

BERNARD R. SEGAL, P. E.
CONSULTING ENGINEER
KENSINGTON, MARYLAND

ENGINEERING EXHIBIT
AMENDED APPLICATION FOR
DTV CONSTRUCTION PERMIT
HEARST-ARGYLE STATIONS, INC.
WNNE-DT, HARTFORD, VERMONT
CH. 25 188 KW (MAX-DA) 651 METERS

Hearst- Argyle Stations, Inc. is the applicant in BPCDT-19991101AEW for a DTV construction permit for station WNNE-DT, Hartford, Vermont. The application specifies operation on allotted Channel 25 from the present WNNE-DT site. Average effective radiated power of 135 kW and antenna radiation center height above average terrain are specified. By letter dated February 27, 2001, the FCC advised that slightly greater than the permissible 2% interference would be caused to co-channel station WFXT, Boston, Massachusetts..

The instant Engineering Exhibit is in support of an amendment to the pending application and is responsive to the FCC's letter. A site change to the tower employed for stations WVTM (TV) and WVTM-DT, Windsor, Vermont, is proposed. The WVTM tower is 0.7 kilometer from the originally specified site for WNNE-DT. The WNNE-DT antenna will be side- mounted on the WVTM tower with the radiation center 81 meters above ground level, 953 meters above mean sea level. The Antenna Structure Registration (ASR) number for the tower is 1060721. No change in the overall structure height will result from the proposed installation. The geographic coordinates for the tower are: 72° 27' 08" north latitude; 72° 27' 08". The foregoing coordinates are NAD 27.

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The antenna will be a Dielectric, type TFU-10DSC-R P230, directional with 1° electrical beam tilt. The elevation patterns for the antenna are provided in Figure 1, Sheets 1 and 2. Sheet 3 of Figure 1 is the tabulation of relative field data for the patterns of Sheets 1 and 2.

The azimuth pattern for the proposed antenna is provided in Figure 2, Sheet 1. The tabulation of relative field data for the pattern is furnished in Figure 2, Sheet 2. The patterns and tabulations of Figures 1 and 2 were made available by the antenna manufacturer..

Figure 3 is a map demonstrating that the entire principal community of Hartford is encompassed by the 48 dBu, F(50, 90) contour. Supporting terrain elevation and effective radiated power data used for contour distance calculations are furnished in Figure 4. The FCC recently adopted the 48 dBu signal strength level as the requirement for principal community coverage to supplant the previous 41 dBu signal strength level.

An allocation study using the FCC's FLR software has been conducted for the proposed WNNE-DT facility using an Alpha processor. Two runs were performed. The first run was with the database for the stations of interest the same as employed by the FCC in establishing the data for Appendix B in the Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders in MM Docket No. 87-268. The results of this run permitted comparison with the FCC's results, and, also,

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provided a reference for comparison with the results obtained for the second run. For the second run, the facilities proposed herein for WNNE-DT were substituted for the.

WNNE-DT allotment facilities of the aforementioned Appendix B that were used in the first run. By this means, any changes in the results between the two runs would be attributable to the proposed WNNE-DT operation.

The study results showed a 1.1 % increase in the interference caused to co-channel station WFXT, Boston, Massachusetts. The total interference from both NTSC and ATV sources was increased from 252,000 persons to 322,000 persons. The 70,000 person difference represents 1.1% of the 6,225,000 persons who are within the WFXT Grade B contour that is not affected by terrain losses. The 2% "de minimis" interference criterion is satisfied.

The only other station impacted by the instant proposal is WVTA-DT, Windsor, Vermont, Channel 24. WVTA-DT and WNNE-DT will be co-located. The proposed operation for WNNE-DT will reduce the interference to WVTA-DT from that sanctioned in the original allotment. The original allotment, including interference from NTSC stations, impacted 27,000 persons. With the instant proposal for WNNE-DT substituted for the original allotment facility, the total interference to WVTA-DT is reduced to 26,000 persons. Hence, all FCC protection requirements are satisfied. In this connection, no consideration has been given to Class A stations since the WNNE-DT proposal for "maximized" facilities was submitted prior to the December 31, 1999, notification deadline date to qualify for pre-emption with respect to Class A station protection. In any event, there are no Class A stations close enough on any channel of interest to merit consideration.

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The proposed operation for WNNE-DT will have no significant impact on the environment. Since an existing site will be employed for the proposed WNNE-DT facility, only the concerns relating to radio-frequency radiation (rfr) exposure to the general public at uncontrolled locations and to workers at controlled locations merit discussion from among the list of environmentally sensitive items set forth in Section 1.1307 of the FCC Rules.

In order to assess compliance with the FCC's currently adopted standard for uncontrolled location rfr exposure, a test calculation was performed using OST Bulletin 65 equations. The calculation made was to a target at the tower base with the target 2 meters above ground level. The result represents the greatest power density level that could occur anywhere at ground level. The 2 meter elevation corresponds approximately to the head height of a person who might be standing at that location.

The vertical plane radiation characteristic for the proposed WNNE-DT antenna (see Figure 1) shows that the maximum radiation occurring at any depression angle greater than 6° below the horizontal plane is less than 20% of the maximum occurring at the 1° beam tilt angle. With a ground reflection coefficient of 1.6, and maximum possible downward average effective radiated power of 7.5 kW, the power density at the target is 0.04 mW/cm². The maximum permissible exposure (MPE) at Channel 25 (539 MHz) is 0.36 mW/cm². The WNNE-DT contribution to the MPE is 11.1%.

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KENSINGTON, MARYLAND

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The tower that will support the WNNE-DT antenna is in existence and supports the antenna for FM station WVPR and will support a new antenna that will be used to multiplex the signals of WVTM and WVTM-DT according to information provided to the undersigned. The FCC's CDBS shows that WVPR operates on Channel 208 (89.5 MHz) with effective radiated power of 1.8 kW (H@V) and antenna radiation center height of 92 meters above ground level. An application for modification of construction permit for WVTM-DT, BMPEDT-20000501AIU, specifies operation on Channel 24 with maximum average effective radiated power of 200 kW and antenna radiation center height of 122 meters above ground level. A construction permit, BPET-19990413KF, has been issued for WVTM for operation on Channel 41 with peak visual effective radiated power of 1050 kW and antenna radiation center height of 122 meters above ground level. The same Dielectric, type TUP-04-10-1, antenna is listed for WVTM-DT and WVTM.

According to information provided by WVTM, the maximum radiation for the type TUP-04-10-1 antenna at steep depression angles is no more than 10% of the maximum occurring at the 0.85° electrical beam tilt angle. The radiation characteristic for the WVPR antenna is not known, so the undersigned has assumed a worst case scenario for WVPR with maximum power of 3.6 kW directed to the target at the tower base. Ten percent aural power has been assumed for WVTM.

Calculations using OST Bulletin 65 equations and the foregoing parameters for the other stations that are, or will be, located on the tower yield the following power densities and MPE percent contributions at the target that has been described earlier.

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<u>Station</u>	<u>Power Density</u> (mW/cm ²)	<u>MPE</u> (mW/cm ²)	<u>Percent of MPE</u>
WVPR	0.015	0.20	7.5
WVTA-DT	0.0046	0.35	1.3
WVTA	0.012	0.42	2.9

The sum of the contributions, including the 11.1% contribution from the proposed WNNE-DT operation, is well below 100%. Hence, compliance with the requirement for the avoidance of overexposure of the general public to rfr at uncontrolled locations will be achieved.

Worker protection against overexposure will be achieved by coordinating with the licensees of the above referenced stations (Vermont Public Radio and Vermont ETV, Inc) when work must be performed on the tower that will place a worker near an antenna. Excitation to the antenna will be reduced or terminated, as the situation requires, to avoid overexposure to rfr. A radiation hazard warning sign is posted on the tower according to information provided to the undersigned.

Based on the foregoing, the proposed operation will comply with the FCC's adopted standard and procedures for the avoidance of overexposure of the public and workers to rfr . An environmental assessment of the instant proposal is not required


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CONSULTING ENGINEER
KENSINGTON, MARYLAND

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In preparing the contour map of Figure 4, use was made of the U.S.G.S. 3 arc-second terrain elevation database. The distances to the contour were determined by computer using an algorithm developed by EDX.

I declare under the penalty of perjury that the foregoing is true and correct.
Executed on July 12, 2001.


Bernard R. Segal, P. E.



Proposal Number

Date

Call Letters

Location

Customer

Antenna Type

09 Jul 2001

WNNE-DT

HARTFORD, VT

TFU-10DSC-R P230

FIGURE 1
SHEET 1 OF 3

Channel 25

ELEVATION PATTERN

RMS Gain at Main Lobe

9.5 (9.78 dB)

Beam Tilt

1.00 Degrees

RMS Gain at Horizontal

8.4 (9.24 dB)

Frequency

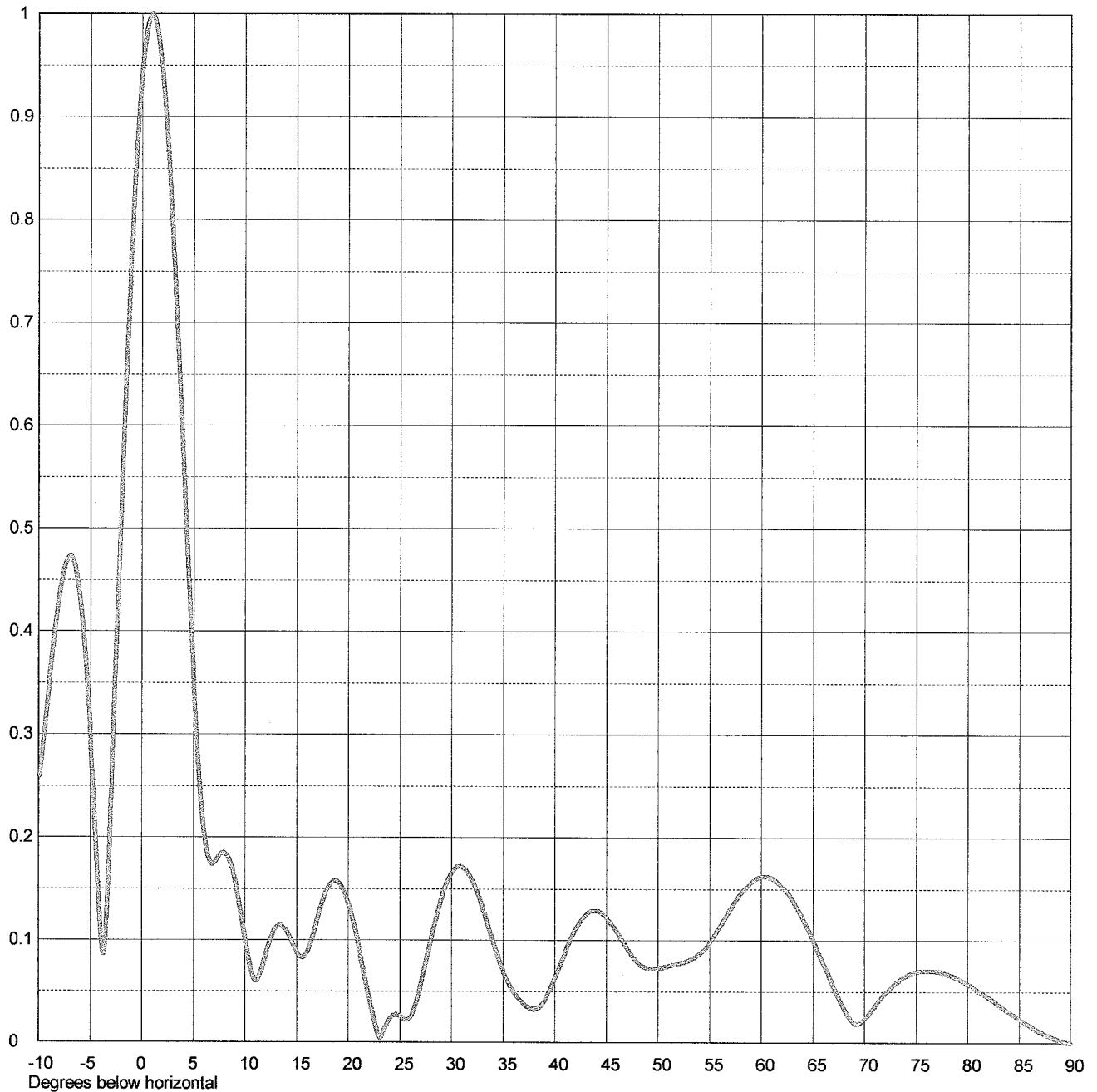
539.00 MHz

Calculated / Measured

Calculated

Drawing #

10Q095100-90



Remarks:



Proposal Number

Date

Call Letters

Location

Customer

Antenna Type

09 Jul 2001

WNNE-DT

HARTFORD, VT

TFU-10DSC-R P230

FIGURE 1

SHEET 2 OF 3

Channel 25

ELEVATION PATTERN

RMS Gain at Main Lobe

9.5 (9.78 dB)

Beam Tilt

1.00 Degrees

RMS Gain at Horizontal

8.4 (9.24 dB)

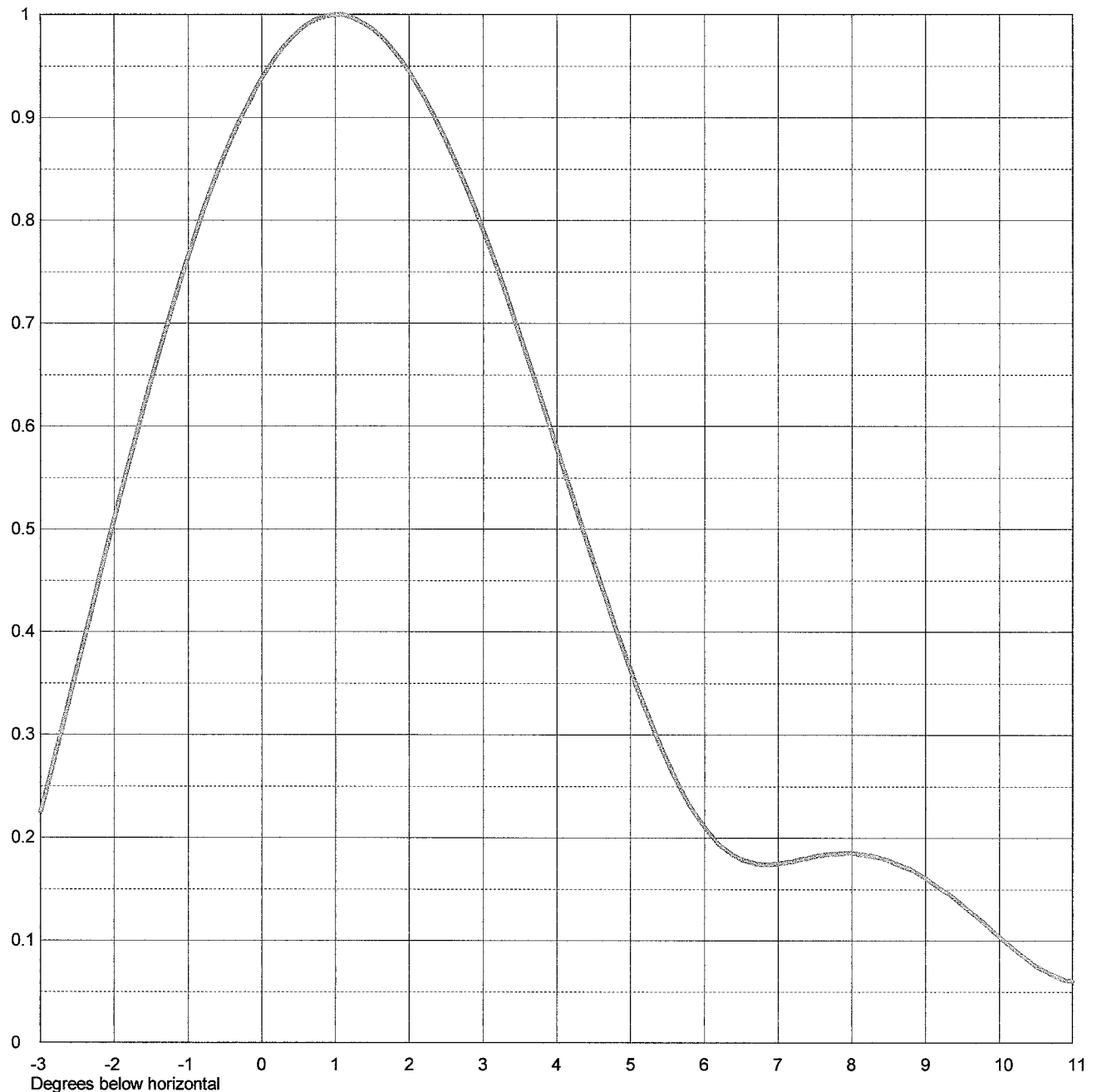
Frequency

539.00 MHz

Calculated / Measured

Calculated

Drawing #

10Q095100

Remarks:



Proposal Number

Date

Call Letters

Location

Customer

Antenna Type

09 Jul 2001

WNNE-DT

HARTFORD, VT

TFU-10DSC-R P230

FIGURE 1
SHEET 3 OF 3

Channel 25

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing # 10Q095100-90

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.251	2.4	0.893	10.6	0.071	30.5	0.171	51.0	0.075	71.5	0.042
-9.5	0.296	2.6	0.862	10.8	0.064	31.0	0.171	51.5	0.076	72.0	0.048
-9.0	0.344	2.8	0.828	11.0	0.060	31.5	0.167	52.0	0.077	72.5	0.053
-8.5	0.392	3.0	0.791	11.5	0.067	32.0	0.159	52.5	0.078	73.0	0.058
-8.0	0.432	3.2	0.752	12.0	0.084	32.5	0.147	53.0	0.080	73.5	0.062
-7.5	0.461	3.4	0.710	12.5	0.101	33.0	0.133	53.5	0.083	74.0	0.065
-7.0	0.473	3.6	0.668	13.0	0.112	33.5	0.117	54.0	0.086	74.5	0.067
-6.5	0.466	3.8	0.624	13.5	0.115	34.0	0.100	54.5	0.091	75.0	0.069
-6.0	0.436	4.0	0.579	14.0	0.110	34.5	0.085	55.0	0.098	75.5	0.070
-5.5	0.383	4.2	0.535	14.5	0.100	35.0	0.071	55.5	0.105	76.0	0.070
-5.0	0.307	4.4	0.490	15.0	0.089	35.5	0.059	56.0	0.113	76.5	0.070
-4.5	0.212	4.6	0.446	15.5	0.083	36.0	0.050	56.5	0.121	77.0	0.070
-4.0	0.114	4.8	0.404	16.0	0.087	36.5	0.043	57.0	0.130	77.5	0.068
-3.5	0.106	5.0	0.364	16.5	0.101	37.0	0.038	57.5	0.138	78.0	0.067
-3.0	0.224	5.2	0.326	17.0	0.119	37.5	0.034	58.0	0.145	78.5	0.065
-2.8	0.280	5.4	0.291	17.5	0.136	38.0	0.032	58.5	0.151	79.0	0.063
-2.6	0.337	5.6	0.259	18.0	0.150	38.5	0.034	59.0	0.156	79.5	0.060
-2.4	0.395	5.8	0.232	18.5	0.157	39.0	0.040	59.5	0.160	80.0	0.057
-2.2	0.452	6.0	0.211	19.0	0.157	39.5	0.050	60.0	0.162	80.5	0.054
-2.0	0.509	6.2	0.194	19.5	0.150	40.0	0.062	60.5	0.162	81.0	0.051
-1.8	0.564	6.4	0.183	20.0	0.137	40.5	0.075	61.0	0.161	81.5	0.048
-1.6	0.618	6.6	0.177	20.5	0.118	41.0	0.087	61.5	0.158	82.0	0.044
-1.4	0.669	6.8	0.174	21.0	0.096	41.5	0.099	62.0	0.153	82.5	0.041
-1.2	0.718	7.0	0.175	21.5	0.071	42.0	0.110	62.5	0.147	83.0	0.037
-1.0	0.764	7.2	0.177	22.0	0.046	42.5	0.118	63.0	0.140	83.5	0.034
-0.8	0.807	7.4	0.180	22.5	0.023	43.0	0.124	63.5	0.132	84.0	0.030
-0.6	0.846	7.6	0.183	23.0	0.005	43.5	0.128	64.0	0.122	84.5	0.027
-0.4	0.881	7.8	0.184	23.5	0.013	44.0	0.128	64.5	0.112	85.0	0.023
-0.2	0.911	8.0	0.185	24.0	0.022	44.5	0.127	65.0	0.101	85.5	0.020
0.0	0.938	8.2	0.183	24.5	0.026	45.0	0.122	65.5	0.090	86.0	0.017
0.2	0.960	8.4	0.180	25.0	0.026	45.5	0.116	66.0	0.078	86.5	0.014
0.4	0.977	8.6	0.175	25.5	0.022	46.0	0.109	66.5	0.067	87.0	0.011
0.6	0.990	8.8	0.169	26.0	0.024	46.5	0.101	67.0	0.055	87.5	0.008
0.8	0.997	9.0	0.161	26.5	0.036	47.0	0.093	67.5	0.044	88.0	0.006
1.0	1.000	9.2	0.151	27.0	0.054	47.5	0.085	68.0	0.034	88.5	0.004
1.2	0.998	9.4	0.141	27.5	0.076	48.0	0.079	68.5	0.025	89.0	0.002
1.4	0.991	9.6	0.129	28.0	0.099	48.5	0.075	69.0	0.019	89.5	0.001
1.6	0.980	9.8	0.117	28.5	0.120	49.0	0.072	69.5	0.019	90.0	0.000
1.8	0.964	10.0	0.104	29.0	0.139	49.5	0.072	70.0	0.023		
2.0	0.945	10.2	0.092	29.5	0.154	50.0	0.072	70.5	0.029		
2.2	0.921	10.4	0.081	30.0	0.165	50.5	0.073	71.0	0.036		

Remarks:



Proposal Number

Date

Call Letters

Location

Customer

Antenna Type

09 Jul 2001

WNNE-DT

HARTFORD, VT

TFU-10DSC-R P230

FIGURE 2
SHEET 1 OF 2

Channel 25

AZIMUTH PATTERN

RMS Gain at Main Lobe

Calculated / Measured

2.30 (3.62 dB)

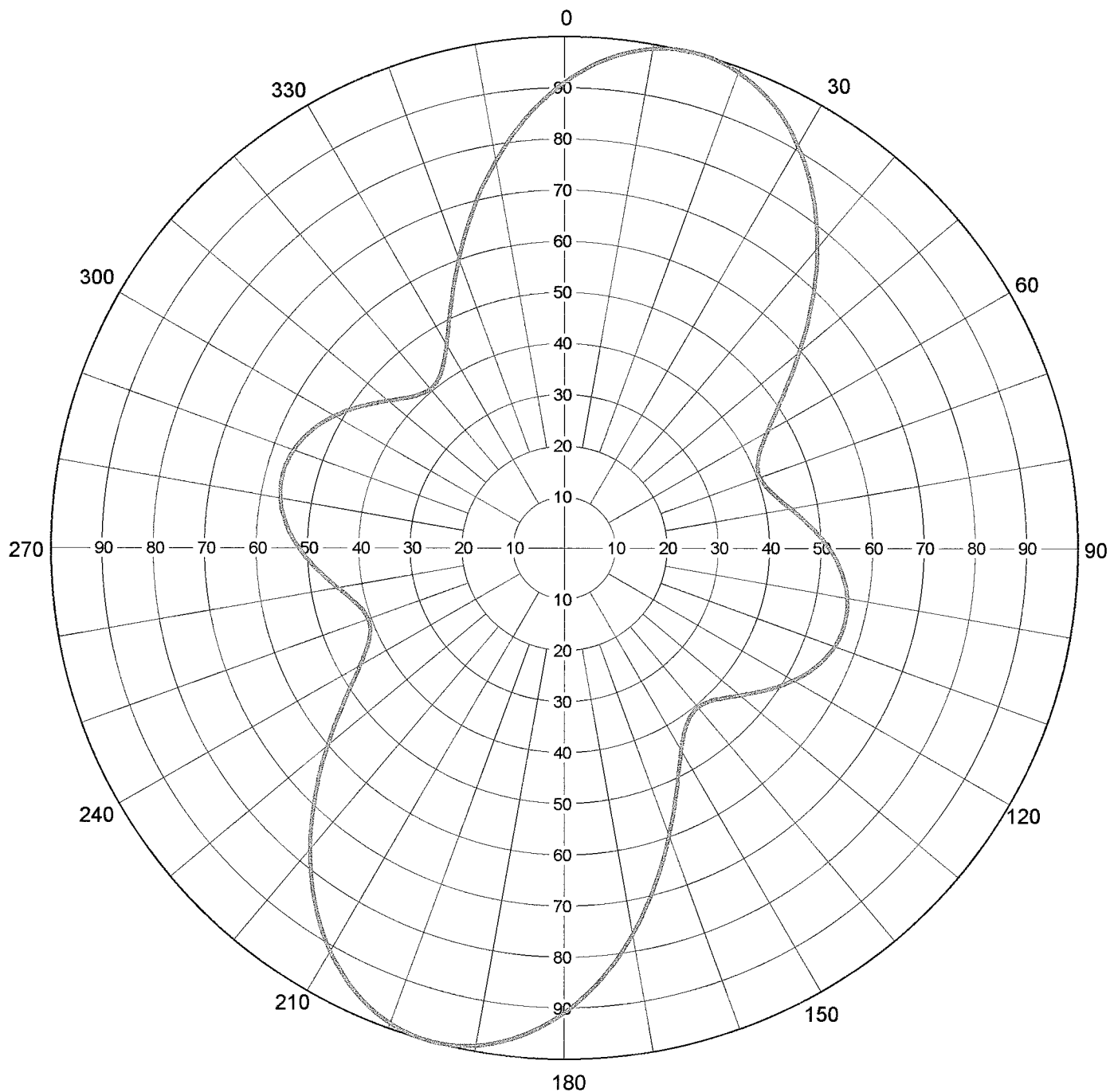
Calculated

Frequency

Drawing #

539 MHz

TFU-P230



Remarks:



Proposal Number

Date

Call Letters

Location

Customer

Antenna Type

11 Jul 2001

WNNE-DT

HARTFORD, VERMONT

TFU-10DSC-R P230

FIGURE 2

SHEET 2 OF 2

Channel 25

TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #

TFU-P230

Angle	Field	ERP (kW)	ERP (dBk)
0	0.909	155.3	21.91
10	0.990	184.3	22.65
20	0.990	184.3	22.65
30	0.909	155.3	21.91
40	0.767	110.6	20.44
50	0.599	67.5	18.29
60	0.457	39.3	15.94
70	0.405	30.8	14.89
80	0.447	37.6	15.75
90	0.515	49.9	16.98
100	0.560	59.0	17.71
110	0.560	59.0	17.71
120	0.515	49.9	16.98
130	0.447	37.6	15.75
140	0.405	30.8	14.89
150	0.457	39.3	15.94
160	0.599	67.5	18.29
170	0.767	110.6	20.44
180	0.909	155.3	21.91
190	0.990	184.3	22.65
200	0.990	184.3	22.65
210	0.909	155.3	21.91
220	0.767	110.6	20.44
230	0.599	67.5	18.29
240	0.457	39.3	15.94
250	0.405	30.8	14.89
260	0.447	37.6	15.75
270	0.515	49.9	16.98
280	0.560	59.0	17.71
290	0.560	59.0	17.71
300	0.515	49.9	16.98
310	0.447	37.6	15.75
320	0.405	30.8	14.89
330	0.457	39.3	15.94
340	0.599	67.5	18.29
350	0.767	110.6	20.44

Maxima

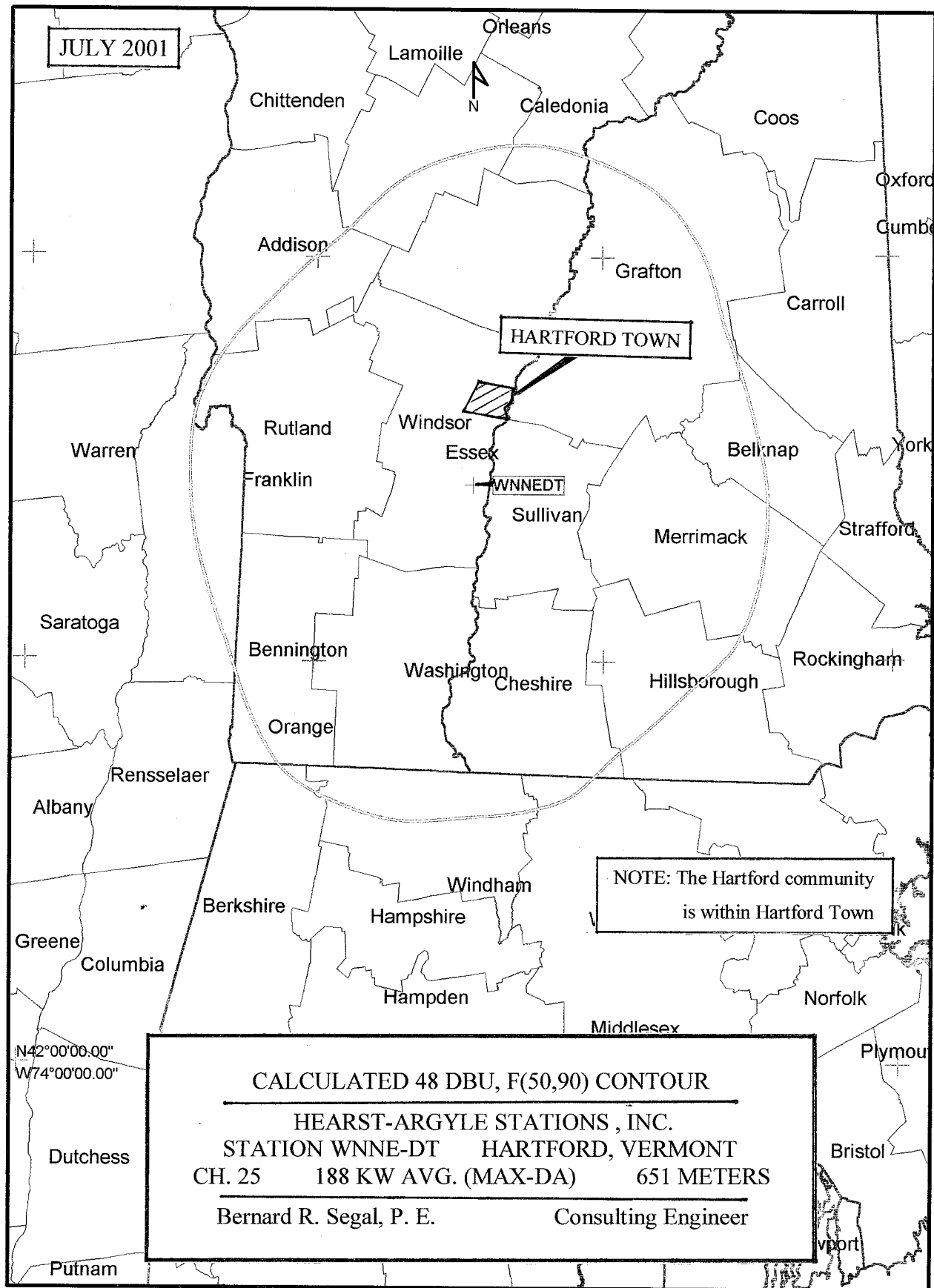
Angle	Field	ERP (kW)	ERP (dBk)
15	1.000	188.0	22.74
105	0.566	60.2	17.80
195	1.000	188.0	22.74
285	0.566	60.2	17.80

Minima

Angle	Field	ERP (kW)	ERP (dBk)
70	0.405	30.8	14.89
140	0.405	30.8	14.89
250	0.405	30.8	14.89
320	0.405	30.8	14.89

Remarks:

FIGURE 3



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CONSULTING ENGINEER

FIGURE 4
TABULATION OF ELEVATIONS, RADIATION VALUES AND
DISTANCES TO THE 48 DBU, F(50,90) CONTOUR

<u>Azimuth</u> (Deg. True)	<u>Antenna Rad.. Center Above Terrain Avg.</u> (meters)	<u>ERP</u> (kW)	<u>Distance to 48 dBu F(50,90) Contour</u> (km)
0	634	155	91.7
15	700	188	95.4
30	746	155	95.5
45	753	89.5	90.6
60	704	39.3	82.4
75	688	34.7	80.8
90	638	49.9	82.4
105	653	60.2	84.3
120	761	49.9	85.9
135	769	34.7	82.9
150	774	39.3	84.2
165	756	89.5	90.7
180	623	155	91.3
195	685	188	94.9
210	743	155	95.4
225	681	89.5	88.4
240	653	39.3	81.0
255	630	34.7	79.2
270	559	49.9	79.4
285	560	60.2	80.6
300	547	49.9	78.8
315	553	34.7	76.3
330	558	39.3	77.6
345	597	89.5	85.5

Notes: (1) Antenna radiation center is 953 meters above mean sea level. (2) Terrain elevation data from USGS 3 arcsecond database. (3) Standard eight radial HAAT is 651 meters.