

ENGINEERING REPORT RE  
APPLICATION FOR CONSTRUCTION PERMIT  
FOR NEW DTV STATION  
KWTV-DT, OKLAHOMA CITY, OKLAHOMA  
CHANNEL 39 1000 KW 479 METERS

SEPTEMBER 1999

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### Introduction

This engineering report has been prepared on behalf of Kelley International Licensing, L.L.C., licensee of TV station KWTV, Oklahoma City, Oklahoma, in support of its application for construction permit for a new digital television (DTV) station. At present, KWTV operates on analog Channel 9 with 316 kW effective radiated power (ERP) and 465 meters antenna height above average terrain (HAAT). KWTV has been allotted Channel 39 for its digital TV operation with 840.8 kW maximum ERP and 465 meters HAAT from its analog Channel 9 antenna site. It is proposed to operate KWTV-DT on Channel 39 with a non-directional ERP of 1000 kW at 479 meters HAAT from a new community tower which is located 5.4 km north from the licensed KWTV site. The proposed operation from the new tower will comply with the Commission's guidelines with respect to protection afforded to other DTV and existing analog TV stations.

### Antenna Site

It is proposed to install the Channel 39 DTV antenna on a new guyed tower, located at corner of North Kelley Avenue and 122nd Street, Oklahoma City, Oklahoma County, Oklahoma. The geographic coordinates (NAD-27) of the proposed tower are as follows.

North Latitude: 35° 35' 52"

West Longitude: 97° 29' 22"

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

Antenna and Elevation Data

Antenna:	Andrew	Model ATW25H3H
	Beam Tilt	0.75 degrees electrical
Elevation of the site above mean sea level:		337.0 meters
Elevation of the top of supporting structure: above ground		499.5 meters
Elevation of the top of supporting structure: above mean sea level		836.5 meters
Height of DTV antenna radiation center: meters above ground		491.0 meters
Height of DTV antenna radiation center: above mean sea level		828.0 meters
Height of DTV antenna radiation center: above average terrain		479 meters

The attached Exhibit E-1 shows a vertical sketch of the proposed KWTV-DT antenna supporting structure. The FCC tower registration number is 1045226.

Analog and DTV Allocation Situation

The attached Tables I and II show the nearest pertinent analog and DTV stations and allotments. Since the proposed KWTV-DT antenna is located 5.4 kilometers from the licensed KWTV site, an electromagnetic interference study has been conducted according to OET Bulletin 69 to determine any potential impact on the existing analog and allotted DTV operations. The

attached Table III shows the area and population that may receive interference from the proposed operation. Table III indicates the potential interference population will not exceed the Commission's guidelines provided in its Public Notice dated August 10, 1998 (Additional Application Processing Guidelines for Digital Television (DTV)). Therefore, the proposed operation would not have any adverse impact on the existing analog or proposed DTV allotments.

#### Topographic Data

The average elevation data of the eight cardinal and other radials, from 3.2 to 16.1 kilometers, is based on the NGDC 30-second 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 values has been used to calculate ERP where the vertical radiation pattern at these angles is greater than 90% of the maximum.

The distances along each radial to the limits of F(50,90) 41 dBu contour 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.

The distances along the eight cardinal radials to the 41 dBu contour, the average elevations, and the effective antenna heights are included on the attached tabulation (Table IV). The 41 dBu contour determined from these distances are shown on the attached map (Exhibit E-2).

### Environmental Statement

Since the proposed antenna will be constructed on an existing tower, it is believed the environmental concerns listed in Section 1.1307(a) the Commission's rules are not pertinent; therefore, those issues have not been addressed.

An evaluation has been made to determine compliance with the Commission's specified standards for human exposure to RF fields as set forth in the OET Bulletin No. 65 dated August 1997. KWTV-DT will be operating with a maximum effective radiated power of 1000 kW and a radiation center of 491 meters above ground level. The TV antenna relative field factor is 0.05 in the downward direction. It is calculated that proposed operation would have less than 1.0 microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ) RF field at 2 meters above the base of tower. The Commission's MPE guidelines for Channel 39 (620-626 MHz) TV operation are 2,077  $\mu\text{W}/\text{cm}^2$  for the occupational/controlled and 415  $\mu\text{W}/\text{cm}^2$  for the general population/uncontrolled environment. The computed RF field due to the proposed operation would be less than 1% of the MPE for the general population/uncontrolled environment.

Therefore, members of the public and personnel working around the proposed TV facility would not be exposed to RF fields exceeding the Commission's guidelines. With respect to work performed on the tower, station KWTV-DT in coordination with other TV stations will establish procedures to ensure that workers are not exposed to RF fields above the Commission's guidelines, by reducing or turning off the power, as appropriate.

For the reasons stated above, it is believed this proposal complies with Section 1.1307(a) and (b) of the Commission's Rules; therefore, under Section 1.1306, it is categorically excluded from the environmental processing.

TABLE I  
ANALOG TV ALLOCATION SITUATION  
FOR THE PROPOSED CHANNEL 39 DTV OPERATION OF  
KWTV-DT, OKLAHOMA CITY, OKLAHOMA  
SEPTEMBER 1999

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Geographic Coordinates</u>	<u>Actual Distance</u> km
39	KWTV-DT	Oklahoma City, OK	35°35'52" 97°29'22"	–
24	KSAS-TV	Wichita, KS	37°46'40" 97°30'37"	241.9
25	KOKH-TV	Oklahoma City, OK	35°32'58" 97°29'18"	5.4
31	KBCA	Elk City, OK	35°24'22" 99°29'54"	183.5
32	None within 250 km			
35	App.	Woodward, OK	36°24'40" 99°21'05"	190.6
35	KRSC-TV	Claremore, OK	36°24'05" 95°36'33"	191.6
36	None within 250 km			–
37	Radio Astronomy			–
38	None within 250 km			–
39	KXTX-TV	Dallas, TX	32°35'07" 96°58'06"	337.6
40	None within 250 km			–
41	KTFO	Tulsa, OK	36°01'10" 95°39'24"	172.1
42	App.	Wichita, KS	37°46'40" 97°30'37'	241.9
43	KAUT-TV	Oklahoma City, OK	35°35'22" 97°29'03"	1.0
46	App.	Norman, OK	35°23'29" 97°45'35"	33.6
47	KWHB	Tulsa, OK	36°01'15" 95°40'32"	170.5

TABLE II  
DTV ALLOCATION SITUATION  
FOR THE PROPOSED CHANNEL 39 DTV OPERATION OF  
KWTV-DT, OKLAHOMA CITY, OKLAHOMA  
SEPTEMBER 1999

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Geographic Coordinates</u>	<u>Actual Distance</u> km
39	KWTV-DT	Oklahoma City, OK	35°35'52" 97°29'22"	–
38	KOED-DT	Tulsa, OK	36°01'15" 95°40'32"	170.5
39	KSBN-DT	Springdale, AR	36°11'07" 94°17'49"	295.5
40	DRM KAUT-DT	Oklahoma City, OK	35°35'22" 97°29'03"	1.0

TABLE III  
POTENTIAL IMPACT ON NTSC AND DTV ALLOTMENTS  
FROM THE PROPOSED CHANNEL 39 OPERATION OF  
KWTV-TV, OKLAHOMA CITY, OKLAHOMA  
AUGUST 1999

<u>DTV Allotment</u>	<u>Predicted Interference from KWTV-DT population</u>	<u>Baseline Population</u>	<u>Percent Interference</u>
KXTX(TV) CH.39	3,262	4,095,000	0.08
KOED-DT CH.38	5,601	1,140,000	0.49
KSBN-DT CH.39	12,903	5,681,000	0.23
DRM KAUT-DT CH.40			

TABLE IV  
DTV COVERAGE DATA  
KWTV-DT, OKLAHOMA CITY, OKLAHOMA  
SEPTEMBER 1999

<u>Radial</u> N ° E, T	<u>Average*</u> <u>Elevation</u> <u>3.2-16.1 km</u> meters	<u>Effective</u> <u>Height</u> meters	<u>Distance to</u> <u>41 dBu</u> <u>F(50,90)</u> <u>Contour</u> km
0	352	476	112.8
45	336	492	113.9
90	337	491	113.9
135	352	476	112.7
180	354	474	112.6
225	375	453	110.8
270	350	478	112.9
315	332	496	114.2

\*Based on NGDC 30-second terrain data base.

DTV Channel 39 (620-626 MHz)  
Average Elevation 3 to 16 km 479 meters AMSL  
Center of Radiation 828 meters AMSL  
Antenna Height Above Average Terrain 479 meters  
Site Elevation 337 meters AMSL  
Max. Effective Radiated Power 1000 kW

(NAD-27)

North Latitude: 35° 35' 52"  
West Longitude: 97° 29' 22"

**ABOVE GROUND**

**ABOVE MEAN SEA LEVEL**

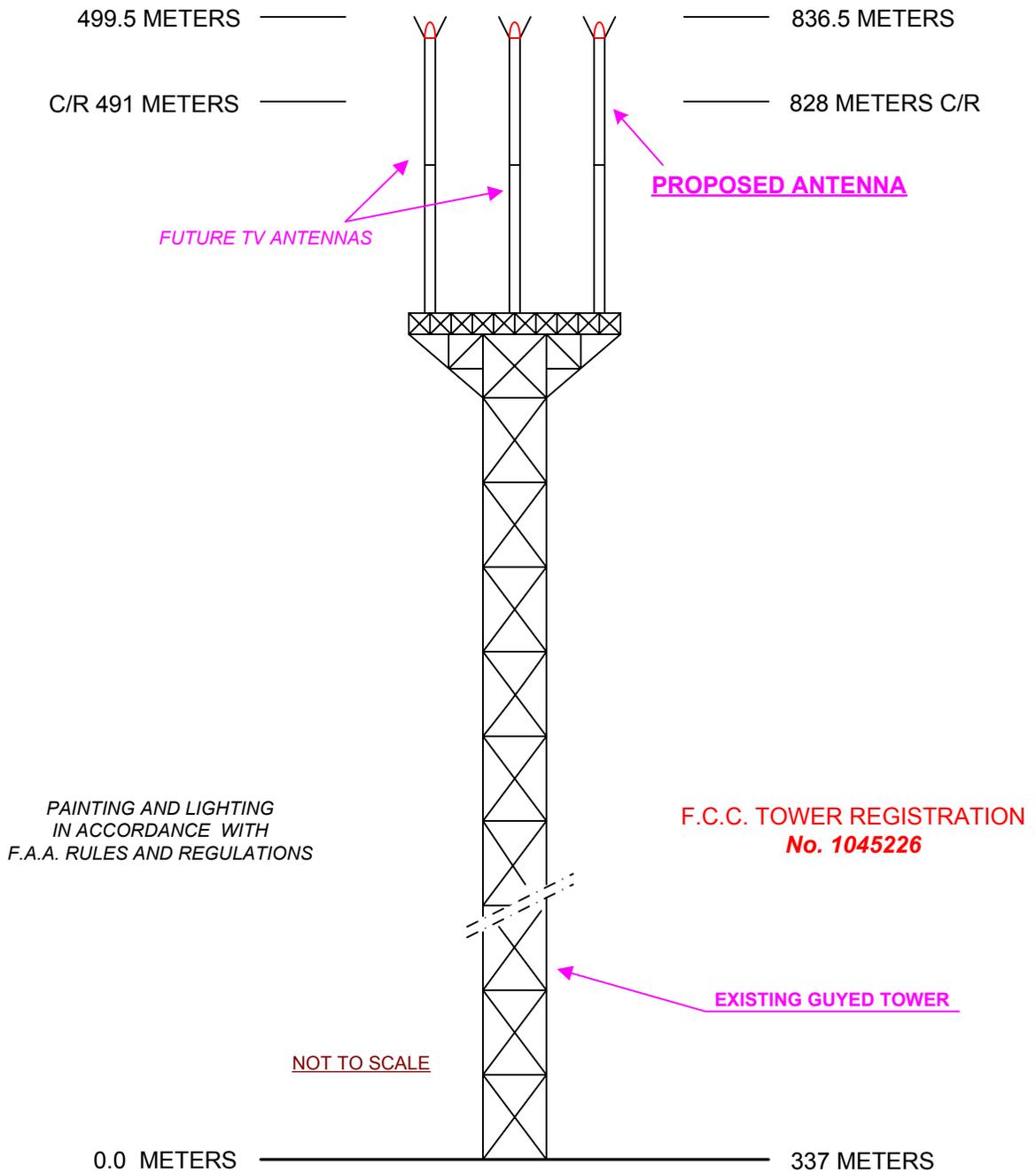
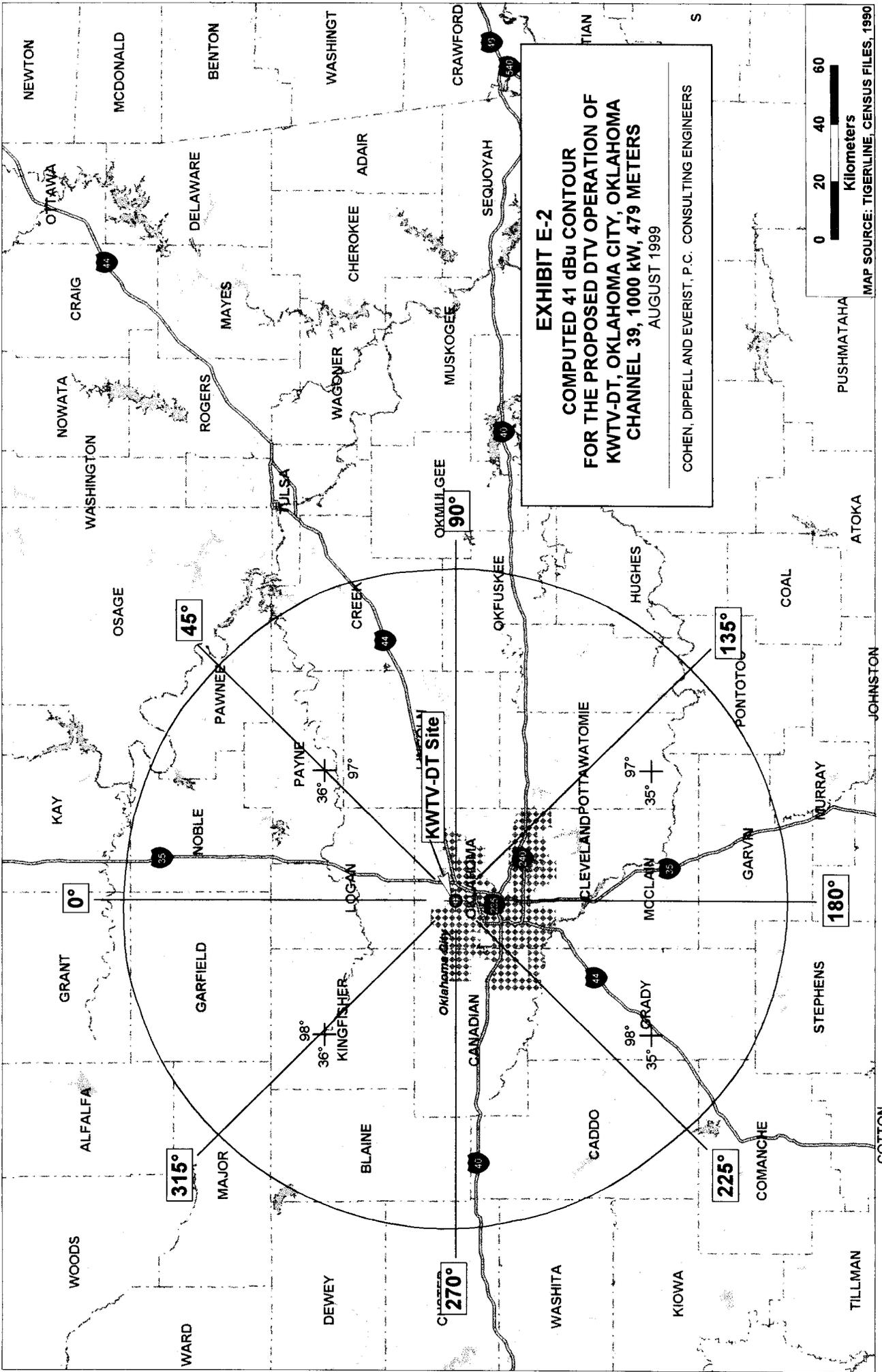


EXHIBIT E-1  
VERTICAL SKETCH  
FOR THE PROPOSED DTV OPERATION OF  
**KWTV-DT, OKLAHOMA CITY, OKLAHOMA**  
AUGUST 1999



**EXHIBIT E-2**  
**COMPUTED 41 dBu CONTOUR**  
**FOR THE PROPOSED DTV OPERATION OF**  
**KWTW-DT, OKLAHOMA CITY, OKLAHOMA**  
**CHANNEL 39, 1000 KW, 479 METERS**  
**AUGUST 1999**

COHEN, DIPPELL AND EVERIST, P.C. CONSULTING ENGINEERS

0 20 40 60  
 Kilometers  
 PUSHMATAHA

MAP SOURCE: TIGERLINE, CENSUS FILES, 1990