

TECHNICAL EXHIBIT
APPLICATION FOR MINOR CHANGE
MODIFICATION OF DTV CONSTRUCTION PERMIT
STATION WPXG-DT (FACILITY ID 48406)
CONCORD, NEW HAMPSHIRE

MARCH 5, 2002

CH 33 100 KW (MAX-DA) 344 M

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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 WPXG-DT at Concord, New Hampshire. Station WPXG(TV) currently operates on analog (NTSC) channel 21. The WPXG-DT construction permit (BPCDT-19991101AFX, Facility ID 48406) authorizes a DTV operation on channel 33, the channel allotted to WPXG for DTV use. The WPXG-DT CP is based on use of a non-directional (ND) antenna system and effective radiated power (ERP) of 80 kilowatts (kW). The antenna height above average terrain (HAAT) is 345 meters. The transmitter site coordinates are 43-11-04, 71-19-12 (NAD-27).

Proposed DTV Facilities

This minor change application proposes to change to a directional antenna (DA) system, increase DTV ERP, and slightly reduce antenna HAAT. There is no proposed change in DTV channel (33), transmitter site (43-11-04, 71-19-12) or city of license (Concord, NH). It is proposed to mount a new dual channel directional antenna system on the existing tower at the current WPXG site. The antenna system will be used for the WPXG analog (NTSC-21) and digital television (DTV-33) operations. The Federal Communications Commission registration number for the existing tower is 1033792. It is proposed to operate with a maximum DTV ERP of 100 kW and antenna HAAT of 344 meters.

The WPXG transmitter site is 204 kilometers from the closest point of the Canadian border. It is believed the proposed WPXG-DT operation complies with the US/Canada LOU/DTV agreement.

The WPXG 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 227 kilometers to the northeast. The closest point of the National Radio Quiet Zone (VA/WV) is more than 700 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 61 kilometers to the west-northwest.

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 WPXG-DT operation does not cause excessive calculated interference to any analog or DTV assignment or allotment.

It is recognized that the proposed WPXG-DT operation does not comply with the separation requirements or non-overlapping contour requirements of the US/Canada DTV Letter of Understanding (LOU) with respect to Canada Class A DTV allotments on channel 33 at St. George Beauce, Quebec and Plessisville, Quebec. Interference calculations using the Longley-Rice propagation model, the procedures outlined in the LOU and a 2 kilometer grid have been made with respect to these 2 Canadian DTV allotments. Figure 4A is a copy of the computer output showing the interference caused to the 2 Canadian Class A DTV allotments by the WPXG DTV allotment (Ch.33, 74.6 kW, 320 m). Figure 4B shows the interference caused by the proposed WPXG-DT operation (Ch.33, 100 kW-DA, 344 m). As demonstrated,

the proposed WPXG-DT operation causes no increase in interference to the 2 Canadian Channel 33 Class A DTV allotments. If necessary, it is requested that the proposed WPXG-DT operation be coordinated with Canada using the Longley-Rice interference provisions of the LOU.

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. Interference calculations have been made using the procedures outlined in the FCC's OET-69 Bulletin. The proposed WPXG-DT operation does not cause any calculated interference to any known current or eligible Class A station. If necessary, a waiver of the FCC rules is requested based on use of the FCC's OET-69 procedures to demonstrate no interference to LPTV assignments requesting Class A status.

Radiofrequency Electromagnetic Field Exposure

The proposed WPXG-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 78.9 meters above ground level. The maximum DTV ERP is 100 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 0.0056 mW/cm^2 . This is less than 2% of the FCC's recommended limit of 0.39 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 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 WPXG-DT operation appears to be otherwise categorically excluded from environmental processing.

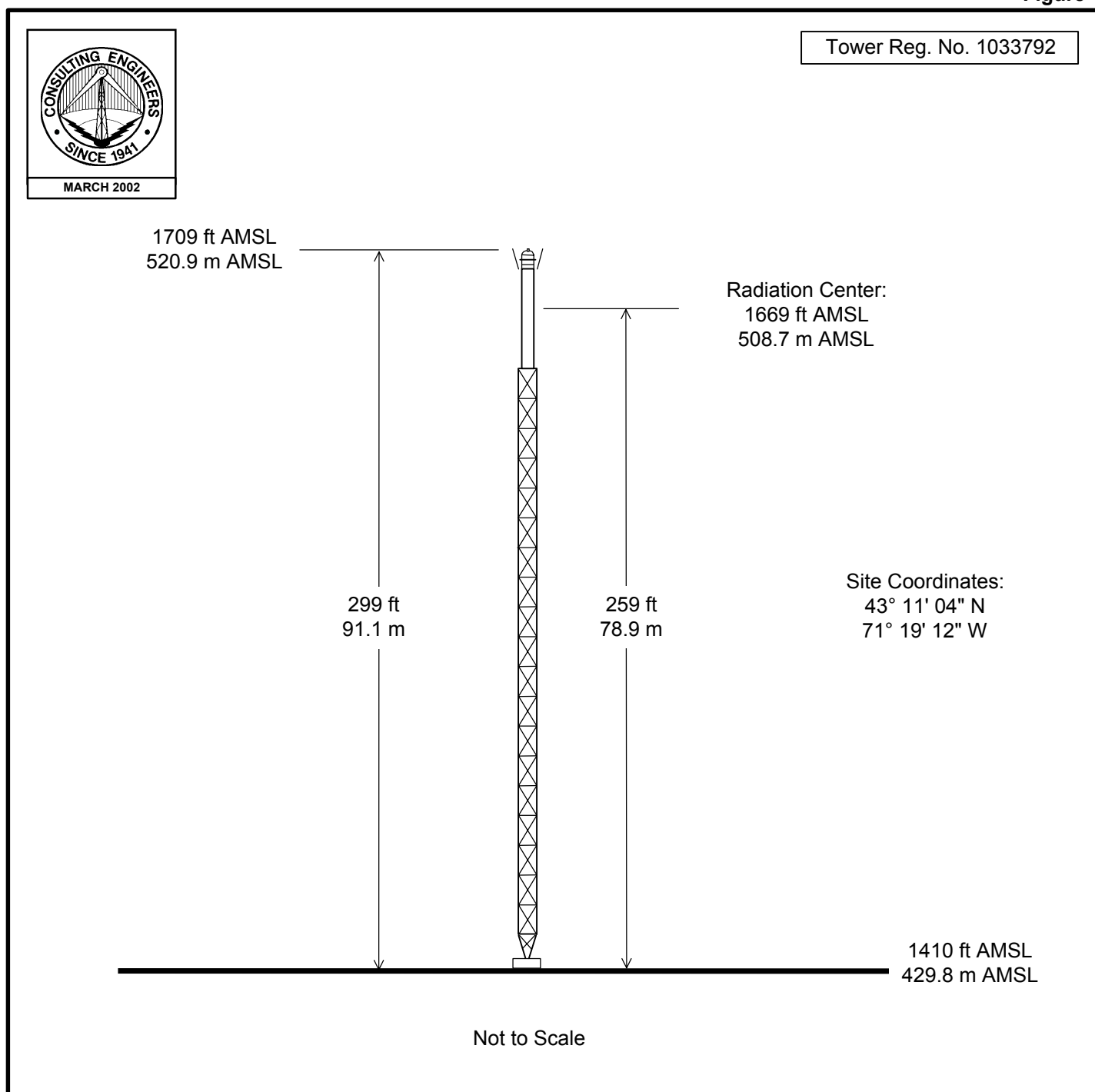
If there are questions concerning the technical portion of this application, please contact the office of the undersigned.

John A. Lundin

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

March 5, 2002

Figure 1



PROPOSED ANTENNA AND SUPPORTING STRUCTURE

TELEVISION STATION WPXG-DT

CONCORD, NEW HAMPSHIRE

CH 33 100 KW (MAX-DA) 344 M

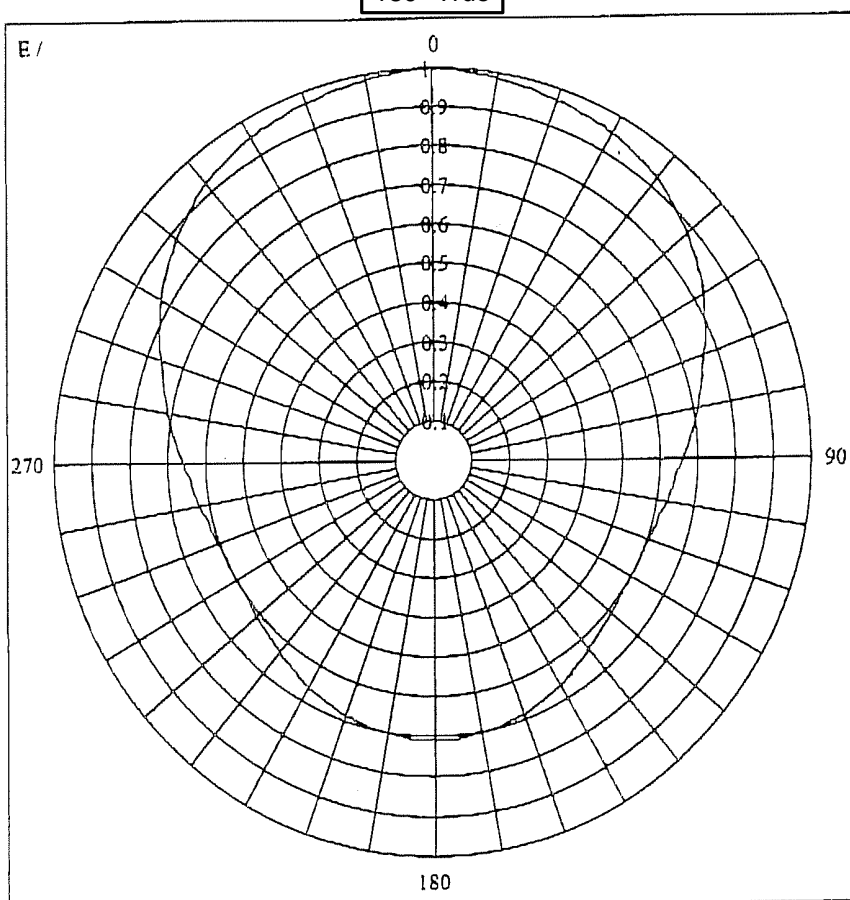
du Treil, Lundin & Rackley, Inc., Sarasota, Florida

UHF Omnioid Pattern

180° True

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	1.00	60	0.83	120	0.60	180	0.71	240	0.60	300	0.83
10	0.99	70	0.76	130	0.61	190	0.70	250	0.60	310	0.88
20	0.97	80	0.71	140	0.63	200	0.69	260	0.63	320	0.93
30	0.95	90	0.66	150	0.66	210	0.66	270	0.66	330	0.95
40	0.93	100	0.63	160	0.69	220	0.63	280	0.71	340	0.97
50	0.88	110	0.60	170	0.70	230	0.61	290	0.76	350	0.99

180° True

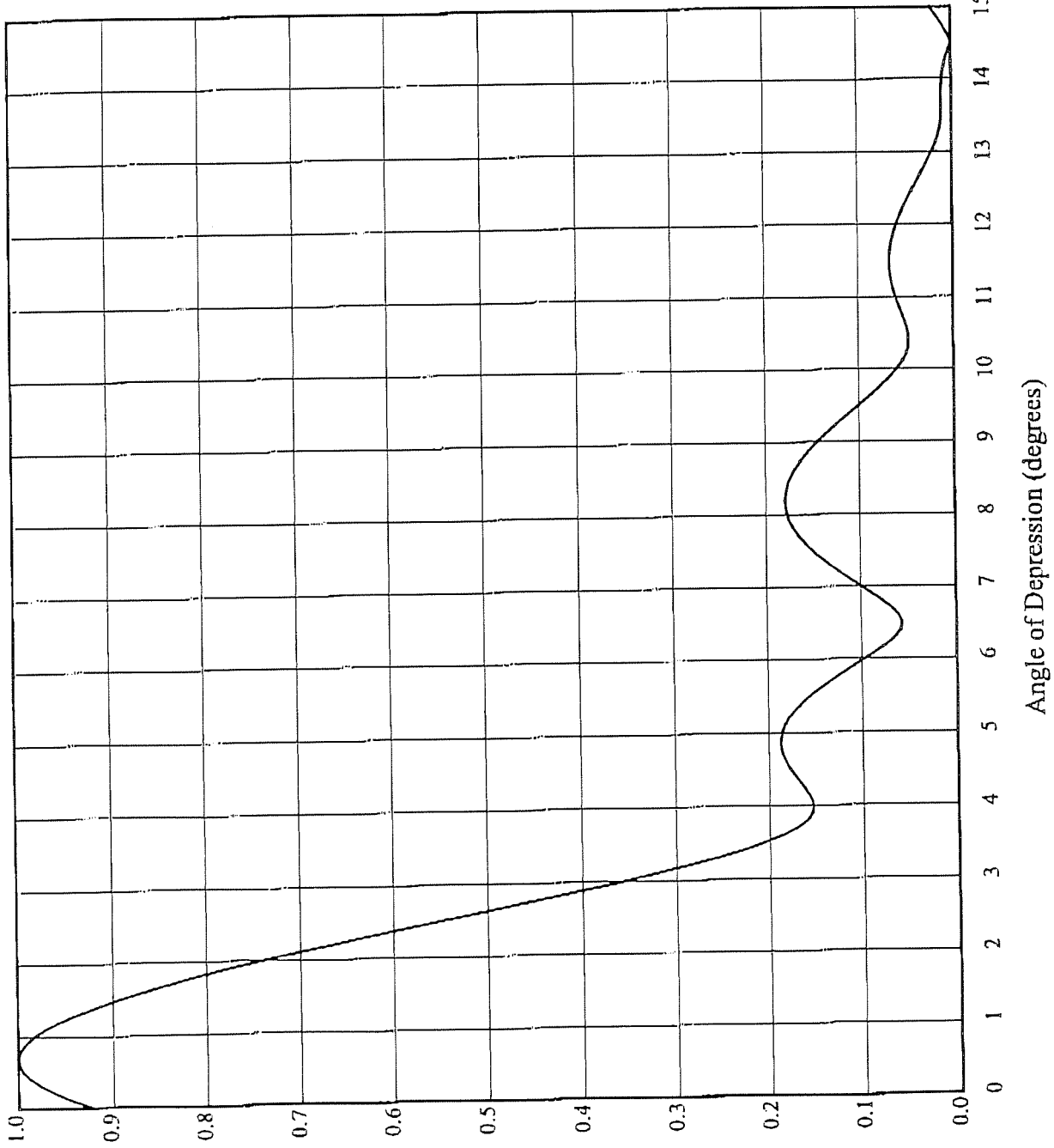


Pattern: OM
Horizontal Gain: 1.7(2.3 dB)
FCC Data Format

Rev. 001
Date: 6/19/01

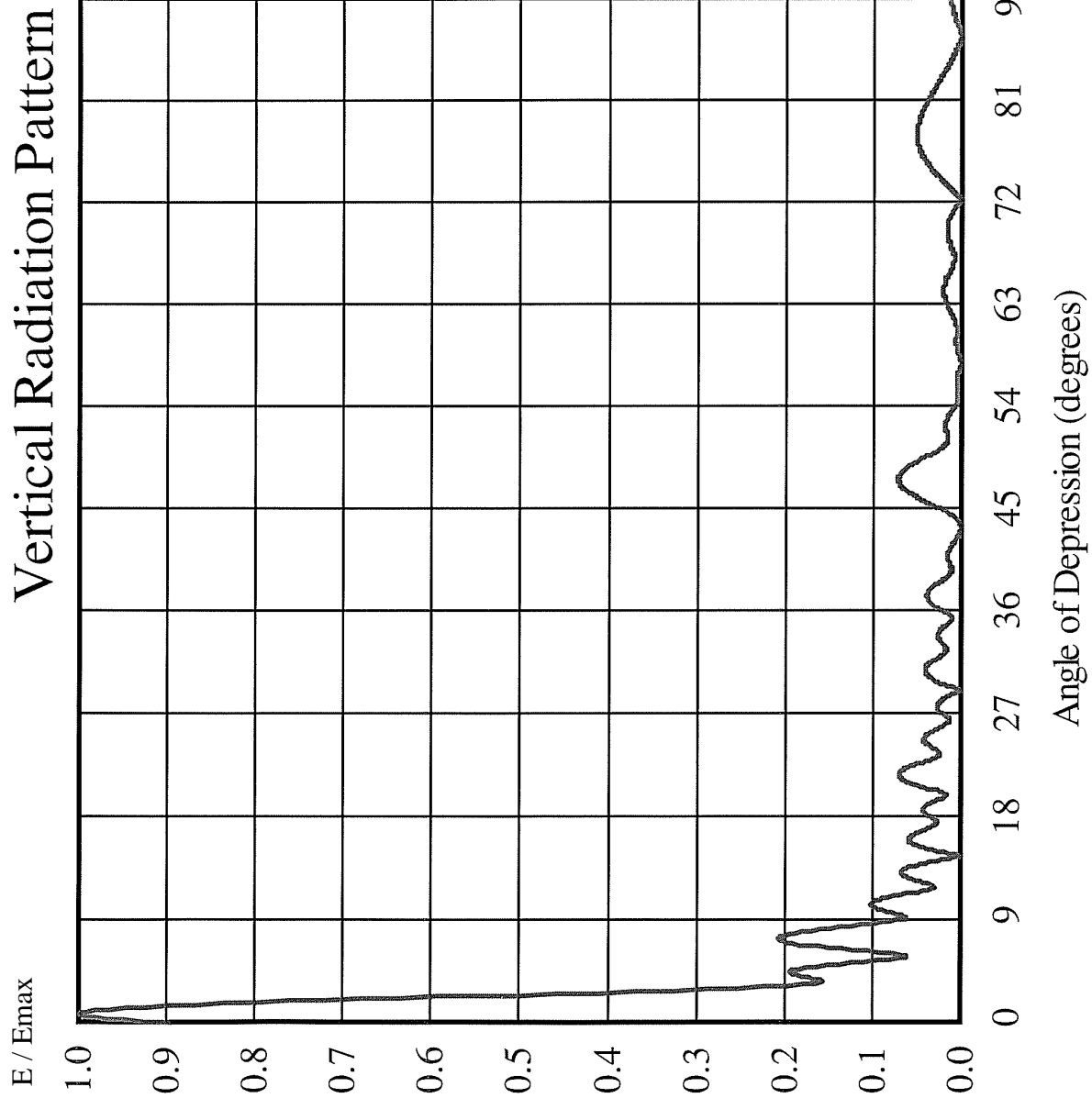
Vertical Radiation Pattern

E / Emax



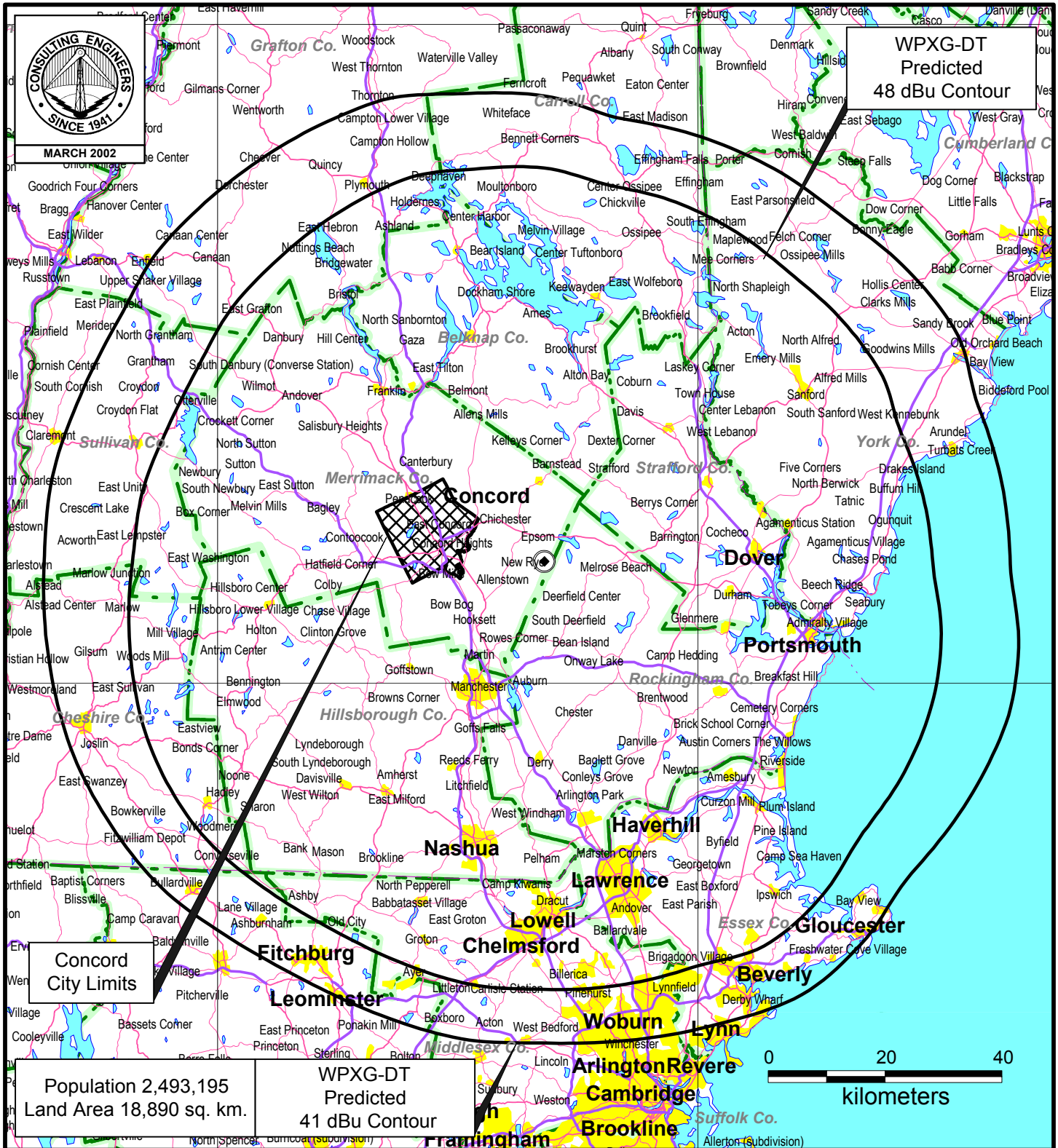
Date : 2/12/2002
Station : Station 33
Frequency (MHz) : 587.00
Directivity(dB) : 13.11
Beam Tilt (deg) : 0.7 °
Vertical Spacing : 1.876

Level	Power	Phase
1	1.000	88.6
2	1.000	43.4
3	1.000	37.3
4	1.000	0.0
5	1.000	28.1



Date :	3/5/2002			
Station :	Station WPXG-33			
Frequency (mhz):	587.00			
Directivity (dB):	13.61			
Beam Tilt (deg):	0.7 °			
1/2 3dB Beamwidth :	6.4			
Vertical Spacing (m):	2.143			
Level	Power	Phase	Loc'n	Tilt
1	1.000	96.0	0.000	0.0
2	1.000	48.3	2.143	0.0
3	1.000	39.8	4.286	0.0
4	1.000	0.0	6.429	0.0
5	1.000	25.7	8.572	0.0

Figure 3



PREDICTED COVERAGE CONTOURS

TELEVISION STATION WPXG-DT
CONCORD, NEW HAMPSHIRE
CH 33 100 KW (MAX-DA) 344 M
du Treil, Lundin & Rackley, Inc. Sarasota, Florida

CDBS TV/DTV SEPARATION STUDY

Job Title: WPXG-DT, Concord, NH
Channel: 33
Class: VU
Type: DT

Separation Buffer: 65 km
Coordinates: 43-11-04 071-19-12
Zone: I

Call ID	City St	File Status	Chan. Zone	ERP-kW HAAT-m	DA ID	Latitude Longitude	Bear. (deg)	Dist. (km)	Required- (km) min	max
VACANT 97578	FRYEURG ME	C	18 (+) II			44-00-54 070-58-48	16.4	96.3	24.1	80.5 CLEAR
WFXT 6463	BOSTON MA	BMLCT LIC C 19911001LV	25 (+) I	1950.0 357	DA 20560	42-18-12 071-13-08	175.1	98.2	24.1	80.5 CLEAR
WMEA-TV 39656	BIDDEFORD ME	BLET LIC C 379	26 (-) I	692.0 244	ND	43-25-00 070-48-09	58.2	49.3	24.1	80.5 Meets Interference Stds.
WNNE 73344	HARTFORD VT	BLCT LIC C 19791119LG	31 (Z) I	2240.0 677	DA 18504	43-26-38 072-27-17	287.8	96.5	24.1	80.5 CLEAR
DWABU	BOSTON MA	DTV	32 I	50.0 249	DA	42-20-50 071-04-59	168.2	95.0	24.0	110.0 Meets Interference Stds.
WBPX-DT 7692	BOSTON MA	BPCDT APP C 19991101AF	32 I	300.0 292	DA 41971	42-18-27 071-13-27	175.4	97.7	24.0	110.0 Meets Interference Stds.
VACANT 25212	GREENFIELD MA	C	32 (+) I			42-35-18 072-36-12	238.1	124.0	12.0	106.0 CLEAR
DWPXG	CONCORD NH	DTV	33 I	74.6 320	DA	43-11-04 071-19-12	0.0	0.0		
WPXG-DT 48406	CONCORD NH	BPCDT CP C 19991101AF	33 I	80.0 345	ND	43-11-04 071-19-12	0.0	0.0		
WETK 69944	BURLINGTON VT	BLET LIC C 19910613KE	33 (-) II	1350.0 815	DA 19254	44-31-32 072-48-54	321.7	191.4	217.3	217.3 Meets Interference Stds.
DWFSB	HARTFORD CT	DTV	33 I	1000.0 276	DA	41-46-30 072-48-20	218.4	198.6	196.3	196.3 CLEAR
WFSB-DT 53115	HARTFORD CT	BPCDT CP C 19980731KJ	33 I	500.0 284	ND	41-46-30 072-48-20	218.4	198.6	196.3	196.3 CLEAR
VACANT	ST-GEORGE-B QU	CAN A	33 I			46-07-00 070-40-00	8.8	329.9	363.0	363.0 Meets LOU L-R Interference Std
VACANT	PLESSISVILL QU	CAN A	33 I			46-13-00 071-47-00	354.0	339.0	363.0	363.0 Meets LOU L-R Interference Std

FIGURE 4
Sheet 2 of 2

<u>Call</u> <u>ID</u>	<u>City</u> <u>St</u> <u>Status</u>	<u>File</u> <u>Num</u>	<u>Chan.</u> <u>Zone</u>	<u>ERP-kW</u> <u>HAAT-m</u>	<u>DA</u> <u>ID</u>	<u>Latitude</u> <u>Longitude</u>	<u>Bear.</u> <u>(deg)</u>	<u>Dist.</u> <u>(km)</u>	<u>Required-</u> <u>min</u>	<u>(km)</u> <u>max</u>
CBVT-8	STONEHAM QU CAN A		33 I			46-57-23 071-23-24	359.3	419.2	363.0	363.0 CLEAR
DWPXB	MERRIMACK NH DTV		34 I	50.0 308	DA	42-59-02 071-35-20	224.5 Meets	31.2 Interference	24.0 Stds.	110.0
WPXB-DT 51864	MERRIMACK NH CP C	BPCDT 19990930AA	34 I	80.0 293	DA 28154	42-59-02 071-35-20	224.5 Meets	31.2 Interference	24.0 Stds.	110.0
WPXB 51864	MERRIMACK NH APP C	BPCT 20020123AA	34 (Z) I	1410.0 293 4	DA 2366	42-59-02 071-35-20	224.5 Meets	31.2 Interference	12.0 Stds.	106.0
WPME 48408	LEWISTON ME CP C	BMPCT 19960319KG	35 (-) I	1100.0 278	ND	43-51-06 070-19-40	46.8	109.2	24.1	80.5 CLEAR
WPME 48408	LEWISTON ME LIC C	BLCT 19970813KG	35 (-) I	1100.0 278	ND	43-51-06 070-19-39	46.8	109.2	24.1	80.5 CLEAR
VACANT 69056	BERLIN NH C		40 (-) II			44-28-12 071-11-00	4.3	143.3	24.1	80.5 CLEAR
WVTA 69943	WINDSOR VT CP C	BPET 19990413KF	41 (Z) I	1050.0 693	DA 19011	43-26-15 072-27-08	287.5	96.1	24.1	80.5 CLEAR

*** END OF DTV STUDY ***

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Technical Specifications

Channel	33
Frequency	584-590 MHz
Proposed Site Coordinates (NAD 27)	43° 11' 04" North Latitude 71° 19' 12" West Longitude
Site Elevation above mean sea level	429.8 m
Average elevation above mean sea level of 8 equally spaced radials, 3-16 kilometers	164.9 m
Overall height of antenna structure (#1033792)	
Above ground	91.1 m
Above mean sea level	520.9 m
Height of antenna radiation center	
Above ground	78.9 m
Above mean sea level	508.7 m
Above average terrain	344 m
Transmitter rated power output (average)	5 kW
Transmission line	RFS HCA618-50JT, 6-1/8", 50 Ohm, Heliflex coax
Length	(300 ft) 91.4 m
Efficiency (including combiner)	89.3%
Antenna	RFS RD20UOM
Polarization	Horizontal
Peak Power Gain	34.8
Beam Tilt (electrical)	0.75°
Main Lobe	180° T

Proposed Operation

Transmitter output power (average)	3.2 kW
Transmission line/combiner loss	0.3 kW
Antenna input power	2.9 kW
Maximum DTV Effective Radiated Power (MAX-DA)	100 kW