

ENGINEERING STATEMENT RE  
APPLICATION FOR A CONSTRUCTION PERMIT  
TO INCREASE POWER ON BEHALF OF  
**KWJZ(FM), SEATTLE, WASHINGTON**  
CHANNEL 255C 68 KW ERP 698 METERS HAAT

JULY 2006

COHEN, DIPPELL AND EVERIST, P.C.  
CONSULTING ENGINEERS  
RADIO AND TELEVISION  
WASHINGTON, D.C.

COHEN, DIPPELL AND EVERIST, P. C.

City of Washington            )  
  ) ss  
District of Columbia         )


Donald G. Everist, being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer, a Registered Professional Engineer in the District of Columbia, and is President, Secretary and Treasurer of Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;


That his qualifications are a matter of record in the Federal Communications Commission;

That the attached engineering report was prepared by him or under his supervision and direction and

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.

  
Donald G. Everist  
District of Columbia  
Professional Engineer  
Registration No. 5714

Subscribed and sworn to before me this 18<sup>th</sup> day of July, 2006.

  
Notary Public

My Commission Expires: 2/28/2008



COHEN, DIPPELL AND EVERIST, P. C.

City of Washington                     )  
  ) ss  
District of Columbia                 )

Martin R. Doczkat being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer of the Pennsylvania State University, and is a staff engineer at Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

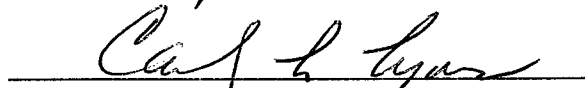
That the attached engineering report was prepared by him or under his supervision and direction and

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.

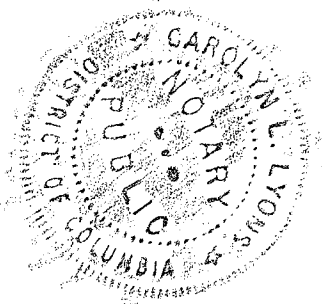


Martin R. Doczkat

Subscribed and sworn to before me this 18<sup>th</sup> day of July, 2006.

  
\_\_\_\_\_  
Notary Public

My Commission Expires: 2/28/2008



### Introduction

This engineering report has been prepared on behalf of Orca Radio, Inc. in support of an application for a construction permit to modify the existing license<sup>1</sup> (FCC File No. BLH-20060712AGD) by increasing the effective radiated power (“ERP”) of FM broadcast station KWJZ(FM), licensed to Seattle, Washington to 68 kW.

This application proposes to increase the ERP to 68 kW while all other technical parameters licensed to KWJZ(FM) remain unchanged. The proposed operation of KWJZ(FM) requests operation from a common master antenna and KQMV(FM), Channel 223, licensed to Bellevue, Washington, is simultaneously submitting an application proposing operation from this same common antenna. FCC expedited processing is requested since prior Canadian coordination has been received and is provided in Table II.

### Transmitter Site (unchanged)

The geographic coordinates (NAD-27) of the existing site are as follows:

North Latitude: 47° 30' 17.3"

West Longitude: 121° 58' 03.4"

Tower Registration No. 1056093

The location is described from the tower registration as 10812 279<sup>th</sup> Avenue Southeast (West Tiger Mountain).

Exhibit E-1 is the vertical antenna sketch of the existing tower.

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<sup>1</sup>KWJZ(FM) is currently awaiting FCC action on this license application.

Power Data

Transmitter output power	22.57 kW	13.54 dB
Combiner and filter loss		0.236 dB
Transmission line loss --(Myat 6-1/8" rigid dual run) 90.5 meters (297 feet)		0.157 dB
Master antenna		
Type, ERI, Type 1084-8CP	3.299	5.184 dB
Max. Horiz.	3.10	4.914 dB
Maximum Effective Radiated Power (H&V)	68 kW	18.325 dB

Elevation Data  
(unchanged)

Elevation of the site above mean sea level	865.3 meters (2838.9 feet)
Elevation of the top of supporting structure above ground	94.5 meters (310 feet)
Elevation of the top of supporting structure above mean sea level	959.8 meters (3149 feet)
Height of antenna radiation center meters above ground	66.7 meters (218.8 feet)
Height of antenna radiation center above mean sea level	932 meters (3057.7 feet)
Height of antenna radiation center above average terrain	698 meters

Allocation Situation

Table I lists the distances to the pertinent co-channel and adjacent-channel FM stations from existing KWJZ(FM) site. Based on the required distance separations found in Section 73.207, the

existing site for KWJZ(FM) is “short-spaced” by KMNA(FM), Mabton, Washington. When KMNA(FM) submitted its application for construction permit (FCC File No. BMPH-20021021ABT) it requested a site which caused a short-spaced distance situation to KWJZ(FM). That distance is 180.2 km while 188 km is required. The recent site move by KWJZ(FM) only slightly changed the separation distance from KMNA(FM) to 179.8 km. However, the distance rounds in each case to 180 km, and therefore, the provisions for Section 73.215 of the FCC Rules are not requested. However, if the Commission deems otherwise, the provisions of Section 73.215 of the FCC Rules are requested. Exhibit E-2 depicts the allocation situation. Table II provides the results of the prior coordination with Canada.

#### Contour Data

Exhibit E-3 shows the proposed 70 dBu and 60 dBu coverage contours. Table III lists the distances to contours for the proposed operation of KWJZ(FM). The proposed 70 dBu contour will cover all of the principal community of Seattle.

#### Main Studio Location

The main studio address is unchanged.

#### Blanketing Contour

The proposed blanketing contour (115 dBu) based on an ERP of 68 kW will extend approximately 3.0 kilometers. The area is rural in nature and no interference problems are anticipated.

Environmental Statement

The radiofrequency field evaluation is based on a 136 kW (max) operation (68 kW H plus 68 kW V) with a center of radiation above ground of 218.8 feet (66.7 meters). Based on information from the antenna manufacturer downward field value is 0.05 for all stations operating from the master antenna. See Exhibit E-4 for the elevation pattern for KWJZ(FM). The proposed operation complies with the FCC Rules, Section 1.1307, as it meets the provisions of the FCC radiation frequency field ("RFF") guideline as the RFF 2 meters above ground is computed to be less than  $2.7 \mu\text{W}/\text{cm}^2$  or well below the  $200 \mu\text{W}/\text{cm}^2$  FCC guideline for uncontrolled exposure limit. This is based upon the methodology contained in OET Bulletin 65 dated August 1997 and Supplement A.

Therefore, the RFF study will consider the following stations:

<u>Station</u>	<u>Frequency</u> MHz	<u>Status</u>
KWJZ(FM)	98.9	Prop
KMPS-FM	94.1	Lic
KJAQ(FM)	96.5	CP
KZOK-FM	102.5	Lic
KBKS-FM	106.1	Lic
KQMV(FM)	92.5	Prop
KWPX(TV)	584-590	Lic
KWPX-DT	578-584	Lic
KWDK(TV)	722-728	Lic
KWDK-DT	638-644	Lic
KHCV(TV)	656-662	Lic
KHCV-DT	650-656	CP
KWOG(TV)	692-698	Lic

<u>Station</u>	<u>Frequency</u> MHz	<u>Status</u>
KWOG-DT	686-692	CP

The RFF contribution of each station will be calculated using the following formula:

$$S = \frac{33.4(F^2) \text{ Total ERP}}{R^2}$$

where:

S = power density in  $\mu\text{W}/\text{cm}^2$

F = relative field factor

Total ERP = ERP Horizontal Polarization + ERP Vertical Polarization

R = RCAGL - 2 meters

ERP = RMS ERP in watts for DTV Stations

ERP =  $[0.4 \text{ ERP}_V + \text{ERP}_A]$  for NTSC Stations

$\text{ERP}_V$  = peak visual ERP in watts

$\text{ERP}_A$  = RMS aural ERP in watts

#### KWJZ(FM) FM Proposed Facility

Channel 255	Freq:	98.9 MHz
	ERP =	68 kW
	Polarization =	(Horizontal + Vertical)
	RCAGL -2 meters =	64.7 meters

KWJZ(FM) proposes to utilize an ERI, Type 1084-8CP antenna with  $1.31^\circ$  electrical beam tilt. The manufacturer's vertical plane pattern for this antenna is included in Exhibit E-4. Based on this plot, the field factor will be less than 0.05 at any angle greater than 65 degrees below the horizon. A value of 0.05 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2}$$

Tot ERP = 68 kW (Horizontal + Vertical)  
R = 64.7 meters  
F = 0.05 (field factor)

$$S = 2.7 \mu\text{W}/\text{cm}^2$$

KWJZ(FM) contributes less than  $2.7 \mu\text{W}/\text{cm}^2$  at 2 meters above ground.



The limit for an uncontrolled environment is  $200 \text{ W/cm}^2$  for a station broadcasting in the 30-300 MHz range.

Therefore:

KWJZ(FM) facility contributes less than 1.4% RFF for an uncontrolled environment two meters above ground at the tower site.

#### KMPS-FM FM Licensed Facility

Channel 231	Freq:	94.1 MHz
	Max ERP =	73 kW
	Polarization =	Horizontal + Vertical
	RCAGL -2 meters =	64.7 meters

KMPS-FM is using an ERI, Type 1084-8CP antenna with  $1.31^\circ$  electrical beam tilt. The manufacturer's vertical plane pattern for this type of master antenna is included in Exhibit E-4. Based on this plot, the field factor will be less than 0.05 at any angle greater than 65 degrees below the horizon. A value of 0.05 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{Tot ERP}}{R^2}$$

Tot ERP = 73 kW (Horizontal + Vertical)  
 R = 64.7 meters  
 F = 0.05 (field factor)

$$S = 2.9 \mu\text{W/cm}^2$$

KMPS-FM contributes less than  $2.9 \mu\text{W/cm}^2$  at 2 meters above ground.

The limit for an uncontrolled environment is  $200 \mu\text{W/cm}^2$  for a station broadcasting in the 30-300 MHz range.

Therefore:

KMPS-FM FM facility contributes less than 1.5% RFF for an uncontrolled environment two meters above ground at the tower site.

#### KJAO(FM) FM Construction Permit Facility

Channel 243	Freq:	96.5 MHz
	Max ERP =	52 kW
	Polarization =	Horizontal + Vertical
	RCAGL -2 meters =	64.7 meters

KJAQ(FM) is using an ERI, Type 1084-8CP antenna with 1.31° electrical beam tilt. The manufacturer's vertical plane pattern for this type of master antenna is included in Exhibit E-4. Based on this plot, the field factor will be less than 0.05 at any angle greater than 65 degrees below the horizon. A value of 0.05 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2}$$

Tot ERP = 52 kW (Horizontal + Vertical)  
R = 64.7 meters  
F = 0.05 (field factor)

$$S = 2.1 \mu\text{W}/\text{cm}^2$$

KJAQ(FM) contributes less than 2.1  $\mu\text{W}/\text{cm}^2$  at 2 meters above ground.  
The limit for an uncontrolled environment is 200  $\mu\text{W}/\text{cm}^2$  for a station broadcasting in the 30-300 MHz range.

Therefore:

KJAQ(FM) facility contributes less than 1.1% RFF for an uncontrolled environment two meters above ground at the tower site.

#### KZOK-FM FM Licensed Facility

Channel 273	Freq:	102.5 MHz
	Max ERP =	73 kW
	Polarization =	Horizontal + Vertical
	RCAGL -2 meters =	64.7 meters

KZOK-FM is using an ERI, Type 1084-8CP antenna with 1.31° electrical beam tilt. The manufacturer's vertical plane pattern for this type of master antenna is included in Exhibit E-4. Based on this plot, the field factor will be less than 0.05 at any angle greater than 65 degrees below the horizon. A value of 0.05 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2}$$

Tot ERP = 73 kW (Horizontal + Vertical)  
R = 64.7 meters  
F = 0.05 (field factor)

$$S = 2.9 \mu\text{W}/\text{cm}^2$$

KZOK-FM contributes less than 2.9  $\mu\text{W}/\text{cm}^2$  at 2 meters above ground.  
The limit for an uncontrolled environment is 200  $\mu\text{W}/\text{cm}^2$  for a station broadcasting in the 30-300 MHz range.

Therefore:

KZOK-FM facility contributes less than 1.5% RFF for an uncontrolled environment two meters above ground at the tower site.

#### KBKS-FM FM Licensed Facility

Channel 291	Freq:	106.1 MHz
	ERP =	73 kW
	Polarization =	Horizontal + Vertical
	RCAGL -2 meters =	64.7 meters

KBKS-FM is using an ERI, Type 1084-8CP antenna with 1.31° electrical beam tilt. The manufacturer's vertical plane pattern for this type of master antenna is included in Exhibit E-4. Based on this plot, the field factor will be less than 0.05 at any angle greater than 65 degrees below the horizon. A value of 0.05 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2}$$

Tot ERP = 73 kW (Horizontal + Vertical)  
R = 64.7 meters  
F = 0.05 (field factor)

$$S = 2.9 \mu\text{W}/\text{cm}^2$$

KBKS-FM contributes 2.9  $\mu\text{W}/\text{cm}^2$  at 2 meters above ground.

The limit for an uncontrolled environment is 200  $\mu\text{W}/\text{cm}^2$  for a station broadcasting in the 30-300 MHz range.

Therefore:

KBKS-FM facility contributes less than 1.5% RFF for an uncontrolled environment two meters above ground at the tower site.

#### KQMV(FM) FM Proposed Facility

Channel 223	Freq:	92.5 MHz
	ERP =	60 kW
	Polarization =	Horizontal + Vertical
	RCAGL -2 meters =	64.7 meters

KQMV(FM) proposes to utilize an ERI, Type 1084-8CP antenna with 1.31° electrical beam tilt. The manufacturer's vertical plane pattern for this antenna is included in Exhibit E-5.

Based on this plot, the field factor will be less than 0.05 at any angle greater than 65 degrees below the horizon. A value of 0.05 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2}$$

Tot ERP = 60 kW (Horizontal + Vertical)  
R = 64.7 meters  
F = 0.05 (field factor)

$$S = 2.4 \mu\text{W}/\text{cm}^2$$

KQMV(FM) contributes less than  $2.4 \mu\text{W}/\text{cm}^2$  at 2 meters above ground.

The limit for an uncontrolled environment is  $200 \mu\text{W}/\text{cm}^2$  for a station broadcasting in the 30-300 MHz range.

Therefore:

KQMV(FM) FM facility contributes less than 1.2% RFF for an uncontrolled environment two meters above ground at the tower site.

#### KWPX(TV) NTSC Licensed Facility

Channel 33	Freq:	584-590 MHz range
	ERP =	(0.4) [3720 kW (visual)]+[372 kW (aural)]
	Polarization =	Horizontal
	RCAGL -2 meters =	81 meters

KWPX(TV) is using a Dielectric, Type TFU-31ETT-RCTSP antenna with  $1.0^\circ$  electrical beam tilt. The manufacturer's vertical plane pattern is proof that the field factor is less than 0.05 at any angle below the horizon in the vicinity of the proposed tower site. A value of 0.05 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2}$$

Tot ERP = 1860 kW (Horizontal Only)  
R = 81 meters  
F = 0.05 (field factor)

$$S = 23.7 : \text{W}/\text{cm}^2$$

KWPX(TV) contributes less than  $23.7 : \text{W}/\text{cm}^2$  at 2 meters above ground. The limit for an uncontrolled environment is  $f/1500$  for a station broadcasting in the 300-1500 MHz range.

$(587 \text{ MHz})/1500 = 391.3 : \text{W}/\text{cm}^2$  is the RFF limit for KWPX(TV)

Therefore:

KWPX(TV) NTSC facility contributes less than 6.1% RFF for an uncontrolled environment two meters above ground at the tower site.

#### KWPX-DT DTV Licensed Facility

Channel 32	Freq:	578-584 MHz range
	ERP =	175 kW
	Polarization =	Horizontal
	RCAGL-2 meters =	81 meters

KWPX-DT is using a Dielectric, Type TFU-31ETT-RCTSP antenna with 1.1° electrical beam tilt. The manufacturer's vertical plane pattern is proof that the field factor is less than 0.05 at any angle below the horizon in the vicinity of the proposed tower site. A value of 0.05 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{Tot ERP}}{R^2}$$

Tot ERP = 175 kW (Horizontal Only)  
R = 81 meters  
F = 0.05 (field factor)

$$S = 2.2 : \text{W/cm}^2$$

KWPX-DT contributes less than 2.2 : W/cm<sup>2</sup> at 2 meters above ground. The limit for an uncontrolled environment is f/1500 for a station broadcasting in the 300-1500 MHz range.

$$(581 \text{ MHz})/1500 = 387.3 : \text{W/cm}^2 \text{ is the RFF limit for KWPX-DT}$$

Therefore:

KWPX-DT DTV facility contributes less than 0.6% RFF for an uncontrolled environment two meters above ground at the tower site.

#### KWDK(TV) NTSC Licensed Facility

Channel 56	Freq:	722-728 MHz range
	ERP =	(0.4) [3980 kW (visual)]+[398 kW (aural)]
	Polarization =	Horizontal
	RCAGL -2 meters =	58 meters

KWDK(TV) is using a PSI, Type USM25AC2/56 antenna with 0.75° electrical beam tilt. The manufacturer's vertical plane pattern is proof that the field factor is less than 0.1 at any

angle below the horizon in the vicinity of the proposed tower site. A value of 0.1 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2}$$

Tot ERP = 1990 kW (Horizontal Only)  
R = 58 meters  
F = 0.1 (field factor)

$$S = 197.6 : \text{W/cm}^2$$

KWDK(TV) contributes less than 197.6 : W/cm<sup>2</sup> at 2 meters above ground. The limit for an uncontrolled environment is f/1500 for a station broadcasting in the 300-1500 MHz range.

$$(725 \text{ MHz})/1500 = 483.3 : \text{W/cm}^2 \text{ is the RFF limit for KWDK(TV)}$$

Therefore:

KWDK(TV) NTSC facility contributes less than 40.9%<sup>2</sup> RFF for an uncontrolled environment two meters above ground at the tower site.

#### KWDK-DT DTV Licensed Facility

Channel 42	Freq:	638-644 MHz range
	ERP =	144 kW
	Polarization =	Horizontal + Vertical
	RCAGL -2 meters =	58 meters

KWDK-DT is using a SWR, Type SWED160I antenna with 1.0° electrical beam tilt. The field factor is assumed to be less than 0.1 at any angle below the horizon in the vicinity of the proposed tower site. A value of 0.1 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2}$$

Tot ERP = 144 kW (Horizontal + Vertical)  
R = 58 meters  
F = 0.1 (field factor)

$$S = 28.6 : \text{W/cm}^2$$

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<sup>2</sup>Technical staff associated with KWJZ(FM) asserts that KWDK(TV) has permanently ceased its analog television operation. This assertion has been confirmed due to the May 5, 2006 "Cancelled" status of the KWDK(TV) license in the FCC CDBS. The licensed operation of KWDK(TV) is predicted to be the largest contributor of RFF near the KWJZ(FM) tower site.

KWDK-DT contributes less than  $28.6 : \text{W}/\text{cm}^2$  at 2 meters above ground. The limit for an uncontrolled environment is  $f/1500$  for a station broadcasting in the 300-1500 MHz range.

$(641 \text{ MHz})/1500 = 427.3 : \text{W}/\text{cm}^2$  is the RFF limit for KWDK-DT

Therefore:

KWDK-DT DTV facility contributes less than 6.7% RFF for an uncontrolled environment two meters above ground at the tower site.

#### KHCV(TV) NTSC Licensed Facility

Channel 45	Freq:	656-662 MHz range
	ERP =	(0.4) [2000 kW (visual)]+[200 kW (aural)]
	Polarization =	Horizontal
	RCAGL -2 meters =	77 meters

KHCV(TV) will use a Bogner, Type BU(I)24N-G antenna with  $0.5^\circ$  electrical beam tilt. The field factor is assumed to be less than 0.1 at any angle below the horizon in the vicinity of the proposed tower site. A value of 0.1 will be used in the calculation.

$S = \frac{33.4 (F^2) \text{Tot ERP}}{R^2}$	Tot ERP = 1000 kW (Horizontal Only)
	R = 77 meters
	F = 0.1 (field factor)

$S = 56.3 : \text{W}/\text{cm}^2$

KHCV(TV) contributes less than  $56.3 : \text{W}/\text{cm}^2$  at 2 meters above ground. The limit for an uncontrolled environment is  $f/1500$  for a station broadcasting in the 300-1500 MHz range.

$(659 \text{ MHz})/1500 = 439.3 : \text{W}/\text{cm}^2$  is the RFF limit for KHCV(TV)

Therefore:

KHCV(TV) NTSC facility contributes less than 12.8% RFF for an uncontrolled environment two meters above ground at the tower site.

KHCV-DT DTV Construction Permit Facility

Channel 44	Freq:	650-656 MHz range
	ERP =	240 kW
	Polarization =	Horizontal
	RCAGL -2 meters =	77 meters

KHCV-DT is using a Bogner, Type BU(I)24N-G antenna with 0.5° electrical beam tilt. The field factor is assumed to be less than 0.1 at any angle below the horizon in the vicinity of the proposed tower site. A value of 0.1 will be used in the calculation.

$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2}$	Tot ERP = 240 kW (Horizontal Only)
	R = 77 meters
	F = 0.1 (field factor)

$$S = 13.5 : \text{W/cm}^2$$

KHCV-DT contributes less than 13.5 : W/cm<sup>2</sup> at 2 meters above ground. The limit for an uncontrolled environment is f/1500 for a station broadcasting in the 300-1500 MHz range.

$$(653 \text{ MHz})/1500 = 435.3 : \text{W/cm}^2 \text{ is the RFF limit for KHCV-DT}$$

Therefore:

KHCV-DT DTV facility contributes less than 3.1% RFF for an uncontrolled environment two meters above ground at the tower site.

KWOG(TV) NTSC Licensed Facility

Channel 51	Freq:	692-698 MHz range
	ERP =	(0.4) [3800 kW (visual)]+[380 kW (aural)]
	Polarization =	Horizontal
	RCAGL -2 meters =	83 meters

KWOG(TV) is using an Andrew, Type ATW25H3-HTC2U-51 antenna with 0.75° electrical beam tilt. The manufacturer's vertical plane pattern is proof that the field factor is less than 0.042 at any angle below the horizon in the vicinity of the proposed tower site. A value of 0.042 will be used in the calculation.



$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2}$$

Tot ERP = 1900 kW (Horizontal Only)

R = 83 meters

F = 0.042 (field factor)

$$S = 16.3 : \text{W/cm}^2$$

KWOG(TV) contributes less than 16.3 : W/cm<sup>2</sup> at 2 meters above ground. The limit for an uncontrolled environment is f/1500 for a station broadcasting in the 300-1500 MHz range.

(695 MHz)/1500 = 463.3 : W/cm<sup>2</sup> is the RFF limit for KWOG(TV)

Therefore:

KWOG(TV) NTSC facility contributes less than 3.5% RFF for an uncontrolled environment two meters above ground at the tower site.

#### KWOG-DT DTV Construction Permit Facility

Channel 50	Freq:	686-692 MHz range
	ERP =	240 kW
	Polarization =	Horizontal
	RCAGL -2 meters =	83 meters

KWOG-DT will use an Andrew, Type ATW25H3-HTC2U-51 antenna with 1.25° electrical beam tilt. The manufacturer's vertical plane pattern is proof that the field factor is less than 0.042 at any angle below the horizon in the vicinity of the proposed tower site. A value of 0.042 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2}$$

Tot ERP = 240 kW (Horizontal Only)

R = 83 meters

F = 0.042 (field factor)

$$S = 2.1 : \text{W/cm}^2$$

KWOG-DT contributes less than 2.1 : W/cm<sup>2</sup> at 2 meters above ground. The limit for an uncontrolled environment is f/1500 for a station broadcasting in the 300-1500 MHz range.

(689 MHz)/1500 = 459.3 : W/cm<sup>2</sup> is the RFF limit for KWOG-DT

Therefore:

KWOG-DT facility contributes less than 0.5% RFF for an uncontrolled environment two meters above ground at the tower site.

Total Uncontrolled RFF at Site

The total uncontrolled RFF contribution for all transmitters can now be calculated:

$$\text{Total uncontrolled RFF} = 1.4\% + 1.1\% + 1.5\% + 1.5\% + 1.2\% + 6.1\% + 0.6\% + 40.9\%^3 \\ + 6.7\% + 12.8\% + 3.1\% + 3.5\% + 0.5\%$$

$$\text{Total uncontrolled RFF} = 82.4\%$$

The licensee indicates that access to the site is approximately 5 miles from a main road. The road is not regularly traveled as the only purpose the access road serves is to provide access to the tower site. Therefore, it is believed this site qualifies under Situation B of OET Bulletin 65 as discussed below.

From Pages 77 and 78, guidance for such a situation is provided from the FCC publication entitled, *“Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, OET Bulletin 65, Edition 97-01, August 1997”*, *“Appendix B, Summary of 1986 Mass Media Bureau, Public Notice on RF Compliance”*.

A portion is abstracted as follows:

Situations

(B) High RF levels are produced at ground level in a remote area not likely to be visited by the public.

- If the area of concern is marked by appropriate warning signs, an applicant may assume that there is no significant effect on the human environment with regard to

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<sup>3</sup>Ibid.

exposure of the general public. It is recommended that fences also be used where feasible.

The tower site owner indicates that they are in the process of having an RFF site survey performed and any further restrictions other than the current fencing about the tower sites that are required will be undertaken.

Authorized personnel and rigging contractors will be alerted to the potential zone of high radiation on the tower, and if necessary, KWJZ(FM) will operate with reduced power or terminate the operation of the transmitter as appropriate when it is necessary for authorized personnel or contractors to perform work on the tower. Workers and the general public, therefore, will not be subjected to RFF levels in excess of the current FCC guidelines.

#### Environmental Assessment

An environmental assessment ("EA") is categorically excluded under Section 1.1306 of the FCC Rules and Regulations as the tower was constructed prior to the requirements specified in WT Docket No. 03-128 and the licensee indicates:

- (a)(1) The existing tower is not located in an officially designated wilderness area.
- (a)(2) The existing tower is not located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities will not jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats.
- (a)(4) The proposed facilities located on a tower which was built prior to the adoption of WT Docket No. 03-128 and is grandfathered and has not affected any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.

- (a)(5) The existing tower is not located near any known Indian religious sites.
- (a)(6) The existing tower is not located in a flood plain.
- (a)(7) The installation of the facilities on an existing guyed tower will not involve a significant change in surface features of the ground in the vicinity of the tower.
- (a)(8) It is not proposed to equip the tower with high intensity white lights unless required by the FAA.
- (b) Workers and the general public will not be subjected to RFF levels in excess of the current FCC guidelines contained in OET Bulletin No. 65, Edition 97-01, dated August 1997 and Supplement A.

**ABOVE GROUND**

**ABOVE MEAN SEA LEVEL**

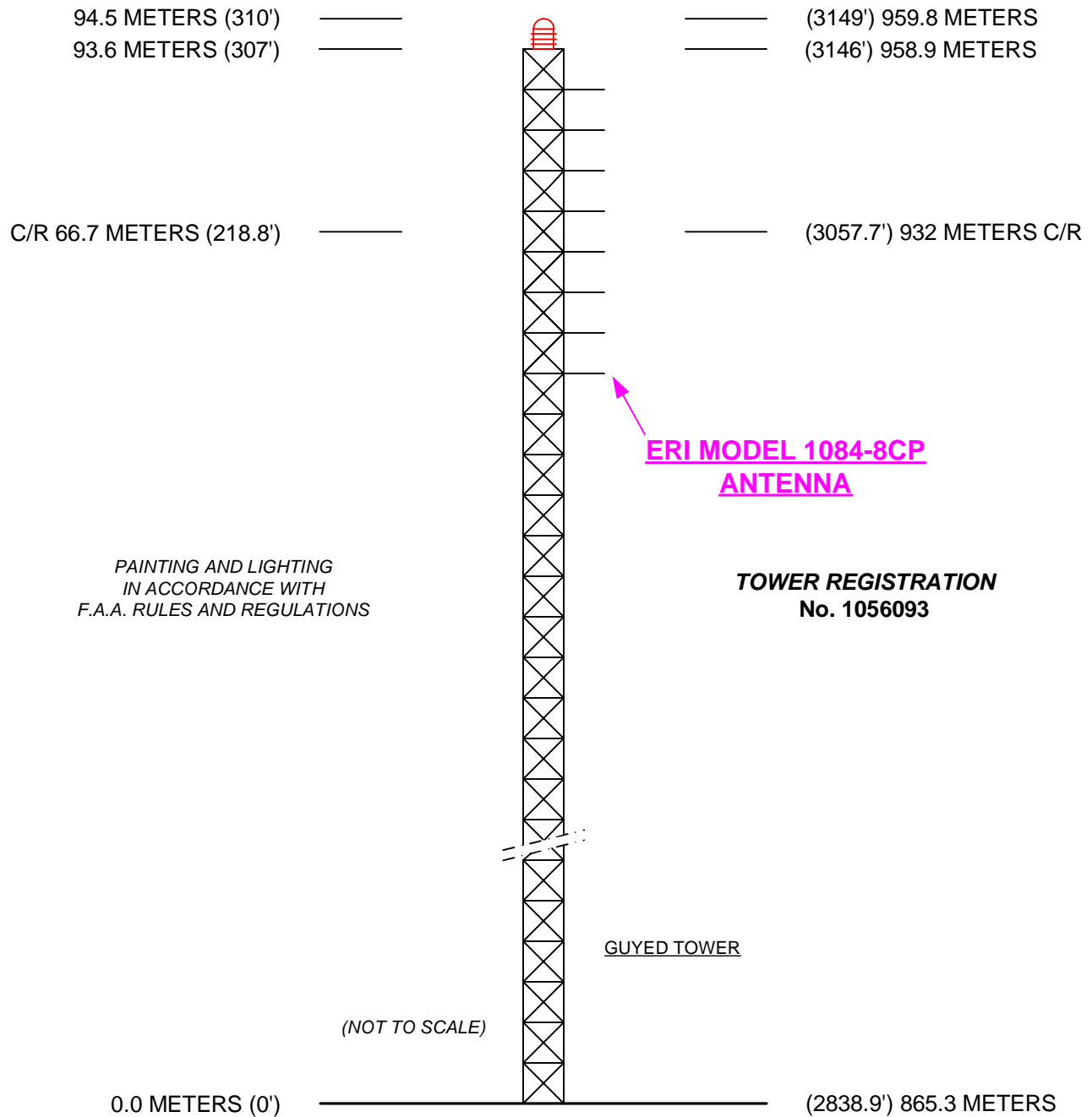


EXHIBIT E - 1  
VERTICAL SKETCH  
FOR THE PROPOSED FM OPERATION OF  
**KWJZ(FM), SEATTLE, WASHINGTON**  
JULY 2006

COHEN, DIPPELL AND EVERIST, P.C.

TABLE I  
ALLOCATION SITUATION  
FOR THE CONSTRUCTION PERMIT OPERATION OF  
KWJZ-FM, SEATTLE, WASHINGTON  
JULY 2006

<u>Channel</u>	<u>Frequency</u> MHz	<u>Call</u>	<u>City/State</u>	<u>ERP</u> kW	<u>HAAT</u> meters	<u>Coordinates</u>	<u>Distance</u>		
							<u>Licensed</u> km	<u>Authorized</u> km	<u>Required</u> km
255C	98.9	KWJZ(FM) Lic	Seattle, WA	58	714	47°30'14" 121°58'29"	--	0.5	--
255C	98.9	KWJZ(FM) CP	Seattle, WA	58	698	47°30'17.3" 121°58'3.4"	0.5	--	--
254C1	98.7	KUPL-FM Lic	Portland, OR	37	440	45°30'58" 122°43'59"	228.5	228.7	209
254C2	98.7	KMNA(FM) Lic	Mabton, WA	11.5	266.4	46°28'33" 120°08'37"	180.2	179.8	188
256C1	99.1	KUJ-FM CP Mod	Burbank, WA	52	385	46°05'58" 119°07'40"	267.6	267.2	209
257C	99.3	KDDS-FM Lic	Elma, WA	41	620	47°19'12" 123°20'41"	105.4	105.9	105
257C	99.3	KDDS-FM App	Elma, WA	64	742	47°18'46" 123°22'15"	107.5	108	105

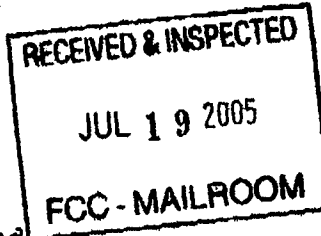
Channel 255 (98.9 MHz)  
Center of Radiation 932 meters AMSL  
Antenna Height Above Average Terrain 698 meters  
Effective Radiated Power 68 kW (18.325 dBk) Max.

North Latitude: 47° 30' 17.3"  
West Longitude: 121° 58' 03.4"  
NAD-27

## TABLE II



Industry Canada Industrie Canada  
300 Slater Street  
Ottawa, Ontario  
K1A 0C8



6116-2-1 (DBC-E)

July 15, 2005

Ms. Kathryn O'Brien  
Chief, Strategic Analysis and  
Negotiations Division  
Federal Communications Commission  
445 12th Street, SW  
Washington, DC 20554 USA

Dear Ms. O'Brien,

This is in reply to your letter dated April 11, 2005 requesting comments on the following proposed amendments to Table B of the Working Arrangement pursuant to the Canada-USA FM Broadcasting Agreement of 1997:

<u>Location</u>	<u>Channel Number</u>	
	<u>Delete</u>	<u>Add</u>
Seattle, WA 47-32-41 NL/122-06-28 WL	255C	----
Seattle, WA 47-30-17 NL/121-58-04 WL	----	255C
Bellevue, WA 47-30-14 NL/121-58-29 WL	223C*	----
Bellevue, WA 47-30-17 NL/121-58-04 WL	----	223C*

\* Specially negotiated short-spaced allotment (Bellevue is short-spaced to a Canadian proposal on channel 223A\*(L) in Abbotsford, BC).

This Administration has no objection to the above proposals as notified and will amend Table B accordingly should we hear further in this regard.

Sincerely,

Paul Vaccani  
Director  
Broadcast Applications  
Engineering  
Broadcasting Regulatory Branch

Canada

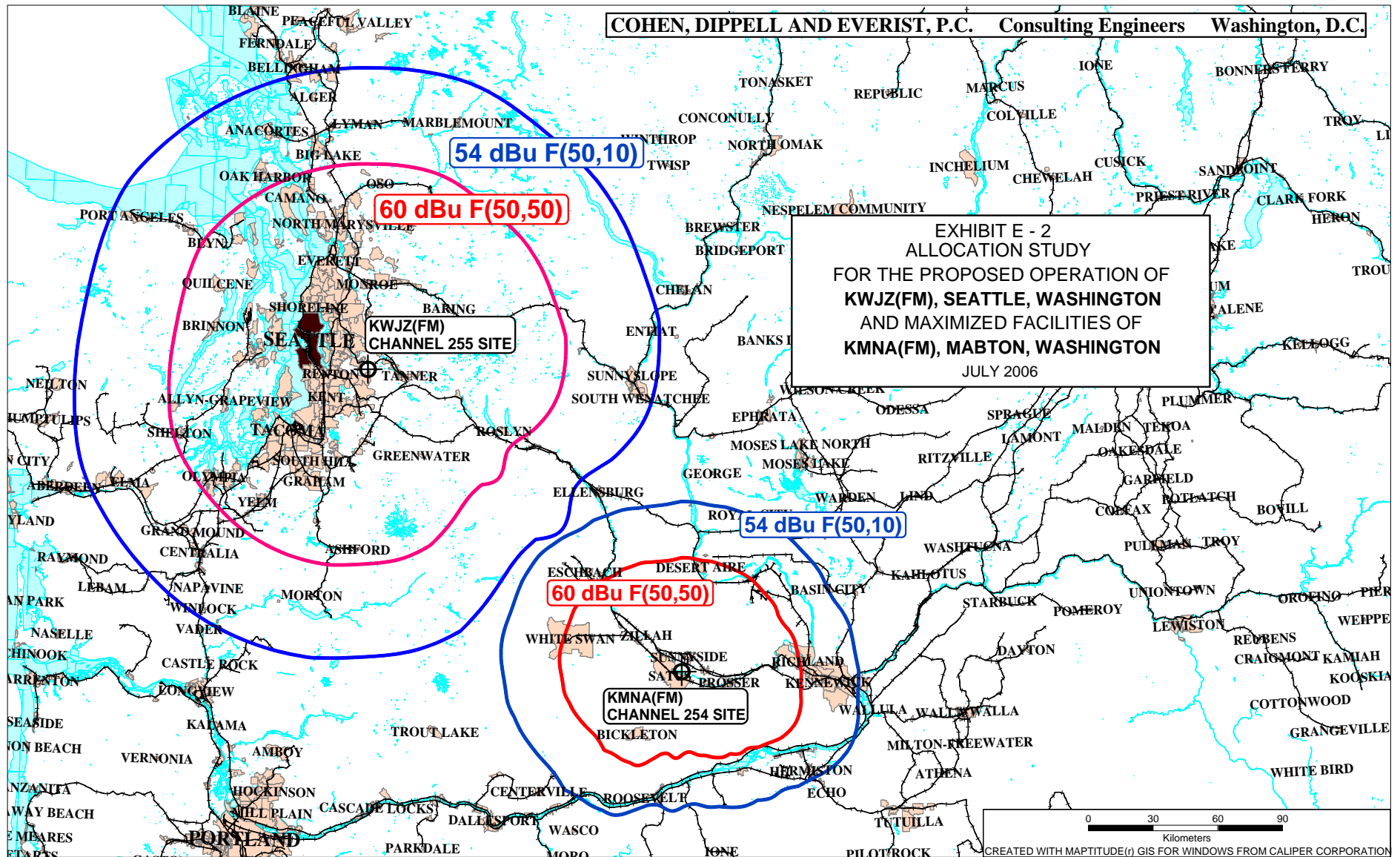




TABLE III  
COMPUTED COVERAGE DATA  
FOR THE PROPOSED FM OPERATION OF  
KWJZ(FM), SEATTLE, WASHINGTON  
CHANNEL 255 68 KW ERP 698 METERS HAAT  
JULY 2006

<u>Radial</u> <u>Bearing</u> N ° E, T	<u>Average*</u> <u>Elevation</u> <u>3.2 to 16.1 km</u>	<u>Effective</u> <u>Height</u> meters	<u>Depression</u> <u>Angle</u>	<u>ERP At</u> <u>Radio</u> <u>Horizon</u> kW	<u>Distance to Contour F(50,90)</u>	
	meters				<u>70 dBu</u> <u>3.16 mV/m</u> km	<u>60 dBu</u> <u>1 mV/m</u> km
0	138.2	793.8	0.780	68	70.3	94.9
45	180.6	751.4	0.759	68	69.0	93.4
90	255.1	676.9	0.721	68	66.4	90.7
135	546.6	385.4	0.544	68	51.9	74.8
180	267.9	664.1	0.714	68	66.0	90.3
225	159.1	772.9	0.770	68	69.7	94.2
270	224.0	708.0	0.737	68	67.5	91.9
315	80.8	851.2	0.808	68	72.0	96.9
Average	231.5	700.5*				

\*Based on data from FCC 3-second data base

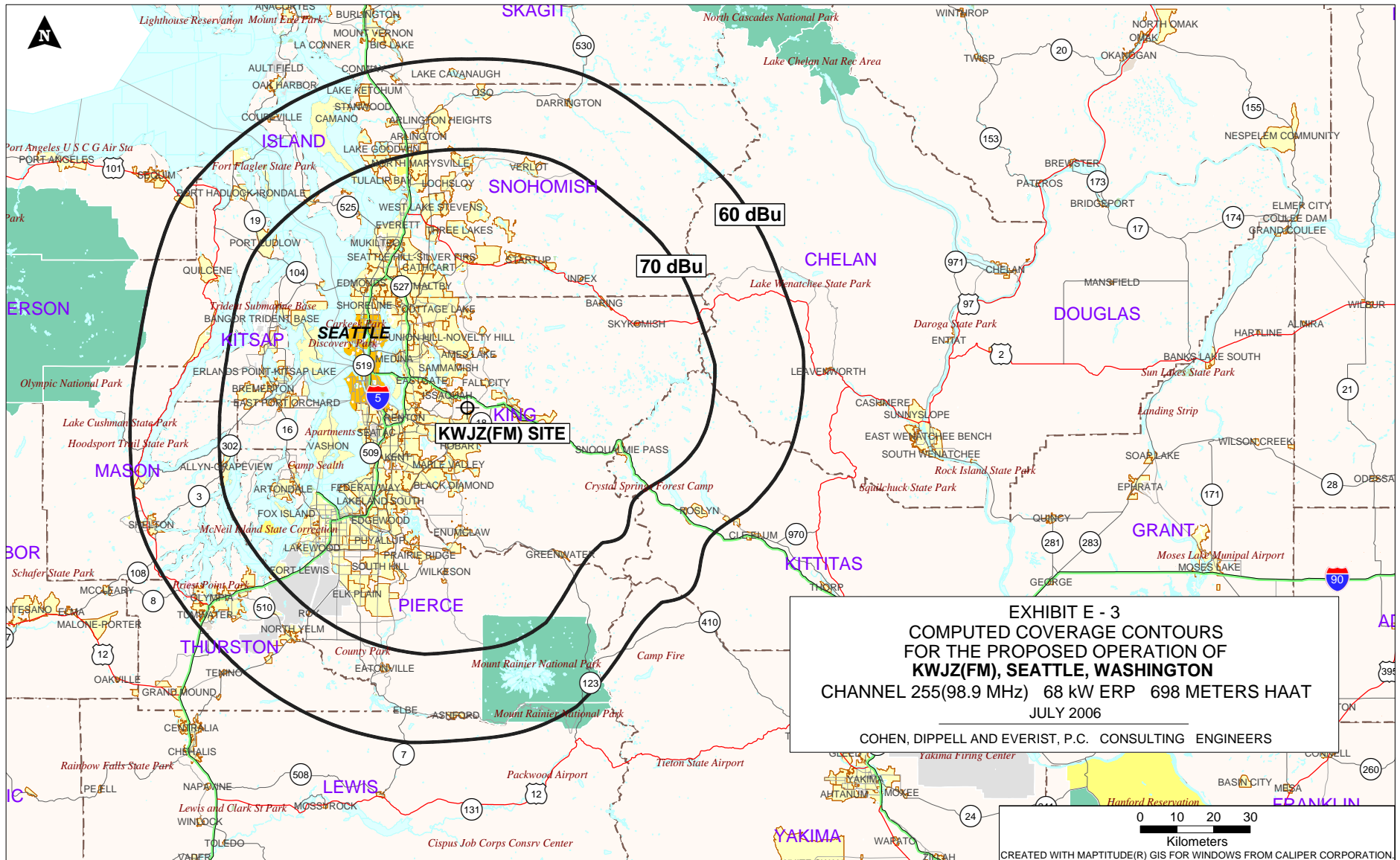
DTV Channel 255 (98.9 MHz)  
Average Elevation 3.2 to 16.1 km 231.5 meters AMSL  
Center of Radiation 932 meters AMSL  
Antenna Height Above Average Terrain 698 meters  
Effective Radiated Power 68 kW (18.325 dBk)

Horizontal ERP 68 kW  
Vertical ERP 68 kW

North Latitude: 47° 30' 17.3"  
West Longitude: 121° 58' 03.4"

(NAD-27)

The value of 698 meters is specified to conform to HAAT values for facilities licensed that operate from this master antenna.



ELECTRONICS RESEARCH, INC.  
7777 GARDNER ROAD  
CHANDLER, IN. 47610

FIGURE 1F

-----THEORETICAL-----  
VERTICAL PLANE RELATIVE FIELD

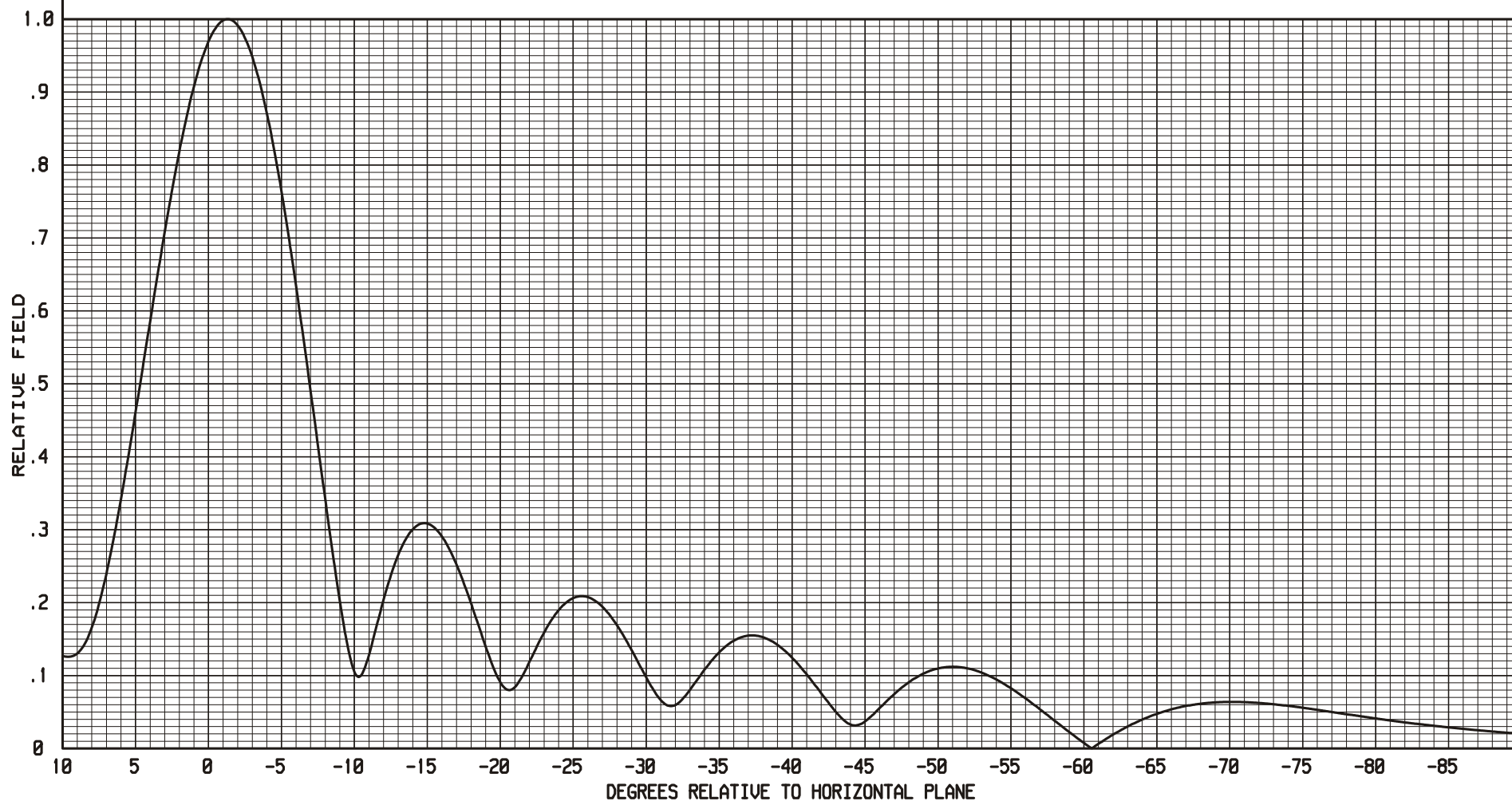
8 LEVELS OF TYPE 1000 ELEMENTS  
-1.31 DEGREE(S) BEAM TILT  
10 PERCENT FIRST NULL FILL  
8 PERCENT SECOND NULL FILL

POWER GAIN IS 3.100 IN THE HORIZONTAL PLANE(3.299 IN THE MAX.)  
[ POWER GAINS AT 95% ANTENNA EFFICIENCY ]

MARCH 31, 2005

98.9 MHz.

BAY SPACING:  
92.00 INCHES



ELECTRONICS RESEARCH, INC.  
7777 GARDNER ROAD  
CHANDLER, IN. 47610

FIGURE 1E

-----THEORETICAL-----  
VERTICAL PLANE RELATIVE FIELD

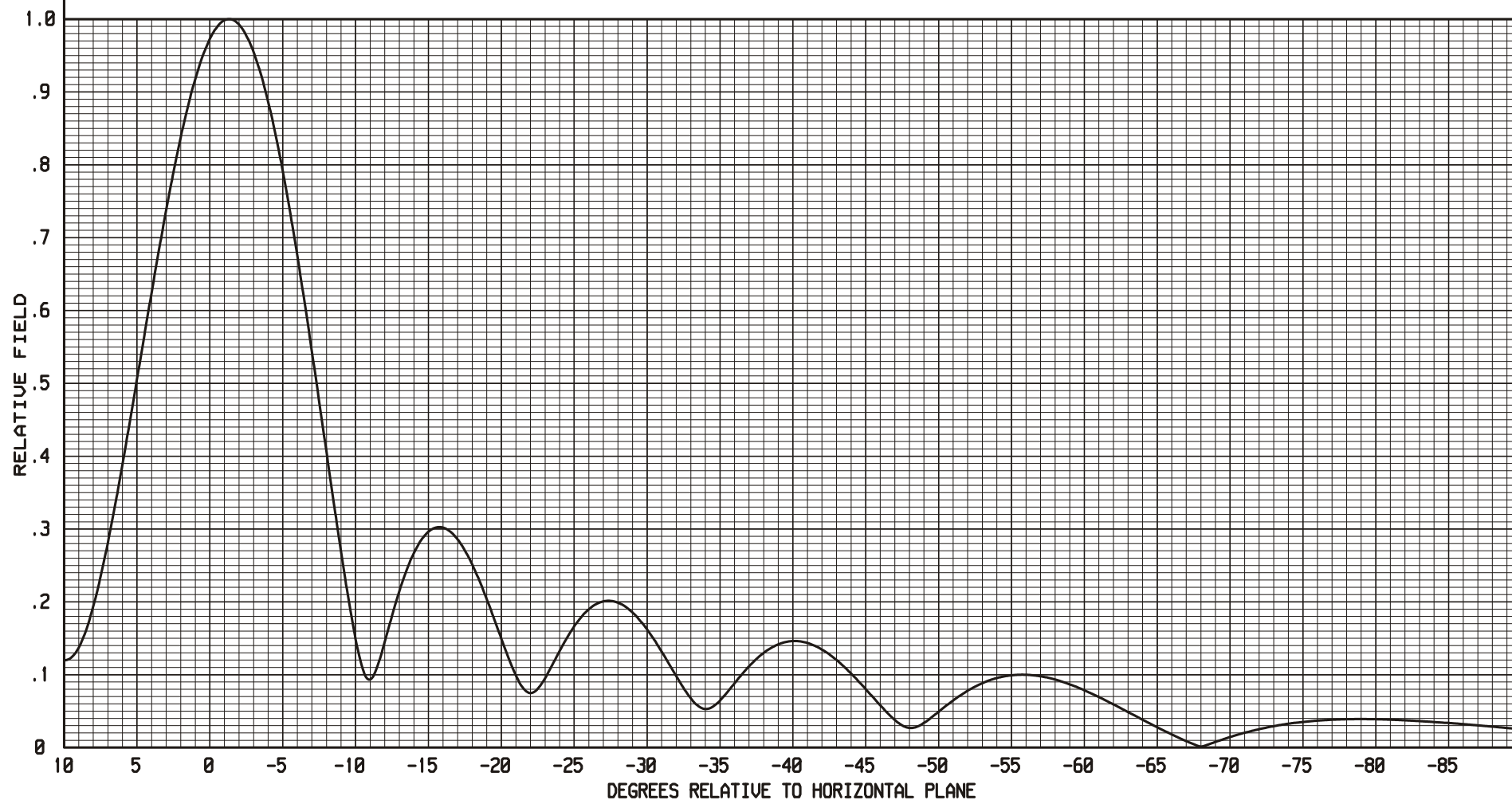
8 LEVELS OF TYPE 1000 ELEMENTS  
-1.31 DEGREE(S) BEAM TILT  
9 PERCENT FIRST NULL FILL  
7 PERCENT SECOND NULL FILL

POWER GAIN IS 2.978 IN THE HORIZONTAL PLANE(3.147 IN THE MAX.)  
[ POWER GAINS AT 95% ANTENNA EFFICIENCY ]

MARCH 31, 2005

92.5 MHz.

BAY SPACING:  
92.00 INCHES



**SECTION III-B FM Engineering****TECHNICAL SPECIFICATIONS**

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

**TECH BOX**

1. Channel: \_\_\_\_\_
2. Class: ☐ A ☐ B1 ☐ B ☐ C3 ☐ C2 ☐ C1 ☐ C ☐ D
3. Antenna Location Coordinates: (NAD 27)
- \_\_\_\_\_° \_\_\_\_\_' \_\_\_\_\_" ☐ N ☐ S Latitude  
\_\_\_\_\_° \_\_\_\_\_' \_\_\_\_\_" ☐ E ☐ W Longitude
4. One-Step Proposal Allotment Coordinates: (NAD 27) ☐ Not applicable
- \_\_\_\_\_° \_\_\_\_\_' \_\_\_\_\_" ☐ N ☐ S Latitude  
\_\_\_\_\_° \_\_\_\_\_' \_\_\_\_\_" ☐ E ☐ W Longitude
5. Antenna Structure Registration Number: \_\_\_\_\_
- ☐ Not applicable ☐ FAA Notification Filed with FAA
6. Overall Tower Height Above Ground Level: \_\_\_\_\_ meters
7. Height of Radiation Center Above Mean Sea Level: \_\_\_\_\_ meters (H) \_\_\_\_\_ meters (V)
8. Height of Radiation Center Above Ground Level: \_\_\_\_\_ meters (H) \_\_\_\_\_ meters (V)
9. Height of Radiation Center Above Average Terrain: \_\_\_\_\_ meters (H) \_\_\_\_\_ meters (V)
10. Effective Radiated Power: \_\_\_\_\_ kW (H) \_\_\_\_\_ kW (V)
11. Maximum Effective Radiated Power: ☐ Not applicable \_\_\_\_\_ kW (H) \_\_\_\_\_ kW (V)  
(Beam-Tilt Antenna ONLY)
12. Directional Antenna Relative Field Values: ☐ Not applicable (Nondirectional)
- Rotation: \_\_\_\_\_° ☐ No rotation

Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value
0		60		120		180		240		300	
10		70		130		190		250		310	
20		80		140		200		260		320	
30		90		150		210		270		330	
40		100		160		220		280		340	
50		110		170		230		290		350	
Additional Azimuths											

**NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.**

**CERTIFICATION**

**AUXILIARY ANTENNA APPLICANTS ARE NOT REQUIRED TO RESPOND TO ITEMS 13-16.  
PROCEED TO ITEM 17.**

13. **Allotment.** The proposed facility complies with the allotment requirements of 47 C.F.R. Section 73.203. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.
14. **Community Coverage.** The proposed facility complies with 47 C.F.R. Section 73.315. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.
15. **Main Studio Location.** The proposed main studio location complies with 47 C.F.R. Section 73.1125. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.
16. **Interference.** The proposed facility complies with all of the following applicable rule sections. Check all those that apply. ☐ Yes ☐ No 

See Explanation  
in Exhibit No.
- Separation Requirements.**
- a. ☐ 47 C.F.R. Section 73.207.
- Grandfathered Short-Spaced.**
- b. ☐ 47 C.F.R. Section 73.213(a) with respect to station(s): \_\_\_\_\_ 

Exhibit No.

  
**Exhibit Required.**
- c. ☐ 47 C.F.R. Section 73.213(b) with respect to station(s): \_\_\_\_\_ 

Exhibit No.

  
**Exhibit Required.**
- d. ☐ 47 C.F.R. Section 73.213(c) with respect to station(s): \_\_\_\_\_ 

Exhibit No.

  
**Exhibit Required.**
- Contour Protection.**
- e. ☐ 47 C.F.R. Section 73.215 with respect to station(s): \_\_\_\_\_ 

Exhibit No.

  
**Exhibit Required.**
17. **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (*i.e.*, the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an **Exhibit is required.** ☐ Yes ☐ No 

See Explanation  
in Exhibit No.

By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.

**PREPARER'S CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.**

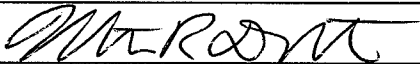
I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith. I acknowledge that all certifications and attached Exhibits are considered material representations. I hereby waive any claim to the use of any particular frequency as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and request an authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended.)

Typed or Printed Name of Person Signing	Typed or Printed Title of Person Signing
Signature	Date

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT  
(U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT  
(U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

### SECTION III PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name Martin R. Doczkat	Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature 	Date July 18, 2006	
Mailing Address Cohen, Dippell and Everist, P.C., 1300 L Street, NW, Suite 1100		
City Washington	State or Country (if foreign address) DC	ZIP Code 20005
Telephone Number (include area code) (202) 898-0111	E-Mail Address (if available) cde@attglobal.net	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT  
(U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT  
(U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).