

WNSC-FM CHANNEL 205 CLASS C1
ROCK HILL, SOUTH CAROLINA
MODIFICATION OF AUTHORIZED
LICENSE APPLICATION
(SOUTH CAROLINA EDUCATIONAL TELEVISION COMMISSION)

KESSLER AND GEHMAN ASSOCIATES, INC.
TELECOMMUNICATIONS CONSULTING ENGINEERS

20060210

Prepared by William T. Godfrey, Jr.

KG&A

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ENGINEERING TECHNICAL STATEMENT PREPARED BY WILLIAM T. GODFREY, JR. OF THE FIRM KESSLER AND GEHMAN ASSOCIATES, INC., TELECOMMUNICATIONS CONSULTING ENGINEERS IN CONNECTION WITH A MODIFICATION OF AUTHORIZED LICENSE APPLICATION TO MAKE CHANGES TO THE SOUTH CAROLINA EDUCATION TELEVISION COMMISSION (“SCETV”) FM BROADCAST FACILITY, WNSC-FM CHANNEL 205 C1 (BLEDRA1104BN), ROCK HILL, SOUTH CAROLINA.

The firm Kessler and Gehman Associates, Inc., has been retained by the South Carolina Educational Television Commission (“SCETV”), Columbia, South Carolina, in order to prepare the engineering portion of a modification of authorized license application for the licensed WNSC-FM Channel 205 Class C1 FM broadcast facility (BLEDRA1104BN) requesting authorization to make an omni for omni antenna system change to reduce tower loading.

Discussion

SCETV is licensed to operate WNSC-FM Channel 205 Class C1 with a maximum ERP of 100 kW (main beam) using circular polarization with an antenna height radiation center of 160.0 meters Above Ground Level (“AGL”) using a nondirectional, side-mounted circularly polarized FM antenna. It was determined that the WNSC tower would not be able to support the licensed FM antenna along with the new top-mounted NTSC/DTV antenna without making serious tower upgrades. Therefore, SCETV requests authorization to make an omni for omni antenna change. The proposed antenna height radiation center is exactly the same height as the licensed antenna height radiation center and the proposed transmitter power output is increased to 22.0 kW in order to maintain the licensed ERP of 100 kW in the main beam.

Attached Figures

The following list is an index of enclosed figures produced by calculations and engineering studies of the proposed WNSC-FM Channel 205 C1 facility.

- 1) Proposed Engineering Specifications (Exhibit 1).
- 2) Antenna Data (Exhibit 2).

- 3) Support Structure Profile/Elevation View of Antenna System (Exhibit 3).
- 4) Antenna Vertical Pattern: 0° - 90° (Exhibit 4)
- 5) Antenna Vertical Pattern Tabulation (Exhibit 5)
- 6) USGS 7.5-minute topographic quadrangle map depicting the proposed transmitter location and coordinate lines (Exhibit 6).

Principal Community

The principal community of Rock Hill, South Carolina will continue to be completely encompassed by the proposed facility's F(50,50) 60.0 dBuV/m protected service contour since the antenna height, ERP and directionality will not change.

FM Interference Studies

Not required.

Allocation Studies

Not required.

TV Channel 6 Studies

Not required.

Environmental Impact

The proposed change will have no significant environmental impact as defined in §1.1307 of the FCC Rules. The FM transmitter, 3-1/8 inch EIA transmission line and antenna system will produce a maximum ERP of 100 kW in the main beam. It was determined that the maximum lobe of radiation from the base of the tower out to approximately 1.0 mile would occur at approximately 115.1 feet from the base of the tower (531.6-foot radial distance from the antenna center). At approximately 115.1 feet from the base of the tower, the depression angle of the

main lobe would be 77.5° below the horizontal. At that point, the relative field would be 0.202 and the power density six feet above the ground would be 0.0104 mW/cm². This is only 1.04% of the Maximum Permissible Exposure (“MPE”) limits for Occupational/Controlled Exposure and only 5.19% of the MPE limits for General Population/Uncontrolled Exposure authorized by the American National Standards Institute (“ANSI”). Since the proposed operation of WNSC-FM Channel 210 will remain exactly the same as the licensed facility with respect to antenna height, power and directionality, and since the power density of the proposed facility would be well below 100% of the MPE limit, the WNSC-FM facility would not be considered a “significant contributor” to the RF exposure environment pursuant to OET Bulletin 65, Edition 97-01.

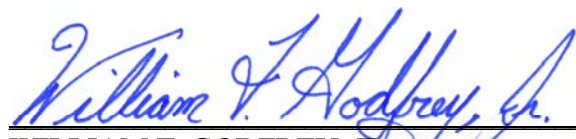
If other antennas are placed on the tower in the future, the applicant will cooperate with those users by reducing or completely terminating the power to the antenna when maintenance workers are in danger from the electromagnetic radiation emanating from the antenna.

Certification

This technical statement was prepared by William T. Godfrey, Jr., Telecommunications Consultant with Kessler and Gehman Associates, Inc. having offices in Gainesville, Florida and has been working in the field of radio and television broadcast consulting since 1998. He graduated from the University of North Florida with a Bachelor of Arts degree in Criminal Justice and a minor in Mathematics in 1993. As a Professional in the field of Telecommunications he states under penalty of perjury that the information contained in this report is true and correct to the best of his knowledge and belief.

The logo for Kessler and Gehman Associates, Inc. (KGA) features the letters 'KGA' in a stylized, serif font. The letters are white with a black outline and are set against a dark gray horizontal bar that extends to the left and right of the letters.

KESSLER AND GEHMAN ASSOCIATES, INC.

A handwritten signature in blue ink that reads 'William T. Godfrey, Jr.' The signature is written in a cursive style and is positioned above a horizontal line.

WILLIAM T. GODFREY, JR.
Telecommunications Technical Consultant

10 February, 2006

WNSC-FM Channel 205 C1
Rock Hill, South Carolina

ENGINEERING SPECIFICATIONS

A. Transmitter Site:

Geographic coordinates (NAD27):

North Latitude	34° 50' 23"
West Longitude	81° 01' 07"

Transmitter Site Location: **Located off of I-77 (Lazy Hawk Road), to the east and 6.9 miles south of Rock Hill, South Carolina**

FCC Antenna Structure Registration Number: **1059182**

FAA Study Number: **2004-ASO-3745-OE**

**B. Main Studio Site Address: 1101 George Rogers Boulevard
Columbia, South Carolina 29201**

C. Proposed Facility:

FM Channel	Number	205
	Frequency	88.9 MHz
	Class	C1

D. Exact Antenna Heights Without Rounding:

Height of Site Above Mean Sea Level (AMSL):	195.0 M
Overall Height of Structure Above Ground:	197.7 M
(including all appurtenances)	
Overall Height of Structure Above Mean Sea Level:	392.7 M
(including all appurtenances)	
Height of Site Above Average Terrain:	22.1 M
Antenna Height Radiation Center (R/C) Above Ground:	160.0 M
Antenna Height R/C Above Mean Sea Level:	355.0 M
Average of All Non-Odd Radials:	172.9 M
Antenna Height R/C Above Average Terrain:	182.1 M

E. System Parameters – Circular Polarization:

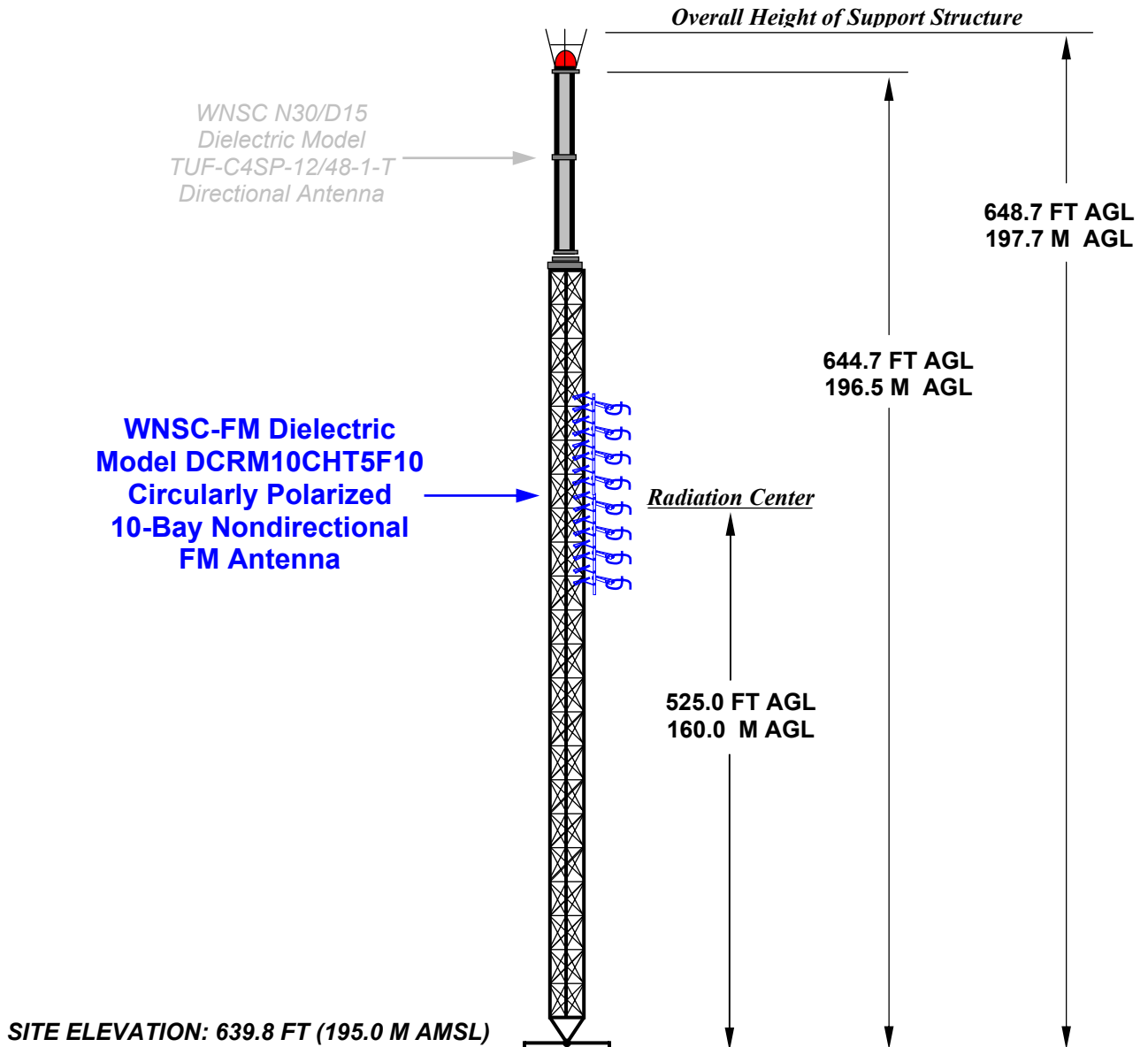
Transmitter Power Required:	22.0 kW
Maximum Power Input to Antenna:	19.4 kW
Transmission Line Loss:	0.55 dB
Transmission Line Efficiency:	88.1%
Maximum Antenna Gain in Beam Maximum:	7.13 dB
Maximum Antenna Gain in Horizontal Plane:	7.04 dB
Maximum Effective Radiated Power:	20.00 dBk
In Beam Maximum:	100.0 kW
Maximum Effective Radiated Power:	19.91 dBk
In Horizontal Plane:	97.9 kW

WNSC-FM Channel 205 C1
Rock Hill, South Carolina

**DATA FOR PROPOSED NONDIRECTIONAL
TRANSMITTING ANTENNA**

- A. **Antenna:** Dielectric Model DCRM10CHT5F10, Circularly Polarized, Nondirectional, Side-mount Antenna.
- B. **Electrical Beam Tilt:** 0.5°
- C. **Mechanical Beam Tilt:** None
- D. **Main Beam Orientation:** N/A
- | | | |
|----|----------------------------------|---------------------------------------|
| E. | <u>Maximum Power Gain</u> | <u>Horizontal Polarization</u> |
| | Maximum: 5.16 | (7.13 dB) |
| | Horizontal: 5.06 | (7.04 dB) |
- F. **Length:** 102.0 feet (31.1 meters) not including lightning protector.
- G. **Weight:** 990 lbs
- H. **Transmitter Power Output:** 22.0 kW
- I. **Null Fill:** 11.4%
- J. **Transmission Line:** 3-1/8" EIA
- K. **Transmission Line Loss:** 0.091 dB/100-feet
- L. **Total Transmission Line:** 600 feet (182.9 meters)
- M. **Transmission Line Attenuation:** 0.55 dB

ANTENNA STRUCTURE ELEVATION VIEW



OVERALL HEIGHT AGL: 197.7 M
OVERALL HEIGHT AMSL: 392.7 M
RADIATION CENTER AGL: 160.0 M
RADIATION CENTER AMSL: 355.0 M
RADIATION CENTER HAAT: 182.1 M
AVERAGE OF NON-ODD RADIALS: 172.9 M
SITE ELEVATION HAAT: 22.1 M

COORDINATES: (NAD 27)
N. LATITUDE 34° 50' 23"
W. LONGITUDE 81° 01' 07"
Antenna Structure Registration Number:
1059182
FAA Aeronautical Study Number:
2004-ASO-3745-OE

NOTE: NOT TO SCALE

KESSLER AND GEHMAN

TELECOMMUNICATIONS CONSULTING ENGINEERS

507 N.W. 60th Street, Suite C
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WNSC-FM CHANNEL 205

ROCK HILL, SOUTH CAROLINA

20060208

EXHIBIT 3



Proposal Number

Date

26-Aug-05

Call Letters

WNSC

Channel **205**

Location

Rock Hill, SC

Customer

SCETV

Antenna Type

DCRM10CHT5F10

ELEVATION PATTERN

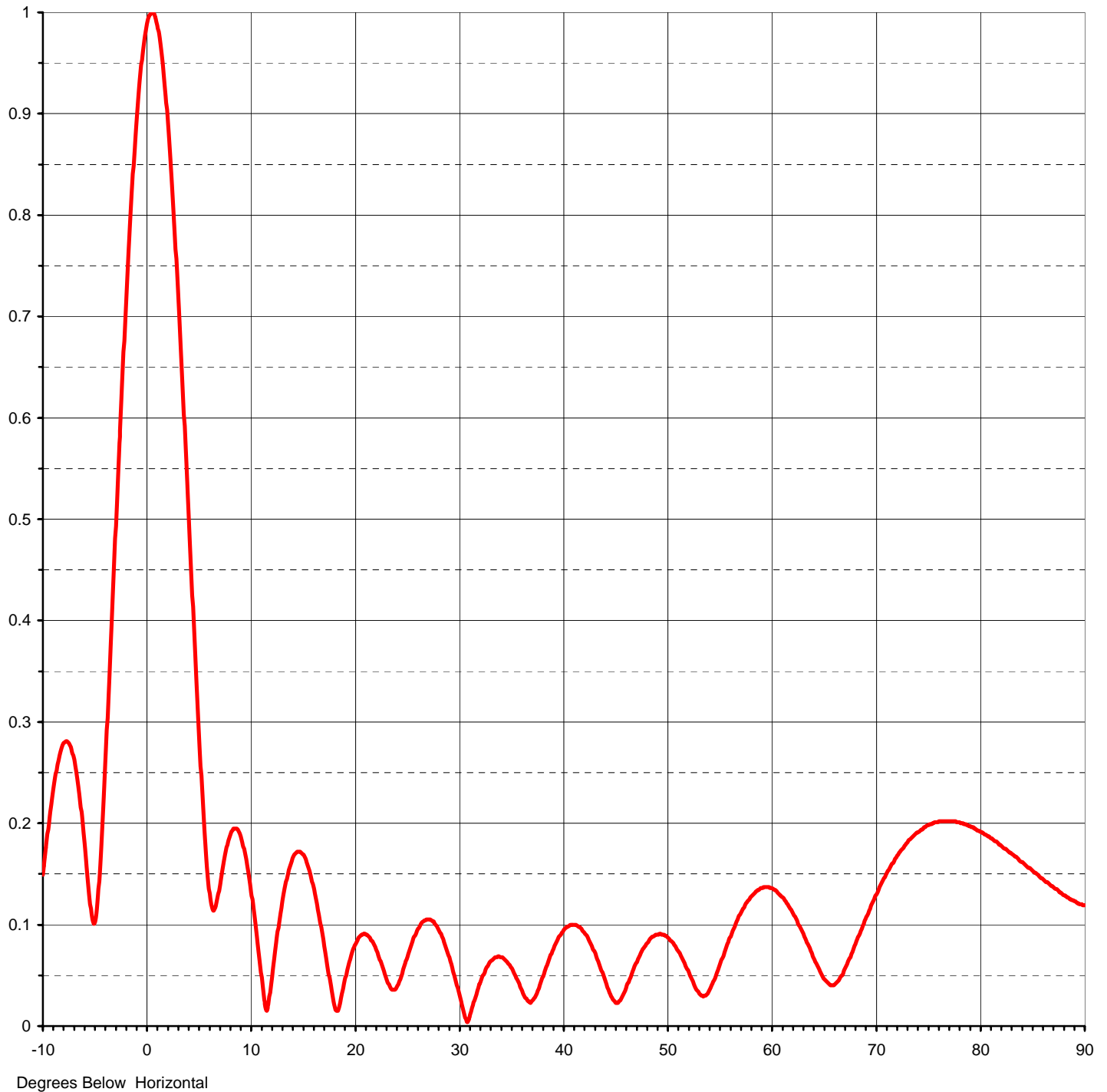
RMS Gain at Main Lobe **5.17 (7.13 dB)**

Beam Tilt **0.50 deg**

RMS Gain at Horizontal **5.06 (7.04 dB)**

Frequency **88.90 MHz**

Calculated / Measured **Calculated**





Proposal Number

Date

Call Letters

Location

Customer

Antenna Type

26-Aug-05

WNSC

Rock Hill, SC

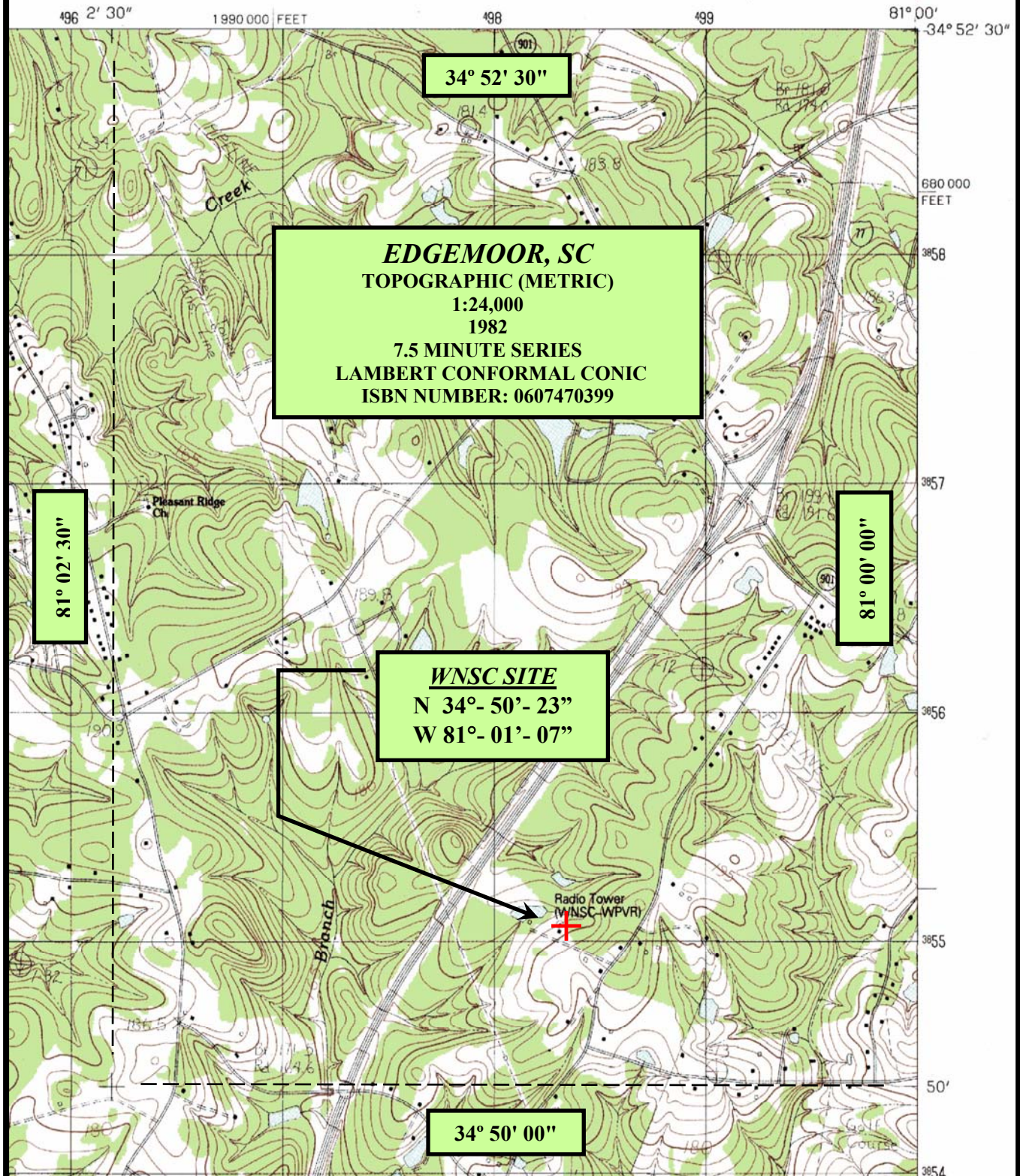
SCETV

DCRM10CHT5F10

TABULATION OF ELEVATION PATTERN

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.149	2.4	0.829	10.6	0.092	30.5	0.014	51.0	0.075	71.5	0.160
-9.5	0.194	2.6	0.794	10.8	0.074	31.0	0.007	51.5	0.066	72.0	0.168
-9.0	0.233	2.8	0.757	11.0	0.057	31.5	0.025	52.0	0.055	72.5	0.175
-8.5	0.262	3.0	0.718	11.5	0.017	32.0	0.041	52.5	0.044	73.0	0.181
-8.0	0.279	3.2	0.677	12.0	0.041	32.5	0.053	53.0	0.034	73.5	0.187
-7.5	0.279	3.4	0.635	12.5	0.082	33.0	0.063	53.5	0.029	74.0	0.191
-7.0	0.263	3.6	0.592	13.0	0.117	33.5	0.068	54.0	0.034	74.5	0.195
-6.5	0.229	3.8	0.548	13.5	0.145	34.0	0.068	54.5	0.045	75.0	0.198
-6.0	0.180	4.0	0.503	14.0	0.163	34.5	0.065	55.0	0.058	75.5	0.200
-5.5	0.125	4.2	0.458	14.5	0.172	35.0	0.058	55.5	0.072	76.0	0.202
-5.0	0.102	4.4	0.414	15.0	0.170	35.5	0.049	56.0	0.086	76.5	0.202
-4.5	0.159	4.6	0.370	15.5	0.159	36.0	0.037	56.5	0.098	77.0	0.202
-4.0	0.259	4.8	0.327	16.0	0.140	36.5	0.027	57.0	0.110	77.5	0.202
-3.5	0.374	5.0	0.286	16.5	0.115	37.0	0.024	57.5	0.119	78.0	0.201
-3.0	0.493	5.2	0.247	17.0	0.086	37.5	0.032	58.0	0.127	78.5	0.199
-2.8	0.540	5.4	0.211	17.5	0.054	38.0	0.046	58.5	0.132	79.0	0.197
-2.6	0.587	5.6	0.179	18.0	0.024	38.5	0.060	59.0	0.136	79.5	0.195
-2.4	0.632	5.8	0.151	18.5	0.018	39.0	0.074	59.5	0.137	80.0	0.192
-2.2	0.676	6.0	0.131	19.0	0.041	39.5	0.085	60.0	0.136	80.5	0.189
-2.0	0.718	6.2	0.118	19.5	0.063	40.0	0.093	60.5	0.133	81.0	0.185
-1.8	0.759	6.4	0.114	20.0	0.078	40.5	0.098	61.0	0.128	81.5	0.182
-1.6	0.797	6.6	0.118	20.5	0.088	41.0	0.100	61.5	0.121	82.0	0.178
-1.4	0.832	6.8	0.128	21.0	0.091	41.5	0.098	62.0	0.113	82.5	0.174
-1.2	0.864	7.0	0.139	21.5	0.087	42.0	0.093	62.5	0.104	83.0	0.170
-1.0	0.894	7.2	0.152	22.0	0.078	42.5	0.085	63.0	0.093	83.5	0.166
-0.8	0.920	7.4	0.164	22.5	0.064	43.0	0.074	63.5	0.081	84.0	0.162
-0.6	0.943	7.6	0.174	23.0	0.049	43.5	0.061	64.0	0.069	84.5	0.157
-0.4	0.962	7.8	0.183	23.5	0.037	44.0	0.047	64.5	0.056	85.0	0.153
-0.2	0.977	8.0	0.189	24.0	0.037	44.5	0.033	65.0	0.046	85.5	0.149
0.0	0.989	8.2	0.193	24.5	0.049	45.0	0.024	65.5	0.041	86.0	0.145
0.2	0.996	8.4	0.195	25.0	0.066	45.5	0.025	66.0	0.041	86.5	0.141
0.4	1.000	8.6	0.195	25.5	0.081	46.0	0.035	66.5	0.047	87.0	0.137
0.6	0.999	8.8	0.192	26.0	0.094	46.5	0.048	67.0	0.057	87.5	0.133
0.8	0.995	9.0	0.187	26.5	0.102	47.0	0.061	67.5	0.068	88.0	0.129
1.0	0.987	9.2	0.179	27.0	0.105	47.5	0.072	68.0	0.081	88.5	0.126
1.2	0.975	9.4	0.170	27.5	0.103	48.0	0.081	68.5	0.094	89.0	0.123
1.4	0.959	9.6	0.159	28.0	0.097	48.5	0.087	69.0	0.106	89.5	0.120
1.6	0.939	9.8	0.153	28.5	0.086	49.0	0.090	69.5	0.119	90.0	0.119
1.8	0.917	10.0	0.140	29.0	0.071	49.5	0.090	70.0	0.130		
2.0	0.890	10.2	0.125	29.5	0.053	50.0	0.088	70.5	0.141		
2.2	0.861	10.4	0.109	30.0	0.034	50.5	0.083	71.0	0.151		

EDGEMOOR QUADRANGLE
SOUTH CAROLINA
7.5 MINUTE SERIES (TOPOGRAPHIC)



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WNSC-FM CHANNEL 205
ROCK HILL, SOUTH CAROLINA

20060210

EXHIBIT 6