



OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS • EMC TEST LABORATORIES

**5844 Hamline Avenue North, Shoreview, MN 55126
651-784-7445 • Fax 651-784-7541**

**ENGINEERING EXHIBIT FOR AN
APPLICATION FOR A CONSTRUCTION PERMIT
FOR A TRANSLATOR (BNPFT-20030313ANC)**

FACILITY ID# 144624

CHANNEL 225 D 92.9 MHZ

MARC A. LEHMUTH

COLBY, KANSAS

CHANNEL 225 D 0.25 KW (H&V) 45 METERS HAAT

March 18, 2013



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ENGINEERING STATEMENT

This engineering exhibit, of which this Statement is a part, was prepared in accordance with the Rules and Regulations of the Federal Communications Commission and pursuant to the provisions of Section III-B of FCC Form 349 on behalf of Marc A. Lehmuth (hereafter ("**LEHMUTH**") in support of an application for authority to construct an FM Translator, for operation on channel 225D (92.9 MHz) at Colby, Kansas. The purpose of this application is to propose a power output of 250 watts ERP and HAAT (height of 45 meters). This power/height combination is an allowable Class D facility permitted under the current rules and regulations. This change is proposed in order to rebroadcast FM facility KICX FM (Facility ID# 57517).

"**LEHMUTH**" proposes to operate from a site uniquely described by the geographic coordinates:

(NAD 27)

39° 23' 54" North Latitude
101° 02' 27" West Longitude

(NAD 83)

39° 23' 54" North Latitude
101° 02' 28.6" West Longitude

Notification to the FAA is not required since the existing structure is a grain elevator and is less than 61 meters (200 feet) and is not required to notify the FAA or be registered with the FCC.

Engineering Figure 1 is a portion of the Colby, Kansas 7.5 minute USGS map that shows the exact location of the tower. A search was performed for the presence of any other AM or FM communications facilities located nearby within 3 km and none were found.

Figure 2 is an aerial view of the site. The applicant is aware of the provisions of §74.1203 of the FCC's Rules and the requirement for satisfying all complaints of interference that are received.

The addition of the proposed antenna will not increase the overall height of the existing grain elevator.



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COVERAGE CONTOURS

The three-to-sixteen-kilometer average terrain elevations were derived from the USGS 3-second terrain database.

DISTANCES TO CONTOURS (Kilometers):

Antenna COR elevation (AMSL): 1006 meters Average HAAT: 45 meters

Frequency: 92.9000 MHz

Coordinates: N 39° 23' 54" W 101° 2' 27"

F(50,50) Curves Number of Contours: 1

AZ (degs)	HAAT (m)	ERPd (kW)	CONTOUR LEVELS (dBuV) : 60.0
0.0	49	0.2500	9.0
30.0	59	0.2500	10.0
60.0	76	0.2500	11.4
90.0	71	0.2500	11.0
120.0	59	0.2500	9.9
150.0	49	0.2500	9.0
180.0	37	0.2500	7.8
210.0	25	0.2500	7.1
240.0	23	0.2500	7.1
270.0	27	0.2500	7.1
300.0	32	0.2500	7.4
330.0	36	0.2500	7.7

The effective antenna radiation center height for each of the twelve standard 30-degree spaced radials was used in conjunction with the F(50,50) metric curves of Figure 1 of §73.333 of the Rules to determine the distances to the 60 dBuV coverage contour. The contours drawn from the data are depicted on the map included as Engineering Figure 3.

Figure 3 shows the predicted 60 dBuV coverage contour and is the same location as the proposed facility referenced in the 2003 application¹ and clearly demonstrates that there is overlap and therefore satisfies the conditions of §74.1231(b)(iii) for being mutually exclusive with the original 2003 application and §74.1233(a)(1) and is considered a minor change application.

Additionally, the instant proposal is not within the 39 km buffer of any defined market grid/or out of grid location within a top 50 spectrum limited market.

¹ BNPFT20030313ANC



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ALLOCATION CONSIDERATIONS

A review of allotments and assignments on channel 225, on the three immediately upper adjacent, the three immediately lower adjacent channels and the two channels removed by 53 and 54 channels (278 & 279) shows that the site proposed has no short-spaced conditions and satisfies the requirements of §74.1204. The results of the allocation study are shown below.

<div> <div>REFERENCE</div> <div>CH# 225D - 92.9 MHz, Pwr= 0.25 kW, HAAT= 45 M, COR= 1007 M</div> <div>39 23 54.0 N.</div> <div>Average Protected F(50-50)= 9.1 km</div> <div>101 02 27.0 W.</div> <div>Omni-directional</div> <div>DISPLAY DATES</div> <div>DATA 03-01-13</div> <div>SEARCH 03-18-13</div> </div>											
CH	CALL	TYPE	ANT	AZI.	DIST	LAT.	Pwr (kW)	INT (km)	PRO (km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG.	HAAT (M)	COR (M)	LICENSEE	(Overlap in km)	
225D	637031	APP	C	0.0	0.00	39 23 54.0	0.250	31.1	9.4	-40.5*	-40.5*
Colby			KS	0.0	BNPFT20030313ANC	101 02 27.0	48	1007	Marc A. Lehmuth		
225C2	KMML	LIC	CX	158.4	173.87	37 56 29.6	32.000	131.4	51.4	32.9	90.8
Cimarron			KS	338.9	BLH20090212ABH	100 18 44.3	186	1004	Radioactive, Llc		
Terrain database is FCC NGDC 30 Sec											

Figure 4 shows the 60 dBuV F(50,50) and 40IC dBuV F(50,10) contours of the proposal and KMML-FM for Cimarron, KS and shows that there is no prohibited contour overlap.

ANSI Power Density Calculations

The power density at the base of the tower was calculated using the following formula from OET Bulletin Number 65, August, 1997:

$$S = \frac{(0.64)(1.64)(ERP)(1000) \left(\frac{\text{milliwatts}}{\text{watt}} \right)}{\pi(R)^2}$$

Where:

S = power density in milliwatts per square centimeter
ERP = effective radiated power in watts
R = distance to radiation source (in Centimeters)
 $\pi = 3.14$



The proposed antenna will be energized such that it produces an effective radiated power of 0.25 kW from a center of radiation 48 meters above ground level. The site is in a restricted public entry area and only has an access road with a locked gate. Therefore this site is considered a controlled area. There are presently no other transmitters located on the site

Using the OET-65 model program the maximum RF Radiation level assuming a controlled area would be $7.25 \mu\text{w}/\text{cm}^2$, 0.725%, which is below the controlled area exposure level maximum of $1,000 \mu\text{w}/\text{cm}^2$ and 3.6% for the General Public exposure level.

Access to RF circuitry will be restricted by locked doors and signs will be posted warning of the potential danger. When persons require access to the site for any maintenance purposes, the transmitter power will be reduced or completely eliminated to comply with ANSI guidelines. Hence, the conditions of §1.1306(b)(3) would not be involved.

ENVIRONMENTAL IMPACT STATEMENT

The instant proposal is categorically excluded from environmental processing since none of the conditions of §1.1306(b)(2) and (3) would be involved for the following reasons:

- 1) The site proposed is not in or near any location referenced in §1.1306(b)(1) as being of environmental interest.
- 2) The provisions of §1.1306(b)(2) relating to the use of high intensity strobe lighting do not apply since this tower is not utilizing this type of lighting.
- 3) Compliance to §1.1306(b)(3) regarding human exposure to RF radiation was examined for multiple sources. A search was made about the proposed site coordinates to locate any additional sources of RF radiation and none were identified.



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CONCLUSIONS

Based on the engineering studies provided, the proposal is in complete conformance with all technical rules of the Federal Communications Commission.

A handwritten signature in black ink that reads "Garrett G. Lysiak". The signature is written in a cursive style with a large initial 'G'.

Garrett G. Lysiak, P.E.
March 18, 2013

(CHARDON SW)

101° 37' 33.61" W
040° 01' 53.85" N

(CHARDON SE)

COLBY QUADRANGLE
HIGH PLAINS/HAYS/COLBY (KS) (LONG DRAW
TOPOGRAPHIC SERIES SOUTH)

100° 27' 58.53" W
040° 01' 53.85" N

(LEVANT)

(GEM)

038° 45' 43.70" N
101° 37' 33.61" W

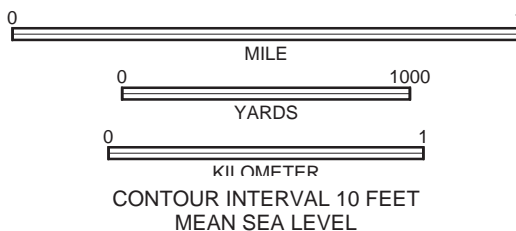
(COLBY SW)

Declination



GN 1.29° W
MN 6.45° E

(COLBY SE)
SCALE 1:24000



Copyright (C) 2008, MyTopo

038° 45' 43.70" N
100° 27' 58.53" W

(MINGO)

COLBY, KS
1967

FIGURE 1 - SITE MAP



SCALE 1:3000

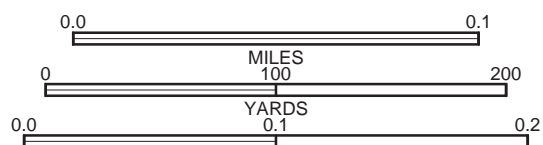


FIGURE 2 - AERIAL VIEW

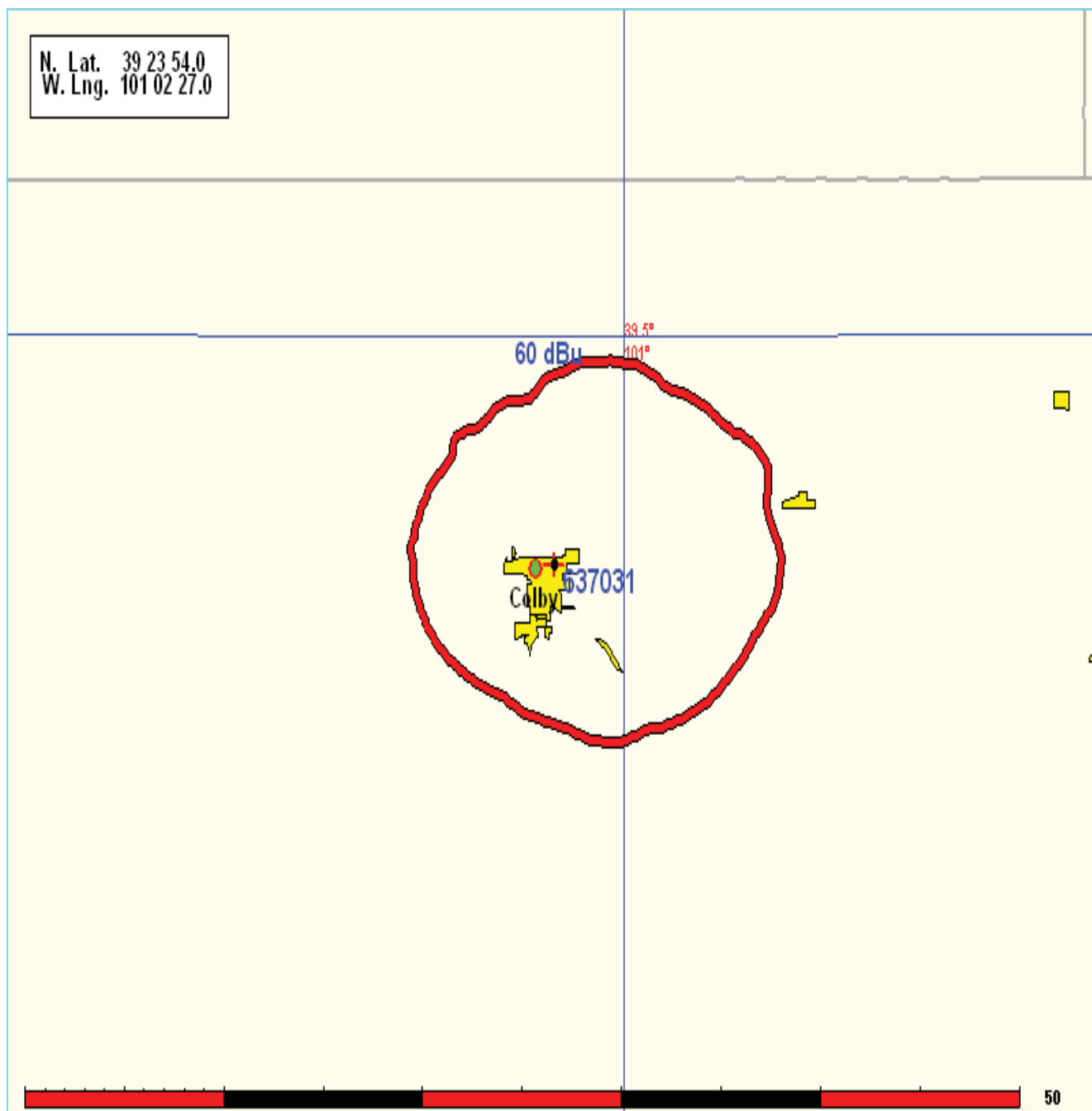


FIGURE 3 - COVERAGE CONTOUR

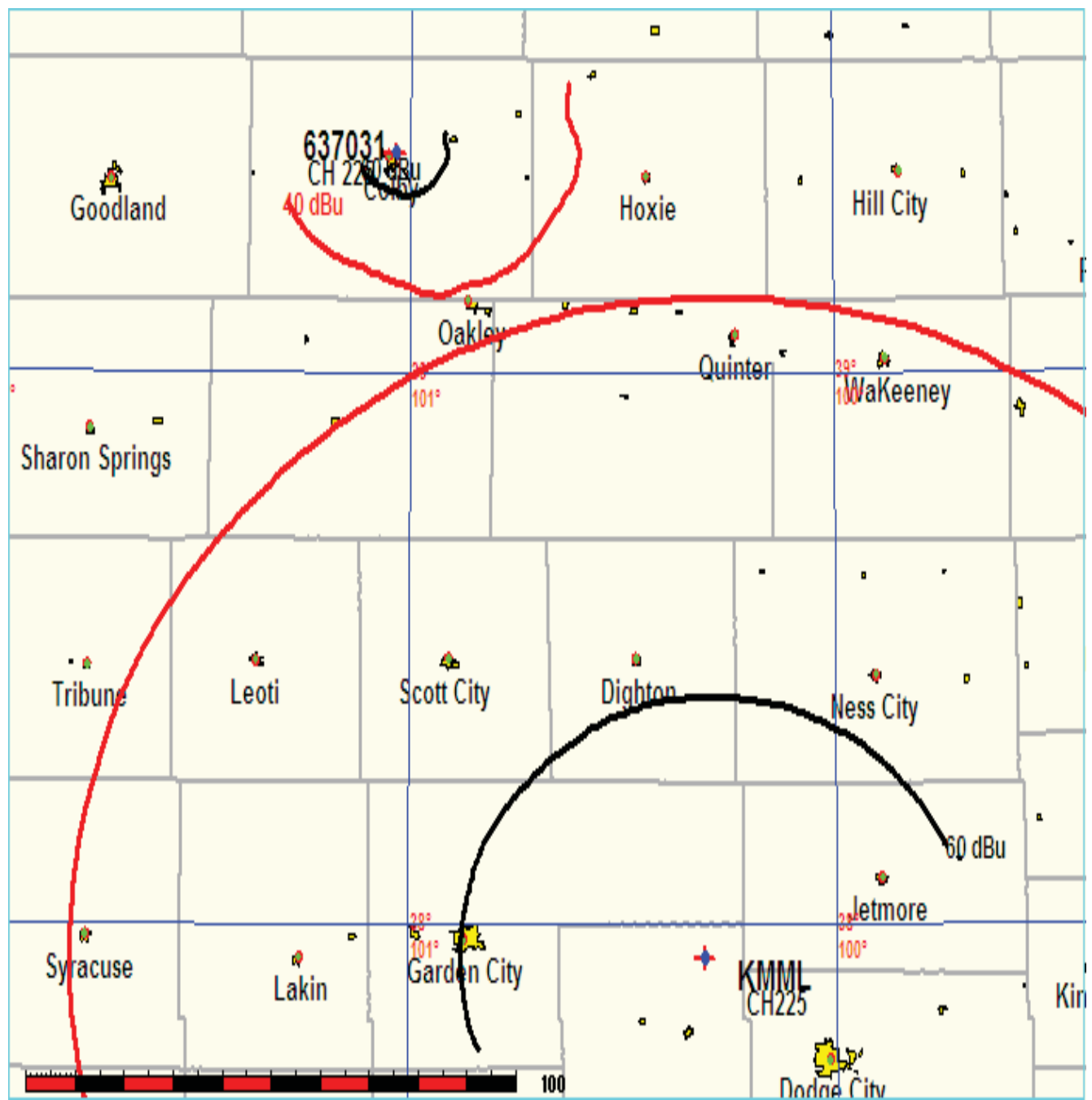


FIGURE 4 - INTERFERENCE CONTOURS