

**ENGINEERING REPORT**  
**Proposed NEW**  
**Non-Commercial Educational FM**  
**On Channel 218, 91.5 mHz**  
**At Denison, TX**  
**February, 1997**

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**E. HAROLD MUNN, JR. & ASSOCIATES, INC.**  
Broadcast Engineering Consultants  
Coldwater, MI 49036



## **DISCUSSION**

This firm was retained to prepare the required engineering report in support of an application on behalf of Bible Broadcasting Network, Inc. This application requests a new Educational FM Station, to operate serving Denison, Texas. It has been determined that FM Channel 218, 91.5 mHz, may be used at the site proposed, in full conformance with the provisions of the rules. The station will operate with an effective radiated power of 4.0 kW, and an antenna height above terrain of 63 meters. Allocation details concerning the use of this channel are included as Exhibit E-7 of this report. There will be no prohibited contour overlap between the proposed station and any known existing or proposed full-service stations.

The transmitter site proposed in this application is not within the affected radius of a Channel 6 television station.

Due consideration has been given to protection against human exposure to radiofrequency radiation. A detailed study is part of this section.

The proposed 1.0 mV/m contour has been calculated in accordance with the Rules, and the plotted data forms Exhibit E-1 of this report. The vertical plan diagram for the proposed support tower is included as Exhibit E-3.

The FAA has not been notified of this proposed antenna addition to the tower, as there is no height increase.

The service contour exhibit, E-1 used 360 bearings of terrain calculations to develop the data for the computer generated plots. This shows the effect of the terrain on the contour shape. All area computations were based on the contours as plotted.



## DISCUSSION Cont.

The following tabulation of the distances to the proposed service contours results from calculations performed in accordance with §73.313(d) and §73.333 Figure 1.

### TERRAIN AND CONTOUR DATA Proposed Channel 218A

ERP = 4 kW  
FM - 2-6 Tables 30 Sec

| Azimuth<br>Deg T. | Ave. Elev.<br>3 to 16 km<br>Meters AMSL | Effective<br>Antenna Height,<br>Meters AAT | ERP<br>(dBk) | F(50-50)<br>Distance to<br>60 dBu Contour<br>km |
|-------------------|---|--|--------------|---|
| 0                 | 199.9                                   | 72.1                                       | 6.021        | 22.1  |
| 45                | 187.0                                   | 85.0                                       | 6.021        | 23.9  |
| 90                | 180.9                                   | 91.1                                       | 6.021        | 24.7  |
| 135               | 198.9                                   | 73.1                                       | 6.021        | 22.3  |
| 180               | 214.7                                   | 57.3                                       | 6.021        | 20.0  |
| 225               | 236.6                                   | 35.4                                       | 6.021        | 15.3  |
| 270               | 227.5                                   | 44.5                                       | 6.021        | 17.4  |
| 315               | 229.0                                   | 43.0                                       | 6.021        | 17.1  |
| -----             |   |  |              |   |
| Ave. = 209.3 M    |   | 62.7 M                                     |              |   |

Antenna Radiation Center AMSL = 272.0 M

### Geographic Coordinates:

North latitude: 33 42 38

West longitude: 96 34 20



**STATEMENT OF COMPLIANCE WITH RF EXPOSURE GUIDELINES**  
**REVISED FOR NEW Ch.218**  
**at Denison, Texas**

The Commission requires an engineering study regarding compliance with the guidelines for human protection from radiofrequency radiation. This report section is in response to that provision of the Rules.

The Federal Communications Commission, as of January 1, 1986, and revised effective January 1, 1997, has set forth guidelines for RF radiation protection as issued by the American National Standards Institute (ANSI). The following steps have been taken by the licensee of this facility to insure proper protection from potentially high RF energy levels to station personnel and the public in general.

The radiation center of the FM antenna is located at a height above ground sufficient to provide full compliance with the FCC guidelines concerning human exposure to radiofrequency radiation to observers on the ground.

In the event repairs or maintenance would be required on the antenna support structure, or the antenna which could result in potential exposure to fields in excess of the ANSI standards, the operating power of the station will be reduced, or the facility shut down for such time as may be required for the repairs and/or maintenance to be completed. An agreement, signed by all parties with access to the site is in effect concerning the required power reductions or cessation of operations.

To verify that this facility as constructed meets the requirements of the guidelines, calculations have been made using the appropriate formulae of OST Bulletin No.65. The antenna in use is expected to be a three (3) bay antenna. The antenna is a Shively bearing a model number 6810-3.

The calculations use the technique outlined in the EPA report titled: An Engineering Assessment of the Potential Impact of Federal Radiation Protection Guidance on the AM, FM, and TV Broadcast Services (Gailey & Tell, April, 1985). All calculations contained herein are based on the measured element patterns for the antenna, and follow the procedure shown in the Gailey & Tell report. The patterns were identified by applying the procedure outlined in the report to the measurement data contained in the report titled Element Pattern Measurements on FM Antennas (EPA-520/6-85-107, June 1985). The antenna has been designated an EPA Type 6 element due to the construction.



## **RF Exposure Guideline Compliance, Cont.**

The tabulated and plotted field data which is included in this section shows that the ANSI protection guideline will not be exceeded in proximity to the station.

The data obtained shows that full compliance with the guidelines is attained.

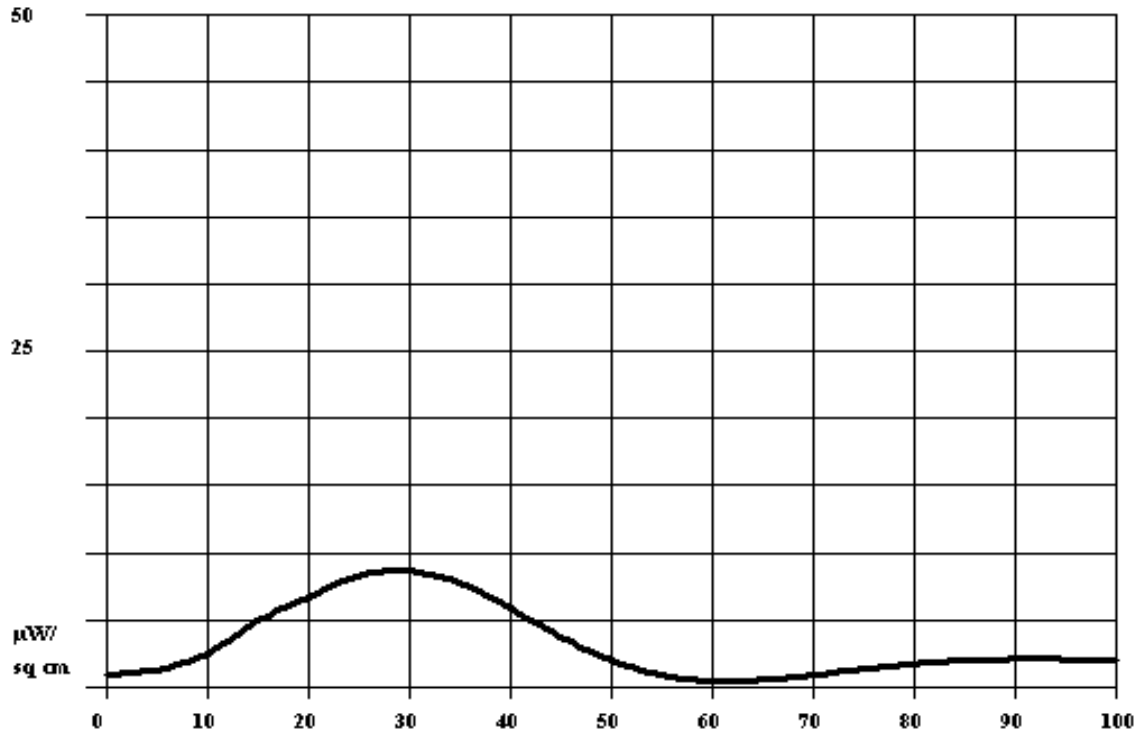
The maximum calculated RF field in proximity to the station at 2 meters above ground is  $0.00833 \text{ mW/cm}^2$ , at about 29 meters from the tower base. This is only 0.833 % of the permitted "controlled access" field of  $1.0 \text{ mW/cm}^2$ , and 4.17 % of the "uncontrolled access" limit of  $0.2 \text{ mW/cm}^2$ .

In addition to the protection provided by the antenna design, access to the area will be restricted by locked gates and other security measures. The area will be marked with appropriate signs, warning of the potential for exposure to radiofrequency fields.

There are no other FM or TV broadcast transmitters within 100 meters of the antenna site.



Environment = Uncontrolled, Maximum = 200  $\mu\text{W}/\text{sq cm}$   
**Shively 6800 series-Type 6, 3 Bays, Spac= 1, H=4 kW, V=4 kW, 55 MAG**



HORZ. DISTANCE FROM FM RADIATOR Vs POWER DENSITY (Microwatt/Square cm)  
 Dist(Meters) PD (H) PD (V) Total (uW/cm2) Percent Max.

|    |      |      |      |     |
|----|------|------|------|-----|
| 0  | 0.28 | 0.16 | 0.44 | 0.2 |
| 1  | 0.34 | 0.16 | 0.50 | 0.3 |
| 2  | 0.41 | 0.16 | 0.57 | 0.3 |
| 3  | 0.49 | 0.16 | 0.64 | 0.3 |
| 4  | 0.56 | 0.16 | 0.72 | 0.4 |
| 5  | 0.65 | 0.17 | 0.82 | 0.4 |
| 6  | 0.73 | 0.28 | 1.01 | 0.5 |
| 7  | 0.83 | 0.40 | 1.23 | 0.6 |
| 8  | 0.92 | 0.55 | 1.47 | 0.7 |
| 9  | 1.02 | 0.71 | 1.73 | 0.9 |
| 10 | 1.15 | 0.91 | 2.05 | 1.0 |
| 11 | 1.34 | 1.16 | 2.50 | 1.2 |
| 12 | 1.54 | 1.44 | 2.98 | 1.5 |
| 13 | 1.75 | 1.74 | 3.49 | 1.7 |
| 14 | 1.96 | 2.06 | 4.02 | 2.0 |
| 15 | 2.16 | 2.36 | 4.52 | 2.3 |
| 16 | 2.34 | 2.56 | 4.89 | 2.4 |
| 17 | 2.51 | 2.75 | 5.26 | 2.6 |
| 18 | 2.67 | 2.94 | 5.62 | 2.8 |
| 19 | 2.83 | 3.12 | 5.95 | 3.0 |
| 20 | 2.98 | 3.29 | 6.27 | 3.1 |
| 21 | 3.18 | 3.48 | 6.67 | 3.3 |
| 22 | 3.38 | 3.66 | 7.04 | 3.5 |
| 23 | 3.55 | 3.82 | 7.37 | 3.7 |
| 24 | 3.71 | 3.96 | 7.66 | 3.8 |
| 25 | 3.84 | 4.07 | 7.91 | 4.0 |
| 26 | 3.95 | 4.15 | 8.10 | 4.1 |
| 27 | 4.03 | 4.20 | 8.23 | 4.1 |
| 28 | 4.09 | 4.21 | 8.31 | 4.2 |
| 29 | 4.12 | 4.21 | 8.33 | 4.2 |
| 30 | 4.12 | 4.17 | 8.29 | 4.1 |
| 31 | 4.09 | 4.12 | 8.21 | 4.1 |
| 32 | 4.04 | 4.03 | 8.07 | 4.0 |
| 33 | 3.94 | 3.93 | 7.87 | 3.9 |
| 34 | 3.83 | 3.80 | 7.63 | 3.8 |
| 35 | 3.69 | 3.65 | 7.34 | 3.7 |



## **EXHIBIT A**

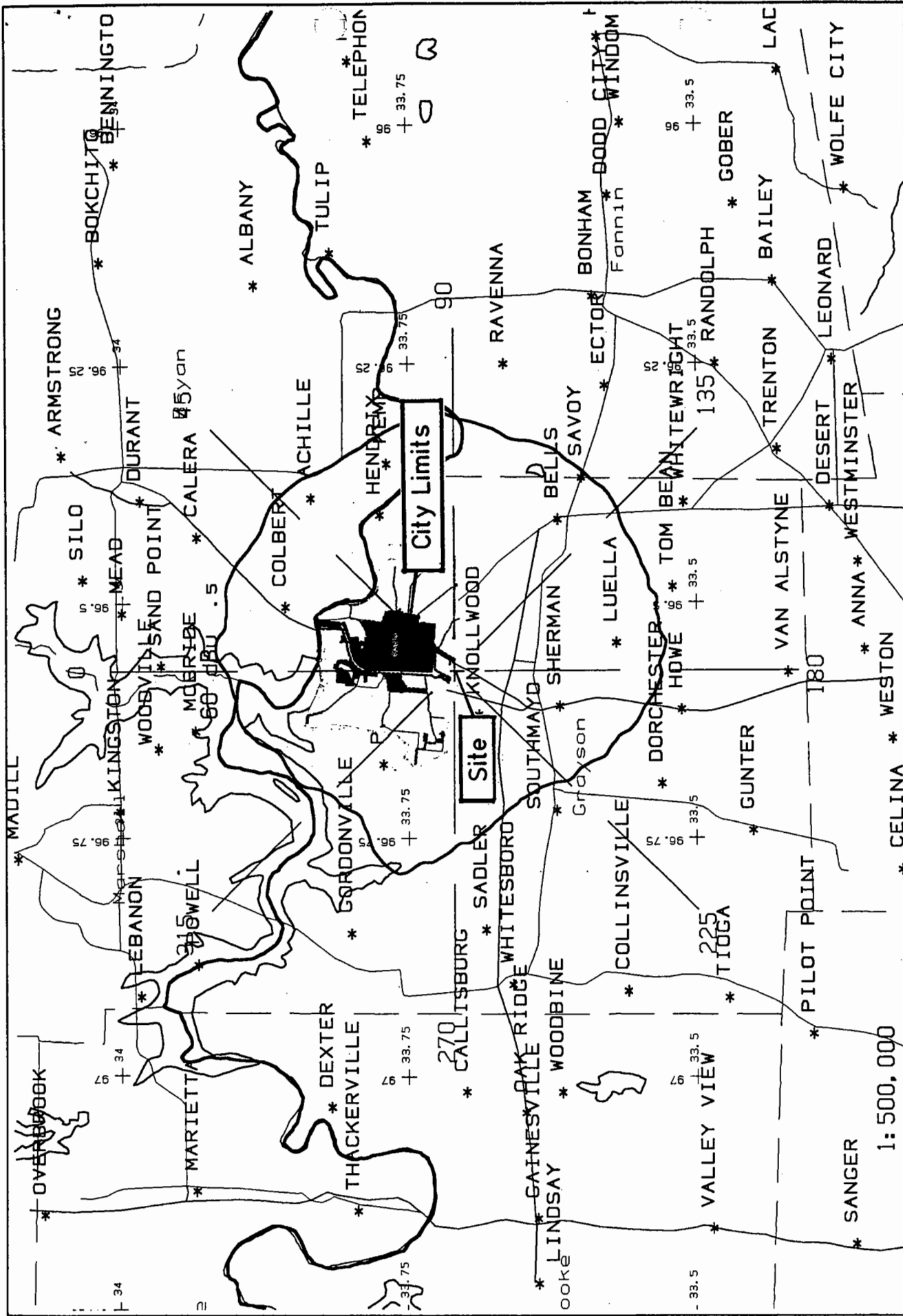
The transmitting facility is so located that there is some resident population within the predicted "blanketing" contour, as defined in 47 C.F.R. §73.318. The applicant agrees that full compliance with the procedures and requirements of §73.318(b)(d) will be attained.

The applicant will take such engineering steps as may be required to satisfy complaints of "blanketing" including, but not limited to, the installation of filters, traps, or other devices to satisfy said complaints within the specified time period.

The proposed transmitter is located within 10 km of other existing or proposed FM and TV transmitters. This applicant does not believe that there would be any adverse effects on the operation of any other facility as a result of a grant of this application.

In the event adverse effects are noted, including but not limited to receiver-induced or other types of modulation, the applicant accepts full responsibility for the elimination of any objectionable interference to facilities in existence or authorized, or to radio receivers in use prior to grant of this application.





|   |                         |   |                    |
|---|-------------------------|---|--------------------|
| <p>Scale in km</p> <p>0 10 20 30 40</p> | <p>1:500,000</p>        | <p>Prop. Denison TX Ch. 218A 4kW 63m HAAT</p> | <p>EXHIBIT E-1</p> |
| <p>N. Lat. 33 42 38</p>                 | <p>W. Lng. 96 34 20</p> | <p>MUNN &amp; ASSOC 02/97</p>                 | <p></p>            |



## **EXHIBIT E-2**

### **SOURCE OF TOPOGRAPHIC DATA**

The topographic data employed in this application is based on the 30" topographic database, NGDC-TGP-0050. Linear interpolation was employed between datapoints.

The averages calculated include 131 points between 3 and 16 km from the transmitter site proposed in this application.

The transmitter site elevation was determined by means of 7.5' series topographic mapping. The site coordinates were also developed from the 7.5' series map, and are based on NAD-27 datum. A portion of that map is included as Exhibit E-5 .

Elevations in feet have been converted to meters, using the following formula:

$$H(\text{meters}) = h(\text{feet}) * 0.3048$$

For application purposes, the resultant metric elevation has been rounded to the nearest meter.



### EXHIBIT E-3

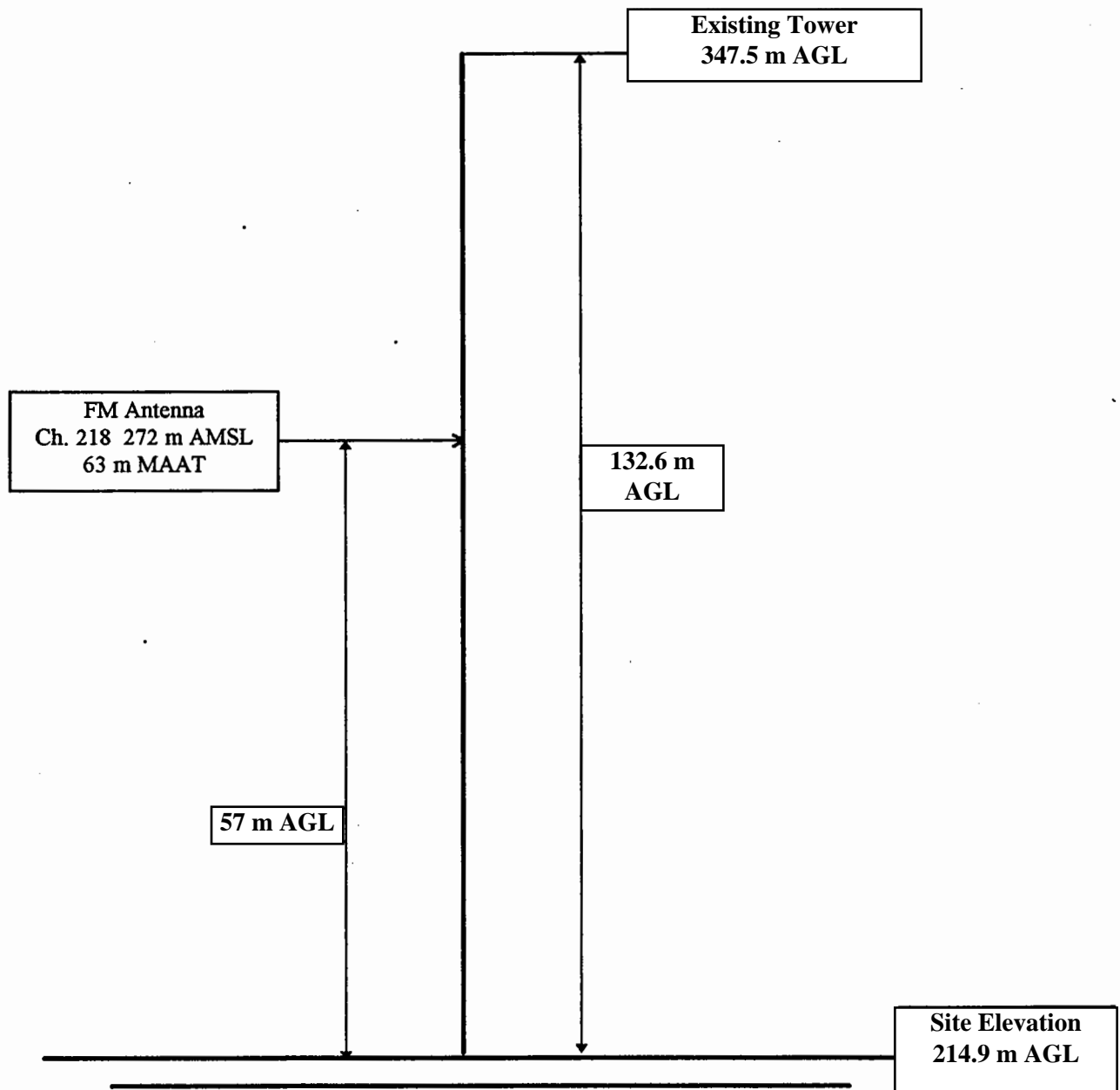
## VERTICAL PLAN OF ANTENNA SYSTEM

#### Site Location:

NL 33° 42' 38"; WL 096° 34' 20"

Site Owner: Mobile Comm.

1 km N. of St.Rd. 691, 1.6 km S. of Denison,  
Grayson Co., Texas





**EXHIBIT E-4**

**PROPOSED FM OPERATING SPECIFICATIONS**

**Applicant:** Bible Broadcasting Network, Inc.      **Call:** New  
**City of License:** Denison, TX

**Frequency:** 91.7 MHz      **Channel:** 218A  
**ERP:** 4.0 kW      **HAAT:** 63 (meters)

**Site Coordinates:** NL 33° 42' 38"; WL 096° 34' 20"

**Transmitter Location:** 1 km N. of St. Rd. 691, 1.6 km S. of Denison

**County:** Grayson

**State:** TX

**Proposed Operation:** Class A

**Effective Radiated Power:** 4.0 (kW) H 4.0 (kW) V (Non-Directional)

**Height of Antenna Radiation Center Above:**

|                   | <u>Average Terrain</u> | <u>Mean Sea Level</u> | <u>Ground</u> |
|-------------------|------------------------|-----------------------|---------------|
| <b>Horizontal</b> | 63 meters              | 272 meters            | 57 meters     |
| <b>Vertical</b>   | 63 meters              | 272 meters            | 57 meters     |

**Elevation of Tower Site**-----: 214.9 meters AMSL

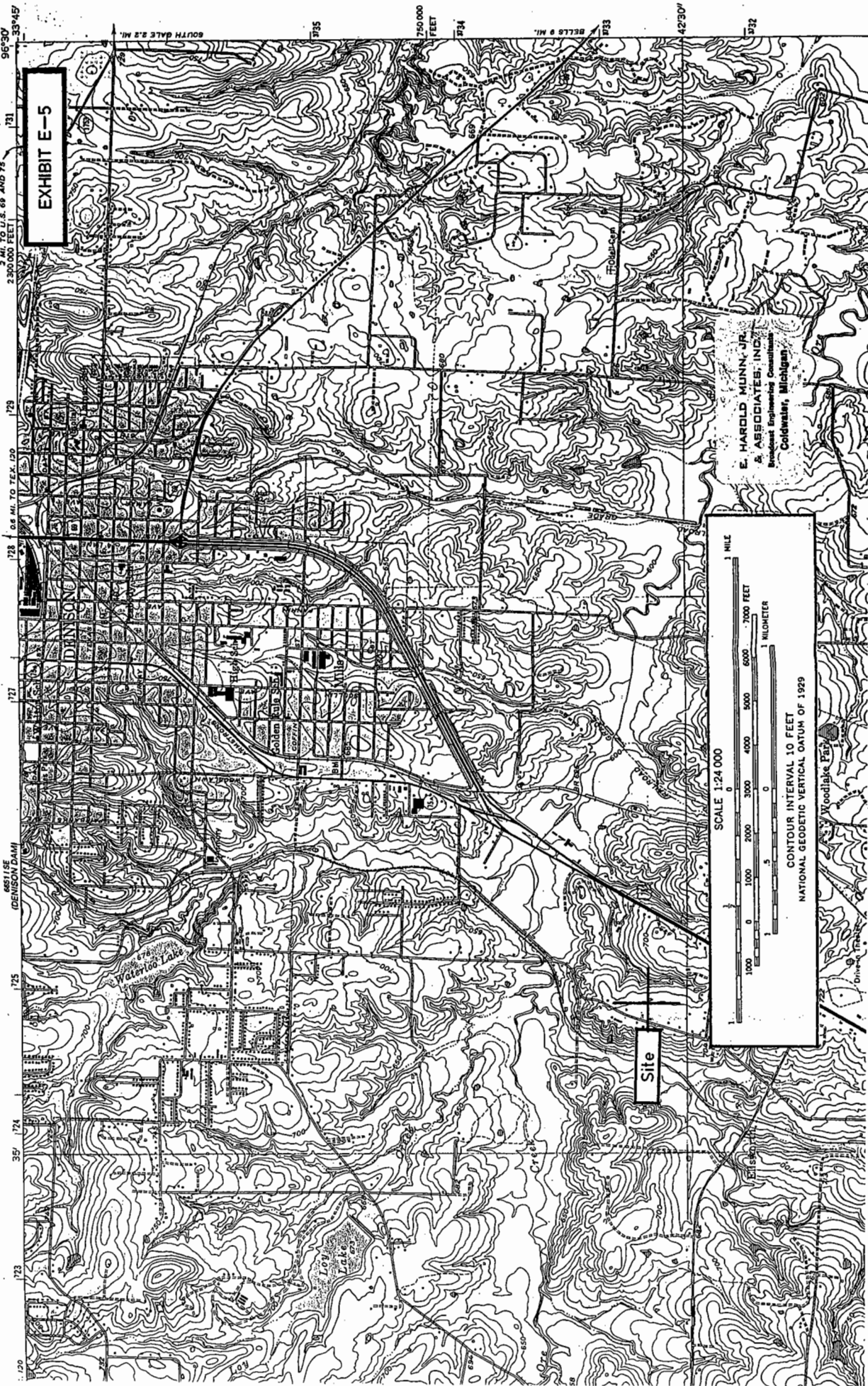
**Overall Height of Supporting Structure Above Ground**-----: 132.6 meters AGL

**Overall Height of Supporting Structure Above Mean Sea Level:** 347.5 meters AMSL

All heights "rounded" to nearest meter for Section V-B of Form 340



EXHIBIT E-5



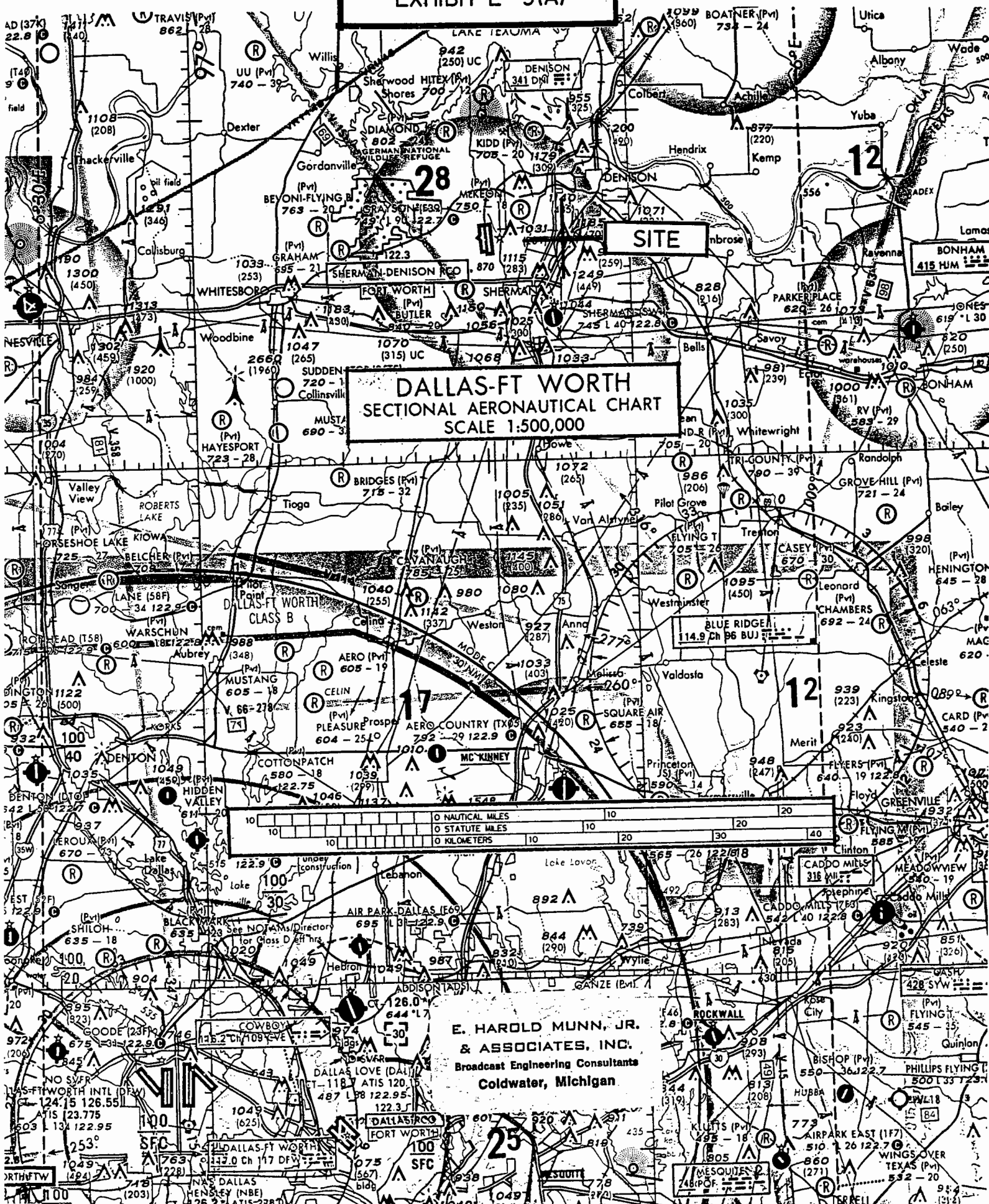
SCALE 1:24 000  
HILE  
0 1000 2000 3000 4000 5000 6000 7000 FEET  
0 1 2 3 4 5 KILOMETER  
CONTOUR INTERVAL 10 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

E. HAROLD MUNN, JR.  
S. ASSOCIATES, INC.  
Professional Engineering Consultants  
Coldwater, Michigan

Site



# EXHIBIT E-5(A)





## **EXHIBIT E-6**

### **TABULATION OF POPULATION AND AREA**

**Prop. 218(A)  
Denison, Texas**

#### **CONTOUR   POPULATION   AREA**

|                 |               |                             |
|-----------------|---------------|-----------------------------|
| <b>1.0 mV/m</b> | <b>74,722</b> | <b>1,293 km<sup>2</sup></b> |
|-----------------|---------------|-----------------------------|

The population within the 1.0 mV/m contour was determined by superimposing the desired contour onto U.S. Standard Civil Division maps of the 1990 Census, and assuming uniform population distribution within each minor civil division. The data was computer generated.

The service area was determined by measurement of the contour map Exhibit E-1, using computer calculations and 360 terrain radials.



**EXHIBIT E-7**

**ALLOCATION STUDY FOR THE USE OF CHANNEL 218A**

**91.5 mHz**

**At Denison, TX**

This exhibit shows the calculated spacings between the proposed Class A site and the other facilities which may be affected in the allocation. The relationships between the proposed operation and the existing stations are tabulated.

This exhibit shows that there will be no prohibited contour overlap to any station in contravention of the Rules of the Commission, or any treaty obligations of the United States of America.

The station, operating as proposed, would **not** create or receive overlap. There is one (1) facility existing or authorized close enough to the transmitter site to require further study. That is KVTM(FM), Dallas, TX on Channel 219. There is sufficient clearance to other stations that no additional study is believed to be needed.

The INTERDLG© maps of the protected 1 mV/m contours in this exhibit show compliance with the rules concerning the affected station. The tabulation of distances to interference contours provided by the FMOVER© tabulations included in this section provides the support for the map exhibits.

The required tabulation of protected and interference contours from the proposed Channel 218 station is included in this section.



## EXHIBIT E-7 Cont.

The following tabulation of the distances to the proposed service contours results from calculations performed in accordance with §73.313(d) and §73.333 Figure 1, 1(a).

**Predicted Signal Contours:**

33 42 38 - Proposed  
96 34 20 - Protected and Interference Contours

| ERP = 4 kW, 6.021 dBk FM - 2-6 Tables 30 Sec |       |       |       |       |          |          |          |
|--|-------|-------|-------|-------|----------|----------|----------|
| Radial                                       | HAAT  | kW    | dBk   | Field | 60 dBu.5 | 80 dBu.1 | 54 dBu.1 |
| 0 Degr.                                      | 72.1M | 4.000 | 6.021 | 1.000 | 22.1     | 6.9      | 33.0     |
| 10 Degr.                                     | 76.0M | 4.000 | 6.021 | 1.000 | 22.7     | 7.1      | 34.0     |
| 20 Degr.                                     | 82.0M | 4.000 | 6.021 | 1.000 | 23.5     | 7.4      | 35.5     |
| 30 Degr.                                     | 79.7M | 4.000 | 6.021 | 1.000 | 23.2     | 7.3      | 35.0     |
| 40 Degr.                                     | 83.1M | 4.000 | 6.021 | 1.000 | 23.7     | 7.4      | 35.8     |
| 50 Degr.                                     | 84.6M | 4.000 | 6.021 | 1.000 | 23.9     | 7.5      | 36.1     |
| 60 Degr.                                     | 79.9M | 4.000 | 6.021 | 1.000 | 23.2     | 7.3      | 35.0     |
| 70 Degr.                                     | 84.2M | 4.000 | 6.021 | 1.000 | 23.8     | 7.5      | 36.0     |
| 80 Degr.                                     | 91.7M | 4.000 | 6.021 | 1.000 | 24.8     | 7.8      | 37.7     |
| 90 Degr.                                     | 91.1M | 4.000 | 6.021 | 1.000 | 24.7     | 7.8      | 37.6     |
| 100 Degr.                                    | 83.7M | 4.000 | 6.021 | 1.000 | 23.7     | 7.4      | 35.9     |
| 110 Degr.                                    | 82.8M | 4.000 | 6.021 | 1.000 | 23.6     | 7.4      | 35.7     |
| 120 Degr.                                    | 79.8M | 4.000 | 6.021 | 1.000 | 23.2     | 7.3      | 35.0     |
| 130 Degr.                                    | 77.4M | 4.000 | 6.021 | 1.000 | 22.9     | 7.2      | 34.4     |
| 140 Degr.                                    | 67.1M | 4.000 | 6.021 | 1.000 | 21.4     | 6.7      | 31.7     |
| 150 Degr.                                    | 63.3M | 4.000 | 6.021 | 1.000 | 20.9     | 6.5      | 30.7     |
| 160 Degr.                                    | 62.9M | 4.000 | 6.021 | 1.000 | 20.8     | 6.5      | 30.6     |
| 170 Degr.                                    | 59.7M | 4.000 | 6.021 | 1.000 | 20.3     | 6.3      | 29.9     |
| 180 Degr.                                    | 57.3M | 4.000 | 6.021 | 1.000 | 20.0     | 6.2      | 29.3     |
| 190 Degr.                                    | 51.4M | 4.000 | 6.021 | 1.000 | 18.9     | 5.9      | 27.7     |
| 200 Degr.                                    | 45.4M | 4.000 | 6.021 | 1.000 | 17.6     | 5.5      | 25.9     |
| 210 Degr.                                    | 41.8M | 4.000 | 6.021 | 1.000 | 16.8     | 5.3      | 24.8     |
| 220 Degr.                                    | 36.3M | 4.000 | 6.021 | 1.000 | 15.5     | 4.9      | 23.1     |
| 230 Degr.                                    | 31.5M | 4.000 | 6.021 | 1.000 | 14.5     | 4.5      | 21.6     |
| 240 Degr.                                    | 28.8M | 4.000 | 6.021 | 1.000 | 14.2     | 4.4      | 21.1     |
| 250 Degr.                                    | 32.7M | 4.000 | 6.021 | 1.000 | 14.7     | 4.6      | 22.0     |
| 260 Degr.                                    | 38.8M | 4.000 | 6.021 | 1.000 | 16.1     | 5.1      | 23.9     |
| 270 Degr.                                    | 44.5M | 4.000 | 6.021 | 1.000 | 17.4     | 5.5      | 25.7     |
| 280 Degr.                                    | 53.1M | 4.000 | 6.021 | 1.000 | 19.2     | 6.0      | 28.1     |
| 290 Degr.                                    | 58.2M | 4.000 | 6.021 | 1.000 | 20.1     | 6.2      | 29.5     |
| 300 Degr.                                    | 45.0M | 4.000 | 6.021 | 1.000 | 17.5     | 5.5      | 25.8     |
| 310 Degr.                                    | 43.1M | 4.000 | 6.021 | 1.000 | 17.1     | 5.4      | 25.2     |
| 320 Degr.                                    | 46.5M | 4.000 | 6.021 | 1.000 | 17.9     | 5.6      | 26.3     |
| 330 Degr.                                    | 50.6M | 4.000 | 6.021 | 1.000 | 18.7     | 5.8      | 27.4     |
| 340 Degr.                                    | 59.0M | 4.000 | 6.021 | 1.000 | 20.2     | 6.3      | 29.7     |
| 350 Degr.                                    | 66.7M | 4.000 | 6.021 | 1.000 | 21.4     | 6.7      | 31.6     |

Ave. HAAT= 62.0M, Ant. COR= 272.0M AMSL

E. HAROLD MUNN, JR. & ASSOCIATES, INC.  
Broadcast Engineering Consultants  
Coldwater, MI 49036



02-04-1997

E. Harold Munn Jr. &amp; Associates Inc.

517 278-7339

CH# 218A - 91.5 MHz

EXHIBIT E-7 Channel Allocation Study

INTERFERENCE CHECKS WITH NEW, DENISON, TX at N. LAT. 33 42 38 W. LNG. 96 34 20

PWR = 4 kW H.A.A.T. = 63 M C.O.R. = 272 M AMSL

Protected F(50-50) 60 dBu = 20.47 km

F(50-10) 40 dBu = 72.47 54 dBu = 31.04 80 dBu = 6.47 100 dBu = 2.16

F(50-10) 37 dBu = 84.65 51 dBu = 36.92 77 dBu = 7.69 97 dBu = 2.56

F(50-10) 34 dBu = 97.03 48 dBu = 45.48 74 dBu = 9.27 94 dBu = 2.96

| CH#  | CALL    | TYPE                          | * IN * | * OUT * | BEARING | DISTANCE  | LAT.     | PWR(kW) | INT(km) | PRO(km)      |
|--|---------|-------------------------------|--------|---------|---------|-----------|----------|---------|---------|--------------|
| CITY   | STATE   | LICENSEE                      |        |         | <---    |           | LNG.     | HAAT(M) | COR(M)  | FILE #       |
| 216A   | AP216 * | AP CN                         | 11.0   | 19.5    | 30.9    | 37.00 km  | 33 59 46 | 1.00    | 3.19    | 10.30        |
| Durant   |         | OK American Family Associatio |        |         | 210.9   | 22.99 Mi  | 96 21 56 | 23.4*   | 227     | BPED960610ML |
| > Reference HAAT at 30.9 degrees = 79.4 M, Pwr.= 4 kW, Pro. Dist. = 22.82 km, Int. Dist. = 7.23 km   |         |                               |        |         |         |           |          |         |         |              |
| 217C2  | KDKR.C* | CP VN                         | 11.7   | 27.6    | 249.1   | 98.82 km  | 33 23 22 | 8.00    | 72.21   | 48.81        |
| Decatur  |         | TX Creative Educational Media |        |         | 69.1    | 61.40 Mi  | 97 33 53 | 312.0*  | 590     | BPED931221MA |
| FCC Comment > Vertical Polarization Only   |         |                               |        |         |         |           |          |         |         |              |
| > Reference HAAT at 249.1 degrees = 32.3 M, Pwr.= 4 kW, Pro. Dist. = 14.89 km, Int. Dist. = 22.42 km |         |                               |        |         |         |           |          |         |         |              |
| 217C1  | AP217   | AP DCN                        | 22.3   | 41.5    | 354.7   | 117.39 km | 34 45 51 | 100.00  | 74.67   | 44.82        |
| Ada  |         | OK American Family Associatio |        |         | 174.7   | 72.94 Mi  | 96 41 32 | 73.0    | 369     | BPED960802MF |
| 218D   | K218BY  | CP CN                         | -57.3  | -80.9   | 196.5   | 3.99 km   | 33 40 34 | 0.14    | 40.86   | 12.38        |
| Sherman  |         | TX North Texas Public Broadca |        |         | 16.5    | 2.48 Mi   | 96 35 04 | 118.0   | 332     | BPFT950210TJ |
| FCC Comment > Translator For KERA, Dallas, TX  |         |                               |        |         |         |           |          |         |         |              |
| 219C   | KVTT *  | LI CN                         | 1.9    | 27.2    | 196.8   | 129.76 km | 32 35 24 | 100.00  | 109.95  | 74.95        |
| Dallas   |         | TX Research Educational Found |        |         | 16.8    | 80.63 Mi  | 96 58 21 | 335.7*  | 531     | BLED861212KB |
| > Reference HAAT at 196.8 degrees = 48.2 M, Pwr.= 4 kW, Pro. Dist. = 17.93 km, Int. Dist. = 27.6 km  |         |                               |        |         |         |           |          |         |         |              |
| 220A   | KSSU *  | LI CN                         | 12.1   | 22.4    | 28.8    | 37.74 km  | 34 00 30 | 0.32    | 2.67    | 8.06         |
| Durant   |         | OK Southeastern Oklahoma Stat |        |         | 208.8   | 23.45 Mi  | 96 22 30 | 34.6*   | 240     | BLED821012AK |
| > Reference HAAT at 28.8 degrees = 80.4 M, Pwr.= 4 kW, Pro. Dist. = 22.95 km, Int. Dist. = 7.27 km   |         |                               |        |         |         |           |          |         |         |              |
| 221A   | AD221   | AD                            | 31.0 R | 21.7 M  | 157.4   | 52.65 km  | 33 16 21 | 6.00    | 2.80    | 28.29        |
| Farmersville   |         | TX Hunt Broadcasting          |        |         | 337.4   | 32.72 Mi  | 96 21 14 | 100.0   | 0       | RM8799       |
| FCC Comment > Alternate Site   |         |                               |        |         |         |           |          |         |         |              |

## I.F. RELATIONSHIPS:

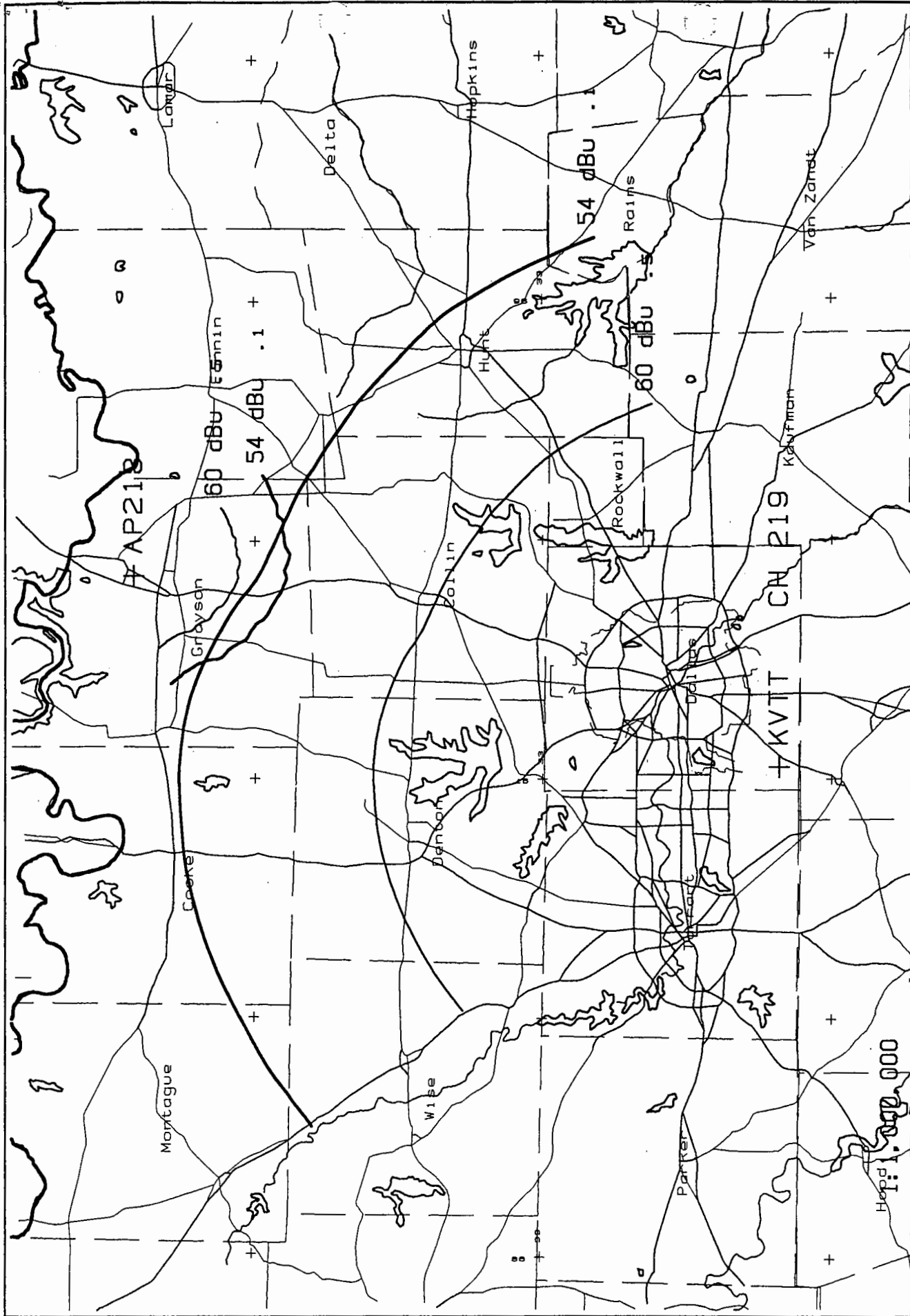
|   |       |                            |        |        |       |          |          |       |      |        |
|---|-------|----------------------------|--------|--------|-------|----------|----------|-------|------|--------|
| 272A  | DE272 | DE                         | 10.0 R | 37.8 M | 337.0 | 47.77 km | 34 06 24 | 6.00  | 2.80 | 28.29  |
| Madill  |       | OK Hunt Broadcasting, Inc. |        |        | 157.0 | 29.68 Mi | 96 46 30 | 100.0 | 0    | RM8671 |
| FCC Comment > Petition for Recon D95-126, 960614 by Carephil Communications |       |                            |        |        |       |          |          |       |      |        |

|        |        |                       |        |        |       |          |          |      |      |             |
|--------|--------|-----------------------|--------|--------|-------|----------|----------|------|------|-------------|
| 272A   | KMADFM | LI CN                 | 10.0 R | 37.8 M | 337.0 | 47.77 km | 34 06 24 | 3.00 | 2.08 | 20.08       |
| Madill |        | OK Radio Station KMAD |        |        | 157.0 | 29.68 Mi | 96 46 30 | 71.0 | 300  | BLH850523KA |

Nearest CH 6 Grade B =KAUZTV at 78.94 km, Distance= 183.35 Azimuth = 277.2 Deg. T.

\* Uses actual antenna radial HAAT and power toward reference





|  |  |   |
|--|--|---|
| <p>Scale in km</p> <p>0 10 20 30 40 50 60 70</p> | <p>Prop. Denison, TX Ch. 218A 4kW 63m HAAT</p> <p>KVTT BLED861212KB 219C 100kW</p> | <p>EXHIBIT E-7(A)</p> <p>MUNN &amp; ASSOC - 02/97</p> |
|--|--|---|



MUNN & ASSOC 30 Sec.  
02-04-1997

EXHIBIT E-7(A) Detail Tabulation

AP218  
Channel= 218  
Max ERP = 4 kW  
RCAMSL = 272 M  
N. Lat = 334238  
W. Lng = 963420

KVTT BLED861212KB  
Channel = 219  
Max ERP = 100 kW  
RCAMSL = 531 M  
N. Lat = 323524  
W. Lng = 965821

Protected  
60 dBu

Interfering  
54 dBu

| Azimuth<br>(degrees) | ERP<br>(kW) | HAAT<br>(m) | Dist<br>(km) | Azimuth<br>(degrees) | ERP<br>(kW) | HAAT<br>(m) | Dist<br>(km) | Actual<br>(dBu) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|
| 170.0                | 4.000       | 59.7        | 20.3         | 21.2                 | 100.000     | 316.7       | 112.0        | 52.5            |
| 171.0                | 4.000       | 60.7        | 20.5         | 21.1                 | 100.000     | 316.9       | 111.7        | 52.6            |
| 172.0                | 4.000       | 61.5        | 20.6         | 21.0                 | 100.000     | 317.1       | 111.4        | 52.7            |
| 173.0                | 4.000       | 60.9        | 20.5         | 20.8                 | 100.000     | 317.5       | 111.3        | 52.8            |
| 174.0                | 4.000       | 60.0        | 20.4         | 20.6                 | 100.000     | 318.0       | 111.2        | 52.8            |
| 175.0                | 4.000       | 59.2        | 20.3         | 20.4                 | 100.000     | 318.5       | 111.2        | 52.8            |
| 176.0                | 4.000       | 58.3        | 20.1         | 20.2                 | 100.000     | 319.2       | 111.2        | 52.8            |
| 177.0                | 4.000       | 57.2        | 19.9         | 20.0                 | 100.000     | 319.9       | 111.2        | 52.9            |
| 178.0                | 4.000       | 56.3        | 19.8         | 19.8                 | 100.000     | 320.6       | 111.2        | 52.9            |
| 179.0                | 4.000       | 56.8        | 19.9         | 19.7                 | 100.000     | 321.3       | 111.0        | 53.0            |
| 180.0                | 4.000       | 57.3        | 20.0         | 19.5                 | 100.000     | 322.0       | 110.8        | 53.0            |
| 181.0                | 4.000       | 57.8        | 20.0         | 19.4                 | 100.000     | 322.7       | 110.6        | 53.1            |
| 182.0                | 4.000       | 57.2        | 19.9         | 19.2                 | 100.000     | 323.6       | 110.6        | 53.2            |
| 183.0                | 4.000       | 56.5        | 19.8         | 19.0                 | 100.000     | 324.6       | 110.6        | 53.2            |
| 184.0                | 4.000       | 55.9        | 19.7         | 18.8                 | 100.000     | 325.6       | 110.6        | 53.2            |
| 185.0                | 4.000       | 55.2        | 19.6         | 18.6                 | 100.000     | 326.6       | 110.7        | 53.3            |
| 186.0                | 4.000       | 54.7        | 19.5         | 18.4                 | 100.000     | 327.6       | 110.7        | 53.3            |
| 187.0                | 4.000       | 53.9        | 19.4         | 18.3                 | 100.000     | 328.7       | 110.7        | 53.3            |
| 188.0                | 4.000       | 52.9        | 19.2         | 18.1                 | 100.000     | 329.7       | 110.9        | 53.3            |
| 189.0                | 4.000       | 52.2        | 19.0         | 17.9                 | 100.000     | 330.6       | 110.9        | 53.3            |
| 190.0                | 4.000       | 51.4        | 18.9         | 17.7                 | 100.000     | 331.6       | 111.1        | 53.4            |
| 191.0                | 4.000       | 50.7        | 18.7         | 17.5                 | 100.000     | 332.4       | 111.1        | 53.4            |
| 192.0                | 4.000       | 50.1        | 18.6         | 17.4                 | 100.000     | 333.3       | 111.2        | 53.4            |
| 193.0                | 4.000       | 49.8        | 18.6         | 17.2                 | 100.000     | 334.0       | 111.3        | 53.4            |
| 194.0                | 4.000       | 49.5        | 18.5         | 17.0                 | 100.000     | 334.8       | 111.3        | 53.4            |
| 195.0                | 4.000       | 49.1        | 18.4         | 16.9                 | 100.000     | 335.5       | 111.4        | 53.4            |
| 196.0                | 4.000       | 48.6        | 18.3         | 16.7                 | 100.000     | 336.2       | 111.5        | 53.4            |
| 197.0                | 4.000       | 48.0        | 18.2         | 16.5                 | 100.000     | 336.9       | 111.6        | 53.4            |
| 198.0                | 4.000       | 47.5        | 18.1         | 16.4                 | 100.000     | 337.5       | 111.7        | 53.4            |
| 199.0                | 4.000       | 46.6        | 17.9         | 16.2                 | 100.000     | 338.2       | 111.9        | 53.4            |
| 200.0                | 4.000       | 45.4        | 17.6         | 16.1                 | 100.000     | 338.7       | 112.2        | 53.4            |
| 201.0                | 4.000       | 44.1        | 17.3         | 15.9                 | 100.000     | 339.3       | 112.5        | 53.3            |
| 202.0                | 4.000       | 43.3        | 17.1         | 15.8                 | 100.000     | 339.8       | 112.7        | 53.3            |
| 203.0                | 4.000       | 43.0        | 17.1         | 15.6                 | 100.000     | 340.3       | 112.8        | 53.3            |
| 204.0                | 4.000       | 42.8        | 17.0         | 15.5                 | 100.000     | 340.8       | 112.9        | 53.3            |
| 205.0                | 4.000       | 42.4        | 16.9         | 15.3                 | 100.000     | 341.3       | 113.0        | 53.2            |
| 206.0                | 4.000       | 42.1        | 16.9         | 15.2                 | 100.000     | 341.7       | 113.2        | 53.2            |
| 207.0                | 4.000       | 42.0        | 16.8         | 15.1                 | 100.000     | 342.2       | 113.2        | 53.2            |
| 208.0                | 4.000       | 42.1        | 16.9         | 14.9                 | 100.000     | 342.6       | 113.3        | 53.2            |
| 209.0                | 4.000       | 42.1        | 16.9         | 14.8                 | 100.000     | 343.1       | 113.3        | 53.2            |
| 210.0                | 4.000       | 41.8        | 16.8         | 14.6                 | 100.000     | 343.5       | 113.5        | 53.2            |