

**TECHNICAL EXHIBIT  
MINOR CHANGE APPLICATION FOR  
MODIFICATION OF CONSTRUCTION PERMIT  
STATION KAAL-DT (FACILITY ID 18285)  
AUSTIN, MINNESOTA**

JULY 3, 2006

CH 33    224 KW-ND    293 M

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Technical Narrative

This Technical Exhibit supports a minor change application for modification of construction permit (CP) for digital television (DTV) station KAAL-DT at Austin, Minnesota (Facility ID 18285).

Station KAAL was allotted DTV channel 33 at its analog site. The FCC assigned the channel 33 DTV allotment an effective radiated power (ERP) of 1000 kilowatts (kW) and antenna height above average terrain (HAAT) of 320 meters.

Station KAAL-DT is currently authorized to operate on channel 33 (BPCDT-19991022ABU) with a non-directional (ND) antenna system. The ERP is 1000 kW and the antenna HAAT is 295 meters. The antenna center of radiation is 276 meters above ground level (AGL), and 671 meters above mean sea level (AMSL). The transmitter site coordinates are 43-37-42, 93-09-12 (NAD-27). The FCC antenna structure registration number is 1024162.

**Proposed DTV Facilities**

This minor change application to modify the CP proposes to reduce the ERP for the proposed KAAL-DT operation. A non-directional antenna system will be employed with an ERP of 224 kW. The antenna center of radiation will be located 275.8 meters AGL,

and 670.5 meters AMSL. The proposed antenna HAAT is 293 meters. There are no other changes from that authorized in the current KAAL-DT CP (no change in channel, site, supporting structure, or city of license).

Figure 1 is a map showing the predicted 41 dBu and 48 dBu contours for the proposed KAAL-DT operation. The city limits of Austin, Minnesota are indicated. The predicted 48 dBu contour encompasses all of the land area within the Austin city limits. The estimated population (2000 Census) and land area within the predicted 41 dBu contour are 443,836 people and 21,530 square kilometers, respectively.

Figure 1 also shows the predicted 41 dBu contour for the KAAL-DT CP operation (Ch.33, 1000 kW-ND, 295 m). The proposed 41 dBu contour is completely within the KAAL-DT CP 41 dBu contour, complying with the FCC's freeze exemption for minor change DTV applications.

Figure 2 shows the proposed antenna's vertical radiation pattern.

There are no known AM stations within 5 kilometers (3.1 miles) of the KAAL-DT site. Station KAUS-FM on channel 260C1 at Austin, MN is also co-located on the KAAL tower. There are no other known FM and TV stations located in the vicinity of the KAAL tower. Station KAAL-DT is currently operating with the special temporary authorization (STA) facilities (4.9 kW-DA, 165 m) at the site (BDSTA-20020220ABS). No adverse electromagnetic interaction is expected from KAAL-DT's proposed operation. The applicant recognizes its responsibility to correct prohibited interference problems that its proposed operation may create.

The KAAL-DT site is more than 500 kilometers from the closest point of the Canadian border. The KAAL-DT site is more than 1700 kilometers from the closest point of the Mexican border. The closest FCC monitoring station is at Grand Island, Nebraska, 527 kilometers to the southwest. The closest point of the National Radio Quiet Zone (VA/WVA) is more than 1100 kilometers to the southeast. The closest point of the Table Mountain Radio Quiet Zone (CO) is more than 1000 kilometers to the southwest. The closest radio astronomy

site using channel 37 is at North Liberty, Iowa, approximately 243 kilometers to the southeast. These separations are sufficient to not be coordination concern.

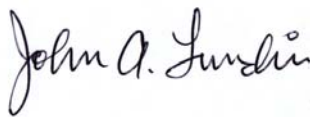
Calculations have been made concerning interference that the proposed KAAL-DT operation would receive. The calculations are based on the OET-69 procedures using a 2 kilometer grid and the 2000 Census. After consideration of terrain and interference, the proposed KAAL-DT operation would serve 444,166 people. This represents 81.4% of the required service population for KAAL-DT's certification and the FCC's "use-it-or-lose-it" requirement.

### **Radiofrequency Electromagnetic Field Exposure**

The proposed KAAL-DT facilities were evaluated in terms of potential radio frequency (RF) energy exposure at ground level to workers and the general public. The radiation center for the proposed antenna is located 275.8 meters above ground level. The proposed ERP of 224 kW is assumed. A relative field value of 0.32 was assumed for the antenna's downward radiation (see Figure 2). The calculated power density at a point 2 meters (6.6 feet) above ground level is  $0.010222 \text{ mW/cm}^2$ . This is less than 3% of the FCC's recommended limit of  $0.39 \text{ mW/cm}^2$  for channel 33 for an "uncontrolled" environment. The calculated power density is less than 1% of the FCC's recommended limit for a "controlled" environment.

Access to the transmitting equipment will be restricted and appropriately marked with warning signs. In the event that workers or other authorized personnel enter restricted areas or climb the tower, appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at reduced power or shut down.

If there are questions concerning the technical portion of this application,  
please contact the office of the undersigned.

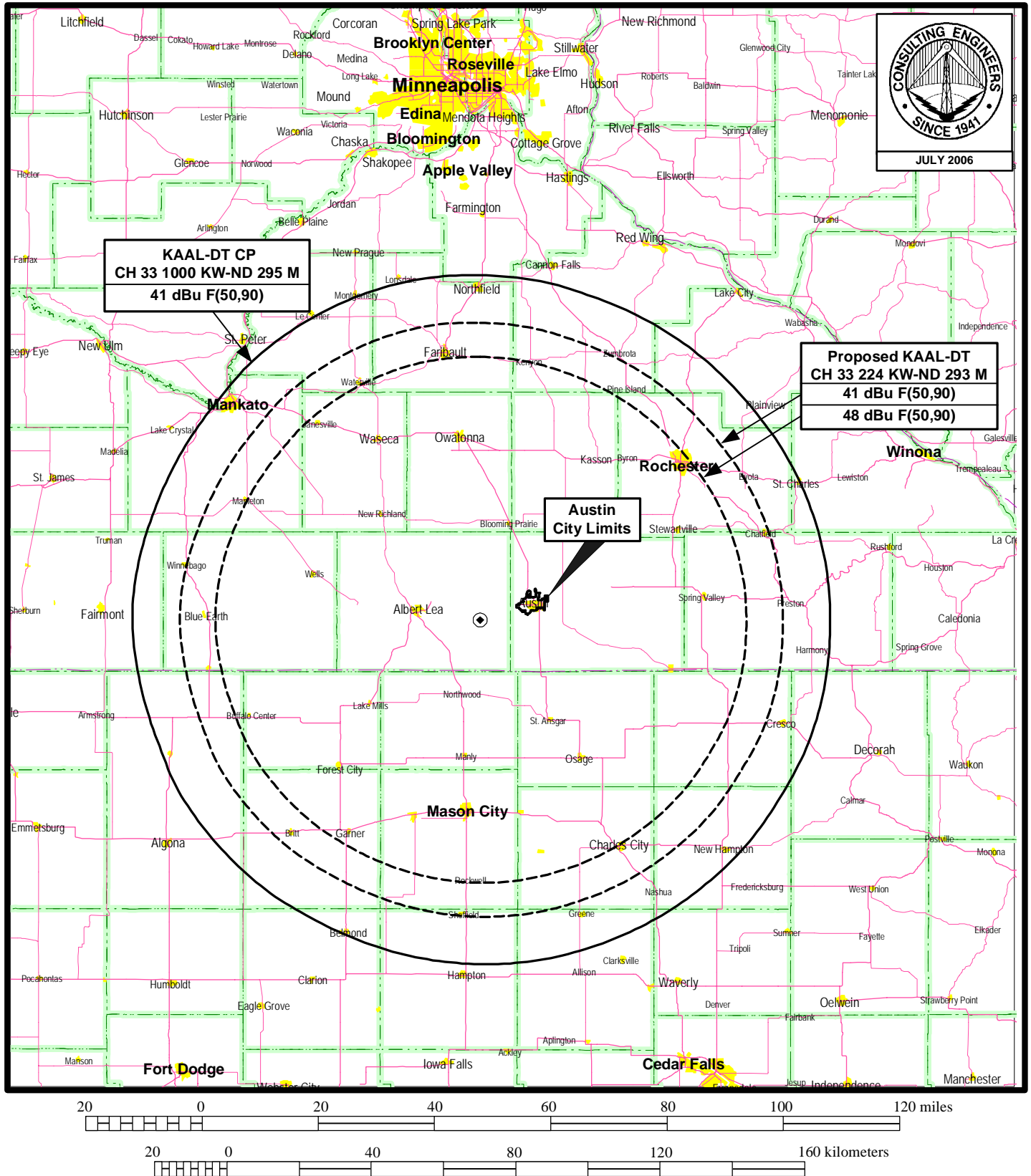
A handwritten signature in black ink that reads "John A. Lundin". The signature is written in a cursive style with a large initial 'J' and a small 'A'.

John A. Lundin

du Treil, Lundin & Rackley, Inc.  
201 Fletcher Avenue  
Sarasota, Florida 34237  
(941) 329-6000 voice  
(941) 329-6030 fax  
[john@DLR.com](mailto:john@DLR.com) e-mail

July 3, 2006

Figure 1



## PREDICTED COVERAGE CONTOURS

STATION KAAL-DT  
 AUSTIN, MINNESOTA  
 CH 33 224 KW-ND 293 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

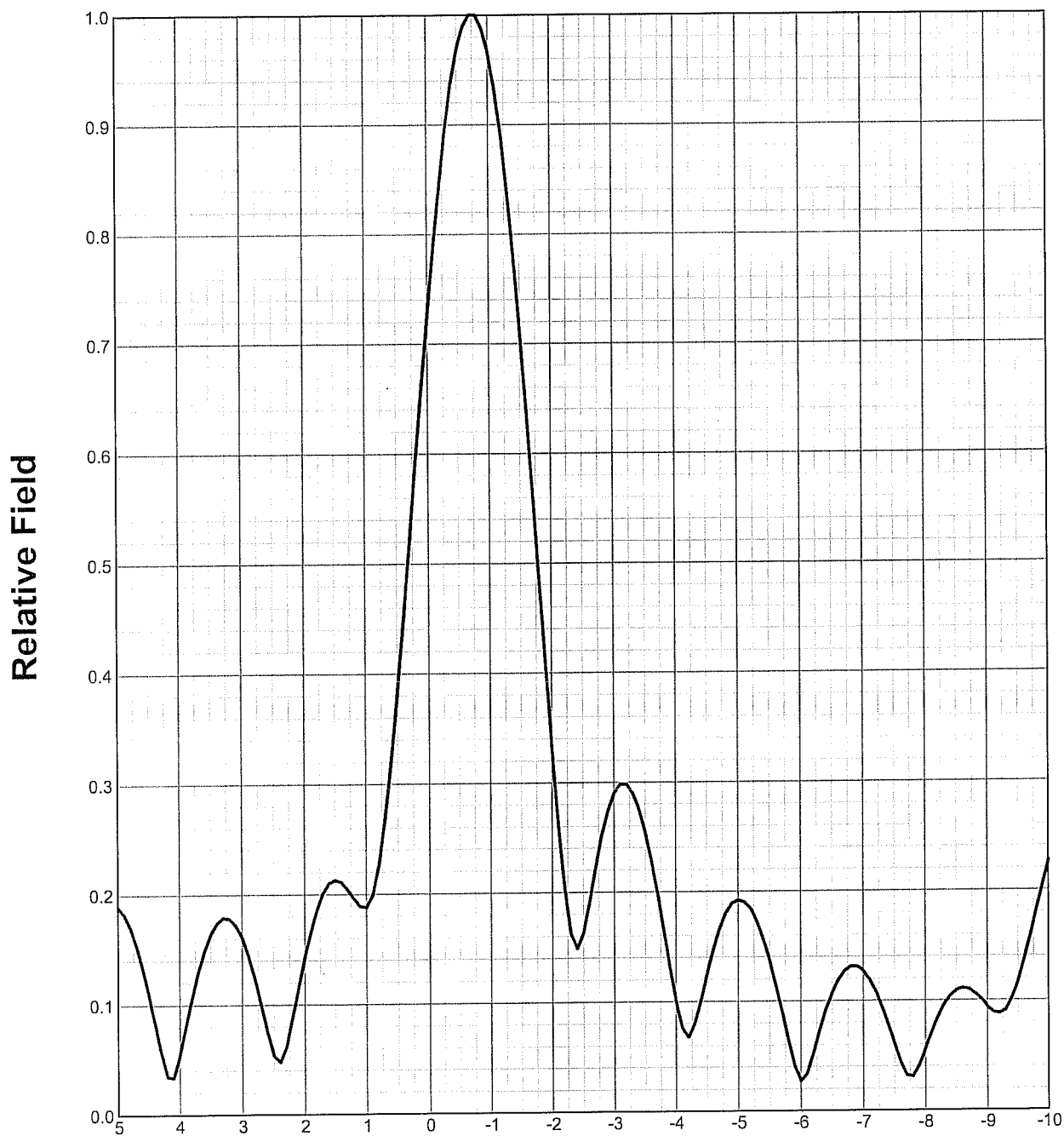
## ELEVATION PATTERN

Type: ALP24M3  
Directivity: 

Numeric	dBd
<u>25.21</u>	<u>14.02</u>
<u>13.29</u>	<u>11.23</u>

  
Main Lobe:  
Horizontal:

Channel: 32  
Location: Austin, MN  
Beam Tilt: -0.75  
Polarization: Horizontal





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 Directivity: Numeric dBd  
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