

APPLICATION FOR A  
MAJOR AMENDMENT TO  
AN LPFM BROADCAST  
STATION HAVING  
FACILITY ID 196317 FCC  
FILE BNPL-20131112BMC  
HANFORD, CA

July 14, 2014

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## 1.0 PURPOSE OF LPFM MAJOR AMENDMENT APPLICATION

Hanford Youth Services, Inc. ("HYS") filed for an LPFM broadcast station during the October 15 – November 14, 2013 LPFM filing window. The proposed facility has subsequently been identified as Mutually Exclusive "MX" in Public Notice DA-2397<sup>1</sup> which consists of the following filings:

#	Group	State	City	Chan	Applicant	File Number	Facility ID
236	46	CA	Hanford	283	Hanford Youth Services, Inc.	20131112BMC	196317
237	46	CA	Hanford	283	First Unitarian Universal Life Church	20131113BFQ	196319

Pursuant to Public Notice FCC 14-96<sup>2</sup> released on July 9, 2014, the FCC has identified Facility ID 196319 having File Number BNPL-20131113BFQ as the tentative selectee for MX group 46.

Pursuant to Public Notice DA-2308<sup>3</sup> major amendments, such as non-adjacent channel changes and otherwise prohibited site relocations of greater than 5.6 kilometers, will only be allowed after the Commission identifies tentative selectees among the MX groups.

In response the above reference Public Notices, the instant major amendment application is being filed in an expeditiously manner to change the channel from 283 to channel 223. Since channel 223 is 60 channels below channel 283 it is not +/- three channels or to an intermediate frequency (+/- 53 or 54) channel which would be a minor amendment.

Upon approval of the instant major amendment, the LPFM shall be broken from MX group 46 and will not enter into any new MX situations with any other applicants or licensees.

## 2.0 AMENDED TECHNICAL PARAMETERS

The instant major amendment shall entail modifying the following technical parameters

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<sup>1</sup> See *Media bureau identifies mutually exclusive applications filed in the LPFM window and announces 60-day settlement period; CDBS is now accepting form 318 amendments*, Public Notice, DA 13-2397 (MB 2013) Released: December 16, 2013

<sup>2</sup> *Commission Identifies Tentative Selectees in 79 Groups of Mutually Exclusive Applications Filed In the LPFM Window; Announces A 30-Day Petition To Deny Period And A 90 - Day Period To File Voluntary Time-Share Proposals And Major Change Amendments* Public Notice, FCC 12-96 Released: July 9, 2014

<sup>3</sup> See *Media Bureau Provides Further Guidance On The Processing of Form 318 Applications Filed in the LPFM Window*, Public Notice, DA 13-2308 (MB 2013) Released: December 3, 2013

## 2.1 FCC Form 318 – Section VI – Question 1 - Channel

The channel is herein amended from 283 to 223 and is classified as a major amendment which is allowable during the 90 day filing period beginning July 10, 2014

## 3.0 STATION TRANSMITTER LOCATION

The proposed transmitter site shall consist of an existing building which is 15 feet tall with a 19 foot tall mast erected on the roof top to support the proposed LPFM antenna. The building is located at the following address and resulting site geographical coordinates.

### 3.1 Transmitter Site Physical Address:

102 W 7<sup>th</sup> ST  
Hanford, CA 93230

### 3.2 Transmitter Site Geographic Coordinates (NAD27)

The following transmitter site coordinates were determined using a 7.5 minutes series U.S. Geological Survey topographic quadrangle map then checked for consistency using a GIS program:

N. Latitude     36° 19' 36.6"  
W. Longitude   119° 38' 42.6"

### 3.3 Antenna Structure Registration

The proposed structure consists of a 15' tall building with a 19' mast erected on the rooftop. The combined structure and mast height of the roof mounted antenna system does not require an Antenna Structure Registration "ASR" number since the mast atop the roof meets the 6.1 meter (20-foot) rule criteria. Output resulting from the FCC's TOWAIR program is demonstrated in Appendix A.

## 4.0 ANTENNA AND SITE ELEVATIONS

The applicant proposes to use the studio roof top to erect a mast in which to mount the LPFM antenna. The pertinent elevations are as described:

### 4.1 Height of Site Above Mean Sea Level (AMSL) 250ft / 76.2m (rounded to 76m for FCC Application)

### 4.2 Overall Height of Support Structure (roof) Above Ground Level (AGL) 15ft / 4.6m

- 4.3 Overall Height of Mast above the rooftop  
19ft / 5.8m
- 4.4 Overall Height of Mast (AGL)  
34ft / 10.4m (Rounded to 10m for FCC Application)
- 4.5 LPFM antenna height above rooftop  
18.0ft / 5.5m
- 4.6 LPFM antenna height (AGL)  
33.1ft / 10.1m (Rounded to 10m for FCC Application)
- 4.7 LPFM antenna height (AMSL)  
283.1ft / 86.3m
- 4.8 LPFM antenna Height Above Average Terrain (HAAT)  
82.0ft / 25.0m (Refer to Appendix B for HAAT Calculations produced from the FCC's Website)

## **5.0 LPFM EFFECTIVE RADIATED POWER**

Pursuant to 47 C.F.R. Section 73.811(a) entitled "Maximum facilities", LPFM stations will be authorized to operate with maximum facilities of 100 watts ERP at 30 meters HAAT. An LPFM station with a HAAT that exceeds 30 meters will not be permitted to operate with an ERP greater than that which would result in a 60 dBu contour of 5.6 kilometers. In no event will an ERP less than one watt be authorized. No facility will be authorized in excess of one watt ERP at 450 meters HAAT.

Since the calculated HAAT is 25m as demonstrated in Appendix B, the applicant shall employ a 100 Watt ERP and is thus well within 47 C.F.R. Section 73.811(a) compliance.

## **6.0 ALLOCATION ANALYSIS**

A major amendment from channel 283 to channel 223 will break the instant applicant from MX group 46 and bring the facility into technical compliance.

### **6.1 LPFM Short Space Study for Channel 223**

Appendix C is a long form channel study which demonstrates the distance separation requirements of 47 C.F.R. Section 73.807 to surrounding FM stations. As demonstrated there are no short spacing violations and is fully compliant with all spacing requirements.

## **7.0 INTERFERENCE TO TRANSLATOR OR BOOSTER INPUT SIGNALS**

Pursuant to the requirements of 47 C.F.R. Section 73.827(a), Appendix D demonstrates that there are no FM Booster or Translator stations that exist within 10km of the proposed site, thus no translators or boosters shall have an input channel that is third -adjacent to the proposed LPFM facility; as such the proposed LPFM facility will not cause interference to the input signals of and surrounding FM translator or FM booster stations.

## **8.0 CHANNEL 6 TELEVISION STATIONS**

Section 47 C.F.R. Section 73.825 TV Channel 6 interference is not a factor for LPFM stations operating on channels 221 – 300 and thus is not applicable to the instant application for further analysis.

## **9.0 AM STATION PROXIMITY**

Pursuant to 47 C.F.R. Section 1.30002(e), the addition of an antenna-supporting structure on a building shall be considered construction subject to the analysis and notification requirement only if the height of the antenna-supporting structure **ALONE** exceeds the 60 and 36 electrical degree threshold in Section 1.30002(a) and 1.30002(b) for a non-direction and directional AM facility respectively.

The proposed support structure in this instance extends 5.8 meters above the roof top. A worst case proposed support structure height in electrical degrees shall be calculated using the highest frequency on the AM band of 1600 kHz which subsequently has the highest wavelength and thus is the most prone to vertical radiators. As such the worst case proposed structure height in electrical degrees is as follows:

$$\text{AM Wavelength} = 300/1.6 = 187.5 \text{ meters}$$

$$\text{Prop. Support Structure. Ht. in elec. Deg.} = (5.8/187.5)(360) = 11.1 \text{ electrical degrees}$$

As demonstrated the calculated height in electrical degrees is well below the 60 and 36 electrical degree thresholds for non-directional and directional AM facilities respectively. As such, the proposed LPFM facility and its support structure are not subject to the moment method analysis and 30 day advance notification of the commencement of construction of the proposed rooftop support structure.

## **10.0 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)**

### **10.1 General Environmental Requirements**

The proposed support structure and antenna will not:

- Require high intensity white lighting.
- Is not located in an official designated wilderness area or wildlife preserve.
- Does not threaten the existence or habitat of endangered species.
- Does not affect districts, sites, buildings, structures or objects significant in American history, architecture, archaeology, engineering or culture that are listed in the National Register of Historic Places or are eligible for listing.
- Does not affect Indian religious sites.
- Is not located in a floodplain
- Does not require construction that involves significant changes in surface features (e.g., wetland fill, deforestation or water diversion).

### **10.2 Radio Frequency Radiation (RFR) Compliance.**

Appendix F is a RFR analysis which demonstrates that the peak RFR exposure is 65.1% of the most restrictive permissible exposure threshold standing anywhere on the roof top in any proximity to the proposed support structure. Pursuant to OET Bulletin 65, since the proposed operation exceeds 5% of the most permissible exposure at any location 2 meters above the roof top, it is considered a significant contributor to RFR exposure and other sources of RFR must be taken into account for a cumulative RFR analysis. Since there are no other RF sources in the area to contribute to a cumulative RFR analysis, Appendix F is considered the cumulative RFR analysis. It should be further noted that access to the roof top where the antenna is located is restricted to the general public. The instant application is compliant with the FCC limits for human exposure to RFR and thus is excluded from further environmental processing.

## **11.0 CONCLUSION**

As demonstrated a major amendment to the proposed facility shall remove it from MX group 46 and place it to a channel where it will not be mutual exclusive with any other. On all accounts, the proposed facility is well within compliance on all regulatory matters.

## **12.0 CERTIFICATION**

The foregoing statement and the report regarding the aforementioned engineering work are true and correct to the best of my knowledge. Executed on July 14, 2014.

KESSLER AND GEHMAN ASSOCIATES, INC.



Ryan Wilhour  
Consulting Engineer



## APPENDIX A - FCC TOWAIR Study

Antenna Structure Registration (ASR) filing determination was calculated from the FCC's structure registration tool:

<http://wireless2.fcc.gov/UlsApp/AsrSearch/towairSearch.jsp>

Results are as follows:

DETERMINATION Results	
Structure does not require registration. The structure meets the 6.10-meter (20-foot) Rule criteria.	
Your Specifications	
NAD83 Coordinates	
Latitude	36-19-36.5 north
Longitude	119-38-46.0 west
Measurements (Meters)	
Overall Structure Height (AGL)	10.4
Support Structure Height (AGL)	4.6
Site Elevation (AMSL)	76.2
Structure Type	
BMAST - Building with Mast	

## **APPENDIX B - Height Above Average Terrain Calculation**

The Height Above Average Terrain (HAAT) was calculated from the FCC's HAAT Calculator tool:

[http://transition.fcc.gov/mb/audio/bickel/haat\\_calculator.html](http://transition.fcc.gov/mb/audio/bickel/haat_calculator.html)

Results are as follows:

### **Antenna Height Above Average Terrain Calculations -- Input**

Latitude **36 19 36.6 North**  
Longitude **119 38 42.6 West** (NAD 27)

Height of antenna radiation center above mean sea level [RCAMSL] = **86.3** meters

Number of Evenly Spaced Radials = 8      0° is referenced to True North

### **Results:**

**Calculated HAAT= 25. meters**

(Antenna Height Above Average Terrain)  
using the 30 second FCC/NGDC terrain data)

### **Antenna Radiation Center Heights Above Individual Radials:**

0.0°	25.3 meters
45.0°	22.2 meters
90.0°	23.6 meters
135.0°	26.3 meters
180.0°	26.3 meters
225.0°	26.3 meters
270.0°	26.3 meters
315.0°	26.3 meters

**APPLICATION FOR A NEW LPFM BROADCAST STATION TO SERVE HANFORD, CA**

Hanford Youth Services, Inc.

July 14, 2014

**APPENDIX C - Short Spacing Study for Channel 223**

Hanford Youth Services, Inc.

REFERENCE		CLASS = L1	DISPLAY DATES
36 19 36.6 N.			DATA 07-14-14
119 38 42.6 W.	Current	Spacings to 2nd Adj.	SEARCH 07-14-14
----- Channel 223 - 92.5 MHz -----			

Call	Channel	Location	Azi	Dist	FCC	Margin		
KFSO-FM	LIC	225B	Visalia	CA	61.1	71.71	66.5	5.2
KVLP-LP	CP	222L1	Visalia	CA	94.7	29.40	13.5	15.9
NEW	CP -Z	224A	Kerman	CA	272.8	73.34	55.5	17.8
KOND	LIC	221B	Clovis	CA	358.2	88.92	66.5	22.4
1622532	APP	223L1	Fresno	CA	353.0	51.26	23.5	27.8
KKAL	LIC	223B	Paso Robles	CA	220.6	140.77	111.5	29.3
NEW	CP	224A	Wasco	CA	163.7	86.76	55.5	31.3
KSRW	LIC	223B	Independence	CA	61.5	154.27	111.5	42.8
1642515	APP	277L1	Fresno	CA	348.4	42.76	-0.5	43.3
1594351	APP	277L1	Fresno	CA	348.4	42.76	-0.5	43.3
1588692	APP	277L1	Fresno	CA	343.8	47.50	-0.5	48.0
KZPO	LIX	277B1	Lindsay	CA	93.2	72.62	8.5	64.1
KBRE	LIC-Z	223A	Atwater	CA	320.7	137.15	66.5	70.7
KWVP-LP	LIC	224L1	Wasco	CA	161.0	86.18	13.5	72.7

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All separation margins include

## APPENDIX D – Translator and Booster Proximity

The proposed transmitter site proximity to FM boosters and translators was determined using the FCC's FMQuery tool:

<http://www.fcc.gov/encyclopedia/fm-query-broadcast-station-search>

Results are as follows:

Boosters within 10km of the proposed LPFM transmitter site:

### Search Parameters

Service:	FB
Search radius:	10.00 km
Center lat / lon:	N 36 19 36.60 W 119 38 42.60
Lower Channel	200
Upper Channel	300

\*\*\* 0 FM Records within 10.00 km distance of 36° 19' 36.60" N, 119° 38' 42.60" W \*\*\*

Translators within 10km of the proposed LPFM transmitter site:

### Search Parameters

Service:	FX
Search radius:	10.00 km
Center lat / lon:	N 36 19 36.60 W 119 38 42.60
Lower Channel	200
Upper Channel	300

\*\*\* 0 FM Records within 10.00 km distance of 36° 19' 36.60" N, 119° 38' 42.60" W \*\*\*

## **APPENDIX F - Far Field Exposure to RF Emissions**

A theoretical analysis has been conducted of the human exposure to radio frequency radiation ("RFR") using the calculation methodology described in OET Bulletin 65, Edition 97-01. The RFR analysis is conducted pursuant to the following methodology:

Terrain<sup>4</sup> extraction is compiled from the support structure site, if the support structure is on a rooftop with no higher elevations (e.g., elevator shaft) then flat terrain is compiled. Terrain is extracted using radial lengths of 0.25 miles in 0.001 mile increments for 360 radials. The power density is calculated for each terrain point at 6 feet above ground level using the elevation and azimuth pattern of the proposed broadcast antenna. The power density calculations are conducted using the lower edge of the proposed channel frequency. To account for ground reflections, a coefficient of 1.6 was included in the calculation.

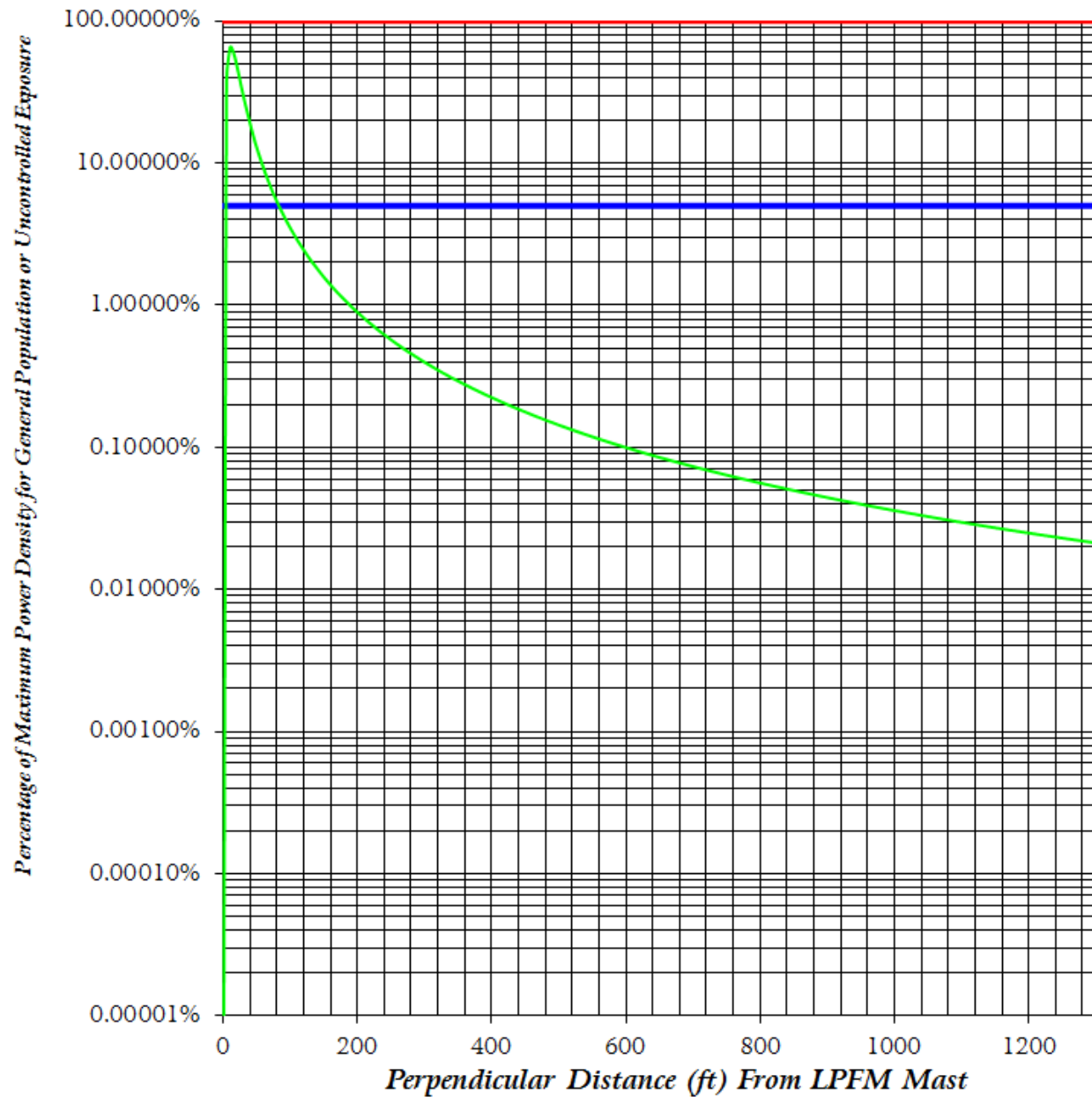
The resulting cylindrical polar analysis is then summarized into a coordinate plane graph using the following methodology:

Starting from the origin the maximum calculated RFR value is determined among the 360 degree radials for each 0.001 mile increment, the value is then converted into a percentage of the maximum allowable general population or uncontrolled exposure and plotted as a function of perpendicular distance from the tower.

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<sup>4</sup> Terrain extraction is based upon a 3 arc second point spacing terrain database.

## FAR FIELD EXPOSURE TO RF EMISSIONS



- Maximum Allowable General Population or Uncontrolled Exposure
- 5 % of Maximum General Population or Uncontrolled Exposure
- Percentage of Maximum General Population or Uncontrolled Exposure