Flight Procedure Tracking Form	Action: FLIGHT CHECK	Task Type: IAP	Date Open: 05/11/2012	Task #: 2011100529630803004	Request #: 20111005296308
Procedure: RNAV (RNP) Z RWY 23 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		[illegible]	WAIVER

P1

Procedure Comments: ENROUTE **Remark Type:** INFORMATION pkg 1.14

RALEIGH/DURHAM, NC RALEIGH-DURHAM INTL (KRDU) RNAV (RNP) Z RWY 23R, AMDT 2 ENROUTE-YES FC: 11.13.12 PUB: 1.10.13

ATTACHED FORMS: 8260-3; 8260-10; 8260-9; 8260-2(S): CFVVP, ORIG; CLIFE, REV 2; JEMAD, ORIG; NOBVE, ORIG; (INFO ONLY) BUTTS, ORIG; GLEYS, ORIG; JOLTY, ORIG; PAINS, ORIG; PRSTN-INT, REV 4; SCHOO-INT, REV 3.

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

RNAV (RNP) Z RWY 23R
RALEIGH-DURHAM INTL (RDU)

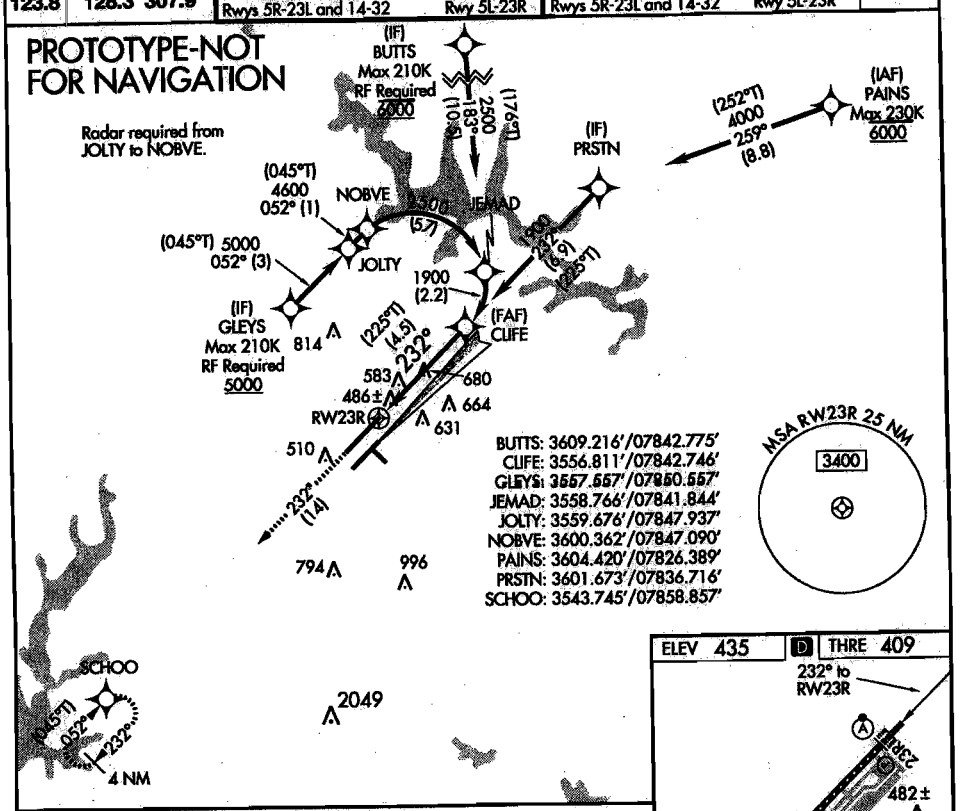
APP CRS	Rwy ldg	10000
232°	THRE	409
	Apt Elev	435

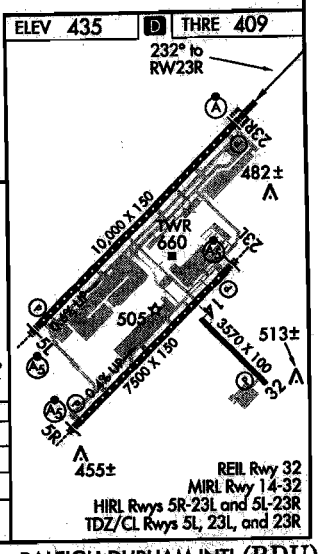
For uncompensated Baro-VNAV systems, procedure NA below -9°C (16°F) or above 54°C (130°F). GPS required. Simultaneous approach authorized with ILS or LOC Rwy 23L, RNAV (GPS) Y Rwy 23, except for arrivals at GLEYS and BUTTS. Use of FD or AP providing RNAV track guidance required during simultaneous operations. For inoperative MALSR, increase RNP 0.15 all Cats visibility to 1¼, increase RNP 0.30 all Cats visibility to 1⅞.

ALSF-2

MISSED APPROACH: Climb to 3000 on track 232° to SCHOO 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

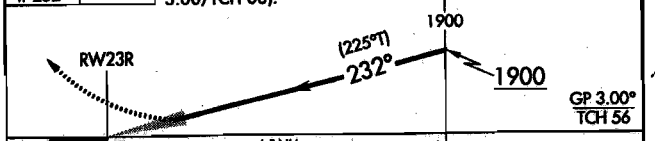




3000 ↑ tr 232° | SCHOO

See planview for multiple IF locations.

VGSI and RNAV glidepath not coincident (VGSI Angle 3.00/TCH 68).



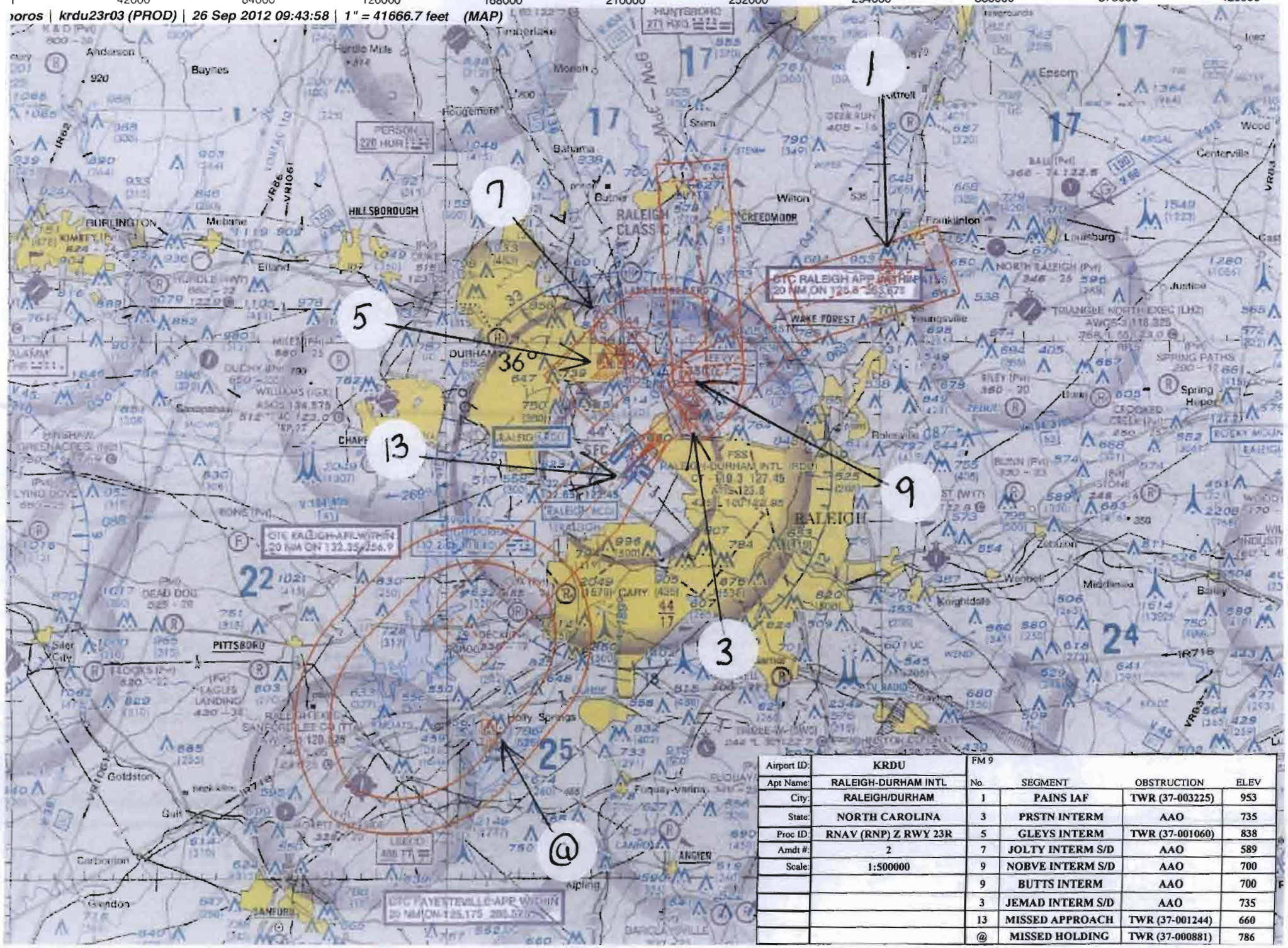
CATEGORY	A	B	C	D
RNP 0.15 DA	779/40 370 (400-¾)			
RNP 0.30 DA	978-1½ 569 (600-1½)			

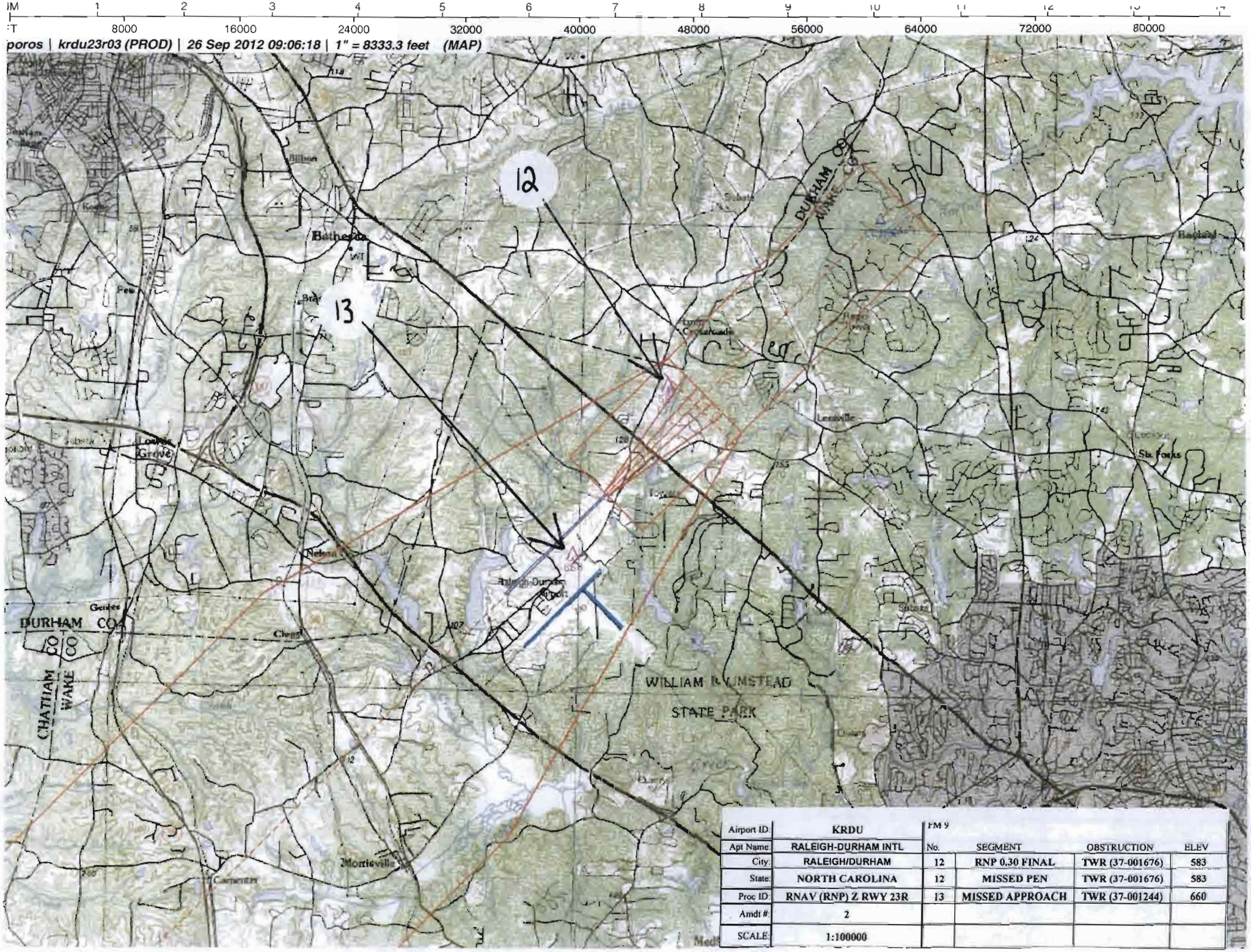
AUTHORIZATION REQUIRED

M 7 14 21 28 35 42 49 56

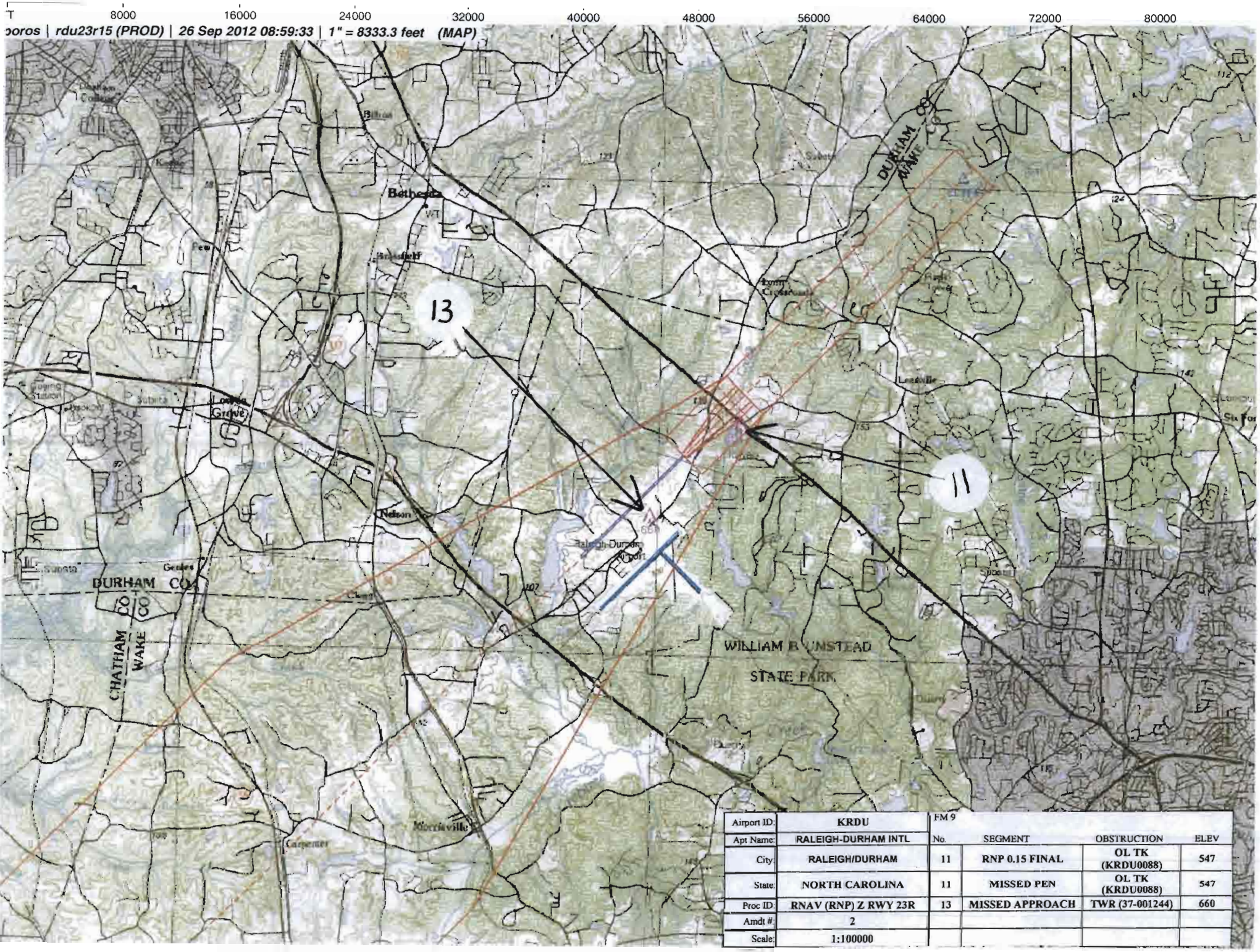
T 42000 84000 126000 168000 210000 252000 294000 336000 378000 420000

oros | krdu23r03 (PROD) | 26 Sep 2012 09:43:58 | 1" = 41666.7 feet (MAP)


1
7
5
13
9
3
@
36°
RALEIGH CLASS C
RALEIGH
DURHAM
CARY
WAKE FOREST
CREEDMOOR
HILLSBOROUGH
PITTSBORO
Franklinton
Louisburg
Wilton
Butner
Bahama
Hillsborough
Mebane
Burlington
Efland
Chapel Hill
Pittsboro
Holly Springs
Fuquay-Varina
Garner
Knightdale
Wendell
Zebulon
Middlesex
Bailey
Spring Hope
Youngsville
Rolesville
Wake Forest
Goldston
Gulf
Carborro
Gordon
Sanford
Angier
Apex
Cary
Raleigh
Durham
Hunter
Stem
Oxford
Epsom
Centerville
Wood
Justice
Siler City
Pittsboro
Bynum
Moncure
Haw River
Mebane
Hillsborough
Chapel Hill
Efland
Hurdle Mills
Timberlake
Roxboro
Person County
Franklinton
Louisburg
Wake Forest
Youngsville
Rolesville
Wendell
Zebulon
Knightdale
Garner
Fuquay-Varina
Holly Springs
Apex
Cary
Raleigh
Durham
Sanford
Angier
Goldston
Gulf
Carborro
Gordon



Airport ID:	KRDU	FM 9			
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM	12	RNP 0.30 FINAL	TWR (37-001676)	583
State:	NORTH CAROLINA	12	MISSED PEN	TWR (37-001676)	583
Proc ID:	RNAV (RNP) Z RWY 23R	13	MISSED APPROACH	TWR (37-001244)	660
Amdt #:	2				
SCALE:	1:100000				



Airport ID:	KRDU	FM 9			
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM	11	RNP 0.15 FINAL	OL TK (KRDU0088)	547
State:	NORTH CAROLINA	11	MISSED PEN	OL TK (KRDU0088)	547
Proc ID:	RNAV (RNP) Z RWY 23R	13	MISSED APPROACH	TWR (37-001244)	660
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
PAINS (IAF)	PRSTN (TF) (FB) (RNP 1.00)	258.92 / 8.81	4000
PRSTN (IF)	CLIFE (TF) (FB) (RNP 1.00)	232.26 / 6.89	1900
GLEYS (IF)	JOLTY (TF) (FB) (RNP 1.00)	052.12 / 3.00	5000
JOLTY	NOBVE (TF) (FB) (RNP 1.00)	052.13 / 0.97	4600
NOBVE	JEMAD (RF) (FB) (RNP 1.00)	(2.50 NM RADIUS CW CFVVP)/5.71	2500
(SEE FORM 8260-10)			

MISSED APPROACH

RNP: DA

CLIMB TO 3000 ON TRACK 232.16 TO SCHOO AND HOLD.

ADDITIONAL FLIGHT DATA:
HOLD SW, RT, 052.04 INBOUND.
CHART FAS OBST: 486 TREE 355408N/0784610W
CHART FAS OBST: 583 TOWER 355448N/0784548W
DISTANCE TO THLD FROM 370 HATH: 0.99 NM.
CHART MINIMUM 5000 AT GLEYS.
CHART MANDATORY 6000 AT BUTTS AND PAINS.
ROUTE TYPE: A, H.
ROUTE TYPE QUALIFIER 1: F
ROUTE TYPE QUALIFIER 2: S
#TCH 464.7 MSL (DO NOT CHART)
CHART LOC RWY 23L

1. PT ____ SIDE OF COURSE ____ OUTBOUND ____ FT WITHIN ____ MILES OF ____ (IAF)
2. PROFILE STARTS AT CLIFE
3. FAC: 232.20 FAF: ____ DIST FAF TO MAP: ____ THLD: ____
4. MIN. ALT: CLIFE 1900
5. DIST TO THLD FROM OM: 4.51 MM: ____ IM: ____ 150 HAT: ____ 100 HAT: ____ GS ANT: ____
6. MIN GS INCPT: 1900 GS ALT AT: CLIFE 1900 OM: ____ MM: ____ IM: ____
7. GS ANGLE: 3.00 TCH: 56.0# 34:1 IS CLEAR
8. MSA FROM: RW23R 3400

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 0.15 DA	779	4000	370	779	4000	370	779	4000	370	779	4000	370			
RNP 0.30 DA	978	1 1/2	569	978	1 1/2	569	978	1 1/2	569	978	1 1/2	569			

NOTES:
CHART NOTE: FOR UNCOMPENSATED BARO-VNAV SYSTEMS, PROCEDURE NA BELOW -9C (16F) OR ABOVE 54C (130F).
CHART PLANVIEW NOTE AT BUTTS: MAX 210 KIAS.
CHART PLANVIEW NOTE AT GLEYS: MAX 210 KIAS.
CHART PLANVIEW NOTE AT PAINS: MAX 230 KIAS.

(SEE FORM 8260-10)

QUALITY 4 CHECKED

CITY AND STATE	ELEVATION: 435 THRE: 409	FACILITY IDENTIFIER: RNAV	PROCEDURE NO./AMDT NO./EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL		RNAV (RNP) Z RWY 23R, 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 **FIOG**	DATE: **11/06/2012**

DEVELOPED BY		
NAME: **RONALD SALPINO**	FIFO **AJV-352**	DATE: **08/17/2012**

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

CHANGES:

1. RF SEGMENT FIX NAMES CHANGED, IF WAMTA CHANGED TO GLEYS, RAVOE CHANGED TO JOLTY, AND FIX NOBVE ADDED.
2. RF SEGMENT NAMES CHANGED, IAF STRYC CHANGED TO BUTTS, IF CAXID CHANGED TO JEMAD AND PLACED ON THE 2.5 NM ARC. FIX HIGDI REMOVED.
3. IAF CHANGED FROM LEASA TO PAINS.
4. RF SEGMENTS AIRSPEED CHANGED FROM 180 TO 210 AND CHARTED 230 AT PAINS.
5. PFAF ALTITUDE RAISED FROM 1800 TO 1900.
6. CHARTED MANDATORY ALTITUDE 6000 AT BUTTS AND PAINS.
7. 0.30 MINIMUMS RAISED FROM 956 TO 978.
8. CHARTED MINIMUM 5000 AT GLEYS.
9. FINAL COURSE CHANGED FROM 232.19 TO 232.20.
10. TCH CHANGED FROM 54.9 TO 56.
11. FAF DISTANCE CHANGED FROM 4.15 TO 4.51.
12. 0.30 HATH CHANGED FROM 547 TO 569.
13. CHANGED NOTE: SIMULTANEOUS APPROACH AUTHORIZED WITH ILS OR LOC RWY 23L, RNAV (GPS) Y RWY 23L. TO SIMULTANEOUS APPROACH AUTHORICED WITH ILS OR LOC RWY 23L, RNAV (GPS) Y RWY 23L, EXCEPT FOR ARRIVALS AT GLEYS AND BUTTS.

REASONS:

1, 2, 3, 6, 8. TO COINCIDE WITH THE CURRENT STARS OR STARS IN DEVELOPMENT FOR KRDU.
4. REQUEST BY THE USERS AND DUE TO CHANGES IN CRITERA ALLOWING FOR INCREASED BANK ANGLE.
5. TO MINIMIZE EXCESSIVE DESCENT GRADIENT FROM THE RF SEGMENT.
7. NEW CONTROLLING OBSTACLE IDENTIFIED IN FINAL.
9. DUE TO FAF DISTANCE INCREASE AND GEODEDIC CALCULATION.
10. TO MATCH THE ILS DATA.
11. FAF ALTITUDE RAISED 100 FT.
12. MEASURED FROM THRESHOLD ELEVATION INSTEAD OF TDZE.
13. ATC REQUESTED.

12/4/12: THIS IS AN UPDATED COPY OT THE FORM DEVELOPED ON 08/17/2012.
1. CORRECTED THE SPELLING OF THE WORD AUTHORIZED IN CHANGES (13).

12/17/12: THIS IS AN UPDATED COPY OF THE FORM DEVELOPED ON 08/17/2012.
1. ADDED CHART PROFILE NOTE: RADAR REQUIRED FROM JOLTY TO NOBVE.

QUALITY CHECKED

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TERMINAL ROUTES, (CONT.):

FROM	TO	COURSE AND DISTANCE	ALTITUDE
BUTTS (IF)	JEMAD (TF) (FB) (RNP 1.00)	182.86 / 10.46	2500
JEMAD	CLIFE (RF) (FB) (RNP 1.00)	(2.50 NM RADIUS CW CFVVP)/2.15	1900
CLIFE (FAF)	RW23R (MAP) (TF) (FO)	232.20 / 4.51	
RW23R (MAP)	SCHOO (TF) (FO) (RNP 1.00)	232.16 / 13.98	3000

NOTES, (CONT.):
CHART PLANVIEW NOTE ADJACENT TO BUTTS: RF REQUIRED.
CHART PLANVIEW NOTE ADJACENT TO GLEYS: RF REQUIRED.
CHART PROFILE NOTE: VGSI AND RNAV GLIDEPATH NOT COINCIDENT.
CHART NOTE: GPS REQUIRED.
CHART PROFILE NOTE: SEE PLANVIEW FOR MULTIPLE IF LOCATIONS.
CHART NOTE: SIMULTANEOUS APPROACH AUTHORIZED WITH ILS OR LOC RWY 23L, RNAV (GPS) Y RWY 23L, EXCEPT FOR ARRIVALS AT GLEYS AND BUTTS.
CHART NOTE: USE OF FD OR AP PROVIDING RNAV TRACK GUIDANCE REQUIRED DURING SIMULTANEOUS OPERATIONS
CHART NOTE: FOR INOPERATIVE MALSR, INCREASE RNP 0.15 ALL CATS VISIBILITY TO 1 1/4, INCREASE RNP 0.30 ALL CATS VISIBILITY TO 1 7/8.
CHART PLANVIEW NOTE: RADAR REQUIRED FROM JOLTY TO NOBVE.

QUALITY CHECKED

CITY AND STATE	ELEVATION: 435 THRE: 409	FACILITY IDENTIFIER:	PROCEDURE NO./ AMDT NO./EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 23R, 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   BUTTS K70    W     N36091297W078424651                      W0091     NAR           BUTTS
        SUSAEAENRT   CFVVP K70    W     N35583523W078445498                      W0090     NAR           CNF(CFVVP)
        SUSAEAENRT   CLIFE K70    W     N35564866W078424475                      W0091     NAR           CLIFE
        SUSAEAENRT   GLEYS K70    W     N35573339W078503343                      W0090     NAR           GLEYS
        SUSAEAENRT   JEMAD K70    W     N35584596W078415064                      W0091     NAR           JEMAD
        SUSAEAENRT   JOLTY K70    W     N35594056W078475624                      W0090     NAR           JOLTY
        SUSAEAENRT   NOBVE K70    W     N36002169W078470539                      W0090     NAR           NOBVE
        SUSAEAENRT   PAINS K70    W     N36042517W078262333                      W0093     NAR           PAINS
        SUSAEAENRT   PRSTN K70    C     N36014036W078364297                      W0091     NAR           PRSTN
        SUSAEAENRT   SCHOO K70    C     N35434471W078585142                      W0088     NAR           SCHOO

                 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 KRDUK7FH23RZ ABUTTS 010BUTTSK7EA0E  B    IF                                 06000     18000210              A-FS
        SUSAP KRDUK7FH23RZ ABUTTS 020JEMADK7EA0E    010TF                              + 02500                           A FS
        SUSAP KRDUK7FH23RZ ABUTTS 030CLIFEK7EA0EE  R010RF       0025001829    23220022  + 01900                 CFVVP K7EAA FS
        SUSAP KRDUK7FH23RZ AGLEYS 010GLEYSK7EA0E  B    IF                              + 05000     18000210              A-FS
        SUSAP KRDUK7FH23RZ AGLEYS 020JOLTYK7EA0E    010TF                              + 05000                           A FS
        SUSAP KRDUK7FH23RZ AGLEYS 030NOBVEK7EA0E    010TF                              + 04600                           A FS
        SUSAP KRDUK7FH23RZ AGLEYS 040JEMADK7EA0E   R010RF       0025000521    18290057  + 02500                 CFVVP K7EAA FS
        SUSAP KRDUK7FH23RZ AGLEYS 050CLIFEK7EA0EE  R010RF       0025001829    23220022  + 01900                 CFVVP K7EAA FS
        SUSAP KRDUK7FH23RZ APAINS 010PAINSK7EA0E  A    IF                                 06000     18000230              A-FS
        SUSAP KRDUK7FH23RZ APAINS 020PRSTNK7EA0E  B 010TF                               + 04000                           A FS
        SUSAP KRDUK7FH23RZ APAINS 030CLIFEK7EA0EE   010TF                               + 01900                           A FS
        SUSAP KRDUK7FH23RZ H      020CLIFEK7EA1E  F    IF                               + 01900     18000       RW23R K7PGA FS
        SUSAP KRDUK7FH23RZ H      020CLIFEK7EA2W                                            A031A152                          FS
        SUSAP KRDUK7FH23RZ H      030RW23RK7PG0GY M 031TF                                 00465             -300            A FS
        SUSAP KRDUK7FH23RZ H      040SCHOOK7EA0EYM  010TF                               + 03000                           A FS
        SUSAP KRDUK7FH23RZ H      050SCHOOK7EA0EE  R020HM                     05200040  + 03000                           A FS

                 1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KRDUK7GRW23R   0100002322 N35533776W078464092-0400    +00925004090000056150IIDMP3
```

QUALITY CHECKED 1

CITY AND STATE	ELEVATION: 435 THRE: 409	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 23R, 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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```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
MSA     123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KRDUK7SRW23RK7PG                0   18018003425                                                                        M
```

CITY AND STATE	ELEVATION: 435 THRE: 409	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 23R, AMDT 2	AMDT: 1B
				DATED: 01/12/2012

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:	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
	BUTTS	BUTTS	010		IF		FB				AT 06000	AB 210
	BUTTS	JEMAD	020		TF		FB	1.0			AA 02500	
	BUTTS	CLIFE	030		RF	R	FB	1.0		002.2	AA 01900	
	GLEYS	GLEYS	010		IF		FB				AA 05000	AB 210
	GLEYS	JOLTY	020		TF		FB	1.0			AA 05000	
	GLEYS	NOBVE	030		TF		FB	1.0			AA 04600	
	GLEYS	JEMAD	040		RF	R	FB	1.0		005.7	AA 02500	
	GLEYS	CLIFE	050		RF	R	FB	1.0		002.2	AA 01900	
	PAINS	PAINS	010	IAF	IF		FB				AT 06000	AB 230
	PAINS	PRSTN	020		TF		FB	1.0			AA 04000	
	PAINS	CLIFE	030		TF		FB	1.0			AA 01900	
		CLIFE	020	FAF	IF		FB				AA 01900	
		RW23R	030	MAP	TF		FO	0.3			AT 00465	

MISSED APPROACH	FIX	SEQ	USE	PATH	TURN	FO/FB	RNP	MAG(TRUE)	DISTANCE	ALTITUDE	SPEED
	SCHOO	040		TF		FO	1.0			AA 03000	
	SCHOO	050		HM	R	FO	2.0	052.0(045.0T)	004.0	AA 03000	

POINT DATA	WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
	BUTTS	N360912.97	W0784246.51	N3609.216	W07842.775
	CFVVP	N355835.23	W0784454.98	N3558.587	W07844.916
	CLIFE	N355648.66	W0784244.75	N3556.811	W07842.746
	GLEYS	N355733.39	W0785033.43	N3557.557	W07850.557
	JEMAD	N355845.96	W0784150.64	N3558.766	W07841.844
	JOLTY	N355940.56	W0784756.24	N3559.676	W07847.937
	NOBVE	N360021.69	W0784705.39	N3600.362	W07847.090
	PAINS	N360425.17	W0782623.33	N3604.420	W07826.389
	PRSTN	N360140.36	W0783642.97	N3601.673	W07836.716
	SCHOO	N354344.71	W0785851.42	N3543.745	W07858.857
	RW23R	N355337.76	W0784640.92	N3553.629	W07846.682

RUNWAY DATA	RWY	THRESHOLD ELEVATION	TCH
	RW23R	00409	56

QUALITY 1 CHECKED

CITY AND STATE	ELEVATION: 435 THRE: 409	FACILITY IDENTIFIER:	PROCEDURE NO. / AMDT NO. / EFFECTIVE DATE:	SUP:
RALEIGH/DURHAM, NC	AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 23R, 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	PAINS	PRSTN	1. TWR (37-003225)	360356.05N/0782924.61W	953 (1A)	1000	AC3 AT2044	4000
(RNP 1.00)			2. TERRAIN	360427.00N/0783230.00W	578 (600)		AS1500	2100
INTERMEDIATE	PRSTN	CLIFE	3. AAO	355551.00N/0784306.00W	735 (4E)	500	AC98 AT567	1900
(RNP 1.00)			4. TERRAIN	355739.00N/0784318.00W	496 (500)		AS1000	1500
INTERMEDIATE	GLEYS	JOLTY	5. TOWER (37-001060)	355840.00N/0784857.00W	838 (4D)	500	AC50 AT3612	5000
(RNP 1.00)			6. TERRAIN	355621.00N/0784836.00W	430 (400)		AS1500	1900
INTERMEDIATE:	JOLTY	NOBVE	7. AAO	360112.00N/0784918.00W	589 (4E)	500	AC98 AT3413	4600
STEPDOWN			8. TERRAIN	360112.00N/0784918.00W	389 (400)		AS1500	1900
(RNP 1.00)								
INTERMEDIATE:	NOBVE	JEMAD	9. AAO	355738.94N/0784317.31W	700 (4E)	500	AC98 AT1202	2500
STEPDOWN			10. TERRAIN	355848.00N/0784212.00W	447 (400)		AS1500	1900
(RNP 1.00)								
INTERMEDIATE	BUTTS	JEMAD	9. AAO	355738.94N/0784317.31W	700 (4E)	500	AC98 AT1202	2500
(RNP 1.00)			10. TERRAIN	355848.00N/0784212.00W	447 (400)		AS1500	1900
INTERMEDIATE:	JEMAD	CLIFE	3. AAO	355551.00N/0784306.00W	735 (4E)	500	AC98 AT567	1900
STEPDOWN			4. TERRAIN	355739.00N/0784318.00W	496 (500)		AS1000	1500
FINAL: RNP 0.15	CLIFE	RW23R	11. OL TK (KRDU0088)	355354.92N/0784552.54W	547 (1A)	21.03:1	AC3 MA24	779/370
2. PROCEDURE TURN	NA							
3. MISSED APPROACH MAP:								
ELEV:								

4. CIRCLING AREA	DISTANCE		HT. ABV. ARPT.	
CATEGORY A	1.3 NM	REQUIRED	350	ACTUAL
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: **RW23R**

SECTOR	OBSTRUCTION	BRG/DIST	ELEVATION (MSL)	M S A	SECTOR	OBSTRUCTION	BRG/DIST	ELEVATION (MSL)	M S A
360-360	TWR (37-002504)	137/ 17.9	2349 (1A)	3400					

QUALITY CHECKED 4

CITY AND STATE		FACILITY	PROCEDURE AND AMENDMENT NO:	REGION
RALEIGH/DURHAM, NC	ELEVATION: 435 AIRPORT NAME: RALEIGH-DURHAM INTL	RNAV	RNAV (RNP) Z RWY 23R, 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
		A / C		HOURS REMOTE OPERATION: 0
SATISFACTORY ON:				
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: 408.7
	DISTANCE FROM RWY:	ELEV GP ANTENNA:
		THRESHOLD CROSSING HEIGHT: 56.0

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: 08/17/2012
TITLE: AERONAUTICAL INFORMATION SPECIALIST	OFFICE: AJV-352

PART C - REMARKS:

ISA DEVIATION USED: -23.13C (-10F)

MAX SPEED GLEYS TO CLIFE - 210 KIAS.
MAX SPEED BUTTS TO CLIFE - 210 KIAS.
MAX SPEED PAINS TO CLIFE - 230 KIAS.

ACTUAL HIGH TEMP: 48C (130F)

RF TURN RADIUS/BANK ANGLE COMPUTATIONS:

SEGMENT: NOBVE - CLIFE, ALT: 4659.46, KIAS: 210.
KTAS: 228.48, HAA: 4224.46', VKTW: 53.
RF CENTER POINT: CFVVP 355835.23N/0784454.98W
BA: 23.48

SEGMENT: JEMAD - CLIFE, ALT: 2583, KIAS: 210.
KTAS: 220.85, HAA: 2148', VKTW: 52.
RF CENTER POINT: CFVVP 355835.23N/0784454.98W
BA: 24.81

TF - TF TURN SEGMENT:

SEGMENT: PAINS - PRSTN, ATL: 6892.00, KIAS: 230.
KTAS: 261.70, HAA: 6457', VKTW: 84.57, BA: 18.00

ACT = -9C

CONNECTS TO ALDAN, MEYER, MALNR AND KAROO RNAV STARS.

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

VKTW WINDS OBTAINED FROM MITRE DATA.

VGSI DATA: 3.00/68 TCH

QUALITY CHECKED

STANDARD INSTRUMENT APPROACH PROCEDURE DATA RECORD

PART - A OBSTRUCTION DATA

1. APP SEGMENT	FROM	TO	OBSTRUCTION	COORDINATES	ELEV. MSL	ROC	ALT. ADJUSTMENTS	MIN. ALT.
FINAL: RNP 0.30	CLIFE	RW23R	12. TOWER (37-001676)	355448.49N/0784547.70W	583 (5D)	21.00:1	AC50 MA75	978/569
MISSED APPROACH:	DA	RW23R	11. OL TK (KRDU0088)	355354.92N/0784552.54W	547 (1A)	ASC		
(RNP 0.15 - 1.00)		(40:1)						
MISSED APPROACH:	DA	RW23R	12. TOWER (37-001676)	355448.49N/0784547.70W	583 (5D)	ASC	AC50	
(RNP 0.30 - 1.00)		(40:1)						
MISSED APPROACH:	RW23R	SCHOO				ASC		
(RNP 0.15 - 1.00)		(40:1)						
MISSED APPROACH:	RW23R	SCHOO				ASC		
(RNP 0.30 - 1.00)		(40:1)						

3. MISSED APPROACH									
	MAP:	DA / DA	SCHOO				ASC		3000
				13. TWR (37-001244)	355252.00N/0784709.00W	660 (1A)	1000	AC3	1700
	ELEV:	538/655		14. TERRAIN	354715.00N/0785136.00W	479 (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 23R, 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: CFVVP **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 355835.23N/0784454.98W **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 23R			KRDU	RALEIGH/DURHAM	NC (US)

COMPULSORY REPORTING POINT: NO

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

DEVELOPED BY: **DATE:** 08/23/2012 **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 4

RADIO FIX AND HOLDING DATA RECORD

NAME: CLIFE **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 355648.66N/0784244.75W **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 23R			KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: IAP

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 2 **DATE OF REVISION:** 01/10/2013

REASON FOR REVISION:
FIX RELOCATED 2177.82 FEET NE.
REMOVED CONTROLLER FROM REQUIRED CHARTING.

DEVELOPED BY: **DATE:** 08/09/2012 **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 ATCT
OTHER:

QUALITY CHECKED 4

RADIO FIX AND HOLDING DATA RECORD

NAME: JEMAD **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 355845.96N/0784150.64W **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 23R			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:** 08/23/2012 **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: NOBVE **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 360021.69N/0784705.39W **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 23R			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:** 08/23/2012 **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

INFO ONLY

NAME: BUTTS **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 360912.97N/0784246.51W **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 23R			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:** 07/16/2012 **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: GLEYS **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 355733.39N/0785033.43W **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 23R			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:** 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 4

RADIO FIX AND HOLDING DATA RECORD

NAME: JOLTY **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 355940.56N/0784756.24W **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 23R			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:** 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 4

RADIO FIX AND HOLDING DATA RECORD

NAME: PAINS **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 360425.17N/0782623.33W **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 23L			KRDU	RALEIGH/DURHAM	NC (US)
IAP	RNAV (RNP) Z RWY 23R			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:** 08/01/2012 **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: PRSTN **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 360140.36N/0783642.97W **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-DMP	LOC/DME		052.16	045.16	13.21	13.21		2200	4800

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	052.26	232.26	R		4	3000	10000	5	10

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	TOWER (37-003225)	360356.05N/0782924.61W	953	1A

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERN.

REMARKS:
PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
IAP	ILS OR LOC RWY 23R	1		KRDU	RALEIGH/DURHAM	NC (US)
IAP	ILS RWY 23R (CAT II & III)	1		KRDU	RALEIGH/DURHAM	NC (US)
IAP	RNAV (GPS) Y RWY 23R		1	KRDU	RALEIGH/DURHAM	NC (US)
IAP	RNAV (RNP) Z RWY 23R			KRDU	RALEIGH/DURHAM	NC (US)
STAR	MEYER (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: STAR, IAP, CONTROLLER

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 4 **DATE OF REVISION:** 09/23/2010

REASON FOR REVISION:
ADDED STAR TO REQUIRED CHARTING.
UPDATED SIGNATURE BLOCKS.

DEVELOPED BY: **DATE:** 03/05/2010 **OFFICE:** AVN-110 **NAME:** JILL OLSON

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

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 4

TERMINAL AIRSPACE DATA REQUIREMENTS

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

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

PROCEDURE: **RNAV (RNP) Z RWY 23R** 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 **3.25**
   (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 **225.20**
4. High Terrain in **FINAL** segment containing 1000' point **545**
5. Distance from **THLD** to 1500' point **6.05**
   (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 **225.26**
8. High Terrain in **INTERMEDIATE** segment containing 1500' point **496**
9. Threshold Coordinates (if straight-in) ... **355337.76N** / **0784640.92W**
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 ..... **355648.66N** / **0784244.75W**

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) Z RWY 23R** 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 **3.25**
   (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 **225.20**
4. High Terrain in **FINAL** segment containing 1000' point **545**
5. Distance from **THLD** to 1500' point **6.05**
   (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 **500**
9. Threshold Coordinates (if straight-in) ... **355337.76N** / **0784640.92W**
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 ..... **355648.66N** / **0784244.75W**

REMARKS: Approach/Drawing attached.

***RF SEGMENT JEMAD TO CLIFE, RADIUS CENTERPOINT CNF (CFVVP) ARC RADIUS 2.50 NM.**

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 23R

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 JOLTY TO CLIFE is 351.08 FT/NM (3.31 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:

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 23R

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 JOLTY and NOBVE is 0.97 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.
JOLTY is located at an airspace boundary with a required altitude. The beginning of the RF segment could not be collocated at JOLTY 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:

DO NOT REMOVE FROM PACKAGE

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

JEMAD – CLIFE
PRSTN – CLIFE

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:	408.7
Glidepath Angle:	3
TCH:	56
RNP Value:	0.30
Δ ISA:	-23.13

Straight In Segment

(Wingspan =<262) **LTP to Origin:**	3,662.43'
(Wingspan =<136) **LTP to Origin:**	3,442.45'
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 24

VEB
Temperature Limits

Glidepath Angle:	3.00°	
Max Glidepath Angle:	3.50°	
PFAF Elevation:	2000	
LTP Elevation:	22.7	
ACT:	-15.00°C	
Min Glidepath Angle	2.76°	
NA Below	-15.00°C	5.00°F
NA Above	49.24°C	120.63°F

Intermediate Segment
VEB ROC

Glidepath Angle	3.00°
LTP MSL Elevation	408.70
TCH (ft)	56.00
OCS Slope	21.00
OCS Origin Distance (ft) *(measured along-track from LTP)*	3,652.43
Obstacle Distance (ft) *(measured along-track from LTP)*	22,037.66
VEB ROC *(at obstacle)*	**339**
Glidepath MSL altitude at Obstacle	1,631.28
OCS MSL altitude at Obstacle	1,292.29

Rwy 23R
Butts.

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:	408.7
Glidepath Angle:	3
TCH:	56
RNP Value:	0.30
Δ ISA:	-23

Straight In Segment

***(Wingspan =<262)* LTP to Origin:**	3,649.66'
***(Wingspan =<136)* LTP to Origin:**	3,439.79'
OCS Slope Ratio:	20.99 : 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:	1900	
LTP Elevation:	408.7	
ACT:	-9.00°C	
Min Glidepath Angle	2.83°	
NA Below	-9.00°C	15.80°F
NA Above	47.73°C	117.92°F

Intermediate Segment
VEB ROC

Glidepath Angle	3.00°
LTP MSL Elevation	430.60
TCH (ft)	55.80
OCS Slope	20.99
OCS Origin Distance (ft) *(measured along-track from LTP)*	3,649.66
Obstacle Distance (ft) *(measured along-track from LTP)*	22,037.66
VEB ROC *(at obstacle)*	**338**
Glidepath MSL altitude at Obstacle	1,652.98
OCS MSL altitude at Obstacle	1,314.74

Rwy 23 R
RF Seg

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:	408.7
Glidepath Angle:	3
TCH:	56
RNP Value:	0.30
Δ ISA:	-23

Straight In Segment

(*Wingspan =<262*) LTP to Origin:	3,649.66'
(*Wingspan =<136*) LTP to Origin:	3,439.79'
OCS Slope Ratio:	20.99 : 1

RF Turn Segment | Bank angle:	23.48°
(*Wingspan =<262*) LTP to Origin:	4,220.36'
(*Wingspan =<136*) LTP to Origin:	3,693.58'
OCS Slope Ratio:	20.99 : 1

Version 2.0

VEB
Temperature Limits

Glidepath Angle:	3.00°	
Max Glidepath Angle:	3.50°	
PFAF Elevation:	1900	
LTP Elevation:	408.7	
ACT:	-9.00°C	
Min Glidepath Angle	2.83°	
NA Below	-9.00°C	15.80°F
NA Above	47.73°C	117.92°F

Intermediate Segment
VEB ROC

Glidepath Angle	3.00°
LTP MSL Elevation	430.60
TCH (ft)	55.80
OCS Slope	20.99
OCS Origin Distance (ft) *(measured along-track from LTP)*	4,220.36
Obstacle Distance (ft) *(measured along-track from LTP)*	22,037.66
VEB ROC *(at obstacle)*	**366**
Glidepath MSL altitude at Obstacle	1,652.98
OCS MSL altitude at Obstacle	1,287.05