W	397 (400)		AS1500	1900
INTERMEDIATE:	JEMMY	ZOSAP	7. AAO	355336.00N/0785551.00W	545 (4E)	500	AC98 AT3557	4700
STEPDOWN			8. TERRAIN	355248.00N/0785609.00	332 (300)		AS1500	1800
(RNP 1.00)								
INTERMEDIATE:	ZOSAP	VANZI	3. AAO	354715.00N/0785136.00W	680 (4E)	500	AC98 AT623	1900
STEPDOWN			4. TERRAIN	354715.00N/0785136.00W	480 (500)		AS1000	1500
(RNP 1.00)								
FINAL: RNP 0.10	VANZI	RW05L				ASC	MA59 XP33	709/342
FINAL: RNP 0.30	VANZI	RW05L	9. TOWER (37-002539)	355208.00N/0784907.00W	510 (1A)	21.00:1	AC3 MA27 XP1	803/436
2. PROCEDURE TURN	NA							
3. MISSED APPROACH MAP:								
ELEV:								

4. CIRCLING AREA	DISTANCE	HT. ABV. ARPT. REQUIRED	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: RW05L

SECTOR	OBSTRUCTION	BRG/DIST	ELEVATION (MSL)	M S A	SECTOR	OBSTRUCTION	BRG/DIST	ELEVATION (MSL)	M S A
360-360	TWR (37-002504)	139/ 18.0	2349 (1A)	3400					4

QUALITY CHECKED

CITY AND STATE	ELEVATION: 435 AIRPORT NAME:	FACILITY	PROCEDURE AND AMENDMENT NO:	REGION
RALEIGH/DURHAM, NC	RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 5L, 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 F A A A / C	OTHER: ASOS	SOURCE: KRDU DISTANCE: 0 HOURS REMOTE OPERATION: 0
SATISFACTORY ON: X VHF X UHF HF	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: 366.9	
DISTANCE FROM RWY:	ELEV GP ANTENNA:	
	THRESHOLD CROSSING HEIGHT: 57.4	

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: RONALD SALPINO	DATE: 08/21/2012
TITLE: AERONAUTICAL INFORMATION SPECIALIST	OFFICE: AJV-352

PART C - REMARKS:

MAX SPEED HEAVE TO VANZI - 210 KIAS.
MAX SPEED OTTOS TO VANZI - 230 KIAS.

PRECIPITOUS TERRAIN EVALUATION COMPLETED.

SEE ATTACHED AIRSPACE LETTER.

ACTUAL HIGH TEMP: 54C (130F)

ISA DEVIATION USED: -23.13

PROCEDURE DESIGNED PER ATC REQUEST.
MANDATORY ALTITUDES REQUIRED BY ATC.

RF TURN RADIUS/BANK ANGLE COMPUTATIONS:

SEGMENT: ZOSAP - VANZI, ALT 4700.00', KIAS 210.
KTAS: 228.06, HAA: 4202.43', VKTW: 52, TR: 2.50 NM.
RF CENTER POINT: CFVVL 355057.93N / 0785419.65W
BA: 24.85

TF - TF TURN SEGMENT:
SEGMENT: OTTOS - OTTOS, ALT: 6000, KIAS: 230,
KTAS: 257.60, HAA: 5565', VKTW: 75.65, BA: 18.00.

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

PROCEDURE CONNECTS TO ALDAN AND MALNR STARS.

VKTW WINDS OBTAINED FROM MITRE DATA.

ACT = -9C

VGSI DATA: 3.00/72 TCH

XP = (RNP 0.10) 33 FEET ADDED TO ACHIEVE PREVIOUS MINIMUMS
XP = (RNP 0.30) 1 FOOT ADDED TO ACHIEVE PREVIOUS MINIMUMS

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	RW05L				ASC		
(RNP 0.10 - 1.00)		(40:1)						
MISSED APPROACH:	DA	RW05L				ASC		
(RNP 0.30 - 1.00)		(40:1)						
MISSED APPROACH:	RW05L	MAPPI				ASC		
(RNP 0.10 - 1.00)		(40:1)						
MISSED APPROACH:	RW05L	MAPPI				ASC		
(RNP 0.30 - 1.00)		(40:1)						
MISSED APPROACH:	MAPPI	ESTMA				ASC		
(RNP 1.00)		(40:1)						

3. MISSED APPROACH									
	MAP:	DA / DA	ESTMA	10. TWR (37-001244)	355252.00N/0784709.00W	660 (1A)	ASC	AC3	3000
				11. TANK (37-002936)	355507.34N/0784438.39W	678 (4D)	1000	AC50	1800
	ELEV:	447/493		12. TERRAIN	355548.00N/0784415.00W	549 (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: 4

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

QUALITY CHECKED

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

RADIO FIX AND HOLDING DATA RECORD

NAME: CFVVL **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 355057.93N/0785419.65W **TYPE:** CNF

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

FIX USE:

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

COMPULSORY REPORTING POINT: NO

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

DEVELOPED BY: **DATE:** 08/21/2012 **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: ESTMA **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 360647.36N/0784153.86W **TYPE:** WP, DME

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	DIST FROM FAC FEET	MRA	MAA
1	RALEIGH/DURHAM	RDU	VORTAC	H	020.00	016.00	15.00	15.00		3000	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	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	NE		WP	023.00	203.00	R		4	3000	6000	5	6

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	TOWER (37-000695)	361317.00N/0784217.00W	927	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	V3	1				(US)
IAP	RNAV (RNP) Z RWY 5L		1	KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: IAP, EN ROUTE LOW

COMPULSORY REPORTING POINT: NO

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

REASON FOR REVISION:
HOLDING PATTERN OBSTACLE HEIGHT UPDATED FROM 925 TO 927.
FPO CHANGED FROM ATL TO EASTERN.
UPDATED FIX USE.

DEVELOPED BY: **DATE:** 08/21/2012 **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: HEAVE **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 355521.22N/0785316.24W **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)
STAR	ALDAN (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:** 07/17/2012 **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: JEMMY **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 355313.85N/0785553.74W **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)
STAR	ALDAN (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:** 07/17/2012 **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: MAPPI **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 355814.60N/0784058.25W **TYPE:** WP

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 5L			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:
1. CHANGED ALT FPO TO EASTERN

DEVELOPED BY: **DATE:** 08/21/2012 **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: VANZI **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 354911.54N/0785209.40W **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 5L			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:
1. FIX MOVED 4080 SW TO NEW PFAF LOCATION.
2. CHANGED FPO FROM ALT TO EASTERN.

DEVELOPED BY: **DATE:** 07/30/2012 **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: ZOSAP **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 355244.01N/0785630.33W **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)

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

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

DEVELOPED BY: **DATE:** 08/08/2012 **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: SCHOO **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 354344.71N/0785851.42W **TYPE:** WP, RADAR, 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	DIST FROM FAC FEET	MRA	MAA
1	RALEIGH/DURHAM	I-GKK	LOC/DME		232.14	225.14	14.22	14.22		3000	4900

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

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	3000	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:
I-GKK DME COORDINATES: 355347.52N/0784627.57W
PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

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

REQUIRED CHARTING: STAR, IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 3 **DATE OF REVISION:** 09/23/2010

REASON FOR REVISION:
ADDED STAR CHARTING

DEVELOPED BY: **DATE:** 08/03/2010 **OFFICE:** AVN-110 **NAME:** JIM EMORY

APPROVED BY: **DATE:** 08/09/2010 **OFFICE:** AVN-110 **NAME:** GEORGE DAVIS

SIGNATURE:

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

QUALITY CHECKED

TERMINAL AIRSPACE DATA REQUIREMENTS

CITY: **RALEIGH/DURHAM** STATE: **NC**

AIRPORT NAME: **RALEIGH-DURHAM INTL** ID: **KRDU**

PROCEDURE: **RNAV (RNP) RWY 5L** 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 **3.07**
   (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 **434**
5. Distance from **THLD** to 1500' point **7.04**
   (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 **479**
9. Threshold Coordinates (if straight-in) ... **355228.02N** / **0784807.07W**
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 ..... **354911.54N** / **0785209.40W**

REMARKS: Approach/Drawing attached.

***RF SEGMENT ZOSAP TO VANZI, RADIUS TURN CENTERPOINT CNF (CFVVL) ARC RADIUS 2.50 NM, THIS IS AIRSPACE LETTER 1 OF 2.**

TERMINAL AIRSPACE DATA REQUIREMENTS

CITY: **RALEIGH/DURHAM** STATE: **NC**

AIRPORT NAME: **RALEIGH-DURHAM INTL** ID: **KRDU**

PROCEDURE: **RNAV (RNP) RWY 5L** 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 **3.07**
   (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 **434**
5. Distance from **THLD** to 1500' point **7.04**
   (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 **045.04**
8. High Terrain in **INTERMEDIATE** segment containing 1500' point **479**
9. Threshold Coordinates (if straight-in) ... **355228.02N** / **0784807.07W**
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 ..... **354911.54N** / **0785209.40W**

REMARKS: Approach/Drawing attached.

SCHOO TO VANZI, THIS IS AIRSPACE LETTER 2 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 5L

2. Waiver Required and Applicable Standard:
Memo dated 02/06/12 establishes the minimum segment length for PBN procedures as 2 times RNP value or 1 NM, which ever is less. The segment length between JEMMY and ZOSAP is 0.70 NM and the minimum calculated length for this TF segment is 1 NM, making this segment less than required by the memo.

3. Reason for Waiver *(Justification for nonstandard treatment)*:
Ground track/procedure design is a collaboration between air carriers, RDU ATC, and FAA PBN Office.
JEMMY is located at an airspace boundary with a required altitude. The beginning of the RF segment could not be collocated at JEMMY due to excessive descent gradient.

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 is required for this procedure.
4. The intermediate segment was satisfactorily evaluated 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**

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 5L

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 JEMMY TO VANZI is 362.57 FT/NM (3.41 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

KRDU RWY 5L
SI TRANSITION
INTERMEDIATE S/D TO PFAF SEGMENT
DO NOT REMOVE FROM PACKAGE

PFAF Calculations

Min Intermediate Segment Alt (a):	
LTP MSL Elevation (b):	3.00
TCH:	
Glidepath Angle (Θ):	
Distance from LTP to PFAF (D):	#NUM!
	#NUM!
LTP/FTP Latitude:	
LTP/FTP Longitude:	
True RWY Bearing/True Course:	
PFAF Latitude:	#NUM!
PFAF Longitude:	#NUM!

Latitude/Longitude valid for straight segment only

VEB OCS Origin & Slope

Intermediate Segment Altitude:	1900
LTP Elevation:	366.9
Glidepath Angle:	3
TCH:	57.4
RNP Value:	0.30
Δ ISA:	-23.13

Straight In Segment

(*Wingspan =<262*) **LTP to Origin:**	3,622.96'
(*Wingspan =<136*) **LTP to Origin:**	3,412.98'
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:	3.00°	
Max Glidepath Angle:	3.50°	
PFAF Elevation:	7000	
LTP Elevation:	5349.9	
ACT:	-25.00°C	
Min Glidepath Angle	2.76°	
NA Below	-25.00°C	-13.00°F
NA Above	38.29°C	100.93°F

Intermediate Segment VEB ROC

Glidepath Angle	3.00°
LTP MSL Elevation	366.90
TCH (ft)	57.40
OCS Slope	21.00
OCS Origin Distance (ft) *(measured along-track from LTP)*	3,622.96
Obstacle Distance (ft) *(measured along-track from LTP)*	34,688.75
VEB ROC *(at obstacle)*	**402**
Glidepath MSL altitude at Obstacle	2,271.09
OCS MSL altitude at Obstacle	1,869.35

DO NOT REMOVE FROM PACKAGE

KRDU RWY 5L
LEFT CCWTRANSITION
INTERMEDIATE S/D TO PFAF SEGMENT
DO NOT REMOVE FROM PACKAGE

PFAF Calculations

Min Intermediate Segment Alt (a):	
LTP MSL Elevation (b):	3.00
TCH:	
Glidepath Angle (Θ):	
Distance from LTP to PFAF (D):	#NUM!
	#NUM!
LTP/FTP Latitude:	
LTP/FTP Longitude:	
True RWY Bearing/True Course:	
PFAF Latitude:	#NUM!
PFAF Longitude:	#NUM!

Latitude/Longitude valid for straight segment only

VEB OCS Origin & Slope

Intermediate Segment Altitude:	1900
LTP Elevation:	366.9
Glidepath Angle:	3
TCH:	57.4
RNP Value:	0.30
Δ ISA:	-23.13

Straight In Segment

(*Wingspan =<262*) **LTP to Origin:**	3,622.96'
(*Wingspan =<136*) **LTP to Origin:**	3,412.98'
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:	3.00°	
Max Glidepath Angle:	3.50°	
PFAF Elevation:	7000	
LTP Elevation:	5349.9	
ACT:	-25.00°C	
Min Glidepath Angle	2.76°	
NA Below	-25.00°C	-13.00°F
NA Above	38.29°C	100.93°F

Intermediate Segment VEB ROC

Glidepath Angle	3.00°
LTP MSL Elevation	366.90
TCH (ft)	57.40
OCS Slope	21.00
OCS Origin Distance (ft) *(measured along-track from LTP)*	3,622.96
Obstacle Distance (ft) *(measured along-track from LTP)*	32,039.77
VEB ROC *(at obstacle)*	**389**
Glidepath MSL altitude at Obstacle	2,128.03
OCS MSL altitude at Obstacle	1,739.43