



**STATEMENT OF JOHN E. HIDLE, P.E.  
IN SUPPORT OF AN  
APPLICATION TO AMEND A PENDING APPLICATION  
FOR CONSTRUCTION PERMIT  
BPCDT-19990930AAV  
WNUV-DT- BALTIMORE, MARYLAND  
TV - CH. 40 - 900 kW - 368 M HAAT**

Prepared for: Baltimore (WNUV-TV) Licensee, Inc.

I am a Consulting Engineer, an employee in the firm of Carl T. Jones Corporation, with offices located in Springfield, Virginia. My education and experience are a matter of record with the Federal Communications Commission. I am a registered Professional Engineer in the Commonwealth of Virginia, Registration No. 7418, and in the State of New York, Registration No. 63418.

**GENERAL**

This office has been authorized by Baltimore (WNUV-TV) Licensee, Inc., licensee of WNUV(TV), channel 54, Baltimore, Maryland, and applicant for construction permit for the paired Digital Television Allotment for WNUV-DT, channel 40, to prepare this statement, FCC Form 301, Sections III and III-D, and the associated exhibits in support of an application to amend its pending application for construction permit, BPCDT-19990930AAV. The instant application to amend WNUV-DT's pending application, BPCDT-19990930AAV, is necessary as a component of the applicant's efforts to implement its digital facility on DTV channel 40. In order to physically locate its station on the existing support structure the modifications proposed herein are required.

It is proposed herein to install a new Dielectric panel type directional antenna to be

used by WNUV-DT, and other DTV stations. The new antenna is to be mounted on the existing tower support structure located at 39E 20' 10" N latitude, 76E 38' 59" W longitude. The existing structure is registered in the FCC 's tower registration database, # 1044237. The modifications proposed herein will serve to further the Commission's goals in the deployment of DTV service in the United States. The new DTV antenna proposed herein for WNUV-DT is designed to accommodate a number of other DTV transmission facilities at the site, which will tend to lessen the effects of the "receive antenna orientation problem" that results when television transmission systems are scattered in multiple locations within a television market area. Additionally, the proposed modifications will provide for various cooperative operational efficiencies among several television licensees, which should further improve service to the public.

#### **PROPOSED DIRECTIONAL ANTENNA**

It is proposed to install a new directional antenna, Dielectric TUD-C5SP-12/44H-1-B for use by WNUV-DT and WBFF-DT on the existing tower currently used by WBFF(TV), and WBFF-DT currently operating under STA. The proposed directional transmitting antenna shall employ an electrical beam tilt of 0.75 degrees below the horizontal plane. The antenna manufacturer's horizontal plane azimuth radiation pattern, illustrating the proposed antenna's directional pattern characteristics is shown in Exhibit 1, and tabulated in Exhibit 2, and the vertical plane radiation pattern, illustrating the proposed antenna's radiation characteristics above and below the horizontal plane, is shown in Exhibit 3, and tabulated in Exhibit 4. A Vertical Plan Antenna Sketch is provided in Exhibit 5.

### **PREDICTED COVERAGE CONTOURS**

The predicted coverage contours were calculated in accordance with the method described in Section 73.684 of the Rules, utilizing the appropriate F(50,90) propagation curves (47 CFR Section 73.699, Figure 9), power, and antenna height above average terrain as determined for each profile radial. The average terrain on the eight cardinal radials from 3 kilometers to 16 kilometers from the site, was determined using the National Geophysical Data Center Thirty Second Point Database (TPG-0050) as prescribed in the FCC Rules. The antenna site elevation and coordinates were determined from FCC antenna registration data. The predicted principal community (48 dBu) contour completely encompasses the principal community of license, shown in Exhibit 6, as required by Section 73.625(a) of the Commission's rules. The predicted 41 dBu contour is also shown in Exhibit 6..

### **ALLOCATION CONSIDERATIONS**

#### **NTSC Allocation Considerations**

An interference study was performed, using the Commission's application analysis program, tv\_process, to ensure that the proposed DTV facility is in compliance with the Commission's *de minimis* interference requirement contained in Section 73.623(c)(2) of the Commission's rules. The study showed that the DTV facility proposed herein is predicted to cause no increase in the interference population in excess of the Commission's *de minimis* criteria to any authorized NTSC television facility.

**DTV Allocation Considerations**

The same study was evaluated to determine if the proposed modification of WNUV-DT is predicted to cause any level of new prohibited interference to other authorized DTV facilities, including other DTV stations, DTV expansion construction permits, DTV allotments or pending DTV applications. The study results indicate that the instant proposal is predicted to cause no unacceptable level of new interference to the populations served by any other relevant DTV facility, and thereby is in compliance with the *de minimis* interference criteria contained in Section 73.623(c)(2) of the Commission's Rules.

**Class A Television Allocation Considerations**

As required in Section 73.623(c)(5) of the FCC's Rules, as established in the Report and Order establishing Class A Television Service, released April 4, 2000, a study of interference contour overlap was performed, based on the WNUV-DT facility proposed herein, to establish compliance with the protection requirements contained therein. The study results indicate that no prohibited contour overlap is predicted to occur with any LPTV stations which were granted Certificates of Eligibility for Class A Status in Public Notice DA 00-1224, Released June 2, 2000.

**BLANKETING AND INTERMODULATION INTERFERENCE**

A number of broadcast and non-broadcast facilities are located within 10 km of the proposed WNUV-DT transmitter/antenna site. The applicant recognizes its responsibility to remedy complaints of interference created by this proposal in accordance with applicable Rules.

## **ENVIRONMENTAL CONSIDERATIONS**

### **GENERAL**

The proposal described herein meets the criteria specified in Section 1.1306 of the FCC Rules and Regulations as an action, which is categorically excluded from environmental processing. The proposed TV facility involves neither a site location specified under Section 1.1307(a)(1)-(7) of the Rules nor high intensity lighting as specified in Section 1.1307(a)(8).

### **RADIO FREQUENCY IMPACT**

Effective October 15, 1997, the FCC adopted new guidelines and procedures for evaluating environmental effects of radio frequency (RF) emissions. The guidelines are generally based on recommendations by the National Council on Radiation Protection and Measurements (NCRP) in NCRP Report No. 86 (1986), and by the American National Standards Institute and the Institute of Electrical and Electronic Engineers, LLC (IEEE) in ANSI/IEEE C95.1-1992 (IEEE C95.1-1991). The guidelines provide a maximum permissible exposure (MPE) level for occupational or "controlled" situations that apply in cases that affect the general public. The FCC Office of Engineering and Technology's technical bulletin No. 65 entitled, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields" (Edition 97-01, August 1997), provides assistance in the determination of whether FCC-regulated transmitting facilities, operations or devices comply with guideline limits for human exposure to radio frequency electromagnetic fields as adopted by the Commission in 1996. Bulletin No. 65 contains

the technical information necessary to evaluate compliance with the FCC's policies and guidelines.

The FCC Maximum Permitted Exposure (MPE) level for "uncontrolled" environments is derived from the formula,  $(\text{frequency}/1500)$ , for UHF TV stations. The MPE level for UHF stations in a "controlled" environment is derived from the formula,  $(\text{frequency}/300)$ . The predicted emissions of WNUV-DT channel 40 must be considered, along with the predicted emissions from other proposed and existing stations at the current site. For WNUV-DT, which will operate on television Channel 40 (629 MHz), the MPE is 0.419 milliwatts per centimeter squared ( $\text{mW}/\text{cm}^2$ ) in an "uncontrolled" environment and 2.095  $\text{mW}/\text{cm}^2$  in a "controlled" environment. The proposed WNUV-DT facility will operate with a maximum ERP of 900 kW from a horizontally polarized directional transmitting antenna with a centerline height of 370 meters above ground level (AGL). Considering a very conservative vertical plane relative field factor of 0.3, the WNUV-DT facility produces a predicted power density at two meters above ground level of .01998  $\text{mW}/\text{cm}^2$ , which is 4.76% of the FCC guideline value for "uncontrolled" environments, and 0.95% of the FCC guideline value for "controlled" environments (see Appendix A). The total percentage of the ANSI value at the proposed site, considering the cumulative radiation of all stations at the site, is only 13.47% of the limit for "uncontrolled" environments, and 2.69% of the limit for "controlled" environments.

### **OCCUPATIONAL SAFETY**

The licensee of WNUV-DT is committed to the protection of station personnel and/or

tower contractors working in the vicinity of the WNUV-DT antenna. The applicant is committed to reducing power and/or ceasing operation during times of service or maintenance of the transmission systems, when necessary, to ensure protection to personnel. As an additional safety measure, the base of the tower will be fenced to preclude casual access. In light of the above, the proposed WNUV-DT facility should be categorically excluded from RF environmental processing under Section 1.1307(b) of the Commission's Rules.

#### **SUMMARY**

It is submitted that the proposal to modify the authorized facilities of WNUV-DT as described herein complies with the Rules and Regulations of the Federal Communications Commission. This statement, FCC Form 301, and the attached exhibits were prepared by me or under my direct supervision and are believed to be true and correct to the best of my knowledge and belief.

DATED: April 25, 2002

  
John E. Hidle, P.E.





Exhibit No.  
I

Date	24 Apr 2002	
Call Letters	WNUV-DT	Channel 40
Location	Baltimore, MD	
Customer		
Antenna Type	TUD-C5SP-12/44H-1-B	

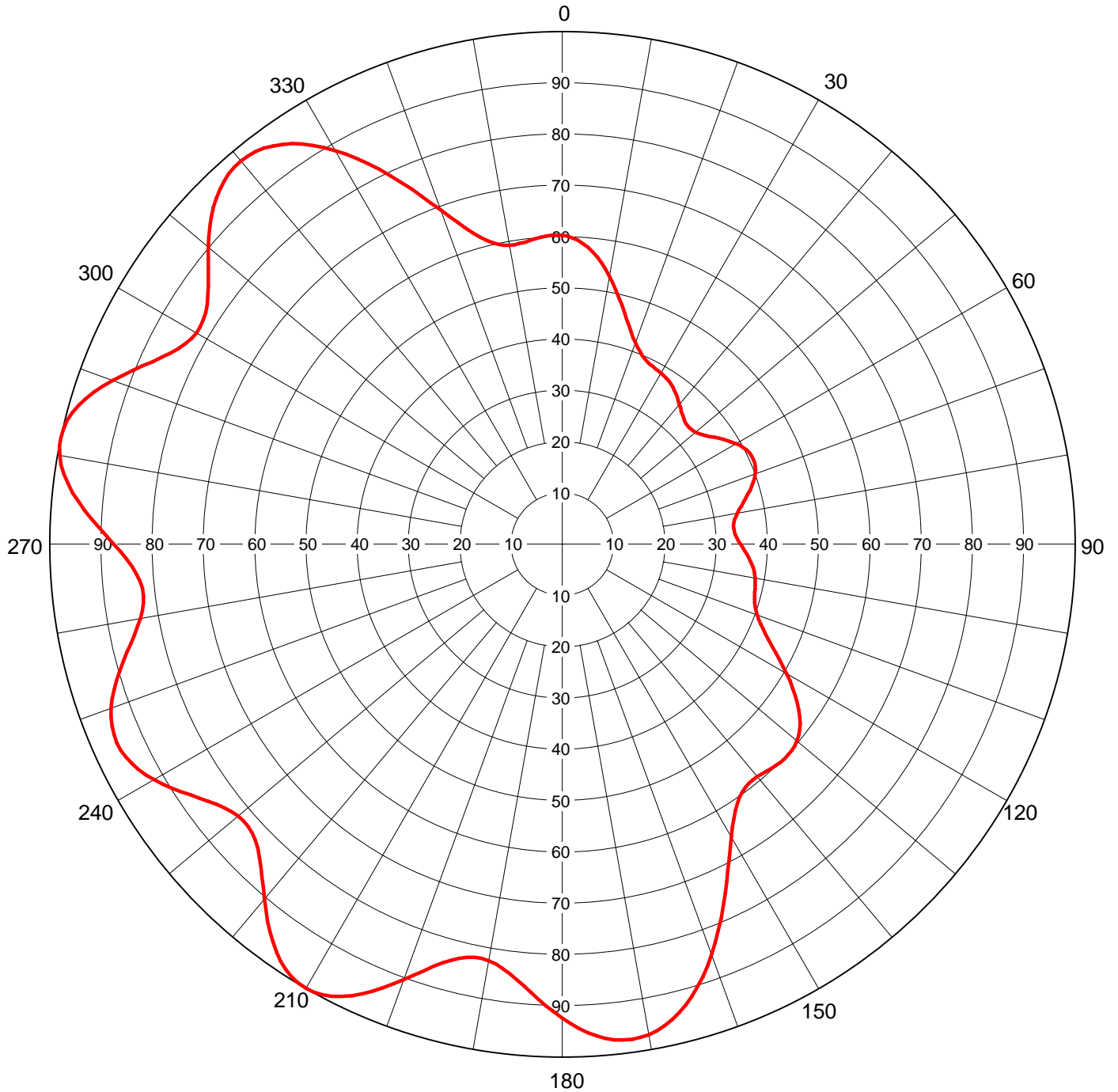
### AZIMUTH PATTERN

RMS Gain at Main Lobe  
Calculated / Measured

**1.90 (2.79 dB)**  
**Calculated**

Frequency  
Drawing #

**629 MHz**  
**TUD-C5SP-629**



Remarks:





Date	<b>24 Apr 2002</b>
Call Letters	<b>WNUV-DT</b> Channel <b>40</b>
Location	<b>Baltimore, MD</b>
Customer	
Antenna Type	<b>TUD-C5SP-12/44H-1-B</b>

### TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #    **TUD-C5SP-629**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.602	45	0.338	90	0.348	135	0.601	180	0.925	225	0.840	270	0.875	315	0.954
1	0.600	46	0.337	91	0.352	136	0.600	181	0.913	226	0.832	271	0.889	316	0.962
2	0.597	47	0.336	92	0.356	137	0.598	182	0.901	227	0.827	272	0.904	317	0.968
3	0.593	48	0.336	93	0.360	138	0.596	183	0.889	228	0.824	273	0.919	318	0.972
4	0.587	49	0.337	94	0.364	139	0.594	184	0.876	229	0.823	274	0.933	319	0.974
5	0.581	50	0.340	95	0.368	140	0.592	185	0.865	230	0.825	275	0.947	320	0.975
6	0.573	51	0.343	96	0.372	141	0.591	186	0.854	231	0.829	276	0.960	321	0.974
7	0.563	52	0.347	97	0.375	142	0.592	187	0.844	232	0.836	277	0.972	322	0.971
8	0.553	53	0.352	98	0.378	143	0.594	188	0.836	233	0.844	278	0.982	323	0.967
9	0.542	54	0.357	99	0.380	144	0.597	189	0.829	234	0.853	279	0.989	324	0.960
10	0.530	55	0.363	100	0.382	145	0.603	190	0.825	235	0.864	280	0.995	325	0.952
11	0.518	56	0.369	101	0.383	146	0.610	191	0.823	236	0.875	281	0.999	326	0.942
12	0.505	57	0.375	102	0.385	147	0.620	192	0.824	237	0.887	282	1.000	327	0.930
13	0.493	58	0.381	103	0.386	148	0.631	193	0.827	238	0.898	283	0.999	328	0.917
14	0.480	59	0.386	104	0.387	149	0.644	194	0.832	239	0.909	284	0.995	329	0.903
15	0.468	60	0.392	105	0.389	150	0.659	195	0.840	240	0.919	285	0.989	330	0.887
16	0.456	61	0.396	106	0.391	151	0.676	196	0.850	241	0.928	286	0.982	331	0.870
17	0.445	62	0.400	107	0.393	152	0.693	197	0.862	242	0.936	287	0.972	332	0.851
18	0.435	63	0.404	108	0.396	153	0.712	198	0.875	243	0.943	288	0.960	333	0.833
19	0.426	64	0.406	109	0.400	154	0.732	199	0.889	244	0.947	289	0.947	334	0.813
20	0.418	65	0.408	110	0.405	155	0.752	200	0.904	245	0.950	290	0.933	335	0.793
21	0.410	66	0.408	111	0.410	156	0.772	201	0.919	246	0.951	291	0.919	336	0.772
22	0.405	67	0.408	112	0.418	157	0.793	202	0.933	247	0.950	292	0.904	337	0.752
23	0.400	68	0.406	113	0.426	158	0.813	203	0.947	248	0.947	293	0.889	338	0.732
24	0.396	69	0.404	114	0.435	159	0.833	204	0.960	249	0.943	294	0.875	339	0.712
25	0.393	70	0.400	115	0.445	160	0.851	205	0.972	250	0.936	295	0.862	340	0.693
26	0.391	71	0.396	116	0.456	161	0.870	206	0.982	251	0.928	296	0.850	341	0.676
27	0.389	72	0.392	117	0.468	162	0.887	207	0.989	252	0.919	297	0.840	342	0.659
28	0.387	73	0.386	118	0.480	163	0.903	208	0.995	253	0.909	298	0.832	343	0.644
29	0.386	74	0.381	119	0.493	164	0.917	209	0.999	254	0.898	299	0.827	344	0.631
30	0.385	75	0.375	120	0.505	165	0.930	210	1.000	255	0.887	300	0.824	345	0.620
31	0.383	76	0.369	121	0.518	166	0.942	211	0.999	256	0.875	301	0.823	346	0.610
32	0.382	77	0.363	122	0.530	167	0.952	212	0.995	257	0.864	302	0.825	347	0.603
33	0.380	78	0.357	123	0.542	168	0.960	213	0.989	258	0.853	303	0.829	348	0.597
34	0.378	79	0.352	124	0.553	169	0.967	214	0.982	259	0.844	304	0.836	349	0.594
35	0.375	80	0.347	125	0.563	170	0.971	215	0.972	260	0.836	305	0.844	350	0.592
36	0.372	81	0.343	126	0.573	171	0.974	216	0.960	261	0.829	306	0.854	351	0.591
37	0.368	82	0.340	127	0.581	172	0.975	217	0.947	262	0.825	307	0.865	352	0.592
38	0.364	83	0.337	128	0.587	173	0.974	218	0.933	263	0.823	308	0.876	353	0.594
39	0.360	84	0.336	129	0.593	174	0.972	219	0.919	264	0.824	309	0.889	354	0.596
40	0.356	85	0.336	130	0.597	175	0.968	220	0.904	265	0.827	310	0.901	355	0.598
41	0.352	86	0.337	131	0.600	176	0.962	221	0.889	266	0.832	311	0.913	356	0.600
42	0.348	87	0.338	132	0.602	177	0.954	222	0.875	267	0.840	312	0.925	357	0.601
43	0.344	88	0.341	133	0.603	178	0.946	223	0.862	268	0.850	313	0.936	358	0.603
44	0.341	89	0.344	134	0.603	179	0.936	224	0.850	269	0.862	314	0.946	359	0.603

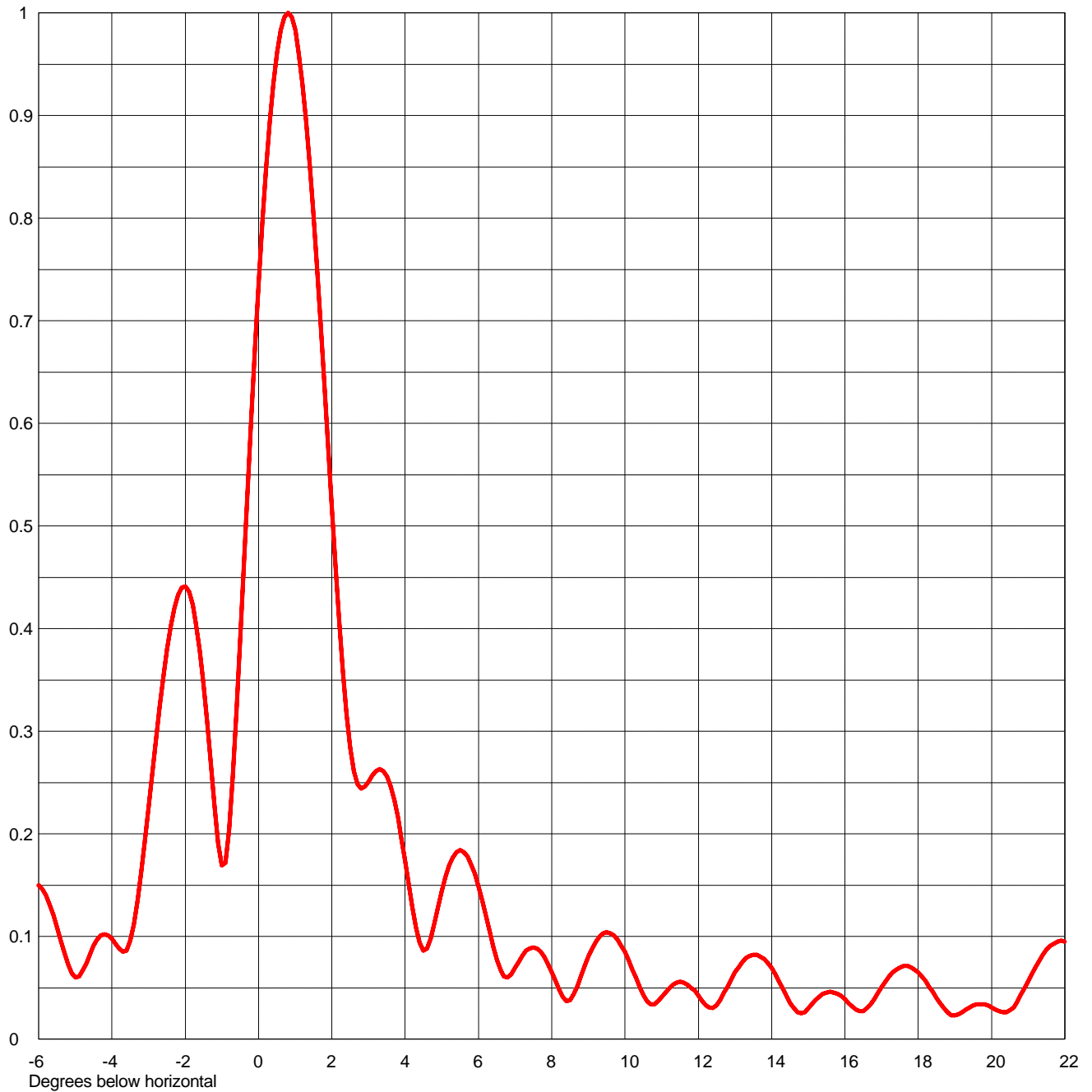
Remarks:



Date	24 Apr 2002	
Call Letters	WNUV-DT	Channel 40
Location	Baltimore, MD	
Customer		
Antenna Type	TUD-C5SP-12/44H-1-B	

### ELEVATION PATTERN

RMS Gain at Main Lobe	21.4 (13.30 dB)	Beam Tilt	0.75 Degrees
RMS Gain at Horizontal	11.6 (10.64 dB)	Frequency	629 MHz
Calculated / Measured	Calculated	Drawing #	12U214075



Remarks:



Date	<b>24 Apr 2002</b>
Call Letters	<b>WNUV-DT</b>
Location	<b>Baltimore, MD</b>
Customer	
Antenna Type	<b>TUD-C5SP-12/44H-1-B</b>

### TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing # **12U214075**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.099	2.4	0.317	10.6	0.037	30.5	0.023	51.0	0.092	71.5	0.008
-9.5	0.069	2.6	0.261	10.8	0.034	31.0	0.023	51.5	0.110	72.0	0.008
-9.0	0.035	2.8	0.244	11.0	0.041	31.5	0.015	52.0	0.114	72.5	0.008
-8.5	0.062	3.0	0.251	11.5	0.056	32.0	0.011	52.5	0.102	73.0	0.008
-8.0	0.071	3.2	0.261	12.0	0.042	32.5	0.016	53.0	0.076	73.5	0.007
-7.5	0.049	3.4	0.261	12.5	0.033	33.0	0.018	53.5	0.046	74.0	0.006
-7.0	0.077	3.6	0.246	13.0	0.065	33.5	0.013	54.0	0.048	74.5	0.005
-6.5	0.134	3.8	0.216	13.5	0.082	34.0	0.009	54.5	0.089	75.0	0.004
-6.0	0.150	4.0	0.175	14.0	0.069	34.5	0.019	55.0	0.135	75.5	0.003
-5.5	0.109	4.2	0.129	14.5	0.035	35.0	0.028	55.5	0.173	76.0	0.003
-5.0	0.060	4.4	0.094	15.0	0.030	35.5	0.029	56.0	0.200	76.5	0.003
-4.5	0.091	4.6	0.088	15.5	0.045	36.0	0.022	56.5	0.212	77.0	0.004
-4.0	0.098	4.8	0.113	16.0	0.039	36.5	0.013	57.0	0.209	77.5	0.004
-3.5	0.096	5.0	0.144	16.5	0.027	37.0	0.014	57.5	0.194	78.0	0.005
-3.0	0.226	5.2	0.169	17.0	0.051	37.5	0.020	58.0	0.168	78.5	0.005
-2.8	0.292	5.4	0.182	17.5	0.070	38.0	0.019	58.5	0.137	79.0	0.006
-2.6	0.353	5.6	0.182	18.0	0.065	38.5	0.013	59.0	0.104	79.5	0.006
-2.4	0.402	5.8	0.170	18.5	0.040	39.0	0.015	59.5	0.075	80.0	0.006
-2.2	0.433	6.0	0.148	19.0	0.023	39.5	0.027	60.0	0.054	80.5	0.006
-2.0	0.441	6.2	0.120	19.5	0.033	40.0	0.036	60.5	0.044	81.0	0.006
-1.8	0.423	6.4	0.090	20.0	0.031	40.5	0.036	61.0	0.043	81.5	0.006
-1.6	0.379	6.6	0.067	20.5	0.028	41.0	0.028	61.5	0.044	82.0	0.006
-1.4	0.310	6.8	0.060	21.0	0.056	41.5	0.016	62.0	0.043	82.5	0.005
-1.2	0.228	7.0	0.069	21.5	0.087	42.0	0.014	62.5	0.038	83.0	0.005
-1.0	0.169	7.2	0.081	22.0	0.095	42.5	0.022	63.0	0.031	83.5	0.005
-0.8	0.204	7.4	0.088	22.5	0.076	43.0	0.025	63.5	0.023	84.0	0.004
-0.6	0.320	7.6	0.088	23.0	0.038	43.5	0.021	64.0	0.015	84.5	0.004
-0.4	0.462	7.8	0.080	23.5	0.035	44.0	0.016	64.5	0.013	85.0	0.004
-0.2	0.605	8.0	0.065	24.0	0.070	44.5	0.025	65.0	0.016	85.5	0.004
0.0	0.736	8.2	0.048	24.5	0.089	45.0	0.039	65.5	0.020	86.0	0.003
0.2	0.847	8.4	0.037	25.0	0.085	45.5	0.048	66.0	0.023	86.5	0.003
0.4	0.931	8.6	0.044	25.5	0.066	46.0	0.047	66.5	0.024	87.0	0.003
0.6	0.983	8.8	0.062	26.0	0.040	46.5	0.038	67.0	0.023	87.5	0.003
0.8	1.000	9.0	0.081	26.5	0.021	47.0	0.024	67.5	0.021	88.0	0.003
1.0	0.983	9.2	0.095	27.0	0.009	47.5	0.018	68.0	0.018	88.5	0.003
1.2	0.932	9.4	0.103	27.5	0.009	48.0	0.025	68.5	0.015	89.0	0.003
1.4	0.853	9.6	0.103	28.0	0.011	48.5	0.030	69.0	0.011	89.5	0.002
1.6	0.752	9.8	0.097	28.5	0.013	49.0	0.027	69.5	0.008	90.0	0.002
1.8	0.638	10.0	0.085	29.0	0.010	49.5	0.025	70.0	0.007		
2.0	0.519	10.2	0.068	29.5	0.009	50.0	0.040	70.5	0.007		
2.2	0.408	10.4	0.051	30.0	0.017	50.5	0.066	71.0	0.007		

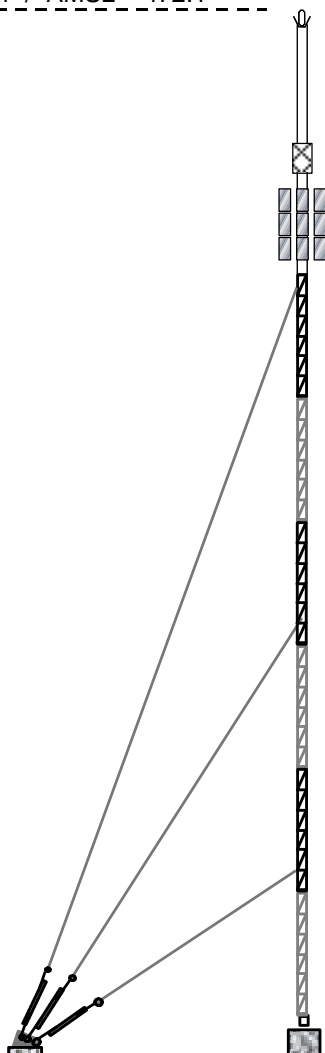
Remarks:

**EXHIBIT 5**COORDINATES NAD-27

NORTH LATITUDE: 39° 20' 10"

WEST LONGITUDE: 76° 38' 59"

--- AGL = 390.1 / AMSL = 472.1 ---



--- WBFF (TV) ---

AMSLAGLHAAT

465.6 m

383.6 m

381.6 m

--- WNUV-DT ---

452.0 m

370.0 m

368.0 m

SITE ELEVATION 82 m A.M.S.L.

**VERTICAL PLAN ANTENNA SKETCH**

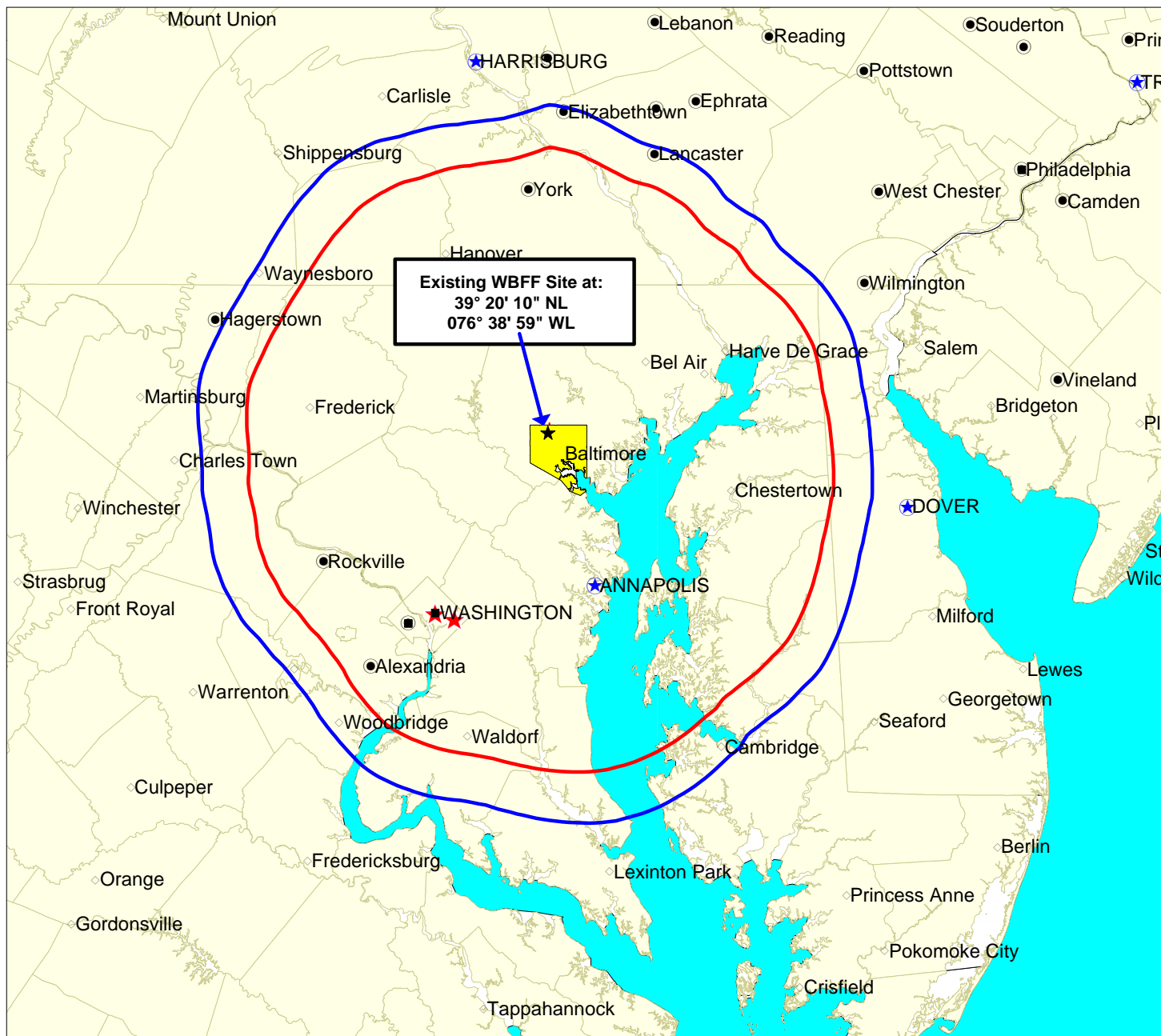
WNUV-DT - BALTIMORE, MARYLAND

Ch. 40 - 900 kW ERP - 368 m HAAT

APRIL, 2002

**CARL T. JONES**  
CORPORATION

NOTE : NOT DRAWN TO SCALE



41 dBu F(50,90) Protected Coverage Contour

48 dBu F(50,90) City Grade Coverage Contour

***WNUV-DT Channel 40, Baltimore, Maryland  
Coverage Contours of Proposed Facility  
900 kW ERP; 368 m HAAT; Directional Antenna  
April, 2002***

**CARL T. JONES  
CORPORATION**

**SUMMARY OF RADIOFREQUENCY  
RADIATION STUDY**  
WNUV-DT, BALTIMORE, MARYLAND  
CHANNEL 40, 900 kW ERP, 368 m HAAT  
APRIL, 2002

<u>CALL</u>	<u>SERVICE</u>	<u>CHANNEL</u>	<u>FREQUENCY</u>	<u>POLARIZATION</u>	<u>ANTENNA HEIGHT **</u>	<u>ERP (kW)</u>	<u>VERT. RELATIVE FIELD FACTOR</u>	<u>PREDICTED POWER DENSITY (mW/cm<sup>2</sup>)</u>	<u>FCC UNCONTROLLED LIMIT (mW/cm<sup>2</sup>)</u>	<u>PERCENT UNCONTROLLED LIMIT</u>
WBFF(TV)	TV	45	659	H	381.6	1765.000	0.300	0.01822	0.439	4.15%
WBFF-DT	DT	46	665	H	368	550.000	0.300	0.01221	0.443	2.75%
WNUV-DT	DT	40	629	H	368	900.000	0.300	0.01998	0.419	4.76%
WWMX-FM	FM	293	106.5	H & V	370	7.400	1.000	0.00361	0.200	1.81%

**TOTAL PERCENTAGE OF ANSI VALUE= 13.47%**

*\*\* The antenna heights indicated above are 2 meters less than the actual antenna heights so that the predicted power densities consider the 2 meter human height allowance.*