

**MODIFY BPH-20060224AAF**  
**SEA-COMM, INC.**  
**WWTB (FM) RADIO STATION**  
**CH 281A - 104.1 MHZ - 6.0 KW**  
**SWANSBORO, NORTH CAROLINA**  
**October 2006**

**EXHIBIT A**

**Compliance with §73.315(a)**  
**Using Supplemental City Grade Analysis**

The proposed tower site for WWTB is located approximately 17.4 kilometers north-west of the center of the community of Swansboro, North Carolina. From the WWTB facility, the predicted 3.16 mV/m contour, using the Commission's standard method of predicting city grade coverage, as outlined in §73.313, does not encompass the community of Swansboro. However, in this particular case, we find a supplemental method of depicting city grade coverage, as noted in §73.313(e) of the Commission's rules, is appropriate. We have analyzed the terrain in 3° increments from 94° to 103° to determine the terrain variations on each of these radials. §73.313 of the rules notes that the Commission's propagation curves are based on a 50 meter terrain variation ( $\Delta H$ ). Using the 30 second terrain database, on the five pertinent radials toward the community of Swansboro, beginning 10.0 kilometers out from the site out to a distance of 19.0 kilometers, the individual radial  $\Delta H$  values never exceed 6.0 meters. As such, the terrain along the pertinent radials varies from the 50 meter variation used in the Commission's field strength curves.

The proposed WWTB antenna system is to be located in Midway Park, North Carolina, at geographic coordinates North Latitude 34° 42' 59" and West Longitude 77° 18' 35". The

community of Swansboro, North Carolina, is located on bearings between 94° and 103° true from the proposed WWTB site. Running individual radials, in 3° increments, from the WWTB site through the community, we have determined the location of the city grade contour based on the standard utilization of the Commission's 50/50 curves (see Exhibit A1). We have alternatively determined the location of the 70 dBu contour, using the Diffcomb program, which is a variation of the irregular terrain model, taking into consideration diffraction loss over knife edge and rounded obstacle obstructions. Further, reductions of calculated signal strength are also made to account for foliage and buildings (Clutter Loss).<sup>3</sup> This model is a more representative prediction of field strength than the standard methodology under certain terrain conditions.

On the pertinent bearings toward the community of Swansboro, we have tabulated the distance to the city grade contour using both the FCC method and supplemental method to demonstrate the differences to the contour and find that the supplemental depiction distances are in excess of 10% higher than the distances using the Commission's standard methodology (see Exhibit A2). Based on the Staff's policy, we find that the terrain on these pertinent radials varies widely from the 3.0 to 16.0 kilometer average (as detailed above) and the differences to the contour distances, as determined by the supplemental method, exceed the standard method by more than 10%. Therefore, pursuant to §73.313(e), a supplemental method of depicting the city grade coverage is acceptable. It is noted that at no point does the supplemental city grade distance extend beyond the predicted 60 dBu (50/50) protected contour.

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3) To insure coverage of the proposed community, the Diffcomb model was set at 27.5 kilometers as the point of interest (the distance to the 60 dBu of the proposed WWTB facility).

Using the supplemental method calculations, we find that the city grade contour in the direction of Swansboro, North Carolina, in 3° increments between 94° and 103°, extends at least 23.0 kilometers out from the site, on the pertinent radials, extending beyond the community of Swansboro. As visually demonstrated on Exhibit A3, the predicted 70 dBu signal, as calculated using the Diffcomb model, shows Swansboro, North Carolina, within the predicted city grade contour. There are no terrain obstructions in the path between the proposed transmitter site and the community. Attached as Exhibit A4 through A8 are the terrain profiles of the 94°, 97°, 100° and 103° radials.

A sample calculation was made, based on the 100° radial, between the site and the community, to verify the location of the city grade contour, using a free space signal formula:  $106.9 + \text{power in dBk} - 20 \log (\text{distance in kilometers to point of interest})$ . Based on the WWTB facility, the distance to the 70 dBu contour was calculated using the Diffcomb program and found to extend 34.0 kilometers. Based on the proposed facility, the 70 dBu contour, corrected to allow for a 5.0 dB clutter loss (the 75 dBu contour), is being sought.

$$106.9 + 7.78 \text{ dBk} - 20 \log 23.0 = 87.4$$

**Attenuation due to diffracted signal over terrain - 12.4 dB**

**Clutter Loss -5.0**

**Signal at point of interests 70.0 dBu**

Therefore, based on the supplemental depiction, we find the community of Swansboro to be within the city grade contour of the proposed WWTB facility in compliance with the Commission's rules.

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**EXHIBIT A1**

Predicted contours:

N. Lat. = 34 42 59 - Tabulated City Grade and Service Contour Data  
W. Lng. = 77 18 35 - WWTB Radio Station - Swansboro, North Carolina

HAAT and Distance to Contour - FCC Method - NGDC 30 Second terrain database  
Azi. HAAT ERP kW dBk Field 70-F5 60-F5

Azi.	HAAT	ERP kW	dBk	Field	70-F5	60-F5
000	92.3	6.0000	7.78	1.000	15.41	27.24
045	87.6	6.0000	7.78	1.000	14.97	26.58
090	91.2	6.0000	7.78	1.000	15.31	27.09
135	93.8	6.0000	7.78	1.000	15.56	27.45
180	92.1	6.0000	7.78	1.000	15.39	27.22
225	95.6	6.0000	7.78	1.000	15.73	27.70
270	92.7	6.0000	7.78	1.000	15.45	27.30
315	93.4	6.0000	7.78	1.000	15.52	27.40

Ave El= 5.41 M HAAT= 92.35 M AMSL= 97.76 M

Additional Radials (Not Considered in Average):

094	92.1	6.0000	7.78	1.000	15.39	27.21
097	92.4	6.0000	7.78	1.000	15.42	27.26
100	93.0	6.0000	7.78	1.000	15.48	27.35
103	92.9	6.0000	7.78	1.000	15.47	27.33

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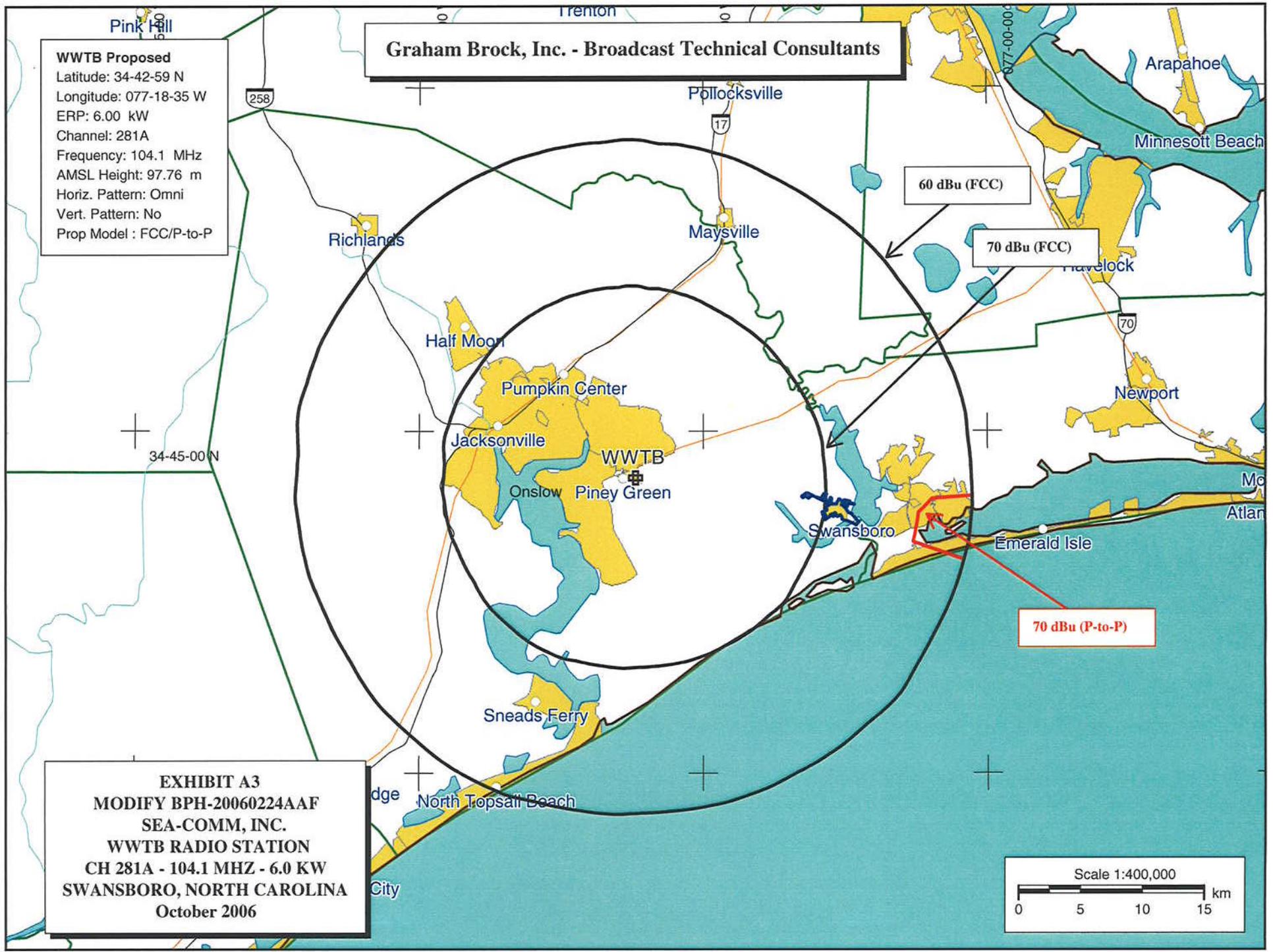
**EXHIBIT A2**

**Tabulation of City Grade Contours**  
**in Arc Towards Swansboro, North Carolina**

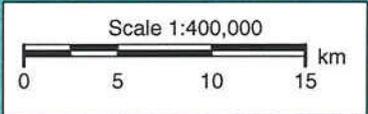
<u>Radial</u> <u>(Bearing)</u>	<u>Delta h</u> <u>meters</u>	<u>Location of 70 dBu</u>		<u>% of Chg</u>	<u>Method</u> <u>Used</u>
		<u>FCC Method (F)</u>	<u>Diffcomb(D)</u>		
94°	6.0	15.4 km	24.0 km	+ 55.8	D
97°	6.0	15.4 km	23.0 km	+ 49.4	D
100°	3.5	15.5 km	23.0 km	+ 48.4	D
103°	5.0	15.5 km	23.0 km	+ 48.3	D

**Graham Brock, Inc. - Broadcast Technical Consultants**

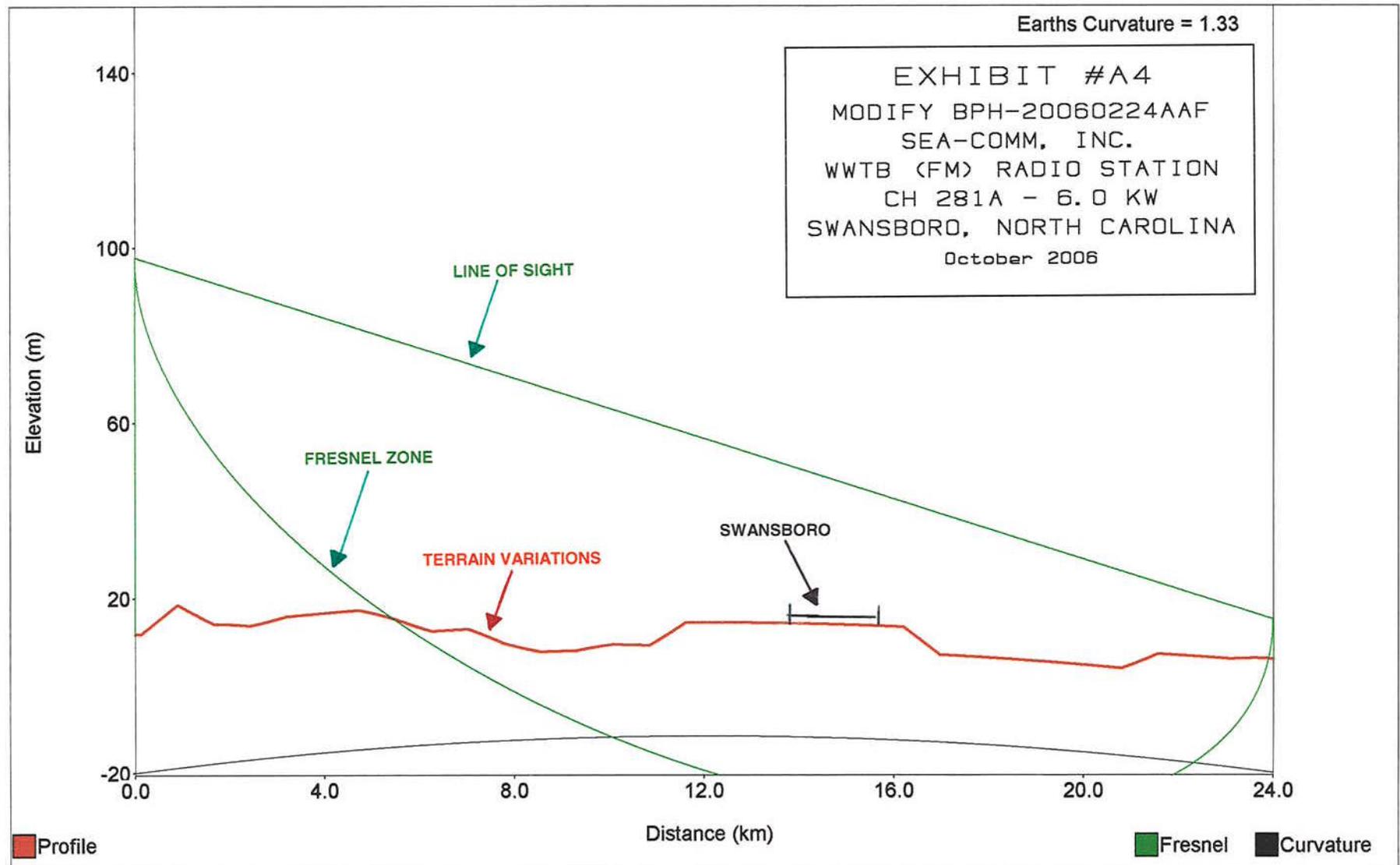
**WWTB Proposed**  
Latitude: 34-42-59 N  
Longitude: 077-18-35 W  
ERP: 6.00 kW  
Channel: 281A  
Frequency: 104.1 MHz  
AMSL Height: 97.76 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model : FCC/P-to-P



**EXHIBIT A3**  
**MODIFY BPH-20060224AF**  
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# Terrain path profile - WWTB Radio - 94° radial



Starting Latitude: 34-42-59 N  
 Starting Longitude: 077-18-35 W

End Latitude: 34-42-03.66 N  
 End Longitude: 077-02-54.28 W

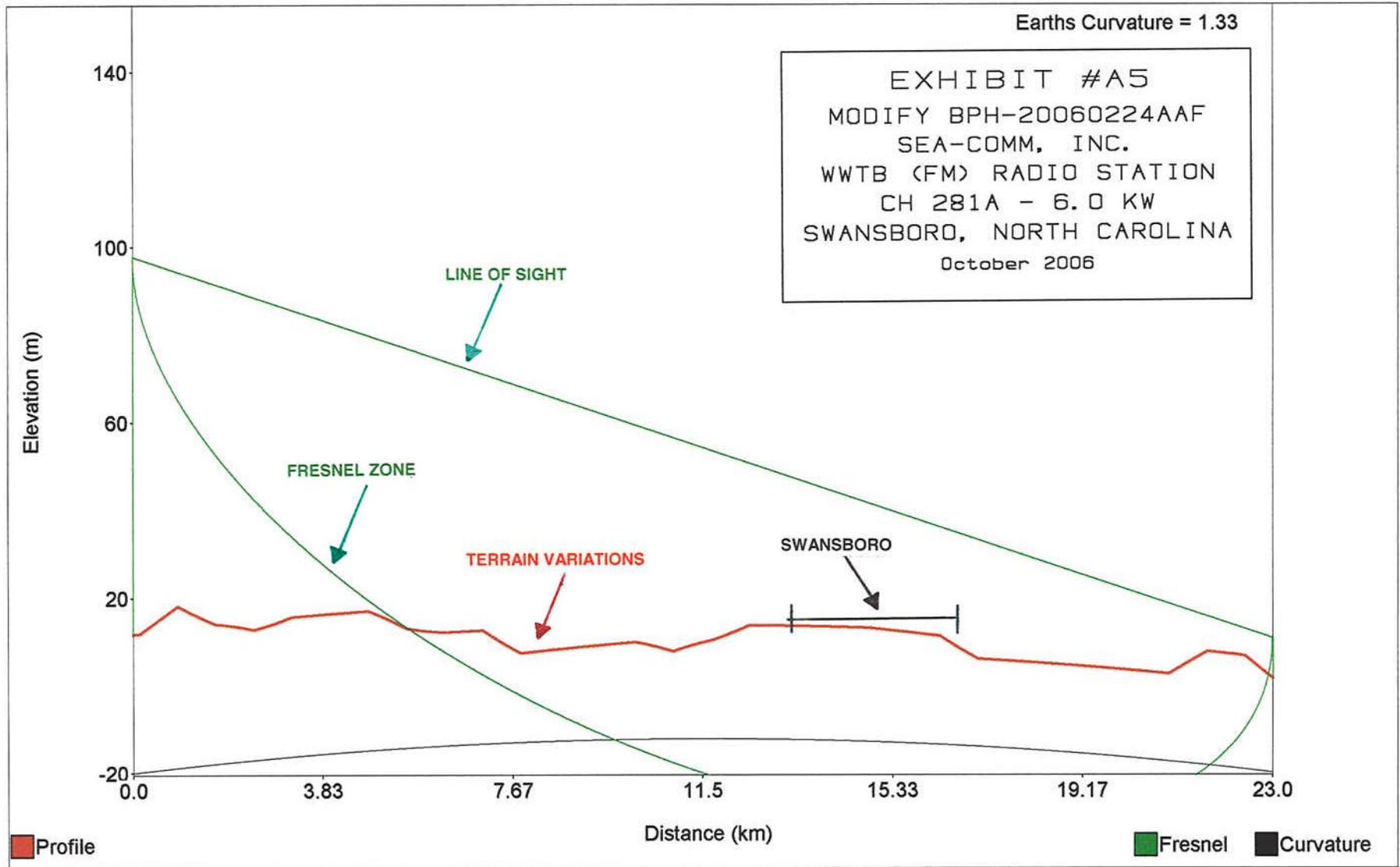
Distance: 24 km  
 Bearing: 94 deg

Transmitter Height (AG) = 86.0 m  
 Receiver Height (AG) = 9.1 m

Transmitter Elevation = 11.8 m  
 Receiver Elevation = 6.0 m

Frequency = 104.1 MHz  
 Fresnel Zone: 0.6

# Terrain path profile - WWTB Radio - 97° radial



Starting Latitude: 34-42-59 N  
 Starting Longitude: 077-18-35 W

End Latitude: 34-41-27.12 N  
 End Longitude: 077-03-38.12 W

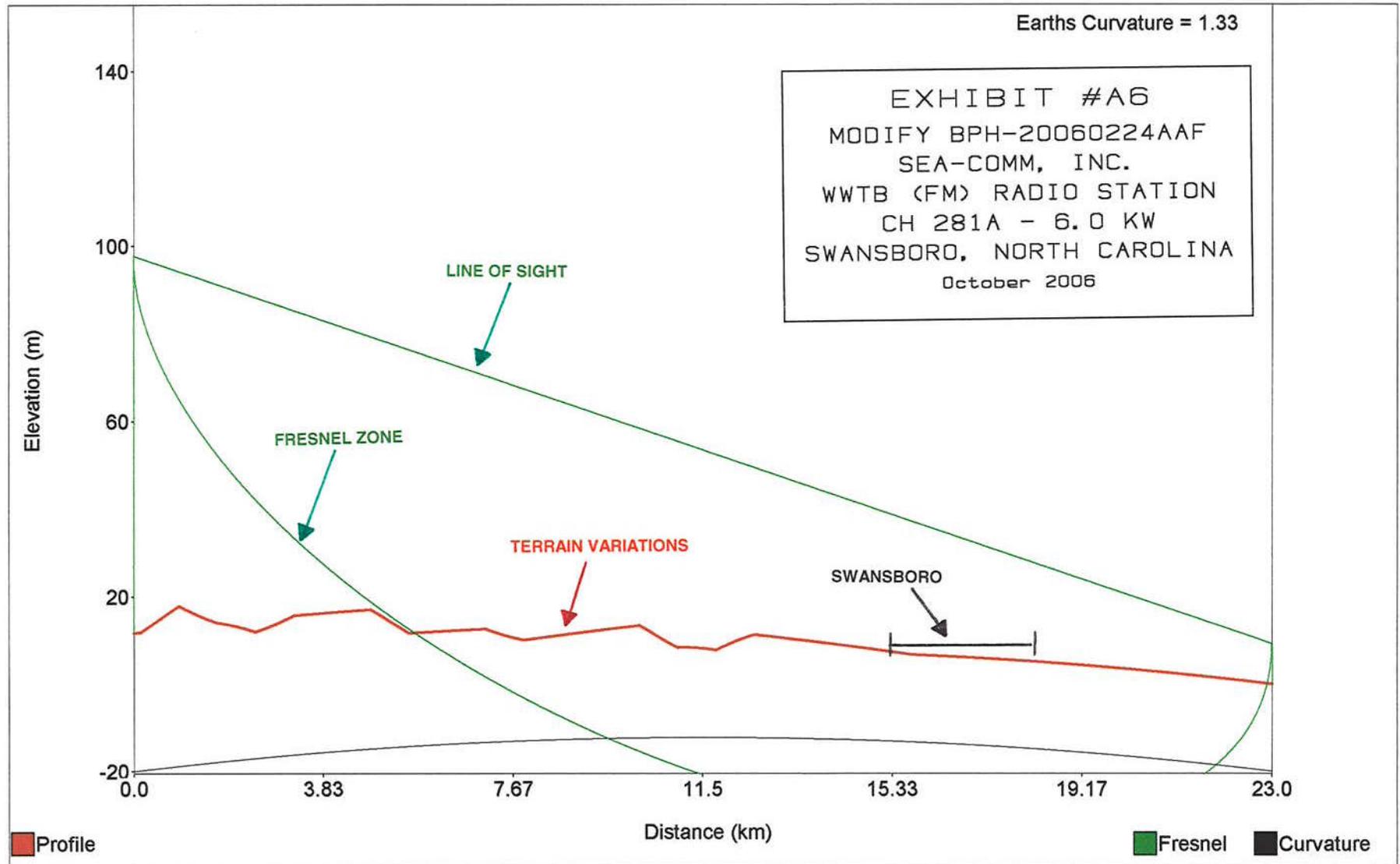
Distance: 23 km  
 Bearing: 97 deg

Transmitter Height (AG) = 86.0 m  
 Receiver Height (AG) = 9.1 m

Transmitter Elevation = 11.8 m  
 Receiver Elevation = 1.6 m

Frequency = 104.1 MHz  
 Fresnel Zone: 0.6

# Terrain path profile - WWTB Radio - 100° radial



Starting Latitude: 34-42-59 N  
 Starting Longitude: 077-18-35 W

End Latitude: 34-40-48.49 N  
 End Longitude: 077-03-45.23 W

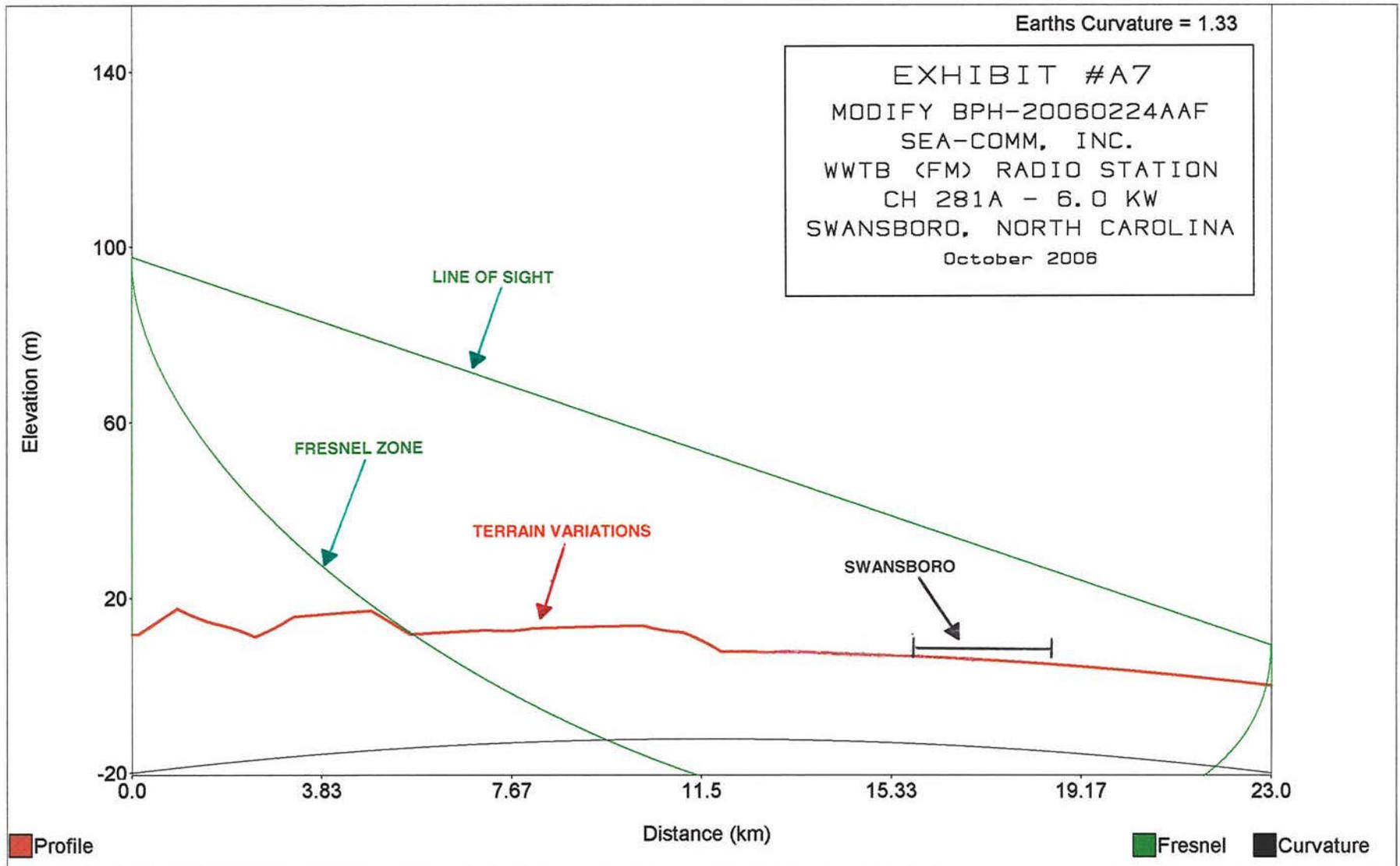
Distance: 23 km  
 Bearing: 100 deg

Transmitter Height (AG) = 86.0 m  
 Receiver Height (AG) = 9.1 m

Transmitter Elevation = 11.8 m  
 Receiver Elevation = 0.0 m

Frequency = 104.1 MHz  
 Fresnel Zone: 0.6

# Terrain path profile - WWTB Radio - 103° radial



Starting Latitude: 34-42-59 N  
 Starting Longitude: 077-18-35 W

End Latitude: 34-40-10.21 N  
 End Longitude: 077-03-54.77 W

Distance: 23 km  
 Bearing: 103 deg

Transmitter Height (AG) = 86.0 m  
 Receiver Height (AG) = 9.1 m

Transmitter Elevation = 11.8 m  
 Receiver Elevation = 0.0 m

Frequency = 104.1 MHz  
 Fresnel Zone: 0.6