

**MINOR CHANGE APPLICATION**  
**MILLER COMMUNICATIONS, INC.**  
**WWKT (FM) RADIO STATION**  
**CH 257C3 - 99.3 MHZ - 11.0 KW**  
**KINGSTREE, SOUTH CAROLINA**  
**April 2003**

**EXHIBIT A**

The proposed transmitter location for WWKT is located approximately 31.0 kilometers northwest of Kingtree. From the proposed WWKT 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 reach the boundaries of Kingtree. 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.

The proposed WWKT antenna system is to be located on a new tower just east of Highway 301 near Turbeville, South Carolina, at geographic coordinates North Latitude 33° 54' 07", West Longitude 79° 59' 52". The community of Kingtree is located on bearings between 147° and 151° True and at a distance no greater than 32 kilometers from the proposed WWKT site. We have analyzed the terrain in 2.0° increments from 147° through 151° to determine the terrain variations on each of these radials. §73.313 of the rules notes the Commission's propagation curves are based on a 50 meter terrain variation ( $\Delta H$ ) in the 3.0 to 16.0 kilometer sector. Using the 30 second terrain database, on the three pertinent radials toward the city and the eight cardinal radials, from the site out to 16 kilometers, the individual radial  $\Delta H$  values never exceed 0.6 meters, with two as low as 0.0 meters. Therefore, the terrain, along the pertinent radials, is determined to vary significantly from the 50 meter variation used in the Commission's field strength curve predictions.

We have determined the location of the 70 dBu contour, using the Diffcomb program, which is a variation of the irregular terrain model, using point-to-point calculation methodology, 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>1</sup> This model is a more representative prediction of field strength than the standard methodology.

On the pertinent bearings toward the community of license (and the eight cardinal radials), we have tabulated the distance to the city grade contour, using both the FCC method (Exhibit A1) and supplemental method to demonstrate the differences in the distances to the contour, and find the supplemental depiction distances are greater (in excess of 10%) than the distances using the Commission's standard methodology (see Exhibit A2). Based on the Staff's policy, we find the terrain on these 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, exceeds the standard method by more than 10%. Therefore, pursuant to §73.313(e), a supplemental method of depicting the city grade coverage is warranted. It is noted that at no point does the supplemental city grade distance extend beyond the predicted 60 dBu (50/50) protected contour, using the FCC method.

Using the supplemental method calculations, we find the city grade contour in the direction of Kingstree, South Carolina, in 2.0° increments between 147° and 151° extends out a minimum of 36 kilometers from the proposed site and fully encompasses the city, as visually

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1) To insure coverage of the community, the Diffcomb model was set at 40 kilometers as the point of interest.

demonstrated in Exhibit A3. There are no terrain obstructions in the path between the proposed transmitter site and the city of Kingstree. Attached as Exhibits A4 through A6 are the terrain profiles depicting the radials toward the city at 2.0° increments.

A sample calculation was made, based on the 149° radial, between the proposed site and the community, to verify the location of the city grade signal, using a free space signal formula:  $106.9 + \text{power in dBk} - 20 \log (\text{distance in kilometers to point of interest, based on the Diffcomb model})$ . Based on the proposed facility, the 70 dBu contour, corrected to allow for a 5.0 dB clutter loss (thus the 75 dBu contour), is being sought.

$$106.9 + 10.41 \text{ dBk} - 20 \log (36) = 86.2$$

$$\text{Attenuation due to diffracted signal of terrain} = 11.2 \text{ dB}$$

$$\text{Clutter Loss} = 5.0 \text{ dB}$$

$$\text{Signal at point of interest} = 70 \text{ dBu}$$

Based on the supplemental depiction, we find the WWKT facility fully serves the city of Kingstree with the required 70 dBu service. Therefore, the WWKT proposed facility is in compliance with the rules regarding city grade coverage.

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**EXHIBIT A1**

N. Lat. = 33 54 07    W. Lng. = 79 59 52  
HAAT and Distance to Contour - FCC Method - 30 Arc Sec.

Azi.	AV EL	HAAT	ERP kW	dBk	Field	70-F5	60-F5
000	36.8	143.0	11.0000	10.41	1.000	22.59	38.19
045	28.9	151.0	11.0000	10.41	1.000	23.16	39.15
090	28.0	151.8	11.0000	10.41	1.000	23.22	39.25
135	22.5	157.3	11.0000	10.41	1.000	23.59	39.90
180	25.0	154.9	11.0000	10.41	1.000	23.43	39.62
225	27.0	152.9	11.0000	10.41	1.000	23.29	39.38
270	33.0	146.9	11.0000	10.41	1.000	22.87	38.66
315	37.9	141.9	11.0000	10.41	1.000	22.51	38.06

Ave El= 29.89 M    HAAT= 149.94 M    AMSL= 179.832 M

Additional Radials (Not Considered in Average):

147	23.3	156.5	11.0000	10.41	1.000	23.54	39.81
149	23.3	156.6	11.0000	10.41	1.000	23.54	39.82
151	23.1	156.7	11.0000	10.41	1.000	23.56	39.83

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**EXHIBIT A2**

**Tabulation of City Grade Contours**  
**in Arc Toward Kingtree**

N. Lat. = 33 54 07  
W. Lng. = 79 59 52

Maximum distance for  $\Delta H$  calculations - 16 km

Azi.	Location of 70 dBu		% Change	$\Delta H$ (m)	Method Used
	FCC Method (F)	Diffcomb (D)			
000	22.59	37.0	+63.8	0.0	D
045	23.16	34.0	+46.8	6.0	D
090	23.22	37.0	+59.3	6.0	D
135	23.59	35.0	+48.4	0.0	D
180	23.43	37.0	+57.9	6.0	D
225	23.29	37.0	+58.9	4.9	D
270	22.87	37.0	+61.8	9.1	D
315	22.51	36.0	+59.9	6.0	D
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147	23.54	37.0	+57.2	0.6	D
149	23.54	36.0	+52.9	0.0	D
151	23.56	37.0	+57.0	0.0	D

# GRAHAM BROCK, INC.

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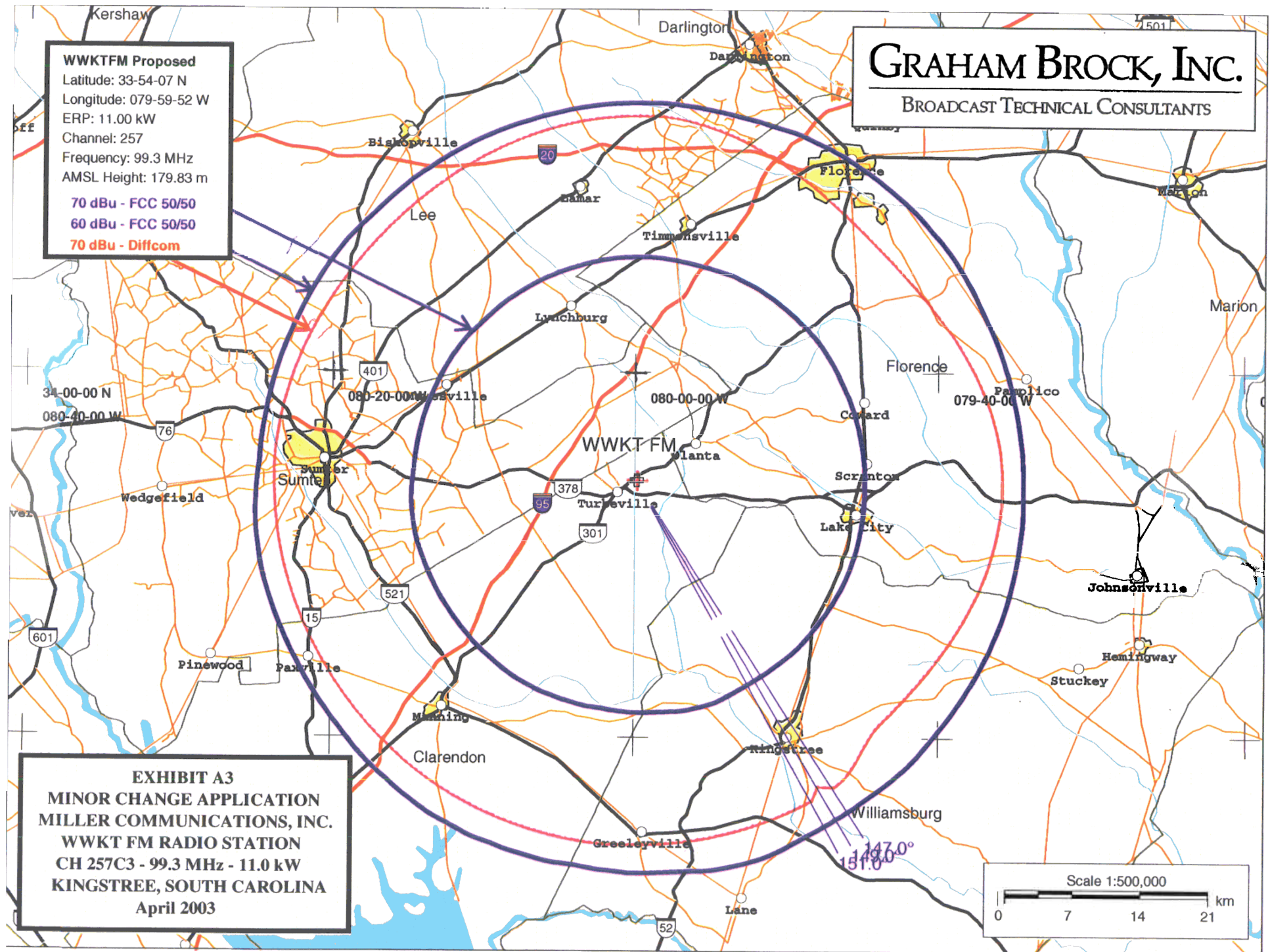
## WWKTFM Proposed

Latitude: 33-54-07 N  
Longitude: 079-59-52 W  
ERP: 11.00 kW  
Channel: 257  
Frequency: 99.3 MHz  
AMSL Height: 179.83 m

70 dBu - FCC 50/50

60 dBu - FCC 50/50

70 dBu - Diffcom



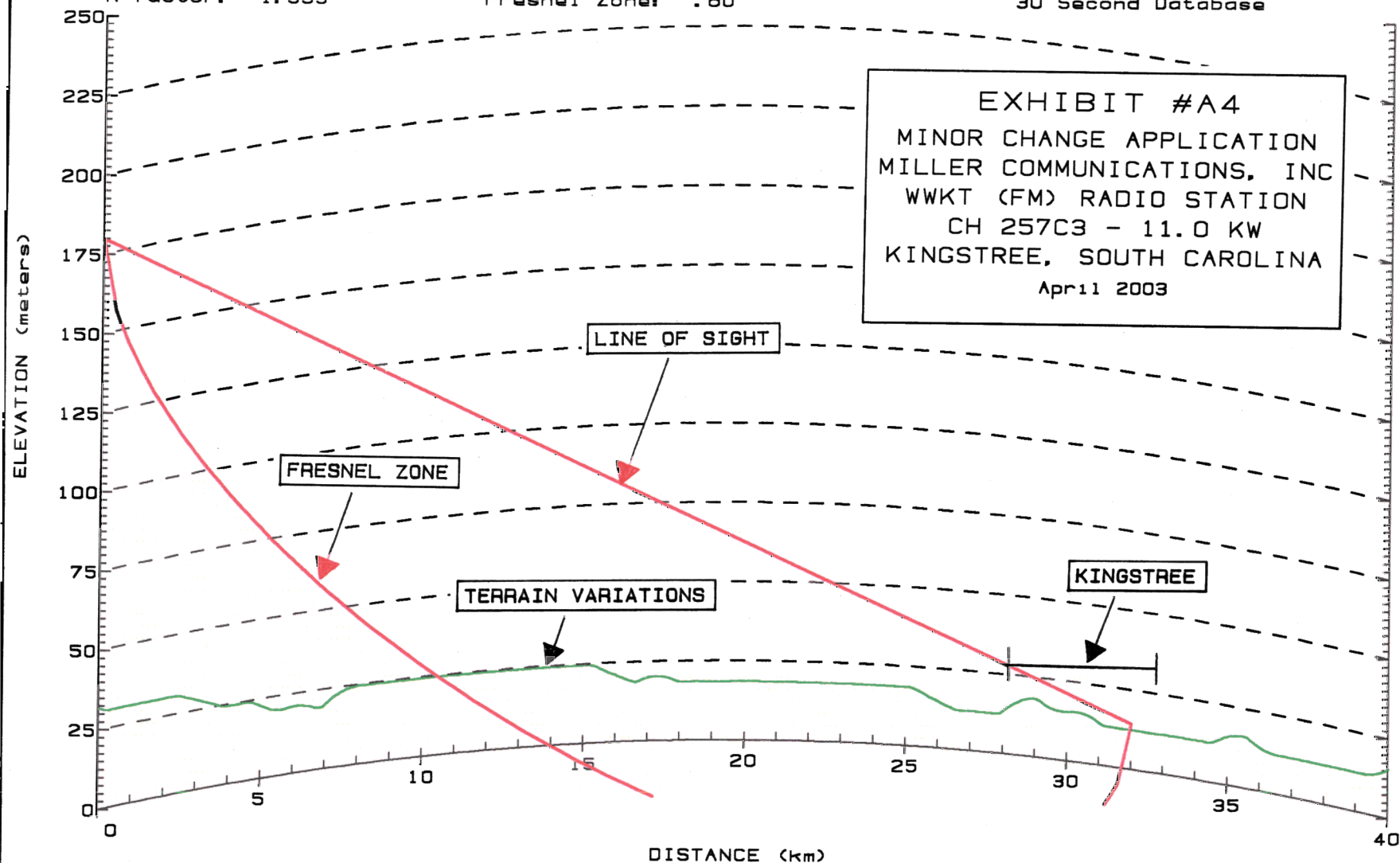
## EXHIBIT A3

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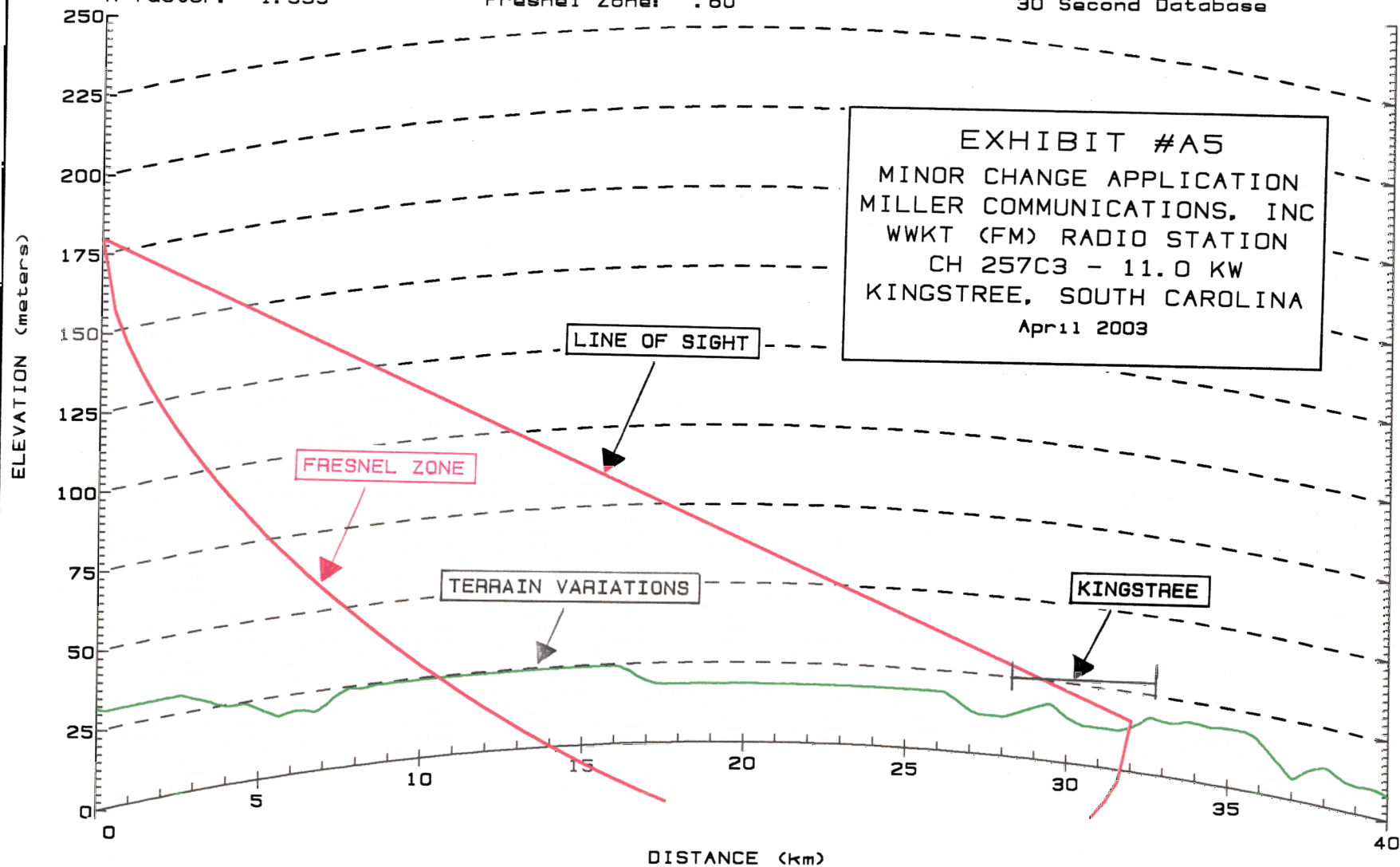
April 2003

Transmitter coords: 33 54 7 79 59 52 Azimuth: 147.00 degs. Receiver Distance: 32.0 km  
Frequency: 99.3 MHz Transmitter Elevation: 179.8 m Receiver Elevation: 14.2 m  
Number of Obstacles: 0 Obstacle Loss: 4.3 dB Total Path Loss: 106.8 dB  
K factor: 1.333 Fresnel Zone: .60 30 Second Database



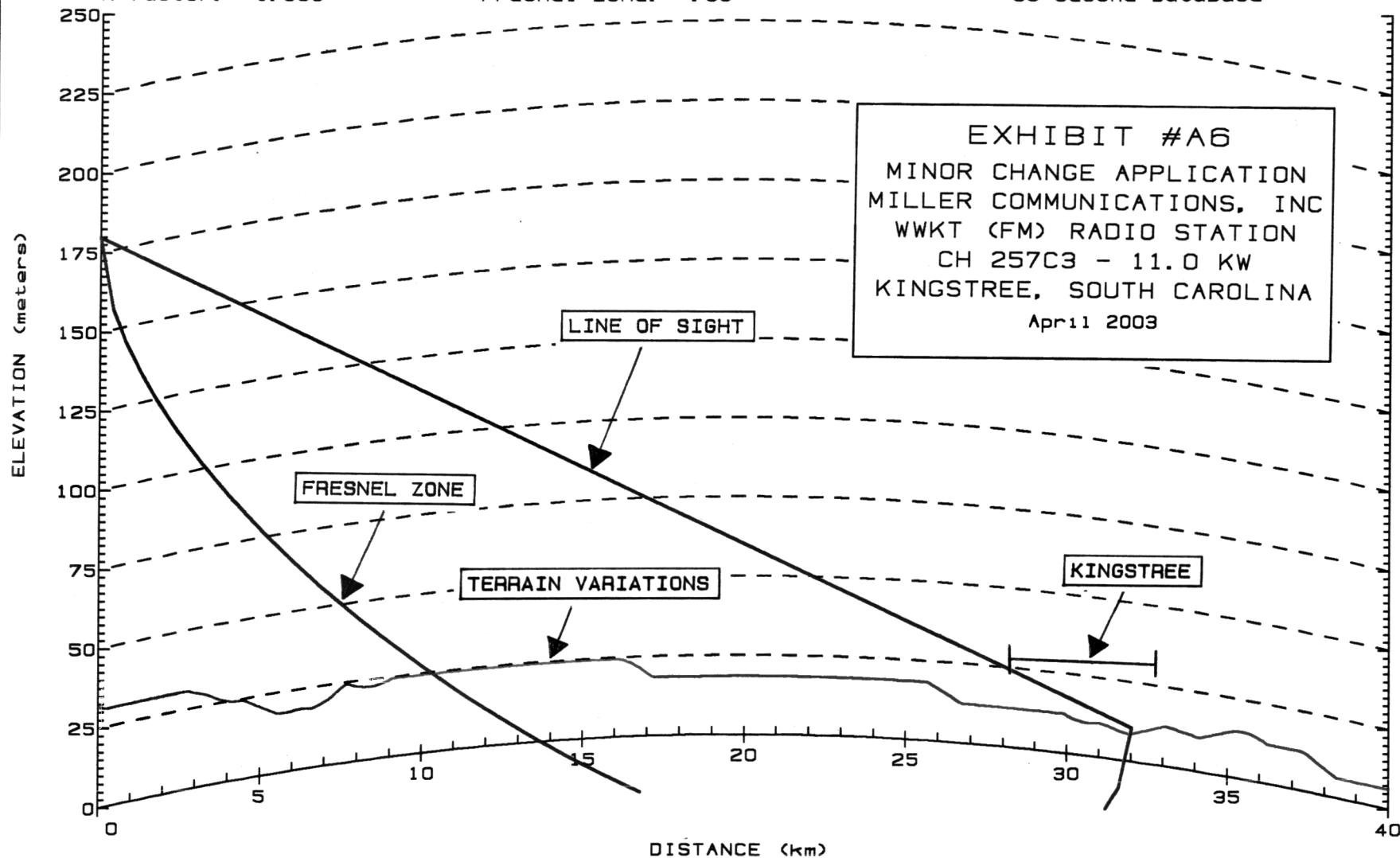
**GRAHAM BROCK, INC.**  
BROADCAST TECHNICAL CONSULTANTS

Transmitter coords: 33 54 7 79 59 52 Azimuth: 149.00 degs. Receiver Distance: 32.0 km  
Frequency: 99.3 MHz Transmitter Elevation: 179.8 m Receiver Elevation: 15.7 m  
Number of Obstacles: 0 Obstacle Loss: 4.2 dB Total Path Loss: 106.7 dB  
K factor: 1.333 Fresnel Zone: .60 30 Second Database



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Transmitter coords: 33 54 7 79 59 52 Azimuth: 151.00 degs. Receiver Distance: 32.0 km  
Frequency: 99.3 MHz Transmitter Elevation: 179.8 m Receiver Elevation: 10.5 m  
Number of Obstacles: 0 Obstacle Loss: 4.6 dB Total Path Loss: 107.1 dB  
K factor: 1.333 Fresnel Zone: .60 30 Second Database



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