

BROADCAST ENGINEERING CONSULTANTS

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ENGINEERING STATEMENT

Concerning an application for Construction Permit for a new fill in FM translator for AM broadcast station KHAC AM tse Bonito, New Mexico.

The FCC has previously determined that it is in the public interest for AM stations to benefit from fm translators to fill in their service area.

Western Indian Ministries, Inc. is the licensee of Station KHAC AM and was the singleton applicant for new translator in Auction 100 BMPFT20180129AFS to fill in the coverage of KHAC. This instant modification application requests the operating channel of 244D for the proposed translator to serve Window Rock, Arizona.

The proposed nondirectional antenna will be mounted on the existing 56m tower ASR# 1006020 at 53m AGL height. The proposed translator 60dBu contour remains within the KHAC AM 2 mV/m contour. See the coverage map exhibit following this statement.

The proposed translator antenna will be located at the 53m AGL level on the existing 56m AGL tower. The existing tower and the existing transmitter building will be used so no environmental effect is likely. The fields on the ground due to the proposed translator facility will be less than 2% of the OET recommended maximum public exposure and therefore will be excluded from additional environmental study.

No employee will be allowed to climb the structure when energized and power will be reduced or operation terminated as needed when any user must service the tower or antennas.

The proposed translator meets location criteria for an AM fill in translator since the proposed 60dBu contour is completely within the KHAC 2mV/m contour as shown on the following coverage map.

The proposed translator protects the existing 60dBu contour for all licensed, permitted, and known proposed FM facilities. The nondirectional antenna proposed is a ERI Model 1100 as shown on the form. In the event of actual interference the translator will reduce power or cease operation until any actual interference is remedied.

The proposed translator will provide the best practical fill in service for KHAC-AM in the public interest.

Respectfully submitted



Timothy C. Cutforth, P.E.
10 October 2018

FM Study for: KHAC244D FCC Database Date: 10/5/2018 35-39-19
 Location: WINDOW ROCK, AZ Channel Class: D 109-01-59

Contours calculated on direct line using 73.509(a)

[*] by Distance indicates directional antenna used in calculation.

[*] by HAAT indicates calculated as missing in database.

Call	City, State	Chan Class	Freq	kW	Latitude	Dist.	Required
Status	Proponent	File Number	HAAT	Longitude	Azm.	Clear (km)	

>>>>>>> Study For Channel 244 96.7 MHz <<<<<<<<

K298BT	TOHATCHI, NM	298 D	107.5	.010+	35-54-30	36.6	0
LIC	Fac. No. 144698	BLFT-20161230ABC	569*		108-46-22	39.9	+36.6 CLEAR
KWRK	WINDOW ROCK, AZ	241 C1	96.1	100.	35-33-36	12.6	73
LIC	Fac. No. 66147	BLH-19960911KD	178		109-06-30	212.9	-60.4 SHORT
KHAC24 F(50,10) 100 dBu = 1 km, KWRK F(50,50) 60 dBu = 64 KM -52 km *							
KMYN	GRANTS, NM	244 C3	96.7	.265	35-15-11	137.9	83
LIC	Fac. No. 183361	BLH-20121203BTF	818		107-35-46	108.5	+54.9 CLEAR
KHAC24 F(50,10) 40 dBu = 45 km, KMYN F(50,50) 60 dBu = 38 KM +55 km							
NEW	WINDOW ROCK, AZ	244 D	96.7	.250	35-39-19	0.0	44
APP	Fac. No. 202948	BNPFT-20180129AFS	104*		109-01-59	0.0	-44.0 SHORT
KHAC24 F(50,10) 40 dBu = 45 km, NEW F(50,50) 60 dBu = 18 KM -62 km							
KDAG	FARMINGTON, NM	245 C0	96.9	100.	36-48-52	164.5	111
LIC	Fac. No. 29519	BLH-20060309AED	303		107-53-32	38.2	+53.5 CLEAR
KHAC24 F(50,10) 54 dBu = 19 km, KDAG F(50,50) 60 dBu = 78 KM +67 km							
NEW	GALLUP, NM	246 D	97.1	.250	35-31-43	30.3	14
APP	Fac. No. 203284	BNPFT-20180131AIS	-36*		108-44-13	117.6	+16.3 CLEAR
KHAC24 F(50,10) 100 dBu = 1 km, NEW F(50,50) 60 dBu = 7 KM +22 km							

- The KWRK Contour at the proposed translator site is 92.6 dBu therefore the third adjacent contour level to cause interference would be 40 dB above 92.6dBu or 132.6dBu
 The proposed 132.6dBu contour does not touch the ground so no interference To KWRK will exist.

Station: KHAC		Frequency 880 kHz		35-38-41		109-01-13	
Azim	Inverse	25 mV	5 mV	2.0 mV	0.5 mV	.250 mV	.025 mV
(deg)	(mV/m)	(km)	(km)	(km)	(km)	(km)	(km)
0	912.6	20.5	51.0	77.1	151.9	198.2	361.0
5	912.6	20.5	51.0	77.1	154.8	195.0	360.6
10	912.6	20.5	51.0	77.7	157.7	192.2	360.2
15	912.6	20.5	51.0	80.4	159.6	190.1	359.2
20	912.6	20.5	51.0	82.4	158.8	189.3	354.0
25	912.6	20.5	51.0	84.3	158.5	188.9	335.8
30	912.6	20.5	51.0	85.6	159.0	189.5	331.7
35	912.6	20.5	51.0	86.5	160.3	190.7	332.4
40	912.6	20.5	51.0	87.0	161.8	192.3	334.8
45	912.6	20.5	51.0	87.6	163.2	193.7	338.2
50	912.6	20.5	51.0	87.9	164.5	195.0	342.3
55	912.6	20.5	51.0	87.4	165.6	196.1	343.6
60	912.6	20.5	51.0	86.8	166.8	197.8	346.0
65	912.6	20.5	51.0	86.2	166.2	200.5	346.8
70	912.6	20.5	51.0	84.7	164.7	204.4	351.4
75	912.6	20.5	51.0	83.3	163.3	211.0	357.3
80	912.6	20.5	51.0	79.4	159.4	209.6	363.7
85	912.6	20.5	51.0	77.1	154.2	204.4	374.0
90	912.6	20.5	51.0	77.1	146.6	196.9	377.0
95	912.6	20.5	51.0	77.1	141.0	191.2	395.7
100	912.6	20.5	51.0	77.1	137.7	187.9	397.6
105	912.6	20.5	51.0	77.1	135.4	185.7	395.3
110	912.6	20.5	51.0	77.1	133.7	183.7	393.7
115	912.6	20.5	51.0	77.1	133.7	180.9	390.7
120	912.6	20.5	51.0	77.1	133.7	179.0	389.5
125	912.6	20.5	51.0	77.1	133.7	176.7	386.0
130	912.6	20.5	51.0	77.1	133.7	173.6	377.0
135	912.6	20.5	51.0	77.1	133.7	173.1	369.2
140	912.6	20.5	51.0	77.1	133.7	173.1	360.9
145	912.6	20.5	51.0	77.1	133.7	173.1	353.9
150	912.6	20.5	51.0	77.1	133.7	173.1	346.5
155	912.6	20.5	51.0	77.1	133.7	173.1	346.9
160	912.6	20.5	51.0	77.1	133.7	173.1	343.4
165	912.6	20.5	51.0	77.1	133.7	173.1	336.5
170	912.6	20.5	51.0	77.1	133.7	170.2	328.0
175	912.6	20.5	51.0	77.1	133.7	166.8	322.9

Station: KHAC		Frequency 880 kHz		35-38-41		109-01-13	
Azim	Inverse	25 mV	5 mV	2.0 mV	0.5 mV	.250 mV	.025 mV
(deg)	(mV/m)	(km)	(km)	(km)	(km)	(km)	(km)
180	912.6	20.5	51.0	77.1	133.1	163.5	322.5
185	912.6	20.5	51.0	77.1	140.7	174.7	338.8
190	912.6	20.5	51.0	77.1	146.5	178.9	346.9
195	912.6	20.5	51.0	77.1	150.5	180.9	352.3
200	912.6	20.5	51.0	77.1	151.6	182.1	357.4
205	912.6	20.5	51.0	78.3	154.3	184.8	364.3
210	912.6	20.5	51.0	81.1	159.2	189.7	377.3
215	912.6	20.5	51.0	83.3	163.3	202.6	393.1
220	912.6	20.5	51.0	84.9	164.9	205.9	397.1
225	912.6	20.5	51.0	86.5	166.5	207.8	398.3
230	912.6	20.5	51.0	87.3	167.3	209.2	397.2
235	912.6	20.5	51.0	88.2	168.3	211.1	398.8
240	912.6	20.5	51.0	88.6	168.6	212.0	398.3
245	912.6	20.5	51.0	88.7	168.8	213.8	397.9
250	912.6	20.5	51.0	88.7	161.6	209.2	393.5
255	912.6	20.5	51.0	87.8	154.1	203.8	388.0
260	912.6	20.5	51.0	86.1	150.7	200.9	386.6
265	912.6	20.5	51.0	84.5	147.2	197.4	384.5
270	912.6	20.5	51.0	83.1	143.7	193.9	383.6
275	912.6	20.5	51.0	79.0	135.8	186.1	378.8
280	912.6	20.5	51.0	77.1	133.7	181.6	377.1
285	912.6	20.5	51.0	77.1	133.7	179.0	378.1
290	912.6	20.5	51.0	77.1	133.7	175.6	377.7
295	912.6	20.5	51.0	77.1	133.7	173.1	376.8
300	912.6	20.5	51.0	77.1	133.7	173.1	382.9
305	912.6	20.5	51.0	77.1	133.7	173.1	391.3
310	912.6	20.5	51.0	77.1	133.7	173.1	391.1
315	912.6	20.5	51.0	77.1	133.7	173.1	365.9
320	912.6	20.5	51.0	77.1	133.7	173.1	366.6
325	912.6	20.5	51.0	77.1	133.7	173.1	367.9
330	912.6	20.5	51.0	77.1	133.7	173.1	375.8
335	912.6	20.5	51.0	77.1	133.7	176.8	390.4
340	912.6	20.5	51.0	77.1	133.7	183.5	397.0
345	912.6	20.5	51.0	77.1	138.0	188.3	388.8
350	912.6	20.5	51.0	77.1	143.0	193.2	377.1
355	912.6	20.5	51.0	77.1	147.8	198.0	365.9

Vir James Engineers

Station: KHAC 880 kHz 35-38-41 109-01-13

Distances are from Site to Conductivity Breaks

AZIMUTH	mS/m	KM	mS/m	KM	mS/m	KM	mS/m	KM
0	8	88.2	15	191.1	4	330.2	15	411.6
	8	450.0						
5	8	81.4	15	178.4	4	314.8	15	408.6
	8	450.0						
10	8	75.2	15	167.3	4	304.6	15	388.5
	8	450.0						
15	8	69.8	15	158.5	4	298.3	15	362.1
	8	446.0	2	450.0				
20	8	65.5	15	154.3	4	306.9	15	334.0
	8	404.1	2	450.0				
25	8	62.2	15	151.4	4	275.6	2	450.0
30	8	59.7	15	150.9	4	247.2	2	450.0
35	8	57.8	15	152.6	4	244.5	2	434.6
	8	450.0						
40	8	56.4	15	155.5	4	251.4	2	413.8
	8	450.0						
45	8	55.5	15	157.8	4	259.5	2	335.1
	4	407.1	8	450.0				
50	8	55.0	15	160.3	4	263.2	2	316.8
	4	404.4	8	445.3	15	450.0		
55	8	55.8	15	163.4	4	266.5	2	314.2
	4	379.1	2	404.4	8	437.2	15	450.0
60	8	57.0	15	167.8	4	272.1	2	318.6
	4	368.9	2	428.3	15	450.0		
65	8	58.8	15	175.4	4	283.8	2	427.7
	15	450.0						
70	8	61.2	15	187.4	4	291.9	2	417.4
	15	450.0						
75	8	64.2	15	206.4	4	293.5	2	371.9
	15	450.0						
80	8	72.1	15	229.9	4	292.1	2	356.8
	15	450.0						
85	8	83.3	15	253.6	4	289.2	2	346.8
	15	450.0						
90	8	99.6	15	280.0	2	339.9	15	450.0
95	8	114.2	15	313.1	2	329.4	15	450.0
100	8	122.9	15	355.5	8	397.2	15	450.0
105	8	129.2	15	352.8	8	432.0	15	450.0
110	8	135.3	15	354.1	8	439.8	15	450.0
115	8	143.2	15	358.1	8	457.6		
120	8	150.9	15	365.0	8	450.0		
125	8	160.2	15	368.4	4	450.0		
130	8	172.0	15	338.6	4	450.0		
135	8	186.5	15	314.1	4	450.0		
140	8	203.7	15	294.2	4	450.0		

Vir James Engineers

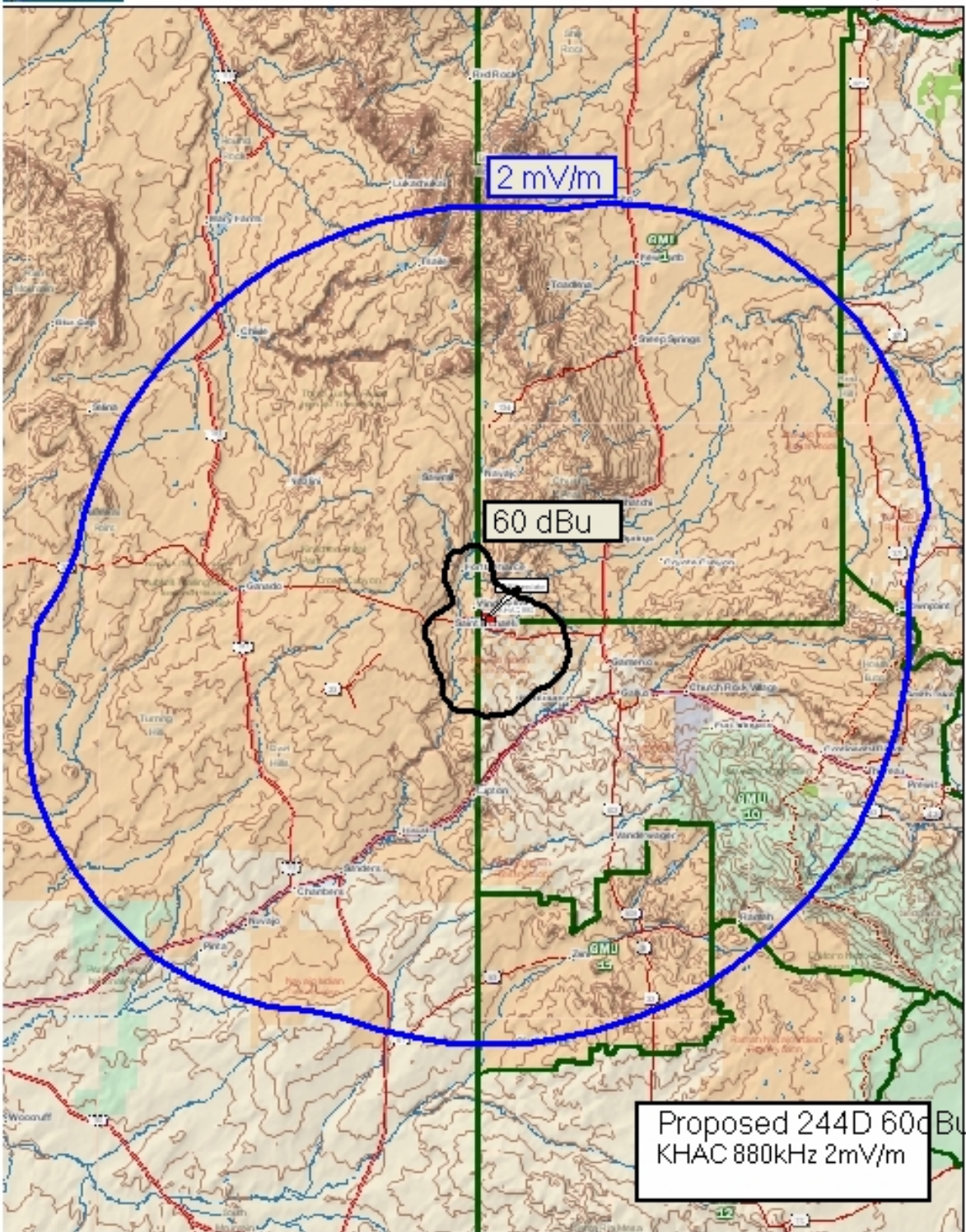
Station: KHAC 880 kHz 35-38-41 109-01-13

AZIMUTH	mS/m	KM	mS/m	KM	mS/m	KM	mS/m	KM
145	8	226.3	15	278.6	4	450.0		
150	8	256.4	15	266.6	4	450.0		
155	8	274.3	4	450.0				
160	8	191.8	4	198.9	8	264.8	4	450.0
165	8	175.8	4	220.4	8	259.8	4	317.7
	8	327.2	4	450.0				
170	8	159.9	4	318.1	8	359.9	4	450.0
175	8	145.2	4	320.6	8	450.0		
180	8	131.1	4	306.9	8	450.0		
185	8	114.7	15	149.2	4	276.3	8	450.0
190	8	99.8	15	151.5	4	254.9	8	450.0
195	8	88.7	15	148.9	4	237.6	8	450.0
200	8	80.4	15	147.0	4	222.2	8	366.7
	15	440.1	8	450.0				
205	8	74.0	15	149.3	4	206.5	8	345.2
	15	468.5						
210	8	68.6	15	156.8	4	190.5	8	336.2
	15	450.0						
215	8	64.2	15	167.7	4	169.6	8	331.5
	15	450.0						
220	8	60.7	15	173.0	8	326.1	15	450.0
225	8	58.0	15	175.5	8	330.3	15	450.0
230	8	55.9	15	178.0	8	363.8	15	450.0
235	8	54.4	15	182.1	8	355.2	15	450.0
240	8	53.6	15	187.7	8	374.9	15	450.0
245	8	53.2	15	193.6	8	390.4	15	450.0
250	8	53.2	15	94.9	8	111.1	15	199.0
	8	404.0	15	450.0				
255	8	53.7	15	85.3	8	118.2	15	201.7
	8	415.6	15	450.0				
260	8	54.5	15	81.3	8	121.5	15	205.8
	8	416.7	15	450.0				
265	8	55.8	15	78.2	8	124.6	15	211.7
	8	421.1	15	450.0				
270	8	58.3	15	75.8	8	128.9	15	219.6
	8	422.7	15	450.0				
275	8	65.2	15	71.0	8	134.5	15	230.1
	8	424.6	15	450.0				
280	8	141.8	15	243.7	8	424.8	15	450.0
285	8	151.1	15	266.0	8	419.0	15	450.0
290	8	163.1	15	285.7	8	416.3	15	450.0
295	8	178.6	15	289.9	8	360.4	30	388.6
	8	413.0	15	450.0				
300	8	197.1	15	290.2	8	336.5	30	438.0
	15	450.0						
305	8	221.6	15	292.5	30	432.6	15	450.0

Vir James Engineers

Station: KHAC 880 kHz 35-38-41 109-01-13

AZIMUTH	mS/m	KM	mS/m	KM	mS/m	KM	mS/m	KM
310	8	231.5	15	287.4	30	420.4	15	450.0
315	8	226.1	15	284.6	8	442.2	15	450.0
320	8	218.8	15	280.4	8	450.0		
325	8	203.3	15	273.3	8	450.0		
330	8	180.2	15	271.0	8	341.3	15	406.0
	8	450.0						
335	8	158.5	15	433.0	8	450.0		
340	8	137.4	15	450.0				
345	8	122.1	15	234.3	4	264.9	15	397.0
	4	450.0						
350	8	109.0	15	218.0	4	291.7	15	374.5
	4	450.0						
355	8	97.2	15	205.0	4	323.4	15	390.2
	8	450.0						



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