

## **Non-Interference Compliance**

Regarding Facility id 145443

Channel 281

### **Description of Exhibit 13 Contents**

This exhibit demonstrates that the proposed facility complies with contour overlap and interference protection provisions in all of the applicable rule sections and that this application for a construction permit is in full compliance with 47 C.F.R. § 74.1204.

**Let it be noted that should any actual real world interference occur, the applicant acknowledges that it will promptly suspend operation of this translator in accordance with 47 C.F.R. § 74.1203.**

Page 2 of this exhibit is an explanation of the method used to demonstrate compliance with contour overlap and interference provisions based on 47 C.F.R. § 74.1204(d), which states:

*[A]n 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 such other factors as may be applicable.*

Page 3 contains a tabulation of the vertical radiation pattern of the proposed antenna and the minimum ground clearance of the interfering contour based on this pattern.

Pages 4 through 6 include a tabulation of the vertical radiation pattern for the proposed antenna provided by the antenna manufacturer.

Page 7 of this exhibit contains the tabulated data from the interference analysis, which shows all stations whose protected contours come within 50 km of the 34 dBμ F(50,10) contour of the proposed translator. These tabulated values were calculated using data from the FCC's CDBS files and 30 arc second terrain data. The column labeled "Adj" shows the number of channels difference between the entry and the proposed translator. The column labeled "Dist" shows the distance in km. The column labeled "Overlap" shows the area of contour overlap in square kilometers.

Page 8 of this exhibit is a portion of a USGS 1:24,000 scale 7.5 minute quadrangle at full scale with the calculated area of interference overlaid. The sheet includes the quadrangle name and measurement scale at the bottom-left corner (note: "Mt" refers to meters). The area of interference was calculated using the free space equation and 120 radials.

Page 9 of this exhibit is an aerial photo of the vicinity surrounding the proposed translator's tower site.

### Compliance with 47 C.F.R. § 74.1204(d)

All authorized second and third adjacent stations with which the proposed translator has contour overlap are tabulated below. Column four show the station's signal level at the proposed translator's tower site, and column five gives the minimum value within the entire standard interfering contour of the proposed translator (100 dBμ for most classes, 94 for class B, 97 for class B1). The minimum second or third adjacent F(50,50) contour within the proposed translator's standard interfering contour was used to calculate the proposed translator's actual "worst-case" interfering contour.

Application_id	File Number	Callsign	Contour at Tower	Min. Contour
1459461	BPH20111116AIN	KCLZ	71.7	71.7
Minimum F(50,50) Contour of Adjacent Station within Proposed Translator's Standard Interfering Contour				<b>71.7</b>

FCC 02-244 at Section II.A.5 states that "when demonstrating that 'no actual interference will occur due to . . . other factors,' pursuant to Section 74.1204(d), an applicant may use the undesired-to-desired signal ratio method." The undesired-to-desired ratio for second and third adjacent stations required by § 74.1204(a) is 40 dB. Since the minimum protected contour strength within the proposed translator's standard interference contour is **71.7 dBμ**, this makes the proposed translator's worst-case interfering contour **111.7 dBμ**. By the free-space equation, this contour is calculated to extend a maximum of **288.4 m** from the transmit antenna.

The maximum horizontal plane of the interfering contour was calculated for 120 radials and plotted on the pertinent portion of a USGS quadrangle (page 8 of this exhibit). However, the field strength of the proposed translator's antenna varies with angle of depression from horizontal. The antenna relative fields are tabulated on the following page at 5 degree increments, starting at 5 degrees below horizontal. Antenna relative field strength data was provided and certified by the manufacturer of the proposed antenna. Using a free-space calculation that neglects any loss due to reflection, the vertical ground clearance of the proposed translator's interference contour has been tabulated. As shown on the following page, the area of interference clears the tower ground level (TGL) by **4.5 m** at the lowest point. The applicant has taken into account USGS quadrangles and relevant aerial photography in stating that no structures, except possibly tower support structures, puncture the area of interference.

**Note : The tallest buildings in the zone of predicted interference are 12ft (3.7m) in height. This proposal provides 4.5m (14.8ft) ground clearance so a lack of population has been demonstrated within the area of interference and this application is therefore in full compliance with 47 C.F.R. § 74.1204.**

Antenna Manufacturer:	ERI
Antenna Model:	100-A
Antenna Bays:	3
Antenna Bay Spacing:	0.75
CORAGL:	44 m
Maximum ERP:	0.25 kW
Interfering Contour:	111.7 dBμ
Max Int. Contour Distance:	288.4 m
Min Ground Clearance:	4.5 m

The following table shows how the interfering contour ground clearance was calculated.

The formula used to calculate the vertical radiation pattern for the multi-bay antenna array is the exact formula used by the FCC's Office of Engineering and Technology in the FM Model program used to calculate ground-level power density for multi-bay antenna arrays for purposes of compliance with OET65. According to the source code of FM Model, this formula was "derived from Kraus (eqn 4-51 & 5-52), Gailey and Tell, and material from Ben Dawson, Hatfield and Dawson."

- The *Depression Angle* is the angle below horizontal for the radial.
- The *Single-Bay Relative Field* value is the relative field value for the depression angle either provided by the antenna manufacturer or interpolated from the values provided by the manufacturer.
- The *Relative Field Multiplier* is equal to  $\text{Sin}(N * \pi \text{Sin}\phi) / (N * \text{Sin}(\pi \text{Sin}\phi))$ , where N is the number of antenna elements in the array, S is the spacing between elements,  $\pi$  is the ratio of a circle's circumference to its diameter, and  $\phi$  is the Depression Angle.
- The *Relative Field Value for the Array* is the absolute value of the product of the Relative Field Factor and the Single-Bay Relative Field value for that radial.
- The *ERP on the Radial* is the square of the *Relative Field Value for the Array* multiplied by the maximum ERP.
- The *Contour Direct Distance* is found by using the free space equation.
- The *Horizontal and Vertical Contour Distances* are calculated from the *Direct Distance* using trigonometry.
- The *Contour Ground Clearance* is the *Vertical Contour Distance* subtracted from the overall antenna height above the ground.

Depression Angle (degree)	Single-Bay Relative Field	Relative Field Multiplier	Relative Field for Array	ERP on Radial (W)	Contour Direct Distance (m)	Contour Horizontal Distance (m)	Contour Vertical Distance (m)	Contour Ground Clearance (m)
5	0.993	0.9446	0.938	219.9	270.5	269.5	23.6	20.4
10	0.974	0.7890	0.768	147.6	221.6	218.2	38.5	5.5
15	0.941	0.5626	0.529	70.1	152.7	147.5	39.5	4.5
20	0.897	0.3061	0.275	18.8	79.2	74.4	27.1	16.9
25	0.843	0.0610	0.051	0.7	14.8	13.4	6.3	37.7
30	0.780	-0.1381	0.108	2.9	31.1	26.9	15.5	28.5
35	0.709	-0.2702	0.192	9.2	55.2	45.3	31.7	12.3
40	0.633	-0.3291	0.208	10.9	60.1	46.0	38.6	5.4
45	0.554	-0.3213	0.178	7.9	51.3	36.3	36.3	7.7
50	0.473	-0.2616	0.124	3.8	35.7	22.9	27.3	16.7
55	0.394	-0.1685	0.066	1.1	19.1	11.0	15.7	28.3
60	0.317	-0.0602	0.019	0.1	5.5	2.7	4.8	39.2
65	0.245	0.0485	0.012	0.0	3.4	1.4	3.1	40.9
70	0.181	0.1464	0.027	0.2	7.6	2.6	7.2	36.8
75	0.124	0.2267	0.028	0.2	8.1	2.1	7.8	36.2
80	0.077	0.2856	0.022	0.1	6.3	1.1	6.2	37.8
85	0.041	0.3214	0.013	0.0	3.8	0.3	3.8	40.2
90	0.016	0.3333	0.005	0.0	1.5	0.0	1.5	42.5
<b>Min Ground Clearance (m):</b>								<b>4.5</b>

**PRELIMINARY SPECIFICATION FOR  
ERI 100 CIRCULARLY POLARIZED  
FM BROADCAST ANTENNA**

*Prepared For*

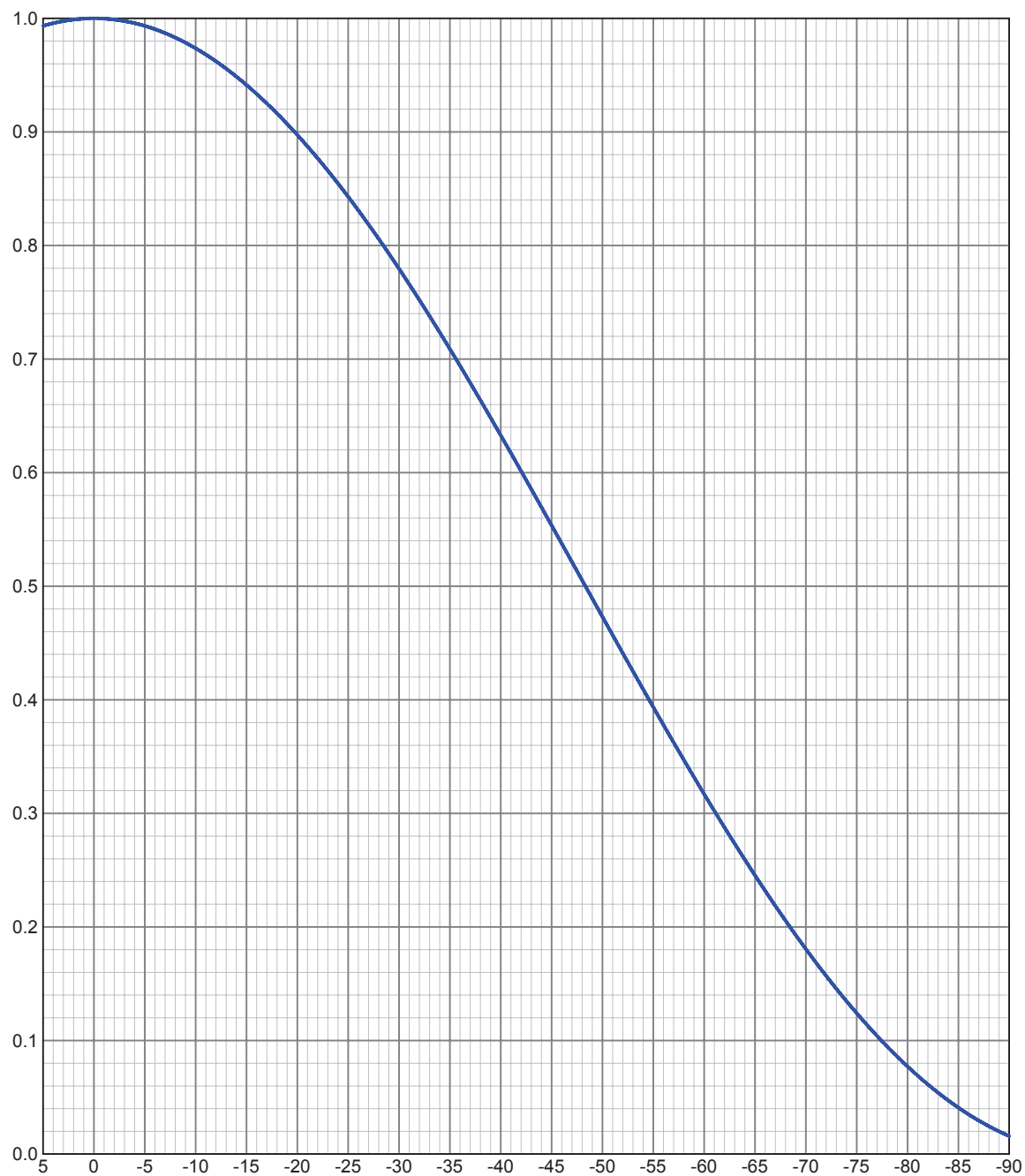
*Channel 201*

*March 13, 2013*

**ANTENNA TYPE:**  
**101-1(F)**

**SPECIFICATION NO:**



**ELEVATION PATTERN****Type:****1001F****Channel:****201****Directivity:****Numeric****dBd****Location:****Main Lobe:****0.41****-3.82****Beam Tilt:****0.00****Horizontal:****0.41****-3.82****Polarization:****Circular****Relative Field***Preliminary, subject to final design and review.*

## TABULATED DATA FOR ELEVATION PATTERN

Type: 1001F

Polarization: Circular

ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB					
5.00	0.993	-0.06	-6.75	0.988	-0.11	-27.00	0.819	-1.74	-50.50	0.465	-6.65	-74.00	0.135	-17.42
4.75	0.994	-0.05	-7.00	0.987	-0.11	-27.50	0.812	-1.81	-51.00	0.457	-6.80	-74.50	0.129	-17.77
4.50	0.995	-0.05	-7.25	0.986	-0.12	-28.00	0.806	-1.87	-51.50	0.449	-6.96	-75.00	0.124	-18.13
4.25	0.995	-0.04	-7.50	0.985	-0.13	-28.50	0.799	-1.94	-52.00	0.441	-7.11	-75.50	0.119	-18.50
4.00	0.996	-0.04	-7.75	0.984	-0.14	-29.00	0.793	-2.02	-52.50	0.433	-7.27	-76.00	0.114	-18.87
3.75	0.996	-0.03	-8.00	0.983	-0.15	-29.50	0.786	-2.09	-53.00	0.425	-7.43	-76.50	0.109	-19.26
3.50	0.997	-0.03	-8.25	0.982	-0.16	-30.00	0.780	-2.16	-53.50	0.417	-7.59	-77.00	0.104	-19.65
3.25	0.997	-0.02	-8.50	0.981	-0.17	-30.50	0.773	-2.24	-54.00	0.409	-7.76	-77.50	0.099	-20.06
3.00	0.998	-0.02	-8.75	0.980	-0.18	-31.00	0.766	-2.32	-54.50	0.401	-7.93	-78.00	0.095	-20.47
2.75	0.998	-0.02	-9.00	0.979	-0.19	-31.50	0.759	-2.40	-55.00	0.394	-8.10	-78.50	0.090	-20.90
2.50	0.998	-0.01	-9.25	0.977	-0.20	-32.00	0.752	-2.48	-55.50	0.386	-8.28	-79.00	0.086	-21.34
2.25	0.999	-0.01	-9.50	0.976	-0.21	-32.50	0.745	-2.56	-56.00	0.378	-8.45	-79.50	0.081	-21.79
2.00	0.999	-0.01	-9.75	0.975	-0.22	-33.00	0.738	-2.64	-56.50	0.370	-8.63	-80.00	0.077	-22.25
1.75	0.999	-0.01	-10.00	0.974	-0.23	-33.50	0.731	-2.73	-57.00	0.362	-8.82	-80.50	0.073	-22.73
1.50	0.999	-0.01	-10.50	0.971	-0.26	-34.00	0.723	-2.81	-57.50	0.355	-9.00	-81.00	0.069	-23.22
1.25	1.000	0.00	-11.00	0.968	-0.28	-34.50	0.716	-2.90	-58.00	0.347	-9.19	-81.50	0.065	-23.73
1.00	1.000	0.00	-11.50	0.965	-0.31	-35.00	0.709	-2.99	-58.50	0.339	-9.38	-82.00	0.061	-24.25
0.75	1.000	0.00	-12.00	0.962	-0.33	-35.50	0.701	-3.08	-59.00	0.332	-9.58	-82.50	0.058	-24.79
0.50	1.000	0.00	-12.50	0.959	-0.36	-36.00	0.694	-3.17	-59.50	0.324	-9.78	-83.00	0.054	-25.34
0.25	1.000	0.00	-13.00	0.956	-0.39	-36.50	0.687	-3.27	-60.00	0.317	-9.98	-83.50	0.051	-25.92
0.00	1.000	0.00	-13.50	0.952	-0.42	-37.00	0.679	-3.36	-60.50	0.310	-10.19	-84.00	0.047	-26.51
-0.25	1.000	0.00	-14.00	0.949	-0.46	-37.50	0.671	-3.46	-61.00	0.302	-10.39	-84.50	0.044	-27.13
-0.50	1.000	0.00	-14.50	0.945	-0.49	-38.00	0.664	-3.56	-61.50	0.295	-10.61	-85.00	0.041	-27.77
-0.75	1.000	0.00	-15.00	0.941	-0.53	-38.50	0.656	-3.66	-62.00	0.288	-10.82	-85.50	0.038	-28.44
-1.00	1.000	0.00	-15.50	0.937	-0.56	-39.00	0.648	-3.76	-62.50	0.280	-11.04	-86.00	0.035	-29.13
-1.25	1.000	0.00	-16.00	0.933	-0.60	-39.50	0.641	-3.87	-63.00	0.273	-11.27	-86.50	0.032	-29.85
-1.50	0.999	-0.01	-16.50	0.929	-0.64	-40.00	0.633	-3.97	-63.50	0.266	-11.49	-87.00	0.029	-30.61
-1.75	0.999	-0.01	-17.00	0.925	-0.68	-40.50	0.625	-4.08	-64.00	0.259	-11.73	-87.50	0.027	-31.39
-2.00	0.999	-0.01	-17.50	0.921	-0.72	-41.00	0.617	-4.19	-64.50	0.252	-11.96	-88.00	0.024	-32.22
-2.25	0.999	-0.01	-18.00	0.916	-0.76	-41.50	0.609	-4.30	-65.00	0.245	-12.20	-88.50	0.022	-33.09
-2.50	0.998	-0.01	-18.50	0.912	-0.80	-42.00	0.601	-4.42	-65.50	0.239	-12.45	-89.00	0.020	-34.00
-2.75	0.998	-0.02	-19.00	0.907	-0.85	-42.50	0.593	-4.53	-66.00	0.232	-12.70	-89.50	0.018	-34.96
-3.00	0.998	-0.02	-19.50	0.902	-0.89	-43.00	0.586	-4.65	-66.50	0.225	-12.95	-90.00	0.016	-35.99
-3.25	0.997	-0.02	-20.00	0.897	-0.94	-43.50	0.578	-4.77	-67.00	0.219	-13.21			
-3.50	0.997	-0.03	-20.50	0.892	-0.99	-44.00	0.570	-4.89	-67.50	0.212	-13.47			
-3.75	0.996	-0.03	-21.00	0.887	-1.04	-44.50	0.562	-5.01	-68.00	0.206	-13.74			
-4.00	0.996	-0.04	-21.50	0.882	-1.09	-45.00	0.554	-5.14	-68.50	0.199	-14.01			
-4.25	0.995	-0.04	-22.00	0.877	-1.14	-45.50	0.546	-5.26	-69.00	0.193	-14.29			
-4.50	0.995	-0.05	-22.50	0.871	-1.20	-46.00	0.537	-5.39	-69.50	0.187	-14.58			
-4.75	0.994	-0.05	-23.00	0.866	-1.25	-46.50	0.529	-5.52	-70.00	0.181	-14.87			
-5.00	0.993	-0.06	-23.50	0.860	-1.31	-47.00	0.521	-5.66	-70.50	0.175	-15.16			
-5.25	0.993	-0.06	-24.00	0.855	-1.36	-47.50	0.513	-5.79	-71.00	0.169	-15.47			
-5.50	0.992	-0.07	-24.50	0.849	-1.42	-48.00	0.505	-5.93	-71.50	0.163	-15.77			
-5.75	0.991	-0.08	-25.00	0.843	-1.48	-48.50	0.497	-6.07	-72.00	0.157	-16.09			
-6.00	0.990	-0.08	-25.50	0.837	-1.55	-49.00	0.489	-6.21	-72.50	0.151	-16.41			
-6.25	0.990	-0.09	-26.00	0.831	-1.61	-49.50	0.481	-6.36	-73.00	0.146	-16.74			
-6.50	0.989	-0.10	-26.50	0.825	-1.67	-50.00	0.473	-6.50	-73.50	0.140	-17.07			

Preliminary, subject to final design and review.

# **Adjacent Channel Study** **For Station K281BN, Facility\_id: 145443**

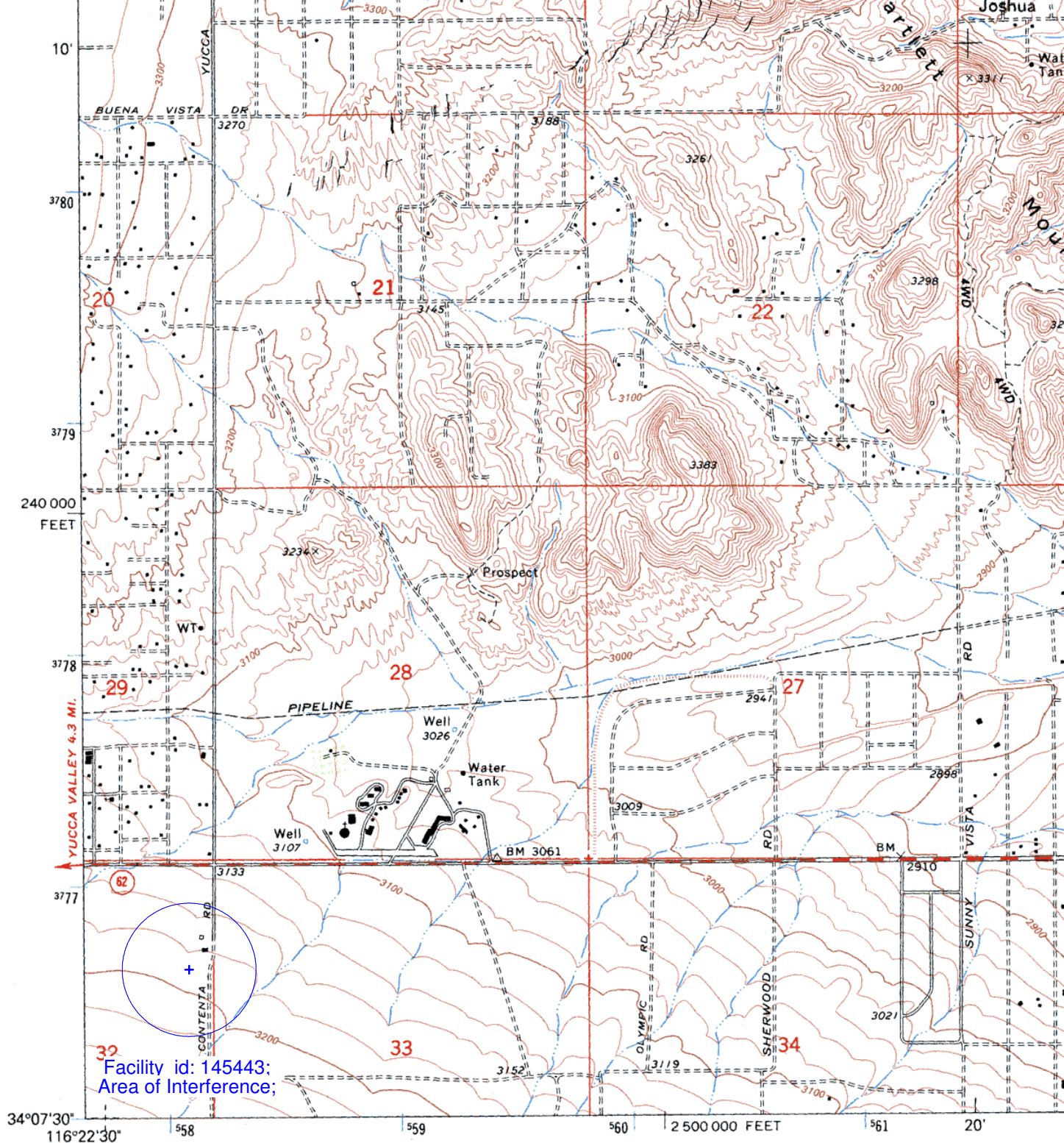
## **Co-channel through third adjacent:**

App_id	Fac_id	File_Number	Call	Licensee	Class	City	State	Status	ERP	RCAMSL	Char	Adj	Dist	Overlap
1459461	183327	BPH-20111116AIN	KCLZ	SUNNYLANDS BROADCASTING L	A	TWENTYNINE PA	CA	CP	6	949	283	2	15.8	1.4918
1498256	14060	BLFT-20120501AFC	K280CV	MCC RADIO, LLC	D	CATHEDRAL CITY	CA	LIC	0.25	482	280	1	30.1	0
672104	141074	BNPFT-20030827AKI	K280FO	WORLD RADIO NETWORK, INC.	D	COACHELLA	CA	CP	0.022	53	280	1	52.4	0
1397692	67354	BLH-20100903ACG	KQIE	LC MEDIA LP	A	REDLANDS	CA	LIC	1.35	1522	284	3	56.1	0
1561660	191492	BNPH-20130624ABC	NEW	SUNNYLANDS BROADCASTING,	A	MECCA	CA	APP	6	572	282	1	58	0
1500291	189509	BLH-20120521BEN	KPST-FM	ENTRAVISION HOLDINGS, LLC	A	COACHELLA	CA	LIC	1.9	559	278	3	63.3	0
224243	2398	BLH-19960502KA	KCXX	ALL PRO BROADCASTING, INC.	A	LAKE ARROWHE/	CA	LIC	0.18	1988	280	1	71.7	0
1619596	188075	BLFTB-20140113AAC	KQIE-FM1	LC MEDIA LP	D	SUNNYMEAD RA	CA	LIC	0.095	935	284	3	86.6	0
1563270	191521	BNPH-20130724ABV	NEW	POINT FIVE LLC	A	AMBOY	CA	CP	0.76	1153	284	3	92.7	0
542643	79388	BLH-20001219ABK	KIQQ-FM	CASA MEDIA PARTNERS, LLC	A	NEWBERRY SPRI	CA	LIC	6	845	279	2	96.7	0
1334064	183309	BSFH-20090624AFD	NEW	AUDION COMMUNICATIONS, LLC	A	MURRIETA	CA	APP	0	0	281	0	97.3	0
1334450	183309	BNPH-20091019AFK	NEW	AUDION COMMUNICATIONS, LLC	A	MURRIETA	CA	APP	1.15	622	281	0	104.2	0
494551	81804	BLH-20000316ACA	KBTW	LAZER LICENSES, LLC	A	LENWOOD	CA	LIC	1.1	1037	283	2	111.7	0
189533	34424	BLH-19930831KD	KOST	AMFM BROADCASTING LICENSE	B	LOS ANGELES	CA	LIC	12.5	1843	278	3	156.2	0
1107983	6360	BLH-20060113ABU	KBIG	AMFM BROADCASTING LICENSE	B	LOS ANGELES	CA	LIC	65	1818.4	282	1	156.4	0

## **Intermediate Frequencies (53 and 54 channels difference):**

App_id	Fac_id	File_Number	Call	Licensee	Class	City	State	Status	ERP	RCAMSL	Channel	Adj	Dist	Clr
1037905	51566	BLH-20050103AJG	KBHR	PARALLEL BROADCASTING, INC.	A	BIG BEAR CITY	CA	LIC	1.3	2115	227	54	42.1	32.1





2752 III SW  
(YUCCA VALLEY  
SOUTH)

Produced by the United States Geological Survey in  
cooperation with California Department of Water  
Resources

Control by USGS and NOS/NOAA

Compiled from aerial photographs taken 1970. Field checked 1972

North American Datum of 1927 (NAD 27). Projection and

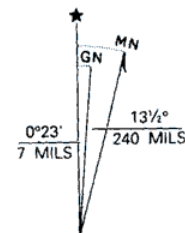
10 000-foot ticks: California Coordinate System, zone 5

(Lambert Conformal Conic)

Blue 1000-meter Universal Transverse Mercator ticks, zone 11

North American Datum of 1983 (NAD 83) is shown by dashed  
corner ticks. The values of the shift between NAD 27 and NAD 83  
for 7.5-minute intersections are obtainable from National Geodetic  
Survey NADCON software

Photinspected from 1989 source; no major culture  
or drainage changes observed. Names verified 1994



UTM GRID AND 1994 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET



