

TECHNICAL EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT
DIGITAL COMPANION CHANNEL APPLICATION
TV TRANSLATOR STATION K21AX
FACILITY ID 48562
FARMINGTON, NEW MEXICO
CH 29 4.4 KW

Technical Narrative

The technical exhibit of which this narrative is part was prepared in response to the FCC Public Notice (Public Notice) dated August 31, 2006 and entitled "LPTV and TV Translator Digital Companion Channel Applications Non-Mutually Exclusive Proposals (Auction No. 85)" (DA 06-1748). Specifically, this technical exhibit was prepared in support of a complete FCC Form 346 as required by the Public Notice for K21AX's proposed digital companion channel operation on channel 29 at Farmington, New Mexico (FCC File No. BSFDDT-20060630BRM, Facility ID 167895). It is proposed to operate on digital channel 29 using an Andrew model AL-8 nondirectional antenna system. The maximum ERP will be 4.4 kW and the antenna radiation center height above mean sea level will be 1868 meters. The transmitter will employ a "stringent" out-of-channel emission mask to control adjacent channel interference.

Figure 1 depicts the 74 dBu for the licensed analog, authorized analog and herein proposed 51 dBu contours for K21AX. As indicated, the proposed 51 dBu contour encompasses all of the licensed and authorized 74 dBu contours. Thus, the proposal complies with the FCC requirement that there be contour overlap between the current analog and proposed digital operations.

Response to Paragraph 5 - Antenna Registration

The antenna will be mounted at the 30 meter level on an existing tower having an overall height above ground level of 60 meters. Tower registration is not required based on the TOWAIR program. Figure 2 provides the TOWAIR program results.

Response to Paragraph 13 - Interference

A study has been conducted using the provisions of Section 74.793 and the OET Bulletin 69 interference model.¹ The results indicate that the proposed operation will not create prohibited interference to stations in the Land Mobile Radio Service (LMRS) or other existing, authorized or proposed NTSC or DTV full-power, LPTV, TV translator or Class A stations.

Response to Paragraph 14 - Environmental Protection Act

The proposed digital facilities were evaluated in terms of potential radiofrequency radiation exposure at ground level in accordance with OST Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation."² The calculated power density at the base of the tower was calculated using the appropriate equation of the Bulletin.

Using a greater than expected vertical relative field value of 0.25 at angles towards the tower base (see Figure 3) and a maximum effective radiated power of 4.4 kilowatts, the calculated power density at 2 meters above ground level at the base of the tower is 0.0117 milliwatt per square centimeter (mW/cm^2) which is 3.1 % of the recommended limit of $0.38 \text{ mW}/\text{cm}^2$ for channel 29 applicable to uncontrolled exposure areas. Therefore, the facility complies with the FCC's RF emission rules.

Access to the transmitting site will be restricted and appropriately marked with warning signs. Furthermore, as

¹The du Treil, Lundin & Rackley, Inc. DTV interference analysis program is based on the program and procedures outlined by the FCC in the Sixth Report and Order; subsequent Memorandum Opinion and Order; and FCC OET Bulletin No. 69. A nominal grid size resolution of 1 km was employed. An Alpha based processor computer system was employed. The results have been found to be in very close agreement with the results of the FCC implementation of OET Bulletin No. 69.

² See *Report and Order* in ET Docket 93-62, FCC 96-326, adopted August 1, 1996, 11 FCC Rcd 15123 (1997). See also *First Memorandum Opinion and Order*, ET Docket 93-62, FCC 96-487, adopted December 23, 1996, 11 FCC Rcd 17512 (1997), and *Second Memorandum Opinion and Order and Notice of Proposed Rulemaking*, ET Docket 93-62, FCC 97-303, adopted August 25, 1997.

this is a multi-user site, an agreement will be in effect in the event that workers or other authorized personnel enter the restricted area or climb the tower to ensure that appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at reduced power or shut down.

If there are questions concerning the technical portion of this application, please contact the office of the undersigned.

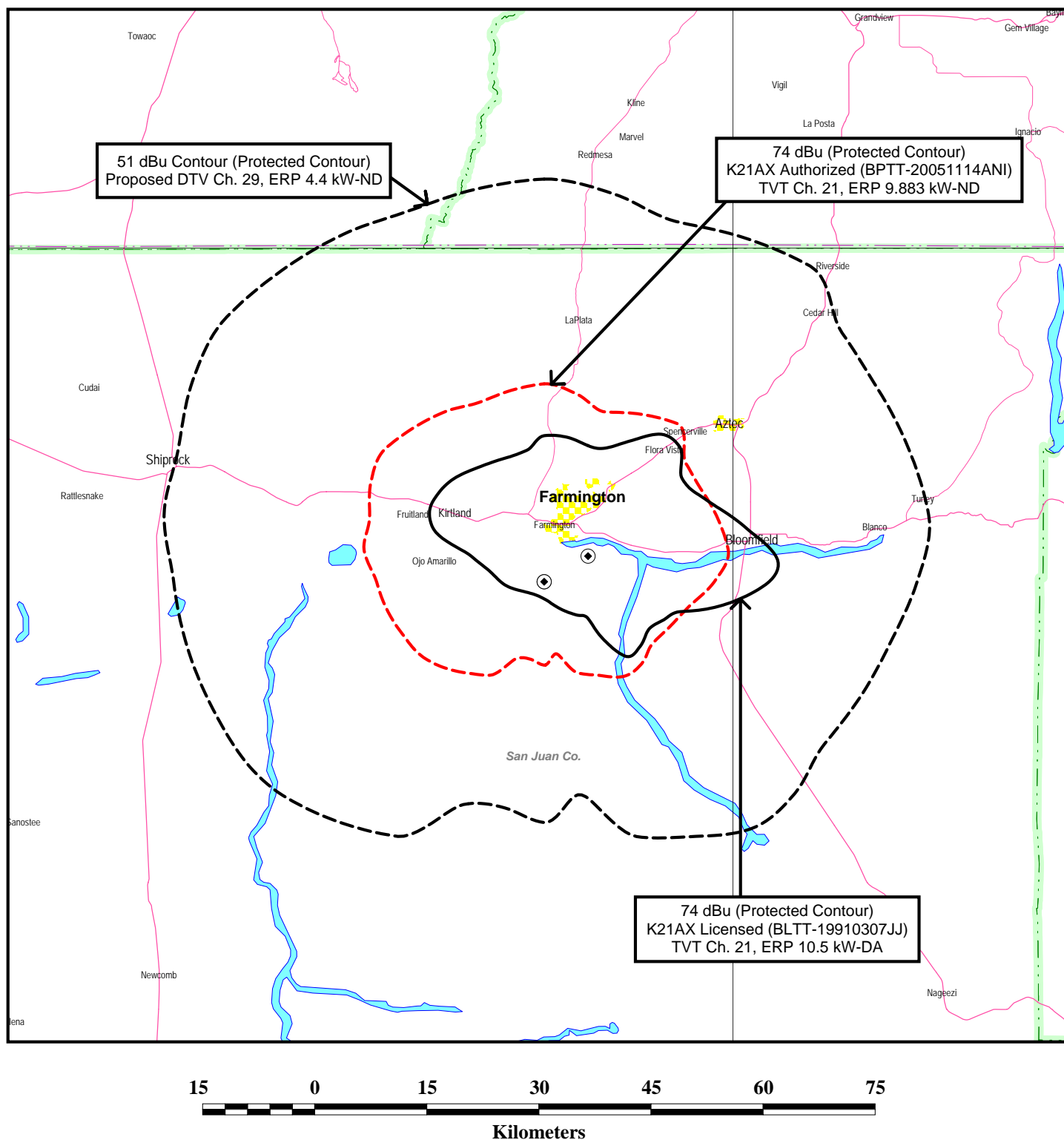


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Figure 1



FCC PREDICTED COVERAGE CONTOURS

TV TRANSLATOR STATION K21AX
FARMINGTON, NEW MEXICO
DTV COMPANION CH 29
4.4 KW-ND

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

TOWAIR Determination Results

A routine check of the coordinates, heights, and structure type you provided indicates that this structure does not require registration.

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 7351.77 MTRS (7.35179 KM) AWAY

Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	36-44-14.00N	108-14-29.00W	FOUR CORNERS	SAN JUAN FARMINGTON, REGIONAL NM	1667.8	2043.4000000000001

PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 7745.88 MTRS (7.74589 KM) AWAY

Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	36-44-28.00N	108-14-24.00W	FOUR CORNERS	SAN JUAN FARMINGTON, REGIONAL NM	1667.8	2043.4000000000001

PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 8035.74 MTRS (8.03570 KM) AWAY

Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	36-44-37.00N	108-13-31.00W	FOUR CORNERS	SAN JUAN FARMINGTON, REGIONAL NM	1667.8	2043.4000000000001

Your Specifications NAD83 Coordinates

Latitude	36-40-17.0 north
Longitude	108-13-55.3 west

Measurements (Meters)

Overall Structure Height (AGL)	60
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Support Structure Height (AGL)	60
Site Elevation (AMSL)	1838

Structure Type

TOWER - Free standing or Guyed Structure used for Communications Purposes

[Tower Construction Notification](#)

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

Note: Notification does NOT replace [Section 106 Consultation](#).

CLOSE WINDOW

Figure 3

ELEVATION PATTERN

Type:	ALP8		Channel:	29
Directivity:	Numeric	dBd	Location:	
Main Lobe:	9.05	9.57	Beam Tilt:	-1.75
Horizontal:	6.48	8.11	Polarization:	Horizontal

Relative Field

