EXHIBIT 13
COMPREHENSIVE ENGINEERING EXHIBIT

APPLICATION FOR MODIFICATION OF LICENSE

prepared for

Global Radio, L.L.C. (Delaware)

WNWR Philadelphia, Pennsylvania

FCC Facility ID 1027

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

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FCC Form 301, Section III-A

Exhibit 13 - Statement A

Comprehensive Engineering Statement
Application for Modification of License
prepared for
Global Radio, L.L.C. (Delaware)
WNWR Philadelphia, Pennsylvania
FCC Facility ID 1027
1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Nature of the Proposal

Global Radio, L.L.C. (Delaware) (hereinafter *"Global"*) is the licensee of Standard Broadcast Radio Station WNWR, 1540 kHz, Philadelphia, Pennsylvania (Facility Id 1027). *Global* is presently authorized to operate WNWR during daytime hours only with 50 kW using a directional antenna system (under FCC File No. BMML-20120724AFT). WNWR does not presently operate during nighttime hours.

This Application requests authority to operate WNWR during nighttime hours using its existing licensed daytime site. *No physical changes* are proposed for the existing WNWR daytime array and no changes will be necessary above the tower base insulators. In this instance, components can be easily added within the existing tuning unit cabinets to achieve the proposed new nighttime antenna pattern without disturbing the environment or the daytime operation.

Since the presently licensed daytime facility is being specified for this proposal, a considerable amount of information regarding this site is already on file with the Federal Communications Commission ("FCC" or "Commission"). Therefore it is not duplicated herein, except for form sections required for completeness. However, *Global* will promptly supply this information if necessary upon the request of Commission Staff.

Description of Proposed Nighttime Antenna System

The nighttime antenna system design proposed in this Application will employ the same three towers that are presently being used for the WNWR daytime operation. The proposed 0.25kW nighttime antenna parameters are described in **Exhibit 13 - Table I**. A tabulation of the resulting horizontal plane standard radiation pattern data is included in the Table. This data is plotted on the polar graph supplied as **Exhibit 13 - Figure 1**. Tabulations and plots of radiated fields at various elevation angles are not included for brevity, but will be provided upon request.

The long-existing WNWR towers are being used for this proposal. They are series fed, base insulated, uniform cross-section, guy-wire top-loaded, steel structures. Each tower extends 41.18 meters above the base insulators, for an electrical height of 81.7° at 1540 kHz. The existing top loading is 8.3° and will not be altered. The overall height of each tower above ground level is 45.8 meters for the center tower (Tower 1), 45.3 meters for the Southeast tower (Tower 2), and 45.4 meters for the Northwest tower (Tower 3).

Description of Ground System

The ground system for this site consists of 120 equally spaced #10 AWG soft-drawn, copper wire radials buried into the ground and arrayed every three degrees around each tower, to a length of 48.8 meters in length, except where truncated at the nearest property line or where shortened and bonded to transverse copper straps located at midway points between each tower. An additional set of 120 copper radials, each 15.2 meters in length, are interspersed between the primary radials around each tower.

Blanketing Considerations

The location of the predicted 1.0 V/m (or 1000 mV/m) "blanketing contour" that will be developed under this nighttime proposal is shown in the attached **Exhibit 13 - Figure 2.** According to 2010 U.S. Census data, there are 91 people residing within the predicted 1.0 V/m contour; there are 52,221 persons residing within the predicted 25 mV/m contour. As such, this proposal meets the requirements of Section 73.24(g) of the Rules in that the population within the 1 V/m contour does not exceed more than 1.0 percent of the population residing within the predicted 25 mV/m contour and, further, the population within the 1.0 V/m contour is less than 300 persons. No change is being proposed in the long-existing licensed daytime operation, therefore daytime blanketing considerations are not readdressed herein.

Coverage Predictions

Theoretical (*FCC Figure M-3*) conductivity data were used for all distance to groundwave contour predictions using the FCC's standard prediction methods and a computer program that simulates the Commission's AM groundwave propagation curves. The nearest *Figure M-3* values and boundary locations are shown on the coverage maps of **Exhibit 13 – Figures 2** and **3**. The predicted groundwave contours of those maps lie well within the Conductivity 4 region. No tabulation is provided herewith for the distance to contour locations or associated ground conductivity values since all are derived from theoretical values. If a tabulation of this information is desired by Commission staff, it will be supplied upon request.

Nighttime coverage contours (the 1000 mV/m "blanketing" contour, the 25 mV/m contour and the 11.52 mV/m nighttime "interference free" contour) are included in the map attached as **Exhibit 13 – Figure 2**. The calculations that determine the proposed nighttime interference free limit are shown in **Table II** of **Exhibit 13**. Based upon Year 2010 U.S. Census data, the proposed 11.52 mV/m Nighttime Interference Free contour will encompass 174,738 persons.

The 5, 2 and 0.5 mV/m "standard" AM coverage contours are not plotted and presented in this application since they fall well outside the nighttime interference free contour and are thus not pertinent. Maps showing the licensed daytime coverage contours are also not included in this application since they are not being altered and are already a matter of record for this Station. Maps showing this information will be provided upon request.

Principal Community Coverage

The map of **Exhibit 13 – Figure 3** shows the location of the proposed Nighttime Interference Free ("NIF") contour along with the bounds of the WNWR principal community, Philadelphia, Pennsylvania. As shown, the NIF contour does not encompass the community of Philadelphia. However, nighttime coverage of a principal community is no longer required for existing licensed stations per Paragraphs 26 – 30 of the Commission's ***First Report and Order, Further Notice of Proposed Rule Making, and Notice of Inquiry*** in the Matter of Revitalization of the AM Radio Service, 30 FCC Rcd 12145 (2015). (The Commission proposed in the underlying NPRM that the nighttime community coverage requirement be eliminated for existing licensed AM stations. This proposal was adopted by the FCC as discussed in the Report and Order.)

Protection of other Facilities

With respect to nighttime frequency interference and allocation matters, the protection requirements for all pertinent co-channel and first adjacent channel AM stations and proposals of interest were developed in accordance with the methods specified in the Commission's Rules. Interference impacts were predicted on a site-to-site basis, except for Class A stations, where the procedures of FCC Rule Section 73.182(q) were employed.

The resulting antenna design is described in **Exhibit 13 - Table I**, and is based upon available site location considerations, existing infrastructure, and channel allocation/interference constraints. **Exhibit 13 - Table III** shows how the facilities proposed herein do not enter into the 25% RSS night limit calculation of any other licensed or proposed non-"Class A" station.

Three domestic "Class A" stations utilize frequencies of concern for this proposal– they are co-channel KXEL Waterloo, Iowa, first adjacent channel WCKY Cincinnati, Ohio, and first adjacent channel KFBK Sacramento, California. Regarding KXEL, the attached **Exhibit 13 - Figure 4** shows the position of the KXEL pertinent protected contour versus the proposed WNWR nighttime interfering contour. As shown, no prohibited contour overlap occurs within United States territory. The results of detailed skywave calculations, included in **Exhibit 13 – Table IV**, also indicates that KXEL receives the required protection within United States territory thus further demonstrating compliance with FCC Rule Section 73.182(q).

Regarding first-adjacent channel WCKY and KFBK, a detailed study of the proposed WNWR operation's signal strength at these facility's 500 μV/m (0.5 mV/m) protected groundwave contour was conducted in accordance with Section 73.182 of the Commission's Rules. As shown in the attached **Exhibit 13 - Figure 5** and **Table V**, the instant proposal easily complies with this rule section with regard to both of these stations.

Consideration of Co-Channel Class A ZNS-1 Nassau, BF

The WNWR nighttime proposal on 1540 kHz requires notification and coordination with the government of the Commonwealth of the Bahamas since the involved frequency is designated as a Bahama Islands Class I-A Clear Channel Assignment. Since Bahamian Station ZNS-1[1] in Nassau operates on 1540 kHz, special consideration was given to protecting this facility when the WNWR nighttime pattern design process was underway. An examination of page number 1 of the ***Final Acts of the Regional Administrative MF Broadcasting Conference (Region 2), Rio de Janeiro, 1981***, hereinafter "*Region 2 Agreement*", shows that the Commonwealth of the Bahamas (hereinafter "Bahamas"), among other participants, adopted these Final Acts of the conference, which included the Agreement, its resolutions and recommendations. Since The Bahamas is apparently not yet a formal signatory to the current *Region 2 Agreement*, informal discussions were undertaken with the FCC's International Bureau Staff to reach a better understanding of presently accepted practices employed for addressing Bahamian Class I-A Station protection. According to the understanding reached, since The Bahamas is a member of the United Nations, the Bahamian government has in the past approved proposed U.S. facilities that comply with the *Region 2 Agreement*. Accordingly, it is respectfully requested that this proposal be evaluated using the methods outlined in the *Region 2 Agreement*, and that coordination with The Bahamas also be requested under that accord.

Under the terms of *Region 2 Agreement* and also the *North American Regional Broadcasting Agreement of 1937, Havana, Cuba* and its successor, the *North American Regional Broadcasting Agreement of 1950, Washington, DC* (hereinafter "NARBA"), no broadcast signal is protected from interference beyond its parent country's land area or border. In such cases, the use of a standard desired to undesired ("d/u") ratio has long been accepted as an appropriate method for determining the threshold of interference to co-channel signals. In this instance, the standard co-channel 20:1 d/u ratio was employed at designated border points around The Bahamas. ZNS-1 *does not* produce a skywave signal within The Bahamas, therefore for this application proposal, the predicted ZNS-1 0.5 mV/m (or higher) nighttime groundwave signal was protected by determining the ZNS-1 groundwave signal strengths at points along the nation's border and examining the corresponding proposed WNWR 10% skywave signal magnitude. In all instances, the d/u ratio was calculated to be 20:1 or better. As such, the facility described

[1] The WNWR proposal is located more than 1,680km (1,044 miles) from ZNS-1.

in this application protects the nighttime facility of ZNS-1 as required by the NARBA Agreement and the *Region 2 Agreement*. Two attachments to this application provide a summary supporting the findings described above. **Exhibit 13 – Table VI** provides the results of a standard nighttime skywave interference study ("Margin Study") as generated by a widely-used commercial software program[2] while **Exhibit 13 – Figure 6A** and **B** provides an independently generated graphical approach to the analysis. Both approaches, while differing very slightly in results due to the granularity of the graphical method, demonstrate that ZNS-1 would be properly protected under this proposal.

Both methods employ an international border boundary for study points, as determined by an off-shore polygon surrounding all of The Bahamas. **Exhibit 13 – Figure 6A** shows the base map used as a basis for the study; it includes the polygon shape employed, the coordinates of polygon inflection points[3], and a tabulation of the selected points used in the graphical study, along with the approximate bearings to and from the stations under study. (This defined border was also employed with the AMPro Margin Study to provide a basis for that program's analysis.) **Exhibit 13 – Figure 6B**, using the same basis, albeit at a different scale, provides a presentation of the graphical d/u study. (The protected ZNS-1 ground contours of 0.5 mV/m or higher are plotted versus the corresponding proposed WNWR incoming 10% Skywave contours.) A tabulation is included on the map providing a contour legend and a d/u summary. For both study approaches (graphical and computer calculations) the 10% curves of Annex II, Figure 4 of the *Region 2 Agreement* were used for the analysis. Further, the understood *Region 2 Agreement* (Appendix 1 to Annex 2) conductivity data for The Bahamas (of 5000 mS) was used for all ZNS-1 groundwave coverage predictions[4]. Further, all analysis was done at 0.5 degree radial intervals for completeness but those results are not supplied herein for brevity. These detailed tabulations can be provided on request.

Both approaches demonstrate that the proposed WNWR nighttime operation protects the nighttime facility of ZNS-1 as required by the NARBA Agreement and the *Region 2 Agreement*. A grant of this application will be in the public interest in that it will add a new nighttime service at Philadelphia, Pennsylvania and will not create interference to any other station as defined under applicable rules, regulations, agreements or publicly known policies.

[2] "AM-Pro2", published by VSoft.
[3] A text copy of these points, suitable for importing into analysis software, can be provided upon request.
[4] It should be noted that if analysis software is used to study this proposal, care should be taken to ensure that the appropriate conductivity is used in all radial directions. Some software versions are known to have small errors in their libraries, requiring that the correct data be manually entered.

Other Spectrum Usage Considerations

This application will not require coordination with Canada or Mexico since the location is more than 400 km from the nearest points on the Canadian and Mexican borders and it does not have a material impact on any facility operating in those or other countries.

The proposed WNWR nighttime operation will not have an adverse impact on any known protected monitoring stations, identified "quiet zones", or other existing or proposed broadcasting facilities. The nearest FCC Monitoring Station is located at Laurel, Maryland, more than 167 km from the existing/proposed WNWR nighttime site; therefore, the proposed operation is well beyond the distance requiring consideration of the monitoring station for a station of the proposed power level. As such, advance consultation and coordination is not necessary. The nearest know radio astronomy and radio research installations are the National Radio Astronomy Observatory and the National Radio Research Observatory, located within the Green Bank NRAO "Quiet Zone" in West Virginia. Inasmuch as the proposed WNWR nighttime site is located well outside of (more than 290 km away from) this "quiet zone", notification or coordination is not required with respect to these facilities. The nearest known radio receiving installation is the Table Mountain Radio Receiving Zone in Boulder County, Colorado, which is sufficiently distant from the proposed site as to not require advance consultation with the Department of Commerce.

There are no other AM broadcast stations located within the required coordination distance of FCC Rule Sections 1.30002(a) and (b) from the WNWR nighttime site, according to information contained within the Commission's engineering database. Further, no physical changes are being proposed for the existing WNWR towers. As such, further consideration of AM stations in the vicinity is not required under the Commission's Rules. Finally, while there are several FM and TV broadcast stations located near the existing WNWR site, due to the involved frequencies, the instant proposal is not to have an impact on any of these nearby stations.

Environmental Considerations

FCC Rule Section 1.1307(a)(1-8) Compliance: This proposal specifies the use of an existing tower and transmitter site with no new construction and no changes to the existing tower structures. Further, no new site trenching or construction will be necessary. According to the notes contained in FCC Rules Section 1.1306, the use of existing towers and sites is deemed to be an environmentally desirable alternative to the construction of new tower facilities. Accordingly, this proposal is excluded from the provisions of Section 1.1306 of the FCC's Rules and is not subject to environmental processing.

***RF Exposure Considerations*:** The proposed daytime operation at this site was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET-65"). OET-65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines adopted in Section 1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in Section 1.1310 if it satisfies the exposure criteria set forth in OET-65. Based upon that methodology and as demonstrated in the following, the proposed transmitting system will comply with those guidelines.

The proposed nighttime antenna system will employ the existing three WNWR towers, each having an electrical height of 81.7 degrees; 8.3 degrees of guy wire top-loading at each tower. The AM fence distance tables specified in the Commission's **OET Bulletin No. 65** ("OET-65"), *Supplement A, Section I*, were referenced to determine the required "safe distance" for tower enclosure fencing. In this instance, because the towers are considered to be effectively 90 electrical degrees (0.25 wavelength) in height (after adding the physical height 81.7 degrees to the top-loading value of 8.3 degrees) it is appropriate to use *Table 2* of OET-65 since it addresses the quarter wavelength case. The nominal power for the nighttime operation will be 0.25 kW. The *Table 2* "Predicted Distances for Compliance with FCC Limits" for a "worst case" assumption of 1 kW at each tower base, will be one meter. Since each tower at the site is enclosed by a locked fence whose bounds are greater than this distance[5], the appropriate general public RF exposure guidelines are presumed to be satisfied.

Using OET-65 differently, assuming the closest actual tower fence distance (5.8 meters), an operating power of 0.25 kW and a tower electrical height of 90° at 1540 kHz, interpolated results from *Figures 2* and *3* of OET-65, *Supplement A*, indicate that the calculated total electrical and magnetic fields at the fence perimeter, as shown below, will be less than 1% of the uncontrolled/general population limit ("MPE" or Maximum Permissible Exposure).

Uncontrolled/General Population Calculation Results

	MPE Limit	Value	Percent of MPE
Electric Field (E):	535.06 V/m	5.70 V/m	0.01%
Magnetic Field (H):	1.42 A/m	0.068 A/m	0.23%

[5] The closest distance from the fence enclosure to an energized tower member is 5.8 meters. These distances were set to more than satisfy the distance requirements for the licensed 50 kW daytime operation. (See page 41 of BMML-20120724AFT.)

As such, it is expected that excessive levels of RF energy will not be caused at accessible areas near the site outside the fence line. Members of the general public are thus not expected to be exposed to RF energy in excess of the FCC's published guidelines. The tower fence gate will continue to be locked and RF exposure warning signs will continue to be posted at each tower.

Safety of Tower Workers and the General Public: As demonstrated herein, excessive levels of RF energy will not be caused at accessible areas near the tower. With respect to worker safety, a site exposure policy has been employed to protect maintenance workers from excessive exposure when work must be performed in the vicinity of or on the tower. Such protective measures include, but are not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines will be exceeded. Further, no worker is permitted to climb an energized tower.

Conclusion: Based on the preceding, it is submitted that the instant proposal is categorically excluded from environmental processing under Section 1.1306 of the Rules.

Exhibit 13 – Table I

Proposed Nighttime Directional Antenna System
Standard Pattern Parameters and Horizontal Pattern Data
prepared for
WNWR Philadelphia, Pennsylvania (Facility ID 1027)
1540 kHz 50 kW-D 0.25 kW-N DA-2 U

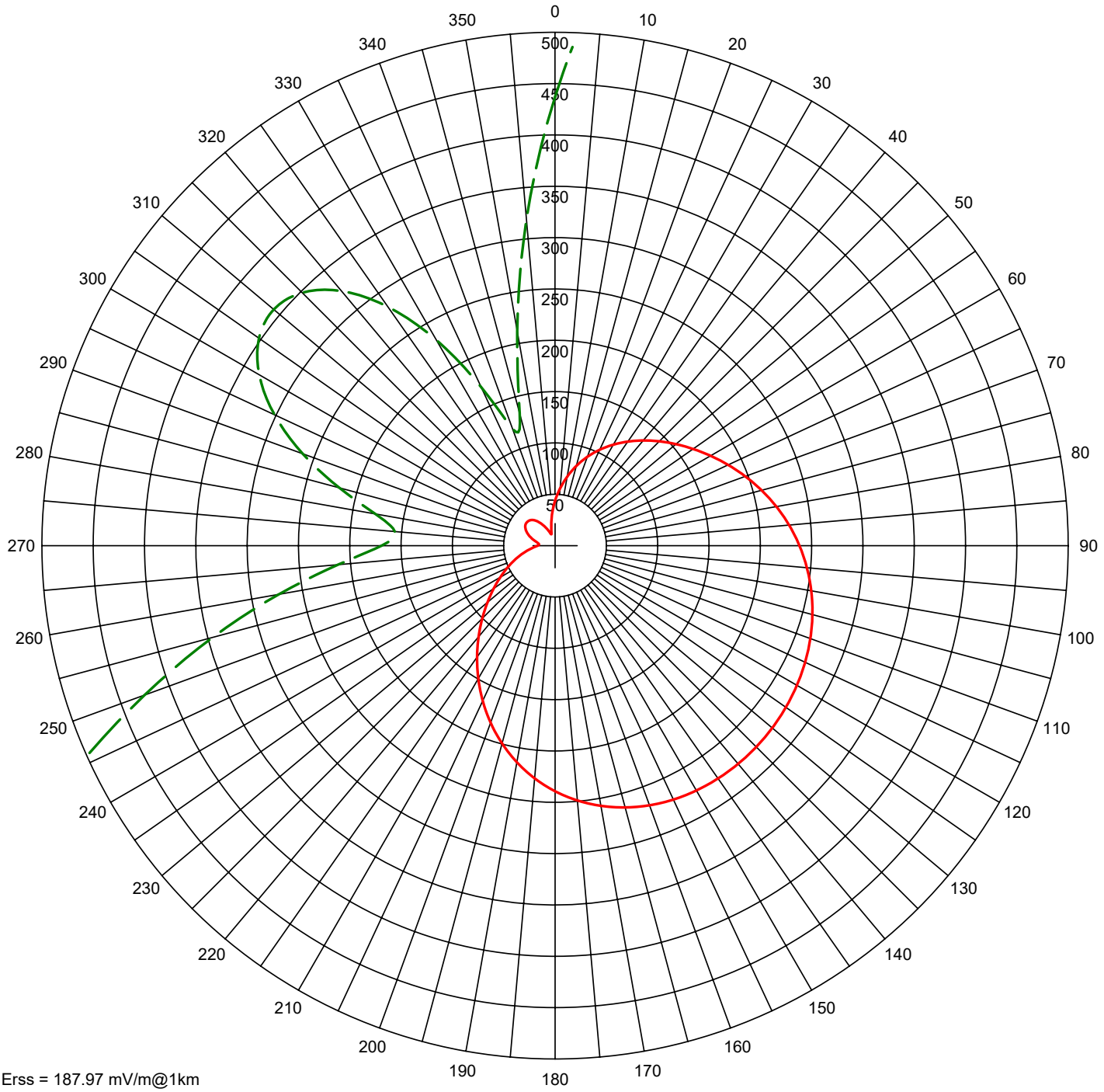
Tower Number	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Electrical Height (A)	Top Loading (B)	Ref Switch
1	1.000	0.0	0.0	0.0	81.7°	8.3°	0
2	0.801	-106.1	107.0	129.8	81.7°	8.3°	0
3	0.319	159.1	74.5	324.9	81.7°	8.3°	0

Input Power (kW)	Loop Loss (ohms)	Theoretical RMS (mV/m)	Theoretical RSS (mV/m)	Standard RMS (mV/m)	Q Factor (mV/m)
0.25	1	159.376	187.97	167.674	10.0

Standard Horizontal Plane Pattern

Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0	43.71	120	272.11	240	61.60
5	55.98	125	274.58	245	51.52
10	68.30	130	276.29	250	42.57
15	80.37	135	277.26	255	34.54
20	91.99	140	277.48	260	27.34
25	103.07	145	276.89	265	21.20
30	113.63	150	275.39	270	16.90
35	123.77	155	272.85	275	15.68
40	133.69	160	269.11	280	17.78
45	143.61	165	264.01	285	21.76
50	153.73	170	257.41	290	26.16
55	164.19	175	249.16	295	30.16
60	175.00	180	239.21	300	33.28
65	186.10	185	227.55	305	35.21
70	197.30	190	214.25	310	35.77
75	208.34	195	199.49	315	34.84
80	218.99	200	183.55	320	32.37
85	228.99	205	166.77	325	28.39
90	238.16	210	149.59	330	23.11
95	246.35	215	132.48	335	17.05
100	253.51	220	115.91	340	12.14
105	259.61	225	100.28	345	13.33
110	264.70	230	85.93	350	21.21
115	268.84	235	73.02	355	31.89

WNWR Proposed Nighttime Directional Pattern



Erss = 187.97 mV/m@1km
Theo RMS: 159.376 mV/m@1km
Std RMS: 167.674 mV/m@1km
Q: 10.0 mV/m@1km

Standard Horizontal Plane Pattern

Pattern (mV/m @ 1km)
Pattern X10

#	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Height (deg)	Ref Swtch	TL Swtch	A (deg)	B (deg)	C (deg)	D (deg)
1	1.000	0.0	0.0	0.0	-999.0	0	1	81.7	8.3	0.0	0.0
2	0.801	-106.1	107.0	129.8	-999.0	0	1	81.7	8.3	0.0	0.0
3	0.319	159.1	74.5	324.9	-999.0	0	1	81.7	8.3	0.0	0.0

EXHIBIT 13 - FIGURE 1
PROPOSED NIGHTTIME ANTENNA SYSTEM
STANDARD PATTERN POLAR PLOT

prepared December 2016 for

Global Radio, LLC (Delaware)
WNWR Philadelphia, PA (Fac ID 1027)
1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Cavell, Mertz & Associates, Inc.
Manassas, Virginia

CAVELL MERTZ & Associates, Inc.

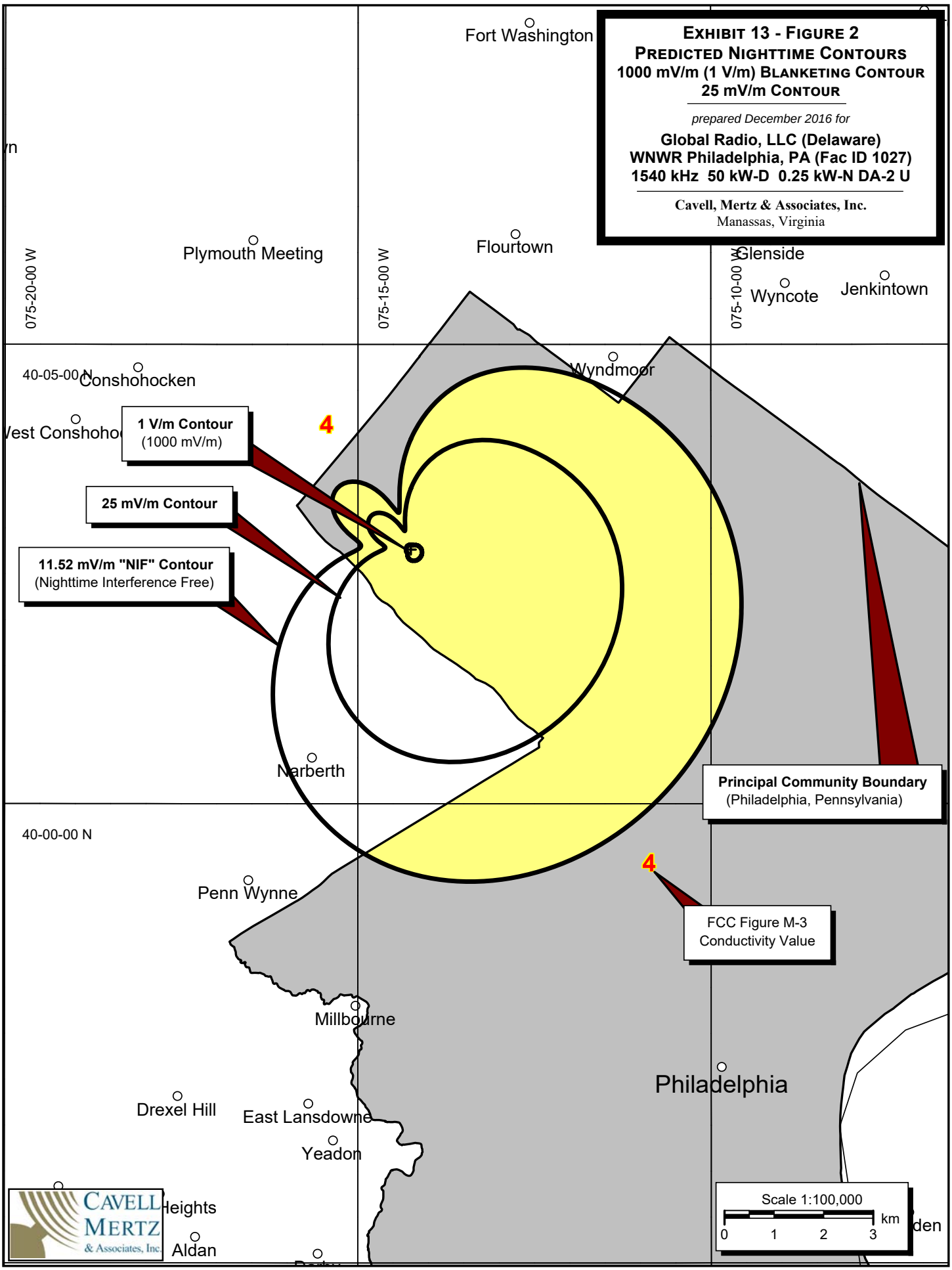


EXHIBIT 13 - FIGURE 2
PREDICTED NIGHTTIME CONTOURS
1000 mV/m (1 V/m) BLANKETING CONTOUR
25 mV/m CONTOUR
prepared December 2016 for
Global Radio, LLC (Delaware)
WNWR Philadelphia, PA (Fac ID 1027)
1540 kHz 50 kW-D 0.25 kW-N DA-2 U
Cavell, Mertz & Associates, Inc.
Manassas, Virginia
Fort Washington
Plymouth Meeting
Flourtown
Glenside
Wyncote
Jenkintown
Wyndmoor
Conshohocken
075-20-00 W
075-15-00 W
075-10-00 W
40-05-00 N
40-00-00 N
1 V/m Contour
(1000 mV/m)
25 mV/m Contour
11.52 mV/m "NIF" Contour
(Nighttime Interference Free)
Principal Community Boundary
(Philadelphia, Pennsylvania)
FCC Figure M-3
Conductivity Value
4
Narberth
Penn Wynne
Millbourne
Philadelphia
Drexel Hill
East Lansdowne
Yeadon
Aldan
Scale 1:100,000
km
0 1 2 3
CAVELL MERTZ & Associates, Inc.

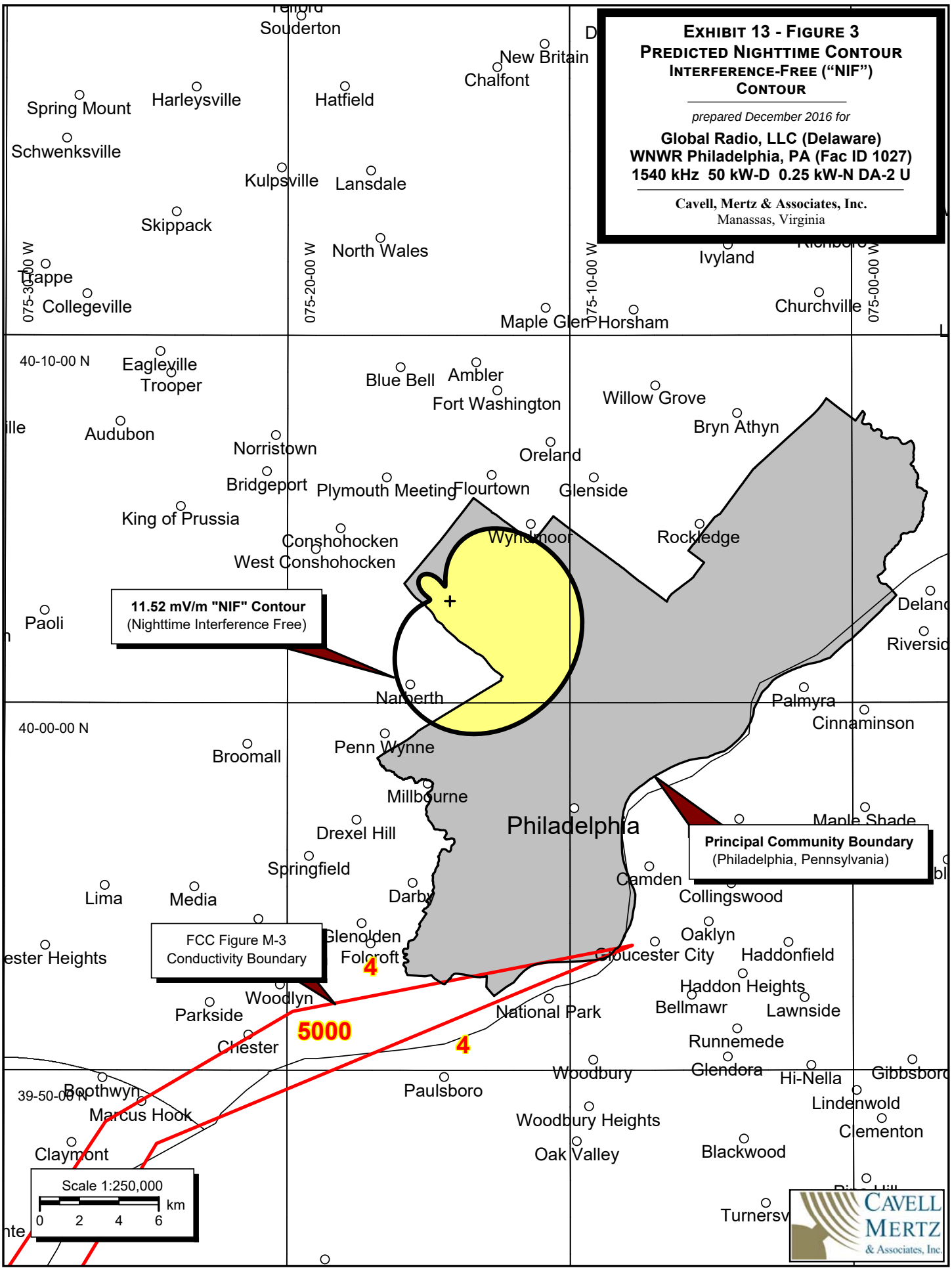


EXHIBIT 13 - FIGURE 3
PREDICTED NIGHTTIME CONTOUR
INTERFERENCE-FREE ("NIF")
CONTOUR
prepared December 2016 for
Global Radio, LLC (Delaware)
WNWR Philadelphia, PA (Fac ID 1027)
1540 kHz 50 kW-D 0.25 kW-N DA-2 U
Cavell, Mertz & Associates, Inc.
Manassas, Virginia
11.52 mV/m "NIF" Contour
(Nighttime Interference Free)
Principal Community Boundary
(Philadelphia, Pennsylvania)
FCC Figure M-3
Conductivity Boundary
5000
4
4
Philadelphia
Souderton
New Britain
Chalfont
Spring Mount
Harleysville
Hatfield
Schwenksville
Kulpsville
Lansdale
Skippack
North Wales
Trappe
Collegeville
Ivyland
Churchville
Maple Glen
Horsham
075-30-00 W
075-20-00 W
075-10-00 W
075-00-00 W
40-10-00 N
40-00-00 N
39-50-00 N
Eagleville
Trooper
Blue Bell
Ambler
Fort Washington
Willow Grove
Bryn Athyn
Audubon
Norristown
Oreland
Bridgeport
Plymouth Meeting
Flourtown
Glenside
King of Prussia
Conshohocken
West Conshohocken
Wyndmoor
Rockledge
Paoli
Narberth
Palmyra
Cinnaminson
Broomall
Penn Wynne
Millbourne
Drexel Hill
Springfield
Lima
Media
Darby
Camden
Collingswood
Glenolden
Folcroft
Oaklyn
Gloucester City
Haddonfield
Haddon Heights
Woodlyn
Parkside
Bellmawr
Lawnside
National Park
Chester
Runnemede
Woodbury
Glendora
Hi-Nella
Gibbsboro
Boothwyn
Paulsboro
Lindenwold
Marcus Hook
Woodbury Heights
Clementon
Claymont
Oak Valley
Blackwood
Turnersv
Scale 1:250,000
km
0 2 4 6
CAVELL MERTZ
& Associates, Inc.

Exhibit 13 – Table II

NIGHTTIME INTERFERENCE FREE
CONTOUR CALCULATION

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)
1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Station	Distance (km)	Bearing (deg)	Vert. Angle (deg)	Radiation (mV/m)	Skywave Factor (μV/m)	Night Limit (mV/m)	RSS Limit (mV/m)
KXEL	1447.1	93.7	2.4 – 6.1	3251.25	17.72	11.520	11.520
					----------50% Exclusion----------		
ZNS-1-A	1684	6.2	1.1 – 4.3	1133.56	18.92	4.288	12.292
WCKY	810.2	79.3	8.2 – 14.6	3253.86	54.12	3.522	12.787
WDCD	320	201.4	23.5 – 36.0	69.04	185.84	2.566	13.042
CBE/A	686.8	108	10.3 – 17.6	1460.55	66.77	1.950	13.187

Exhibit 13 – Table III

NIGHT ALLOCATION PROTECTION REPORT

(Margins above 3000 Omitted for Brevity)

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Note: Positive "Margin" numbers indicate that the require protection level at the contour has been met.

Call Letters	Ct St City	Azi (deg)	Ang Low (deg)	Ang High (deg)	SWFF (100uV/m)	Req Prot (mV/m)	Permis (mV/m)	Cur Rad (mV/m)	Margin (mV/m)
WDCD	US NY ALBANY	20.53	23.49	36.02	185.84	3.181	85.59	84.510	1.09
KZMP	US TX UNIVERSITY PARK	254.35	0.00	1.75	10.86	1.400	644.89	35.560	609.33
KGBC	US TX GALVESTON	242.23	0.00	1.53	11.27	1.650	732.09	56.950	675.14
CHIN/A	CA ON TORONTO	320.51	18.88	18.88	121.13	21.276	878.25	19.790	858.46
WITK	US PA PITTSTON	342.45	43.15	57.24	342.16	6.088	889.68	30.930	858.75
WSDK	US CT BLOOMFIELD	45.33	25.61	38.68	206.80	5.005	1210.13	122.850	1087.28
KEDA	US TX SAN ANTONIO	247.68	0.00	0.21	8.87	2.233	1258.00	46.590	1211.41
WLTI	US IN NEW CASTLE	272.44	7.48	13.47	47.77	2.109	2207.07	15.800	2191.27
KEDA	US TX SAN ANTONIO	247.68	0.00	0.21	8.87	2.233	1258.00	46.590	1211.41

Notes: 1) Stations with Margins above 3000 mV/m omitted for brevity.

2) "Margin" indicates the difference between the permissible radiation toward the station and the actual radiation of the proposed station. If this number is negative, it indicates a violation of the rules.

3) No negative numbers shown above

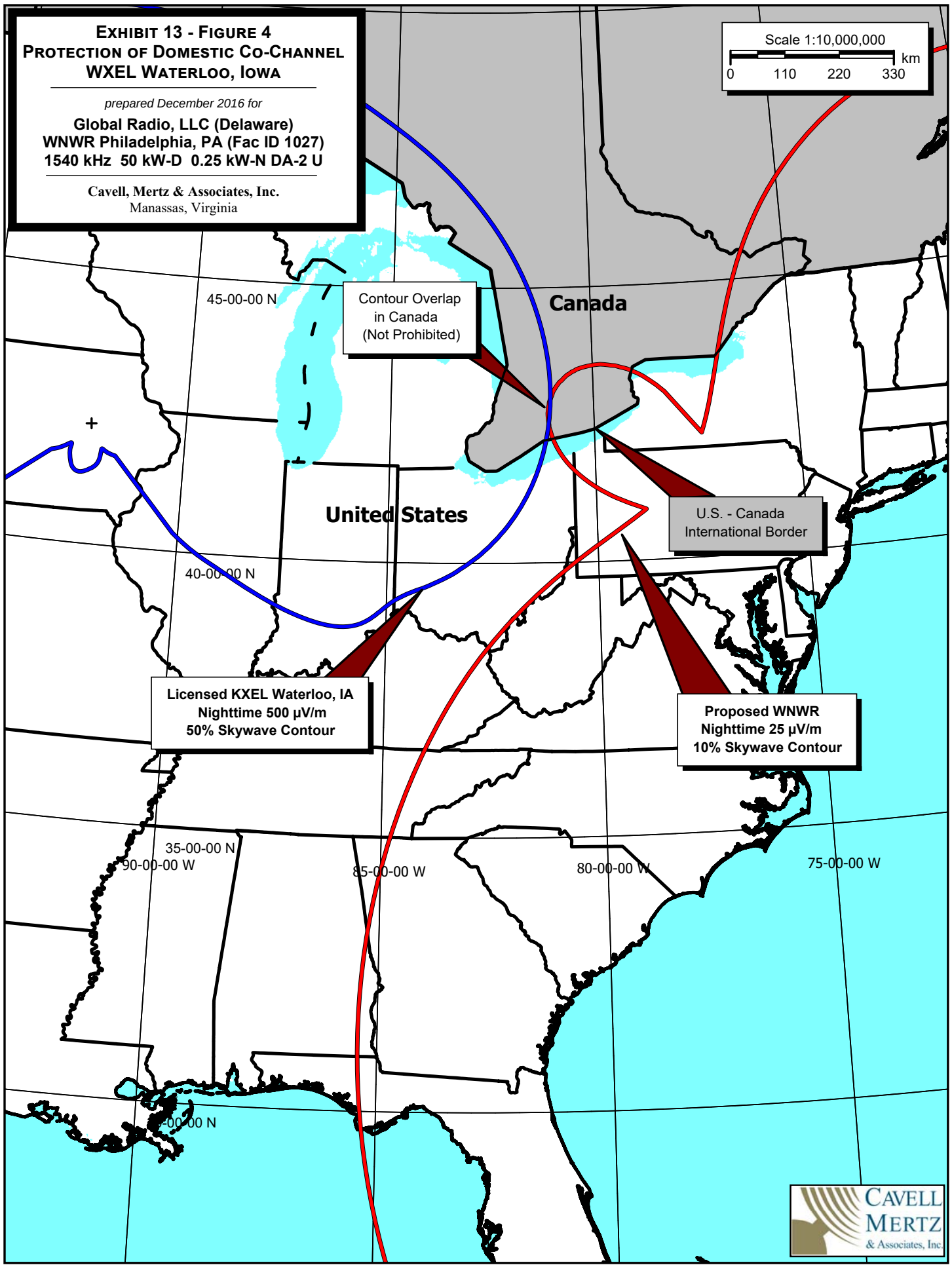


EXHIBIT 13 - FIGURE 4
PROTECTION OF DOMESTIC CO-CHANNEL
WXEL WATERLOO, IOWA
prepared December 2016 for
Global Radio, LLC (Delaware)
WNWR Philadelphia, PA (Fac ID 1027)
1540 kHz 50 kW-D 0.25 kW-N DA-2 U
Cavell, Mertz & Associates, Inc.
Manassas, Virginia
Scale 1:10,000,000
km
0 110 220 330
45-00-00 N
Contour Overlap
in Canada
(Not Prohibited)
Canada
United States
U.S. - Canada
International Border
40-00-00 N
Licensed KXEL Waterloo, IA
Nighttime 500 µV/m
50% Skywave Contour
Proposed WNWR
Nighttime 25 µV/m
10% Skywave Contour
35-00-00 N
90-00-00 W
85-00-00 W
80-00-00 W
75-00-00 W
CAVELL
MERTZ
& Associates, Inc

Exhibit 13 – Table IV (Page 1 of 4)

PROTECTION TO KXEL WATERLOO, IOWA

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Note: Positive "Margin" numbers indicate that the require protection level at the contour has been met.

Call Letters	Ct	St	City	Azi (deg)	Ang Low (deg)	Ang High (deg)	SWFF (100uV/m)	Req Prot (mV/m)	Permis (mV/m)	Cur Rad (mV/m)	Margin (mV/m)
KXEL (0)	US	IA	WATERLOO	309.54	1.36	4.64	10.91	0.756	346.25s	35.7	310.55
KXEL (5)	US	IA	WATERLOO	309.84	1.68	5.09	11.95	0.785	328.46s	35.66	292.8
KXEL (10)	US	IA	WATERLOO	311.06	1.96	5.47	12.78	0.755	295.25s	35.54	259.71
KXEL (15)	US	IA	WATERLOO	311.94	2.28	5.91	13.86	0.739	266.59s	35.38	231.21
KXEL (20)	US	IA	WATERLOO	313.57	2.6	6.36	14.93	0.687	230.17s	34.99	195.18
KXEL (25)	US	IA	WATERLOO	315.8	2.95	6.86	16.13	0.619	192.01s	34.21	157.79
KXEL (30)	US	IA	WATERLOO	316.1	3.39	7.48	18.04	0.623	172.55s	33.97	138.58
KXEL (35)	US	IA	WATERLOO	316.47	3.86	8.16	20.25	0.621	153.26s	33.67	119.59
KXEL (40)	US	IA	WATERLOO	316.93	4.39	8.92	22.86	0.615	134.45s	33.31	101.15
KXEL (45)	US	IA	WATERLOO	317.52	4.98	9.78	26.04	0.602	115.70s	32.81	82.89
KXEL (50)	US	IA	WATERLOO	317.11	5.62	10.72	29.86	0.608	101.87s	32.76	69.11
KXEL (55)	US	IA	WATERLOO	317.63	6.42	11.89	34.82	0.583	83.70s	32.13	51.57
KXEL (60)	US	IA	WATERLOO	316.59	7.26	13.13	40.62	0.581	71.52s	32.14	39.38
KXEL (65)	US	IA	WATERLOO	315.53	8.27	14.63	48.07	0.565	58.75s	31.97	26.78
KXEL (70)	US	IA	WATERLOO	311.86	9.12	15.9	55.04	0.581	52.78s	32.38	20.39
KXEL (75)	US	IA	WATERLOO	307.7	10.01	17.22	62.68	0.584	46.60s	31.87	14.73
KXEL (80)	US	IA	WATERLOO	301.47	10.37	17.76	66.46	0.613	46.10s	30.05	16.05
KXEL (85)	US	IA	WATERLOO	295.64	10.38	17.77	67.23	0.636	47.33s	27.01	20.32
KXEL (85)	US	IA	WATERLOO	294.96	10.34	17.7	66.94	0.641	47.85s	26.64	21.22
KXEL (86)	US	IA	WATERLOO	294.11	10.15	17.43	65.55	0.654	49.92s	26.13	23.79
KXEL (86)	US	IA	WATERLOO	293.31	9.98	17.18	64.23	0.668	51.97s	25.7	26.27
KXEL (87)	US	IA	WATERLOO	296.96	13.37	22.16	93.14	0.5	26.84S	25.53	1.31
KXEL (87)	US	IA	WATERLOO	296.11	13.39	22.19	93.43	0.5	26.76S	25.05	1.71
KXEL (88)	US	IA	WATERLOO	295.28	13.42	22.24	93.8	0.5	26.65S	24.56	2.09
KXEL (88)	US	IA	WATERLOO	294.45	13.44	22.27	94.11	0.5	26.57S	24.05	2.51
KXEL (89)	US	IA	WATERLOO	293.61	13.46	22.29	94.35	0.5	26.50S	23.44	3.05
KXEL (89)	US	IA	WATERLOO	292.76	13.47	22.31	94.53	0.5	26.45S	22.9	3.55
KXEL (90)	US	IA	WATERLOO	291.91	13.45	22.28	94.48	0.5	26.46S	22.32	4.14
KXEL (90)	US	IA	WATERLOO	291.06	13.45	22.27	94.53	0.5	26.45S	21.82	4.62
KXEL (91)	US	IA	WATERLOO	290.22	13.43	22.26	94.5	0.5	26.45S	21.24	5.21
KXEL (91)	US	IA	WATERLOO	289.38	13.4	22.2	94.25	0.5	26.52S	20.65	5.87
KXEL (92)	US	IA	WATERLOO	288.55	13.37	22.16	94.1	0.5	26.57S	20.07	6.5
KXEL (92)	US	IA	WATERLOO	287.72	13.33	22.11	93.88	0.5	26.63S	19.55	7.08
KXEL (93)	US	IA	WATERLOO	286.89	13.27	22.02	93.43	0.5	26.76S	18.98	7.78
KXEL (93)	US	IA	WATERLOO	286.08	13.23	21.95	93.08	0.5	26.86S	18.48	8.38

Exhibit 13 – Table IV, Continued (Page 2 of 4)

PROTECTION TO KXEL WATERLOO, IOWA

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Note: Positive "Margin" numbers indicate that the require protection level at the contour has been met.

Call Letters	Ct	St	City	Azi (deg)	Ang Low (deg)	Ang High (deg)	SWFF (100uV/m)	Req Prot (mV/m)	Permis (mV/m)	Cur Rad (mV/m)	Margin (mV/m)
KXEL (94)	US	IA	WATERLOO	285.28	13.17	21.87	92.67	0.5	26.98S	17.94	9.03
KXEL (94)	US	IA	WATERLOO	284.49	13.09	21.75	92.05	0.5	27.16S	17.49	9.67
KXEL (95)	US	IA	WATERLOO	283.71	13.02	21.65	91.53	0.5	27.31S	17.05	10.26
KXEL (95)	US	IA	WATERLOO	282.95	12.93	21.52	90.79	0.5	27.53S	16.65	10.89
KXEL (96)	US	IA	WATERLOO	282.2	12.85	21.4	90.17	0.5	27.73S	16.23	11.5
KXEL (96)	US	IA	WATERLOO	281.46	12.75	21.26	89.34	0.5	27.98S	15.94	12.04
KXEL (97)	US	IA	WATERLOO	280.74	12.66	21.12	88.62	0.5	28.21S	15.61	12.6
KXEL (97)	US	IA	WATERLOO	280.05	12.55	20.96	87.7	0.5	28.50S	15.39	13.11
KXEL (98)	US	IA	WATERLOO	279.36	12.45	20.81	86.9	0.5	28.77S	15.18	13.59
KXEL (98)	US	IA	WATERLOO	278.7	12.33	20.64	85.92	0.5	29.10S	15.01	14.08
KXEL (99)	US	IA	WATERLOO	278.04	12.22	20.48	85.04	0.5	29.40S	14.89	14.51
KXEL (99)	US	IA	WATERLOO	277.42	12.09	20.29	84	0.5	29.76S	14.81	14.95
KXEL (100)	US	IA	WATERLOO	276.8	11.98	20.12	83.07	0.5	30.09S	14.78	15.32
KXEL (100)	US	IA	WATERLOO	276.22	11.84	19.93	81.98	0.5	30.49S	14.79	15.7
KXEL (101)	US	IA	WATERLOO	275.66	11.71	19.73	80.88	0.5	30.91S	14.83	16.08
KXEL (101)	US	IA	WATERLOO	275.1	11.58	19.55	79.88	0.5	31.30S	14.9	16.39
KXEL (102)	US	IA	WATERLOO	274.58	11.45	19.34	78.75	0.5	31.75S	15.07	16.67
KXEL (102)	US	IA	WATERLOO	274.08	11.31	19.14	77.61	0.5	32.21S	15.34	16.88
KXEL (103)	US	IA	WATERLOO	273.59	11.18	18.95	76.58	0.5	32.65S	15.62	17.03
KXEL (103)	US	IA	WATERLOO	273.13	11.03	18.74	75.42	0.5	33.15S	15.88	17.26
KXEL (104)	US	IA	WATERLOO	272.69	10.89	18.53	74.26	0.5	33.66S	16.15	17.52
KXEL (104)	US	IA	WATERLOO	272.28	10.75	18.31	73.1	0.5	34.20S	16.41	17.79
KXEL (105)	US	IA	WATERLOO	271.88	10.6	18.1	71.95	0.5	34.75S	16.66	18.08
KXEL (105)	US	IA	WATERLOO	271.51	10.46	17.89	70.8	0.5	35.31S	16.91	18.4
KXEL (106)	US	IA	WATERLOO	271.15	10.32	17.67	69.66	0.5	35.89S	17.15	18.74
KXEL (106)	US	IA	WATERLOO	270.79	10.18	17.48	68.62	0.5	36.44S	17.41	19.03
KXEL (107)	US	IA	WATERLOO	270.47	10.04	17.27	67.48	0.5	37.05S	17.63	19.42
KXEL (107)	US	IA	WATERLOO	270.17	9.9	17.05	66.36	0.5	37.67S	17.84	19.83
KXEL (108)	US	IA	WATERLOO	269.89	9.76	16.84	65.25	0.5	38.31S	18.03	20.29
KXEL (108)	US	IA	WATERLOO	269.66	9.6	16.62	64.07	0.5	39.02S	18.19	20.83
KXEL (109)	US	IA	WATERLOO	269.42	9.46	16.41	62.99	0.5	39.69S	18.37	21.32
KXEL (109)	US	IA	WATERLOO	269.19	9.33	16.21	61.92	0.5	40.37S	18.53	21.84
KXEL (110)	US	IA	WATERLOO	268.98	9.19	16	60.87	0.5	41.07S	18.69	22.39
KXEL (110)	US	IA	WATERLOO	268.79	9.05	15.8	59.83	0.5	41.78S	18.82	22.96

Exhibit 13 – Table IV, Continued (Page 3 of 4)

PROTECTION TO KXEL WATERLOO, IOWA

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Note: Positive "Margin" numbers indicate that the require protection level at the contour has been met.

Call Letters	Ct	St	City	Azi (deg)	Ang Low (deg)	Ang High (deg)	SWFF (100uV/m)	Req Prot (mV/m)	Permis (mV/m)	Cur Rad (mV/m)	Margin (mV/m)
KXEL (111)	US	IA	WATERLOO	268.61	8.92	15.6	58.81	0.5	42.51S	18.95	23.56
KXEL (111)	US	IA	WATERLOO	268.48	8.77	15.39	57.73	0.5	43.30S	19.04	24.27
KXEL (115)	US	IA	WATERLOO	267.04	7.93	14.14	51.62	0.5	48.43S	20.21	28.22
KXEL (120)	US	IA	WATERLOO	265.11	7.18	13.02	46.48	0.5	53.79S	22.08	31.71
KXEL (125)	US	IA	WATERLOO	265.76	6.2	11.56	39.86	0.5	62.72S	21.16	41.56
KXEL (130)	US	IA	WATERLOO	270	4.98	9.78	32.00	0.5	78.12S	17.12	60.99
KXEL (135)	US	IA	WATERLOO	274.14	4.05	8.43	26.48	0.5	94.42S	15.54	78.88
KXEL (140)	US	IA	WATERLOO	282.68	2.75	6.57	19.35	0.5	129.19S	19.63	109.56
KXEL (145)	US	IA	WATERLOO	282.81	2.68	6.47	19.04	0.5	131.27S	19.73	111.54
KXEL (150)	US	IA	WATERLOO	283.05	2.61	6.38	18.74	0.5	133.44S	19.94	113.49
KXEL (155)	US	IA	WATERLOO	282.87	2.59	6.35	18.67	0.5	133.88S	19.79	114.09
KXEL (160)	US	IA	WATERLOO	282.36	2.58	6.34	18.72	0.5	133.57S	19.39	114.18
KXEL (165)	US	IA	WATERLOO	281.92	2.56	6.31	18.69	0.5	133.78S	19.04	114.74
KXEL (170)	US	IA	WATERLOO	281.6	2.53	6.27	18.58	0.5	134.54S	18.8	115.73
KXEL (175)	US	IA	WATERLOO	281.38	2.49	6.2	18.43	0.5	135.65S	18.64	117.01
KXEL (180)	US	IA	WATERLOO	281.2	2.44	6.14	18.25	0.5	136.96S	18.52	118.44
KXEL (185)	US	IA	WATERLOO	281.06	2.38	6.06	18.06	0.5	138.44S	18.41	120.02
KXEL (190)	US	IA	WATERLOO	281.04	2.33	5.99	17.85	0.5	140.08S	18.41	121.66
KXEL (195)	US	IA	WATERLOO	281.19	2.28	5.92	17.64	0.5	141.74S	18.52	123.22
KXEL (200)	US	IA	WATERLOO	281.5	2.24	5.87	17.45	0.5	143.24S	18.76	124.48
KXEL (205)	US	IA	WATERLOO	281.95	2.22	5.84	17.31	0.5	144.39S	19.11	125.28
KXEL (210)	US	IA	WATERLOO	282.38	2.21	5.82	17.21	0.5	145.25S	19.44	125.8
KXEL (215)	US	IA	WATERLOO	282.84	2.21	5.82	17.16	0.5	145.71S	19.81	125.9
KXEL (220)	US	IA	WATERLOO	283.22	2.21	5.82	17.12	0.5	146.01S	20.12	125.89
KXEL (225)	US	IA	WATERLOO	282.9	2.13	5.7	16.83	0.5	148.53S	19.87	128.66
KXEL (230)	US	IA	WATERLOO	282.6	2.02	5.55	16.46	0.5	151.87S	19.63	132.24
KXEL (235)	US	IA	WATERLOO	277.33	0.77	3.84	12.84	0.5	194.74S	16.3	178.44
KXEL (240)	US	IA	WATERLOO	276.68	0.22	3.11	11.37	0.5	219.92S	16.07	203.85
KXEL (245)	US	IA	WATERLOO	276.91	0	2.53	10.22	0.5	244.53S	16.15	228.38
KXEL (250)	US	IA	WATERLOO	277.43	0	1.90	9.06	0.5	276.02S	16.36	259.66
KXEL (255)	US	IA	WATERLOO	278.34	0	1.26	7.94	0.5	314.87S	16.79	298.07
KXEL (260)	US	IA	WATERLOO	279.73	0	0.74	7.06	0.5	354.08S	17.61	336.47
KXEL (265)	US	IA	WATERLOO	281.49	0	0.39	6.43	0.5	388.55S	18.85	369.7
KXEL (270)	US	IA	WATERLOO	283.46	0	0.20	6.01	0.5	416.10S	20.44	395.66
KXEL (275)	US	IA	WATERLOO	285.52	0	0.15	5.75	0.5	434.99S	22.22	412.77

Exhibit 13 – Table IV, Continued (Page 4 of 4)

PROTECTION TO KXEL WATERLOO, IOWA

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Note: Positive "Margin" numbers indicate that the require protection level at the contour has been met.

Call Letters	Ct	St	City	Azi (deg)	Ang Low (deg)	Ang High (deg)	SWFF (100uV/m)	Req Prot (mV/m)	Permis (mV/m)	Cur Rad (mV/m)	Margin (mV/m)
KXEL (280)	US	IA	WATERLOO	287.58	0	0.20	5.6	0.5	446.11S	24.04	422.07
KXEL (285)	US	IA	WATERLOO	289.6	0	0.28	5.51	0.5	453.74S	25.82	427.92
KXEL (290)	US	IA	WATERLOO	291.61	0	0.36	5.41	0.5	462.18S	27.53	434.66
KXEL (295)	US	IA	WATERLOO	293.65	0	0.42	5.28	0.5	473.28S	29.16	444.13
KXEL (300)	US	IA	WATERLOO	295.71	0	0.49	5.17	0.5	483.73S	30.67	453.06
KXEL (305)	US	IA	WATERLOO	297.72	0	0.61	5.12	0.5	488.36S	31.99	456.37
KXEL (310)	US	IA	WATERLOO	299.66	0	0.78	5.14	0.5	486.62S	33.1	453.52
KXEL (315)	US	IA	WATERLOO	301.51	0	0.99	5.22	0.5	478.72S	34	444.73
KXEL (320)	US	IA	WATERLOO	303.27	0	1.24	5.38	0.5	464.78S	34.69	430.09
KXEL (325)	US	IA	WATERLOO	304.93	0	1.51	5.59	0.5	446.88S	35.2	411.68
KXEL (330)	US	IA	WATERLOO	306.31	0	1.87	5.98	0.514	430.02s	35.5	394.52
KXEL (335)	US	IA	WATERLOO	307.21	0	2.33	6.6	0.552	418.42s	35.64	382.78
KXEL (340)	US	IA	WATERLOO	308.11	0	2.75	7.23	0.581	402.05s	35.73	366.31
KXEL (345)	US	IA	WATERLOO	309.39	0.22	3.10	7.72	0.581	376.37s	35.78	340.59
KXEL (350)	US	IA	WATERLOO	308.96	0.68	3.72	8.97	0.676	376.83s	35.76	341.07
KXEL (355)	US	IA	WATERLOO	309.85	0.97	4.11	9.69	0.684	352.94s	35.74	317.2

Notes: 1) Additional radials added at 0.5 degree intervals from 85 to 111 degrees from KXEL
2) S = Skywave Signal = no clipping used
3) s = Skywave Signal used, point was clipped at U.S. Border (signal at border used).
4) "Margin" indicates the difference between the permissible radiation toward the station and the actual radiation of the proposed station. If this number is negative, it indicates a violation of the rules.
No negative numbers shown above

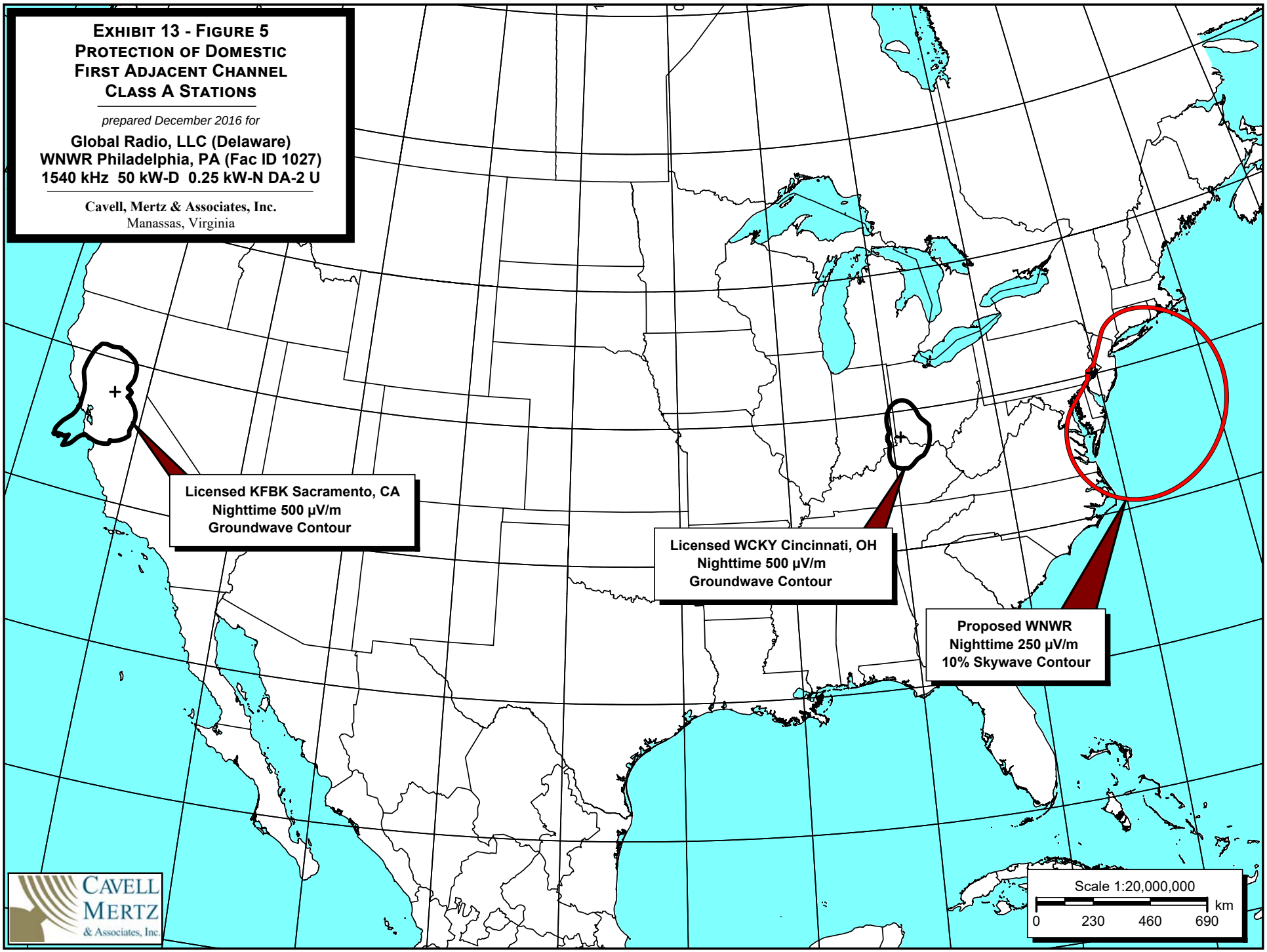


EXHIBIT 13 - FIGURE 5
PROTECTION OF DOMESTIC
FIRST ADJACENT CHANNEL
CLASS A STATIONS
prepared December 2016 for
Global Radio, LLC (Delaware)
WNWR Philadelphia, PA (Fac ID 1027)
1540 kHz 50 kW-D 0.25 kW-N DA-2 U
Cavell, Mertz & Associates, Inc.
Manassas, Virginia
Licensed KFBK Sacramento, CA
Nighttime 500 µV/m
Groundwave Contour
Licensed WCKY Cincinnati, OH
Nighttime 500 µV/m
Groundwave Contour
Proposed WNWR
Nighttime 250 µV/m
10% Skywave Contour
CAVELL MERTZ & Associates, Inc.
Scale 1:20,000,000
km
0 230 460 690

Exhibit 13 – Table V (Page 1 of 4)

PROTECTION TO WCKY CINCINNATI, OHIO

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Note: Positive "Margin" numbers indicate that the require protection level at the contour has been met.

Call Letters	Ct	St	City	Azi (deg)	Ang Low (deg)	Ang High (deg)	SWFF (100uV/m)	Req Prot (mV/m)	Permis (mV/m)	Cur Rad (mV/m)	Margin (mV/m)
WCKY (0)	US	OH	CINCINNATI	275.47	8.45	14.91	54.47	0.5	458.99G	15.2	443.79
WCKY (5)	US	OH	CINCINNATI	275.7	8.65	15.2	55.89	0.5	447.28G	15.2	432.08
WCKY (10)	US	OH	CINCINNATI	275.69	8.85	15.49	57.42	0.5	435.37G	15.17	420.2
WCKY (15)	US	OH	CINCINNATI	275.43	9.04	15.79	58.98	0.5	423.89G	15.14	408.75
WCKY (20)	US	OH	CINCINNATI	274.9	9.22	16.06	60.46	0.5	413.53G	15.14	398.39
WCKY (25)	US	OH	CINCINNATI	274.15	9.38	16.28	61.75	0.5	404.84G	15.22	389.62
WCKY (30)	US	OH	CINCINNATI	273.26	9.5	16.47	62.83	0.5	397.90G	15.54	382.36
WCKY (35)	US	OH	CINCINNATI	272.36	9.6	16.61	63.72	0.5	392.34G	16.11	376.22
WCKY (40)	US	OH	CINCINNATI	271.41	9.67	16.71	64.38	0.5	388.32G	16.79	371.53
WCKY (45)	US	OH	CINCINNATI	270.51	9.72	16.79	64.91	0.5	385.16G	17.51	367.65
WCKY (50)	US	OH	CINCINNATI	269.72	9.78	16.88	65.47	0.5	381.85G	18.2	363.65
WCKY (55)	US	OH	CINCINNATI	269.02	9.86	17	66.22	0.5	377.56G	18.84	358.71
WCKY (60)	US	OH	CINCINNATI	268.36	9.97	17.16	67.15	0.5	372.29G	19.5	352.79
WCKY (65)	US	OH	CINCINNATI	267.66	10.09	17.33	68.17	0.5	366.73G	20.2	346.53
WCKY (70)	US	OH	CINCINNATI	266.9	10.19	17.49	69.13	0.5	361.64G	21.02	340.62
WCKY (75)	US	OH	CINCINNATI	266.06	10.28	17.62	69.93	0.5	357.50G	21.93	335.56
WCKY (80)	US	OH	CINCINNATI	265.16	10.22	17.53	69.56	0.5	359.42G	22.89	336.53
WCKY (85)	US	OH	CINCINNATI	264.3	10.17	17.47	69.27	0.5	360.92G	23.85	337.08
WCKY (90)	US	OH	CINCINNATI	263.47	10.13	17.4	69.02	0.5	362.23G	24.79	337.44
WCKY (95)	US	OH	CINCINNATI	262.66	10.08	17.32	68.64	0.5	364.20G	25.72	338.48
WCKY (100)	US	OH	CINCINNATI	261.87	10.01	17.22	68.17	0.5	366.75G	26.65	340.1
WCKY (105)	US	OH	CINCINNATI	261.13	9.92	17.09	67.55	0.5	370.12G	27.54	342.58
WCKY (110)	US	OH	CINCINNATI	260.45	9.82	16.94	66.79	0.5	374.31G	28.37	345.94
WCKY (115)	US	OH	CINCINNATI	259.82	9.7	16.76	65.92	0.5	379.23G	29.15	350.08
WCKY (120)	US	OH	CINCINNATI	259.23	9.58	16.58	65.01	0.5	384.56G	29.87	354.69
WCKY (125)	US	OH	CINCINNATI	258.71	9.45	16.38	64.01	0.5	390.56G	30.52	360.04
WCKY (130)	US	OH	CINCINNATI	258.25	9.31	16.18	62.96	0.5	397.09G	31.1	366
WCKY (135)	US	OH	CINCINNATI	257.83	9.16	15.96	61.88	0.5	404.04G	31.62	372.42
WCKY (140)	US	OH	CINCINNATI	257.73	8.99	15.71	60.58	0.5	412.71G	31.71	380.99
WCKY (145)	US	OH	CINCINNATI	257.66	8.83	15.47	59.35	0.5	421.21G	31.77	389.44
WCKY (150)	US	OH	CINCINNATI	257.51	8.69	15.26	58.25	0.5	429.21G	31.95	397.26
WCKY (155)	US	OH	CINCINNATI	257.24	8.54	15.04	57.2	0.5	437.04G	32.28	404.76
WCKY (160)	US	OH	CINCINNATI	256.9	8.4	14.83	56.14	0.5	445.28G	32.73	412.55
WCKY (165)	US	OH	CINCINNATI	256.58	8.24	14.6	55.03	0.5	454.31G	33.14	421.17
WCKY (170)	US	OH	CINCINNATI	256.38	8.08	14.36	53.87	0.5	464.12G	33.4	430.73
WCKY (175)	US	OH	CINCINNATI	256.43	7.93	14.13	52.72	0.5	474.19G	33.29	440.9

PROTECTION TO WCKY CINCINNATI, OHIO

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

WCKY (180)	US	OH	CINCINNATI	256.75	7.79	13.92	51.68	0.5	483.72G	32.82	450.9
WCKY (185)	US	OH	CINCINNATI	257.06	7.65	13.72	50.69	0.5	493.21G	32.37	460.84
WCKY (190)	US	OH	CINCINNATI	257.47	7.53	13.54	49.79	0.5	502.11G	31.77	470.33
WCKY (195)	US	OH	CINCINNATI	257.99	7.43	13.39	49.02	0.5	510.00G	31.05	478.95
WCKY (200)	US	OH	CINCINNATI	258.59	7.35	13.27	48.39	0.5	516.65G	30.22	486.44
WCKY (205)	US	OH	CINCINNATI	259.31	7.3	13.2	47.97	0.5	521.17G	29.24	491.94
WCKY (210)	US	OH	CINCINNATI	260.13	7.29	13.18	47.79	0.5	523.09G	28.16	494.93
WCKY (215)	US	OH	CINCINNATI	260.96	7.3	13.2	47.8	0.5	522.99G	27.09	495.9
WCKY (220)	US	OH	CINCINNATI	261.75	7.34	13.26	47.98	0.5	521.09G	26.1	494.99
WCKY (225)	US	OH	CINCINNATI	262.49	7.39	13.34	48.27	0.5	517.89G	25.19	492.7
WCKY (230)	US	OH	CINCINNATI	263.13	7.45	13.43	48.63	0.5	514.13G	24.43	489.7
WCKY (235)	US	OH	CINCINNATI	263.65	7.51	13.51	48.94	0.5	510.81G	23.83	486.99
WCKY (240)	US	OH	CINCINNATI	264.07	7.54	13.55	49.13	0.5	508.83G	23.36	485.47
WCKY (245)	US	OH	CINCINNATI	264.41	7.55	13.57	49.17	0.5	508.43G	22.97	485.46
WCKY (250)	US	OH	CINCINNATI	264.71	7.55	13.56	49.1	0.5	509.19G	22.62	486.56
WCKY (255)	US	OH	CINCINNATI	265.01	7.53	13.54	48.98	0.5	510.44G	22.27	488.17
WCKY (260)	US	OH	CINCINNATI	265.31	7.52	13.53	48.86	0.5	511.67G	21.94	489.73
WCKY (265)	US	OH	CINCINNATI	265.63	7.52	13.52	48.78	0.5	512.46G	21.6	490.86
WCKY (270)	US	OH	CINCINNATI	265.94	7.52	13.52	48.78	0.5	512.52G	21.26	491.26
WCKY (275)	US	OH	CINCINNATI	266.24	7.54	13.55	48.86	0.5	511.69G	20.94	490.76
WCKY (280)	US	OH	CINCINNATI	266.52	7.56	13.59	49.02	0.5	509.98G	20.66	489.32
WCKY (285)	US	OH	CINCINNATI	266.78	7.6	13.64	49.26	0.5	507.55G	20.4	487.15
WCKY (290)	US	OH	CINCINNATI	267.01	7.64	13.71	49.53	0.5	504.79G	20.18	484.61
WCKY (295)	US	OH	CINCINNATI	267.24	7.68	13.76	49.77	0.5	502.34G	19.97	482.37
WCKY (300)	US	OH	CINCINNATI	267.51	7.71	13.8	49.92	0.5	500.83G	19.7	481.13
WCKY (305)	US	OH	CINCINNATI	267.87	7.72	13.81	49.95	0.5	500.52G	19.35	481.18
WCKY (310)	US	OH	CINCINNATI	268.35	7.71	13.81	49.89	0.5	501.12G	18.9	482.22
WCKY (315)	US	OH	CINCINNATI	268.94	7.71	13.81	49.8	0.5	502.05G	18.37	483.68
WCKY (320)	US	OH	CINCINNATI	269.64	7.71	13.81	49.73	0.5	502.76G	17.78	484.98
WCKY (325)	US	OH	CINCINNATI	270.41	7.73	13.83	49.73	0.5	502.72G	17.16	485.56
WCKY (330)	US	OH	CINCINNATI	271.25	7.76	13.88	49.85	0.5	501.46G	16.57	484.89
WCKY (335)	US	OH	CINCINNATI	272.1	7.81	13.96	50.14	0.5	498.62G	16.03	482.58
WCKY (340)	US	OH	CINCINNATI	272.92	7.89	14.07	50.61	0.5	493.98G	15.58	478.4
WCKY (345)	US	OH	CINCINNATI	273.69	7.99	14.23	51.28	0.5	487.50G	15.39	472.11
WCKY (350)	US	OH	CINCINNATI	274.4	8.12	14.42	52.15	0.5	479.42G	15.27	464.15
WCKY (355)	US	OH	CINCINNATI	275.03	8.28	14.65	53.2	0.5	469.89G	15.22	454.67

Exhibit 13 – Table V, Continued (Page 3 of 4)

PROTECTION TO KFBK SACRAMENTO, CALIFORNIA

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Note: Positive "Margin" numbers indicate that the require protection level at the contour has been met.

Call Letters	Ct	St	City	Azi (deg)	Ang Low (deg)	Ang High (deg)	SWFF (100uV/m)	Req Prot (mV/m)	Permis (mV/m)	Cur Rad (mV/m)	Margin (mV/m)
KFBK (0)	US	CA	SACRAMENTO	285.84	0	0	1.88	0.5	13317.54G	22.5	13295.04
KFBK (5)	US	CA	SACRAMENTO	285.69	0	0	1.90	0.5	13156.09G	22.4	13133.73
KFBK (10)	US	CA	SACRAMENTO	285.53	0	0	1.92	0.5	13004.66G	22.2	12982.43
KFBK (15)	US	CA	SACRAMENTO	285.37	0	0	1.94	0.5	12861.90G	22.1	12839.81
KFBK (20)	US	CA	SACRAMENTO	285.17	0	0	1.96	0.5	12725.44G	21.9	12703.54
KFBK (25)	US	CA	SACRAMENTO	284.95	0	0	1.98	0.5	12602.17G	21.7	12580.45
KFBK (30)	US	CA	SACRAMENTO	284.70	0	0	2.00	0.5	12498.33G	21.5	12476.84
KFBK (35)	US	CA	SACRAMENTO	284.43	0	0	2.01	0.5	12420.39G	21.3	12399.13
KFBK (40)	US	CA	SACRAMENTO	284.21	0	0	2.02	0.5	12363.11G	21.1	12342.04
KFBK (45)	US	CA	SACRAMENTO	284.00	0	0	2.03	0.5	12329.50G	20.9	12308.61
KFBK (50)	US	CA	SACRAMENTO	283.80	0	0	2.03	0.5	12331.60G	20.7	12310.89
KFBK (55)	US	CA	SACRAMENTO	283.65	0	0	2.03	0.5	12337.38G	20.6	12316.79
KFBK (60)	US	CA	SACRAMENTO	283.56	0	0	2.03	0.5	12323.52G	20.5	12303.00
KFBK (65)	US	CA	SACRAMENTO	283.49	0	0	2.04	0.5	12269.95G	20.5	12249.49
KFBK (70)	US	CA	SACRAMENTO	283.42	0	0	2.05	0.5	12205.82G	20.4	12185.42
KFBK (75)	US	CA	SACRAMENTO	283.33	0	0	2.06	0.5	12149.50G	20.3	12129.18
KFBK (80)	US	CA	SACRAMENTO	283.24	0	0	2.06	0.5	12112.14G	20.3	12091.89
KFBK (85)	US	CA	SACRAMENTO	283.16	0	0	2.06	0.5	12111.57G	20.2	12091.39
KFBK (90)	US	CA	SACRAMENTO	283.09	0	0	2.06	0.5	12123.75G	20.1	12103.62
KFBK (95)	US	CA	SACRAMENTO	283.04	0	0	2.06	0.5	12138.91G	20.1	12118.83
KFBK (100)	US	CA	SACRAMENTO	282.90	0	0	2.08	0.5	12037.11G	20.0	12017.14
KFBK (105)	US	CA	SACRAMENTO	282.75	0	0	2.09	0.5	11959.34G	19.9	11939.49
KFBK (110)	US	CA	SACRAMENTO	282.52	0	0	2.11	0.5	11821.29G	19.7	11801.63
KFBK (115)	US	CA	SACRAMENTO	282.28	0	0	2.14	0.5	11698.04G	19.5	11678.57
KFBK (120)	US	CA	SACRAMENTO	282.01	0	0	2.16	0.5	11583.96G	19.3	11564.71
KFBK (125)	US	CA	SACRAMENTO	281.76	0	0	2.17	0.5	11505.56G	19.1	11486.51
KFBK (130)	US	CA	SACRAMENTO	281.53	0	0	2.18	0.5	11458.55G	18.9	11439.67
KFBK (135)	US	CA	SACRAMENTO	281.32	0	0	2.19	0.5	11434.36G	18.7	11415.64
KFBK (140)	US	CA	SACRAMENTO	281.11	0	0	2.19	0.5	11419.11G	18.6	11400.55
KFBK (145)	US	CA	SACRAMENTO	280.83	0	0	2.20	0.5	11388.45G	18.4	11370.09
KFBK (150)	US	CA	SACRAMENTO	280.51	0	0	2.20	0.5	11355.18G	18.1	11337.05
KFBK (155)	US	CA	SACRAMENTO	280.41	0	0	2.19	0.5	11421.99G	18.1	11403.93
KFBK (160)	US	CA	SACRAMENTO	280.35	0	0	2.17	0.5	11507.49G	18.0	11489.47
KFBK (165)	US	CA	SACRAMENTO	280.34	0	0	2.15	0.5	11608.67G	18.0	11590.66
KFBK (170)	US	CA	SACRAMENTO	280.39	0	0	2.13	0.5	11730.29G	18.1	11712.25
KFBK (175)	US	CA	SACRAMENTO	280.21	0	0	2.12	0.5	11799.09G	17.9	11781.17

PROTECTION TO KFBK SACRAMENTO, CALIFORNIA

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Note: Positive "Margin" numbers indicate that the require protection level at the contour has been met.

KFBK (180)	US	CA	SACRAMENTO	280.26	0	0	2.10	0.5	11931.30G	18.0	11913.34
KFBK (185)	US	CA	SACRAMENTO	280.35	0	0	2.07	0.5	12075.91G	18.0	12057.88
KFBK (190)	US	CA	SACRAMENTO	280.50	0	0	2.04	0.5	12229.95G	18.1	12211.83
KFBK (195)	US	CA	SACRAMENTO	280.67	0	0	2.02	0.5	12385.88G	18.3	12367.63
KFBK (200)	US	CA	SACRAMENTO	280.86	0	0	1.99	0.5	12543.21G	18.4	12524.83
KFBK (205)	US	CA	SACRAMENTO	281.06	0	0	1.97	0.619	15732.32g	18.5	15713.79
KFBK (210)	US	CA	SACRAMENTO	281.38	0	0	1.95	0.942	24196.01g	18.8	24177.24
KFBK (215)	US	CA	SACRAMENTO	281.67	0	0	1.93	0.85	22046.64g	19.0	22027.66
KFBK (220)	US	CA	SACRAMENTO	281.92	0	0	1.91	1.011	26469.82g	19.2	26450.64
KFBK (225)	US	CA	SACRAMENTO	282.15	0	0	1.89	0.88	23270.66g	19.4	23251.29
KFBK (230)	US	CA	SACRAMENTO	282.37	0	0	1.88	0.505	13472.49g	19.5	13452.95
KFBK (235)	US	CA	SACRAMENTO	282.67	0	0	1.87	0.5	13360.64G	19.8	13340.86
KFBK (240)	US	CA	SACRAMENTO	282.88	0	0	1.86	0.5	13420.12G	20.0	13400.17
KFBK (245)	US	CA	SACRAMENTO	283.08	0	0	1.86	0.5	13476.68G	20.1	13456.57
KFBK (250)	US	CA	SACRAMENTO	283.26	0	0	1.85	0.5	13523.06G	20.3	13502.79
KFBK (255)	US	CA	SACRAMENTO	283.43	0	0	1.84	0.5	13568.76G	20.4	13548.35
KFBK (260)	US	CA	SACRAMENTO	283.59	0	0	1.84	0.5	13621.75G	20.5	13601.21
KFBK (265)	US	CA	SACRAMENTO	283.75	0	0	1.83	0.5	13687.01G	20.7	13666.33
KFBK (270)	US	CA	SACRAMENTO	283.92	0	0	1.82	0.5	13752.64G	20.8	13731.82
KFBK (275)	US	CA	SACRAMENTO	284.11	0	0	1.81	0.5	13847.31G	21.0	13826.32
KFBK (280)	US	CA	SACRAMENTO	284.31	0	0	1.79	0.5	13946.32G	21.2	13925.17
KFBK (285)	US	CA	SACRAMENTO	284.52	0	0	1.78	0.5	14055.67G	21.4	14034.33
KFBK (290)	US	CA	SACRAMENTO	284.75	0	0	1.77	0.5	14158.09G	21.5	14136.55
KFBK (295)	US	CA	SACRAMENTO	284.95	0	0	1.76	0.5	14211.97G	21.7	14190.26
KFBK (300)	US	CA	SACRAMENTO	285.15	0	0	1.75	0.5	14256.62G	21.9	14234.74
KFBK (305)	US	CA	SACRAMENTO	285.35	0	0	1.75	0.5	14300.85G	22.1	14278.78
KFBK (310)	US	CA	SACRAMENTO	285.56	0	0	1.74	0.5	14335.51G	22.3	14313.25
KFBK (315)	US	CA	SACRAMENTO	285.78	0	0	1.74	0.5	14369.06G	22.5	14346.62
KFBK (320)	US	CA	SACRAMENTO	285.99	0	0	1.74	0.5	14384.75G	22.6	14362.12
KFBK (325)	US	CA	SACRAMENTO	286.16	0	0	1.74	0.5	14355.46G	22.8	14332.68
KFBK (330)	US	CA	SACRAMENTO	286.32	0	0	1.75	0.5	14312.53G	22.9	14289.61
KFBK (335)	US	CA	SACRAMENTO	286.29	0	0	1.77	0.5	14149.59G	22.9	14126.69
KFBK (340)	US	CA	SACRAMENTO	286.18	0	0	1.79	0.5	13949.61G	22.8	13926.81
KFBK (345)	US	CA	SACRAMENTO	286.13	0	0	1.81	0.5	13796.40G	22.8	13773.65
KFBK (350)	US	CA	SACRAMENTO	286.11	0	0	1.83	0.5	13658.96G	22.7	13636.22
KFBK (355)	US	CA	SACRAMENTO	285.96	0	0	1.86	0.5	13476.02G	22.6	13453.41

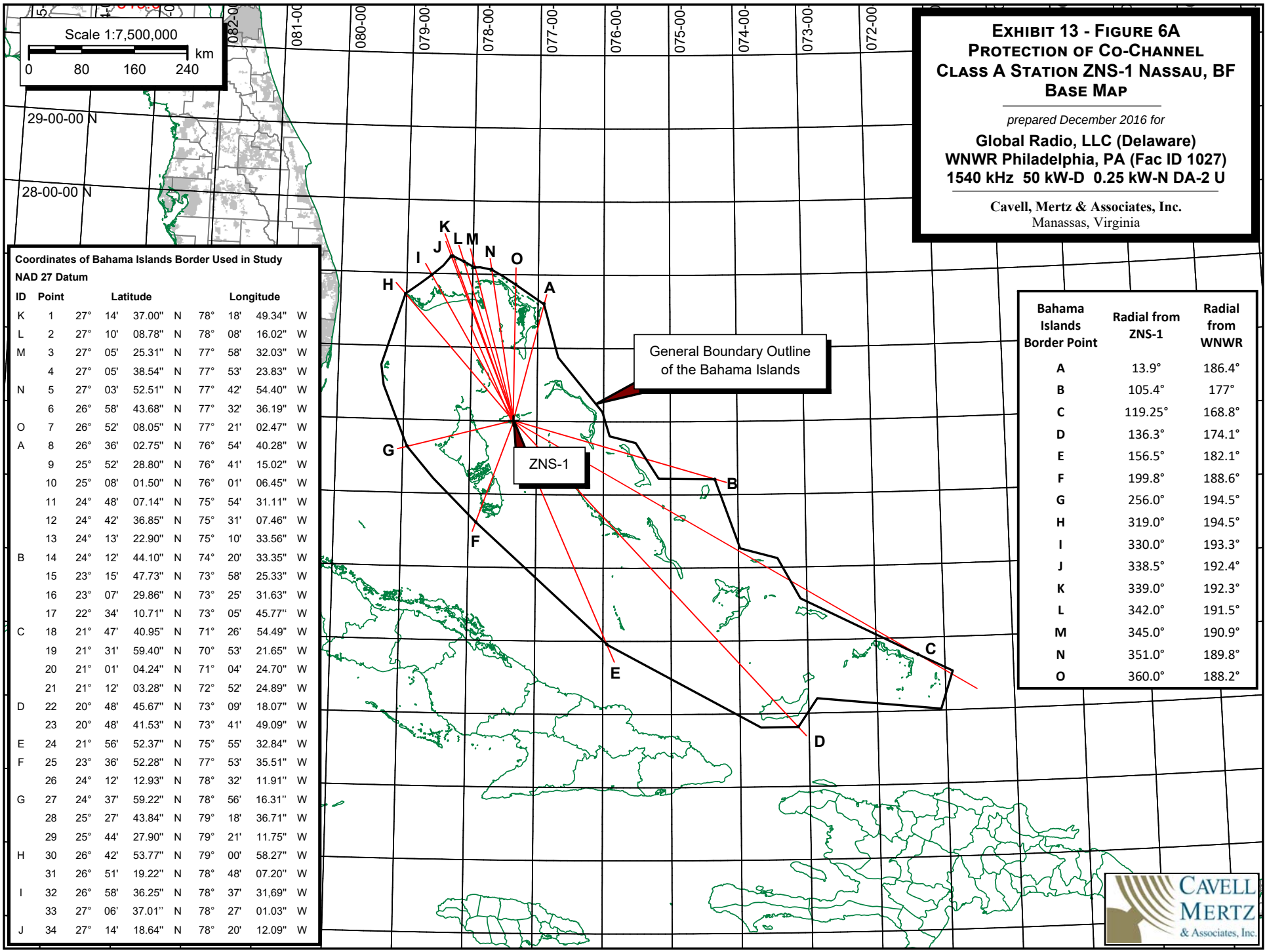


Exhibit 13 - Figure 6A
Protection of Co-Channel Class A Station ZNS-1 Nassau, BF
Base Map

prepared December 2016 for

Global Radio, LLC (Delaware)
WNWR Philadelphia, PA (Fac ID 1027)
1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Cavell, Mertz & Associates, Inc.
Manassas, Virginia

Coordinates of Bahama Islands Border Used in Study
NAD 27 Datum

ID	Point	Latitude				Longitude			
K	1	27°	14'	37.00"	N	78°	18'	49.34"	W
L	2	27°	10'	08.78"	N	78°	08'	16.02"	W
M	3	27°	05'	25.31"	N	77°	58'	32.03"	W
	4	27°	05'	38.54"	N	77°	53'	23.83"	W
N	5	27°	03'	52.51"	N	77°	42'	54.40"	W
	6	26°	58'	43.68"	N	77°	32'	36.19"	W
O	7	26°	52'	08.05"	N	77°	21'	02.47"	W
A	8	26°	36'	02.75"	N	76°	54'	40.28"	W
	9	25°	52'	28.80"	N	76°	41'	15.02"	W
	10	25°	08'	01.50"	N	76°	01'	06.45"	W
	11	24°	48'	07.14"	N	75°	54'	31.11"	W
	12	24°	42'	36.85"	N	75°	31'	07.46"	W
	13	24°	13'	22.90"	N	75°	10'	33.56"	W
B	14	24°	12'	44.10"	N	74°	20'	33.35"	W
	15	23°	15'	47.73"	N	73°	58'	25.33"	W
	16	23°	07'	29.86"	N	73°	25'	31.63"	W
	17	22°	34'	10.71"	N	73°	05'	45.77''	W
C	18	21°	47'	40.95"	N	71°	26'	54.49"	W
	19	21°	31'	59.40"	N	70°	53'	21.65"	W
	20	21°	01'	04.24"	N	71°	04'	24.70"	W
	21	21°	12'	03.28"	N	72°	52'	24.89"	W
D	22	20°	48'	45.67"	N	73°	09'	18.07"	W
	23	20°	48'	41.53"	N	73°	41'	49.09"	W
E	24	21°	56'	52.37"	N	75°	55'	32.84"	W
F	25	23°	36'	52.28"	N	77°	53'	35.51"	W
	26	24°	12'	12.93"	N	78°	32'	11.91''	W
G	27	24°	37'	59.22"	N	78°	56'	16.31''	W
	28	25°	27'	43.84"	N	79°	18'	36.71"	W
	29	25°	44'	27.90"	N	79°	21'	11.75"	W
H	30	26°	42'	53.77"	N	79°	00'	58.27"	W
	31	26°	51'	19.22"	N	78°	48'	07.20"	W
I	32	26°	58'	36.25"	N	78°	37'	31,69"	W
	33	27°	06'	37.01''	N	78°	27'	01.03"	W
J	34	27°	14'	18.64"	N	78°	20'	12.09"	W

Bahama Islands Border Point	Radial from ZNS-1	Radial from WNWR
A	13.9°	186.4°
B	105.4°	177°
C	119.25°	168.8°
D	136.3°	174.1°
E	156.5°	182.1°
F	199.8°	188.6°
G	256.0°	194.5°
H	319.0°	194.5°
I	330.0°	193.3°
J	338.5°	192.4°
K	339.0°	192.3°
L	342.0°	191.5°
M	345.0°	190.9°
N	351.0°	189.8°
O	360.0°	188.2°

CAVELL MERTZ & Associates, Inc.

EXHIBIT 13 - FIGURE 6B
PROTECTION OF CO-CHANNEL CLASS A STATION ZNS-1 NASSAU, BF INTERFERENCE STUDY

prepared December 2016 for

Global Radio, LLC (Delaware)
WNWR Philadelphia, PA (Fac ID 1027)
1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Cavell, Mertz & Associates, Inc.
Manassas, Virginia

Bahama Islands Border Point	Radial from ZNS-1	Radial from WNWR	Contour Color Code	Estimated Values: Proposed WNWR 10% Contour	Estimated Values: ZNS-1 Groundwave Contour	Results from Estimated Values: Desired to Undesired (d/u) Ratio (>20dB)	Results from Estimated Values: Desired to Undesired (d/u) Ratio (>26dB)
A	13.9°	186.4°	Light Purple	58.86 µV/m	5.6200 mV/m	95.48	39.60 dB
B	105.4°	177.0°	Brown	38.50 µV/m	4.4200 mV/m	114.81	41.20 dB
C	119.25°	168.8°	Light Green	24.98 µV/m	0.5000 mV/m	20.02	26.03 dB
D	136.3°	174.1°	Pink	21.58 µV/m	0.7500 mV/m	34.75	30.82 dB
E	156.5°	182.1°	Black	24.15 µV/m	3.8000 mV/m	157.35	43.94 dB
F	199.8°	188.6°	Olive Green	29.70 µV/m	13.9000 mV/m	468.01	53.41 dB
G	256.0°	192.6°	Maroon	33.27 µV/m	5.0700 mV/m	152.39	43.66 dB
H	319.0°	194.5°	Purple	50.87 µV/m	1.2350 mV/m	24.28	27.70 dB
I	330.0°	193.3°	Green	55.52 µV/m	1.2418 mV/m	22.37	26.99 dB
J	338.5°	192.4°	Light Blue	60.00 µV/m	1.2175 mV/m	20.29	26.15 dB
K	339.0°	192.3°	Red	60.17 µV/m	1.2292 mV/m	20.43	26.20 dB
L	342.0°	191.5°	Grey	60.23 µV/m	1.4287 mV/m	23.72	27.50 dB
M	345.0°	190.9°	Dark Blue	60.12 µV/m	1.6731 mV/m	27.83	28.89 dB
N	351.0°	189.8°	Orange	61.06 µV/m	2.0650 mV/m	33.82	30.58 dB
O	360.0°	188.2°	Yellow	60.35 µV/m	3.1996 mV/m	53.02	34.49 dB

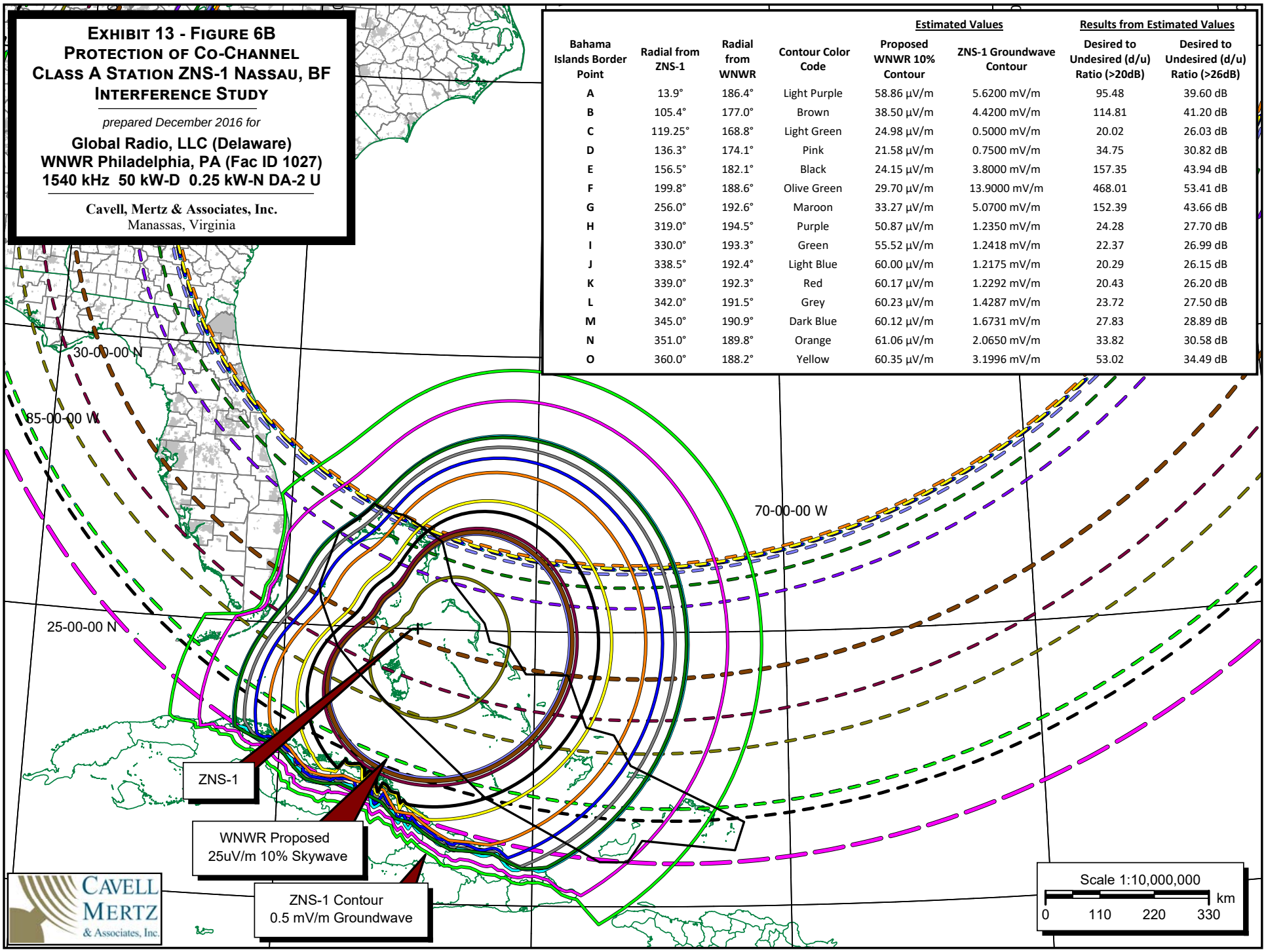


Exhibit 13 – Table VI (Page 1 of 3)

PROTECTION TO ZNS-1 NASSAU, BAHAMAS

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Note: Positive "Margin" numbers indicate that the require protection level at the contour has been met.

Call Letters	Ct	City	Azi (deg)	Ang Low (deg)	Ang High (deg)	SWFF (100uV/m)	Req Prot (mV/m)	Permis (mV/m)	Cur Rad (mV/m)	Margin (mV/m)
ZNS-1 (0)	BF	NASSAU	188.23	4.06	4.06	27.54	3.200	580.89g	218.04	362.84
ZNS-1 (5)	BF	NASSAU	187.51	3.99	3.99	27.04	4.008	741.12g	220.01	521.11
ZNS-1 (10)	BF	NASSAU	186.87	3.92	3.92	26.59	4.900	921.59g	221.74	699.84
ZNS-1 (15)	BF	NASSAU	186.32	3.83	3.83	25.91	6.110	1179.15g	223.23	955.92
ZNS-1 (20)	BF	NASSAU	185.96	3.66	3.66	24.69	8.328	1686.46g	224.18	1462.27
ZNS-1 (25)	BF	NASSAU	185.70	3.53	3.53	23.76	10.784	2268.84g	224.97	2043.87
ZNS-1 (30)	BF	NASSAU	185.48	3.42	3.42	22.98	13.427	2921.51g	225.56	2695.95
ZNS-1 (35)	BF	NASSAU	185.29	3.34	3.34	22.37	16.060	3590.18g	226.09	3364.09
ZNS-1 (40)	BF	NASSAU	185.03	3.29	3.29	22.01	17.806	4045.09g	226.74	3818.35
ZNS-1 (45)	BF	NASSAU	184.78	3.24	3.24	21.67	19.383	4472.49g	227.41	4245.09
ZNS-1 (50)	BF	NASSAU	184.53	3.19	3.19	21.34	20.733	4857.49g	228.01	4629.48
ZNS-1 (55)	BF	NASSAU	184.29	3.14	3.14	21.02	21.806	5186.79g	228.65	4958.15
ZNS-1 (60)	BF	NASSAU	184.05	3.10	3.10	20.70	22.559	5449.51g	229.24	5220.27
ZNS-1 (65)	BF	NASSAU	183.80	3.05	3.05	20.37	22.965	5636.67g	229.88	5406.79
ZNS-1 (70)	BF	NASSAU	183.54	3.00	3.00	20.03	22.989	5737.84g	230.50	5507.34
ZNS-1 (75)	BF	NASSAU	183.27	2.94	2.94	19.68	22.639	5752.54g	231.19	5521.35
ZNS-1 (80)	BF	NASSAU	182.98	2.89	2.89	19.30	21.901	5673.33g	231.89	5441.44
ZNS-1 (85)	BF	NASSAU	182.71	2.82	2.82	18.90	21.134	5592.25g	232.54	5359.71
ZNS-1 (90)	BF	NASSAU	182.58	2.75	2.75	18.45	20.861	5652.38g	232.91	5419.47
ZNS-1 (95)	BF	NASSAU	182.43	2.67	2.67	18.00	20.290	5636.87g	233.25	5403.62
ZNS-1 (100)	BF	NASSAU	180.94	2.55	2.55	17.30	13.706	3960.56g	236.66	3723.90
ZNS-1 (105)	BF	NASSAU	180.49	2.43	2.43	16.62	11.990	3606.31g	237.74	3368.57
ZNS-1 (110)	BF	NASSAU	176.72	2.05	2.05	14.72	4.740	1610.12g	245.65	1364.48
ZNS-1 (115)	BF	NASSAU	176.33	1.82	1.82	13.72	3.934	1433.86g	246.44	1187.42
ZNS-1 (120)	BF	NASSAU	169.00	0.63	0.63	9.47	0.500	263.91G	258.83	5.08
ZNS-1 (125)	BF	NASSAU	170.16	0.41	0.41	8.92	0.500	280.29G	257.16	23.13
ZNS-1 (130)	BF	NASSAU	172.31	0.40	0.40	8.89	0.680	382.32g	253.79	128.54
ZNS-1 (135)	BF	NASSAU	173.84	0.31	0.31	8.66	0.766	442.36g	251.21	191.15
ZNS-1 (140)	BF	NASSAU	175.47	0.26	0.26	8.56	0.906	529.35g	248.29	281.06
ZNS-1 (145)	BF	NASSAU	178.03	0.51	0.51	9.16	1.613	880.91g	243.33	637.58
ZNS-1 (150)	BF	NASSAU	180.05	0.71	0.71	9.68	2.513	1297.44g	239.08	1058.36
ZNS-1 (155)	BF	NASSAU	181.63	0.85	0.85	10.09	3.483	1726.23g	235.53	1490.70
ZNS-1 (160)	BF	NASSAU	183.11	1.04	1.04	10.68	4.979	2332.00g	232.09	2099.91
ZNS-1 (165)	BF	NASSAU	184.31	1.21	1.21	11.27	6.722	2982.00g	229.17	2752.83
ZNS-1 (170)	BF	NASSAU	185.25	1.34	1.34	11.77	8.382	3561.93g	226.81	3335.11

PROTECTION TO ZNS-1 NASSAU, BAHAMAS

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Note: Positive "Margin" numbers indicate that the require protection level at the contour has been met.

ZNS-1 (175)	BF	NASSAU	186.02	1.44	1.44	12.17	9.897	4066.10g	224.84	3841.26
ZNS-1 (180)	BF	NASSAU	186.66	1.53	1.53	12.51	11.207	4479.92g	223.15	4256.77
ZNS-1 (185)	BF	NASSAU	187.22	1.60	1.60	12.80	12.283	4798.39g	221.67	4576.72
ZNS-1 (190)	BF	NASSAU	187.71	1.66	1.66	13.06	13.101	5016.79g	220.33	4796.46
ZNS-1 (195)	BF	NASSAU	188.16	1.72	1.72	13.29	13.644	5133.43g	219.13	4914.30
ZNS-1 (200)	BF	NASSAU	188.57	1.77	1.77	13.51	13.915	5150.82g	218.00	4932.82
ZNS-1 (205)	BF	NASSAU	188.95	1.82	1.82	13.73	13.986	5094.27g	216.96	4877.31
ZNS-1 (210)	BF	NASSAU	189.31	1.87	1.87	13.93	13.784	4945.82g	215.95	4729.88
ZNS-1 (215)	BF	NASSAU	189.65	1.92	1.92	14.13	13.328	4714.85g	214.99	4499.86
ZNS-1 (220)	BF	NASSAU	189.99	1.96	1.96	14.33	12.651	4414.36g	214.02	4200.34
ZNS-1 (225)	BF	NASSAU	190.32	2.00	2.00	14.52	11.784	4057.28g	213.08	3844.20
ZNS-1 (230)	BF	NASSAU	190.66	2.05	2.05	14.72	10.768	3657.41g	212.13	3445.29
ZNS-1 (235)	BF	NASSAU	191.00	2.09	2.09	14.93	9.672	3238.95g	211.14	3027.81
ZNS-1 (240)	BF	NASSAU	191.33	2.14	2.14	15.16	8.575	2828.09g	210.19	2617.89
ZNS-1 (245)	BF	NASSAU	191.67	2.19	2.19	15.40	7.448	2418.36g	209.18	2209.18
ZNS-1 (250)	BF	NASSAU	192.03	2.24	2.24	15.65	6.332	2022.83g	208.13	1814.70
ZNS-1 (255)	BF	NASSAU	192.42	2.30	2.30	15.92	5.272	1655.21g	206.96	1448.25
ZNS-1 (260)	BF	NASSAU	192.71	2.37	2.37	16.30	4.463	1369.30g	206.07	1163.22
ZNS-1 (265)	BF	NASSAU	192.99	2.44	2.44	16.70	3.754	1123.93g	205.25	918.68
ZNS-1 (270)	BF	NASSAU	193.28	2.52	2.52	17.14	3.134	914.27g	204.34	709.93
ZNS-1 (275)	BF	NASSAU	193.60	2.61	2.61	17.62	2.615	741.92g	203.34	538.58
ZNS-1 (280)	BF	NASSAU	193.96	2.70	2.70	18.19	2.203	605.58g	202.24	403.34
ZNS-1 (285)	BF	NASSAU	194.36	2.81	2.81	18.83	1.879	498.86g	200.99	297.86
ZNS-1 (290)	BF	NASSAU	194.60	2.93	2.93	19.56	1.699	434.26g	200.22	234.03
ZNS-1 (295)	BF	NASSAU	194.71	3.05	3.05	20.38	1.600	392.63g	199.82	192.82
ZNS-1 (300)	BF	NASSAU	194.65	3.17	3.17	21.23	1.564	368.38g	199.96	168.42
ZNS-1 (305)	BF	NASSAU	194.59	3.31	3.31	22.15	1.511	341.10g	200.10	140.99
ZNS-1 (310)	BF	NASSAU	194.53	3.45	3.45	23.17	1.435	309.66g	200.26	109.40
ZNS-1 (315)	BF	NASSAU	194.46	3.60	3.60	24.29	1.334	274.60g	200.40	74.20
ZNS-1 (320)	BF	NASSAU	194.30	3.76	3.76	25.41	1.237	243.33g	200.79	42.54
ZNS-1 (325)	BF	NASSAU	193.74	3.88	3.88	26.24	1.242	236.72g	202.43	34.29
ZNS-1 (330)	BF	NASSAU	193.18	3.99	3.99	27.09	1.241	229.09g	204.05	25.04
ZNS-1 (335)	BF	NASSAU	192.62	4.12	4.12	28.04	1.241	221.25g	205.65	15.60
ZNS-1 (340)	BF	NASSAU	191.96	4.24	4.24	28.90	1.286	222.48g	207.52	14.95
ZNS-1 (345)	BF	NASSAU	190.79	4.17	4.17	28.39	1.666	293.40g	210.90	82.50
ZNS-1 (350)	BF	NASSAU	189.93	4.18	4.18	28.45	1.983	348.48g	213.33	135.16
ZNS-1 (355)	BF	NASSAU	189.04	4.13	4.13	28.06	2.510	447.14g	215.85	231.29

PROTECTION TO ZNS-1 NASSAU, BAHAMAS

prepared for

WNWR Philadelphia, Pennsylvania (Facility ID 1027)

1540 kHz 50 kW-D 0.25 kW-N DA-2 U

Notes: 1) Above study report shows analysis at 5 degree intervals. Actual analysis was done at 0.5 degree intervals.
2) S = Skywave Signal = no clipping used
3) s = Skywave Signal used, point was clipped at Border (signal at border used).
4) g = Groundwave contour used, point was clipped at border (signal at border used).
5) See Figure 6A for study setup information, location of assumed border, and border point coordinate information.
6) "Margin" indicates the difference between the permissible radiation toward the station and the actual radiation of the proposed station. If this number is negative, it indicates a violation of the rules.
No negative numbers shown above