VIRGINIA TECH FOUNDATION, INC.

W223AZ

RICHMOND, VIRGINIA

TABLE OF ENGINEERING ATTACHMENTS

VIRGINIA TECH FOUNDATION, INC.

W223AZ

RICHMOND, VIRGINIA

ENGINEERING NARRATIVE

The purpose of this application is to make WURV-HD-3 the primary station for this translator and to increase the power from 10 watts to 220 watts. There is to be no change in the antenna, height above ground, coordinates, tower or transmission line.

A map is attached showing the present and proposed 60 dBu contours. Another map shows the proposed 60 dBu contour completely within the 54 dBu protected contour of primary station WURV.

As shown on the attached Channel Study, this translator is on the same tower as WCDX, channel 221B1, Mechanicsville, Virginia. The second-adjacent interference ratio is 40 dB. Referring to the attached tower sketch (last attachment), the WCDX antenna is 216 meters AGL, or 214 meters above the head of an average person. The W223AZ antenna is 166 meters above head level. Using the FM and TV Propagation Curves Calculations routine on the FCC internet site, the WCDX signal at 214 meters from the antenna is 126 dBu. The distance to the proposed W223AZ 166 dBu signal is less than 10 meters, therefore, interference from the proposed operation will not reach the ground. If a waiver for this second-adjacent overlap of the WCDX 54 dBu contour is required, it is hereby requested under the provision of §74.1204(d).

Allocation studies are attached for WINC, channel 223B, Winchester, Virginia, WYFL, channel 223C0, Henderson, North Carolina, and WLFV, channel 226A, Ettrick, Virginia. A detailed analysis of contour relationship with WINC is included in the allocation studies.

This proposal is for a facility that is covered by Part 74 of The Rules, is less than 1640 watts, is not installed on a building and is more than 10 meters above ground level. It is, therefore, exempt from routine RFR evaluation by the provision of Table 1 of §1.1307.

CHANNEL STUDY

W223AZ, RICHMOND, VIRGINIA
Virginia Tech Foundation, Inc.

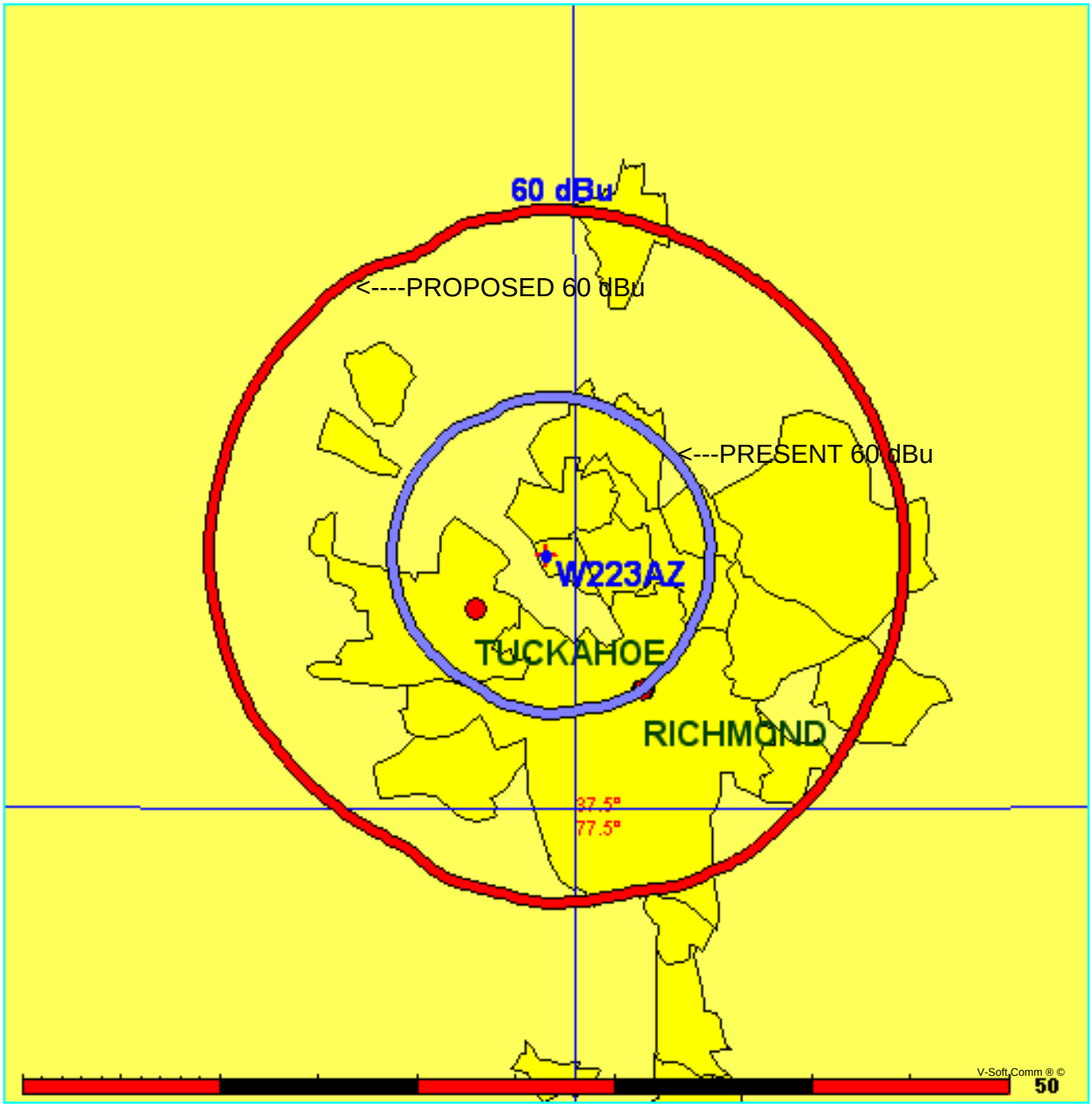
REFERENCE CH# 223D - 92.5 MHz, Pwr= 0.22 kW, HAAT= 186.9 M, COR= 245 M DISPLAY DATES
37 36 52.0 N. Average Protected F(50-50)= 17.35 km DATA 09-03-13
77 30 56.0 W. Omni-directional SEARCH 09-09-13

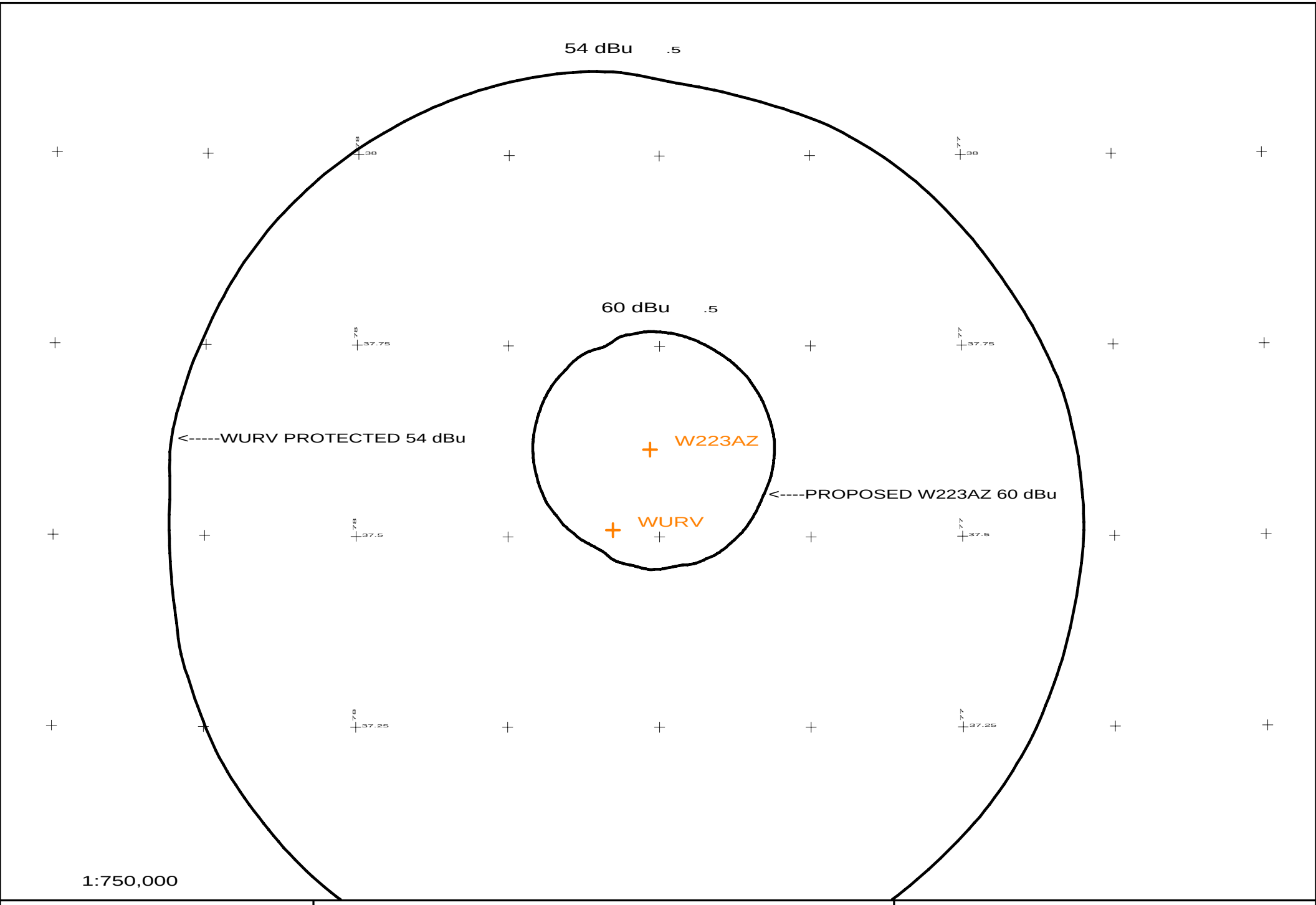
CH	CALL	TYPE	ANT	AZI	DIST	LAT	PWR(kW)	INT(km)	PRO(km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG	HAAT(M)	COR(M)	LICENSEE	(Overlap in km)	
223D	W223AZ	LIC	_C_	0.0	0.00	37 36 52.0	0.010	26.5	7.9	-43.7*	-62.5*
Richmond		VA		0.0	BLFT20100726AJI	77 30 56.0	187	245	Virginia Tech Foundation,		
221B1	WCDX	LIC	NCN	180.0	0.06	37 36 50.0	4.500	3.5	44.6	-20.9*	-46.0*
Mechanicsville		VA		0.0	BLH19960117KA	77 30 56.0	235	295	Radio One Licenses, Llc		
223C0	WYFL	LIC	DCX	201.7	166.28	36 13 23.0	100.000	173.8	73.6	-24.5*	39.1
Henderson		NC		21.3	BLED20040517AEA	78 12 07.0	311	406	Bible Broadcasting Network		
223B	WINC-FM	LIC	_CN	343.6	155.60	38 57 21.0	22.000	158.6	84.6	-20.0*	0.1
Winchester		VA		163.3	BLH19910930KD	78 01 28.0	434	706	Centennial Licensing Ii, L		
226A	WLFV	LIC	_C_	186.7	38.28	37 16 21.0	5.200	2.7	27.9	18.3	9.4
Ettrick		VA		6.7	BLH20000918AAA	77 33 59.0	106	164	Mlb-richmond Iv, Llc		
224A	WUVA	LIC	_CN	296.3	94.21	37 59 08.0	0.750	46.0	30.4	31.2	38.0
Charlottesville		VA		115.7	BLH19981119KC	78 28 47.0	274	441	Wuva, Inc.		
222D	W222BD	LIC	_C_	156.0	68.62	37 03 00.0	0.019	8.9	6.3	41.8	35.6
Waverly		VA		336.2	BLFT20080505ACL	77 12 05.0	88	116	Liberty University, Inc.		
222A	WTYD	LIC	_CX	97.8	95.60	37 29 37.0	2.400	40.7	26.9	36.8	41.7
Deltaville		VA		278.4	BMLH20060803AMM	76 26 30.0	160	166	Davis Media, Llc		

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= East Zone, Co to 3rd adjacent.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside protected contour.
Reference station has protected zone issue:

W223AZ, RICHMOND, VIRGINIA
Virginia Tech Foundation, Inc.

THE PRESENT AND PROPOSED
60 dBu CONTOURS

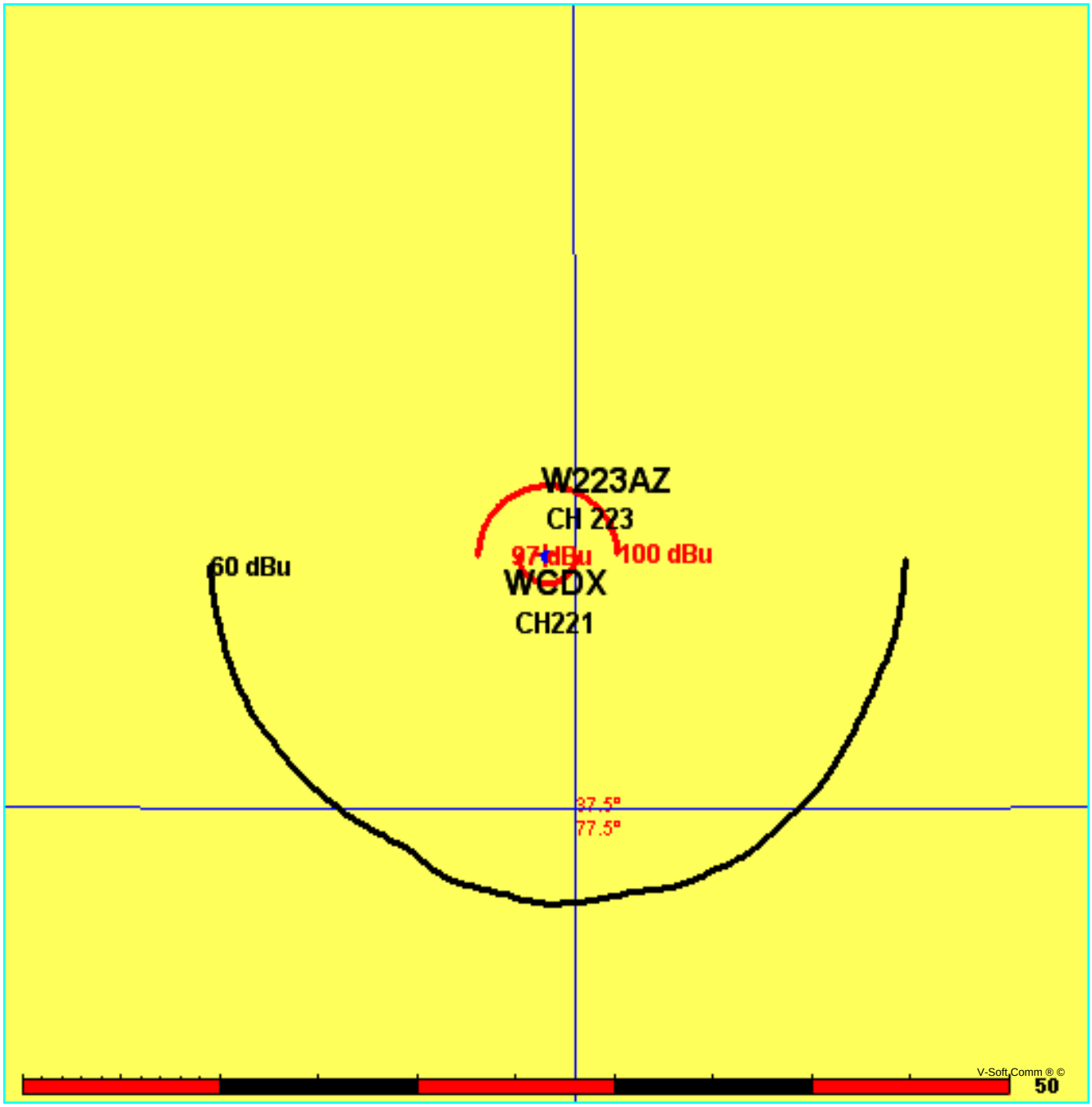




W223AZ, RICHMOND, VIRGINIA 60 dBu
AND PRIMARY STATION WURV 54 dBu

W223AZ and PRIMARY STATION
VIRGINIA TECH FOUNDATION

W223AX and WCDX are on the same tower. See engineering narrative for explanation and waiver request.



VIRGINIA TECH FOUNDATION, INC.

W223AZ, RICHMOND, VIRGINIA

FMOVER STUDY FOR WINC

09-11-2013 Terrain Data: NGDC 30 SEC FMOver Analysis

WINC-FM BLH19910930KD	W223AZ
Channel = 223B	Channel = 223D
Max ERP = 22 kW	Max ERP = 0.22 kW
RCAMSL = 706 M	RCAMSL = 245 M
N. Lat. 38 57 21.0	N. Lat. 37 36 52.0
W. Lng. 78 01 28.0	W. Lng. 77 30 56.0
Protected	Interfering
54 dBu	34 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
141.0	022.0000	0462.6	083.0	005.3	000.2200	0183.7	084.8	29.78	
142.0	022.0000	0461.2	082.9	004.6	000.2200	0183.6	083.9	30.07	
143.0	022.0000	0462.5	083.0	003.9	000.2200	0183.6	082.9	30.39	
144.0	022.0000	0465.1	083.2	003.2	000.2200	0183.5	081.8	30.73	
145.0	022.0000	0468.6	083.4	002.5	000.2200	0183.5	080.7	31.07	
146.0	022.0000	0472.3	083.7	001.7	000.2200	0183.4	079.7	31.41	
147.0	022.0000	0475.9	083.9	001.0	000.2200	0183.4	078.6	31.73	
148.0	022.0000	0478.5	084.1	000.1	000.2200	0183.3	077.7	32.03	
149.0	022.0000	0479.6	084.2	359.2	000.2200	0183.3	076.9	32.29	
150.0	022.0000	0478.6	084.1	358.2	000.2200	0183.1	076.2	32.50	
151.0	022.0000	0474.5	083.8	357.2	000.2200	0182.8	075.8	32.62	
152.0	022.0000	0467.8	083.4	356.0	000.2200	0182.2	075.6	32.66	
153.0	022.0000	0461.2	082.9	354.9	000.2200	0181.3	075.5	32.67	
154.0	022.0000	0458.2	082.7	353.8	000.2200	0180.5	075.2	32.73	
155.0	022.0000	0459.8	082.8	352.8	000.2200	0180.2	074.6	32.90	
156.0	022.0000	0463.7	083.1	351.7	000.2200	0179.9	073.9	33.11	
157.0	022.0000	0467.3	083.4	350.7	000.2200	0179.8	073.3	33.31	
158.0	022.0000	0471.0	083.6	349.6	000.2200	0179.9	072.8	33.50	
159.0	022.0000	0474.8	083.8	348.5	000.2200	0180.1	072.3	33.67	
160.0	022.0000	0478.0	084.1	347.4	000.2200	0180.1	071.8	33.81	
161.0	022.0000	0480.6	084.2	346.2	000.2200	0179.8	071.5	33.90	
162.0	022.0000	0483.2	084.4	345.1	000.2200	0179.0	071.3	33.95	
163.0	022.0000	0485.8	084.6	343.9	000.2200	0177.5	071.1	33.96	
164.0	022.0000	0488.0	084.7	342.7	000.2200	0175.5	070.9	33.91	
165.0	022.0000	0490.0	084.8	341.5	000.2200	0173.4	070.9	33.83	
166.0	022.0000	0491.9	084.9	340.3	000.2200	0171.4	070.9	33.74	
167.0	022.0000	0492.9	085.0	339.1	000.2200	0170.0	071.0	33.63	
168.0	022.0000	0492.9	085.0	337.9	000.2200	0169.0	071.3	33.51	
169.0	022.0000	0491.4	084.9	336.8	000.2200	0168.4	071.6	33.35	
170.0	022.0000	0488.3	084.7	335.7	000.2200	0168.3	072.2	33.17	
171.0	022.0000	0484.0	084.4	334.6	000.2200	0168.6	072.8	32.98	
172.0	022.0000	0479.2	084.1	333.6	000.2200	0169.4	073.6	32.77	
173.0	022.0000	0472.9	083.7	332.6	000.2200	0170.5	074.4	32.53	

174.0	022.0000	0465.4	083.2	331.7	000.2200	0171.7	075.5	32.26
175.0	022.0000	0459.2	082.8	330.8	000.2200	0172.8	076.4	31.99
176.0	022.0000	0454.1	082.4	330.0	000.2200	0173.9	077.4	31.73
177.0	022.0000	0447.7	081.9	329.2	000.2200	0174.9	078.5	31.43
178.0	022.0000	0443.1	081.6	328.4	000.2200	0175.8	079.5	31.15
179.0	022.0000	0438.3	081.2	327.7	000.2200	0176.6	080.5	30.86
180.0	022.0000	0433.5	080.9	327.0	000.2200	0177.2	081.5	30.55
181.0	022.0000	0429.7	080.6	326.3	000.2200	0177.7	082.6	30.25
182.0	022.0000	0426.9	080.4	325.6	000.2200	0178.1	083.6	29.95
183.0	022.0000	0424.3	080.2	324.9	000.2200	0178.5	084.6	29.65
184.0	022.0000	0424.5	080.2	324.2	000.2200	0178.8	085.4	29.39
185.0	022.0000	0416.2	079.6	323.7	000.2200	0179.0	086.8	28.98
186.0	022.0000	0406.3	078.9	323.4	000.2200	0179.2	088.3	28.53
187.0	022.0000	0395.6	078.1	323.1	000.2200	0179.3	089.8	28.07

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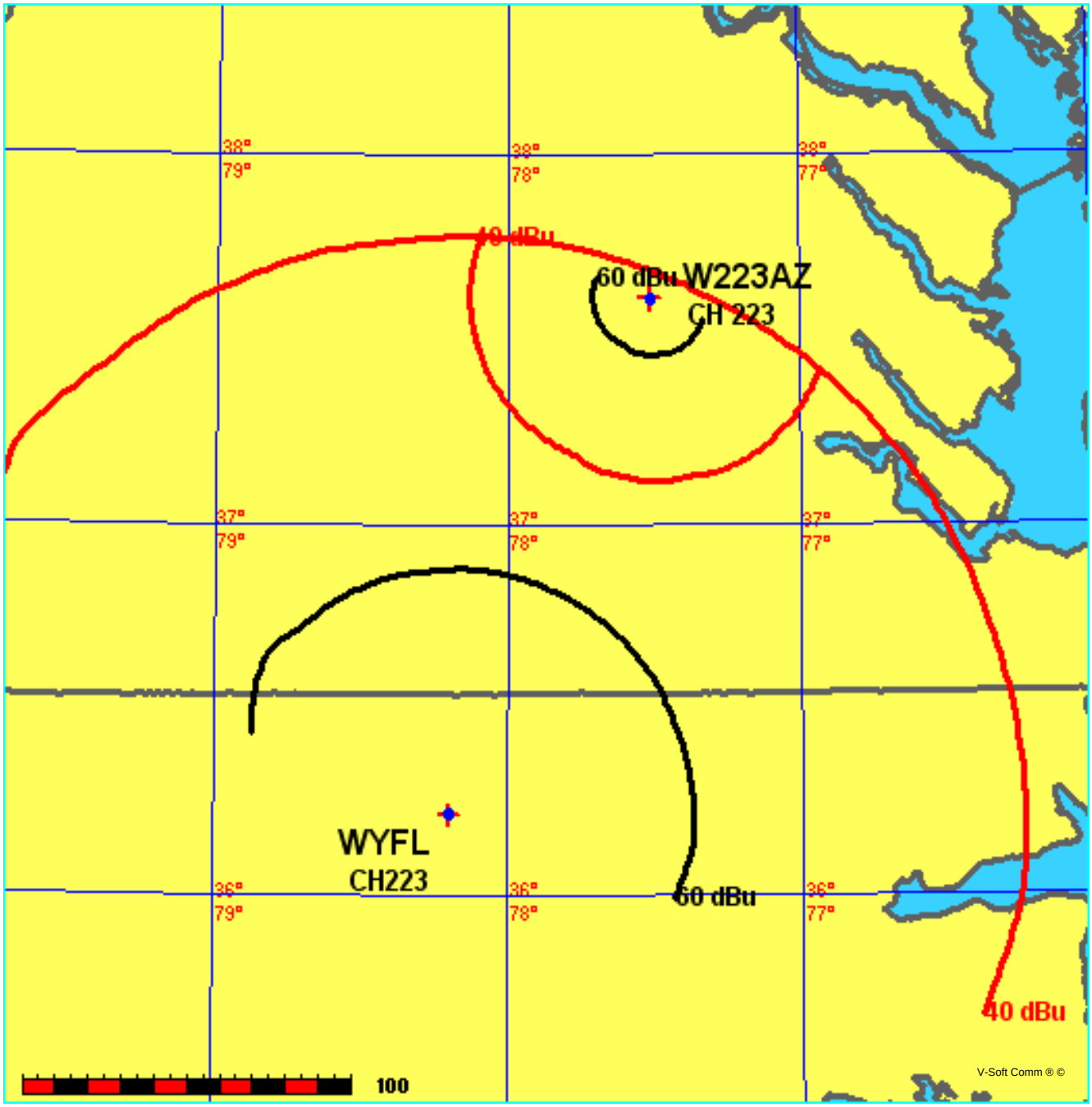
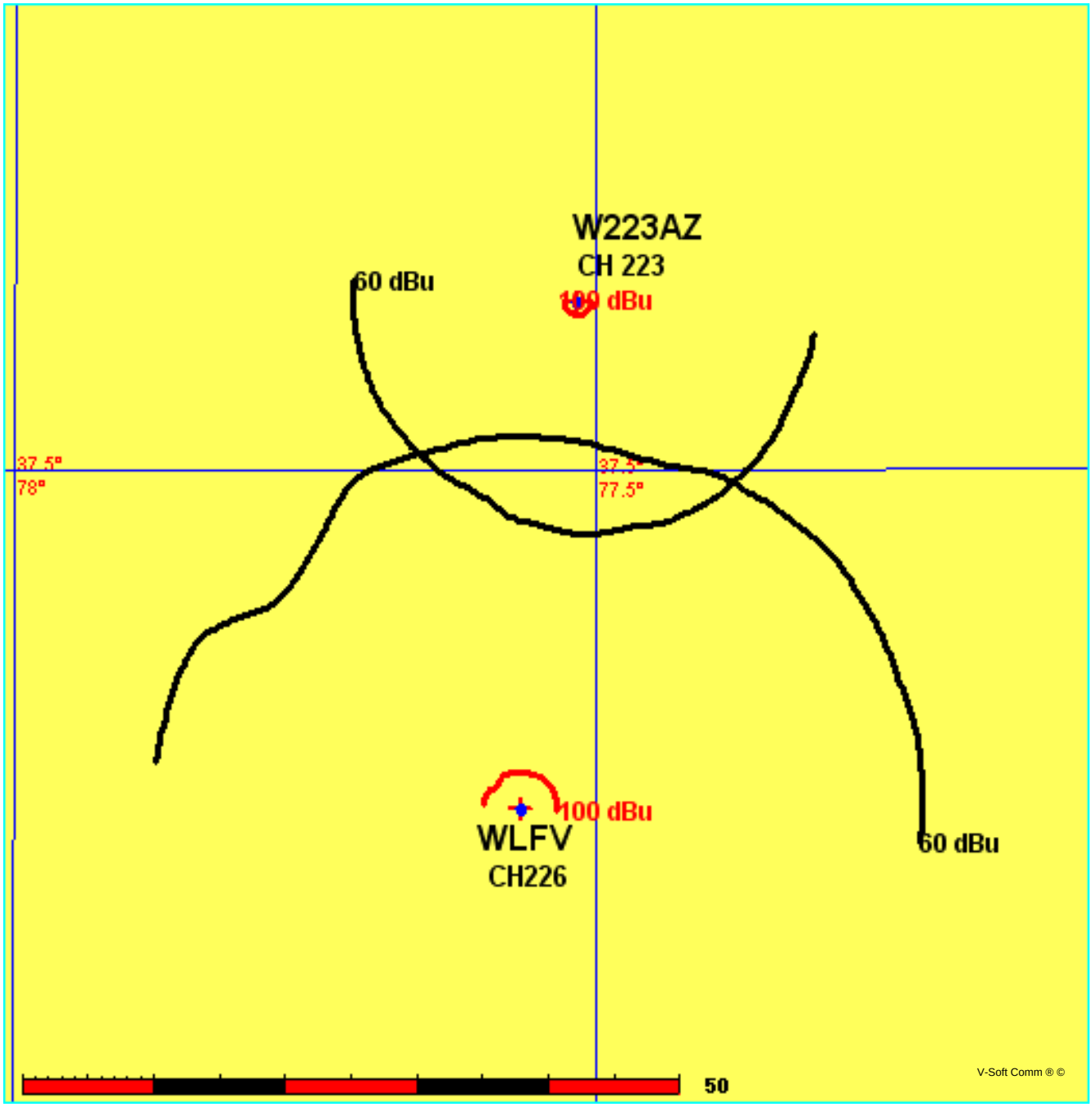
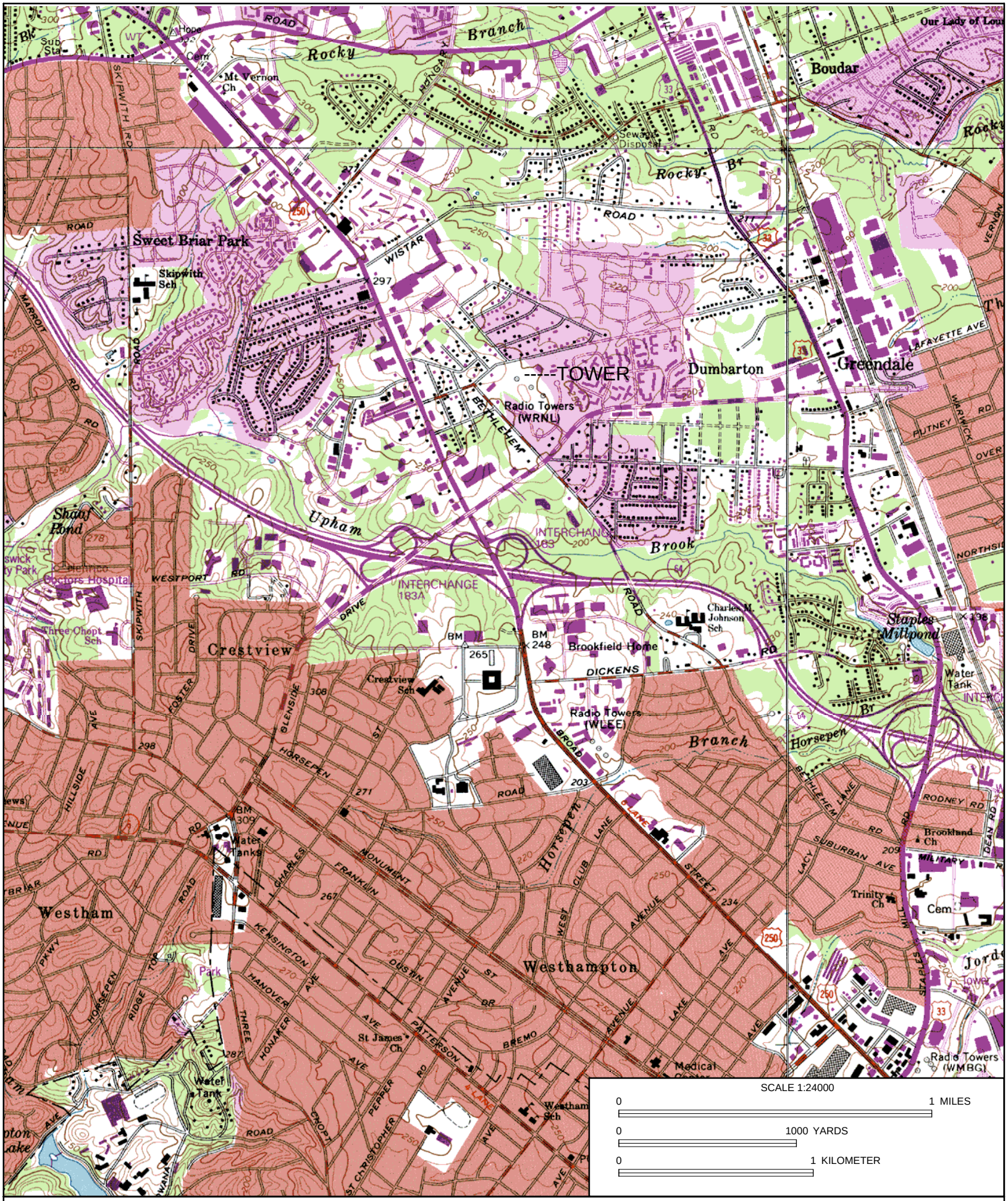
40 dBu
54 dBu
WINC-FM
CH223
39°
79°
39°
78°
39°
77°
39°
76°
38°
79°
38°
78°
38°
77°
60 dBu
W223AZ
CH 223
34 dBu
37°
79°
37°
78°
37°
77°
100
V-Soft Comm ® ©


38°
79°
38°
78°
38°
77°
40 dBu
60 dBu
W223AZ
CH 223
37°
79°
37°
78°
37°
77°
WYFL
CH223
36°
79°
36°
78°
60 dBu
36°
77°
40 dBu
100
V-Soft Comm ® ©


W223AZ
CH 223
60 dBu
100 dBu
37.5°
78°
37.5°
77.5°
100 dBu
WLFV
CH226
60 dBu
50
V-Soft Comm ® ©



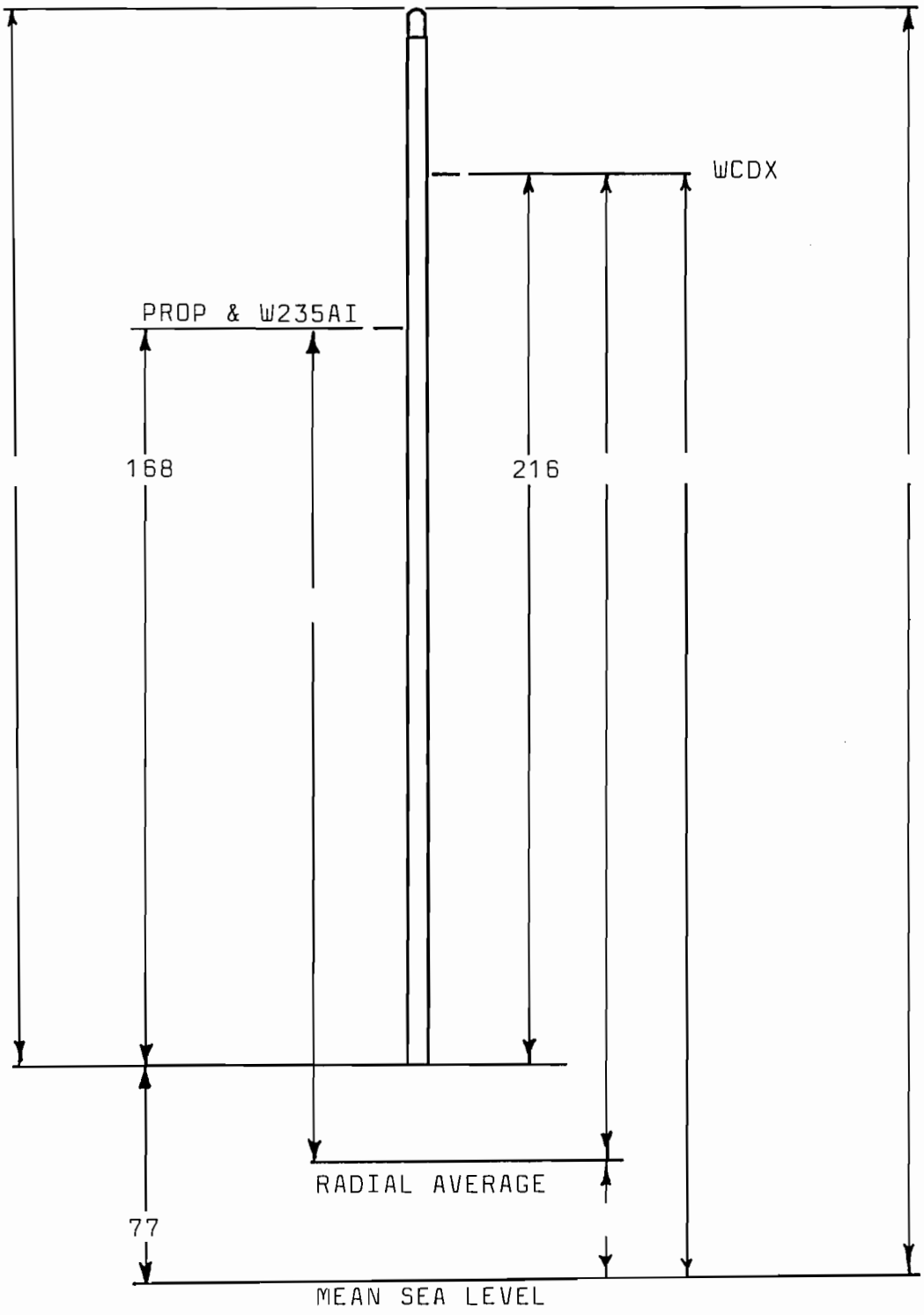
Name: BON AIR
Date: 1/11/2010
Scale: 1 inch equals 2000 feet

Location: 037° 36' 14.51" N 077° 30' 59.36" W NAD27
Caption: PROPOSED TOWER AT 37-36-52 N and 77-30-56 W (NW TOWER)

FIGURE 5

FIGURE 6

VIRGINIA TECH FOUNDATION, INC.



Tower ASR: 1026628