

ENGINEERING STATEMENT
RE DIGITAL FLASHCUT APPLICATION
FOR TELEVISION TRANSLATOR
K25BP-D, BILLINGS, MONTANA
CH. 25 1.48 KW ERP 1241.7 METERS RCAMSL

NOVEMBER 2010

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

COHEN, DIPPELL AND EVERIST, P. C.

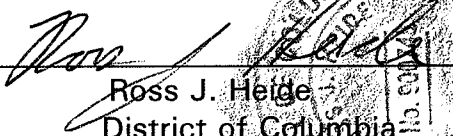
City of Washington)
) ss
District of Columbia)

Ross J. Heide, being duly sworn upon his oath, deposes and states that:

He is a graduate of the Massachusetts Institute of Technology in Operations Research and Management Science, a Registered Professional Engineer in the District of Columbia, and employed by Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1420 N Street, N.W., Suite One, Washington, D.C. 20005;

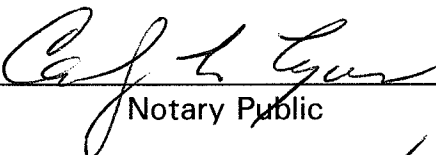
That the attached engineering report was prepared by him or under his supervision and direction and

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.



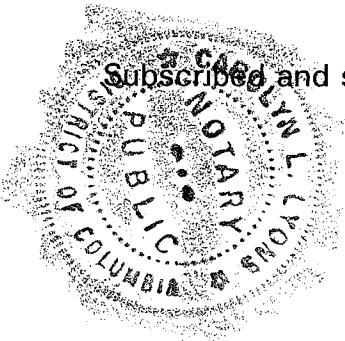
Ross J. Heide
District of Columbia
Professional Engineer
Registration No. PE900748

Subscribed and sworn to before me this 8th day of November, 2010.



Notary Public

My Commission Expires: 2/28/2013



Introduction

This engineering statement has been prepared on behalf of Nexstar Broadcasting, Inc. ("Nexstar") in support of its proposed digital flashcut of licensed television translator K25BP, Channel 25, Billings, Montana [BLTTL-19990723JD]. Nexstar proposes to locate to a tower approximately 10 km away with a center of radiation above mean sea level ("RCAMSL") of 1241.7 meters and with an ERP of 1.48 kW (non-directional).

Exhibits requested by FCC Form 346 are included with this report.

Antenna Site

The proposed Channel 25 antenna will be side-mounted on an existing tower with a center of radiation of 61.0 meters (200 feet) above ground level. The proposed antenna site is located at the end of Old Hardin Rd., Billings, Montana. The geographic coordinates (NAD-27) of the existing site are as follows:

North Latitude: 45° 48' 27.2"

West Longitude: 108° 20' 25.3"

The tower registration number for their antenna structure is 1000794.

Transmitting Equipment

The following data provides the pertinent information concerning the proposed digital television translator operation.

Transmitter:	Type-approved, Harris Ranger, 129 W average digital power output ("TPO") with full power DTV emission mask
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K25BP-D, BILLINGS, MONTANA

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Antenna: Andrew, Type ALP8L1-HSO horizontally polarized, omni-directional antenna with a power gain of 15.39 (11.87 dB) and 1.0° electrical beam tilt

Transmission Line: 73.2 meters (240 feet) of 1-5/8", 50 ohm, foam dielectric, coaxial line; 0.530 dB loss/100 ft.

Power Data

Transmitter output	129 W	1.09 dBW
Transmission line efficiency/loss	74.62%	-1.27 dB
Power input to antenna	96 W	19.82 dBW
Antenna power gain (Peak Lobe -1.0°)	15.39	11.87 dB
Effective Radiated Power	1.48 kW	1.70 dBk

Elevation Data

Vertical dimension of Ch. 25 antenna (side-mounted w/o beacon or lightning rod)	6.0 meters 19.8 feet
Overall height of tower above ground (including beacon and lightning rod)	121.9 meters 400 feet
Elevation of radiation center of Ch. 25 antenna above ground	61.0 meters 200 feet
Elevation of site above mean sea level	1180.7 meters 3873.7 feet
Elevation of center of Ch. 25 antenna above mean sea level	1241.7 meters 4073.7 feet
Overall tower height above mean sea level (including beacon and lightning rod)	1302.6 meters 4273.6 feet

Allocation and Waiver Request

The attached Table II shows the stations potentially affected by the proposed K25BP-D operation. The Longley-Rice (OET Bulletin 69) method predicts no impermissible interference employing the full power DTV emission mask of §73.622(h). A waiver is hereby requested to employ this mask for Longley-Rice interference analysis in place of the stringent mask of §74.793(c).

Topographic Data

The average elevation data of each radial from 3.2-16.1 km was obtained from the 3-second database. The distances along each radial to the limits of the protected 51 dBu F(50,90) and noise-limited 41 dBu F(50,90) contours were determined from reference to the propagation data for Channels 14-69, as published by the FCC in Figure 10b, Section 73.699 of the FCC Rules without the use of the roughness correction.

Utilizing the formula in Section 73.684(c)(1) for the effective heights shown on the attached tabulation, it is found that the depression angle A_h , varies between 0.27 to 0.48 degrees. The relative field in the vertical radiation pattern at these angles is greater than 90% of the maximum. Therefore, maximum power at the vertical angle was used in determining the distance to the respective contours.

Contour Data

The distances to the contours, average elevations, and effective antenna heights are included on the attached tabulation (Table I). The contours determined from these distances are shown on the attached map, Exhibit E-3.

Existing and Proposed Service Areas

The map in Exhibit E-3 also compares the analog service contour (74 dBu) for the licensed translator to the normally digital protected contour of the facilities proposed herein.

Environmental Statement

According to the applicant, the proposed facilities are not located near any known wilderness area, wildlife preserve, historic place, or Indian religious site. The proposed facilities are not located in a flood plain area. The proposed facilities will not affect or jeopardize the threatened or endangered species or their critical habitats. The installation of a DTV antenna on the existing tower does not involve any significant changes in the surface features.

The proposed facilities will not affect any districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.

The FCC guideline for human exposure to RF radiation level for Channel 25 (536-542 MHz) is 1787 and 357 microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$) for controlled and uncontrolled environment, respectively. Computations made according to OET Bulletin 65 (Edition 97-01) show that based on the maximum ERP of 1.48 kW with 0.25 maximum antenna relative field factor towards ground and 61.0 meters antenna radiation center above ground, the RF radiation level would be less than $0.9 \mu\text{W}/\text{cm}^2$ at 2 meters above ground. This value is less than 0.25% of the FCC guideline for an uncontrolled environment.

With respect to work performed near the radiating elements, the applicant will establish procedures in coordination with other stations on the site to reduce or turn off the power to ensure that workers are not exposed to RF radiation levels exceeding FCC guidelines.

For the reasons stated above, the proposed digital television translator operation does not involve any action specified in Section 1.1307 of the Commission's Rules; therefore, under Section 1.1306, it is categorically excluded from environmental processing.

TABLE I
COMPUTED COVERAGE DATA
FOR THE PROPOSED DTV OPERATION OF
K25BP-D, BILLINGS, MONTANA
CHANNEL 25 1.48 KW ERP 1241.7 METERS RCAMSL
NOVEMBER 2010

<u>Radial</u> <u>Bearing</u> (N ° E, T)	<u>Average*</u> <u>Elevation</u>	<u>Effective</u> <u>Height</u> meters	<u>Depression</u> <u>Angle</u> degrees	<u>ERP At</u> <u>Radio</u> <u>Horizon</u> kW	<u>Distance to Contour F(50,90)</u>	
	<u>3.2 to 16.1 km</u> meters				<u>Noise-Limited</u> <u>41 dBu</u> km	<u>Protected</u> <u>51 dBu</u> km
0	956.0	285.7	0.468	1.48	54.7	42.3
10	951.3	290.4	0.472	1.48	54.9	42.5
20	963.3	278.4	0.462	1.48	54.2	42.0
30	973.2	268.5	0.454	1.48	53.7	41.5
40	983.6	258.1	0.445	1.48	53.1	41.0
50	1005.7	236.0	0.426	1.48	51.8	39.9
60	1036.4	205.3	0.397	1.48	50.0	38.3
70	1080.4	161.3	0.352	1.48	47.4	35.8
80	1095.1	146.6	0.335	1.48	46.4	34.8
90	1100.7	141.0	0.329	1.48	46.0	34.4
100	1114.5	127.2	0.312	1.48	45.1	33.5
110	1086.9	154.8	0.345	1.48	47.0	35.3
120	1115.6	126.1	0.311	1.48	45.1	33.4
130	1090.6	151.1	0.341	1.48	46.7	35.1
140	1094.5	147.2	0.336	1.48	46.4	34.8
150	1071.8	169.9	0.361	1.48	48.0	36.3
160	1041.8	199.9	0.392	1.48	49.7	38.0
170	1062.6	179.1	0.371	1.48	48.5	36.8
180	1082.0	159.7	0.350	1.48	47.3	35.7
190	1091.8	149.9	0.339	1.48	46.6	35.0
200	1146.6	95.1	0.270	1.48	42.3	30.5
210	1134.5	107.2	0.287	1.48	43.7	31.9
220	1107.7	134.0	0.321	1.48	45.6	34.0
230	1059.8	181.9	0.374	1.48	48.7	37.0
240	1028.1	213.6	0.405	1.48	50.5	38.7
250	1007.0	234.7	0.424	1.48	51.8	39.9
260	983.5	258.2	0.445	1.48	53.1	41.0
270	996.9	244.8	0.433	1.48	52.3	40.4

TABLE I
COMPUTED COVERAGE DATA
FOR THE PROPOSED DTV OPERATION OF
K25BP-D, BILLINGS, MONTANA
CHANNEL 25 1.48 KW ERP 1241.7 METERS RCAMSL
NOVEMBER 2010

Radial	Average*			ERP At	<u>Distance to Contour F(50,90)</u>	
<u>Bearing</u>	<u>Elevation</u>	Effective	Depression	Radio	Noise-Limited	Protected
(N ° E, T)	3.2 to 16.1 km	<u>Height</u>	<u>Angle</u>	<u>Horizon</u>	<u>41 dBu</u>	<u>51 dBu</u>
	meters	meters	degrees	kW	km	km
280	985.4	256.3	0.443	1.48	53.0	40.9
290	975.9	265.8	0.452	1.48	53.5	41.4
300	976.0	265.7	0.452	1.48	53.5	41.4
310	999.5	242.2	0.431	1.48	52.2	40.2
320	986.2	255.5	0.443	1.48	53.0	40.9
330	977.5	264.2	0.450	1.48	53.4	41.3
340	975.3	266.4	0.452	1.48	53.6	41.4
350	971.3	270.4	0.455	1.48	53.8	41.6

* Based on data from FCC 3-second database

DTV Channel 25 (536-542 MHz)
Average Elevation 3.2 to 16.1 km 1036.2 meters AMSL
Center of Radiation 1241.7 meters AMSL
Antenna Height Above Average Terrain 204.12 meters
Effective Radiated Power 1.48 kW (1.7 dBk) Max.

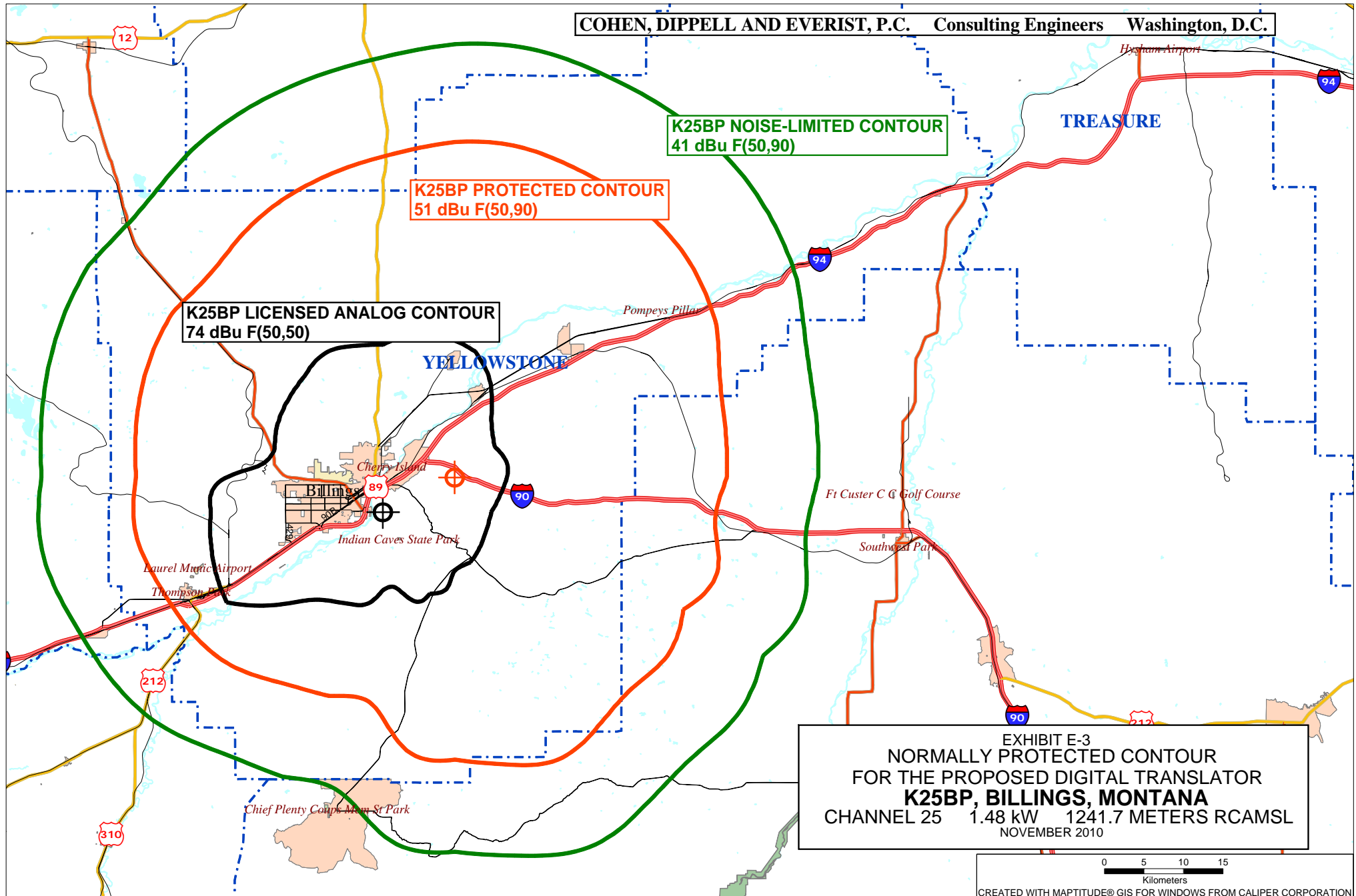
North Latitude: 45° 48' 27.2"
West Longitude: 108° 20' 25.3"

(NAD-27)

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TABLE II
LONGLEY-RICE INTERFERENCE
FOR THE OPERATION FOR
K25BP-D, BILLINGS, MONTANA
CHANNEL 25 1.48 KW ERP 1241.7 METERS RCAMSL
NOVEMBER 2010

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Dist(km)</u>	<u>Status</u>	<u>FCC File No.</u>	<u>Result</u>
23	K23HI	BILLINGS MT	9.7	CP	BPTTL-20090824AEC	No interference
23	K23HI	BILLINGS MT	15.6	LIC	BLTTL-20070809ABT	No interference
24	K24IQ-D	BILLINGS MT	0	CP	BNPDTL-20090825BFB	No interference
24	K24FL-D	COLUMBUS MT	74.1	LIC	BLDTT-20090831ADK	No interference
24	K24GD-D	HARDIN MT	62.7	LIC	BLDTL-20100907ACF	No interference
24	K24HW-D	SOUTH FORK, ETC. WY	197.3	CP MO	BMPDTL-20100628BWD	0.00%
25	K25JY-D	EMIGRANT, ETC. MT	173.1	CP	BDCCDTT-20061031ABF	No interference
25	K25LM-D	GREAT FALLS MT	294.8	CP	BNPDTL-20091221AII	No interference
25	NEW	GREAT FALLS MT	96.6	APP	BNPDTL-20100505AHC	1.87%
25	KXLH-LP	HELENA MT	302.4	LIC	BLTT-19950928IK	No interference
25	K25LF-D	PHILIPSBURG MT	389.8	CP	BNPDTT-20090831AAS	0.00%
25	NEW	TERRY MT	250.4	APP	BNPDTL-20100506AEL	No interference
25	K25HO	WOLF POINT MT	327.3	LIC	BLTT-20041213AAF	No interference
25	NEW	CASPER WY	340.5	APP	BNPDTL-20100510ACS	No interference
25	K25ID	TETON VILLAGE WY	316.7	LIC	BLTT-20050304ACC	No interference
25	K25LI-D	WRIGHT WY	301.9	LIC	BLDTT-20100617AJX	No interference
26	K26GL	COLUMBUS MT	74.1	CP	BDFCDTT-20090630AGN	No interference
26	K26GL	COLUMBUS MT	74.1	LIC	BLTT-20040929AFE	No interference
26	NEW	WORDON MT	37.4	APP	BNPDTL-20100510ABT	No interference
26	K26BE	SHERIDAN WY	173.5	LIC	BLTTL-19910919JS	0.00%
27	K27IM	BILLINGS MT	10	LIC	BLTT-20060711ABH	No interference



Section III - Engineering (Digital)

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. Translator Input Channel No. _____
3. Station proposed to be rebroadcast:

Call Sign	City	State	Channel
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4. Antenna Location Coordinates: (NAD 27)

____° ____' ____" ☐ N ☐ S Latitude
____° ____' ____" ☐ E ☐ W Longitude

5. Antenna Structure Registration Number: _____

☐ Not applicable See Explanation
in Exhibit No. ☐ FAA Notification Filed with FAA

6. Antenna Location Site Elevation Above Mean Sea Level: _____ meters
7. Overall Tower Height Above Ground Level: _____ meters
8. Height of Radiation Center Above Ground Level: _____ meters
9. Maximum Effective Radiated Power (ERP): _____ kW
10. Transmitter Output Power: _____ kW
11. a. Transmitting Antenna: ☐ Nondirectional ☐ Directional ☐ Directional composite

Manufacturer	Model
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- b. Electrical Beam Tilt: _____ degrees ☐ Not applicable

c. Directional Antenna Relative Field Values:

Rotation: _____ ° ☐ No rotation ☐ N/A (Nondirectional)

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.

12. **Out-of-Channel Emission Mask:** Simple ☐ Stringent ☐

CERTIFICATION

13. **Interference.** The proposed facility complies with all of the following applicable rule sections. 47 C.F.R. Sections 74.709, 74.793(e), 74.793(f), 74.793(g), 74.793(h), 74.794(b) and 73.1030. ☐ Yes ☐ No

See Explanation in Exhibit No.

14. **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 RF compliance. An **Exhibit is required.** ☐ Yes ☐ No

See Explanation in Exhibit No.

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.

15. **Channels 52-59.** If the proposed channel is within channels 52-59, the applicant certifies compliance with the following requirements, as applicable:

☐ The applicant is applying for a digital companion channel for which no suitable channel from channel 2-51 is available.

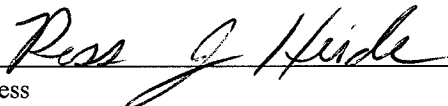
☐ Pursuant to Section 74.786(d), the applicant has notified, within 30 days of filing this application, all commercial wireless licensees of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.

PREPARER'S CERTIFICATION ON PAGE 8 MUST BE COMPLETED AND SIGNED.

16. **Channels 60-69.** If the proposed channel is within channels 60-69, the applicant certifies compliance with the following requirements, as applicable:

- ☐ Pursuant to Section 74.786(e), the applicant has notified, within 30 days of filing this application, all commercial wireless licensees of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees,
- ☐ Pursuant to Section 74.786(e), the applicant proposing operation on channel 63, 64, 68 and 69 ("public safety channels") has secured a coordinated spectrum use agreement(s) with 700 MHz public safety regional planning committee(s) and state frequency administrator(s) of the region(s) and state(s) within which the antenna site of the digital LPTV or TV translator station is proposed to locate, and those adjoining regions and states with boundaries within 75 miles of the proposed station location.
- ☐ Pursuant to Section 74.786(e), an applicant for a channel adjacent to channel 63, 64, 68 or 69 has notified, within 30 days of filing this application, the 700 MHz public safety regional planning committee(s) and state administrator(s) of the region and state containing the proposed digital LPTV or TV translator antenna site and regions and states whose geographic boundaries lie within 50 miles of the proposed LPTV or TV translator antenna site.

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 Ross Heide		Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature 		Date November 8, 2010	
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).