

INTERFERENCE ANALYSIS

Concerning
Northern Arizona University
Long Form 349, Auction 83
Cottonwood, Arizona
File No. BNPFT20030310AJU

August 2003

Page #5 of this exhibit is a computer generated channel study, showing the contour relationship between the proposed translator and adjacent stations. Page #6 is an explanation of the methods used in preparing the study. The proposal causes 2nd adjacent contour overlaps with KVNA-FM, Flagstaff, K244DI, Cottonwood and KMWX, Williams.

Section 73.1204(a) of the Commission's Rules states that "an application for an FM translator station will not be accepted for filing if the proposed operation would involve overlap of predicted field strength contours with any other station, including commercial and noncommercial educational FM stations, FM translators and Class D (secondary) noncommercial educational FM stations." However, Section 74.1204(d) states that "the provisions of this section concerning prohibited overlap will not apply where the area of such overlap lies entirely over water. In addition, *an application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to intervening terrain, lack of population or other such factors as may be applicable.* (Emphasis added.)

Using the undesired-to-desired ratio method regarding interference to a second/third adjacent frequency¹, "interference is predicted to occur where the translator's undesired signal exceeds the protection station's desired signal by more than 40 dB or more."² The FCC F(50-50) curves were used to determine the signal strength, in dBu, of KVNA-FM at the proposed translator's transmitter site. The signal strength of KVNA-FM was calculated to be 69.3 dBu, based on an HAAT toward the reference of 500 meters, power of 100 kW and distance of 63.9 km. Incorporating the 40 dB U/D ratio, the resulting translator interference contour is 109.3 dBu ($69.3 + 40 = 109.3$ dBu). The 109.3 dBu interference contour extends 80 meters along the maximum of the proposed directional antenna.

Using the same method, it was determined that the signal strength of K244DI is 72.7 dBu at the proposed transmitter site (based on an HAAT of 608 meters, 0.001 kW and 1.54 km distance). The resulting interference contour (112.7 dBu) extends only 50 meters.

¹ *Second Report and Order*, FCC 00-368 at 9 and 39.

² *Memorandum Opinion and Order*, FCC 02-244 at 5 and 6, (In response to application of Living Way Ministries, Inc., File No. BPFT-19981001ITA.

The signal strength of KWMX is 62.5 dBu (based on an HAAT of 366 meters, 10.5 kW and 49.33 km distance.) The resulting interference contour (102.5 dBu) extends 170 meters.

Page #3 is a statement from Northern Arizona University staff, certifying that there is nothing within 200 meters of the tower base. Page #4 is a USGS quadrangle map (topozone.com) of the site. The only building in the area is the transmitter building. There are no roads other than the access road.

Due to the absence of “potential listeners” within the interference contour, no interference will occur. If it is necessary to request a waiver of Section 74.1204(a) of the Commission’s Rules, it is here so, respectfully, requested.

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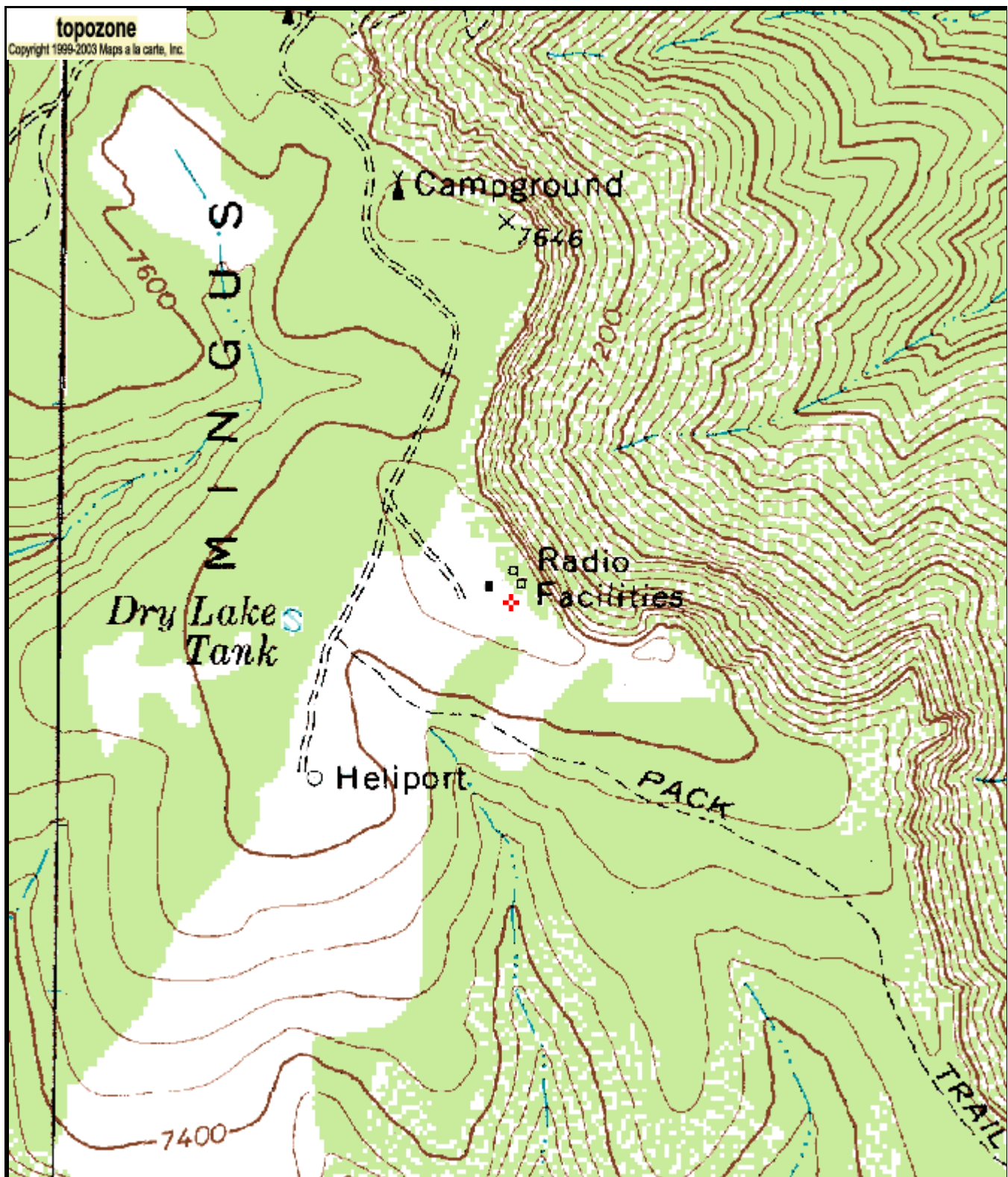
KNAU
Arizona Public Radio

Memo

To: Kate Michler, V-Soft Communications
From: Dave Riek
CC:
Date: 8/26/2003
Re: KNAU Translator Application for Cottonwood, AZ

Following my site inspection on August 19, 2003, this affidavit confirms that there are no buildings, roads or potential listeners within 200 meters of the base of the tower proposed for our Cottonwood translators (34-41-12 N /112-7-0 W). The only road to the transmitter site is gated about .8 miles from the tower base. Attached are digital images from the site.

David Riek, KNAU Network Operations Manger



0 0.1 0.2 0.3 0.4 0.5 km
0 0.1 0.2 0.3 0.4 0.5 mi

Map center is 34° 41' 12"N, 112° 07' 00"W (NAD27)

Cottonwood quadrangle

Projection is UTM Zone 12 NAD83 Datum

MN
GN
MN=12.874
GN=0.636

Northern Arizona University
Cottonwood 246

REFERENCE CH# 246D - 97.1 MHz, Pwr= 0.01 kW, HAAT=1213.3 M, COR= 2367 M DISPLAY DATES
34 41 12 N Average Protected F(50-50)= 18.24 km DATA 08-23-03
112 07 00 W Ave. F(50-10) 40 dBu= 68.5 54 dBu= 31.7 80 dBu= 2.2 100 dBu= .2 SEARCH 08-25-03

CH CITY	CALL	TYPE STATE	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kW) HAAT(M)	COR(M) INT(km)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
246D Cottonwood	AP246	APP DC AZ	0.0 180.0	0.00 BNPFT20030310AJU	34 41 12 112 07 00	0.000 647	2367 36.7	0.0 Arizona Board Of Regents F	-7.46*<	-36.67*<
248C Flagstaff	KVNAFM	LIC EN AZ	60.4 240.4	63.87 BLH19860925KA	34 58 06 111 30 28	100.000 498	2626 0.2	86.6 3 Point Media-ari-zona, Lic	33.09	-22.93*<
246D Prescott	K246AA	LIC DCN AZ	240.4 60.4	44.41 BLFT19931115TE	34 29 20 112 32 15	0.004 422	2173 5.8	9.1 Lerner Film & Tape Prod.,	11.43	29.57
244D Cottonwood, Etc.	K244DI	LIC DHN AZ	358.1 178.1	1.54 BLFT19880523TA	34 42 02 112 07 02	0.001 604	2398 0.1	6.0 Prescott Valley B/csting C	-5.35*<	-4.51*<
244C2 Williams	KWMX	LIC CN AZ	358.2 178.2	49.33 BLH19970609KA	35 07 52 112 08 03	10.500 378	2390 0.1	55.5 Red Rock Communications Li	37.07	-6.21*<
246A Beaver	RADD	ADD UT	324.1 144.1	81.08	35 16 37 112 38 25	6.000 222	1786 5.3	40.4	-22.82<	35.36
246C3 Bagdad	ALLO<	VAC AZ	265.0 85.0	99.86 RM10015	34 36 11 113 12 04	25.000 -1307	0 5.8	22.7	-0.65<	71.43
246C3 Bagdad	RDEL<	DEL AZ	265.0 85.0	99.86	34 36 11 113 12 04	25.000 -1307	0 5.8	22.7	-0.65<	71.43
244D Sedona	KWMXF2	LIC DC AZ	58.6 238.6	35.64 BLFTB20010821AAT	34 51 11 111 47 01	0.000 266	1475 0.2	0.0 Red Rock Communications Li	17.45	35.42
245C Phoenix	KMXP	LIC CY AZ	178.0 358.0	150.11 BMLH19941024KC	33 20 03 112 03 36	100.000 484	834 1.3	85.8 Citicasters Licenses, L.p.	21.62	63.01
246A Cameron	RADD	ADD AZ	25.6 205.6	146.54	35 52 30 111 24 48	6.000 -1428	0 58.8	15.8	64.22	71.97
244D Flagstaff	KWMXF1	LIC DCN AZ	37.4 217.4	77.69 BLFTB19971126TB	35 14 27 111 35 48	0.093 702	2835 0.2	27.4 Red Rock Communications Li	60.79	50.11

***Affixed to 'IN' or 'Out' values = site inside protected contour.
ERP and HAAT are on direct line to and from reference station.
"«" = Station meets FCC minimum distance spacing for its class. "<" = Contour Overlap

HOW TO READ THE FM COMPUTER PRINT-OUT

The computer printout should be self-explanatory for the most part. The parameters of the station being checked, (reference station) are printed in the heading. The 60 dBu protected contour is predicted from the Commission's F(50-50) table, while the 40, 54, 80 and 100 dBu contours are interference contours derived from the Commission's F(50-10) table. Contour distances are in kilometers and are predicted using spline interpolation from data points identical to those published in Report No. RS 76-01 by Gary C. Kalagian. Critical contour distances are determined using the Commission's TVFMINT FORTRAN subroutine. When interference contour distances are less than 16 kilometers the F(50-50) tables are used. If signal contour distances are less than 1.6 km the free-space equation is used.

The column listed "*** IN ***" is the sum of the reference station's 60 dBu protected contour and the data file station's interference contour subtracted from the distance between the stations. (All distances are derived by the method detailed in Sec. 73.208 of the Rules and Regulations as amended in Docket 80-90.) Therefore, the column is a measure of incoming interference. Negative distances in this column indicate the presence of interference. Listed antenna heights are the average heights of eight standard radials as found in the Commission's records unless otherwise noted, in which case the specific antenna heights and the DA power, if applicable, along the straight line azimuths between the reference station and the database station are used and visa versa. The column labeled "*** OUT ***" shows the distance in kilometers of overlap or clearance between the reference station's interference contour and the database station's protected contour. Negative distance figures in this column indicate outgoing overlap interference.

Under the "AZIMUTH" column, the first row of numbers indicate the bearings from True North of the data base stations in relationship with the reference station, while the numbers in the second row indicate the reverse bearings from the database station to the reference station.

The columns labeled "INT" and "PRO" hold the distance in kilometers of the appropriate interference contour and the protected contour of a data base station.

For I.F. relationships the "IN" and "OUT" columns change their significance. The letter "R" stands for the minimum **required** distance in kilometers, while the letter "M" in the next column follows the **available clear space** separation in kilometers. Minimum separation distances when displayed are taken from Sec 73.207 of the rules as amended. Canadian and Mexican separation distances, U/D ratios and protected contour values are from the US/Mexican Working Agreement and the US/Canada Working Agreement".

The first three letters of the "TYPE" column identify the current FCC status of the stations. The fourth letter will be a "D" if the facility is directional. "Z" indicates a 73.215 directional. An "N" indicates it is a 73.215 station that operates omni. The fifth letter will be an E, H or V depending on the type of antenna polarization. The sixth letter will be a "Y" if the antenna uses beam tilt or an "X" if the commission is not sure, otherwise it will be an "N".