TECHNICAL EXHIBIT
APPLICATION FOR MINOR CHANGE
MODIFICATION OF DTV CONSTRUCTION PERMIT
STATION WGTU-DT (FACILITY ID 59280)
TRAVERSE CITY, MICHIGAN

NOVEMBER 7, 2002

CH 31 64.8 KW (MAX-DA) 393 M

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Technical Narrative

This Technical Exhibit supports a minor change application to modify the digital television (DTV) construction permit (CP) for station WGTU-DT at Traverse City, Michigan. Station WGTU-DT is currently authorized to operate on channel 31 (BPCDT-19991027ABX, Facility ID 59280). Station WGTU-DT is authorized to use an Andrew directional antenna (DA) system. The major lobe of the antenna pattern is oriented toward 200 degrees True. The maximum DTV effective radiated power (ERP) is 78 kilowatts (kW). The antenna height above average terrain (HAAT) is 378 meters. The transmitter site coordinates are 44-44-53, 85-04-08 (NAD-27). The FCC tower registration number for the supporting structure is 1006720.

Proposed DTV Facilities

This minor change application proposes to increase the height of the antenna, change directional antenna system, and decrease the maximum ERP. It is proposed change the Andrew directional antenna system to a Dielectric multi-channel directional antenna system. The proposed antenna is a Dielectric TUF-P4-12/48H-1 system with 0.75 degree of electrical beam tilt. The antenna pattern is generally "peanut" shaped with major lobes oriented toward 0 (North) and 180 (South) degrees True. The proposed antenna radiation center height is 370.6 meters above ground level (AGL), 744.6 meters above mean sea level (AMSL). The proposed antenna HAAT is 393 meters. The proposed maximum DTV ERP

will be 64.8 kW. There is no proposed change in channel (31), city of assignment (Traverse City, MI), transmitter site (44-44-53, 85-04-08), or supporting tower (1006720). The Federal Aviation Administration (FAA) Great Lakes Regional Office has been advised of the proposed structure's overall height reduction (383 m AGL down to 378.9 m AGL). The FCC tower registration will be revised upon receipt of the FAA's determination.

The WGTU transmitter site is approximately 166 kilometers from the closest point of the Canadian border. The proposed WGTU-DT complies with the separations requirements contained in the US/Canada Letter of Understanding (LOU) concerning implementation of DTV. If necessary, coordination of the proposed WGTU-DT operation with Canada is requested.

The WGTU-DT site is more than 2100 kilometers from the closest point of the Mexican border. The closest FCC monitoring station is at Allegan, Michigan, approximately 248 kilometers to the south. The closest point of the National Radio Quiet Zone (VA/WV) is more than 700 kilometers to the southeast. The closest point of the Table Mountain Radio Quiet Zone (CO) is more than 1700 kilometers to the west. The closest radio astronomy site operating on TV channel 37 is at North Liberty, Iowa, approximately 621 kilometers to the southwest. These separations are considered sufficient to not be a coordination concern.

The WGTU-DT transmitter site is also used for the WGTU(TV) analog operation on channel 29. In addition, station WCMV at Cadillac, Michigan has proposed using DTV channel 17 at the WGTU-DT site. There are no known AM stations within 3.2 kilometers (2 miles) of the WGTU-DT site. No adverse electromagnetic interaction is expected. The supporting structure exists and the proposed change in the antenna is not expected to have an adverse impact. The applicant recognizes that it is responsible to remedy prohibited electromagnetic problems that its proposed operation may create.

Figure 3 is a map showing the predicted 48 dBu F(50,90) principal city contour and 41 dBu F(50,90) service contour for the proposed WGTU-DT operation. The city limits of Traverse City, as defined in the 2000 US Census for Michigan, are identified. The predicted 48 dBu contour encompasses the Traverse City limits as required by the FCC rules.

The estimated population (2000 Census) within the predicted 41 dBu contour is 325,211 people.

Allocation Study

Figure 4 includes a separation study for DTV channel 31 at the proposed WGTU-DT site. It has been used for reference purposes only to determine the assignments to be considered for interference calculations. Interference calculations have been made using the procedures outlined in the FCC's OET-69 Bulletin and a 2 kilometer grid. The proposed WGTU-DT operation complies with the FCC's 2%/10% interference standards with respect to pertinent surrounding analog (NTSC) full service TV assignments and DTV assignments and allotments.

Pertinent low power television (LPTV) stations that qualify for Class A consideration and are operating within the FCC's core band (ie, 2-51) have been examined. Interference calculations have been made using the procedures outlined in the FCC's OET-69 Bulletin. The proposed WGTU-DT operation complies with the FCC's 0.5% "de minimis" interference policy. If necessary, a waiver of the FCC rules is respectfully requested based on use of the OET-69 interference procedures.

Radiofrequency Electromagnetic Field Exposure

The proposed WGTU-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 370.6 meters above ground level. The maximum DTV ERP is 64.8 kW. A relative field value of 0.2 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 0.00064 mW/cm^2. This is less than 1% of the FCC's recommended limit of 0.38 mW/cm^2 for channel 31 for an "uncontrolled" environment. The calculated power density is less than 0.1% of the FCC's recommended limit for a "controlled" environment.

Access to the transmitting site will be restricted and appropriately marked with warning signs. As this is a multi-user site an agreement will control access. 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 WGTU-DT 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.

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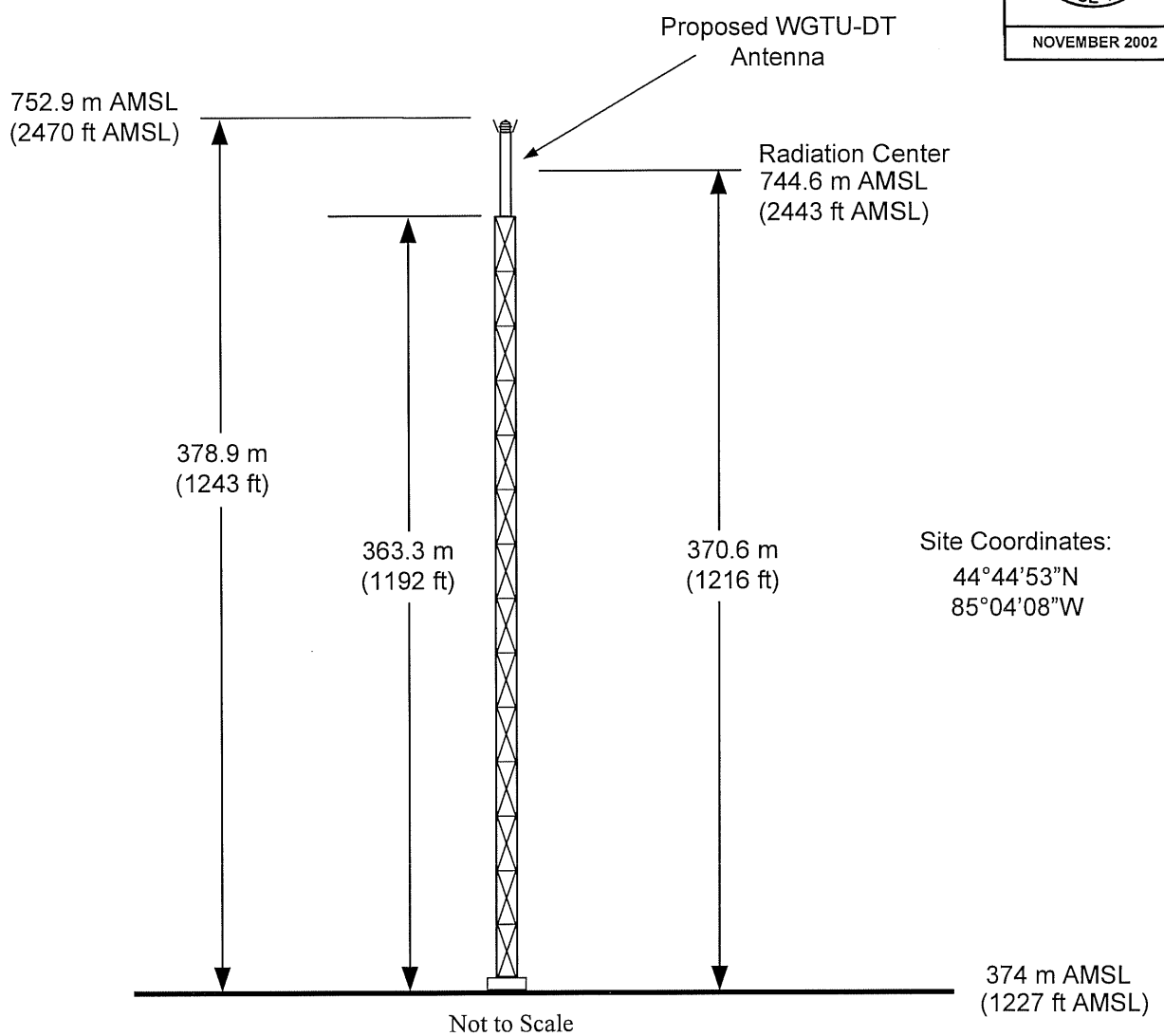
November 7, 2002



FCC Tower ID: 1006720

PROPOSED ANTENNA AND SUPPORTING STRUCTURE

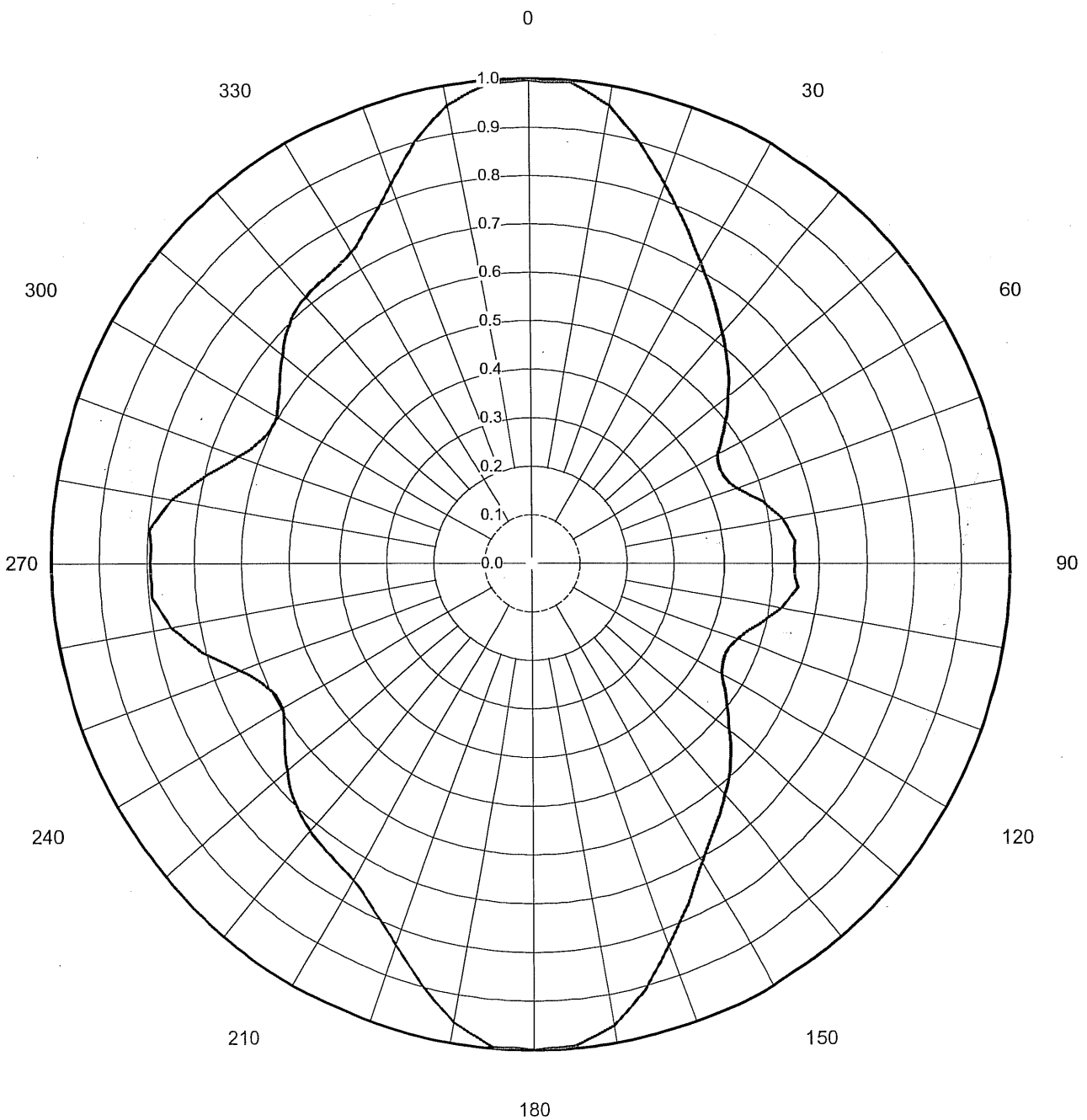
STATION WGTU-DT
TRAVERSE CITY, MICHIGAN
CH 31 64.8 KW (MAX-DA) 393 M

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

Proposal Number	**DCA-10026**	Revision:	**2**
Date	**04-Nov-02**		
Call Letters	**WGTU**	Channel	**31**
Location	**Kalkaska, MI**		
Customer	**Central Michigan University**		
Antenna Type	**TUF-P4-12/48H-1**		

AZIMUTH PATTERN

Gain	**1.92**	**(2.84 dB)**	
Calculated / Measured	**Calculated**		
Frequency	**575.00 MHz**		
Drawing #	**TUF-P4-575_2**		



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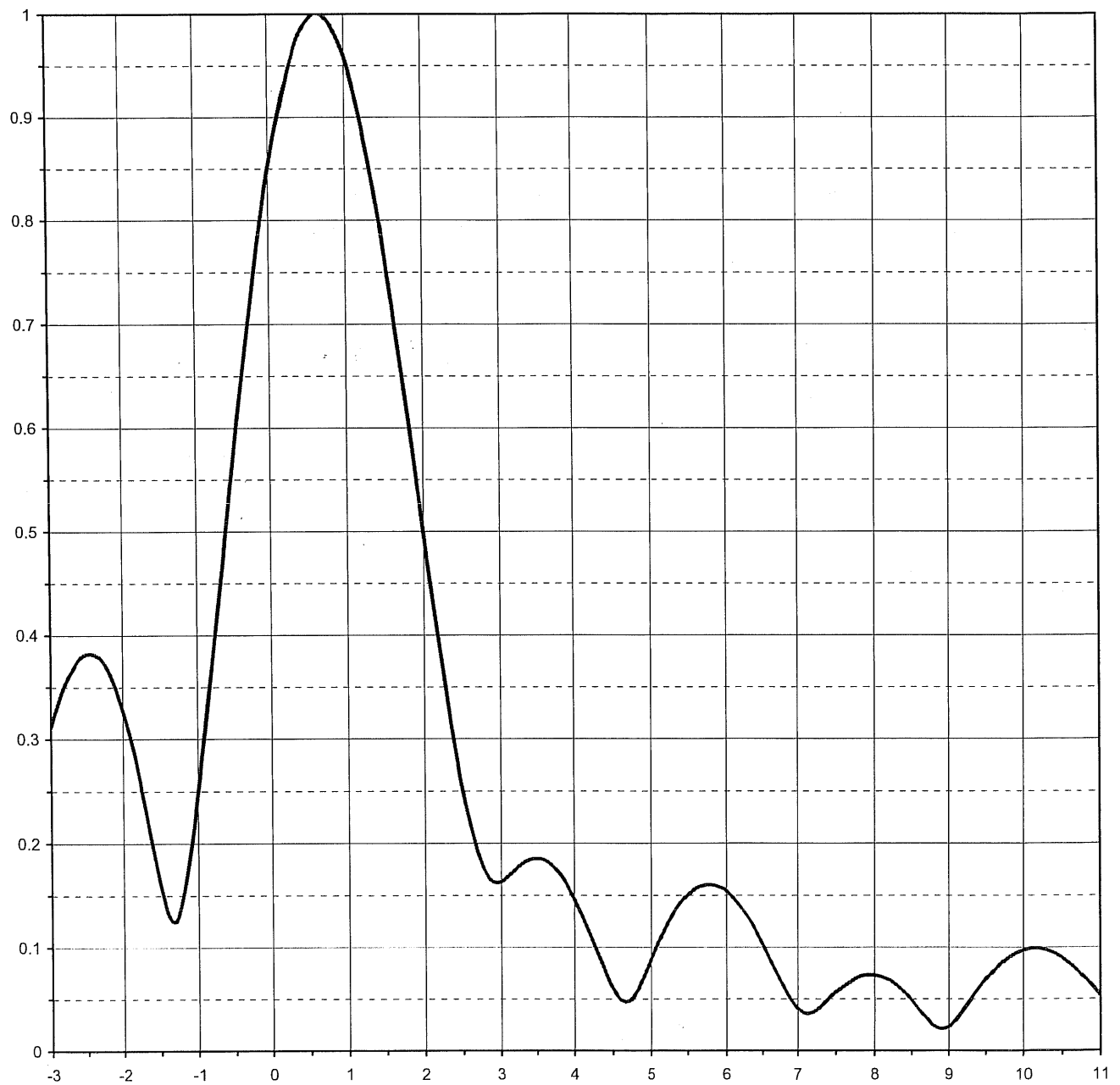
ELEVATION PATTERN

RMS Gain at Main Lobe	**25.00 (13.98 dB)**	Beam Tilt	**0.75 deg**
RMS Gain at Horizontal	**18.10 (12.58 dB)**	Frequency	**575.00 MHz**
Calculated / Measured	**Calculated**	Drawing #	**12U250070**



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ELEVATION PATTERN

RMS Gain at Main Lobe	**25.00 (13.98 dB)**	Beam Tilt	**0.75 deg**
RMS Gain at Horizontal	**18.10 (12.58 dB)**	Frequency	**575.00 MHz**
Calculated / Measured	**Calculated**	Drawing #	**12U250070-90**

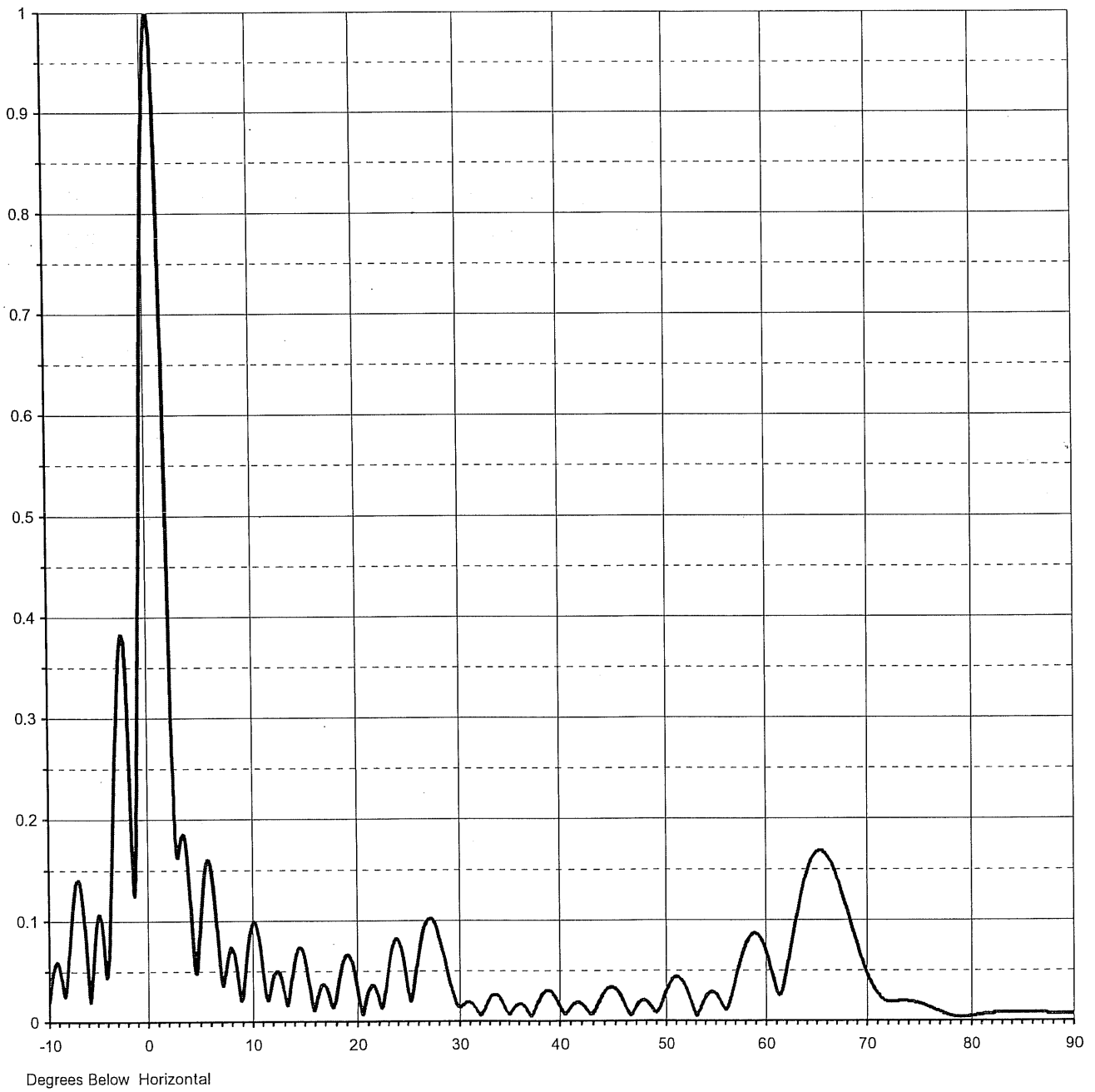
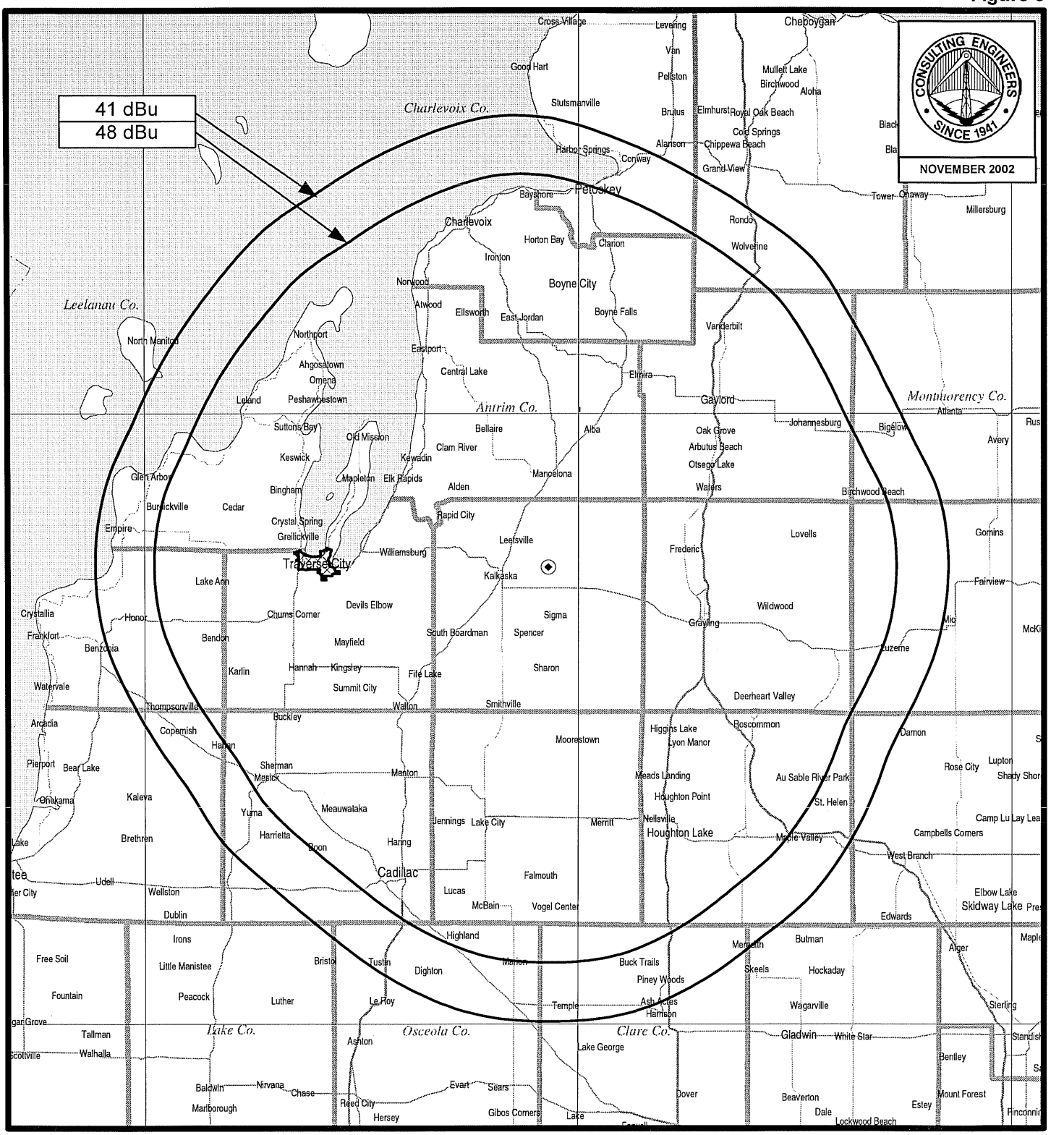


Figure 3



PREDICTED F(50,90) COVERAGE CONTOURS

STATION WGTU-DT
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du Treil, Lundin & Rackley, Inc. Sarasota, Florida

FIGURE 4

CDBS TV/DTV SEPARATION STUDY

Job Title: Proposed WGTU-DT, Traverse City, MI — Separation Buffer: 75 km
Channel: 31 Zone: II Type: DT Class: VU Coordinates: 44-44-53 085-04-08

Call FID	City St Status	File Num.	Chan. Zone	ERP-kW HAAT-m	DA ID	Latitude Longitude	Bearing (deg.)	Distance (km)	Required (km)
WCMV 9922	CADILLAC MI LIC C	BLET 19841002KF	27(Z) II	275.0 180	DA 18052	44-08-22 085-20-28	197.8	71.0	<24.1,>96.6 Short
WGTU 59280	TRAVERSE CIT MI LIC C	BLCT 20000421AB	29(-) II	1175.0 398	DA 28845	44-44-53 085-04-08	0.0	0.0	<24.1,>96.6 Clear
WGTU-DT 59280	TRAVERSE CIT MI CP C	BPCDT 19991027AB	31 II	78.0 378	DA 29476	44-44-53 085-04-08	0.0	0.0	
DWGTU	TRAVERSE CITY MI DTV ALLOTMENT		31 II	63.0 399	DA	44-44-54 085-04-08	0.0	0.0	
WPXD 5800	ANN ARBOR MI LIC C	BLCT 20001005AE	31(+) I	2880.0 329	ND	42-22-25 084-04-10	162.7	275.9	217.3 Clear
CICE-TV	PARRY SOUND ON CANADA ALLOTMENT		31A I			45-23-24 080-02-21	78.0	402.5	363.0 Clear
WFQX-TV 25396	CADILLAC MI LIC C	BLCT 19980803IX	33(Z) II	776.0 297	ND	44-08-53 085-20-45	198.3	70.2	<24.1,>96.6 Short