

TECHNICAL EXHIBIT  
APPLICATION FOR MINOR MODIFICATION  
OF CONSTRUCTION PERMIT  
NEW FM STATION (FACILITY ID 79019)  
CARTHAGE, ILLINOIS

APRIL 10, 2001

CH 230A 6 KW 100 M

TECHNICAL EXHIBIT  
APPLICATION FOR MINOR MODIFICATION  
OF CONSTRUCTION PERMIT  
NEW FM STATION (FACILITY ID 79019)  
CARTHAGE, ILLINOIS  
CH 230A 6 KW 100 M

Table of Contents

	Technical Narrative
Figure 1	Proposed Transmitter Site
Figure 2	Tower Sketch
Figure 3	Vertical Antenna Pattern
Figure 4	Coverage Map
Figure 5	FM Separation Study

TECHNICAL EXHIBIT  
APPLICATION FOR MINOR MODIFICATION  
OF CONSTRUCTION PERMIT  
NEW FM STATION (FACILITY ID 79019)  
CARTHAGE, ILLINOIS  
CH 230A 6 KW 100 M

Technical Narrative

This Technical Exhibit supports an application for minor modification of construction permit for a new FM station at Carthage, Illinois. The current authorization (CP) specifies an operation with a non-directional effective radiated power (ERP) of 6 kW and an antenna height above average terrain (HAAT) of 100 meters (BPH-19960116MH).

Proposed Facilities

This minor modification proposes to relocate the transmitter site to a new location on the current property, approximately 1.3 kilometers south-southwest of the currently authorized site. A maximum Class A operation is proposed at the site coordinates: 40-25-13 N, 91-15-19 W, with a non-directional ERP of 6 kW and antenna HAAT of 100 meters (8 evenly spaced radials were employed for HAAT average).

The Federal Aviation Administration (FAA) is being notified of the proposed alteration to the currently registered tower. When a *Determination of No Hazard* is issued by the FAA, the applicant will update the FCC tower registration for the new information.

The proposed transmitter site is more than 700 kilometers from the closest point of the Canadian border. The site is more than 1,500 kilometers from the closest point of

the Mexican border. The closest FCC monitoring station is at Allegan, Michigan, more than 500 kilometers to the northeast. The closest point of the National Radio Quiet Zone (VA/WV) is more than 900 kilometers to the east. The closest point of the Table Mountain Radio Quiet Zone (CO) is more than 1,100 kilometers to the west. The closest radio astronomy site operating on TV channel 37 is at North Liberty, Iowa, approximately 153 kilometers to the north. These separations are sufficient to not be a concern for coordination purposes.

### Allocation Study

Figure 5 contains a tabulation of actual and required separation distances with respect to other pertinent stations as specified in Section 73.207(b) of the Commission's Rules. The FCC's FM database was used as the basis for the separation study. The study does not indicate any "short-spacings" and, therefore, it is believed the proposal is in compliance with the FCC's FM allocation rules.

### Radiofrequency Electromagnetic Field Exposure

The proposed FM facility was evaluated in terms of potential radio frequency (RF) energy exposure at ground level to workers and the general public. A relative field of 0.45 was used for the proposed 3-bay non-directional antenna, along with a combined ERP of 12 kW (6 kW horizontal polarization & 6 kW vertical polarization). The proposed power density at the base of the structure and 2 meters above ground level is  $0.0098 \text{ mW/cm}^2$ , which is less than 5% of the FCC's recommended limit of  $0.2 \text{ mW/cm}^2$  for FM channels, applicable to general population/uncontrolled exposure areas.

Access to the transmitting site 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. The proposed FM operation appears to be otherwise categorically excluded from environmental processing.

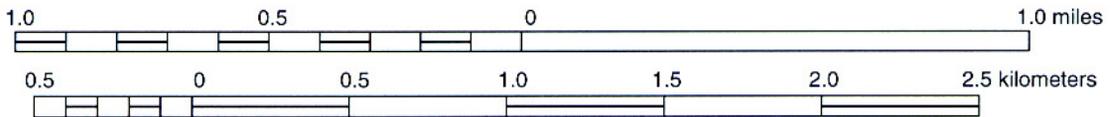
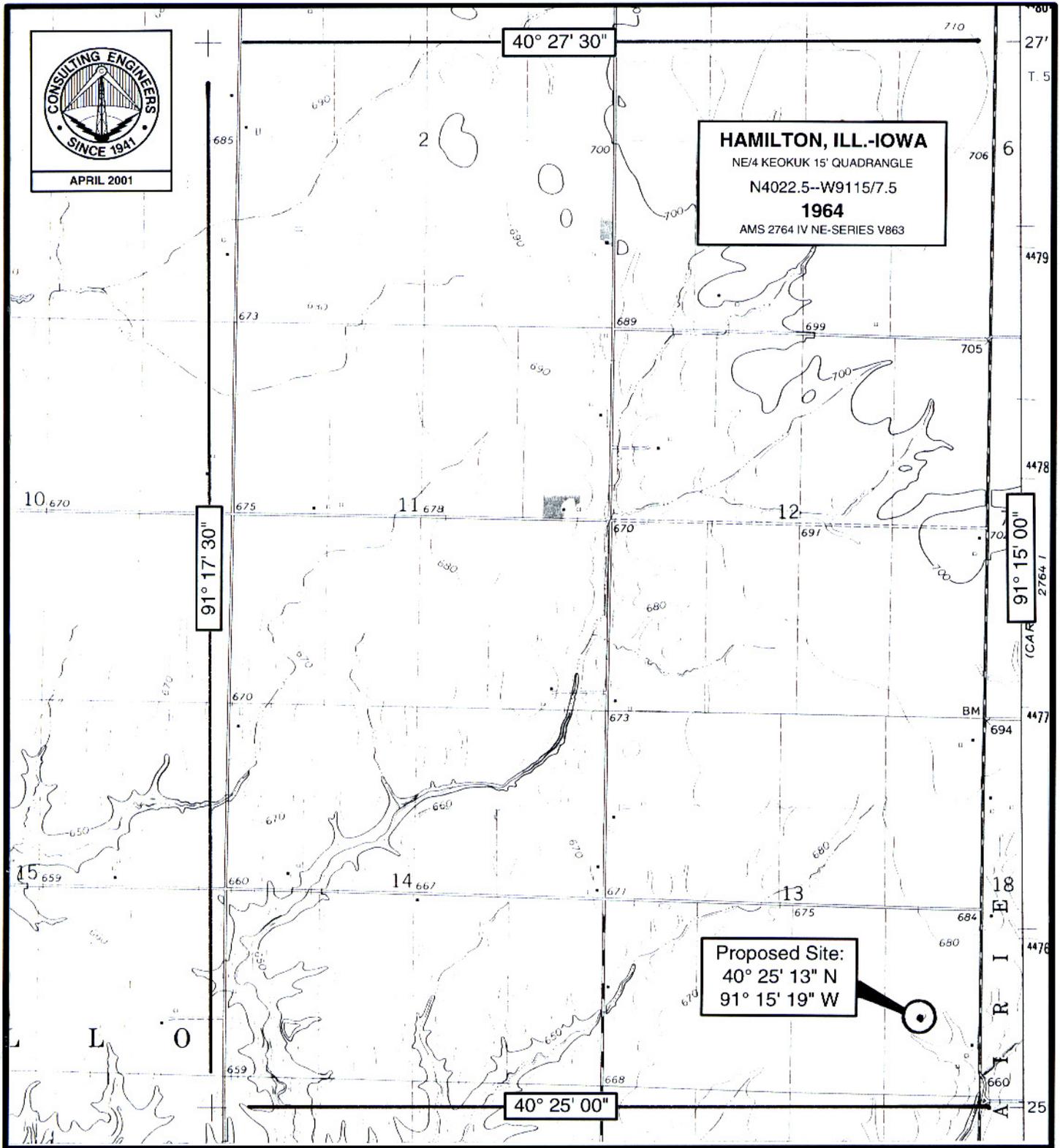
If there are questions concerning the technical portion of this application, please contact the office of the undersigned.

Jonathan N. Edwards

du Treil, Lundin & Rackley, Inc.  
201 Fletcher Avenue  
Sarasota, Florida 34237  
(941) 329-6000

April 10, 2001

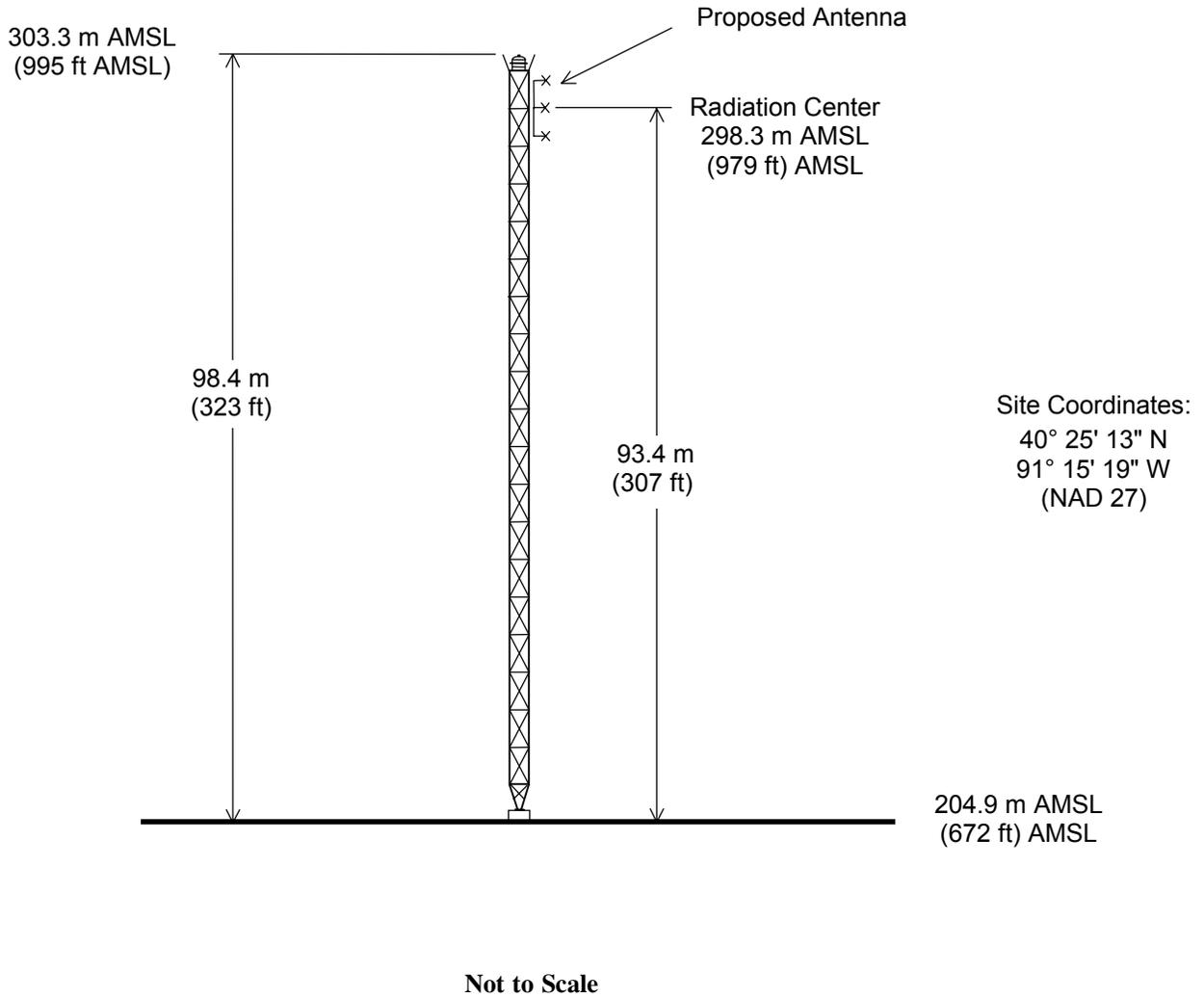
Figure 1



### **PROPOSED TRANSMITTER LOCATION**

**NEW FM STATION**  
**CARTHAGE, ILLINOIS**  
**CH 230A 6 KW 100 M**  
 du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Tower Reg. No. 1041852 (to be updated)



**PROPOSED ANTENNA AND SUPPORTING STRUCTURE**

NEW FM STATION

CARTHAGE, ILLINOIS

CH 230A 6 KW 100 M

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

ELECTRONICS RESEARCH, INC.  
108 MARKET STREET  
NEWBURGH, IN. 47630

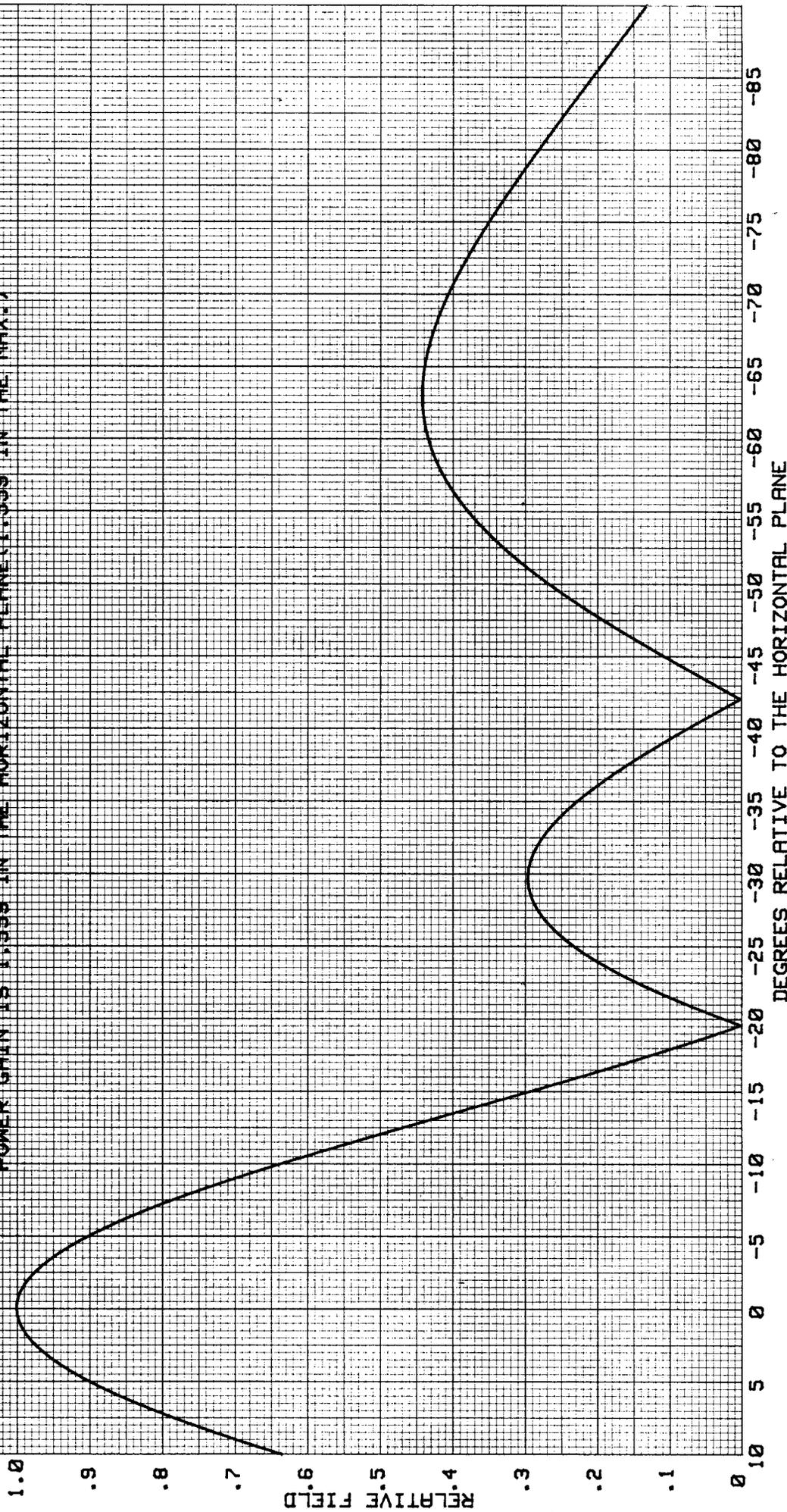
----- THEORETICAL  
VERTICAL PLANE RELATIVE FIELD

MAY 24, 1993  
ELEMENT SPACING:  
1.0 WAVELENGTH

3 ERI TYPE SHP, SHPX, LP, OR LPX ELEMENTS  
0 DEGREE(S) BEAM TILT  
0 PERCENT FIRST NULL FILL  
0 PERCENT SECOND NULL FILL

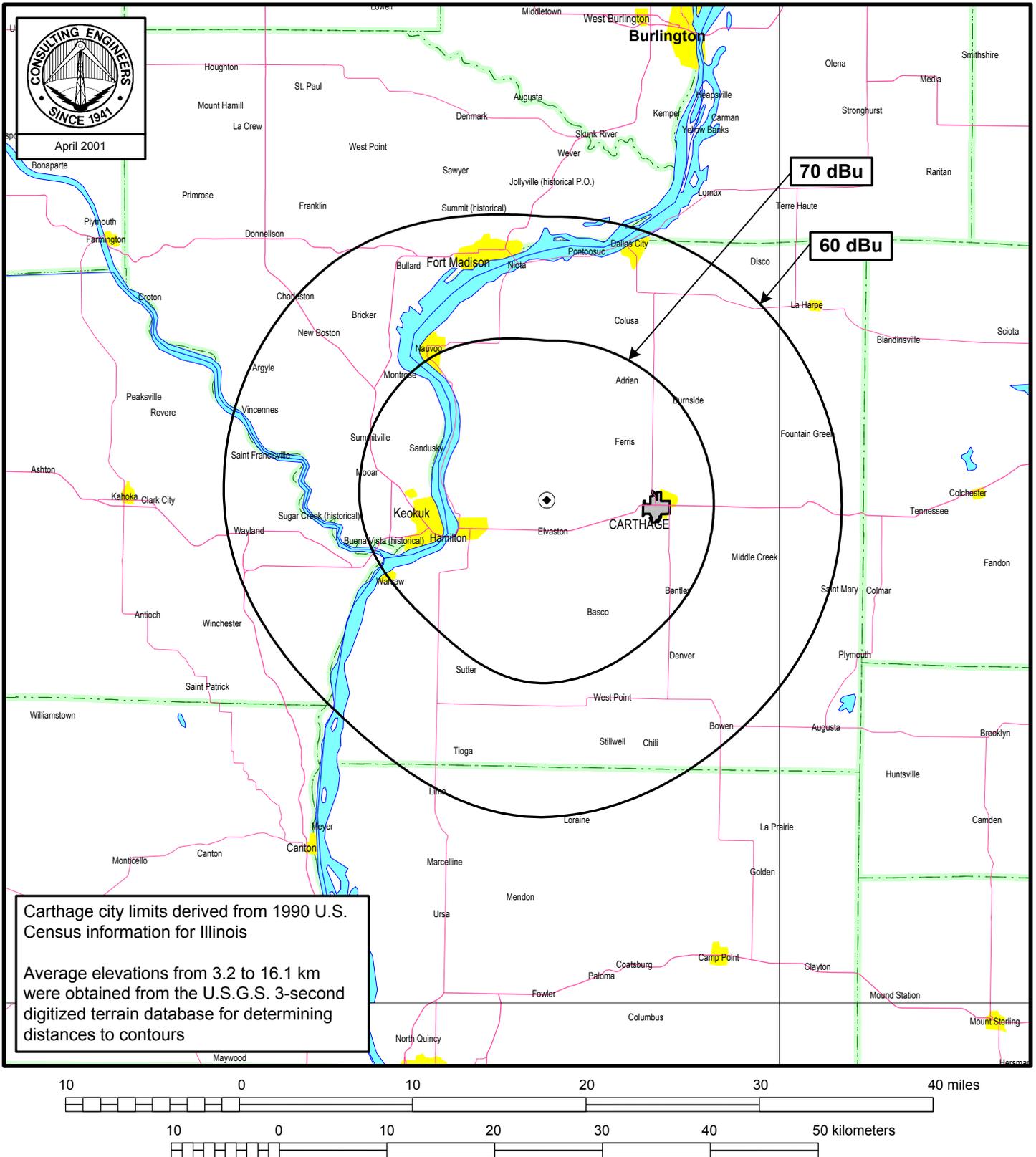
FIGURE F3

POWER GAIN IS 1.559 IN THE HORIZONTAL PLANE(1.559 IN THE MAX.)



DEGREES RELATIVE TO THE HORIZONTAL PLANE

Figure 4



# PREDICTED F(50,50) COVERAGE CONTOURS

NEW FM STATION

CARTHAGE, ILLINOIS

CH 230A 6 KW 100 M

du Treil, Lundin & Rackley, Inc Sarasota, Florida

du Treil, Lundin and Rackley, Inc.  
Sarasota, FL

4/10/01

**CDBS FM SEPARATION STUDY**

Separation Buffer: 50 km  
Coordinates: 402513 911519

Channel: 230 A

Call Id	City St	File Status	File Num	Channel Freq	ERP HAAT	DA Id	Latitude Longitude	73 215	Bear	Dist. (km)	Req. (km)
KKMI 53604	BURLINGTON IA	BLH LIC C	19990122KE	228 A 93.5	6.000 93	N	40-49-11 091-07-02	N	14.7	45.87 14.87	31.0 Close
KTUF 471	KIRKSVILLE MO	BLH LIC C	19910328KB	229 C2 93.7	50.000 150	N	40-11-16 092-31-32	N	256.9	111.04 5.04	106.0 Close
960116 79019	CARTHAGE IL	BPH CP C	19960116MH	230 A 93.9	6.000 100	N	40-25-51 091-14-57	N	23.8	1.28	
WJRE 70277	KEWANEE IL	BLH LIC C	19961004KD	230 A 93.9	3.100 138	N	41-16-40 089-55-15	N	49.2	147.42 32.42	115.0 Clear
WMHX 9964	LINCOLN IL	BLH LIC C	19941020KB	230 B1 93.9	15.000 131	N	39-59-25 089-30-46	N	107.3	155.85 12.85	143.0 Close
KSSZ 5227	FAYETTE MO	BLH LIC C	19960923KD	230 C3 93.9	25.000 100	N	39-03-28 092-28-49	N	215.1	184.15 42.15	142.0 Clear
KPCR-F 52572	BOWLING GREEN MO	BLH LIC C	19911018KG	231 C3 94.1	25.000 82	N	39-21-57 091-10-45	N	176.8	117.26 28.26	89.0 Clear
KRNA 35555	IOWA CITY IA	BLH LIC C	19911115KA	231 C1 94.1	100.000 299	N	41-45-00 091-50-16	N	341.9	155.57 22.57	133.0 Clear
WRMS-F 13650	BEARDSTOWN IL	BMLH LIC C	19900904KE	232 A 94.3	6.000 91	N	40-04-45 090-25-58	N	118.3	79.57 48.57	31.0 Clear
KRXL 34973	KIRKSVILLE MO	BLH LIC C	19900604KE	233 C 94.5	100.000 308	N	40-14-34 092-25-42	N	259.2	101.62 6.62	95.0 Close