

ENGINEERING STATEMENT
RE MODIFICATION OF CONSTRUCTION PERMIT
(FCC FILE NO. BMPCDT-20030807ABS)
ON BEHALF OF
KTVQ-DT, BILLINGS, MONTANA
CHANNEL 10 26.1 KW ERP 180 METERS HAAT

JUNE 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)

Ryan Felmlee, being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer of the Pennsylvania State University, has successfully completed the Engineer-In-Training examination ("EIT") in the State of Virginia, and is a staff engineer 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;

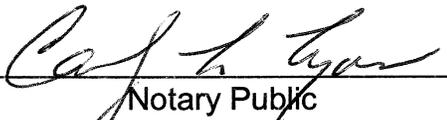
That the attached engineering report was prepared by him or under his supervision and direction and

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.



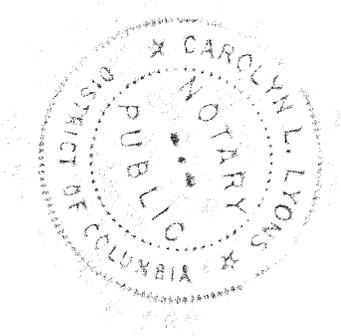
Ryan Felmlee
District of Columbia

Subscribed and sworn to before me this 29th day of June, 2006.



Notary Public

My Commission Expires: 2/20/2008



This engineering statement has been prepared on behalf of KTVQ Communications, Inc. licensee of KTVQ-TV, Billings, Montana. The purpose of this engineering statement is to request modification of its outstanding construction permit (FCC File No. BMPCDT-20030807ABS) for digital television ("DTV") operation.

KTVQ Communications, Inc. ("KTVQ") operates its NTSC television station KTVQ(TV) on Channel 2 with a maximum visual effective radiated power ("ERP") of 100 kW at an antenna height above average terrain ("HAAT") of 165 meters. KTVQ-DT has been allotted DTV Channel 17 with facilities of 1000 kW DA at an HAAT of 165 meters.¹ KTVQ-DT has been authorized in Report and Order, MM Docket No. 02-116 (RM-10233) to substitute DTV Channel 10 in place of DTV Channel 17. KTVQ-DT has an outstanding construction permit (FCC File No. BMPCDT-20030807ABS) with facilities of 160 kW ERP (non-directional) at an HAAT of 165 meters and proposes to modify these facilities to 26.1 kW non-directional ERP at 180 meters HAAT.

The KTVQ-DT antenna will be top-mounted on an existing tower (ASRN 1250854) with an overall height above ground of 119.5 meters. A vertical sketch of the existing structure is included as Exhibit E-1.

The geographic coordinates of the site are as follows:

North Latitude: 45° 46' 1"

West Longitude: 108° 27' 26"

NAD-27

The following data shows the pertinent information concerning the proposed operation.

¹In the Matter of Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service", MM Docket No. 87-286, Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order (FCC 98-24), 2/12/98, DTV Table of Allotments.

Equipment Data

Antenna: Dielectric, Type TF-6HT-H DC with 0.5° electrical beam tilt. The vertical plane pattern and other exhibits required by Section 73.625(c) are herein included as Exhibits E-2.

Transmission Line: 117.3 meters (385 ft) of Dielectric, FLEXLine, 1-5/8" 50 ohm or equivalent.

Power Data

Transmitter output (post filter)	5.3 kW	7.24 dBk
Transmission line efficiency/loss	75.7%	1.21 dB
Input power to antenna	4.01 kW	6.03 dBk
Antenna power gain, main lobe	6.5	8.13 dB
Effective Radiated Power, maximum	26.1 kW	14.16 dBk

Elevation Data

Elevation of site above mean sea level	1118.0 meters (3668 feet)
Overall height above ground of the existing antenna structure (including beacon)	119.5 meters (392 feet)
Overall height above mean sea level of existing tower (including beacon)	1237.5 meters (4060 feet)
Center of radiation of Channel 10 antenna above ground	112.4 meters (368.8 feet)
Center of radiation of Channel 10 antenna above mean sea level	1230.4 meters (4036.7 feet)
Antenna height above average terrain	180 meters

NOTE: Slight height differences result due to conversion to metric.

Authorized Effective Radiated Power

The maximum ERP authorized by the outstanding construction permit for the DTV operation is 160 kW at 165 meters HAAT operating on Channel 10. Station KTVQ-DT is proposing to operate its modified facility with a maximum ERP of 26.1 kW and 180 meters HAAT on Channel 10. This power and height will ensure that it does not extend beyond the predicted 36 dBu contour in any direction as authorized by the outstanding construction permit.

The attached map (Exhibit E-3) shows the computed F(50,90) 36 dBu contour predicted according to Section 73.625(b) of the Commission's rules based on the proposed facilities of 26.1 kW ERP and 180 meters HAAT on Channel 10.

Principal Community Coverage

The proposed operation of KTVQ-DT places a predicted 43 dBu contour over the community of Billings, Montana.

Topographic Data

The average elevation data along the eight cardinal radials 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 each of the radials for every ten degrees in azimuth to the predicted F(50,90) 43 dBu and 36 dBu contours, the average elevations, and the effective antenna heights.

The distances along each radial to the limits of F(50,90) 43 dBu and 36 dBu contours were determined as specified in Section 73.625(b) by reference to the propagation data for Channels 7-13, as published by the Commission in Figures 10 and 10a, Section 73.699 of its rules.

Other Licensed and Broadcast Facilities

There are no AM stations within 3.22 km of the existing KTVQ-DT tower site. There is one FM station operating within 100 meters of the existing site. There are six TV Translator facilities and, with the exception of KTVQ-TV, there are no other NTSC stations operating within 100 meters of the site.

No adverse technical effect is anticipated by the proposed DTV operation to any other FCC licensed facility. If required, the licensee of KTVQ-DT will install filters or take other measures as necessary to resolve the problem.

Radio Frequency Field Level Calculations

<u>Station</u>	<u>Channel</u>	<u>ERP</u> kW	<u>Field</u>	<u>RCAGL*</u> (meters)	<u>S-Calculated</u> $\mu\text{W}/\text{cm}^2$	<u>S-Limit</u> $\mu\text{W}/\text{cm}^2$	<u>% of Limit**</u>
KBBB-FM (existing)	279	100	0.3	74.0	109.8	200	54.89
KTVQ(TV) (existing)	2	100	0.2	102	6.4	200	3.21
KTVQ-DT (proposed)	10	160	0.25	110.4	4.5	200	2.24

*RCAGL Minus 2 meters

**Maximum Exposure Limit for an Uncontrolled Environment

Based on the elevation pattern from the manufacturer's antenna data, a maximum downward field of 0.25 would create a field level of $4.5 \mu\text{W}/\text{cm}^2$ at the base of the tower. Therefore, the proposed 26.1 kW operation of KTVQ-DT would contribute approximately 2.24% of the Maximum Permissible Exposure Limit for an uncontrolled environment and general population.

Authorized personnel and rigging contractors will be alerted to the potential zone of high radiation on the tower, and if necessary, the station 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. The tower site is located inside a chain link fence with a locked gate to prevent unauthorized access to the tower. Workers and the general public, therefore, will not be subjected to RFF levels in excess of the current FCC guidelines.

Environmental Statement

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 proposed facilities are not located in an officially designated wilderness area.
- (a)(2) The proposed facilities are 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 will not affect any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.
- (a)(5) The proposed facilities are not located near any known Indian religious sites.
- (a)(6) The proposed facilities are not located in a flood plain.
- (a)(7) The installation of the DTV facilities on an existing tower at an existing site will not involve a significant change in surface features of the ground in the vicinity of the tower.
- (a)(8) The existing tower lighting will remain unchanged.
- (b) Workers and the general public will not be subjected to RFF levels in excess of the current FCC guidelines contained in OET Bulletin 65 (Edition 97-01) and Supplement A. Authorized personnel will be alerted to areas of the antennas where potential radiation levels are in excess of the FCC guidelines. A security fence with a locked gate precludes access to the tower site.

TABLE I
COMPUTED COVERAGE DATA
FOR THE PROPOSED DTV OPERATION OF
KTVQ-DT, BILLINGS, MONTANA
CHANNEL 10 26.1 KW 180 METERS HAAT
JUNE 2006

<u>Radial Bearing</u> N ° E, T	Average*	<u>Effective Height</u> meters	<u>Depression Angle</u>	<u>ERP At Radio Horizon</u> kW	<u>Distance to Contour F(50,90)</u>	
	<u>Elevation 3.2 to 16.1 km</u> meters				<u>43 dBu City Grade</u> km	<u>36 dBu Noise-Limited</u> km
0	993.9	236.5	0.426	26.1	84.3	96.7
45	1022.4	208.0	0.399	26.1	82.3	94.2
90	1083.7	146.7	0.335	26.1	76.8	88.5
135	1104.7	125.7	0.311	26.1	73.3	85.3
180	1122.3	108.1	0.288	26.1	70.0	81.6
225	1058.1	172.3	0.364	26.1	79.6	91.0
270	982.0	248.4	0.437	26.1	85.0	97.5
315	1035.3	195.1	0.387	26.1	81.3	93.1
Average	1050	180.0				

*Based on data from FCC 3-second data base

DTV Channel 10 (192-198 MHz)
Average Elevation 3.2 to 16.1 km 1050 meters AMSL
Center of Radiation 1230.4 meters AMSL
Antenna Height Above Average Terrain 180 meters
Effective Radiated Power 26.1 kW dBk)

North Latitude: 45° 46' 01"
West Longitude: 108° 27' 26"

(NAD-27)

ABOVE GROUND

ABOVE MEAN SEA LEVEL

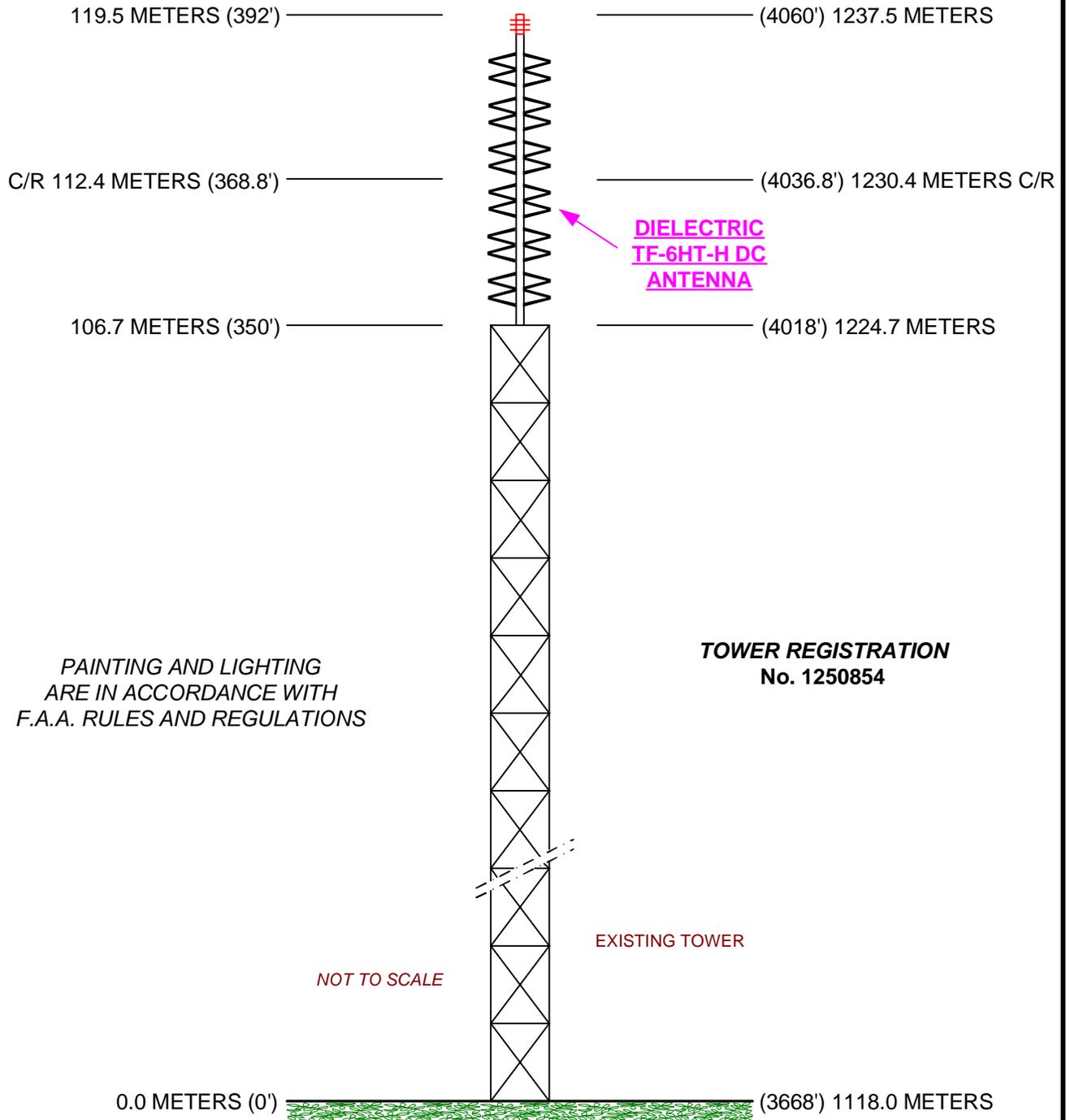


EXHIBIT E-1
VERTICAL SKETCH
FOR THE PROPOSED DTV OPERATION OF
KTVQ-DT, BILLINGS, MONTANA
JUNE 2006

EXHIBIT E-2

ANTENNA MANUFACTURER DATA

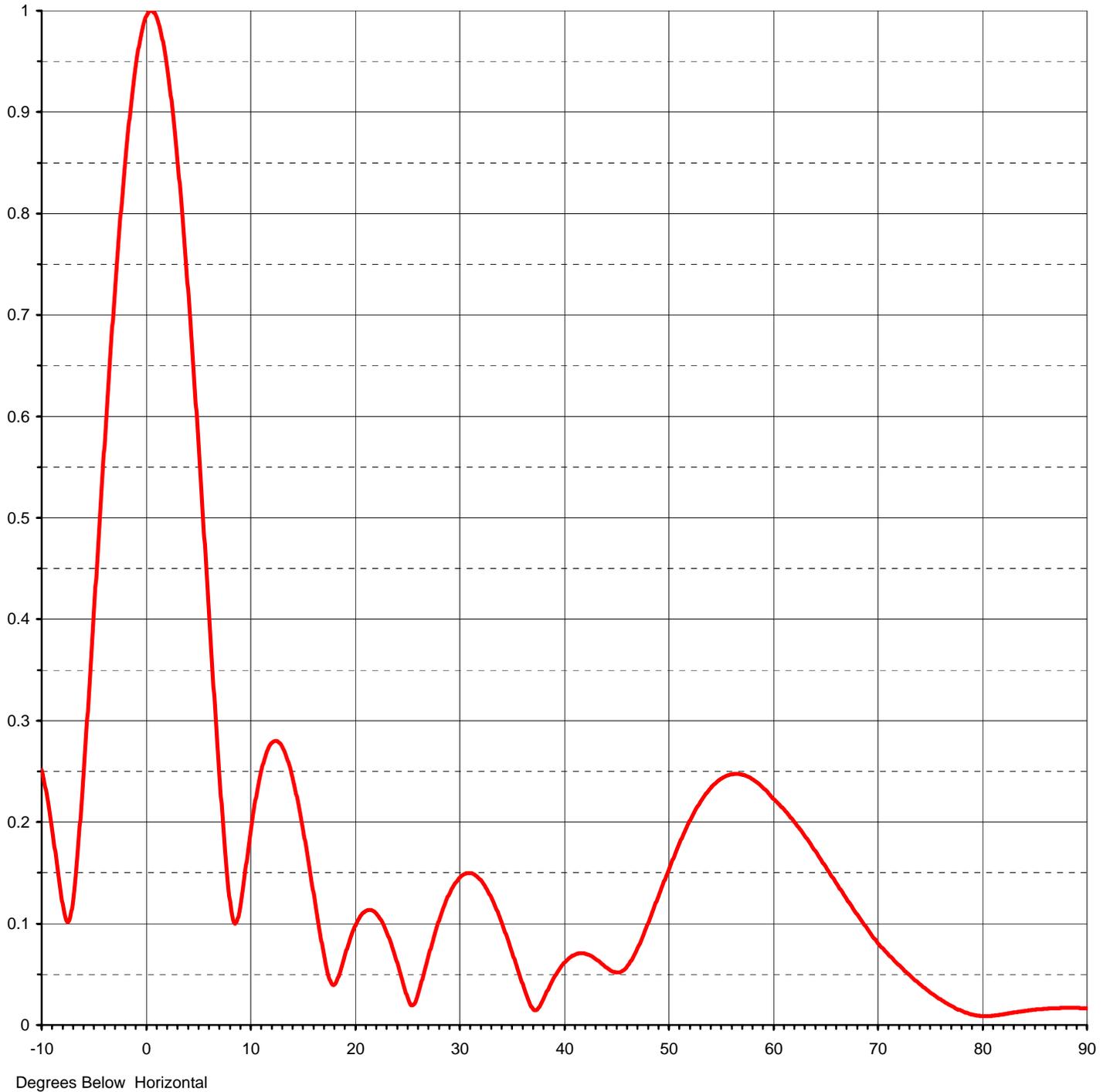
KTVQ-DT, BILLINGS, MONTANA



Proposal Number **DCA-11080**
Date **22-Jul-05**
Call Letters **KTVQ-DT** Channel **10**
Location **Billings, MT**
Customer
Antenna Type **TF-6HT-H DC**

ELEVATION PATTERN

RMS Gain at Main Lobe	6.50 (8.13 dB)	Beam Tilt	0.50 deg
RMS Gain at Horizontal	6.40 (8.06 dB)	Frequency	195.00 MHz
Calculated / Measured	Calculated	Drawing #	06S065050-90





Proposal Number **DCA-11080**
 Date **22-Jul-05**
 Call Letters **KTVQ-DT** Channel **10**
 Location **Billings, MT**
 Customer
 Antenna Type **TF-6HT-H DC**

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **06S065050-90**

Angle	Field										
-10.0	0.251	2.4	0.912	10.6	0.224	30.5	0.148	51.0	0.176	71.5	0.064
-9.5	0.226	2.6	0.894	10.8	0.236	31.0	0.150	51.5	0.188	72.0	0.059
-9.0	0.193	2.8	0.874	11.0	0.246	31.5	0.148	52.0	0.199	72.5	0.054
-8.5	0.156	3.0	0.852	11.5	0.265	32.0	0.144	52.5	0.209	73.0	0.049
-8.0	0.119	3.2	0.829	12.0	0.277	32.5	0.137	53.0	0.218	73.5	0.045
-7.5	0.101	3.4	0.805	12.5	0.280	33.0	0.128	53.5	0.226	74.0	0.040
-7.0	0.122	3.6	0.780	13.0	0.276	33.5	0.117	54.0	0.233	74.5	0.036
-6.5	0.176	3.8	0.753	13.5	0.265	34.0	0.104	54.5	0.238	75.0	0.032
-6.0	0.247	4.0	0.725	14.0	0.248	34.5	0.090	55.0	0.242	75.5	0.029
-5.5	0.325	4.2	0.696	14.5	0.225	35.0	0.075	55.5	0.245	76.0	0.025
-5.0	0.407	4.4	0.666	15.0	0.199	35.5	0.059	56.0	0.247	76.5	0.022
-4.5	0.489	4.6	0.636	15.5	0.169	36.0	0.043	56.5	0.248	77.0	0.019
-4.0	0.571	4.8	0.605	16.0	0.137	36.5	0.029	57.0	0.247	77.5	0.016
-3.5	0.650	5.0	0.573	16.5	0.105	37.0	0.017	57.5	0.245	78.0	0.014
-3.0	0.724	5.2	0.540	17.0	0.075	37.5	0.015	58.0	0.243	78.5	0.012
-2.8	0.752	5.4	0.507	17.5	0.050	38.0	0.024	58.5	0.239	79.0	0.010
-2.6	0.779	5.6	0.474	18.0	0.039	38.5	0.034	59.0	0.235	79.5	0.009
-2.4	0.804	5.8	0.440	18.5	0.048	39.0	0.045	59.5	0.230	80.0	0.009
-2.2	0.829	6.0	0.407	19.0	0.065	39.5	0.053	60.0	0.224	80.5	0.009
-2.0	0.852	6.2	0.374	19.5	0.082	40.0	0.060	60.5	0.219	81.0	0.009
-1.8	0.873	6.4	0.341	20.0	0.096	40.5	0.065	61.0	0.214	81.5	0.010
-1.6	0.894	6.6	0.309	20.5	0.106	41.0	0.069	61.5	0.208	82.0	0.010
-1.4	0.912	6.8	0.278	21.0	0.112	41.5	0.071	62.0	0.202	82.5	0.011
-1.2	0.929	7.0	0.247	21.5	0.113	42.0	0.071	62.5	0.195	83.0	0.012
-1.0	0.945	7.2	0.218	22.0	0.111	42.5	0.069	63.0	0.188	83.5	0.013
-0.8	0.959	7.4	0.190	22.5	0.104	43.0	0.066	63.5	0.181	84.0	0.014
-0.6	0.970	7.6	0.164	23.0	0.094	43.5	0.062	64.0	0.173	84.5	0.014
-0.4	0.980	7.8	0.141	23.5	0.081	44.0	0.058	64.5	0.164	85.0	0.015
-0.2	0.988	8.0	0.122	24.0	0.065	44.5	0.054	65.0	0.156	85.5	0.016
0.0	0.995	8.2	0.108	24.5	0.047	45.0	0.052	65.5	0.148	86.0	0.016
0.2	0.998	8.4	0.101	25.0	0.030	45.5	0.052	66.0	0.140	86.5	0.016
0.4	1.000	8.6	0.101	25.5	0.019	46.0	0.056	66.5	0.132	87.0	0.017
0.6	1.000	8.8	0.107	26.0	0.027	46.5	0.064	67.0	0.124	87.5	0.017
0.8	0.997	9.0	0.117	26.5	0.045	47.0	0.073	67.5	0.117	88.0	0.017
1.0	0.993	9.2	0.131	27.0	0.064	47.5	0.085	68.0	0.109	88.5	0.017
1.2	0.987	9.4	0.146	27.5	0.083	48.0	0.098	68.5	0.102	89.0	0.017
1.4	0.979	9.6	0.161	28.0	0.100	48.5	0.111	69.0	0.094	89.5	0.017
1.6	0.969	9.8	0.169	28.5	0.115	49.0	0.124	69.5	0.087	90.0	0.016
1.8	0.958	10.0	0.184	29.0	0.127	49.5	0.138	70.0	0.080		
2.0	0.944	10.2	0.198	29.5	0.137	50.0	0.151	70.5	0.075		
2.2	0.929	10.4	0.212	30.0	0.144	50.5	0.164	71.0	0.069		

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.