

ENGINEERING STATEMENT
MODIFICATION OF CONSTRUCTION PERMIT
(FCC FILE NO. BPCDT-19991101AKB)
ON BEHALF OF
MISSION BROADCASTING, INC.
KHMT-DT, HARDIN, MONTANA
CHANNEL 22 1000 KW ERP 247.5 METERS HAAT

JANUARY 2007

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)

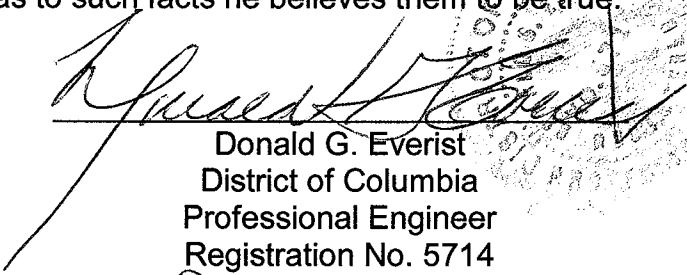
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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 22nd day of January, 2007.



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:

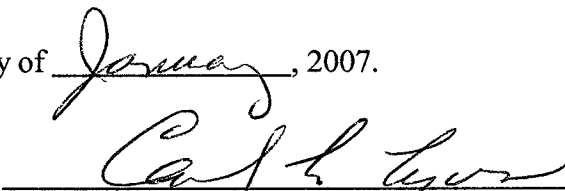
He is a graduate electrical engineer of the Pennsylvania State University, and is a staff engineer at Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

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

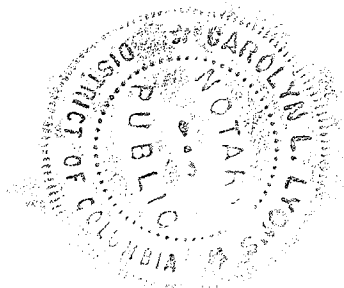
That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.


Martin R. Doczkat

Subscribed and sworn to before me this 22nd day of January, 2007.


Notary Public

My Commission Expires: 2/28/2008



Introduction

This engineering statement has been prepared on behalf of VHR Broadcasting of Billings, LLC, licensee of TV station KHMT(TV), Hardin, Montana, in support of its request to modify the outstanding construction permit for digital television ("DTV") operation (FCC File No. BPCDT-19991101AKB). At present, KHMT(TV) operates on NTSC TV Channel 4 (66-72MHz) with 100 kW effective radiated power ("ERP") and 323 meters antenna height above average terrain ("HAAT"). The current analog Channel 4 operation of 100 kW ERP is with a non-directional TV antenna. Station KHMT(TV) has been allotted Channel 22 (518-524 MHz) for its digital TV operation and has been authorized to construct a facility (FCC File No. BPCDT-19991101AKB) with 1000 kW non-directional maximum ERP and 288.1 meters HAAT. KHMT-DT proposes to operate from the existing tower (no change in overall height) with 1000 kW directional at a slightly reduced HAAT of 247.5 meters.

Antenna Site

There is no change in the proposed antenna site. The DTV antenna will be side-mounted on the existing tower (Figure E-1) at 61 meters (200 feet) above ground level.

The KHMT(TV) antenna site is located west of Hardin, Montana. The KHMT(TV) antenna structure registration number is 1026263.

The geographic coordinates of the existing tower are as follows:

North Latitude: 45° 44' 24"

West Longitude: 108° 08' 18"

(NAD-27)

The following data shows the pertinent information concerning the proposed KHMT-DT operation.

Antenna Data

Antenna:	Dielectric	TFU-32DSB-R O3 or equivalent
	Antenna Power Gain	32 15.05dB

The antenna elevation data is unavailable at this time, however, it is expected to exhibit similar performance as other antennas of this design.

Power Data

Input Power to Antenna	31.3 kW	14.95 dBk
Antenna Power Gain	32	15.05 dB
Effective Radiated Power	1000 kW	30 dBk

Elevation Data

Elevation of the site above mean sea level:	1236.2 meters 4055.8 feet
Elevation of the top of existing supporting structure above ground including DTV antenna	193.5 meters 634.8 feet
Elevation of the top of supporting structure above mean sea level including DTV antenna	1429.7 meters 4690.6 feet
Height of DTV antenna radiation center meters above ground	112.1 meters 367.8 feet
Height of DTV antenna radiation center above mean sea level	1348.3 meters 4423.6 feet
Height of DTV antenna radiation center above average terrain	247.5 meters

Authorized Effective Radiated Power

The maximum ERP authorized by the outstanding construction permit for the DTV operation is 1000 kW at 288.1 meters HAAT. Station KHMT-DT is proposing to operate this facility with a maximum ERP of 1000 kW and a slightly reduced HAAT of 247.5 meters using a non-directional transmitting antenna. This power and height will ensure that it does not extend the predicted 41 dBu contour in any direction beyond that authorized by the construction permit.

The attached map (Exhibit E-3) shows the computed F(50,90) 48 dBu and 41 dBu contours predicted according to Section 73.625(b) of the Commission's rules based on the requested KHMT-DT facilities of 1000 kW ERP and 247.5 meters HAAT.

Principal Community Coverage

In MM Docket No. 00-39, the Commission adopted rules to require DTV stations to place a stronger TV signal over the principal community.

The operation proposed by Station KHMT-DT places a predicted 48 dBu contour over Hardin, as shown on Exhibit E-3.

Topographic Data

The average elevation data of the radials at every 45 degrees in azimuth from 3.2 to 16.1 kilometers, are based on the NGDC 3-second computerized terrain database.

Contour Data

Utilizing the formula in Section 73.625(b)(2) for the effective heights shown on the attached tabulation, the depression angle A_h , for each azimuth has been calculated. The maximum radiation value has been used to calculate ERP where the vertical radiation pattern at these angles is greater than 90% of the maximum.

Table I provides the distances along every 45 degrees in azimuth angle to the predicted F(50,90) 48 and 41 dBu contours, the average elevations, and the effective antenna heights.

The distances along each radial to the limits of F(50,90) 48 dBu and 41 dBu contours were determined as specified in Section 73.625(b) by reference to the propagation data for Channels 14-69, as published by the Commission in Figures 10b and 10c, Section 73.699 of its rules.

Interference Analysis

An analysis of predicted interference caused by the proposed KHMT-DT service has been performed even as the proposed F(50,90) 41 dBu contour is not predicted to extend in any direction beyond that authorized by the F(50,90) 41 dBu contour of the outstanding construction permit (see Exhibit E-4).

The interference analysis used the FCC's FORTRAN-77 code which was modified only to the extent necessary (primarily input/output handling) for the program to run on a Windows 98/Intel platform. Comparison of service/interference areas and populations indicates that this model closely matches the FCC's evaluation program. Best efforts have been made to use data and calculations identical to the FCC's program. Any slight differences are attributable to compiler, operating system and/or processor characteristics. The effect of any variance in calculated population values versus the FCC's program is minimized when differencing a given model's results, such as calculating new interference as total interference less baseline interference. Any variance effect is further reduced when using ratios of calculated population values such as measuring the incremental population affected as a percent of the total population served. The model employs the Longley-Rice propagation methodology and evaluates in grid cells of approximately 4 km² using 3-second terrain data sampled approximately every 1.0 km at one degree azimuth intervals with 2000 Census centroids.

Stations were selected from the FCC's Consolidated Database System ("CDBS") according to the FCC Public Notice dated August 10, 1998 and entitled, "Additional Application

Processing Guidelines for Digital Television”, which outlines the station selection criteria “culling distances” for considering potential interference scenarios.

Table II provides a summary of the Longley-Rice interference analysis and demonstrates that no new interference is caused by the proposed operation of KHMT-DT to any potentially affected facility above the outstanding construction permit.

Other Stations

There is one FM and one TV broadcast station located within 1 km of the proposed site. No objectionable interference problems are anticipated, however, if any problems occur, the applicant will take the necessary steps to resolve them. There are no AM stations within 3.22 km of the proposed site.

Environment Statement

There are two other transmitters operating from the tower. The following broadcast stations are operating from the tower: KHMT-DT, KHMT(TV), and KMHK(FM). The radio frequency field (“RFF”) level will be determined.

Station KHMT-DT

Channel 22	Freq: 518 - 524 MHz Range
$S = \frac{33.4 (F^2) ERP}{R^2}$	ERP = 1000 kW (Horizontal only)
	R = 110.1 meters (antenna height above ground -2 meters)
	F = 0.1 (assumed)

$$S = < 27.6 \mu\text{W}/\text{cm}^2$$

Therefore KHMT-DT is proposed to contribute less than $27.6 \mu\text{W}/\text{cm}^2$ at 2 meters above the ground. The limit for an uncontrolled environment (general population) is $347.33 \mu\text{W}/\text{cm}^2$.

KHMT-DT contributes less than 8% RFF level for an uncontrolled environment (general population) two meters above the ground.

Station KHMT(TV)

Channel 4

Freq: 66 - 72 MHz Range

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

ERP = 100 kW (Horizontal only)

R = 176.2 meters (antenna height above ground -2 meters)

F = 0.2 (assumed)

$$S = < 2.15 \mu\text{W}/\text{cm}^2$$

Therefore KHMT(TV) contributes less than $2.15 \mu\text{W}/\text{cm}^2$ at 2 meters above the ground. The limit for an uncontrolled environment (general population) is $200 \mu\text{W}/\text{cm}^2$.

KHMT(TV) contributes less than 1.1% RFF level for an uncontrolled environment (general population) two meters above the ground.

Station KMHK(FM)

Channel 238

Freq: 95.5 MHz

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

ERP = 100 kW (aural and visual)

R = 152.2 meters (antenna height above ground -2 meters)

F = 0.3 (assumed)

$$S = < 25.95 \mu\text{W}/\text{cm}^2$$

Therefore KMHK(FM) contributes less than $25.95 \mu\text{W}/\text{cm}^2$ at 2 meters above the ground. The limit for an uncontrolled environment (general population) is $200 \mu\text{W}/\text{cm}^2$.

KMHK(FM) contributes less than 13.1% RFF level for an uncontrolled environment (general population) two meters above the ground.

Therefore the total RF percentage two meters above the ground at the highest RFF level will be less than 22.1% of the limit required for an uncontrolled environment, when KHMT-DT is operational. Based on this analysis, no radiation hazard signs will be necessary.

The permittee indicates that all authorized personnel climbing the tower will be alerted to the potential zones of high field levels on the tower.

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 permittee 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 DTV 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 MEAN SEA LEVEL

ABOVE GROUND

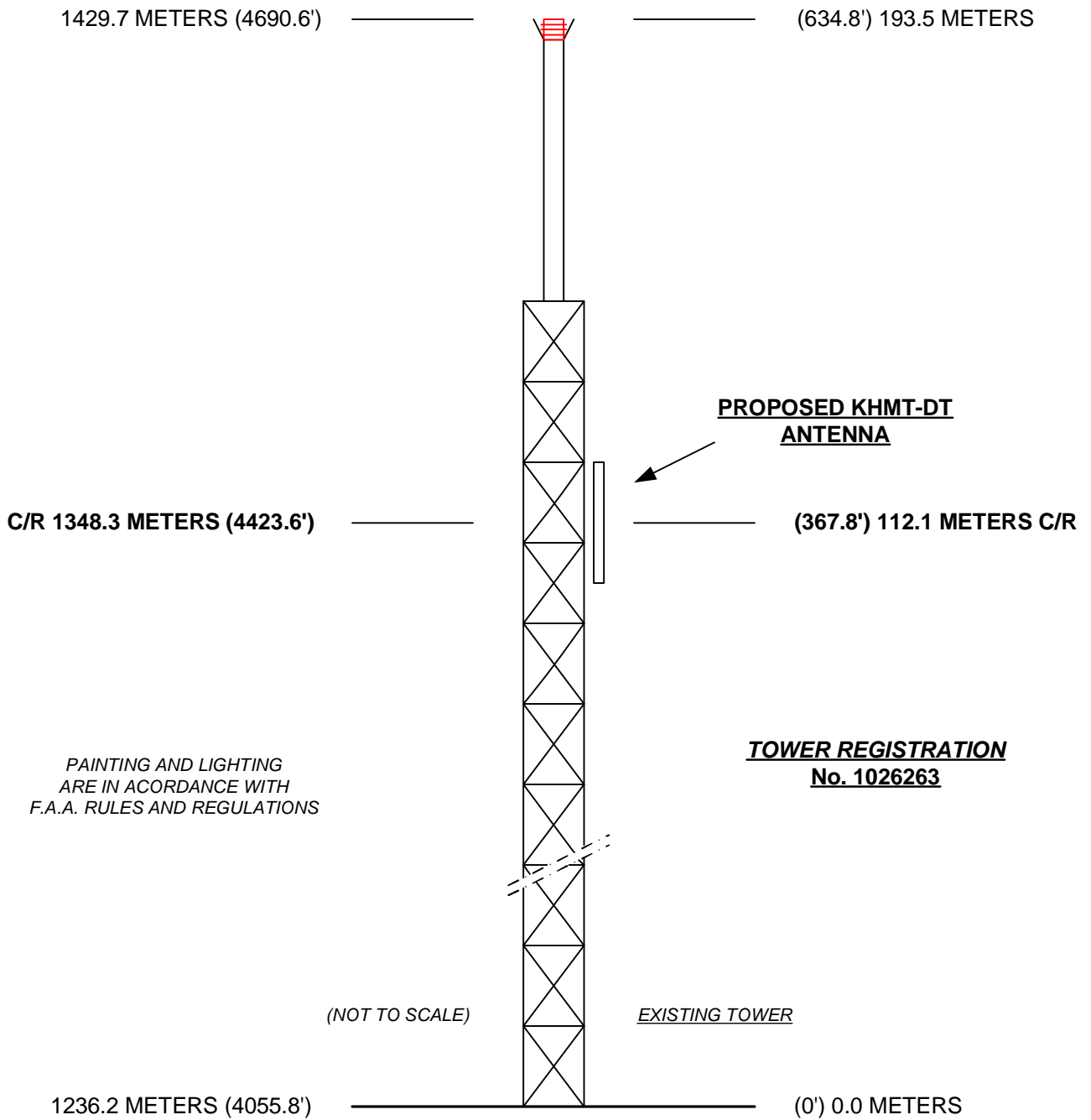


EXHIBIT E - 1
VERTICAL SKETCH
FOR THE PROPOSED OPERATION OF
KHMT-DT, HARDIN, MONTANA
JANUARY 2007

EXHIBIT E-2

ANTENNA MANUFACTURER DATA

KHMT-DT, HARDIN, MONTANA

UNAVAILABLE (SEE TEXT)

COHEN, DIPPELL AND EVERIST, P.C.

TABLE I
COMPUTED COVERAGE DATA
FOR THE PROPOSED DTV OPERATION OF
KHMT-DT, HARDIN, MONTANA
CHANNEL 22 1000 KW ERP 247.5 METERS HAAT
JANUARY 2007

Radial Bearing N ° E, T	Average*	Effective Height meters	Depression Angle	ERP At Radio Horizon kW	Distance to Contour F(50,90)	
	3.2 to 16.1 km meters				48 dBu City Grade km	41 dBu Noise-Limited km
0	1138.3	210.0	0.401	1000	74.3	85.0
45	1097.0	251.3	0.439	1000	77.5	90.2
90	1052.7	295.6	0.476	1000	82.5	96.3
135	1075.2	273.1	0.458	1000	79.8	93.3
180	1109.9	238.4	0.428	1000	76.4	88.4
225	1148.3	200.0	0.392	1000	73.6	83.9
270	1099.6	248.7	0.437	1000	77.3	89.8
315	1085.4	262.9	0.449	1000	78.6	91.8
Average	110.8	247.5				

*Based on data from FCC 3-second data base

DTV Channel 22 (518-524 MHz)
Average Elevation 3.2 to 16.1 km 1100.8 meters AMSL
Center of Radiation 1348.3 meters AMSL
Antenna Height Above Average Terrain 247.5 meters
Effective Radiated Power 1000 kW (30 dBk) Max.

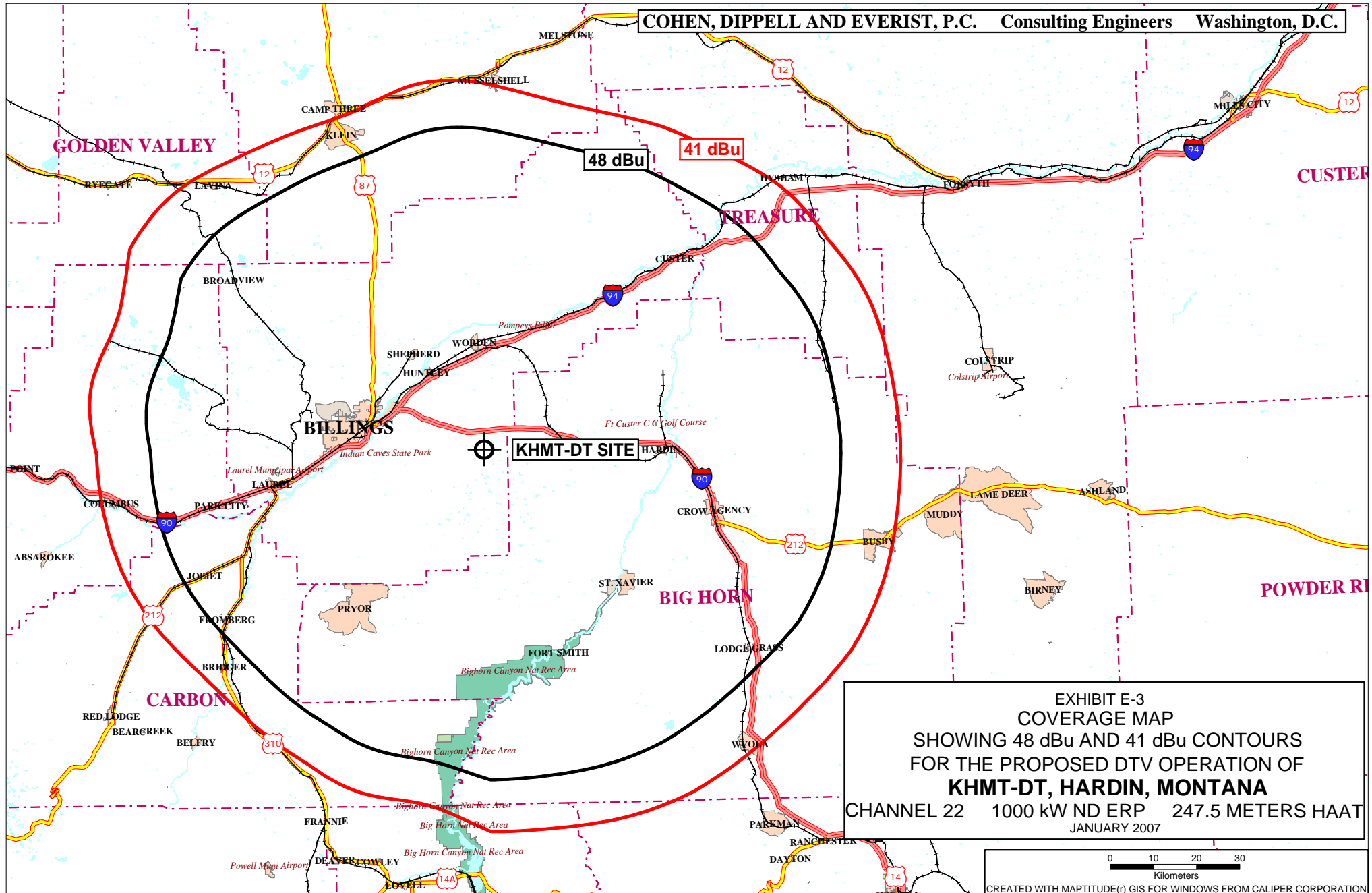
North Latitude: 45° 44' 24"
West Longitude: 108° 08' 18"

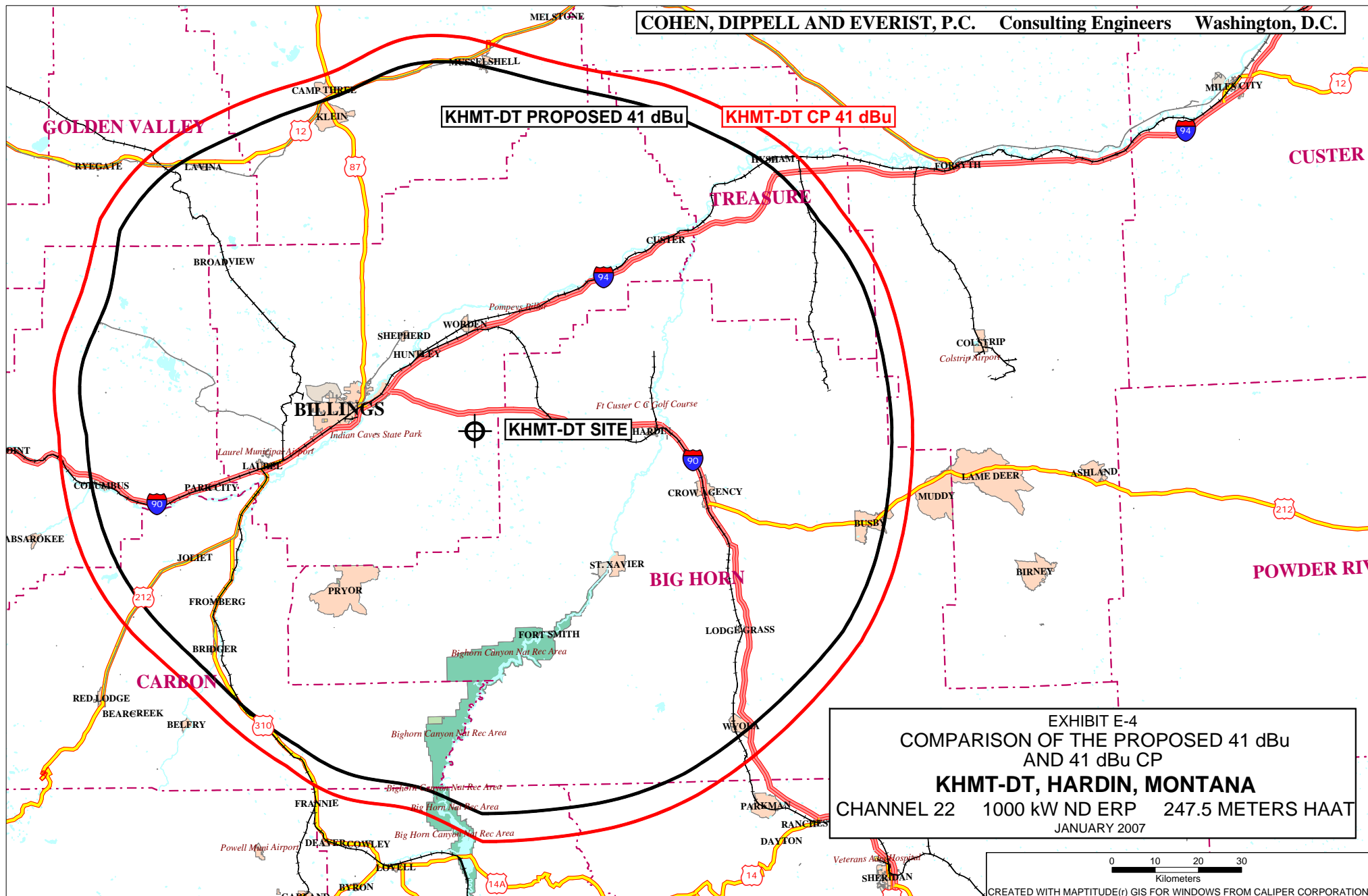
(NAD-27)

COHEN, DIPPELL AND EVERIST, P.C.

TABLE II
LONGLEY-RICE ANALYSIS
ABOVE THE OUTSTANDING CONSTRUCTION PERMIT
(FCC FILE NO. BPCDT-19991101AKB)
FOR THE PROPOSED OPERATION OF
KHMT-DT, HARDIN, MONTANA
CHANNEL 22 1000 KW ERP ND 247.5 METERS HAAT
JANUARY 2007

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Dist(km)</u>	<u>Status</u>	<u>Application Ref. No.</u>	<u>Result</u>
14	960919KI	BILLINGS MT	24.7	APP	BPCT-19960919KI	-0.02%
14	970331KF	BILLINGS MT	24.8	APP	BPCT-19970331KF	no interference
14	970331KJ	BILLINGS MT	17.3	APP	BPCT-19970331KJ	no interference
14	970331KU	BILLINGS MT	25.1	APP	BPCT-19970331KU	-0.01%
14	970331LV	BILLINGS MT	17.3	APP	BPCT-19970331LV	no interference
14	970331LZ	BILLINGS MT	24.8	APP	BPCT-19970331LZ	0.00%
14	970331LO	BILLINGS MT	24.3	APP	BPET-19970331LO	0.00%





SECTION III-D - DTV Engineering

Complete Questions 1-5 of the Certification Checklist and provide all data and information for the proposed facility, as requested in Technical Specifications, Items 1-13.

Certification Checklist: A correct answer of "Yes" to all of the questions below will ensure an expeditious grant of a construction permit. However, if the proposed facility is located within the Canadian or Mexican borders, coordination of the proposal under the appropriate treaties may be required prior to grant of the application. An answer of "No" will require additional evaluation of the applicable information in this form before a construction permit can be granted.

1. The proposed DTV facility complies with 47 C.F.R. Section 73.622 in the following respects:

- (a) It will operate on the DTV channel for this station as established in 47 C.F.R. Section 73.622. ☐ Yes ☐ No
- (b) It will operate from a transmitting antenna located within 5.0 km (3.1 miles) of the DTV reference site for this station as established in 47 C.F.R. Section 73.622. ☐ Yes ☐ No
- (c) It will operate with an effective radiated power (ERP) and antenna height above average terrain (HAAT) that do not exceed the DTV reference ERP and HAAT for this station as established in 47 C.F.R. Section 73.622. ☐ Yes ☐ No

2. The proposed facility will not have a significant environmental impact, including exposure of workers or the general public to levels of RF radiation exceeding the applicable health and safety guidelines, and therefore will not come within 47 C.F.R. Section 1.1307. ☐ Yes ☐ No

Applicant must **submit the Exhibit** called for in Item 13.

3. Pursuant to 47 C.F.R. Section 73.625, the DTV coverage contour of the proposed facility will encompass the allotted principal community. ☐ Yes ☐ No
4. The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied or are not applicable. ☐ Yes ☐ No
5. The antenna structure to be used by this facility has been registered by the Commission and will not require reregistration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely effect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7. ☐ Yes ☐ No

SECTION III-D DTV 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 Number: DTV _____ Analog TV, if any _____
2. Zone: ☐ I ☐ II ☐ III
3. Antenna Location Coordinates: (NAD 27)
- _____ ° _____ ' _____ " ☐ N ☐ S Latitude
_____ ° _____ ' _____ " ☐ E ☐ W Longitude
4. Antenna Structure Registration Number: _____
- ☐ Not applicable ☐ FAA Notification Filed with FAA
5. Antenna Location Site Elevation Above Mean Sea Level: _____ meters
6. Overall Tower Height Above Ground Level: _____ meters
7. Height of Radiation Center Above Ground Level: _____ meters
8. Height of Radiation Center Above Average Terrain: _____ meters
9. Maximum Effective Radiated Power (average power): _____ kW
10. Antenna Specifications:
- a.

Manufacturer	Model
--------------	-------
- b. Electrical Beam Tilt: _____ degrees ☐ Not Applicable
- c. Mechanical Beam Tilt: _____ degrees toward azimuth _____ degrees True ☐ Not Applicable
- Attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). Exhibit No.
- d. Polarization: ☐ Horizontal ☐ Circular ☐ Elliptical

TECH BOX

e. 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											

If a directional antenna is proposed, the requirements of 47 C.F.R. Section 73.625(c) must be satisfied. **Exhibit required.**

Exhibit No.

11. Does the proposed facility satisfy the interference protection provisions of 47 C.F.R. Section 73.623(a)? (Applicable only if **Certification Checklist** Items 1(a), (b), or (c) are answered "No.") ☐ Yes ☐ No

If "No," attach as an Exhibit justification therefor, including a summary of any related previously granted waivers.

Exhibit No.

12. If the proposed facility will not satisfy the coverage requirement of 47 C.F.R. Section 73.625, attach as an Exhibit justification therefor. (Applicable only if **Certification Checklist** Item 3 is answered "No.")

Exhibit No.

13. **Environmental Protection Act. Submit in an Exhibit** the following:

Exhibit No.

- a. If **Certification Checklist** Item 2 is answered "Yes," a brief explanation of why an Environmental Assessment is not required. Also describe in the Exhibit the steps that will be taken to limit RF radiation exposure to the public and to persons authorized access to the tower site.

By checking "Yes" to **Certification Checklist** Item 2, 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.

If **Certification Checklist** Item 2 is answered "No," an Environmental Assessment as required by 47 C.F.R. Section 1.1311.

PREPARER'S CERTIFICATION IN SECTION III MUST BE COMPLETED AND SIGNED.

KHMT-DT


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 <i>January 22, 2007</i>	
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	

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(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).