



CONSULTING COMMUNICATIONS ENGINEERS • EMC TEST LABORATORIES

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**ENGINEERING EXHIBIT FOR AN  
APPLICATION FOR A CONSTRUCTION PERMIT  
CHANNEL 253 C1 KHAQ  
ARMADA MEDIA – MCCOOK, INC  
MAXWELL, NEBRASKA**

**CHANNEL 253      100 KW (H&V)      113 METERS HAAT**

**February 11, 2009**

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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 301 on behalf of Armada Media (hereafter "**AM**") in support of an application for an application for a construction permit operating on channel 253 (98.5 MHz) at Maxwell, Nebraska. The instant application proposes to change the power level from 85 kW to 100 kW both in the horizontal and vertical plane. This power/height combination is an allowable Class C1 facility permitted under the current rules and regulations.

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

(NAD 27)

N 41° 12' 49" North Latitude

W 100° 43' 49" West Longitude

(NAD 83)

N 41° 12' 49" North Latitude

W 100° 43' 51" West Longitude

Engineering Exhibit Figure 1 is a portion of the North Platte, Nebraska 7.5 minute U.S.G.S. topographic quadrangle map showing the proposed transmitter site. The tower is currently registered (ASR#1031953) and no modifications to the tower are proposed by this instant application.

Because the area is rural, there is not expected to be any problem with blanketing interference. The 115 dBuV signal contour is predicted to have an area of 17 square kilometers and the surrounding area is not very populated. There are only 375 people located within this contour. The applicant is aware of the provisions of §73.318 of the FCC's Rules and the requirement for satisfying all complaints of blanketing interference that are received within a one-year period. The existing facility has been operating for several years with no complaints of interference. The main studio for the station will be located in the Maxwell, Nebraska area and the 70 dBuV coverage contour will encompass the studio. Therefore, the instant application complies with §73.1125 of the Rules.

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**COVERAGE CONTOURS**

The three-to-sixteen-kilometer average terrain elevations were derived from the Defense Mapping Agency 3-second topography database. However, the site elevation was determined from the U.S.G.S. 7.5 minute North Platte topography quadrangle map.

The effective antenna radiation center height for each of the eight standard 45-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 70 dBuV and 60 dBuV coverage contours. The terrain data was determined using the 3-second Defense Mapping Agency database.

**DISTANCE TO CONTOURS**

DISTANCES TO CONTOURS (Kilometers):

Antenna COR elevation (AMSL): 1011 meters      Average HAAT: 113 meters

Frequency: 98.5000 MHz

Coordinates: N 41° 12' 49"      W 100° 43' 49"

F(50,50) Curves      Number of Contours: 2

AZ (degs)	HAAT (m)	ERPd (kW)	CONTOUR LEVELS (dBuV) :	
			70.0	60.0
0.0	64	100.0000	26.1	43.3
45.0	91	100.0000	30.5	49.3
90.0	95	100.0000	31.1	50.1
135.0	125	100.0000	35.0	55.3
180.0	153	100.0000	38.3	58.9
225.0	149	100.0000	37.9	58.5
270.0	142	100.0000	37.1	57.7
315.0	85	100.0000	29.6	48.1

The contours drawn from the data are depicted on the maps included as Engineering Figure 4. As is readily evident, all of Maxwell, Nebraska is included within the proposed 70 dBuV coverage contour as required by §73.315 (a) of the Rules.

**POPULATION AND AREA DATA**

Based on the 2000 U.S. Census of Population, the number of persons enclosed by the proposed 60 dBuV coverage contour is 38,542 persons. The population count was made through the employment of a computer program containing a database including the geographic coordinates of the centroids of population groupings. The area within the proposed 60 dBuV coverage contour is 8,813 square kilometers. A computerized integration program determined this area.

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**ALLOCATION CONSIDERATIONS**

A review of allotments and assignments on channel 253, on the three immediately upper adjacent, the three immediately lower adjacent channels shows that the site proposed would not have any predicted short-spaced conditions.

**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 does not apply since this tower is already utilizing an approved lighting system.
- 3) Compliance with §1.1306(b)(3) regarding human exposure to RF radiation was examined. A search was made about the proposed site coordinates to locate any additional sources of RF radiation and one additional source was found (KXNP) and considered in the calculations. The calculations show that the instant proposal is in compliance with the requirements.

**ANSI POWER DENSITY CALCULATIONS**

The proposed antenna will be energized such that it produces an effective radiated power of 100 kW from a center of radiation 84 meters above ground level. There is also another FM station located on the tower KXNP.

Using the FCC FM Model program the maximum RF Radiation level assuming the combined power levels of KHAQ and KXNP the predicted radiation levels are:

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<b>STATION</b>	<b>Power Density (<math>\mu\text{W}/\text{cm}^2</math>)</b>	<b>% of maximum uncontrolled</b>
KHAQ	51.1	25.5
KXNP	28.9	14.4
<b>TOTAL</b>	<b>80.0</b>	<b>39.9</b>

Based on the calculations it was determined that the RF radiation would be only 39.9% of the uncontrolled limit. After construction measurements will be taken to ensure compliance with the requirements.

Access to RF circuitry is restricted by a metal fence that surrounds the tower property that limits access to the public. Signs are posted warning of the potential danger. When persons require access to the site, tower or antenna for 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.

**CONCLUSIONS**

Based on the engineering studies provided, the following conclusions can be obtained:

- (1) Implementation of the instant proposal will provide Maxwell, Nebraska with a full time aural broadcast service.
- (2) 38,542 persons in 8,813 square kilometers would have an available signal strength of 60 dBuV or greater from the proposed construction location.
- (3) All of Maxwell, Nebraska would be served with a signal of 70 dBuV or greater from the proposed construction site.
- (4) The proposal is in complete conformance with all technical rules of the Federal Communications Commission.



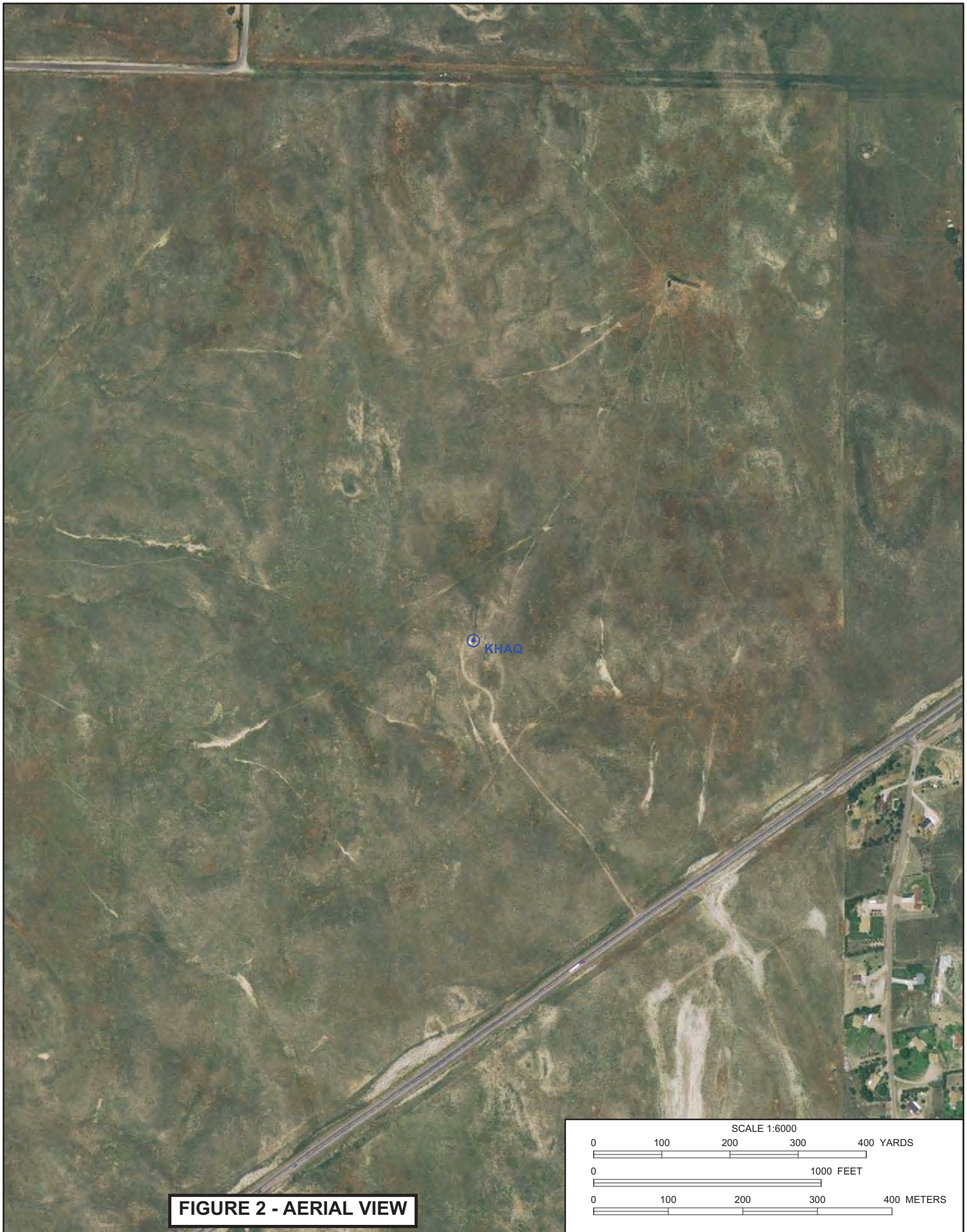
Garrett G. Lysiak, P.E.  
February 11, 2009



5366 1/4 SE  
(NORTH PLATTE 2 SE)







④ KHAQ

**FIGURE 2 - AERIAL VIEW**

