

TECHNICAL EXHIBIT  
MINOR CHANGE APPLICATION TO  
MODIFY DTV CONSTRUCTION PERMIT  
STATION WWDP-DT (FACILITY ID 23671)  
NORWELL, MASSACHUSETTS

FEBRUARY 4, 2002

CH 52    1000 KW    144 M

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Table of Contents

	Technical Narrative
Figure 1	Antenna and Supporting Structure
Figure 2	Antenna Patterns
Figure 3	Predicted DTV Coverage Contours
Figure 4	TV Separation Study
Figure 5	Technical Specifications

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Technical Narrative

This Technical Exhibit supports a minor change application to modify the construction permit (CP) for digital television (DTV) station WWDP-DT at Norwell, Massachusetts. Station WWDP(TV) currently operates on analog (NTSC) channel 46. The current WWDP-DT construction permit (BPCDT-19990322KE, Facility ID 23671) proposes a DTV operation on channel 52, the channel allotted to WWDP for DTV use. The WWDP-DT CP is based on use of a directional antenna (DA) system and maximum effective radiated power (ERP) of 337 kW. The antenna height above average terrain (HAAT) is 216 meters. The transmitter site coordinates for the WWDP-DT CP are 42-00-45, 71-05-39 (NAD-27).

Proposed DTV Facilities

This minor change amendment proposes to reduce antenna HAAT, increase the ERP, change from a directional to a non-directional antenna system, and change transmitter site location. It is proposed to mount a non-directional UHF TV antenna system on a tower near West Bridgewater, Massachusetts. The antenna system will be used for the WWDP-DT DTV operation on channel 52. The proposed structure has been notified to the Federal Aviation Administration (FAA) and has been assigned Aeronautical Study No. 01-ANE-1037-OE. Upon receiving FAA approval, the proposed structure will be registered with the Federal Communications Commission (FCC). The geographic coordinates for the proposed structure are 42-00-34 N, 71-02-46 W (NAD-27). It is proposed to operate with a DTV ERP of 1000 kW and antenna HAAT of 144 meters.

The proposed transmitter site is approximately 336 kilometers from the closest point of the Canadian border. It is believed the proposed WWDP-DT operation complies with the US/Canada LOU/DTV agreement.

The WWDP-DT site is more than 2,700 kilometers from the closest point of the Mexican border. The closest FCC monitoring station is at Belfast, Maine, approximately 314 kilometers to the northeast. The closest point of the National Radio Quiet Zone (VA/WV) is more than 600 kilometers to the southwest. The closest point of the Table Mountain Radio Quiet Zone (CO) is more than 2,800 kilometers to the west. The closest radio astronomy site operating on TV channel 37 is at Hancock, New Hampshire, approximately 128 kilometers to the northwest. These separations are considered sufficient to not be a concern for coordination purposes.

#### Allocation Study

Figure 4 is a separation study showing pertinent analog (NTSC) and DTV stations and allotments. This study is used as a guide to identify assignments requiring further study using the procedures outlined in the FCC's OET-69 Bulletin. Interference calculations have been made to analog (NTSC) and DTV stations and allotments using the procedures outlined in the FCC's OET-69 Bulletin and a 2 kilometer grid spacing. The proposed WWDP-DT operation does not cause excessive calculated interference to any analog or DTV assignment or allotment.

#### Class A Consideration

The FCC's CDBS and list of low power television (LPTV) assignments eligible for Class A status have been reviewed for potential impact. The proposed WWDP-DT operation does not cause any calculated interference to any known current or eligible Class A station.

Radiofrequency Electromagnetic Field Exposure

The proposed WWDP-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 151.5 meters above ground level. The proposed DTV ERP is 1000 kW. A relative field value of 0.1 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 0.0149 mW/cm<sup>2</sup>. This is less than 4% of the FCC's recommended limit of 0.47 mW/cm<sup>2</sup> for channel 52 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 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 WWDP-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.

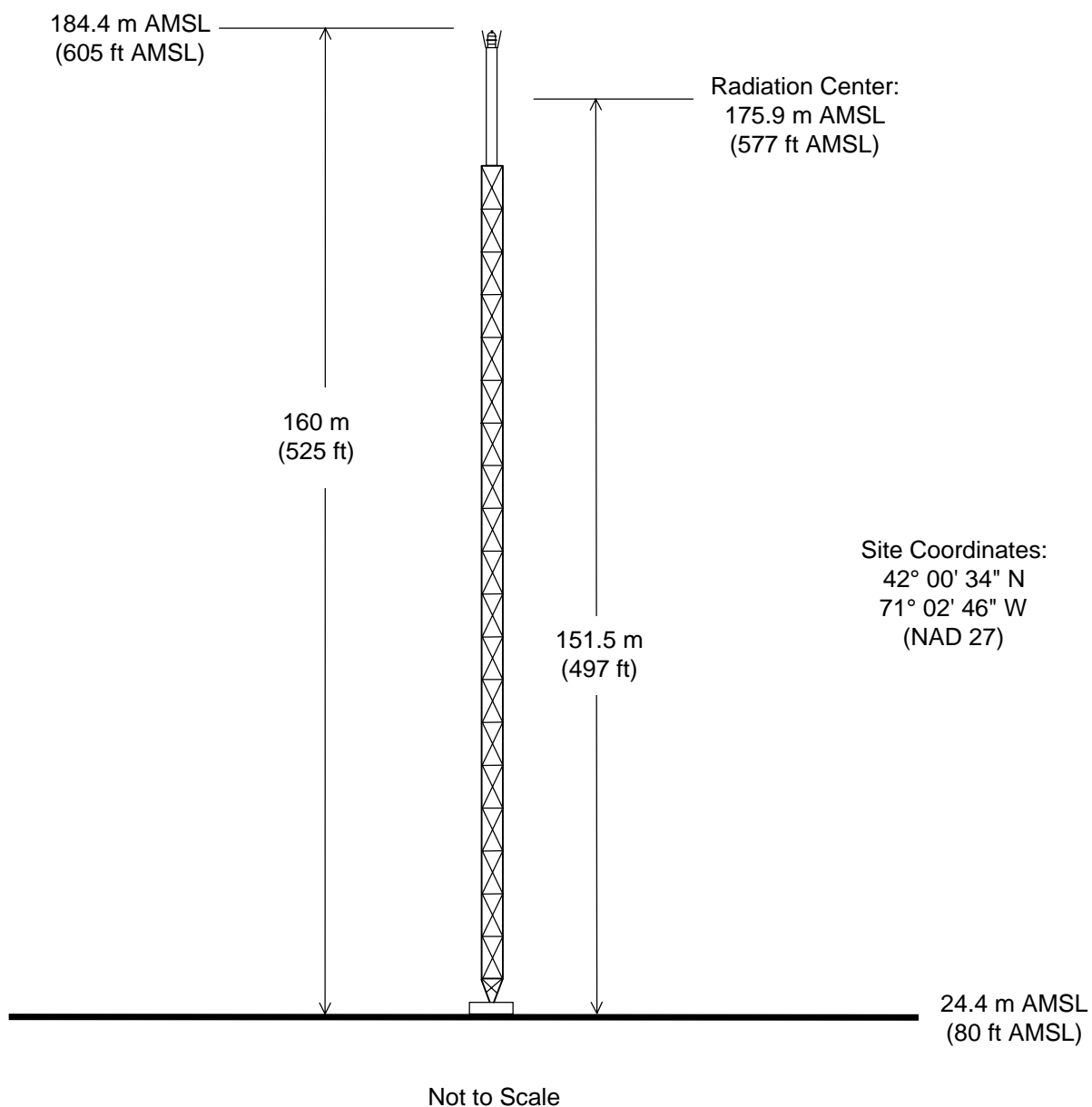
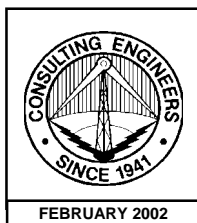
John A. Lundin

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February 4, 2002

Figure 1

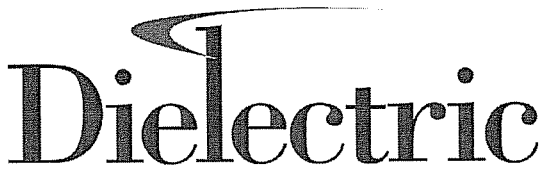
FAA # 01-ANE-1037-OE



## **PROPOSED ANTENNA AND SUPPORTING STRUCTURE**

STATION WWDP-DT  
NORWELL, MASSACHUSETTS  
CH 52 1000 KW 144 M

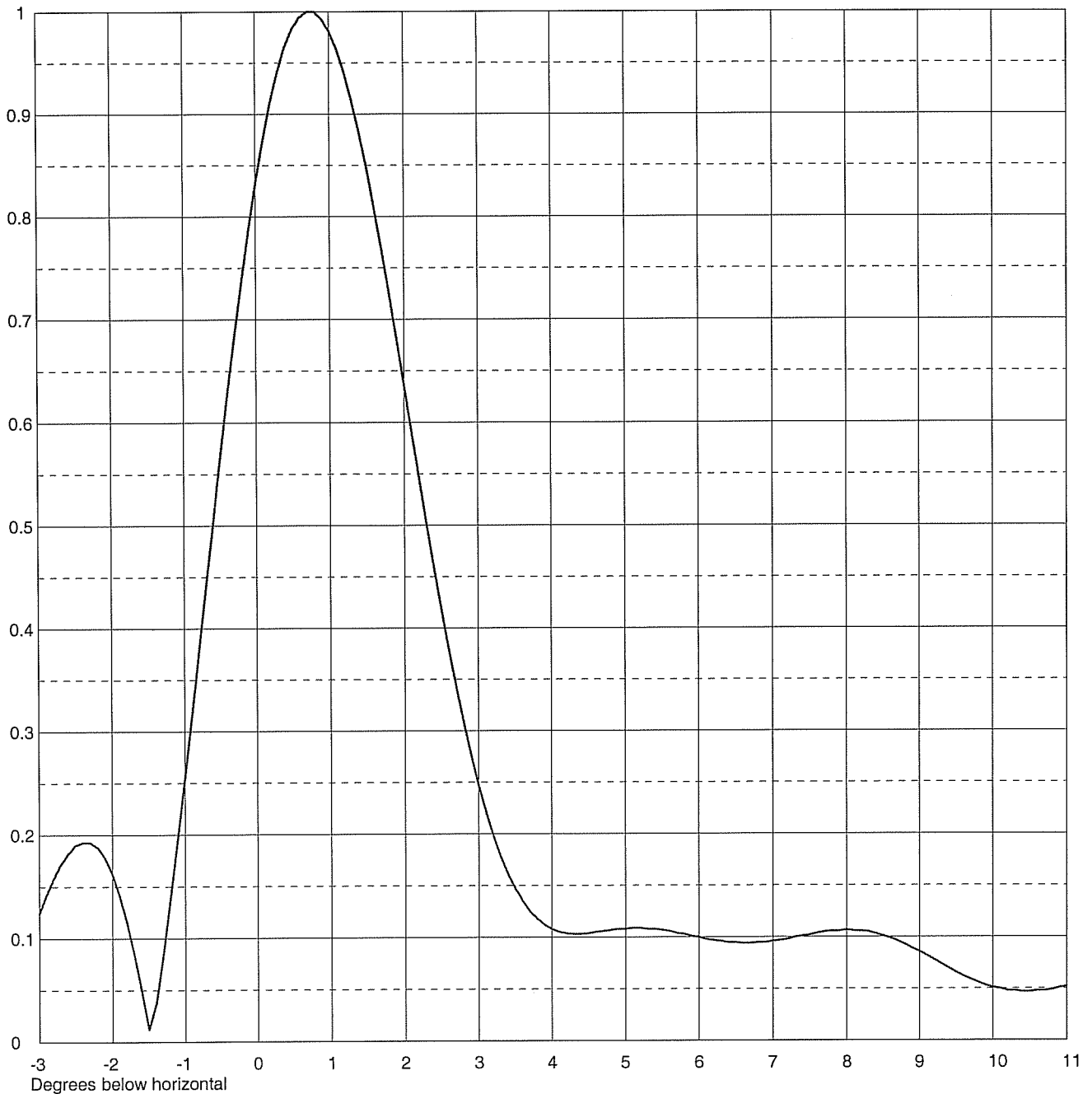
du Treil, Lundin & Rackley, Inc., Sarasota, Florida



Date	31 Jan 2002	
Call Letters	WWDP-DT	Channel 52
Location	Norwell, MA	
Customer		
Antenna Type	TFU-30GTH-R O4	

### ELEVATION PATTERN

RMS Gain at Main Lobe	27.0 (14.31 dB)	Beam Tilt	0.75 Degrees
RMS Gain at Horizontal	18.7 (12.72 dB)	Frequency	701.00 MHz
Calculated / Measured	Calculated	Drawing #	30G270075

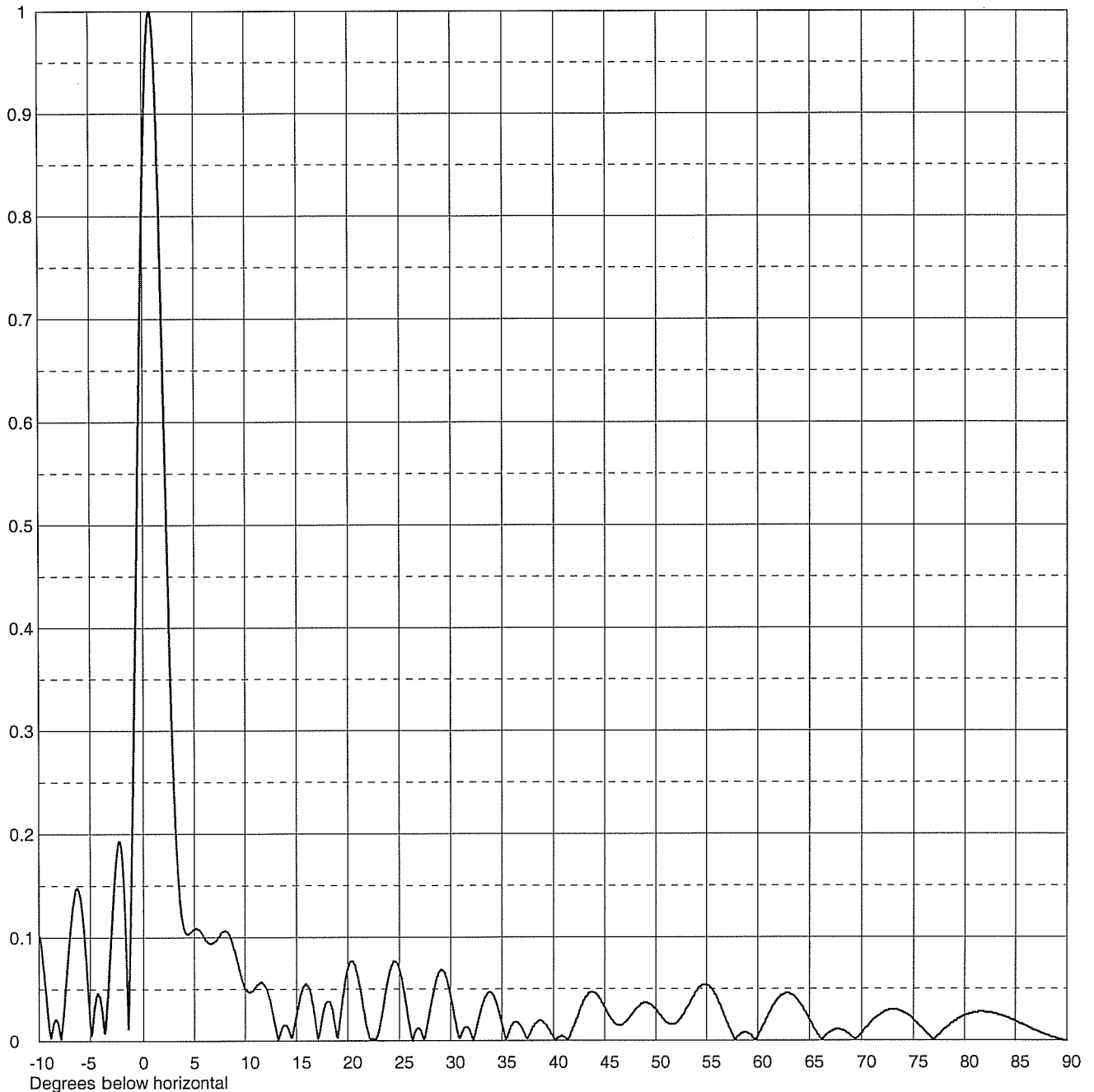


Remarks:

Date	31 Jan 2002	
Call Letters	WWDP-DT	Channel 52
Location	Norwell, MA	
Customer		
Antenna Type	TFU-30GTH-R O4	

## ELEVATION PATTERN

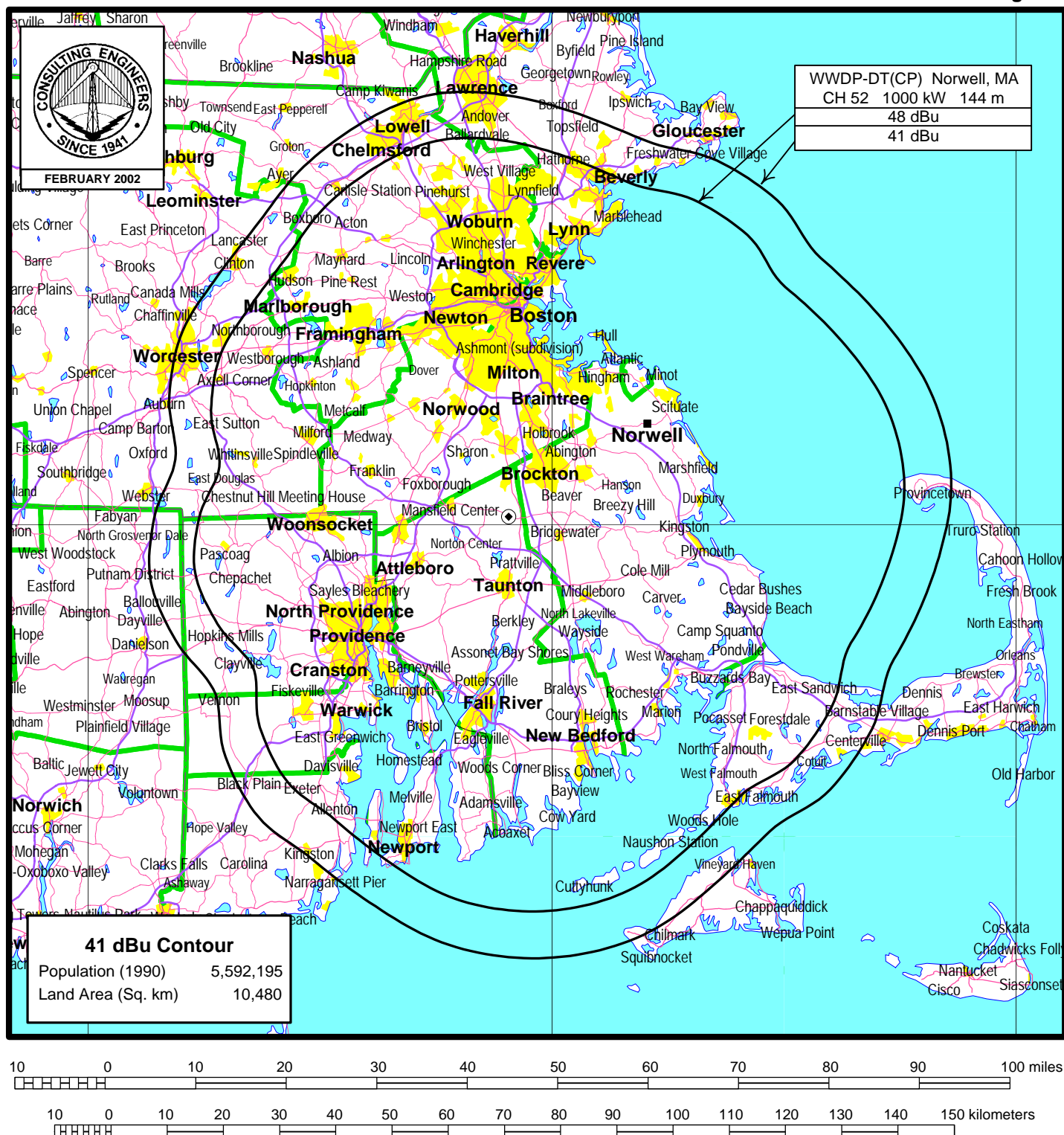
RMS Gain at Main Lobe	27.0 (14.31 dB)	Beam Tilt	0.75 Degrees
RMS Gain at Horizontal	18.7 (12.72 dB)	Frequency	701.00 MHz
Calculated / Measured	Calculated	Drawing #	30G270075-90



Remarks:



Figure 3



## PREDICTED DTV COVERAGE CONTOURS

STATION WWDP-DT  
NORWELL, MASSACHUSETTS  
CH 52 1000 KW 144 M

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

### CDBS TV/DTV SEPARATION STUDY

Job Title: Proposed WWDP-DT  
Channel: 52  
Class: VU  
Type: DT

Separation Buffer: 65 km  
Coordinates: 42-00-34 071-02-46  
Zone: I

Call FID	City St	File Status	Chan. Zone	ERP-kW HAAT-m	DA ID	Latitude Longitude	Bear. (deg)	Dist. (km)	Required (km)
WSBK-TV 73982	BOSTON MA	BLCT LIC-C	38 (Z) I	2340.0 354	ND	42-18-12 071-13-08	336.5	35.6	<24.1/>80.5 Short
WGBX-TV 72098	BOSTON MA	BLET LIC-C	44 (Z) I	1510.0 329	ND	42-18-37 071-14-14	334.8	37.0	<24.1/>80.5 Short
WGBX-TV 72098	BOSTON MA	BPET CP-C	44 (Z) I	1100.0 374	ND	42-18-37 071-14-14	334.8	37.0	<24.1/>80.5 Short
WRDM-LP 10153	HARTFORD CT	BPTTL CP-C	44 (+) I	0.118	ND	41-46-07 072-40-26	259.3	137.7	Class A
WYDN 18783	WORCESTER MA	BLET LIC-C	48 (+) I	240.0 246	DA 18746	42-18-14 071-53-51	295.3	77.6	<24.1/>80.5 Short
WYDN 18783	WORCESTER MA	BPET CP-C	48 (+) I	2300.0 246	DA 31311	42-18-14 071-53-51	295.3	77.6	<24.1/>80.5 Short
WRIW-LP 70184	PROVIDENCE RI	BLTTL LIC-C	50 (Z) I	18.4	DA 17723	41-48-12 071-33-27	241.7	48.2	Class A
WNDS 14682	DERRY NH	BLCT LIC-C	50 (-) I	4790.0 213	DA 18209	42-44-07 071-23-36	340.7	85.5	<24.1/>80.5 Clear
WJAR-DT 50780	PROVIDENCE RI	BPCDT CP-C	51 I	974.0 286	ND	41-51-54 071-17-15	231.3	25.7	<24/>110 Short
DWJAR	PROVIDENCE RI	DTV ALLOTMENT	51 I	1000.0 305	DA	41-51-54 071-17-15	231.3	25.7	<24/>110 Short
DWWDP	NORWELL MA	DTV ALLOTMENT	52 I	50.0 107	DA	42-01-36 071-03-35	329.6	2.2	
WWDP-DT 23671	NORWELL MA	BPCDT CP-C	52 I	337.0 216	DA 39325	42-00-45 071-05-39	274.9	4.0	
WEKW-TV 69271	KEENE NH	BMLET LIC-C	52 (+) I	95.5 329	ND	43-02-00 072-22-04	316.9	157.3	217.3 Short
WEDW-DT 13594	BRIDGEPORT CT	BPEDT CP-C	52 I	50.0 189	DA 32601	41-16-44 073-11-08	246.2	195.8	196.3 Short

**FIGURE 4**  
Sheet 2 of 2

Call FID	City St	Status	File Num	Chan. Zone	ERP-kW HAAT-m	DA ID	Latitude Longitude	Bear. (deg)	Dist. (km)	Required (km)
DWEDW	BRIDGEPORT			52	50.0	DA	41-16-43	246.1	195.9	196.3
	CT	DTV ALLOTMENT		I	222		073-11-08			Short
CBMT-3	SHERBROOKE			52 ( ) B			45-23-48	350.8	381.6	344.0
	QU	CANADA		I			071-49-54			Clear
WEDN 13607	NORWICH	BPET		53 (Z)	630.0	ND	41-31-14	240.1	107.9	<12/>106
	CT	CP-C	20011003AB	I	204		072-10-03			Clear
WEDN 13607	NORWICH	BLET		53 (Z)	794.0		41-31-11	240.0	108.0	<12/>106
	CT	LIC-C	19860124KI	I	207		072-10-04			Clear
WLVI-TV 73238	CAMBRIDGE	BLCT		56 (Z)	2240.0	DA	42-18-12	336.5	35.6	<24.1/>80.5
	MA	LIC-C	2080	I	360	20652	071-13-08			Short
WPXB 51864	MERRIMACK	BPCT		60 (+)	5000.0	DA	42-59-02	337.9	117.1	<24.1/>80.5
	NH	CP-C	19980706KK	I	308		071-35-20			Clear
WPXB 51864	MERRIMACK	BLCT		60 (+)	1410.0	DA	42-59-02	337.9	117.1	<24.1/>80.5
	NH	LIC-C	19870814KF	I	308	18262	071-35-20			Clear

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Technical Specifications

Channel	52
Frequency	698-704 MHz
Proposed Site Coordinates (NAD 27)	42° 00' 34" North Latitude 71° 02' 46" West Longitude
Site Elevation above mean sea level	24.4 m
Average elevation above mean sea level of 8 equally spaced radials, 3-16 kilometers	31.7 m
Overall height of antenna structure (FAA Aeronautical Study No. 01-ANE-1037-OE)	
Above ground	160.0 m
Above mean sea level	184.4 m
Height of antenna radiation center	
Above ground	151.5 m
Above mean sea level	175.9 m
Above average terrain	144 m
Transmitter rated power output (average)	45 kW
Transmission line	6", 50 Ohm, rigid coax
Length	(600 ft) 182.9 m
Efficiency (including combiner)	82.7%
Antenna	Dielectric TFU-30GTH-R-O4
Polarization	Horizontal
Peak Power Gain	27.0
Beam Tilt (electrical)	0.75°
Non-directional	

Proposed Operation

Transmitter output power (average)	44.78 kW
Transmission line/combiner loss	7.74 kW
Antenna input power	37.04 kW
Effective Radiated Power (DTV Average)	1000 kW