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ENGINEERING EXHIBIT  
APPLICATION FOR CONSTRUCTION PERMIT  
WBAL HEARST TELEVISION INC.  
STATION WBAL-TV, BALTIMORE, MARYLAND  
CHANNEL 11 26.6 KW 299 METERS

INTRODUCTION

WBAL Hearst Television Inc. (hereafter, Hearst) is the licensee of Baltimore, Maryland, digital Station WBAL-TV. Hearst, pursuant to program test authority, is operating Station WBAL-TV on Channel 11 with an effective radiated power of 5.0 kW and antenna height above average terrain of 299 meters (BPCDT-20080312AAT). A license application, BPCDT-20090619ABW, is pending for these facilities.

Upon commencement of the foregoing referenced operation, Hearst received numerous complaints of no service and unreliable service. Much effort was expended to determine the problems and to improve the conditions of poor reception. In order to assist in the investigations, an Experimental Authorization, BDSTA-20090713ACP, was obtained which permits WBAL-TV digital operation with effective radiated power increased to 26.6 kW. The conclusion reached was that the 26.6 kW operation, meaningfully, helped alleviate many of the situations involving poor and non-existent service. The instant application for construction permit for permanent operation with effective radiated power of 26.6 kW and antenna height above average terrain of 299 meters is an outshoot of the aforementioned investigations.

INTERFERENCE ANALYSIS

WBAL-TV's 26.6 kW operation is projected to cause new interference that exceeds 0.5 % of the served population of the currently authorized operations of four stations as follows:

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1) **WHTM-TV, Harrisburg, PA:** WBAL-TV's 26.6 kW proposal is predicted to cause 1.12% new interference to BLCDDT-20040812AAH (Ch. 10, 16.2 kW, 311 meters). In addition, Station WHTM-TV has been issued a construction permit, BPCDDT-20080620AGL (Ch. 10, 19.7 kW, 346 meters). The 26.6 kW proposal for WBAL-TV is predicted to cause new interference to 1.61 % of the WHTM-TV's CP served population.

2) **WVPT, Staunton, VA:** WBAL-TV's 26.6 kW proposal is predicted to cause 9.14 % new interference to BLEDDT-20021220ADX (Ch. 11, 3.2 kW, 680 meters). In addition, an application is pending in BPEDT-20081022ABK to increase the effective radiated power for Station WVPT to 10 kW. A Special Temporary Authorization, BDSTA-20090817ACM, has been granted for WVPT operation with effective radiated power of 10 kW. This STA operation replicates the operation proposed in the pending construction permit application in BPEDT-20081022ABK. With respect to this latter proposal, the WBAL-TV, 26.6 kW, proposal is predicted to cause new interference to 1.33 % of the served WVPT population. As explained below, the predicted interference to WVPT is substantially reduced when consideration is given to WVPT's operation of a Distributed Transmission Service ("DTS") system.

3) **WBRE-TV, Wilkes-Barre, PA:** WBAL-TV's 26.6 kW proposal is predicted to cause 1.17 % new interference to BLCDDT-20051123AJX (Ch. 11, 30 kW, 471 meters).

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4) **WWPX-TV, Martinsburg, WV:** WBAL-TV's 26.6 kW proposal is predicted to cause 0.55 % new interference to BLCDT-20021108AAX (Ch. 12, 23 kW, 314 meters).

Hearst has secured an interference acceptance agreement with the licensees of WHTM-TV and WWPX-TV. The agreements are presented elsewhere as part of the instant application for construction permit. Hearst has been unable to secure interference acceptance agreements with WVPT and WBRE-TV. Waiver of the 0.5 % new interference limit is requested elsewhere as part of the instant application.

WVPT DTS OPERATION

In support of the waiver request with respect to WVPT, it is important to note that the prediction of 9.14 % new interference is misleading since it does not take into account the impact of WVPT's DTS operation.

Two DTS transmitters are employed with the main WVPT transmitter pursuant to Special Temporary Experimental Authorizations, BEXP-20050128ASZ and BEXP-20020524ABA. The former is for a Ch. 11 operation at Monterey, VA, with an effective radiated power of 0.008 kW, while the latter is for a Channel 11 operation at Charlottesville, VA, with an effective radiated power of 0.04 kW.

The licensee of WVPT has indicated that it will seek permanent licensed status for the two DTS transmitters as soon as appropriate software has been developed to permit interference predictions that are required by FCC Rules. The two DTS

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experimental transmitters were in operation pursuant to authorities in BDSTA-20090713ACP (Monterey) and BDSTA-20090724ACR (Charlottesville), at the time that WBAL-TV was operating at 26.6 kW. Monterey is too far from WBAL-TV to warrant consideration. However, the principal area of predicted WBAL-TV interference to the main WVPT transmitter is in, and near, Charlottesville. The field observations that were made in Charlottesville and vicinity did not indicate interference to WVPT reception. This is attributable to the service provided by the DTS transmitter at Charlottesville.

In an effort to quantize the extent of interference caused by the 26.6 kW operation for WBAL-TV, despite the lack of a suitable algorithm for this purpose, the undersigned performed separate Longley-Rice calculations for the main and Charlottesville DTS transmitters which could be used to approximate the actual extent of interference to WVPT's composite DTS operation. The Charlottesville transmitter is identified as WVPT2.

Figure 1 is a map that depicts the licensed WVPT 36 dBu contour and the predicted interference losses thereto, including the predicted new interference loss from the WBAL-TV, 26.6 kW, proposal. The relatively high 9.14 % new interference prediction is attributable to losses in and near Charlottesville. Also, shown on Figure 1 is the calculated 36 dBu contour for WVPT2.

A second study was performed to examine the impact of the WBAL-TV 26.6 kW operation on WVPT2. For this particular study, the licensed WVPT main transmitter facility was omitted from the calculation so as to eliminate any possible masking, co-

channel, interference to the WVPT2 operation that would otherwise be calculated by the presently available computer algorithm. This is not an unreasonable approach since the synchronous operations of transmitters in a DTS system is the key to the attainment of successful co-channel interference-free performance. Figure 2 is a graphic depiction of the WVPT2 36 dBu contour and the interference thereto pursuant to the foregoing discussion. The WVPT main transmitter's 36 dBu contour is shown, but the interference losses of Figure 1 have been removed.

Based on the 2000 Census, the results indicate that 174,265 persons reside within the WVPT2 36 dBu contour, but of these, 159,662 persons are not affected by terrain losses. With WBAL-TV at 5.0 kW, the interference received from it, and other DTV stations, excluding the WVPT main transmitter operation, is to 853 persons. With WBAL-TV's 26.6 kW operation in play, the lost population to WVPT2 increases to 1834 persons. Thus, the new interference due to the WBAL-TV 26.6 kW operation is 981 persons, or 0.6177 % of the WVPT2 36 dBu contour served population of 158,809 persons.

Next, an enlarged transparency of Figure 2 was overlaid on an enlarged Figure 1 and the cells of common interference from WBAL-TV's 26.6 kW proposed operation within the WVPT2 36 dBu contour were identified and the sum of the populations therein was evaluated from the computer's summary tabulation of interference cells. This population turned out to be 170 persons. Also, the population within the cells of interference to the WVPT main transmitter that are outside the WVPT2 36 dBu contour, was evaluated. This latter population was 1,567 persons.

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The foregoing process yielded a net interference to WVPT's composite DTS operation of  $981+1,567+170$ , or 2,718 persons from the WBAL-TV proposed 26.6 kW operation, or 0.4927 % of the 551,641 persons that are served by the WVPT main facility. If the populations that are served by WVPT1 and WVPT2, but not by WVPT, are added to the WVPT main transmitter's served population base, the percentage interference to the composite WVPT DTS operation is even lower than 0.4927 %.

Effectively, WVPT is operating as it would pursuant to a licensed DTS facility, and when viewed in this light, the proposed WBAL-TV 26.6 kW operation would comply with the 0.5 % maximum new interference caused constraint, and no waiver, or interference acceptance agreement would be needed.

Following a similar procedure for the interference to the WVPT 10 kW proposal, with two synchronous transmitters, as for the interference to the licensed WVPT de facto DTS operation, would reduce the prediction of 1.33 % new interference from the WBAL-TV 26.6 kW proposal well below 0.5%.

WBRE-TV'S FACILITY

In support of the waiver request with respect to WBRE-TV, the circumstances surrounding the authorization of WBRE-TV's facility in BLCDT-20051123AJX and the equities of the situation warrant waiver of the 0.5 % new interference limit.

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WBRE-TV's licensed facility covers its construction permit BMPCDT-2000501ACL, which authorized operation on Channel 11, with non-directional ERP of 30 kW and antenna height above average terrain of 471 meters. These authorized parameters far exceed the normal maximum permitted facilities for a high band VHF station in Zone I under Section 73.622(f)(5) (as in effect at the time of the application and as currently in effect). For an antenna height of 471 meters above average terrain, the normal maximum ERP is 7.08 kW for a high band VHF station in Zone I.

WBRE-TV's construction permit application in BMPCDT-2000501ACL acknowledged that the facilities would exceed the ERP and HAAT for the station as established in Section 73.622(f)(5). As best as can be determined, the power increase to 30 kW was premised on invocation of the provision of 73.622(f)(3) which allows facilities (up to the maximum permitted by the Rules) in order to match the geographic coverage area of the largest station within the market.

At that time, the prevailing limit for new interference was 2 %. The WBRE-TV application indicated that the new interference to WBAL-TV's Channel 11 facility would be 1.3 %. WBAL-TV, at the time, operated an analog facility on Channel 11. Its digital allotment was on Channel 59. This was subsequently changed to Channel 11, but a transition to digital from analog was after the new interference percentage Rule was changed to 0.5 %. So, WBAL-TV was foreclosed, by unfortunate timing, from securing a power increase under the 2 % criterion that was available to WBRE-TV.

The 1.17 % new interference that the proposed WBAL-TV 26.6 kW operation would cause to WBRE-TV is less than the 1.3 % new interference that WBRE-TV caused to WBAL-TV as part of its 30 kW construction permit application. Considering that the 26.6 kW operation for WBAL-TV has not resulted in actual interference to WBRE-TV, the equities of the situation warrant a waiver of the 0.5 % new interference limit.

In performing the interference analyses, the undersigned employed a Sunblade computer with the William Meintel implementation of the "tv\_process\_post\_transition" algorithm. No changes were made to any of the FCC default settings. The undersigned has routinely replicated FCC results in this fashion in the past.

#### PROPOSED OPERATION DETAILS

The proposed operation for WBAL-TV would employ the same antenna as is used, presently. The antenna is a Dielectric, Model, TW-9B-11-R(S) with an electrical beam tilt of 0.75°. The antenna power gain at the 0.75° beam tilt angle is 9.0 (9.54 dB) relative to a dipole. Figure 3 is the elevation relative field radiation pattern for the antenna, and Figure 4 is the tabulation of relative fields for the pattern of Figure 3.

The supporting tower bears ASRN 1035558. The tower's NAD 1927 geographic coordinates are: 39° 20' 05" North Latitude; 76° 39' 03" West Longitude. The antenna radiation center is 286 meters above ground level, and 383 meters above mean sea level.



Figure 5 is a map that depicts the 43 dBu and 36 dBu service contours for the proposed WBAL-TV operation. The map demonstrates that the proposed 26.6 kW operation will produce a 43 dBu contour that encompasses all of Baltimore, as required by the Rules. The underlying supporting data for the contours of Figure 5 are furnished in Figure 6.

#### ENVIRONMENTAL IMPACT CONSIDERATIONS

Environmental impact concerns have been considered if the instant proposal is implemented. Since the site that is to be employed, is already used for broadcasting purposes, only the environmental impact concern relating to radiofrequency radiation (rfr) exposure of humans is germane from among the list of environmentally sensitive conditions listed in Section 1.1307 of the FCC Rules.

The WBAL-TV site is shared with Stations WMAR-TV, Channel 38, and WJZ-TV, Channel 13. Consideration has been given to the prospect for human exposure to radiofrequency radiation (rfr) in excess of the FCC's adopted standard for both controlled and uncontrolled location conditions.

The Channel 38 operation for WMAR-TV is for an ERP of 1000 kW, and the Channel 13 operation for Station WJZ-DT is for a maximum ERP of 28.8 kW

An initial test calculation for WBAL-DT, alone, has been performed using the FCC's OET Bulletin 65 suggested methodology to determine if at uncontrolled locations, the power density level contribution of WBAL-DT would exceed the 5 % threshold that

could trigger the need for a concerted response with the other two stations for remedial action, in the event of an overexposure condition.

From the elevation pattern of Figure 3 for the WBAL-DT antenna, the relative field for steep depression angles, ranging from 23.5° to 90° below the horizontal plane, does not exceed 0.1. The power density level contribution for WBAL-DT to a test target that is located two meters above ground level at the tower base, using a relative field of 0.1, was determined to be only 0.06 % of the adopted standard's maximum permissible exposure (MPE) level of 0.2 mW/cm<sup>2</sup> for high VHF band stations. The foregoing determination was made using a distance of 275 meters. This is the distance from the bottom of the antenna to the target. The calculation included a ground reflection coefficient of 1.6. The single WBAL-TV contribution to the ambient power density environment at uncontrolled locations is too low to warrant consideration of the combined impact that could result from the simultaneous operations of the three stations located atop the tower.

Turning to controlled (worker) exposure matters, the consortium that owns the tower has established procedures for reducing, or terminating, excitation to antennas, if needed, to avoid worker overexposure. The tower is enclosed in a fenced area with access available only to authorized personnel. In addition rfr hazard warning signs are conspicuously posted.

Based on the foregoing, an "Environmental Assessment" is not required for the proposed operation.

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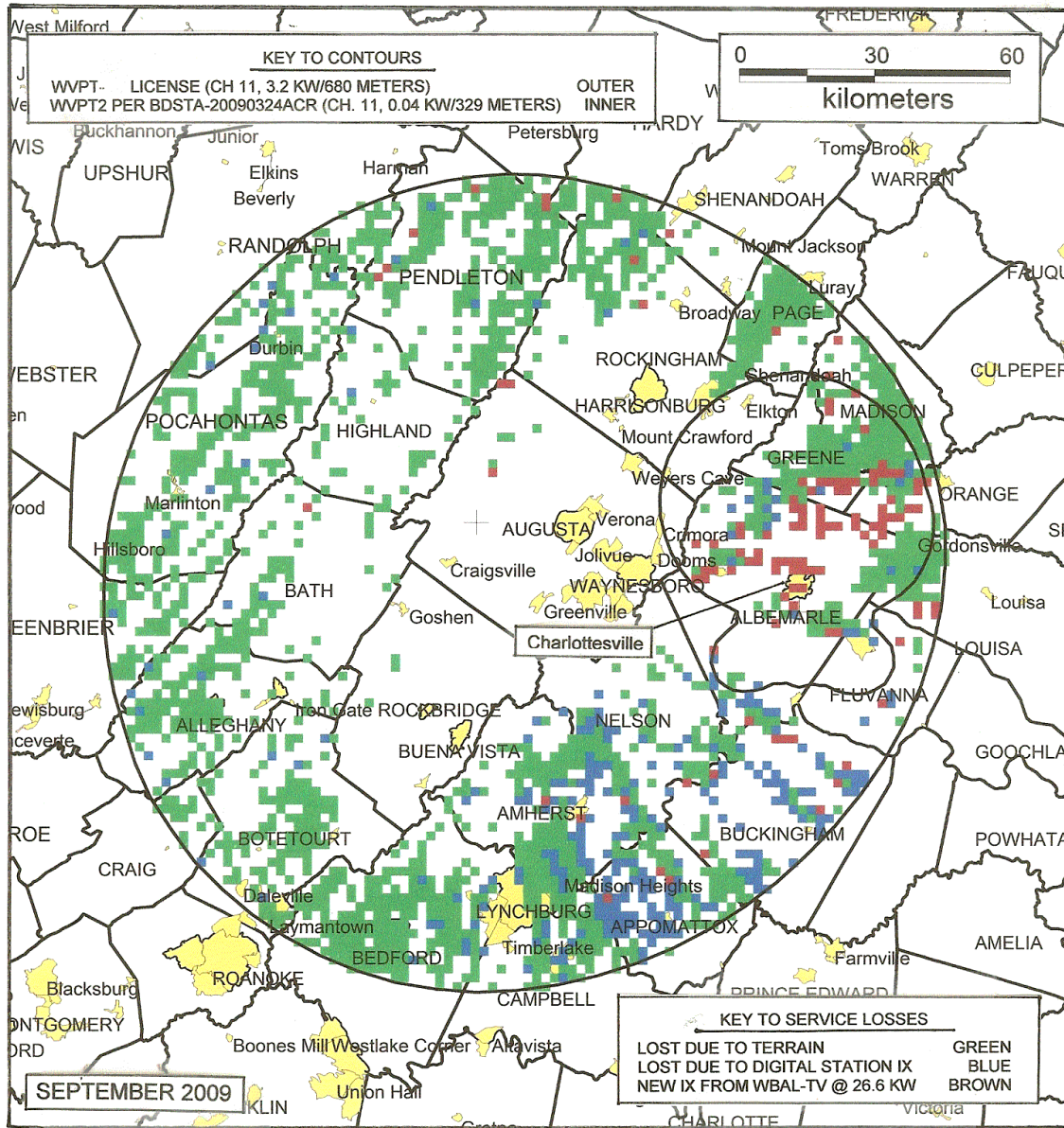
I declare under penalty of perjury that the foregoing is true and correct. Executed  
on April 21, 2010.

*Bernard R. Segal, P.E.*

Bernard R. Segal, P. E.

Maryland Registration #25811

FIGURE 1

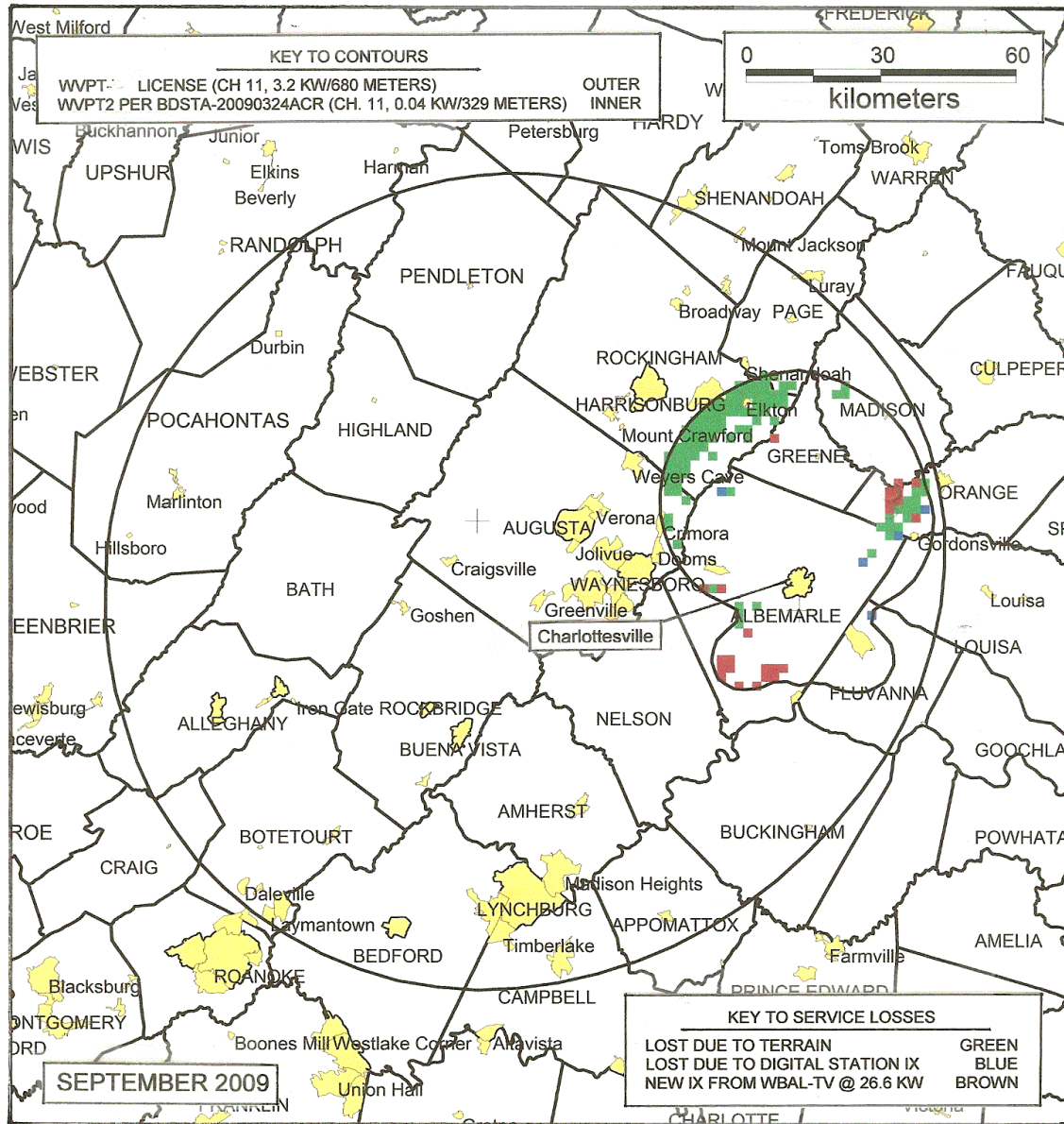


**PREDICTED SERVICE LOSSES WITHIN  
 LICENSED WVPT 36 DBU CONTOUR  
 WITH 36 DBU CONTOUR FOR WVPT2 ADDED**

**WBAL HEARST TELEVISION INC.  
 STATION WBAL-TV, BALTIMORE, MARYLAND**

**Bernard R. Segal, P. E. Consulting Engineer**

FIGURE 2



**SERVICE LOSSES  
 WITHIN WVPT2 36 DBU CONTOUR**

WBAL HEARST TELEVISION INC.  
 STATION WBAL-TV, BALTIMORE, MARYLAND

Bernard R. Segal, P. E. Consulting Engineer



Proposal Number **DCA-7989**  
Date **16-Jul-98**  
Call Letters **WBAL**  
Location **Baltimore, MD**  
Customer  
Antenna Type **TW-9B11-R (S)**

FIGURE 3

Channel **11**

### ELEVATION PATTERN

RMS Gain at Main Lobe **9.00 ( 9.54 dB )**  
RMS Gain at Horizontal **8.60 ( 9.34 dB )**  
Calculated / Measured **Calculated**

Beam Tilt **0.75 deg**  
Frequency **201.00 MHz**  
Drawing # **19W090075-90**

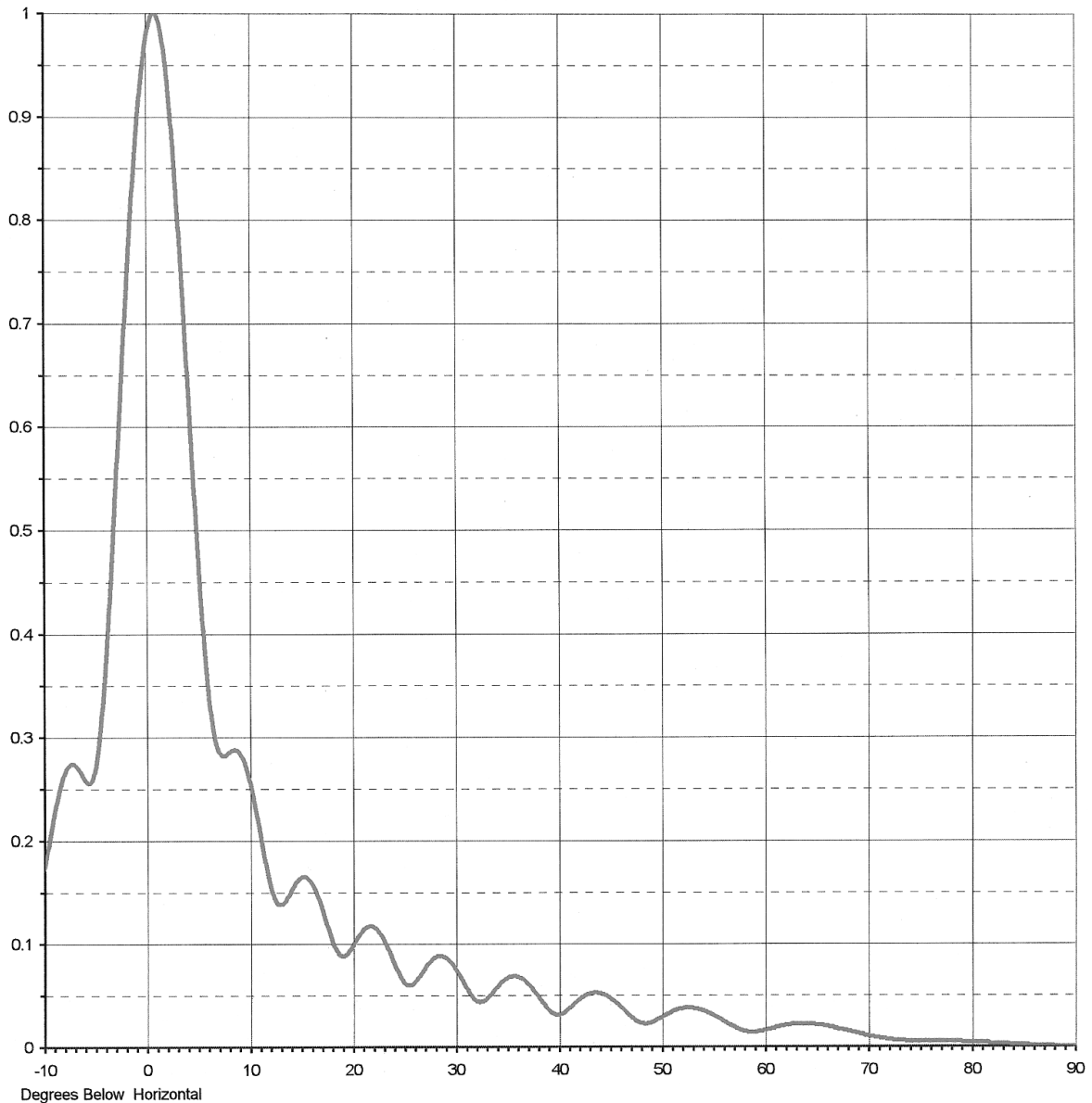




FIGURE 4

Proposal Number **DCA-7989**  
 Date **16-Jul-98**  
 Call Letters **WBAL** Channel **11**  
 Location **Baltimore, MD**  
 Customer  
 Antenna Type **TW-9B11-R (S)**

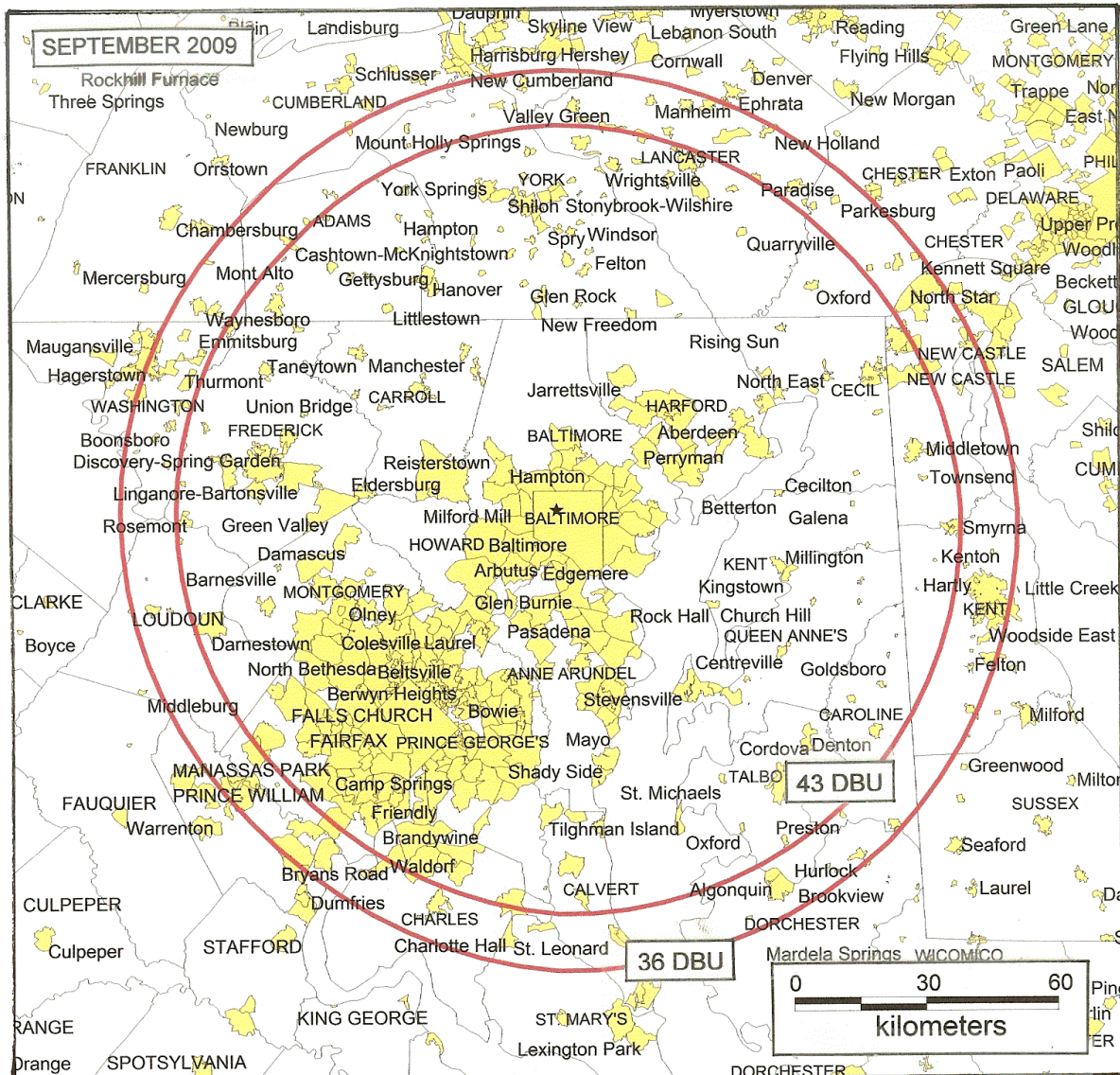
### TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **19W090075-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.173	2.4	0.900	10.6	0.232	30.5	0.068	51.0	0.034	71.5	0.008
-9.5	0.200	2.6	0.875	10.8	0.221	31.0	0.059	51.5	0.036	72.0	0.007
-9.0	0.226	2.8	0.847	11.0	0.210	31.5	0.051	52.0	0.037	72.5	0.006
-8.5	0.249	3.0	0.818	11.5	0.183	32.0	0.045	52.5	0.038	73.0	0.006
-8.0	0.265	3.2	0.787	12.0	0.159	32.5	0.044	53.0	0.038	73.5	0.006
-7.5	0.273	3.4	0.754	12.5	0.143	33.0	0.046	53.5	0.037	74.0	0.005
-7.0	0.273	3.6	0.721	13.0	0.138	33.5	0.051	54.0	0.035	74.5	0.005
-6.5	0.267	3.8	0.686	13.5	0.141	34.0	0.057	54.5	0.033	75.0	0.005
-6.0	0.258	4.0	0.651	14.0	0.150	34.5	0.063	55.0	0.031	75.5	0.005
-5.5	0.256	4.2	0.615	14.5	0.159	35.0	0.066	55.5	0.028	76.0	0.005
-5.0	0.270	4.4	0.580	15.0	0.164	35.5	0.068	56.0	0.025	76.5	0.005
-4.5	0.308	4.6	0.545	15.5	0.165	36.0	0.068	56.5	0.022	77.0	0.005
-4.0	0.369	4.8	0.510	16.0	0.160	36.5	0.066	57.0	0.020	77.5	0.005
-3.5	0.448	5.0	0.477	16.5	0.150	37.0	0.062	57.5	0.017	78.0	0.005
-3.0	0.536	5.2	0.445	17.0	0.136	37.5	0.057	58.0	0.015	78.5	0.005
-2.8	0.573	5.4	0.416	17.5	0.120	38.0	0.050	58.5	0.014	79.0	0.005
-2.6	0.610	5.6	0.388	18.0	0.105	38.5	0.043	59.0	0.014	79.5	0.004
-2.4	0.647	5.8	0.364	18.5	0.093	39.0	0.037	59.5	0.015	80.0	0.004
-2.2	0.684	6.0	0.343	19.0	0.088	39.5	0.033	60.0	0.016	80.5	0.004
-2.0	0.719	6.2	0.324	19.5	0.090	40.0	0.031	60.5	0.017	81.0	0.004
-1.8	0.754	6.4	0.310	20.0	0.097	40.5	0.033	61.0	0.018	81.5	0.004
-1.6	0.787	6.6	0.298	20.5	0.106	41.0	0.037	61.5	0.020	82.0	0.003
-1.4	0.819	6.8	0.291	21.0	0.112	41.5	0.041	62.0	0.021	82.5	0.003
-1.2	0.848	7.0	0.285	21.5	0.116	42.0	0.046	62.5	0.021	83.0	0.003
-1.0	0.876	7.2	0.283	22.0	0.117	42.5	0.049	63.0	0.022	83.5	0.003
-0.8	0.901	7.4	0.282	22.5	0.113	43.0	0.051	63.5	0.022	84.0	0.002
-0.6	0.924	7.6	0.282	23.0	0.105	43.5	0.053	64.0	0.022	84.5	0.002
-0.4	0.944	7.8	0.284	23.5	0.095	44.0	0.052	64.5	0.022	85.0	0.002
-0.2	0.961	8.0	0.285	24.0	0.083	44.5	0.051	65.0	0.021	85.5	0.002
0.0	0.975	8.2	0.287	24.5	0.072	45.0	0.048	65.5	0.021	86.0	0.001
0.2	0.986	8.4	0.287	25.0	0.063	45.5	0.044	66.0	0.020	86.5	0.001
0.4	0.994	8.6	0.287	25.5	0.060	46.0	0.040	66.5	0.019	87.0	0.001
0.6	0.999	8.8	0.287	26.0	0.062	46.5	0.035	67.0	0.018	87.5	0.001
0.8	1.000	9.0	0.284	26.5	0.068	47.0	0.030	67.5	0.017	88.0	0.000
1.0	0.998	9.2	0.281	27.0	0.075	47.5	0.026	68.0	0.015	88.5	0.000
1.2	0.993	9.4	0.277	27.5	0.082	48.0	0.023	68.5	0.014	89.0	0.000
1.4	0.985	9.6	0.271	28.0	0.086	48.5	0.022	69.0	0.013	89.5	0.000
1.6	0.974	9.8	0.268	28.5	0.088	49.0	0.023	69.5	0.012	90.0	0.000
1.8	0.959	10.0	0.260	29.0	0.087	49.5	0.026	70.0	0.011		
2.0	0.942	10.2	0.252	29.5	0.083	50.0	0.028	70.5	0.010		
2.2	0.922	10.4	0.242	30.0	0.076	50.5	0.031	71.0	0.009		



FIGURE 5



**CALCULATED CONTOURS**  
**WBAL HEARST TELEVISION INC.**  
**STATION WBAL-TV, BALTIMORE, MARYLAND**  
**CHANNEL 11 26.6 KW 299 METERS**  
**Bernard R. Segal, P. E. Consulting Engineer**



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FIGURE 6

ELEVATION DATA AND  
DISTANCES TO SERVICE CONTOURS  
PROPOSED WBAL-TV, BALTIMORE, MARYLAND  
CH. 11 26.6 KW 299 METERS

NAD '27 Site Coordinates: 39° 20' 05" N; 76° 39' 03" W  
Antenna Radiation Center: 383 meters AMSL

Azimuth (Deg. True)	HAAT (meters)	Depression Angle To Radio Horizon (degrees)	Distance To	
			43 dBu Contour (km)	36 dBu Contour (km)
0	284	0.5	86.7	99.1
10	269	0.5	86.1	98.6
20	274	0.5	86.3	98.7
30	281	0.5	86.6	99.0
40	269	0.5	86.1	98.6
50	273	0.5	86.3	98.7
60	288	0.5	86.9	99.3
70	307	0.5	88.0	100.5
80	324	0.5	89.2	101.9
90	344	0.5	90.7	103.5
100	356	0.5	91.6	104.4
110	362	0.5	92.1	104.9
120	362	0.5	92.1	104.9
130	370	0.5	92.7	105.5
140	377	0.5	93.2	106.0
150	374	0.5	92.9	105.8
160	367	0.5	92.4	105.2
170	360	0.5	91.9	104.7
180	352	0.5	91.3	104.1
190	347	0.5	90.9	103.7
200	347	0.5	90.9	103.7
210	321	0.5	89.0	101.6
220	288	0.5	86.9	99.3
230	272	0.5	86.2	98.7
240	273	0.5	86.3	98.7
250	269	0.5	86.1	98.6
260	272	0.5	86.2	98.7
270	258	0.4	85.6	98.1
280	250	0.4	85.2	97.7
290	238	0.4	84.5	96.9
300	242	0.4	84.8	97.2
310	237	0.4	84.5	96.9
320	237	0.4	84.5	96.9
330	242	0.4	84.8	97.2
340	255	0.4	85.5	98.0
350	261	0.4	85.8	98.3

Note: In each direction, the relative field at the depression angle to the radio horizon exceeded 90% of the maximum in the vertical plane. Therefore, the maximum ERP was used to determine the contour distance.