

# **ENGINEERING EXHIBIT**

## **Application for Minor Modification Construction Permit**

prepared for

**Eagle Communications, Inc.**  
NEW(FM) Chadron, Nebraska  
Facility ID 164168  
Ch. 234C1 100 kW 144 m

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FCC Form 301 Section III-B - FM Engineering

#### **Exhibit 26**

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#### **Exhibit 31**

Statement B	Environmental Considerations
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*This material supplies a "hard copy" of the engineering portions of this application as entered November 15, 2007 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*

**Section III-B - FM Engineering****TECHNICAL SPECIFICATIONS**

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

**TECH BOX**

1.	Channel Number: 234
2.	Class (select one): <input type="radio"/> A <input type="radio"/> B1 <input type="radio"/> B <input type="radio"/> C3 <input type="radio"/> C2 <input checked="" type="radio"/> C1 <input type="radio"/> C0 <input type="radio"/> C <input type="radio"/> D
3.	Antenna Location Coordinates: (NAD 27)  Latitude: Degrees 42 Minutes 39 Seconds 5.1 <input checked="" type="radio"/> North <input type="radio"/> South  Longitude: Degrees 102 Minutes 41 Seconds 49.3 <input checked="" type="radio"/> West <input type="radio"/> East
4.	Proposed Allotment or Assignment Coordinates: (NAD 27) <input checked="" type="checkbox"/> Not Applicable  Latitude: Degrees Minutes Seconds <input type="radio"/> North <input type="radio"/> South  Longitude: Degrees Minutes Seconds <input type="radio"/> West <input type="radio"/> East
5.	Antenna Structure Registration Number: 1026676 <input type="checkbox"/> Not Applicable <input type="checkbox"/> Notification filed with FAA
6.	Overall Tower Height Above Ground Level: 153.3meters
7.	Height of Radiation Center Above Mean Sea Level: 1327 meters(H) 1327 meters(V)
8.	Height of Radiation Center Above Ground Level: 132.6meters(H) 132.6meters(V)
9.	Height of Radiation Center Above Average Terrain: 144meters(H) 144meters(V)
10.	Effective Radiated Power: 100 kW(H) 100 kW(V)
11.	Maximum Effective Radiated Power: <input checked="" type="checkbox"/> Not Applicable (Beam-Tilt Antenna ONLY) kW(H) kW(V)
12.	Directional Antenna Relative Field Values: <input checked="" type="checkbox"/> Not applicable (Nondirectional) Rotation (Degrees): <input type="checkbox"/> No Rotation

Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value
0		10		20		30		40		50	
60		70		80		90		100		110	
120		130		140		150		160		170	
180		190		200		210		220		230	
240		250		260		270		280		290	
300		310		320		330		340		350	
Additional Azimuths											

[Relative Field Polar Plot](#)

**NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.**

**CERTIFICATION****AUXILIARY ANTENNA APPLICANTS ARE NOT REQUIRED TO RESPOND TO ITEMS 13-16. PROCEED TO ITEM 17.**

13. <b>Allotment.</b> The proposed facility complies with the allotment requirements of 47 C.F.R. Section 73.203.	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 23]
14. <b>Community Coverage.</b> The proposed facility complies with 47 C.F.R. Section 73.315.	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 24]
15. <b>Main Studio Location.</b> The proposed main studio location complies with 47 C.F.R. Section 73.1125.	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 25]
16. <b>Interference.</b> The proposed facility complies with all of the following applicable rule sections: Check all those that apply:  <b>Separation Requirements.</b> <input checked="" type="checkbox"/> a) 47 C.F.R. Section 73.207  <b>Grandfathered Short-Spaced.</b>  <input type="checkbox"/> b) 47 C.F.R. Section 73.213(a) with respect to station(s): [Exhibit 27] <b>Exhibit required</b> <input type="checkbox"/> c) 47 C.F.R. Section 73.213(b) with respect to station(s): [Exhibit 28] <b>Exhibit required</b> <input type="checkbox"/> d) 47 C.F.R. Section 73.213(c) with respect to station(s): [Exhibit 29] <b>Exhibit required.</b>  <b>Contour Protection</b>  <input type="checkbox"/> e) 47 C.F.R. Section 73.215 with respect to station(s): [Exhibit 30] <b>Exhibit required.</b>	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 26]
17. <b>Environmental Protection Act.</b> The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an <b>Exhibit is required.</b>  By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 31]
18. <b>Community of License Change - Section 307(b).</b> If the application is being submitted to change the facility's community of license, then the applicant certifies that it has attached an exhibit containing information demonstrating that the	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A

proposed community of license change constitutes a preferential arrangement of station assignments under Section 307(b) of the Communications Act of 1934, as amended (47 U.S.C. Section 307(b)).

[Exhibit 32]

**An exhibit is required** unless this question is not applicable.

**PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.**

### SECTION III - PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name ROBERT J. CLINTON	Relationship to Applicant (e.g., Consulting Engineer) CONSULTANT	
Signature	Date 11/15/2007	
Mailing Address CAVELL, MERTZ & ASSOCIATES, INC. 7839 ASHTON AVENUE		
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20109 -2883
Telephone Number (include area code) 7033929090	E-Mail Address (if available) BCLINTON@CAVELLMERTZ.COM	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

#### Exhibits

##### Exhibit 5

**Description:** EXHIBIT 5 - MULTIPLE OWNERSHIP STUDY

EXHIBIT 5 - MULTIPLE OWNERSHIP STUDY

##### Attachment 5

Description
<u>EXHIBIT 5 - MULTIPLE OWNERSHIP STUDY</u>

##### Exhibit 26

**Description:** EXHIBIT 26 - STATEMENT A

EXHIBIT 26 - STATEMENT A - NATURE OF THE PROPOSAL - ALLOCATION CONSIDERATIONS.

##### Attachment 26

**Attachment 20**

Description
<a href="#">EXHIBIT 26 - STATEMENT A</a>

**Exhibit 31**

**Description:** EXHIBIT 31 - STATEMENT B

EXHIBIT 31 - STATEMENT B - ENVIRONMENTAL CONSIDERATIONS (WITH TABLE OF CONTENTS AND COPY OF ENGINEERING SECTION).

**Attachment 31**

Description
<a href="#">EXHIBIT 31 - STATEMENT B</a>

Exhibit 31 - Statement B  
**ENVIRONMENTAL CONSIDERATIONS**  
prepared for  
**Eagle Communications, Inc.**  
NEW(FM) Chadron, Nebraska  
Facility ID 164168  
Ch. 234C1 100 kW 144 m

The instant proposal is not believed to have a significant environmental impact as defined under Section 1.1306 of the Commission's Rules. Consequently, preparation of an Environmental Assessment is not required.

**Nature of the Proposal**

The instant application seeks authorization to construct a transmitter facility at a location different from that specified in the underlying Construction Permit, and a different antenna height above average terrain ("HAAT"). The proposed operation will employ a non-directional FM antenna system side-mounted on an existing tower structure (ASR 1026676).

The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. Since the proposal involves an existing tower structure (no change in height is proposed to accommodate the instant proposal), this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.

**Human Exposure to Radiofrequency Radiation**

The proposed operation was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

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**ENVIRONMENTAL CONSIDERATIONS**  
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*Eagle Communications, Inc.* proposes to install the transmitting antenna such that its center of radiation is 132.6 meters above ground level. A maximum effective radiated power (“ERP”) of 100 kilowatts, circularly polarized, will be employed utilizing an 8-bay, full-wavelength spaced, ERI Model SHP-8AC, omni-directional antenna. Calculations were made pursuant to OET 65 to predict power density attributable to the proposed facility at locations two meters above ground level in the immediate vicinity of the tower. According to data provided by the antenna manufacturer, the maximum relative field value in nearby downward directions (between 15 and 90 degrees below the horizontal) is less than 35 percent. Thus, a value of 35 percent relative field is used for this calculation. The “uncontrolled/general population” limit specified in §1.1310 for the FM Band is 200  $\mu\text{W}/\text{cm}^2$ .

The formula used for calculating FM signal density in this analysis is essentially the same as equation (9) in OET-65.

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

$S$	=	power density in microwatts/cm <sup>2</sup>
$ERP$	=	total (average) ERP in Watts
$F$	=	relative field factor
$D$	=	distance in meters

Using this formula and the assumptions above, the proposed facility would contribute a power density of 48  $\mu\text{W}/\text{cm}^2$  at two meters above ground level near antenna support structure, or 24 percent of the general population/uncontrolled limit. At ground level locations away from the base of the tower, the calculated RF power density is even lower, due to the increasing distance from the transmitting antenna.

There are no other authorized facilities within 5 km of the proposed transmitter site, according to information extracted from the Commission’s CDBS database. The only other facilities on the proposed tower utilize focused microwave antennas. Therefore, the maximum calculated

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**ENVIRONMENTAL CONSIDERATIONS**  
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signal density at two meters above ground level in the vicinity of the proposed transmitter site is 24 percent of the “uncontrolled/general population” limit.

Thus, based on this analysis, the Commission’s limit regarding general population / uncontrolled exposure to RF electromagnetic field is not exceeded at ground level locations near the proposed site location.

**Safety of Tower Workers and the General Public**

As demonstrated herein, excessive levels of RF energy will not be caused at publicly accessible areas at ground level near the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission’s guidelines. Nevertheless, tower access will be restricted and controlled through the use of a locked fence. Additionally, appropriate RF exposure warning signs will be posted.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground level. A site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed on the tower or in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines will be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with any pertinent stations.

Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under §1.1306 of the Rules, hence preparation of an Environmental Assessment is not required.