Flight Procedure Tracking Form	Action: FLIGHT CHECK	Task Type: SID	Date Open: 10/05/2011	Task #: 2011100529630801005	Request #: 20111005296308
Procedure: SID OXFRD (RNAV) ONE RALEIGH-DURHAM NC KRDU		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: Proc D	Specialist: DAVID SAUER			

Procedure Review

	Rec'd	Rel'd	Full Name	Comments
Lead:	07/03/2012	08/29/2012	MARLON ROBINSON	
QA:	08/29/2012	09/05/2012	STEVEN SZUKALA	
Liaison:	09/05/2012		Spurlin	DME/DME

DME / DME

ESV REQUEST INCLUDED

pkg 5 of 7

Procedure Comments: ENROUTE

Remark Type: INFORMATION

RALEIGH/DURHAM, NC RALEIGH-DURHAM INTL (KRDU) OXFRD ONE (RNAV) (SID) ENROUTE-YES FC: 11.13.12 PUB: 1.10.13

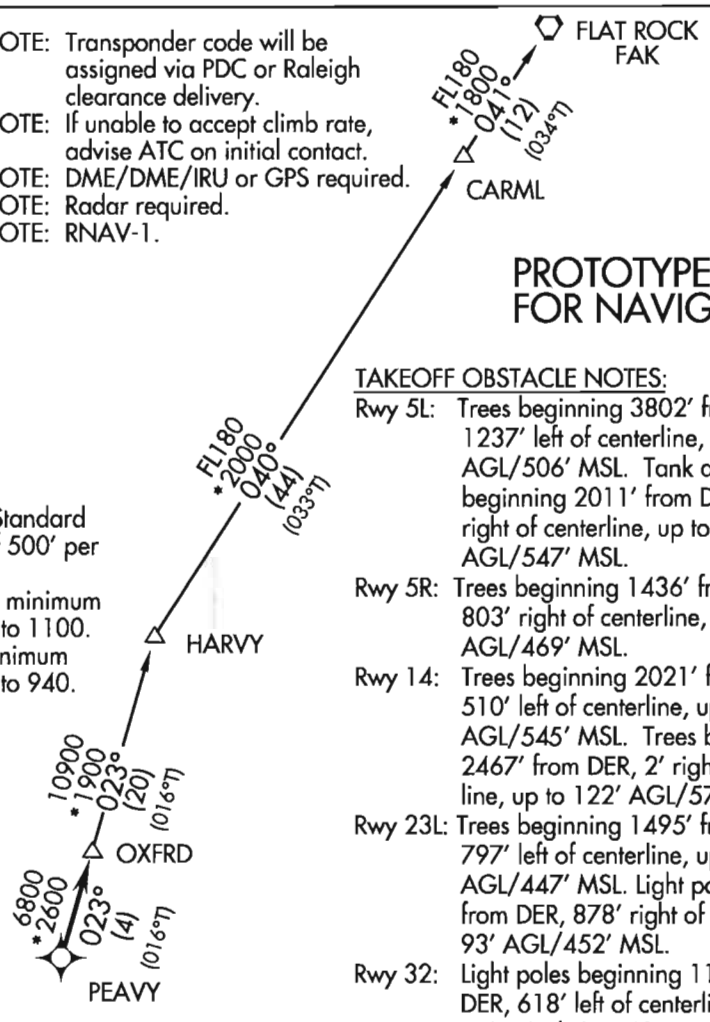
ATTACHED FORMS: ESV REPORTS; 8260-15B; 8260-15C; 8260-2(S): CARML-INT, REV 5; HARVY-INT, REV 12; OXFRD-INT, REV 2; PEAVY, ORIG; (INFO ONLY) FLAT ROCK (FAK) VTAC, REV 13.

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

OXFRD ONE DEPARTURE (RNAV)

ATIS 123.8
CLNC DEL
120.1
GND CON
121.9 348.6 (EAST)
(Rwys 5R-23L, 14-32)
121.7 348.6 (WEST)
(Rwy 5L-23R)
RALEIGH TOWER
127.45 257.8 (EAST)
(Rwys 5R-23L, 14-32)
119.3 257.8 (WEST)
(Rwy 5L-23R)
RALEIGH DEP CON
132.35 256.9

NOTE: Transponder code will be assigned via PDC or Raleigh clearance delivery.
NOTE: If unable to accept climb rate, advise ATC on initial contact.
NOTE: DME/DME/IRU or GPS required.
NOTE: Radar required.
NOTE: RNAV-1.



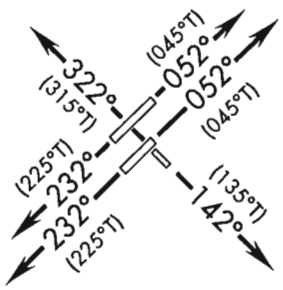
PROTOTYPE-NOT FOR NAVIGATION

TAKEOFF MINIMUMS:
Rwys 5L, 5R, 14, 23R: Standard with minimum climb of 500′ per NM to 940.
Rwy 23L: Standard with minimum climb of 500′ per NM to 1100.
Rwy 32: 300-1 with minimum climb of 500′ per NM to 940.

TAKEOFF OBSTACLE NOTES:
Rwy 5L: Trees beginning 3802′ from DER, 1237′ left of centerline, up to 77′ AGL/506′ MSL. Tank and trees beginning 2011′ from DER, 948′ right of centerline, up to 138′ AGL/547′ MSL.
Rwy 5R: Trees beginning 1436′ from DER, 803′ right of centerline, up to 80′ AGL/469′ MSL.
Rwy 14: Trees beginning 2021′ from DER, 510′ left of centerline, up to 116′ AGL/545′ MSL. Trees beginning 2467′ from DER, 2′ right of centerline, up to 122′ AGL/571′ MSL.
Rwy 23L: Trees beginning 1495′ from DER, 797′ left of centerline, up to 58′ AGL/447′ MSL. Light pole 1457′ from DER, 878′ right of centerline, 93′ AGL/452′ MSL.
Rwy 32: Light poles beginning 1170′ from DER, 618′ left of centerline, up to 55′ AGL/486′ MSL. Hangar 1242′ from DER, 753′ right of centerline, 34′ AGL/473′ MSL. Control tower 2207′ from DER, 910′ right of centerline, 231′ AGL/660′ MSL.

CARML: 3721.709′/07758.140′
FAK: 3731.711′/07749.693′
HARVY: 3644.770′/07828.316′
OXFRD: 3625.217′/07835.338′
PEAVY: 3621.416′/07836.696′

NOTE: Chart not to scale.



DEPARTURE ROUTE DESCRIPTION

TAKEOFF RWYS 05L, 05R: Climb heading 052° or as assigned by ATC, expect radar vectors to PEAVY, thence....
TAKEOFF RWY 14: Climb heading 142° or as assigned by ATC, expect radar vectors to PEAVY, thence....
TAKEOFF RWYS 23L, 23R: Climb heading 232° or as assigned by ATC, expect radar vectors to PEAVY, thence....
TAKEOFF RWY 32: Climb heading 322° or as assigned by ATC, expect radar vectors to PEAVY, thence....

....On track 023° to OXFRD, turbojets maintain 7000, propellers maintain 2000. Expect clearance to filed altitude within ten minutes after departure.

FLAT ROCK TRANSITION (OXFRD1.FAK):

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Establish	
Facility Data			
Chart Name : LYNCHBURG	City : LYNCHBURG	Ident : LYH	State : VA
Type/Class : TACR	Frequency : M990	Reference No.: 10039209	

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 703970-018	132	175	77	40	120

Requirement: ESTABLISH ESV FOR BEXGO RNAV SID

Signature: Osterhage Dennis	Routing Symbol: AJV-E2	Date: 03/09/2010

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 703970-018	132	175	77	40	120	APPROVE

Requirement/Remarks: ESTABLISH ESV FOR BEXGO RNAV SIDApproved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: Cassella Charles	Routing Symbol:	Date: 03/10/2010

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 703970-018	132	175	77	40	120	APPROVE

Requirement/Remarks: ESTABLISH ESV FOR BEXGO RNAV SIDApproved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 03/15/2010

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 703970-018	132	175				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Establish	
Facility Data			
Chart Name : TAR RIVER	City : ROCKY MOUNT	Ident : TYI	State : NC
Type/Class : TACR	Frequency : M1212	Reference No.: 10039211	

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 694155-027	275	333	60	40	120

Requirement: ESTABLISH ESV FOR BEXGO RNAV SID

Signature: Osterhage Dennis	Routing Symbol: AJV-E2	Date: 03/09/2010

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 694155-027	275	333	60	40	120	APPROVE

Requirement/Remarks: ESTABLISH ESV FOR BEXGO RNAV SIDApproved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 03/10/2010

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 694155-027	275	333	60	40	120	APPROVE

Requirement/Remarks: ESTABLISH ESV FOR BEXGO RNAV SIDApproved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 03/10/2010

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 694155-027	275	333				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

OXFRD

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Establish	
Facility Data			
Chart Name : FRANKLIN	City : FRANKLIN	Ident : FKN	State : VA
Type/Class : TACR	Frequency : M1004	Reference No.: 10039217	

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 890698-005	314	327	65	120	180

Requirement: ESTABLISH ESV FOR OXFRD RNAV SID

Signature: Osterhage Dennis	Routing Symbol: AJV-E2	Date: 03/10/2010

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 890698-005	314	327	65	120	180	APPROVE

Requirement/Remarks: ESTABLISH ESV FOR OXFRD RNAV SIDApproved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 03/10/2010

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 890698-005	314	327	65	120	180	APPROVE

Requirement/Remarks: ESTABLISH ESV FOR OXFRD RNAV SIDApproved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 03/10/2010

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 890698-005	314	327				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Establish	
Facility Data			
Chart Name : RALEIGH DURHAM	City : RALEIGH	Ident : RDU	State : NC
Type/Class : TACR	Frequency : M1206	Reference No.: 09034182	

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 694151-011	20	0	55	30	175

Requirement: GRANDFATHERED: HARVY/ ALONG V3

Signature: Bordy Beverly	Routing Symbol:	Date: 03/17/2009

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 694151-011	20	0	55	30	175	APPROVE

Requirement/Remarks: GRANDFATHERED: HARVY/ ALONG V3Approved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: Cassella Charles	Routing Symbol:	Date: 03/17/2009

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 694151-011	20	0	55	30	175	APPROVE

Requirement/Remarks: GRANDFATHERED: HARVY/ ALONG V3Approved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 03/18/2009

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 694151-011	20	0				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Revision	
Facility Data			
Chart Name : FLAT ROCK	City : FLAT ROCK	Ident : FAK	State : VA
Type/Class : H-VOR	Frequency : M113.3	Reference No.: 10039191	

Expanded Service Volume Data: (Original Record)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 697417-008	220	0	57	60	145

Requirement: V3 HARVY

Signature: Guimond Peter | Routing Symbol: | Date: 04/30/2008

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 697417-008	220	0	57	60	150

Requirement: REVISED

Signature: Guimond Peter | Routing Symbol: AVN-110 | Date: 03/09/2010

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 697417-008	220	0	57	60	150	APPROVE

Requirement/Remarks: REVISEDApproved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: Cassella Charles | Routing Symbol: | Date: 03/09/2010

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 697417-008	220	0	57	60	150	APPROVE

Requirement/Remarks: REVISEDApproved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: CHRISTEIN THOMAS | Routing Symbol: | Date: 03/10/2010

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 697417-008	220	0				

Requirement/Remarks:

Signature: | Routing Symbol: | Date:

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Revision	
Facility Data			
Chart Name : FLAT ROCK	City : FLAT ROCK	Ident : FAK	State : VA
Type/Class : TACR	Frequency : M1167	Reference No.: 10039192	

Expanded Service Volume Data: (Original Record)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 698146-001	220	0	57	60	145

Requirement: V3 HARVY

Signature: Guimond Peter	Routing Symbol:	Date: 04/30/2008

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 698146-001	220	0	57	60	150

Requirement: REVISED

Signature: Guimond Peter	Routing Symbol: AVN-110	Date: 03/09/2010

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 698146-001	220	0	57	60	150	APPROVE

Requirement/Remarks: REVISEDApproved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: Cassella Charles	Routing Symbol:	Date: 03/09/2010

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 698146-001	220	0	57	60	150	APPROVE

Requirement/Remarks: REVISEDApproved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 03/09/2010

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 698146-001	220	0				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

ESV Details

Originating Office :	Airspace Docket Number :	Request Type : Establish	
Facility Data			
Chart Name : RALEIGH DURHAM	City : RALEIGH DURHAM	Ident : RDU	State : NC
Type/Class : H-VOR	Frequency : M117.2	Reference No.: 09034181	

Expanded Service Volume Data: (Requesting Officer)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude
FAA 690888-021	20	0	55	30	175

Requirement: GRANDFATHERED: HARVY/ ALONG V3

Signature: Bordy Beverly	Routing Symbol:	Date: 03/17/2009

Expanded Service Volume Data: (FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 690888-021	20	0	55	30	175	APPROVE

Requirement/Remarks: GRANDFATHERED: HARVY/ ALONG V3Approved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT

Signature: Cassella Charles	Routing Symbol:	Date: 03/17/2009

Expanded Service Volume Data: (Super FMO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 690888-021	20	0	55	30	175	APPROVE

Requirement/Remarks: GRANDFATHERED: HARVY/ ALONG V3Approved. Pend. Flight Chk/Inspect @ the req. dist. and MIN ALT.

Signature: CHRISTEIN THOMAS	Routing Symbol:	Date: 03/18/2009

Expanded Service Volume Data: (FIFO)

ESV ID	Radial 1	Radial 2	Distance	Minimum Altitude	Maximum Altitude	Action Type
FAA 690888-021	20	0				

Requirement/Remarks:

Signature:	Routing Symbol:	Date:

NM 7 14 21 28 35 42 49

FT 42000 84000 126000 168000 210000 252000 294000

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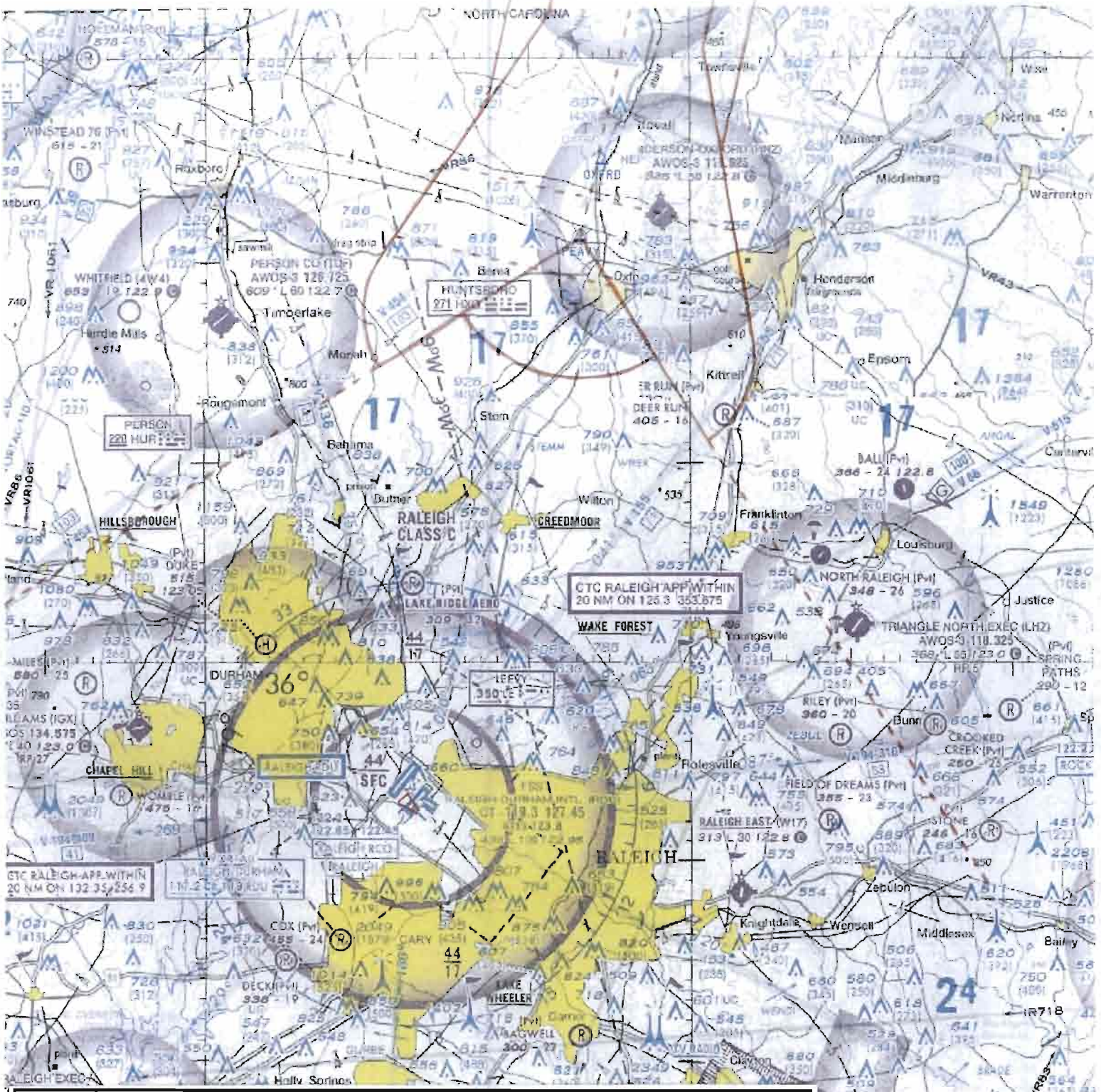

Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM		RWY 32 PNA		ASC
State:	NORTH CAROLINA				
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
Scale:	1: 500,000				

NM 7 14 21 28 35 42 49

FT 42000 84000 126000 168000 210000 252000 294000

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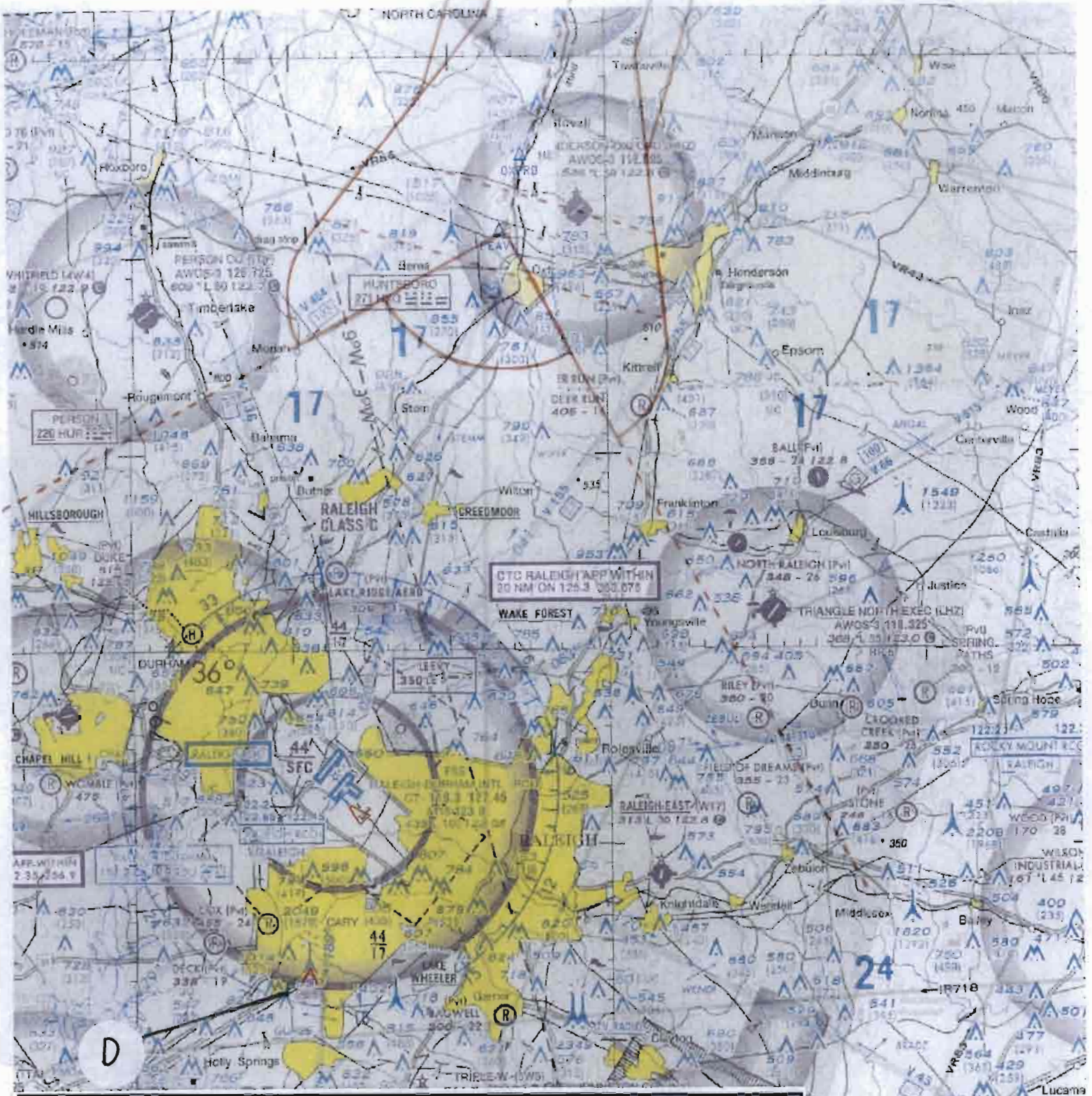

Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM		RWY 14 PNA		
State:	NORTH CAROLINA	D	RWY 14 PEN	TOWER	2049
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
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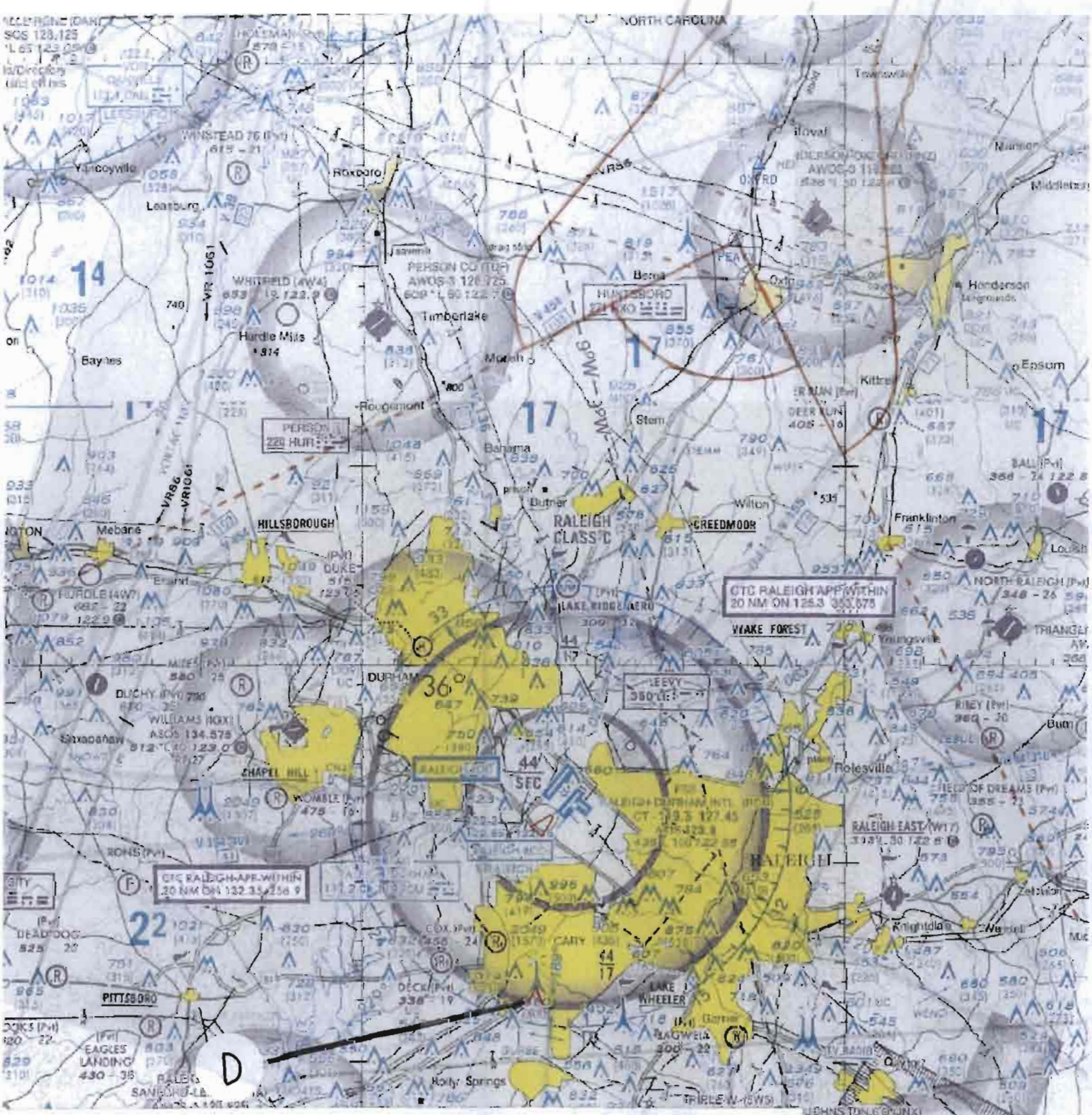

Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM		RWY 23R PNA		
State:	NORTH CAROLINA	D	RWY 23R PEN	TOWER	2049
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
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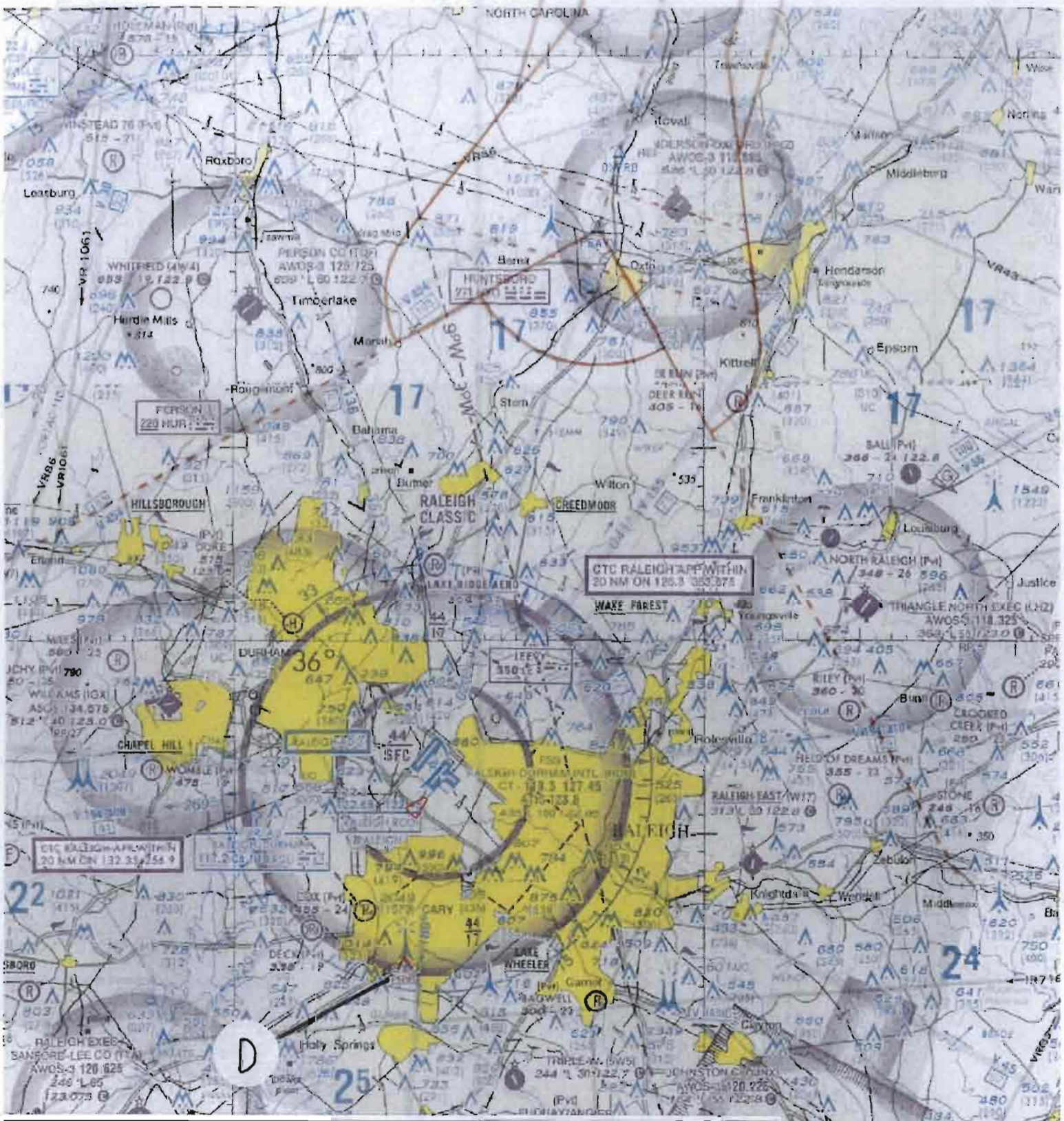

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Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM		RWY 23L PNA		
State:	NORTH CAROLINA	D	RWY 23L PEN	TOWER	2049
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
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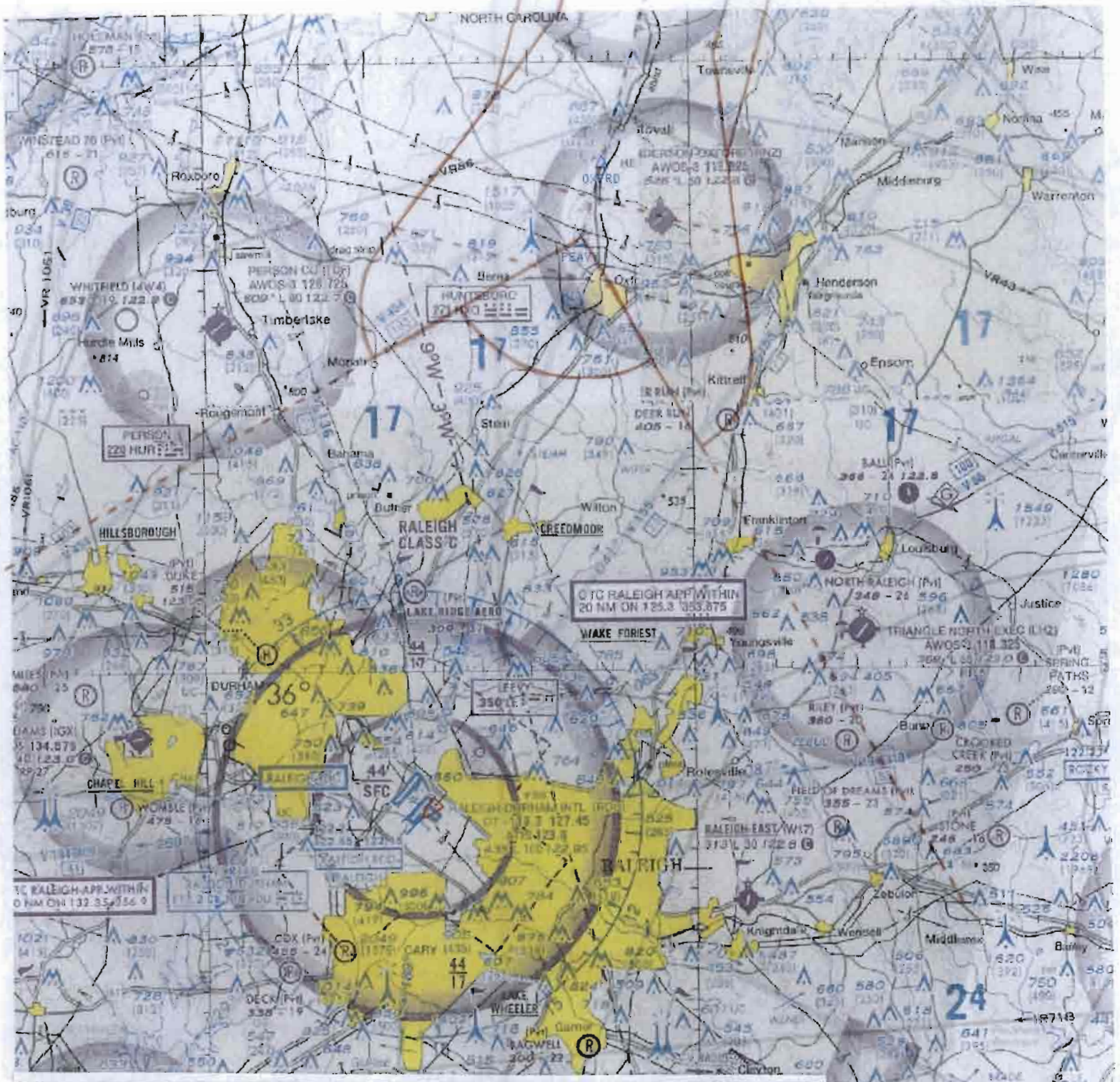

Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM		RWY 05R PNA		ASC
State:	NORTH CAROLINA				
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
Scale:	1: 500,000				

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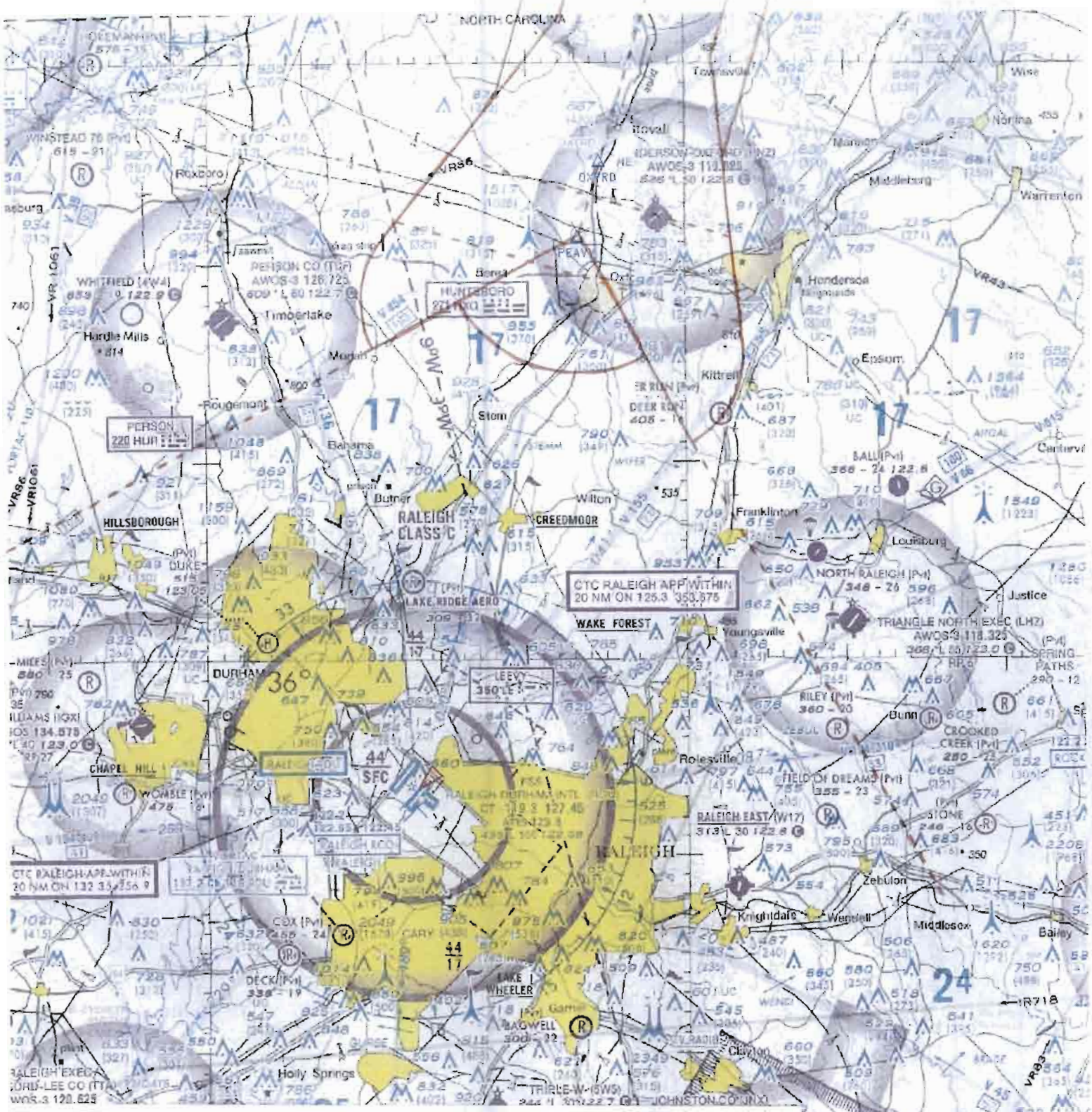

Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM		RWY 05L PNA		ASC
State:	NORTH CAROLINA				
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
Scale:	1: 500,000				

NM 7 14 21 28 35 42 49

FT 42000 84000 126000 168000 210000 252000 294000

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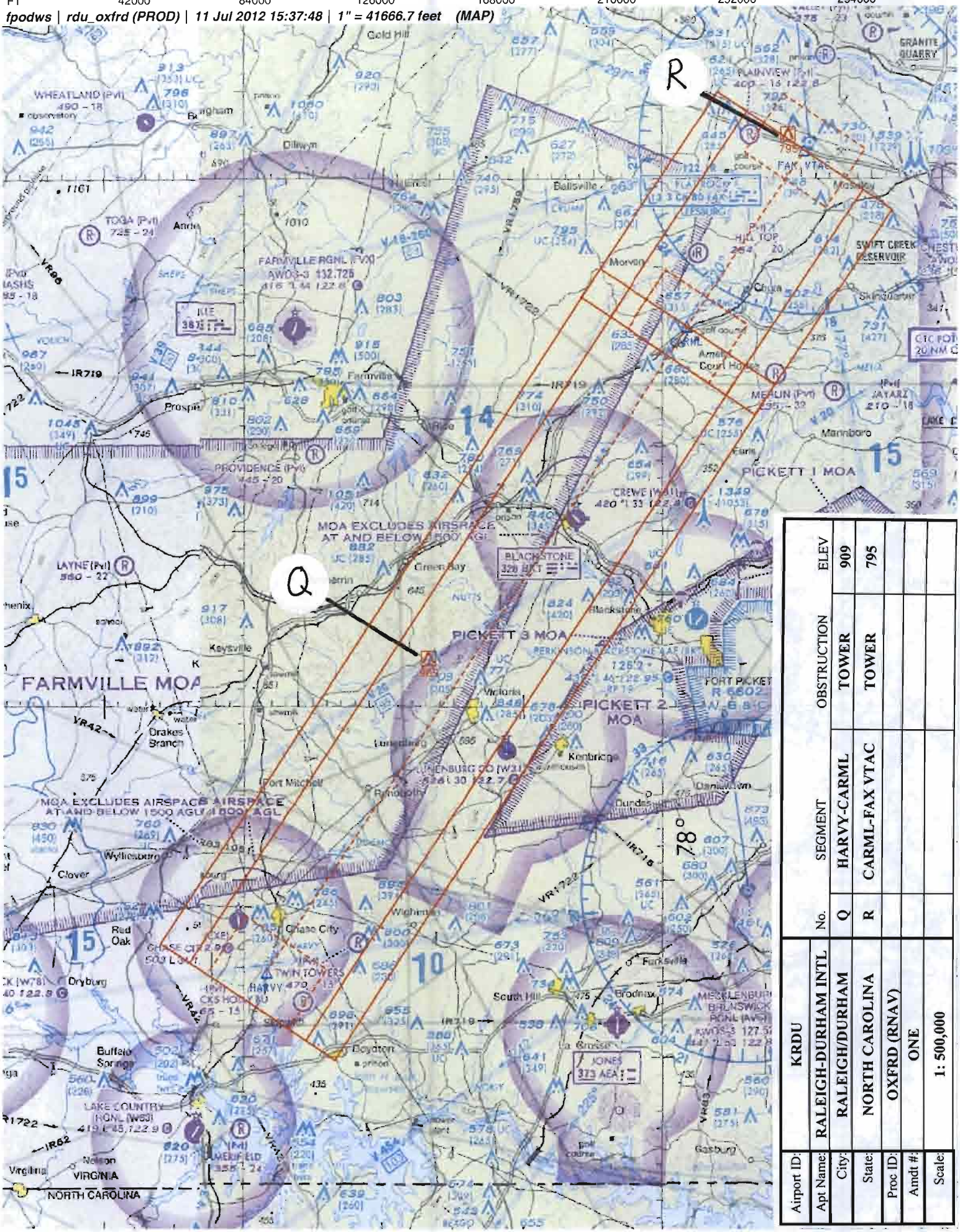
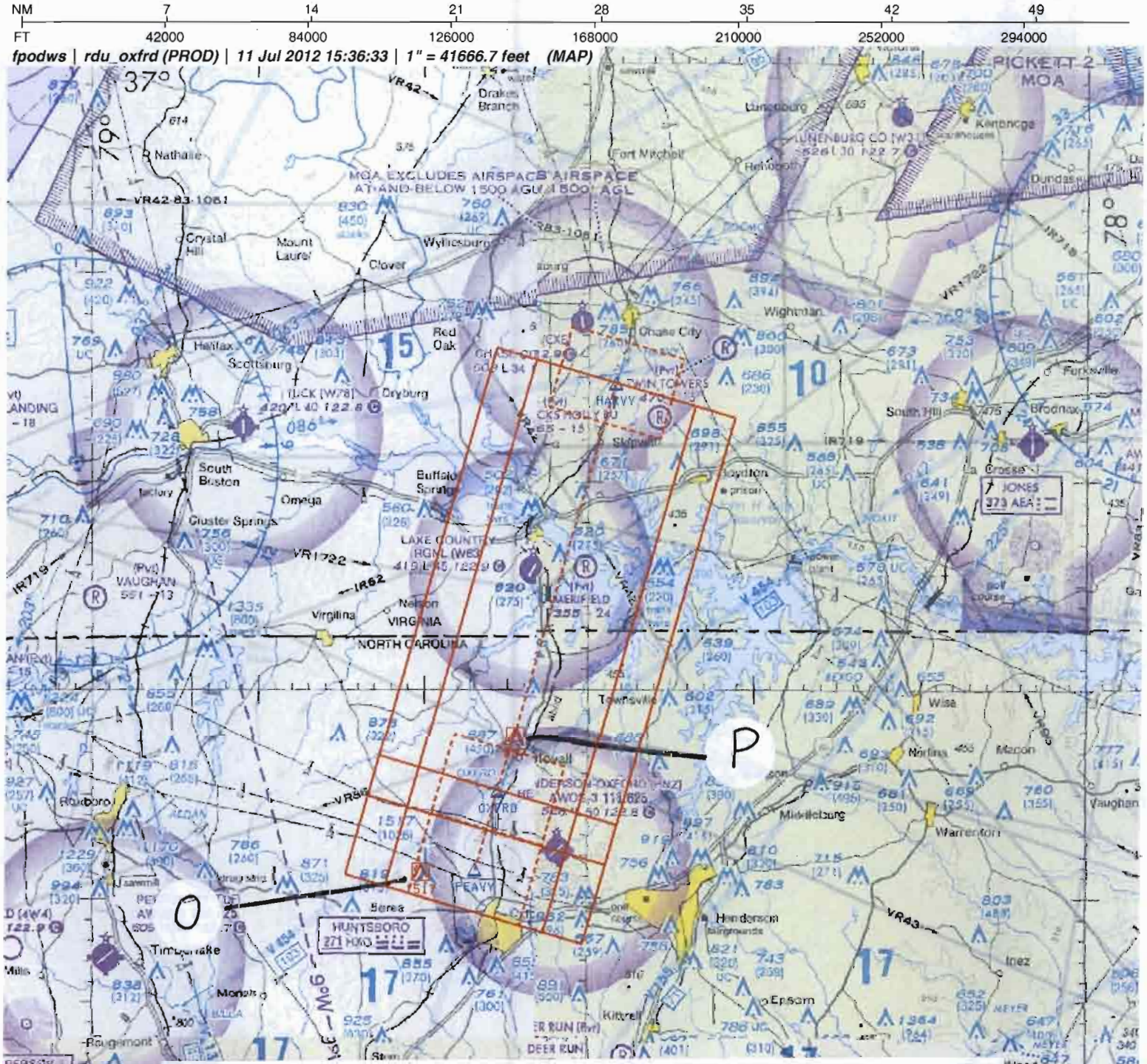


Airport ID:	KRDU						
Apt Name:	RALEIGH-DURHAM INTL						
City:	RALEIGH/DURHAM						
State:	NORTH CAROLINA						
Proc ID:	OXFRD (RNAV)						
Amdt #:	ONE						
Scale:	1: 500,000						
		No.	SEGMENT	OBSTRUCTION		ELEV	
		Q	HARVY-CARML	TOWER		909	
		R	CARML-FAX VTAC	TOWER		795	



Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM	O	PEAVY-OXFRD	TOWER	1517
State:	NORTH CAROLINA	P	OXFRD-HARVY	TOWER	887
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
Scale:	1: 500,000				

R14

NM 1 2 3 4 5 6 7 8 9 10

FT 8000 16000 24000 32000 40000 48000 56000 64000

fpodws | rdu_ica (PROD) | 12 Jul 2012 09:52:37 | 1" = 8333.3 feet (MAP)

Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM	C	RWY 14 ICA	TREE	558
State:	NORTH CAROLINA	D	RWY 14 PEN	TOWER	2049
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
Scale:	1: 100,000				

A32

NM 1 2 3 4 5 6 7 8 9 10

FT 8000 16000 24000 32000 40000 48000 56000 64000

fpodws | rdu_ica (PROD) | 12 Jul 2012 09:26:18 | 1" = 8333.3 feet (MAP)

Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM	F	RWY 32 ICA	CTRL TOWER	660
State:	NORTH CAROLINA				
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
Scale:	1: 100,000				

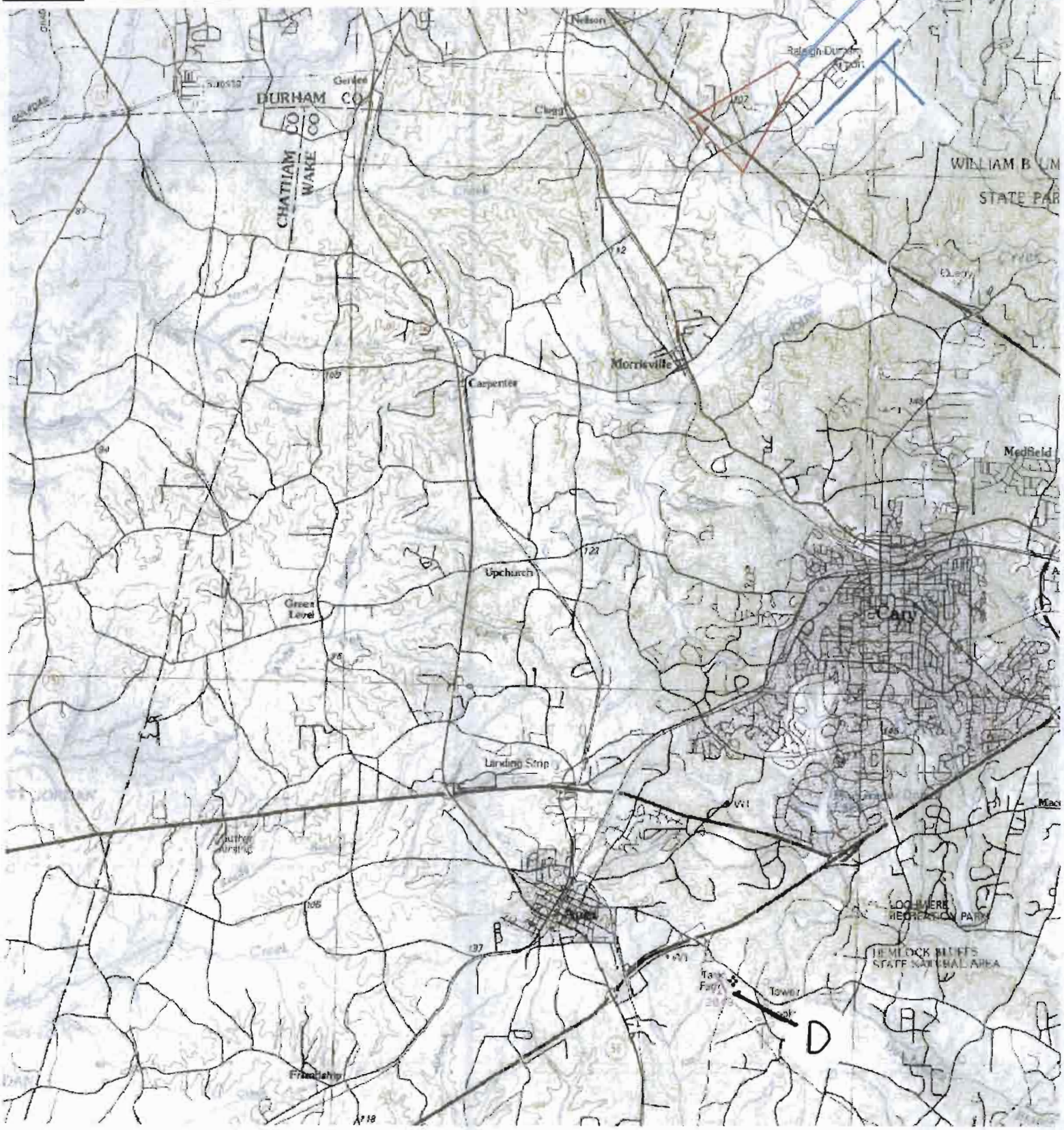
R23R

NM 1 2 3 4 5 6 7 8 9 10

FT 8000 16000 24000 32000 40000 48000 56000 64000

fpodws | rdu_ica (PROD) | 17 Jul 2012 14:51:55 | 1" = 8333.3 feet (MAP)

Airport ID:	**KRDU**				
Apt Name:	**RALEIGH-DURHAM INTL**	No.	SEGMENT	OBSTRUCTION	ELEV
City:	**RALEIGH/DURHAM**		**RWY 23R ICA**		**ASC**
State:	**NORTH CAROLINA**	**D**	**RWY 23R PEN**	**TOWER**	**2049**
Proc ID:	**OXFRD (RNAV)**				
Amdt #:	**ONE**				
Scale:	**1: 100,000**				



23L

NM 1 2 3 4 5 6 7 8 9 10

FT 8000 16000 24000 32000 40000 48000 56000 64000

fpodws | rdu_ica (PROD) | 17 Jul 2012 15:58:43 | 1" = 8333.3 feet (MAP)

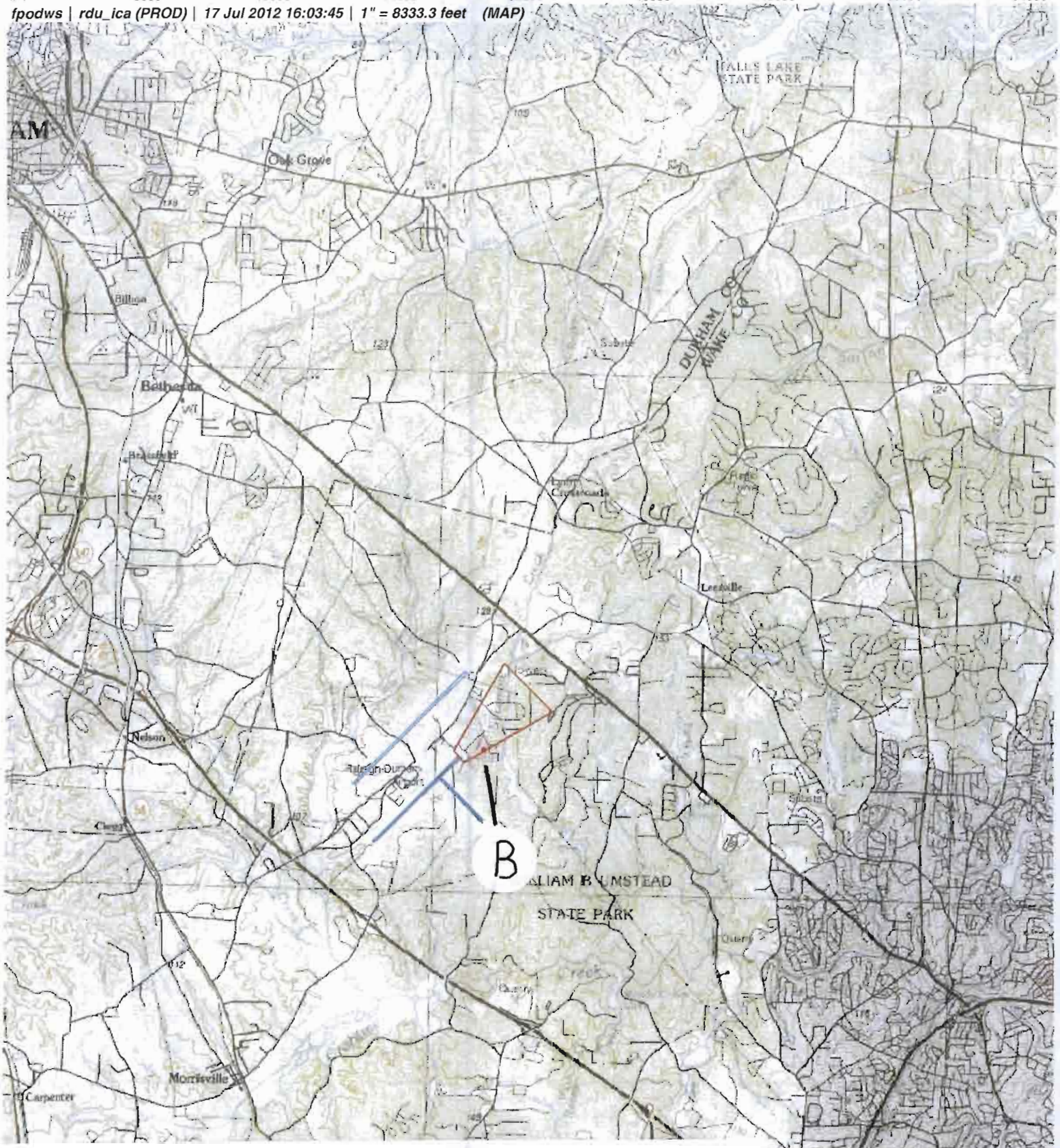
Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM	E	RWY 23L ICA	OL ON POLE	452
State:	NORTH CAROLINA	D	RWY 23L PEN	TOWER	2049
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
Scale:	1: 100,000				

05R

NM 1 2 3 4 5 6 7 8 9 10

FT 8000 16000 24000 32000 40000 48000 56000 64000

fpodws | rdu_ica (PROD) | 17 Jul 2012 16:03:45 | 1" = 8333.3 feet (MAP)



Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM	B	RWY 05R ICA	TREE	469
State:	NORTH CAROLINA				
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
Scale:	1: 100,000				

R05L

Airport ID:	KRDU				
Apt Name:	RALEIGH-DURHAM INTL	No.	SEGMENT	OBSTRUCTION	ELEV
City:	RALEIGH/DURHAM	A	RWY 05L ICA	OL ON TANK	547
State:	NORTH CAROLINA				
Proc ID:	OXFRD (RNAV)				
Amdt #:	ONE				
Scale:	1: 100,000				

U.S. DEPARTMENT of TRANSPORTATION – FEDERAL AVIATION ADMINISTRATION

GRAPHIC DEPARTURE PROCEDURE (DP)

Bearings, headings, courses, tracks, and radials are magnetic. Elevation and altitudes are in feet MSL. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles. Visibilities are in statue miles or feet RVR unless otherwise indicated. Graphic depictions attached.

DP Name	Number	DP Computer Code	Superseded Number	Dated	Effective Date
OXFRD (RNAV)	ONE	OXFRD1.OXFRD	NONE		

TYPE: RNAV SID

DP ROUTE DESCRIPTION:

TAKEOFF RWY 05L, 05R: CLIMB HEADING 052.14 OR AS ASSIGNED BY ATC, EXPECT RADAR VECTORS TO PEAVY THENCE...
TAKEOFF RWY 14: CLIMB HEADING 142.15 OR AS ASSIGNED BY ATC, EXPECT RADAR VECTORS TO PEAVY THENCE...
TAKEOFF RWY 23L: CLIMB HEADING 232.15 OR AS ASSIGNED BY ATC, EXPECT RADAR VECTORS TO PEAVY THENCE...
TAKEOFF RWY 23R: CLIMB HEADING 232.16 OR AS ASSIGNED BY ATC, EXPECT RADAR VECTORS TO PEAVY THENCE...
TAKEOFF RWY 32: CLIMB HEADING 322.15 OR AS ASSIGNED BY ATC, EXPECT RADAR VECTORS TO PEAVY THENCE...

...ON TRACK 023.10 TO OXFRD (MEA 6800/MOCA 2600), TURBOJETS MAINTAIN 7000, PROPELLERS MAINTAIN 2000. EXPECT CLEARANCE TO FILED ALTITUDE WITHIN TEN MINUTES AFTER DEPARTURE.

TRANSITION ROUTES (GRAPHIC DEPICTION ONLY):

Transition Name	Transition Computer Codes	From FIX/NAVAID	To FIX/NAVAID	Course	Distance	MEA	MOCA	Crossing Altitudes/Fixes
FLAT ROCK	OXFRD1.FAK	OXFRD	HARVY	TRACK 023.12	20.33	10900	1900	
		HARVY	CARML	TRACK 040.06	44.10	18000	2000	
		CARML	FAK VORTAC	TRACK 040.91	12.04	18000	1800	

PROCEDURAL DATA NOTES/TAKEOFF MINIMUMS:

NOTE: TRANSPONDER CODE WILL BE ASSIGNED VIA PDC OR RALEIGH CLEARANCE DELIVERY.
NOTE: IF UNABLE TO ACCEPT CLIMB RATE, ADVISE ATC ON INITIAL CONTACT.
NOTE: RNAV-1.
NOTE: DME/DME/IRU OR GPS REQUIRED.
NOTE: RADAR REQUIRED.

TAKEOFF MINIMUMS:
RWY 05L, 05R, 14, 23R, STANDARD WITH MINIMUM CLIMB OF 500 FT PER NM TO 940.
RWY 23L, STANDARD WITH MINIMUM CLIMB OF 500 FT PER NM TO 1100.
RWY 32, 300-1 WITH MINIMUM CLIMB OF 500 FT PER NM TO 940.

TAKEOFF OBSTACLES NOTES:

RWY 05L, TREES BEGINNING 3802 FT FROM DER, 1237 FT LEFT OF CENTERLINE, UP TO 77 FT AGL/506 FT MSL. TANK AND TREES BEGINNING 2011 FT FROM DER, 948 FT RIGHT OF CENTERLINE, UP TO 138 FT AGL/547 FT MSL.
RWY 05R, TREES BEGINNING 1436 FT FROM DER, 803 FT RIGHT OF CENTERLINE, UP TO 80 FT AGL/469 FT MSL.
RWY 14, TREES BEGINNING 2021 FT FROM DER, 510 LEFT OF CENTERLINE, UP TO 116 FT AGL/545 FT MSL. TREES BEGINNING 2467 FT FROM DER, 2 FT RIGHT OF CENTERLINE, UP TO 122 FT AGL/571 FT MSL.

QUALITY CHECKED 1

GRAPHIC DEPARTURE PROCEDURE (DP)

Bearings, headings, courses, tracks, and radials are magnetic. Elevation and altitudes are in feet MSL. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles. Visibilities are in statue miles or feet RVR unless otherwise indicated. Graphic depictions attached.

DP Name	Number	DP Computer Code	Superseded Number	Dated	Effective Date
OXFRD (RNAV)	ONE	OXFRD1.OXFRD	NONE		

RWY 23L, TREES BEGINNING 1495 FT FROM DER, 797 FT LEFT OF CENTERLINE, UP TO 58 FT AGL/447 FT MSL. LIGHT POLE 1457 FT FROM DER, 878 FT RIGHT OF CENTERLINE, 93 FT AGL/452 FT MSL.
RWY 32, LIGHT POLES BEGINNING 1170 FT FROM DER, 618 FT LEFT OF CENTERLINE, UP TO 55 FT AGL/486 FT MSL. HANGAR 1242 FT FROM DER, 753 FT RIGHT OF CENTERLINE, 34 FT AGL/473 FT MSL. CONTROL TOWER 2207 FT FROM DER, 910 FT RIGHT OF CENTERLINE, 231 FT AGL/660 FT MSL.

CONTROLLING OBSTACLES:

RWY 14, 23L, 23R, 2049 FT MSL TOWER (37-001064) 354251.00N/0784903.00W.
RWY 32, 660 FT MSL CONTROL TOWER (37-001244) 355252.00N/0784709.00W.

LOST COMMUNICATIONS PROCEDURES:

STANDARD.

ADDITIONAL FLIGHT DATA:

REFERENCE MAG VAR: KRDU 7W EPOCH YEAR: 1985.
DME/DME ASSESSMENT: SAT (RNP 2.0).

PILOT NAVIGATION AREA:
7NM ARC CENTERED ON PEAVY (IF), CW
FROM: POINT A (BEARING 338.10 TO PEAVY)
TO: POINT B (BEARING 068.10 TO PEAVY)
MINIMUM ALTITUDE - 6000

AIRPORTS SERVED:

RALEIGH-DURHAM INTL – RALEIGH/DURHAM, NC.

COMMUNICATIONS:

ATIS CLEARANCE DELIVERY, GROUND CONTROL, TOWER, DEPARTURE CONTROL: 132.35/256.9

FIXES AND/OR NAVAIDS:

U.S. DEPARTMENT of TRANSPORTATION – FEDERAL AVIATION ADMINISTRATION

GRAPHIC DEPARTURE PROCEDURE (DP)

Bearings, headings, courses, tracks, and radials are magnetic. Elevation and altitudes are in feet MSL. Altitudes are minimum altitudes unless otherwise indicated. Ceilings are in feet above airport elevation. Distances are in nautical miles. Visibilities are in statue miles or feet RVR unless otherwise indicated. Graphic depictions attached.

DP Name	Number	DP Computer Code	Superseded Number	Dated	Effective Date
OXFRD (RNAV)	ONE	OXFRD1.OXFRD	NONE		

REMARKS:

FLIGHT INSPECTED BY:

REQUIRED EFFECTIVE DATE:
ROUTINE

DEVELOPED BY:
DAVID SAUER AJV-352 7/16/12

APPROVED BY:
DARRYEL ADAMS AJV-352

COORDINATED WITH:
APA, ALPA, AOPA, ATA, NBAA, ZDC, RDU ATCT, RDU APP CON, RDU AMGR.

CHANGES:

REASONS:

DEPARTURE (DATA RECORD)

DP Name	Number	DP Computer Code	Superseded Number	Dated	Effective Date
OXFRD (RNAV)	ONE	OXFRD1.OXFRD	NONE		

FIX/NAVAID	LAT/LONG	C	FO/FB	LEG TYPE	TC	DIST (NM)	ALTITUDE	SPEED	REMARKS
RW05L (AER)	355228.02N/0784807.07W	N	-	-	-	-			CG 500 FT/NM TO 940
		-	-	VM	045.14	-			
PEAVY	362124.93N/0783641.75W	Y	FB	DF	-	-			
RW05R (AER)	355152.67N/0784750.42W	N	-	-	-	-			CG 500 FT/NM TO 940
		-	-	VM	045.14	-			
PEAVY	362124.93N/0783641.75W	Y	FB	DF	-	-			
RW14 (AER)	355230.11N/0784657.64W	N	-	-	-	-			CG 500 FT/NM TO 940
		-	-	VM	135.15	-			
PEAVY	362124.93N/0783641.75W	Y	FB	DF	-	-			
RW23L (AER)	355244.98N/0784645.82W	N	-	-	-	-			CG 500 FT/NM TO 1100
		-	-	VM	225.15	-			
PEAVY	362124.93N/0783641.75W	Y	FB	DF	-	-			
RW23R (AER)	355337.76N/0784640.92W	N	-	-	-	-			CG 500 FT/NM TO 940
		-	-	VM	225.16	-			
PEAVY	362124.93N/0783641.75W	Y	FB	DF	-	-			
RW32 (AER)	355205.08N/0784627.05W	N	-	-	-	-			CG 500 FT/NM TO 940
		-	-	VM	315.15	-			
PEAVY	362124.93N/0783641.75W	Y	FB	DF	-	-			

DEPARTURE (DATA RECORD)

DP Name	Number	DP Computer Code	Superseded Number	Dated	Effective Date
OXFRD (RNAV)	ONE	OXFRD1.OXFRD	NONE		

FIX/NAVAID	LAT/LONG	C	FO/FB	LEG TYPE	TC	DIST (NM)	ALTITUDE	SPEED	REMARKS
PEAVY	362124.93N/0783641.75W	Y	FB	IF	-	-			
OXFRD	362513.02N/0783520.30W	Y	FB	TF	016.10	3.95			
OXFRD	362513.02N/0783520.30W	Y	-	IF	-	-			OXFRD1.FAK
HARVY	364446.20N/0782818.98W	Y	FB	TF	016.12	20.33			
CARML	372142.54N/0775808.41W	Y	FB	TF	033.06	44.10			
FAK VORTAC	373142.63N/0774941.59W	Y	FB	TF	033.91	12.04			

DEPARTURE (DATA RECORD)

DP Name	Number	DP Computer Code	Superseded Number	Dated	Effective Date
OXFRD (RNAV)	ONE	OXFRD1.OXFRD	NONE		

ARINC PACKET - 424-18 - SID

```
                 1         2         3         4         5         6         7         8         9         0         1         2         3
NAVAID  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAD        FAK   K6011330VTH  N37314263W077494159    N37314263W077494159W0060004602     NARFLAT ROCK

                 1         2         3         4         5         6         7         8         9         0         1         2         3
WP      123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAEAENRT   CARML K60    C   L N37214254W077580841                      W0099     NAR           CARML
        SUSAEAENRT   HARVY K60    C   L N36444620W078281898                      W0094     NAR           HARVY
        SUSAEAENRT   OXFRD K70    C   L N36251302W078352030                      W0092     NAR           OXFRD
        SUSAEAENRT   PEAVY K70    W     N36212493W078364175                      W0092     NAR           PEAVY

                 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 KRDUK7DOXFRD14RW05B 010         0        VM                     0521                    18000
        SUSAP KRDUK7DOXFRD14RW05B 020PEAVYK7EA0EE   010DF
        SUSAP KRDUK7DOXFRD14RW14  010         0        VM                     1422                    18000
        SUSAP KRDUK7DOXFRD14RW14  020PEAVYK7EA0EE   010DF
        SUSAP KRDUK7DOXFRD14RW23B 010         0        VM                     2322                    18000
        SUSAP KRDUK7DOXFRD14RW23B 020PEAVYK7EA0EE   010DF
        SUSAP KRDUK7DOXFRD14RW32  010         0        VM                     3222                    18000
        SUSAP KRDUK7DOXFRD14RW32  020PEAVYK7EA0EE   010DF
        SUSAP KRDUK7DOXFRD15      010PEAVYK7EA0E       IF                                             18000
        SUSAP KRDUK7DOXFRD15      020OXFRDK7EA0EE   010TF                     02310040
        SUSAP KRDUK7DOXFRD16FAK   010OXFRDK7EA0E       IF                                             18000
        SUSAP KRDUK7DOXFRD16FAK   020HARVYK6EA0E    010TF                     02310203
        SUSAP KRDUK7DOXFRD16FAK   030CARMLK6EA0E    010TF                     04010441
        SUSAP KRDUK7DOXFRD16FAK   040FAK  K6D 0VE   010TF                     04090120

                 1         2         3         4         5         6         7         8         9         0         1         2         3
RUNWAY  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012
        ------------------------------------------------------------------------------------------------------------------------------------
        SUSAP KRDUK7GRW05L   0100000521 N35522802W078480707+0400    +0079800367000057150IIGKK1
        SUSAP KRDUK7GRW05R   0075000521 N35515267W078475042+0400    +0089100397000059150IIRDU1
        SUSAP KRDUK7GRW14    0035701422 N35523011W078465764-0200    +0099600432000050100D
        SUSAP KRDUK7GRW23L   0075002322 N35524498W078464582-0400    +0099200431000056150IILEI1
        SUSAP KRDUK7GRW23R   0100002322 N35533776W078464092-0400    +0092500409000056150IIDMP3
```

DEPARTURE (DATA RECORD)

DP Name	Number	DP Computer Code	Superseded Number	Dated	Effective Date
OXFRD (RNAV)	ONE	OXFRD1.OXFRD	NONE		

```
SUSAP KRDUK7GRW32    0035703222 N35520508W078462705+0200    +0097300425000045100R
```

DEPARTURE (DATA RECORD)

DP Name	Number	DP Computer Code	Superseded Number	Dated	Effective Date
OXFRD (RNAV)	ONE	OXFRD1.OXFRD	NONE		

ARINC SUMMARY - 424-18 - SID

ROUTES	TRANSITION	FIX	SEQ	USE	PATH	TURN	FO/FB	RNP	MAG(TRUE)	DISTANCE	ALTITUDE	SPEED
	RW05B		010		VM		FB		052.1()			
	RW05B	PEAVY	020		DF		FB	1.0				
	RW14		010		VM		FB		142.2()			
	RW14	PEAVY	020		DF		FB	1.0				
	RW23B		010		VM		FB		232.2()			
	RW23B	PEAVY	020		DF		FB	1.0				
	RW32		010		VM		FB		322.2()			
	RW32	PEAVY	020		DF		FB	1.0				
		PEAVY	010		IF		FB					
		OXFRD	020		TF		FB	1.0	023.1()	004.0		
	FAK	OXFRD	010		IF		FB					
	FAK	HARVY	020		TF		FB	1.0	023.1()	020.3		
	FAK	CARML	030		TF		FB	1.0	040.1()	044.1		
	FAK	FAK	040		TF		FB	1.0	040.9()	012.0		

POINT DATA

WAYPOINT	LAT IN SECS	LONG IN SECS	LAT IN MINS	LONG IN MINS
FAK	N373142.63	W0774941.59	N3731.711	W07749.693
CARML	N372142.54	W0775808.41	N3721.709	W07758.140
HARVY	N364446.20	W0782818.98	N3644.770	W07828.316
OXFRD	N362513.02	W0783520.30	N3625.217	W07835.338
PEAVY	N362124.93	W0783641.75	N3621.416	W07836.696
RW05L	N355228.02	W0784807.07	N3552.467	W07848.118
RW05R	N355152.67	W0784750.42	N3551.878	W07847.840
RW14	N355230.11	W0784657.64	N3552.502	W07846.961
RW23L	N355244.98	W0784645.82	N3552.750	W07846.764
RW23R	N355337.76	W0784640.92	N3553.629	W07846.682
RW32	N355205.08	W0784627.05	N3552.085	W07846.451

RUNWAY DATA

RWY	THRESHOLD ELEVATION	TCH
RW05L	00367	57
RW05R	00397	59
RW14	00432	50
RW23L	00431	56
RW23R	00409	56
RW32	00425	45

RADIO FIX AND HOLDING DATA RECORD

NAME: CARML **STATE:** VA **COUNTRY:** US

LATITUDE/LONGITUDE: 372142.54N/0775808.41W **TYPE:** WP, INT, 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	FLAT ROCK	FAK	VORTAC	H	220.00	214.00		12.04		6000	17500
2	RICHMOND	RIC	VORTAC	H	264.00	255.00	32.13	32.13		3000	17500

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

REMARKS:
RICHMOND (FAC 2) AND FLAT ROCK (FAC 1) USED TO ESTABLISH FIX COORDINATES

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	OXFRD (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)
DP	YEAST	1, 2		KRIC	RICHMOND	VA (US)
EN ROUTE	V3	1, 2				(US)
IAP	RNAV (GPS) RWY 22			KBKT	BLACKSTONE	VA (US)
IAP	RNAV (GPS) RWY 4			KBKT	BLACKSTONE	VA (US)

REQUIRED CHARTING: DP, IAP, CONTROLLER, EN ROUTE LOW

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 5 **DATE OF REVISION:** 01/10/2013

REASON FOR REVISION:
1. ADDED REMARK, RICHMOND (FAC 2) AND FLAT ROCK (FAC 1) USED TO ESTABLISH FIX COORDINATES.

DEVELOPED BY: **DATE:** 07/11/2012 **OFFICE:** AJV-352 **NAME:** DAVID SAUER

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

SIGNATURE:

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

RADIO FIX AND HOLDING DATA RECORD

NAME: HARVY **STATE:** VA **COUNTRY:** US

LATITUDE/LONGITUDE: 364446.20N/0782818.98W **TYPE:** WP, INT, 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	54.48	54.48		3000	17500
2	SOUTH BOSTON	SBV	VORTAC	L	085.59	080.59	26.52	26.52		2300	17500
3	FLAT ROCK	FAK	VORTAC	H	219.57	213.57	56.14	56.14		6000	17500

EXPANDED SERVICE VOLUME (ESV):

FAC IDENT	FAC TYPE	RADIAL/BEARING	DISTANCE	MIN ALTITUDE	MAX ALTITUDE
RDU	VORTAC	R-020	55	3000	17500
FAK	VORTAC	R-220	57	6000	15000

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	213.00	033.00	R		4	3000	6000	5	13
2	NE		WP	040.57	220.57	R		4	3000	6000	5	6
3	E		WP	089.25	269.25	L		4	3000	6000	5	6

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
1	200	AAO	364851.00N/0782857.00W	814	2C
1	310	TOWER (51-001219)	364818.00N/0782058.00W	894	5D
2	200	TOWER (51-001219)	364818.00N/0782058.00W	894	5D
3	200	TOWER (51-001219)	364818.00N/0782058.00W	894	5D

REASON FOR NONSTANDARD HOLDING:
PAT 3 AT REQUEST

HOLDING RESTRICTIONS:
HOLDING LIMITED TO ESTABLISHED PATTERNS.

REMARKS:
RALEIGH/DURHAM (FAC 1) AND SOUTH BOSTON (FAC 2) USED TO ESTABLISH FIX COORDINATES
PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	OXFRD (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)
EN ROUTE	V 3	1, 2, 3				(US)
EN ROUTE	V266	1, 2, 3				(US)
IAP	RNAV (GPS) RWY 4			KBKT	BLACKSTONE	VA (US)
IAP	RNAV (GPS) RWY 36		1	KCXE	CHASE CITY	VA (US)
IAP	RNAV (GPS) RWY 04		1	KW63	CLARKSVILLE	VA (US)
IAP	RNAV (GPS) RWY 22		3	KW63	CLARKSVILLE	VA (US)
IAP	RNAV (GPS) RWY 1		2	KW78	SOUTH BOSTON	VA (US)
IAP	RNAV (GPS) RWY 19			KW78	SOUTH BOSTON	VA (US)

REQUIRED CHARTING: MILITARY IAP, IAP, CONTROLLER, EN ROUTE LOW

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 12 **DATE OF REVISION:** 01/10/2013

REASON FOR REVISION:
1. ADDED REMARK, RALEIGH/DURHAM (FAC 1) AND SOUTH BOSTON (FAC 2) USED TO ESTABLISH FIX COORDINATES.
2. UPDATED FIX USE.

DEVELOPED BY: **DATE:** 07/11/2012 **OFFICE:** AJV-352 **NAME:** DAVID SAUER

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

SIGNATURE:

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

RADIO FIX AND HOLDING DATA RECORD

NAME: OXFRD **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 362513.02N/0783520.30W **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	34.15	34.15		3000	17500
2	LIBERTY	LIB	VORTAC	L	056.46	053.46	61.69	61.69		6000	17500

EXPANDED SERVICE VOLUME (ESV):

FAC IDENT	FAC TYPE	RADIAL/BEARING	DISTANCE	MIN ALTITUDE	MAX ALTITUDE
LIB	VORTAC	R-056	62	6000	17500

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

REMARKS:
RALEIGH/DURHAM (FAC 1) USED TO ESTABLISH FIX COORDINATES

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	OXFRD (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)
EN ROUTE	V3	1				(US)
EN ROUTE	V454	2				(US)

REQUIRED CHARTING: DP, CONTROLLER, EN ROUTE LOW

COMPULSORY REPORTING POINT: NO

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

REASON FOR REVISION:
1. ADDED REMARK, RALEIGH/DURHAM (FAC 1) USED TO ESTABLISH FIX COORDINATES.

DEVELOPED BY: **DATE:** 07/11/2012 **OFFICE:** AJV-352 **NAME:** DAVID SAUER

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

SIGNATURE:

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

RADIO FIX AND HOLDING DATA RECORD

NAME: PEAVY **STATE:** NC **COUNTRY:** US

LATITUDE/LONGITUDE: 362124.93N/0783641.75W **TYPE:** WP

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

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	OXFRD (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)

REQUIRED CHARTING: DP

COMPULSORY REPORTING POINT: NO

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

DEVELOPED BY: **DATE:** 07/11/2012 **OFFICE:** AJV-352 **NAME:** DAVID SAUER

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

SIGNATURE:

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

INFO ONLY

RADIO FIX AND HOLDING DATA RECORD

NAME: FLAT ROCK VORTAC **STATE:** VA **COUNTRY:** US

LATITUDE/LONGITUDE: 373142.63N/0774941.59W **TYPE:**

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	FLAT ROCK	FAK	VORTAC	H							45000

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	FAK	VORTAC	218.00	038.00	L	1 1/2		21000	37000	18	26

CONTROLLING OBSTRUCTIONS:

PAT	AIRSPEED	OBSTRUCTION	COORDINATES	ELEVATION	ACCURACY CODE
UPN	200	TOWER (51-000705)	373023.00N/0774202.00W	1539	3D

REASON FOR NONSTANDARD HOLDING:
PAT 1 AIR TRAFFIC REQUEST

HOLDING RESTRICTIONS:
UNPLANNED HOLDING AUTHORIZED AT OR ABOVE 3000.

REMARKS:
PRECIPITOUS TERRAIN EVALUATION COMPLETED.

FIX USE:

USE TYPE	USE TITLE	FAC	PAT	AIRPORT IDENT	CITY	STATE
DP	HICKORY			KHKY	HICKORY	NC (US)
DP	OXFRD (RNAV)			KRDU	RALEIGH/DURHAM	NC (US)
DP	RALEIGH			KRDU	RALEIGH/DURHAM	NC (US)
DP	HENRY			KPHF	NEWPORT NEWS	VA (US)
DP	KISRR			KORF	NORFOLK	VA (US)
DP	YEAST			KRIC	RICHMOND	VA (US)
EN ROUTE	J109					(US)
EN ROUTE	J24					(US)
EN ROUTE	J51		1			(US)
EN ROUTE	V155					(US)
EN ROUTE	V16					(US)
EN ROUTE	V223					(US)
EN ROUTE	V260					(US)
EN ROUTE	V290					(US)
EN ROUTE	V3					(US)
IAP	RNAV (GPS) RWY 15			KW81	CREWE	VA (US)
IAP	NDB RWY 3			KFVX	FARMVILLE	VA (US)
IAP	RNAV (GPS) RWY 21			KFVX	FARMVILLE	VA (US)
IAP	LOC/NDB RWY 5			KPTB	PETERSBURG	VA (US)
IAP	VOR RWY 23			KPTB	PETERSBURG	VA (US)
IAP	RNAV (GPS) RWY 15			KFCI	RICHMOND	VA (US)
IAP	ILS OR LOC RWY 16			KRIC	RICHMOND	VA (US)
IAP	RNAV (GPS) RWY 16			KRIC	RICHMOND	VA (US)
IAP	RNAV (GPS) RWY 2			KRIC	RICHMOND	VA (US)
IAP	RNAV (GPS) RWY 20			KRIC	RICHMOND	VA (US)
IAP	RNAV (GPS) RWY 34			KRIC	RICHMOND	VA (US)
IAP	RNAV (GPS) RWY 7			KRIC	RICHMOND	VA (US)
IAP	LOC RWY 16			KOFP	RICHMOND/ASHLAND	VA (US)
IAP	VOR RWY 16			KOFP	RICHMOND/ASHLAND	VA (US)
STAR	IRONS			KDCA	WASHINGTON	DC (US)
STAR	BARIN (RNAV)			KIAD	WASHINGTON	DC (US)
STAR	COATT			KIAD	WASHINGTON	DC (US)
STAR	NOTTINGHAM			KBWI	BALTIMORE	MD (US)
STAR	NOTTINGHAM			KMTN	BALTIMORE	MD (US)
STAR	IRONS			KW00	BOWIE	MD (US)
STAR	IRONS			KADW	CAMP SPRINGS	MD (US)
STAR	IRONS			KW32	CLINTON	MD (US)
STAR	IRONS			KCGS	COLLEGE PARK	MD (US)
STAR	IRONS			KVKX	FRIENDLY	MD (US)
STAR	NOTTINGHAM			KDMW	WESTMINSTER	MD (US)
STAR	JAIKE (RNAV)			KCDW	CALDWELL	NJ (US)
STAR	JAIKE (RNAV)			KLDJ	LINDEN	NJ (US)
STAR	JAIKE (RNAV)			K47N	MANVILLE	NJ (US)
STAR	JAIKE (RNAV)			KMMU	MORRISTOWN	NJ (US)
STAR	DYLIN			KEWR	NEWARK	NJ (US)
STAR	PHLBO (RNAV)			KEWR	NEWARK	NJ (US)
STAR	JAIKE (RNAV)			KSMQ	SOMERVILLE	NJ (US)
STAR	JAIKE (RNAV)			KTEB	TETERBORO	NJ (US)

STAR	PAATS (RNAV)	KTTN	TRENTON	NJ (US)
STAR	PAATS (RNAV)	KMQS	COATESVILLE	PA (US)
STAR	PAATS (RNAV)	KPHL	PHILADELPHIA	PA (US)
STAR	PAATS (RNAV)	KPNE	PHILADELPHIA	PA (US)
STAR	COATT	KJYO	LEESBURG	VA (US)
STAR	COATT	KHEF	MANASSAS	VA (US)
STAR	TERKS	KCPK	NORFOLK	VA (US)
STAR	TERKS	KNGU	NORFOLK	VA (US)
STAR	TERKS	KORF	NORFOLK	VA (US)
STAR	TERKS	KPVG	NORFOLK	VA (US)
STAR	TERKS	KSFQ	SUFFOLK	VA (US)
STAR	TERKS	KNTU	VIRGINIA BEACH	VA (US)

REQUIRED CHARTING: DP, STAR, IAP, CONTROLLER, EN ROUTE LOW, EN ROUTE HIGH

COMPULSORY REPORTING POINT: NO

RECORD REVISION NUMBER: 13 **DATE OF REVISION:** 03/10/2011

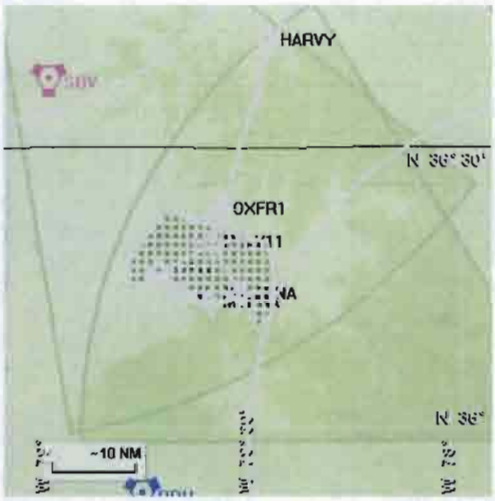
REASON FOR REVISION:
UPDATED HOLDING RESTRICTIONS.
UPDATED FIX USE.

DEVELOPED BY: **DATE:** 07/09/2010 **OFFICE:** AVN-110 **NAME:** PETER GETZ (ERIC VALDEZ)

APPROVED BY: **DATE:** 01/04/2011 **OFFICE:** AVN-110 **NAME:** GEORGE DAVIS

SIGNATURE:

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



Name:	Dennis Osterhage
Project Name:	KRDU OXFRD1 SID PNA GRID AREA EVALUATION 20120312
Software:	RNAV-Pro™
Version:	2.35
Date/Time:	3/12/2012 1:49:19 PM
Input File:	Grid Area Assessment
Databases:	AVNIS Date: 08/26/2011
	NFD Date: 07/02/2009
	DTED® (MAX) Date: 2002

Results Summary:

Grid	✔	DME/DME Grid Analysis

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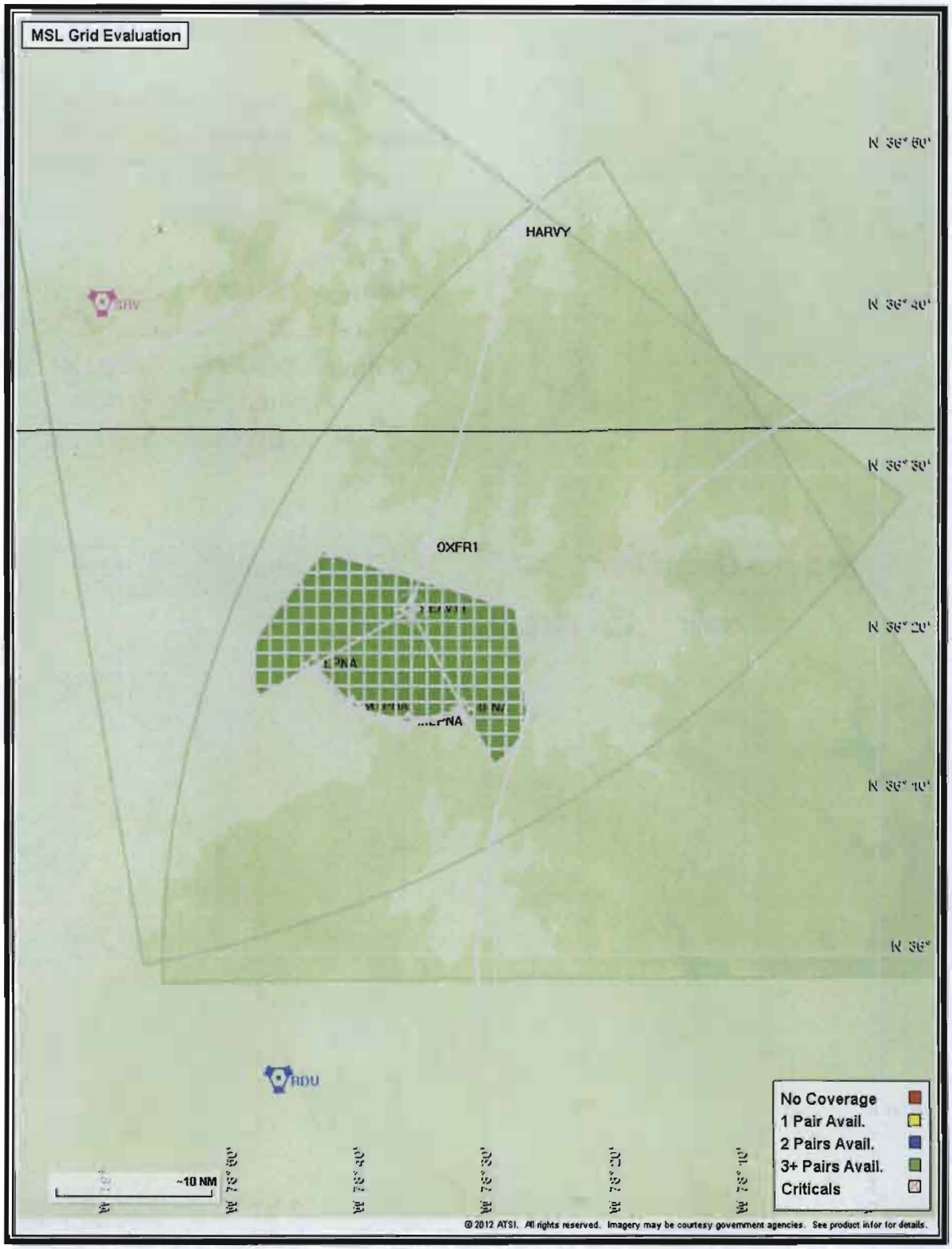
MSL Grid Evaluation
HARVY
OXFR1
RDU
~10 NM
No Coverage
1 Pair Avail.
2 Pairs Avail.
3+ Pairs Avail.
Criticals
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DME/DME Grid Analysis

Return To Summary

Coverage Exists

Settings:

Polygon Grid Definition:

1	Lat: N 36° 18' 1.54" Lon: W 78° 44' 16.72"	21	Lat: N 36° 12' 56.55" Lon: W 78° 28' 29.82"
2	Lat: N 36° 16' 5.38" Lon: W 78° 48' 36.59"	22	Lat: N 36° 12' 33.79" Lon: W 78° 28' 52.69"
3	Lat: N 36° 16' 31.88" Lon: W 78° 48' 52.15"	23	Lat: N 36° 12' 13.46" Lon: W 78° 29' 18.80"
4	Lat: N 36° 16' 59.72" Lon: W 78° 49' 3.61"	24	Lat: N 36° 11' 55.86" Lon: W 78° 29' 47.77"
5	Lat: N 36° 17' 28.49" Lon: W 78° 49' 10.79"	25	Lat: N 36° 11' 46.11" Lon: W 78° 30' 7.71"
6	Lat: N 36° 17' 57.74" Lon: W 78° 49' 13.59"	26	Lat: N 36° 15' 16.58" Lon: W 78° 32' 30.93"
7	Lat: N 36° 18' 27.06" Lon: W 78° 49' 11.96"	27	Lat: N 36° 15' 16.58" Lon: W 78° 32' 30.93"
8	Lat: N 36° 18' 55.99" Lon: W 78° 49' 5.94"	28	Lat: N 36° 14' 54.60" Lon: W 78° 33' 28.23"
9	Lat: N 36° 19' 24.12" Lon: W 78° 48' 55.59"	29	Lat: N 36° 14' 38.43" Lon: W 78° 34' 28.40"
10	Lat: N 36° 19' 51.01" Lon: W 78° 48' 41.09"	30	Lat: N 36° 14' 28.31" Lon: W 78° 35' 30.55"
11	Lat: N 36° 20' 16.28" Lon: W 78° 48' 22.64"	31	Lat: N 36° 14' 24.39" Lon: W 78° 36' 33.76"
12	Lat: N 36° 20' 31.48" Lon: W 78° 48' 8.82"	32	Lat: N 36° 14' 26.73" Lon: W 78° 37' 37.09"
13	Lat: N 36° 25' 6.61" Lon: W 78° 43' 37.01"	33	Lat: N 36° 14' 35.30" Lon: W 78° 38' 39.59"
14	Lat: N 36° 21' 33.72" Lon: W 78° 28' 24.63"	34	Lat: N 36° 14' 49.97" Lon: W 78° 39' 40.35"
15	Lat: N 36° 15' 43.20" Lon: W 78° 27' 36.00"	35	Lat: N 36° 15' 10.51" Lon: W 78° 40' 38.45"
16	Lat: N 36° 15' 13.89" Lon: W 78° 27' 34.21"	36	Lat: N 36° 15' 36.63" Lon: W 78° 41' 33.04"
17	Lat: N 36° 14' 44.62" Lon: W 78° 27' 36.84"	37	Lat: N 36° 16' 7.94" Lon: W 78° 42' 23.30"

DME/DME Grid Analysis (Continued.)

Return To Summary

Coverage Exists

Settings:

Polygon Grid Definition:

18	Lat: N 36° 14' 15.83" Lon: W 78° 27' 43.86"	**38**	Lat: N 36° 16' 43.97" Lon: W 78° 43' 8.49"
19	Lat: N 36° 13' 47.95" Lon: W 78° 27' 55.15"	**39**	Lat: N 36° 17' 24.19" Lon: W 78° 43' 47.93"
20	Lat: N 36° 13' 21.39" Lon: W 78° 28' 10.55"	**40**	Lat: N 36° 18' 1.54" Lon: W 78° 44' 16.72"

Lat Step: 1 NM
Lon Step: 1 NM
Line of Sight (DTED Level 0 Max): Evaluated
DME Restrictions: Evaluated
Co-Frequencies: Evaluated
Min DME Range: 3.0 NM
Allowed Gap Length: 4.0 NM
DME Types: VOR/DME , VORTAC , and User
DME Include Angles: 30 to 150
DoD Facilities: Not included
Foreign Facilities: Not included
Low & Terminal DMEs: Included
Maximum Possible ESVs Used
Altitude: 6000.0 Ft. MSL
PNA Import from RDVA-Pro: KRDU PNA PEAVY OXFRD

DME/DME Grid Analysis (Continued.)

Return To Summary

Maximum Gap: 0.0 NM

Maximum Critical Gap: 0.0 NM

	AGL Altitudes
Min Cell Altitude	5,314.3 Ft.
Max Cell Altitude	5,606.3 Ft.
Mean Cell Altitude	5,471.8 Ft.
Std. Dev. Cell Altitude	57.7 Ft.

Statistics based only on passing cells.

Most Used DMEs: SDZ (172), SBV (172), ROA (172), RDU (172), LVL (172), LIB (172), ISO (172), GSO (172), FAY (172), and FAK (172).

Name:	Dennis Osterhage
Project Name:	KRDU RNAV SIDS
Output File:	KRDU OXFRD1 SID PEAVY FAK 20120510_1206
Procedure Name:	OXFRD1
Software:	RNAV-Pro™
Version:	2.36
Date/Time:	5/10/2012 12:06:45 PM
Input File:	KRDU_PNA_PEAVY_OXFRD_CCW.txt
Databases:	AVNIS Date: 02/07/2012
	Obstacle Date: 08/26/2011
	NFD Date: 09/30/2010
	DTED® (MAX) Date: 2002

Results Summary:

Flyability	✔
DME/DME	✔
Radars	?
Comms	?
TERPS	?

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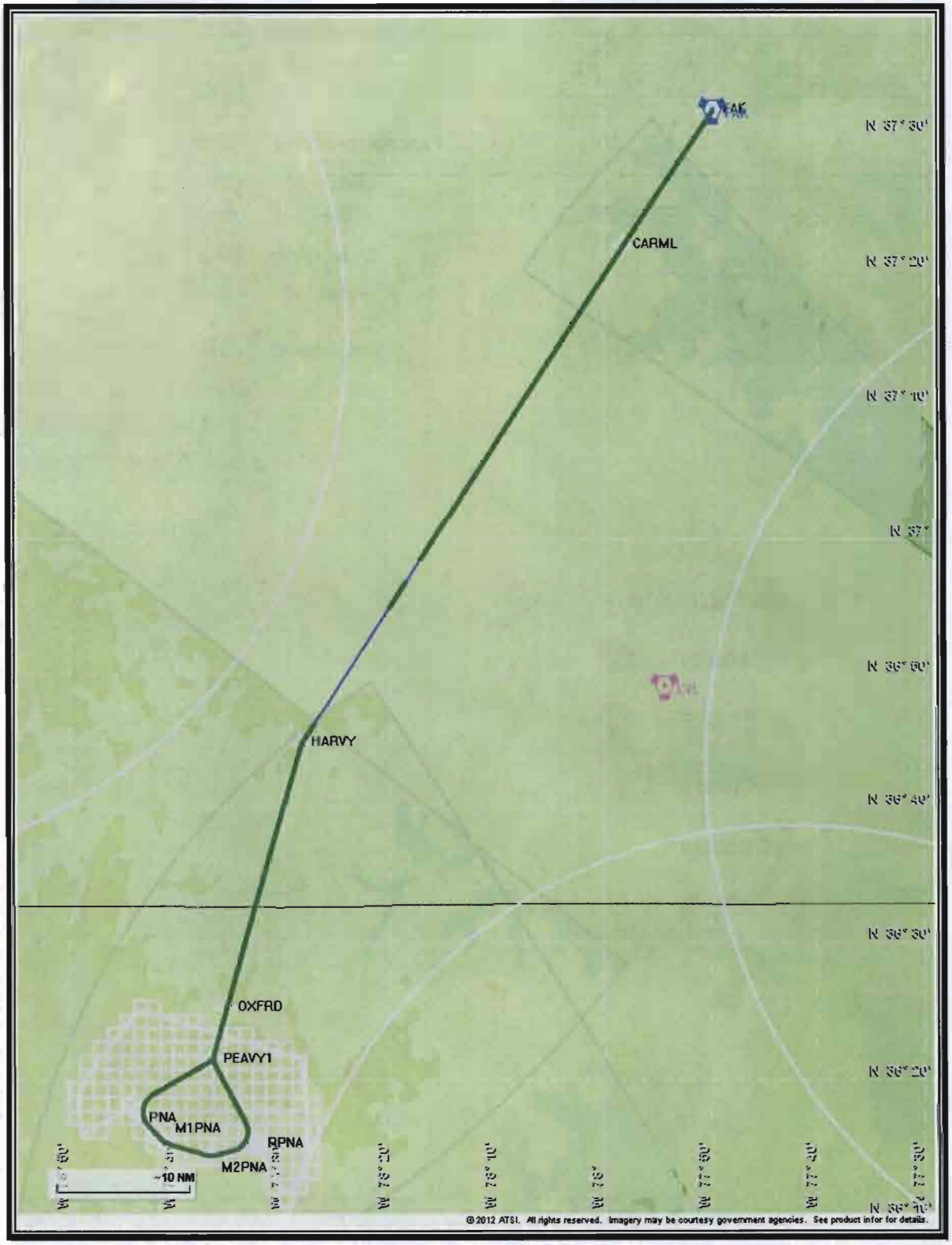
FAK
CARML
HARVY
OXFRD
PEAVY1
PNA
M1PNA
RPNA
M2PNA
~10 NM
N 37° 30'
N 37° 20'
N 37° 10'
N 37°
N 36° 50'
N 36° 40'
N 36° 30'
N 36° 20'
N 36° 10'
W 78° 50'
W 78° 40'
W 78° 30'
W 78° 20'
W 78° 10'
W 78°
W 77° 50'
W 77° 40'
W 77° 30'
W 77° 20'
W 77° 10'
W 77°
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Flight Plan

Return To Summary

Name	Type	Lat/Lon	Alt [Ft]	VNAV Mode	IAS [Kts]	Turn Type	Leg Type
PEAVY	WP	N 36° 21' 24.93" W 78° 36' 41.75"	6000.0	VNAV	180.0	Fly Over	TF
LPNA	WP	N 36° 18' 1.50" W 78° 44' 16.69"	6000.0	VNAV	180.0	Fly By	TF
M1PNA	WP	N 36° 15' 24.75" W 78° 41' 10.08"	6000.0	VNAV	180.0	Fly By	TF
M2PNA	WP	N 36° 14' 24.42" W 78° 36' 51.82"	6000.0	VNAV	180.0	Fly By	TF
RPNA	WP	N 36° 15' 16.61" W 78° 32' 30.87"	6000.0	VNAV	180.0	Fly By	TF
PEAVY1	WP	N 36° 21' 24.93" W 78° 36' 41.75"	6000.0	VNAV	180.0	Fly By	TF
OXFRD	WP	N 36° 25' 13.02" W 78° 35' 20.30"	6790.3	VNAV	180.0	Fly By	TF
HARVY	WP	N 36° 44' 46.20" W 78° 28' 18.98"	10856.1	VNAV	180.0	Fly By	TF
CARML	WP	N 37° 21' 42.54" W 77° 58' 8.41"	18000.0	VNAV	240.0	Fly By	TF
FAK	WP	N 37° 31' 42.63" W 77° 49' 41.59"	18000.0	VNAV	240.0	Fly Over	TF

Flyability

Return To Summary

Settings:	**Flight Type:** Departure with PNA **Selected Airport:** KRDU **Aircraft Category:** Cat D **Climb Gradient:** *None assigned* **Ground Speeds:** Table: **200.0 Kts** up to **29000.0 Ft.** **280.0 Kts** up to **99900.0 Ft.** **Wind Settings:** *None assigned* **Descent During a Turn:** Allowed **VNAV Mode:** Flight Plan

Entire track is fly-able

DME/DME

Return To Summary

Settings:

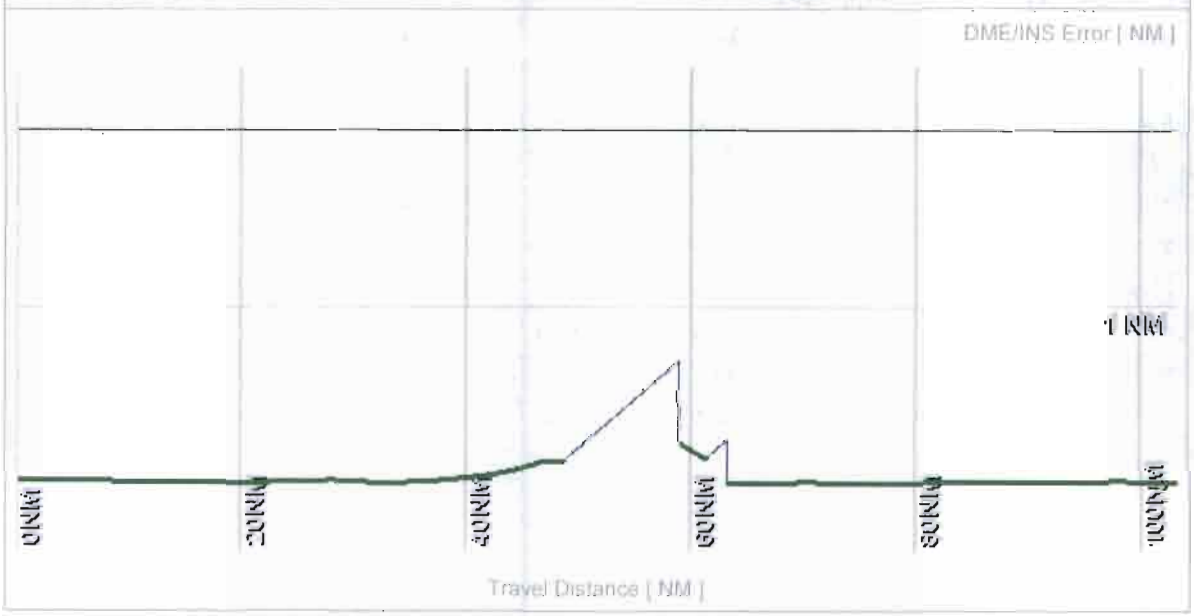
RNP: 2.0
Flight Mode: Manual
Line of Sight (DTED Level 0 Max): Evaluated
DME Restrictions: Evaluated
Inertial Drift: Enabled
Initial Drift: 0.558 NM
INS Drift Rate: 8.000 NM/Hour
Range Mode: OSV
Co-Frequencies: Evaluated
RNP Edges: Evaluated
Min DME Range: 3.0 NM
Allowed Gap Length: 4.0 NM
DME Types: VOR/DME , VORTAC , TACAN , and User
DME Include Angles: 30 to 150
Critical DMEs: Allowed
DoD Facilities: Not included
Foreign Facilities: Not included
Low & Terminal DMEs: Included
Flight Check DMEs: Selected
Higher Altitudes: Evaluated
Near Maximum Altitude: Evaluated
PNA Import from RDVA-Pro: KRDU PNA PEAVY OXFRD

Total Number of DMEs Used: 10

Maximum DME Error: 0.780 NM

No Critical DMEs were found.

Available DMEs: LYH, TYI, RDU, SBV, LVL, FAK, RIC, ORF, GVE, CSN, FKN, HPW



DME/DME (Continued.)

Return To Summary

DMEs Used

#	Name	Lat/Lon/MAGVAR	Range	Source	Critical	Err. [NM]	Status	Time	Distance
1	TYI	N 35° 58' 36.36" W 77° 42' 13.51" W 5	L + ESV	User	NO	0.780	Enabled	28.1 %	28.0 %
2	RDU	N 35° 52' 21.08" W 78° 47' 0.03" W 4	H	Database	NO	1.097	Enabled	30.4 %	30.4 %
3	SBV	N 36° 40' 30.15" W 79° 0' 52.21" W 5	L	Database	NO	0.984	Enabled	7.0 %	7.0 %
4	LYH	N 37° 15' 16.48" W 79° 14' 10.97" W 5	L + ESV	User	NO	0.994	Enabled	16.1 %	16.1 %
5	LVL	N 36° 49' 4.93" W 77° 54' 10.69" W 8	L	Database	NO	1.302	Enabled	40.4 %	40.4 %
6	FAK	N 37° 31' 42.63" W 77° 49' 41.59" W 6	H	Database	NO	0.780	Enabled	11.6 %	11.6 %
7	RIC	N 37° 30' 8.46" W 77° 19' 13.00" W 9	H	Database	NO	0.780	Enabled	27.0 %	27.0 %
8	FKN	N 36° 42' 51.24" W 77° 0' 44.27" W 9	L + ESV	User	NO	0.780	Enabled	4.5 %	4.5 %
9	GVE	N 38° 0' 48.96" W 78° 9' 10.89" W 6	H	Database	NO	0.780	Enabled	5.5 %	5.5 %
10	CSN	N 38° 38' 28.29" W 77° 51' 55.79" W 6	H	Database	NO	0.780	Enabled	5.8 %	5.8 %

Flight Check DME Selection

Distance [NM]	Selected DMEs					Alternate
0.0	TYI	RDU	LYH	SBV		
5.1	TYI	RDU	LYH	SBV		
8.9	TYI	RDU	LYH	SBV		
12.6	TYI	RDU	LYH	SBV		
14.8	TYI	RDU	LYH	SBV		
21.9	TYI	RDU	LYH	SBV		
26.5	TYI	RDU	LYH	SBV	LVL	
46.4	LVL	SBV	LYH			
61.3	LVL	FAK	RIC	FKN	GVE	ORF
90.9	LVL	CSN	RIC	ORF	GVE	FAK

DME/DME (Continued.)

Return To Summary

Inertial Drift Segments

#	Start Location	End Location	Length [NM]
1	N 36° 46' 14.35" W 78° 27' 8.35"	N 36° 54' 51.41" W 78° 20' 8.41"	10.3
	VOR: LVL	Available from N 36° 46' 14.35" W 78° 27' 8.35" to N 36° 54' 51.41" W 78° 20' 8.41"	
	VOR: SBV	Available from N 36° 46' 14.35" W 78° 27' 8.35" to N 36° 54' 51.41" W 78° 20' 8.41"	
2	N 36° 56' 54.34" W 78° 18' 28.33"	N 36° 58' 26.53" W 78° 17' 13.22"	1.8
	VOR: LVL	Available from N 36° 56' 54.34" W 78° 18' 28.33" to N 36° 58' 26.53" W 78° 17' 13.22"	
	VOR: SBV	Available from N 36° 56' 54.34" W 78° 18' 28.33" to N 36° 58' 26.53" W 78° 17' 13.22"	
	VOR: FAK	Available from N 36° 58' 20.94" W 78° 17' 17.77" to N 36° 58' 26.53" W 78° 17' 13.22"	

User DMEs

#	Name	Lat/Lon/MAGVAR	Range	Elevation [Ft]	Frequency	Replaces:	Status
1	LYH	N 37° 15' 16.48" W 79° 14' 10.97" W 5	L	880.0	109.20	LYH	Used
	ESV:	Bearing [True]: 127.0° to 170.0° Bearing [Mag]: 132.0° to 175.0°		Arc Distance: Out to 77.0 NM Altitude: 4000.0 to 12000.0 Ft.			
2	TYI	N 35° 58' 36.36" W 77° 42' 13.51" W 5	L	70.0	117.80	TYI	Used
	ESV:	Bearing [True]: 270.0° to 328.0° Bearing [Mag]: 275.0° to 333.0°		Arc Distance: Out to 60.0 NM Altitude: 4000.0 to 12000.0 Ft.			
3	FKN	N 36° 42' 51.24" W 77° 0' 44.27" W 9	L	85.0	110.60	FKN	Used
	Restriction:	Bearing [True]: 81.0° to 110.0° Bearing [Mag]: 90.0° to 119.0°		Distance: Beyond 18.0 NM Altitude: Below 2000.0 Ft.			
	Restriction:	Bearing [True]: 81.0° to 130.0° Bearing [Mag]: 90.0° to 139.0°		Distance: Beyond 0.0 NM Altitude: Below 99999.0 Ft.			
	ESV:	Bearing [True]: 305.0° to 318.0° Bearing [Mag]: 314.0° to 327.0°		Arc Distance: Out to 65.0 NM Altitude: 12000.0 to 18000.0 Ft.			