

**APPLICATION FOR  
A  
CONSTRUCTION PERMIT**

**FCC FORM 301**

**KVST**

**WILLIS, TEXAS**

**CHANNEL 279C1 (103.7 MHz)**

**ERP: 28.0 kW (H&V)**

**HAAT: 485.9 meters (H&V)**

**APPLICANT: NEW WAVO COMMUNICATION GROUP, INC.**

**JANUARY, 2001**

**Prepared by:**



**Engineering Statement**  
**In Support of an Application**  
**for a Construction Permit**  
**KVST(FM), Willis, Texas**  
**Channel 279C1**

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NOTE: In addition to Exhibit E, Figure 3, 3A, 4A & 4 (proposed site map and allocation site map), the original copy of this application contains the original 7.5 minute USGS maps that was used to prepare Exhibit 3 & 4.

In Exhibit E, Figure 8(a) and 8(b) [proposed service contour maps], the original copy of these maps was produced on a computer-generated map program.

Exhibit E, Figure 10 also includes the land area square kilometers inside the 60 dBu contour.

**ENGINEERING STATEMENT**

**Of**

**Lee S. Reynolds**

**And**

**Virgle Leon Strickland**

**In Support of a**

**Application for a**

**Construction Permit  
(One-Step Upgrade)**

**KVST (FM)**

**New Wavo Communication Group, Inc.**

**Willis, Texas**

**Channel 279C1 – 103.7 MHz**

**ERP: 28.0 kW(H&V)**

**HAAT: 485.9 m (H&V)**

**January, 2001**

**General**

As broadcast technical consultants doing business as Reynolds Technical Associates, we have been authorized by New Wavo Communication Group, Inc. (herein referred to as “New Wavo” as well as “The Applicant”), licensee of KVST (FM), Willis, Texas, to conduct engineering studies and prepare the engineering portion of an application for a construction permit. The purpose of this application is to upgrade KVST (File Number BPH-960125KC.) from a class C3 on channel 279 to a C1 and relocate the transmitter

facility. This application is being simultaneously filed with applications for KBIU, KJCS, and KXAL.

The attached engineering exhibits will show that when KVST operates as a class C1 facility with an ERP of 28.0 kW and a HAAT of 485.9 meters (CORAMSL of 509.9 meters) with the proposed directional antenna, it will be in compliance with all the Commission's Rules and Regulations.

**Channel Spacing Study**  
**(Exhibit E, Figure 1)**

The proposed transmitter site is approximately 60.6 kilometers (37.7 miles) northeast of the central business district of Willis with the geographical coordinates 30° (degrees), 19' (minutes), 46" (seconds) North Latitude; 94° (degrees), 51 (minutes), 31" (seconds) West Longitude. A channel spacing study was performed to insure that the proposed site meets all of the minimum separation requirements with respect to other authorized co-channel, adjacent-channel, I.F. separated channels, new allocations and proposed allocations. The stations considered in the study are listed by channel in Exhibit E, Figure 1 showing the location, separation, and the required minimum spacing of each.

The results of the channel allocation study indicates that The Applicant's proposed transmitter site will meet all the required §73.207 separation requirements specified in the Commission's Rules and Regulations.

**The Site and Surrounding Terrain**  
**(Exhibit E, Figures 2 - 4)**

A computer study was conducted to determine the average terrain elevations for each of the eight required radials, plus an additional 16 radials (one every 15°) for a total of 24, beginning with true north, then at intervals of 15 degrees. Only the 8 cardinal radials

were considered to establish the terrain average. The average of each cardinal radial was taken from three to sixteen kilometers, at 0.1-km intervals. The NGDC 30-second database was used to conduct the computer study. Exhibit E, Figure 2 is a copy of the terrain data printout showing the relevant radials with the average elevations of each. According to the computer study, the elevation of the proposed site is 1.7 meters (5.8 feet) below the average terrain.

A full scale 7.5-minute series USGS topographic quadrangle map, with the required coordinate plotting, with exact geographical coordinates of the proposed transmitter site properly marked and labeled. A Davis Hill, Texas 7.5 minute map used and a copy of a portion of that map is included as Exhibit E, Figure 3.

A full scale 7.5-minute series USGS topographic quadrangle map, with the required coordinate plotting, with exact geographical coordinates of the allocation site properly marked and labeled. A Westcott, Texas 7.5 minute map used and a copy of a portion of that map is included as Exhibit E, Figure 3(a).

Exhibit E, Figure 4 and 4(a) are copies of the entire maps used for preparing Exhibit E, Figure 3 and 3(a). The actual 7.5-minute series USGS topographical map that was used for preparing Exhibit E, Figures 3 and 4 is being included as part of the original application submitted to the Commission.

There are no proposed or authorized FM or TV transmitters, nor any non-broadcast radio stations within 60 meters of the proposed antenna. There are no proposed or authorized FM or TV transmitters that may produce receiver-induced intermodulation interference within ten (10) kilometers of the proposed transmitting antenna. For the populated area

within the blanketing contour, see the “FM Blanketing Interference” section of this statement. A list of the area broadcast facilities is included as Exhibit E Figure 16.

The proposed site was selected by The Applicant to meet the FCC §73.207 minimum separations requirements, as well as an area that had accessibility, aeronautical compatibility, and availability of utilities and availability of the property.

**Antenna and Supporting Structure**  
**(Exhibit E, Figure 5)**

The elevation above mean sea level of the proposed site is 22.3 meters (73.0 feet) AMSL. According to a computer study of the eight cardinal radials at 3 to 16 kilometers (utilizing the NGDC 30-second database), the average terrain surrounding the proposed transmitter site is 24.0 meters (78.8 feet). Therefore, the proposed site is 1.7 meters (5.8 feet) below the average terrain.

The top of the proposed uniform cross-sectional guyed tower that will be used for the antenna supporting structure stands 496.8 meters (1630.0 feet) AGL. The top of the structure is 519.1 meters (1703.0 feet) AMSL. The six-bay directional FM transmitting antenna is to be mounted on the side of the supporting structure so that the center of radiation (both horizontal and vertical) is located 487.6 meters (1600.0 feet) AGL and 509.9 meters (1673.0 feet) AMSL. This places the center of radiation at 485.9 meters (1594.2 feet) above average terrain. Exhibit E, Figure 5 is a vertical plane sketch of the proposed supporting structure depicting the elevations in meters as well as feet.

**Predicted Service Contours**  
**(Exhibit E, Figures 6, 7, and 8)**

Exhibit E, Figure 6 is a contour comparison study that shows the distance to the proposed contours in kilometers, as well as the effective antenna height and the terrain elevation

from 3 to 16 kilometers. It compares the proposed facility (non-directional) to a maximum class C1 facility (100 kW at 299 meters HAAT). The distances to each 60 dBu contour are averaged and compared. This shows that the proposed facility should operate with an ERP of 28.0 kW at 485.9 meters HAAT.

Exhibit E, Figure 7(a) is a contour study, showing the distances to the FCC F(50,50) 70 dBu and 60 dBu contours. Because the F(50,50) 70-dBu does not provide coverage to Willis, The Applicant has chosen to use a supplemental method (Longley-Rice) to show tha the proposed facility will provide sufficient coverage to the city of license.

Exhibit E, Figure 7(b) is a map showing that 100% of the city of Willis can be covered by a hypothetical class C1 70-dBu contour (50.0-kilometers radius). The proposed allocation site has a site restriction of 45.32 kilometers.

Exhibit E, Figure 7(c) is a comparison of the distances to the 70-dBu contours using the FCC curves and the Longley-Rice method. According to the Commission's Rules, in order for an applicant to use a supplemental method to show city-grade coverage, a minimum of 10% difference must exist between the FCC and the supplemental method's contours. This exhibit shows that more than 10% difference exist on each radial of the pertinent arc (278 to 282 degrees in 1-degree increments). Exhibit E, Figure 7(d) show the terrain variation at all azimuths across the pertinent arc. According to the Commission's Rules, the terrain must vary substantially in order for a supplemental method to be used. The FCC curves assume a  $\Delta h$  of 50 meters. Several azimuths across the city of license (Willis, Texas) show  $\Delta h$  values that are significantly different than 50 meters (variation from 50 meters Of 10% or more).

Reynolds Technical Associates calculated the distance to the Longley-Rice 70-dBu contour by finding along each radial the point (in 0.1-km increments) where the calculated signal level drops below 70-dBu and the last point where the signal level is above 70 dBu. The average of the two numbers gives the distance to the contour.

Exhibit E, Figure 8(a) is a map that shows the F(50,50) 70-dBu contour and 60 dBu contours. Exhibit E, Figure 8(b) shows the F(50,50) 70 dBu contour over the pertinent arc, as well as the Longley-Rice contour. The map shows that 93.9% of the community of license (Willis, Texas) is encompassed by the Longley-Rice 70-dBu contour, in compliance with §73.315(a) of the Commission's Rules and Regulations, and it vividly demonstrates the disparity between the two models. Exhibit E, Figure 8(c) is a list of the parameters used to conduct the Longley-Rice study.

**TIGER Map of Willis, Texas**  
**(Exhibit E, Figure 9)**

MapInfo, Version 5.5, was used to construct the base maps for these studies. SoftWright, Version 4.1.586, produced the contours that were imported into MapInfo. The exact community boundaries came from MapInfo and were cross-checked against the US Census Bureau's TIGER maps via the Internet. This map is shown as Exhibit E, Figure 9. The URL for the TIGER map showing the Willis, Texas city boundaries is:

<http://tiger.census.gov/cgi-bin/mapbrowse-tbl?lat=36.47332&lon=-82.85791&wid=0.25&ht=0.25&mlat=36.47332&mlon=-82.85791&msym=redpin&off=CITIES&mlabel=Willis,+TN>

The MapInfo and TIGER map versions of the city boundaries of the city of Willis are in agreement. Use of MapInfo and TAP are fully acceptable to the Commission.

**Area and Population Within the 60-dBu Contour**  
**(Exhibit E, Figure 10)**

The population within the proposed 60-dBu contour (standard method) according to the most recent (estimated 1999) census data was 1,303,454 persons. The total area within the 60-dBu (1 mV/m) is 16,480 square kilometers. The population count within the 60-dBu was determined by plotting the 60-dBu contour map and overlaying it with the latest census data in MapInfo. Then all the census tracts that are completely contained within the contour are summed. A proportionate sum is taken for tracts that are not entirely within the contour. These numbers are added and a total population is determined. Exhibit E, Figure 10 is a copy of the results of that study.

**Federal Aviation Administration Notification**  
**(Exhibit E, Figure 11 and 12)**

The Federal Aviation Administration Regional Office in Ft. Worth, Texas is being notified of the proposed facility since KVST will be mounting its antenna on a new structure. A copy of the FAA Form 7460-1 is attached as Exhibit E, Figure 11.

Directions to the site are shown in Exhibit E, Figure 12.

**FM Blanketing Interference**  
**(Exhibit E, Figure 13)**

The areas adjacent to the transmitting antenna that will receive a signal with a strength of 115 dBu (562 mV/m) or greater will be assumed to be blanketed. In determining the blanketing area, the 115-dBu contour was computed by calculating the inverse distance field using the effective radiated power of the maximum lobe of the antenna without considering its vertical radiation pattern or height.

The distance to the 115-dBu contour was determined by using the equation spelled out in the FCC Rule §73.318.

The Applicant assumes full financial responsibility for remedying new complaints of blanketing interference induced by the proposed for a period of one year. Following the one-year period of full financial obligation to satisfy the blanketing complaints, the licensee shall provide technical information or assistance to complainants on remedies for blanketing interference. The Applicant will try to eliminate all possible blanketing interference to the general public caused by the proposed construction.

The Applicant certifies that this application complies with the regulations of the NEPA and the standards set forth by the ANSI.

The computations used to establish a blanketing distance of 2.085 kilometer are shown in Exhibit E, Figure 13.

**Human Exposure to Radiofrequency Radiation**  
**(Exhibit E, Figure 14)**

The proposed FM facility was evaluated in terms of potential radiofrequency radiation exposure at ground level in accordance with the RF Worksheet #1 (FCC Worksheet 3, pages 5 and 6).

The side-mount antenna for The Applicant's proposed FM broadcast station will utilize a proposed tower. The proposed center of radiation above ground level is to be rounded to 488 meters, with an ERP (both horizontally and vertically) of 28.0 kW. The proposed along with the existing facilities were used to conduct a study on the RF Worksheet. The controlled/occupational limit and uncontrolled/general public limits are in compliance. A radiofrequency radiation warning sign is to be placed at the base of the tower with clearly visible instructions to workers who climb the tower. The sign shall instruct anyone working on the tower to reduce (or turn off) the FM transmitter, whichever is appropriate, in order to avoid harmful exposure to radiofrequency radiation.

The radiation for the FM facility is predicted to remain well within the guidelines concerning exposure to radiofrequency radiation. The method used to establish a level of compliance for human exposure to radiofrequency radiation is shown in Exhibit E, Figure 14.

**RF Specifications and Antenna System**  
**(Exhibit E, Figure 15)**

Exhibit E, Figure 15 depicts the probable method The Applicant will use to achieve the proposed effective radiated power. Slight variations may occur from this scenario due to the availability of equipment.

Upon receiving a construction permit for the proposed facility, The Applicant will select and install all transmitting equipment (including the FM transmitter) that will comply with the technical requirements specified in the Rules and Regulations of the Commission.

**Environmental Impact**  
**(No Exhibits)**

A grant of the proposed construction would not constitute a major action as defined in the Commission's Rules and Regulations.

The proposed uniform cross-sectional guyed tower of 496.8 meters AGL is to be used for the purpose of supporting the applicant's FM transmitting antenna. The proposed KVST antenna will be side-mounted.

During operation, the facility will produce no chemical or significant thermal pollution, and no ionizing radiation will be generated. Areas of high intensity radiofrequency fields will be confined to the immediate area of the transmitting antenna, far above the ground and away from any human and wildlife population.

The area is not officially designated as a wilderness area or wildlife preserve and is not pending consideration. The area has no significant value in American history, architecture, archaeology, or culture, which is listed in the Register of Historic Places, and it is not eligible for listing. It is not recognized either nationally or locally for special scenic or recreational value. The proposed site is located in Liberty County, Texas, near the city of Cleveland, approximately 14.3 kilometers from the central business district of that city.

**Studio Location**  
**(No Exhibits)**

The studio of KVST transmitting facility will be within the 70-dBu contour or within 25 miles of the community reference coordinates. Present plans are for the studio to remain at its current location. The studio will be connected to the transmitter site via remote control and microwave equipment.

## **Conclusion**

This statement/application has been prepared for The Applicant by utilizing the latest available information, cross-checked with the Federal Communications Commission and other sources. Therefore, it is submitted that the proposed is in compliance with the Commission's Rules and Regulations and other sources. Therefore, it is submitted that the engineering data compiled and demonstrated herein for the proposed is in compliance with Commission's Rules and Regulations at the time of this application's filing date. We welcome the opportunity to discuss with the staff of the Federal Communications Commission the engineering data contained in this application. Should any questions arise concerning the information, please contact us.

The following pages are exhibits prepared and assembled in support of the proposed.

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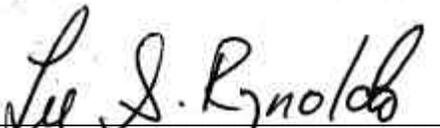
### **Statement of the Consultants**

The instant engineering statement was prepared for New Wavo Communication Group, Inc. ("The Applicant") and supports an application for KVST(FM), Willis, Texas. It was developed by Lee S. Reynolds and Virgle Leon Strickland of Reynolds Technical Associates, and may not be used for purposes other than submission to the Commission by The Applicant.

It may not be reproduced in its entirety, or in part, by anyone (other than from the Commission) without the written consent of Strickland and/or Reynolds.

It is prepared for The Applicant under contractual agreement, and its certification by Strickland/Reynolds is used accordingly. If The Applicant fails in its contractual obligation, Strickland/Reynolds reserve the right to withdraw its certification.

The information in this application is compiled from the most recent Commission and outside data. Strickland/Reynolds are not responsible for errors resulting from incorrect data or unpublished rule and procedure changes.

  
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January 25<sup>th</sup>, 2001

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