

MULLANEY ENGINEERING, INC.

9049 SHADY GROVE COURT
GAITHERSBURG, MD 20877

ENGINEERING EXHIBIT EE-1:

**RADIO STATION KNID(FM)
CHISHOLM TRAIL BROADCASTING CO.
ALVA, OKLAHOMA**

Ch. 259C0 100 KW 310 M HAAT

MAY 9, 2005

**ENGINEERING STATEMENT IN SUPPORT OF
AN APPLICATION FOR A
ONE-STEP UPGRADE**

File No. BLH-19810320AE - Facility ID: 37123

ATTACHED TO EXHIBIT 24 OF FCC FORM 301



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TABLE OF CONTENTS:

1. F.C.C. Form 301.
2. Declaration of Engineer
3. Narrative Statement
4. Figure 1, Topographic Map Showing - Application Site.
5. Figure 1-A, Topographic Map Showing - Reference Site.
6. Figure 2, Proposed C0 Coverage Map.
7. Figure 2-A, C0 City Grade Coverage Map.
8. Figure 3, Vertical Tower Sketch.
9. Figure 4, Channel Study - One-Step Application Site (revised)
10. Figure 4-A, Channel Study - One-Step Reference Site (revised)
11. Figure 5, Contour Protection Map - 73.215.
12. Figure A, Duopoly Compliance.

Declaration

I, John J. Mullaney, declare and state that I am a graduate electrical engineer with a B.E.E. and my qualifications are known to the Federal Communications Commission, and that I am an principal engineer in the firm of Mullaney Engineering, Inc., and that I have provided engineering services in the area of telecommunications since 1977. My qualifications as an expert in radio engineering are a matter of record with the Federal Communications Commission.

The firm of Mullaney Engineering, Inc., has been requested by Chisholm Trail Broadcasting Co., to prepare the instant engineering exhibit in support of a one-step application for Construction Permit for an upgrade to Class C0 of FM radio station KNID licensed to Alva, Oklahoma (FCC Facility ID Number: 37123).

All facts contained herein are true of my own knowledge except where stated to be on information or belief, and as to those facts, I believe them to be true. I declare under penalty of perjury that the foregoing is true and correct.



John J. Mullaney, Consulting Engineer

Executed on the 9th day of May 2005.

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NARRATIVE STATEMENT:

I. General:

This engineering statement has been prepared on behalf of Chisholm Trail Broadcasting Co., licensee of Radio Station KNID(FM) at Alva, Oklahoma. Effective May 9, 2005, Docket 98-155 restored KNID to its previous allotment on Ch. 259C1. The purpose of this statement is to request a Construction Permit authorizing a one-step upgrade to C0 facilities. KNID will operate on Channel 259C0 with an ERP of 100 KW and an HAAT of 310 Meters. This application proposes facilities which are in compliance with the contour protection requirements of Section 73.215. In addition, this application proposes a properly spaced Class C0 reference site.

The application is not a major environmental action, as defined by Section 1.1307 of the Commission's Rules. The proposed facility is in full compliance with both the "controlled" & "un-controlled" FCC Radiation Guidelines.

Answers to questions contained in F.C.C. Form 301, are incorporated in the following paragraphs and figures. This application is an update of the application originally filed in July 2004. Although most of the exhibits are still dated July 2004 they have been reviewed for accuracy.

II. Engineering Discussion:

A. Proposed Location:

KNID proposes to locate the tower approximately 3.4 kilometers north of its currently licensed site. **Figure 1** is a topographic map showing the proposed site. The NAD-27 geographic coordinates are:

Latitude: 36° 37' 31"

Longitude: 98° 15' 21"

The city of license, Alva, Oklahoma, is located approximately 42 kilometers northwest of the proposed site. The Regional Office of the FAA has approved this proposal.

B. Antenna System and Tower:

A dual polarized 10-bay FM antenna will be side mounted near the top of a new tower. **Figure 3** is a sketch of the proposed tower.

C. Effective Radiated Power:

Giving consideration for the maximum antenna gain, transmitter power and line loss, the maximum Effective Radiated Power is 100 KW for the Horizontal and 100 KW for the Vertical Component.

D. Channel Allocation:

Figure 4 is a channel allocation study from the proposed site. The proposed site is short spaced to one allotment. The short spacing of 11.7 kilometers is to a Vacant allotment on Ch. 259C2 at Erick, OK, to which KNID proposes 73.215

contour protection. In all other respects this application is in compliance with Section 73.207(a).

Simultaneously with this application, KNID is filing to move Ch. 259C2 to Mustang, OK, and to allot Ch. 260C3 to Medford, OK and allot Ch. 259C1 to Greensburg, KS. In addition, there was a recent RM proposal to allot Ch. 259C3 to Ashland, KS. The proposal to allot 259A at Lexington, OK, has been dismissed as a result of adoption of Docket 98-155.

1. Contour Protection - Section 73.215:

Figure 5 is a map of the protected 60 dBu and the co-channel interfering 40 dBu contour proposed by this application. In addition, the map shows the same protected & interfering contours for 259C2 at Erick except that they are based upon maximum permissible ERP and HAAT for its respective Class.

As can be seen, through use of a reduced HAAT, no prohibited overlap occurs. All contours are based upon terrain radials spaced every 5 degrees.

2. One-Step C0 Upgrade:

As required by the rules, KNID has determined that the special C0 reference site at 36-39-00 / 98-04-00 complies with the minimum C0 separations (see **Figure 4-A**). The only exception are the contingency discussed above.. **Figure 1-A** is a topo map showing the proposed reference site. **Figure 2-A** is a city grade coverage map demonstrating that the reference 59 km circle encompasses all of Alva, OK.

E. Terrain Profile Data & Coverage:

Terrain profile data was extracted from the NGDC 30 Second Digitized Terrain Data Base provided out of Boulder, Colorado. At least twenty-four bearings (every 15 degrees) were used to obtain the proposed coverage data. The standard eight bearings (every 45 degrees) were used to obtain the proposed HAAT.

The predicted service contours, as shown in the attached report, were computed using a mathematical model adapted for computer use of data shown in Figure 1 of Section 73.333. This is the Commission's computer program TV FM FS REPORT RS-76-01, dated January 1976.

F. Terrain Profile to City of License:

The N-299-E radial is the direct path to the City of License. From the proposed site the 3.16 mV/M or 70 dBu City Grade Contour will completely encompass the City of License without major terrain obstruction.

G. Coverage Area and Population:

The area contained within the 60 dBu (1.0 mV/M) contour has been computed mathematically. The population within this contour was obtained through a computerized analysis of the census designated places population data contained in the 2000 census.

H. FM Blanketing Contour:

KNID recognizes its obligation to resolve related interference complaints for a one year period within its 115 dBu "FM Blanketing Contour" as required by Section 73.318 of the FCC Rules.

The radius around the base of the tower in which Blanketing interference is possible is fairly small (3.2 km) and is in a sparsely populated area. Given the height of the proposed antenna, no problems are anticipated.

I. Other Services in Area:

There are no known AM Broadcast Stations within 3.2 kilometers of the proposed site.

There are no known transmission facilities within 60 meters (197 feet) of the proposed antenna.

There are no other known FM or TV transmitters within 10 kilometers (6.2 miles) of the proposed site, however, based upon the type of transmitter proposed, and the frequency & power involved no intermodulation interference problems with existing transmitting facilities is expected. In the unlikely event some problems would occur, KNID will investigate and correct such cases in accordance with the Commission's Rules.

J. Environmental Assessment Statement:

KNID believes its proposal will not significantly affect the environment since it does not meet any of the criteria specified in Section 1.1307 of the rules. Specifically the proposed facility:

- 1) Will NOT be located in an officially designated wilderness area.
- 2) Will NOT be located in an officially designated wildlife preserve.
- 3) Will NOT affect districts, sites, buildings, structures or objects, significant

in American history, architecture, archeology or culture, that are listed in the National Register of Historic places or are eligible for such listing.

4) Will NOT be located in a floodplain.

5) Will NOT result in construction that will involve a significant change in the surface features (eg. wetland fill, deforestation or water diversion).

6) Will NOT involve the use of high intensity white lights on a structure located in a residential neighborhood, as defined by the applicable zoning laws.

7) Will NOT involve the exposure of workers or the general public to levels of Radio Frequency radiation in excess of the guidelines recommended by the FCC - OET Bulletin 65 (August 25, 1997).

The following is a more detailed discussion of this protection standard:

A. National Environmental Policy Act of 1969:

In 1969, Congress enacted the National Environmental Policy Act (NEPA), which requires the FCC to evaluate the potential environmental significance of the facilities it regulates and authorizes. Human exposure to Radio Frequency (RF) radiation had been identified as an issue that the FCC must consider.

Beginning with the filing of applications after January 1, 1986, broadcast stations were required to “certify compliance” with FCC prescribed guidelines on human exposure to RF radiation. The FCC standard was based upon the American National Standards Institute’s (ANSI) RF radiation protection guides (ANSI C95.1-1982). These exposure limits are expressed in terms of milli-watts per square centimeter.

In October 1997, the FCC implemented a two tier evaluation criteria utilizing recommendations of the National Council on Radiation Protection and Measurement (NCRP). The “controlled” tier involves areas which have restricted access while the “un-controlled” tier involves areas which have unrestricted access. The Maximum Permissible Exposure (MPE) limits for “controlled” areas are the same as adopted in 1985, while the “un-controlled” limits for FM and TV frequencies are one-fifth or 20% of the limits for “controlled” areas.

These exposure limits are time-averaged over any six minute period and vary depending upon the frequency involved. The following are the Maximum Permissible Exposure (MPE) limits for “controlled” areas:

Frequency Range (MHz)	Power Density (mW/sq.cm)
*****	*****
0.3 to 3	100 AM
3 to 30	$900/(\text{Freq}^2)$
30 to 300	1.0 VHF TV & FM
300 to 1,500	$\text{Freq}/300$ UHF TV
1500 to 100,000	5.0

KNID recognizes that compliance with the above criteria at sites involving multiple AM, FM and/or TV facilities is based upon the contributions of all such facilities. At the site discussed in this application, **the only significant facility** that will exist is the proposed FM facility.

FM Broadcast Stations

For FM Broadcast Stations the following formula is used:

$$D = \frac{\text{SQRT}(F^2 * [\text{HERP} + \text{VERP}])}{1.667 * \text{SQRT}(\text{PD}) * 3.2808}$$

Where:

- D = the closest distance in meters that a human should come to an operating antenna (To obtain feet multiply by 3.2808)
- F = typical relative field factor in downward direction (F=1 is worst case main lobe)
- HERP = Horizontal ERP in watts (above a dipole)
- VERP = Vertical ERP in watts (above a dipole)
- PD = highest Power Density in milli-watts/cm²
- SQRT = Square Root
- Freq = Frequency in mega-cycles/sec. (MHz)

The vertical radiation pattern of the FM antenna specified in this application is narrow and, therefore, the power density as seen by an observer on the ground near the base of the tower will be less than 20 percent of the total ERP.

The application of the above equation (assuming maximum ERP), in our case, for a frequency of 99.7 MHz and an “un-controlled” Power Density of 0.2 milli-watts results in a minimum distance of 182.9 meters (600 feet) from the antenna. Inasmuch as the lowest element on the proposed antenna will be approximately 295.7 meters (970 feet) above the ground level, it is self-evident that no hazard from radiation will exist to persons at ground level. At approximately 2 meters above the ground and assuming maximum downward radiation, the proposed FM facility contributes 6.9% of the FCC “controlled” standard. For FM, the “un-controlled” standard is 20% and, therefore, this proposal is in full compliance. The tower will be surrounded by a locked fence to limit access.

Workers employed to climb the tower or work in a potential overexposure location will not be permitted to enter the work area until cleared by the station manager or other responsible person. Appropriate warning signs will be posted to ensure safety. In addition, KNID will establish and enforce work rules and safety procedures applicable in a potential over-exposure area. The rules will establish how close a worker can get to the antenna when it is operating at normal power and specify the power reduction required in order to make other locations safe. It is recognized that maintenance or installation work on or near the antenna may require the station to completely shutdown or switch temporarily to an auxiliary antenna or an auxiliary transmitter site. All employees, contract and other persons having access to areas of potential exposure will be required to sign a site management guide indicating they are aware of and will comply with all safety rules. In the instance of a multiple use site, a single site access policy incorporating the above philosophy will be established. All procedures will be reviewed & updated as necessary.

K. Compliance with Radio Duopoly Rules:

Chisholm Trail is licensee of three FM and two AM (one expanded band) Stations. They are:

Alva, OK

KNID FM 259C1

Enid, OK

KCRC AM 1390 kHz

KFNY AM 1640 kHz (expanded band does not count)

KQOB FM Ch. 245C

Lahoma, OK

KXLS FM Ch. 239C3

App Ch. 239C2

It was determined that none of the cities of licenses are located within a rated market.

Figure A is a map illustrating the FM 70 dBu & the AM 5 mV/m contours for each of the commonly owned stations/application. The C0 application does not change how many common stations overlap. All three FMs and both AMs have an existing overlap that will continue regardless of whether this C0 application is granted. Only one of the common AMs is counted for duopoly purposes. Thus, the maximum overlap is 3 FMs and 1 AM. In order to Justify this level of ownership overlap it is necessary to find four non-common stations.

Since no change in the duopoly overlap is proposed it is unnecessary to provide a detailed analysis of which stations are in the market. However, it should be noted that KQOB FM has a 70 dBu contour in downtown Oklahoma City. According to CDBS, Oklahoma City has **10 separate FMs** licensed to it.

Based upon this analysis it was concluded that the radio market consists of at least **14 stations** including the 4 under common control. In order to justify the ownership of 4 overlapping stations it is only necessary to show a total of **4 stations** in the market. This statement demonstrates that there are at **least 14 stations or 6 more than necessary** in the radio market.

III. SUMMARY:

Chisholm Trail Broadcasting Co., requests a Construction Permit authorizing a one-step upgrade to C0 facilities. KNID will operate on Channel 259C0 with an ERP of 100 KW and an HAAT of 310 Meters. This application proposes facilities which are in compliance with the contour protection requirements of Section 73.215. In addition, this application proposes a properly spaced Class C0 reference site. This engineering proposal is in full compliance with the Commission's Rules.



John J. Mullaney, Consulting Engineer

May 9, 2005.