

## Engineering Exhibit

### **APPLICATION FOR MODIFICATION OF A CONSTRUCTION PERMIT FOR A DIGITAL TELEVISION STATION**

prepared for  
**KATV, LLC**

KATV(TV) Little Rock, Arkansas

Facility ID 33543  
Ch. 22 1000 kW 515 m

#### **Table of Contents**

FCC Form 301- Section III-D

#### **Exhibit 44**

Statement A	Nature Of The Proposal, Proposed Antenna System
Figures 1A	Antenna Vertical Plane (HPOL Elevation) Relative Field Pattern
Figures 1B	Antenna Vertical Plane (VPOL Elevation) Relative Field Pattern
Table I	Summary of Alternative Digital Services
Figure 2	Predicted Gain and Loss Areas
Figure 2A	Proposed Coverage Contours
Figure 3	Other DTV Stations Within The Gain and Loss Areas
Figure 4	Predicted "Terrain Limited" Coverage
Figure 5	Coverage Contour Comparison
Table II	Cable and Satellite Penetration Within the Defined "Loss Area"
Table III	Cable and Satellite Penetration Within the Defined "Gain Area"
Table IV	Cable and Satellite Penetration Within the Defined "White Area"
Table V	Interference Study Results

#### **Exhibit 46**

Statement B	Environmental Considerations
Figure 1	Shinall Mountain Antenna Farm Viewed from the South
Figure 2	Shinall Mountain Antenna Farm Viewed from the West
Figure 3	Shinall Mountain Antenna Farm Tall Tower Locations
Table I	Licensed FM Stations at Shinall Mountain Antenna Farm
Table II	Licensed TV Stations at Shinall Mountain Antenna Farm

*This material supplies a "hard copy" of the engineering portions of this application as entered June 19, 2008 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*

<b>SECTION III-D - DTV Engineering</b>	
<b>Complete Questions 1-5, and provide all data and information for the proposed facility, as requested in Technical Specifications, Items 1-13.</b>	
<p><b>Pre-Transition Certification Checklist:</b> An application concerning a pre-transition channel must complete questions 1(a)-(c), and 2-5. A correct answer of "Yes" to all of the questions will ensure an expeditious grant of a construction permit application to change pre-transition facilities. 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.</p> <p><b>Post-Transition Expedited Processing.</b> An application concerning a post-transition channel must complete questions 1(a), (d)-(e), and 2-5. A station applying for a construction permit to build its post-transition channel will receive expedited processing if its application (1) does not seek to expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B"); (2) specifies facilities that match or closely approximate those defined in the new DTV Table Appendix B facilities; and (3) is filed within 45 days of the effective date of Section 73.616 of the rules adopted in the Report and Order in the Third DTV Periodic Review proceeding, MB Docket No. 07-91.</p>	
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.	<input checked="" type="radio"/> Yes <input type="radio"/> No
(b) It will operate a pre-transition facility 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.	<input type="radio"/> Yes <input type="radio"/> No
(c) It will operate a pre-transition facility 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.	<input type="radio"/> Yes <input type="radio"/> No
(d) It will operate at post-transition facilities that do not expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B").	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A
(e) It will operate at post-transition facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the new DTV Table Appendix B.	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
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. Applicant must <b>submit the Exhibit</b> called for in Item 13.	<input checked="" type="radio"/> Yes <input type="radio"/> No
3. Pursuant to 47 C.F.R. Section 73.625, the DTV coverage contour of the proposed facility will encompass the allotted principal community.	<input checked="" type="radio"/> Yes <input type="radio"/> 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.	<input checked="" type="radio"/> Yes <input type="radio"/> No
5. The antenna structure to be used by this facility has been registered by the Commission and will not require registration 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.	<input checked="" type="radio"/> Yes <input type="radio"/> No

<b>SECTION III-D - DTV Engineering</b>	
<b>TECHNICAL SPECIFICATIONS</b>	
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.	
<b>TECH BOX</b>	
1.	Channel Number: DTV 22 Analog TV, if any 7
2.	Zone: <input type="radio"/> I <input checked="" type="radio"/> II <input type="radio"/> III
3.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 34 Minutes 47 Seconds 49 <input checked="" type="radio"/> North <input type="radio"/> South  Longitude: Degrees 92 Minutes 29 Seconds 19.5 <input checked="" type="radio"/> West <input type="radio"/> East
4.	Antenna Structure Registration Number: 1263739 <input type="checkbox"/> Not Applicable <input type="checkbox"/> Notification filed with FAA
5.	Antenna Location Site Elevation Above Mean Sea Level: 280.4 meters
6.	Overall Tower Height Above Ground Level: 370 meters
7.	Height of Radiation Center Above Ground Level: 359.6 meters
8.	Height of Radiation Center Above Average Terrain : 515 meters
9.	Maximum Effective Radiated Power (average power): 1000 kW
10.	Antenna Specifications: a. Manufacturer ERI Model ATW27H3-ETO-22H  b. Electrical Beam Tilt: 0.75 degrees <input type="checkbox"/> 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 42]

d. Polarization:

☐ Horizontal ☐ Circular ☒ Ellipticale. Directional Antenna Relative Field Values: ☒ Not applicable (Nondirectional)

[For a composite directional (not off-the-shelf) antenna, press the following button to fill in the relative field values subform.]

[Relative Field Values]

**10e. Directional Antenna Relative Field Values**

[Fill in this subform for a composite directional (not off-the-shelf) antenna, only.]

e. Directional Antenna Relative Field Values:

Rotation (Degrees): 0 ☐ No Rotation

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

[Relative Field Polar Plot](#)If a directional antenna is proposed, the requirements of 47 C.F.R. Sections 73.625(c) must be satisfied. **Exhibit required.**

[Exhibit 43]

11. Does the proposed facility satisfy the pre-transition 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.") and/or the post-transition interference protection provisions of 47 C.F.R. Section 73.616?

☒ Yes ☐ No

[Exhibit 44]

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

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 45]

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

[Exhibit 46]

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.

**PREPARERS CERTIFICATION ON SECTION III MUST BE COMPLETED AND SIGNED.****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 RICHARD H. MERTZ	Relationship to Applicant (e.g., Consulting Engineer) CONSULTANT	
Signature	Date 6/19/2008	
Mailing Address CAVELL, MERTZ & ASSOCIATES, INC. 7839 ASHTON AVENUE		
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20109 -
Telephone Number (include area code)	E-Mail Address (if available)	

7033929090

RMERTZ@CAVELLMERTZ.COM

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).

**Exhibits****Exhibit 44****Description:** KATV EXHIBIT 44

EXHIBIT 44 CONTAINS STATEMENT A, NATURE OF THE PROPOSAL/PROPOSED ANTENNA SYSTEM, FIGURES 1 TO 5 AND TABLES I TO V.

**Attachment 44**

Description
<a href="#">KATV Exhibit 44</a>

**Exhibit 46****Description:** KATV EXHIBIT 46

EXHIBIT 46 CONTAINS STATEMENT B, ENVIRONMENTAL CONSIDERATIONS, FIGURES 1 TO 3 AND TABLES I AND II.

**Attachment 46**

Description
<a href="#">KATV Exhibit 46</a>

Exhibit 46 - Statement B  
**ENVIRONMENTAL CONSIDERATIONS**  
prepared for  
**KATV, LLC**  
KATV(TV) Little Rock, Arkansas  
Facility ID: 33543  
Ch. 22 1000 kW 515 m

The instant proposal is not believed to have a significant environmental impact as defined under Section 1.1306 of the Commission's Rules for the reasons set forth below.

**Nature of The Proposal**

*KATV* herein proposes to modify its pending construction permit for KATV(TV) (see BMPCDT-20080408AAS) for a new facility to be constructed at the *de facto* "antenna farm" on Shinall Mountain located to the North and West of Little Rock. The instant application proposes an increase in the effective radiated power ("ERP") to 1000 kW. All other parameters specified in the pending application for KATV remain unchanged.

A conditional land lease for the site has been executed. However, site preparation cannot commence without a grant of a construction permit. An FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, was filed with that agency and a *Determination of No Hazard to Air Navigation* has been issued (see 2008-ASW-3119-OE). The proposed tower has been registered with the Commission with Antenna Structure Registration Number 1263739 being assigned.

Preparation of an environmental assessment is not believed to be necessary in this instance. Note 3 of §1.1306 of the Commission's Rules indicates that construction of a supporting structure in an established "antenna farm" may be excluded from environmental processing if the health and safety guidelines in §1.1307(b) are met. Specifically:

NOTE 3: The construction of an antenna tower or supporting structure in an established "antenna farm": (i.e., an area in which similar antenna towers are clustered, whether or not such area has been officially designated as an antenna farm), will be categorically excluded unless one or more of the antennas to be mounted on the tower or structure are subject to the provisions of §1.1307(b) and the additional radiofrequency radiation from the antenna(s) on the new tower or structure would cause human exposure in excess of the applicable health and safety guidelines cited in §1.1307(b).

The attached **Exhibit 46 – Figures 1 and 2** provide photographs of the Shinall Mountain *de facto* "antenna farm". **Exhibit 46 – Figure 3** provides a satellite photograph of the Shinall Mountain *de facto* "antenna farm". The existing taller towers along with the proposed location for

the KATV facility are shown. Thus, by the clustering of similar towers<sup>1</sup>, the Shinall Mountain area is considered an “antenna farm” as defined in Note 3 of 1.1306 of the Commission’s Rules. As demonstrated below, the proposed facility complies with §1.1307(b) of the Commission’s Rules in that exposure to radiofrequency radiation is not in excess of the health and safety guidelines. Therefore, since the instant proposal complies with Note 3, it is believed to be categorically excluded from environmental processing.

### **Human Exposure to Radiofrequency Radiation**

The proposed operation was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission’s OET Bulletin No. 65 (“OET 65”). OET 65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

The proposed KATV(TV) antenna will have a center of radiation 359.6 meters above ground level. An ERP of 1000 kilowatts, horizontally polarized, and 250 kW vertically polarized, will be employed. According to elevation pattern data provided by the antenna manufacturer<sup>2</sup>, the KATV(TV) antenna has a maximum relative field of 15.1 percent or less from 10 to 90 degrees below the horizontal plane (i.e.: below the antenna). Thus, a value of 15.1 percent relative field is used for this calculation. The “uncontrolled/general population” limit specified in §1.1310 for Channel 22 (center frequency 521 MHz) is 347.3  $\mu\text{W}/\text{cm}^2$ .

OET-65’s formula for television transmitting antennas is based on the NTSC transmission standards, where the average power is normally much less than the peak power. For the DTV facility in the instant proposal, the peak-to-average ratio is different than the NTSC ratio. The DTV ERP figure herein refers to the *average* power level. The formula used for calculating DTV signal density in this analysis is essentially the same as equation (9) in OET-65.

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<sup>1</sup> A listing of licensed FM stations at the Shinall Mountain de facto “antenna farm” is provided in **Exhibit 46 – Table I**. Likewise, a listing of licensed TV stations is provided in **Exhibit 46 – Table II**.

## Exhibit 46 - Statement B

(Page 3 of 4)

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

<i>S</i>	=	power density in microwatts/cm <sup>2</sup>
<i>ERP</i>	=	total (average) ERP in Watts
<i>F</i>	=	relative field factor
<i>D</i>	=	distance in meters

Using this formula, the proposed facility would contribute a power density of 7.4 µW/cm<sup>2</sup> at two meters above ground level near antenna support structure, or 2.13 percent of the general population/uncontrolled limit. At ground level locations away from the base of the tower, the calculated RF power density is even lower, due to the increasing distance from the transmitting antenna.

§1.1307(b)(3) states that facilities at locations with multiple transmitters (such as the case at hand) are categorically excluded from responsibility for taking any corrective action in the areas where their contribution is less than five percent. Since the instant situation meets the five percent exclusion test at all ground level areas, the impact of the any other facilities using this site may be considered independently from this proposal. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at or near ground level as defined under §1.1307(b).

### **Safety of Tower Workers and the General Public**

As demonstrated herein, excessive levels of RF energy attributable to the proposal will not be caused at publicly accessible areas at ground level near the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, tower access will be restricted and controlled through the use of a locked fence. Additionally, appropriate RF exposure warning signs will be posted.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground level. A site exposure policy will be employed

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<sup>2</sup> See **Exhibit 44 – Figure 1A and B**

## Exhibit 46 - Statement B

(Page 4 of 4)

protecting maintenance workers from excessive exposure when work must be performed on the tower in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines will be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with all pertinent stations.

### **Conclusion**

Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under Section 1.1306 of the Rules, hence preparation of an Environmental Assessment is not required.





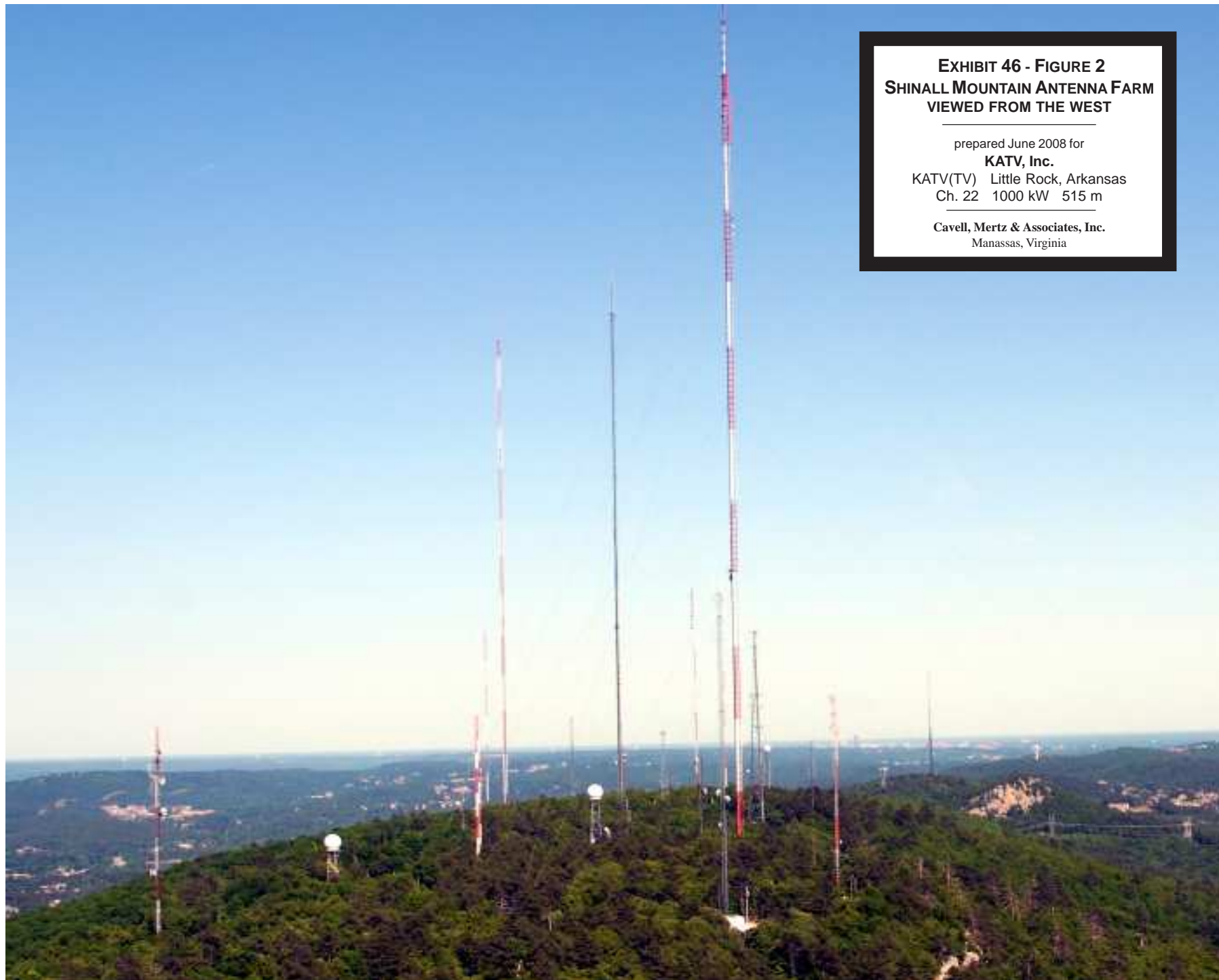
**EXHIBIT 46 - FIGURE 1**  
**SHINALL MOUNTAIN ANTENNA FARM**  
**VIEWED FROM THE SOUTH**

prepared June 2008 for

**KATV, Inc.**

KATV(TV) Little Rock, Arkansas  
Ch. 22 1000 kW 515 m

**Cavell, Mertz & Associates, Inc.**  
Manassas, Virginia



**EXHIBIT 46 - FIGURE 2**  
**SHINALL MOUNTAIN ANTENNA FARM**  
**VIEWED FROM THE WEST**

prepared June 2008 for

**KATV, Inc.**

KATV(TV) Little Rock, Arkansas

Ch. 22 1000 kW 515 m

**Cavell, Mertz & Associates, Inc.**

Manassas, Virginia



**EXHIBIT 46 - FIGURE 3  
SHINALL MOUNTAIN ANTENNA FARM  
TALL TOWER LOCATIONS**

prepared June 2008 for

**KATV, Inc.**

KATV(TV) Little Rock, Arkansas  
Ch. 22 1000 kW 515 m

**Cavell, Mertz & Associates, Inc.**  
Manassas, Virginia

ASR #1040544  
76.5 m AGL  
379.8 m AMSL  
Constructed 2000

ASR #1014093  
308.5 m AGL  
624.4 m AMSL  
Constructed 1992

ASR #1040894  
122 m AGL  
429.9 m AMSL  
Constructed 1977

ASR #1036555  
386 m AGL  
677 m AMSL  
Constructed 1983

ASR #1204200  
97.5 m AGL  
407.8 m AMSL  
Constructed 1991

ASR #1019242  
342 m AGL  
656 m AMSL  
Constructed 1956

ASR #1040898  
151 m AGL  
463 m AMSL  
Constructed 1987

ASR #1040828  
108 m AGL  
411 m AMSL  
Constructed 1989

Proposed KATV Tower  
Location  
34° 47' 49.3" N  
92° 29' 20.1" W  
(NAD-83)  
370 m AGL  
650.4 m AMSL  
FAA Study -  
"NO HAZARD"  
2008-ASW-3119-OE

Exhibit 46 - Table I  
**LICENSED FM STATIONS AT SHINALL MOUNTAIN ANTENNA FARM**  
 prepared for  
**KATV, LLC**  
 KATV(TV) Little Rock, Arkansas  
 Facility ID: 33543  
 Ch. 22 1000 kW 515 m

Channel Status	Call Sign Service	City/State File Number	Fac. ID	Latitude Longitude	Power HAAT	Distance Bearing
206C1 LIC	KUAR FM	LITTLE ROCK, AR BLED-19910502KA	4296	34 47 50 92 29 26	100.0 269	0.16 281.47
231C LIC	KKPT FM	LITTLE ROCK, AR BLH-19911018KN	60364	34 47 56 92 29 44	100.0 488	0.65 289.56
239C LIC	KSSN FM	LITTLE ROCK, AR BLH-19831117BH	61363	34 47 57 92 29 29	100.0 507	0.34 317.27
253C LIC	KURB FM	LITTLE ROCK, AR BLH-19880727KA	19559	34 47 56 92 29 44	100.0 392	0.65 289.56
262C1 LIC	KDJE FM	JACKSONVILLE, AR BMLH-20030612ADW	23025	34 47 53 92 29 33	85.0 321	0.35 290.54
279C LIC	KABZ FM	LITTLE ROCK, AR BLH-19960614KA	60134	34 47 56 92 29 44	100.0 457	0.65 289.56
286C1 LIC	KMJX FM	CONWAY, AR BMLH-20030612ADV	39689	34 47 53 92 29 33	81.0 321	0.35 290.54
294C2 LIC	KHKN FM	BENTON, AR BLH-19930629KA	6819	34 47 56 92 29 53	16.0 264	0.87 284.49

Exhibit 46 - Table II  
**LICENSED TV STATIONS AT SHINALL MOUNTAIN ANTENNA FARM**  
 prepared for  
**KATV, LLC**  
 KATV(TV) Little Rock, Arkansas  
 Facility ID: 33543  
 Ch. 22 1000 kW 515 m

Channel Status	Call Sign Service	City/State File Number	Fac. ID	Latitude Longitude	Power HAAT	Distance Bearing
4Z LIC	KARK-TV TV	LITTLE ROCK, AR BLCT-19851122KF	33440	34 47 57 92 29 59	100.0 503	1.02 284.03
11Z LIC	KTHV TV	LITTLE ROCK, AR BMLCT-20030728AAV	2787	34 47 57 92 29 59	316.0 521	1.02 284.03
12 LIC	KTHV DT	LITTLE ROCK, AR BLCDT-20041029AIX	2787	34 47 57 92 29 59	55.0 518.7	1.02 284.03
16- LIC	KLRT-TV TV	LITTLE ROCK, AR BLCT-19830629KE	11951	34 47 57 92 29 29	5000.0 539	0.34 317.27
20- LIC	KKYK-CA CA	LITTLE ROCK, AR BLTTA-20021227ABA	57545	34 47 56 92 29 45	150.0 0	0.67 288.83
30 LIC	KLRT-TV DT	LITTLE ROCK, AR BLCDT-20020507AAK	11951	34 47 57 92 29 29	1000.0 449	0.34 317.27
34Z LIC	K34FH TX	LITTLE ROCK, AR BLTT-20011219AAR	47690	34 47 57 92 29 29	20.9 0	0.34 317.27
36Z LIC	KKAP TV	LITTLE ROCK, AR BLET-20010514ABD	58267	34 47 56 92 29 45	320.0 394	0.67 288.83
42Z LIC	KWBF TV	LITTLE ROCK, AR BLCT-19980415KE	37005	34 47 56 92 29 44	3390.0 334	0.65 289.56