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ENGINEERING EXHIBIT  
FLASH-CUT APPLICATION FOR  
DIGITAL TRANSLATOR CONSTRUCTION PERMIT  
WYFF HEARST TELEVISION INC.  
STATION W05AR, BRYSON CITY, ETC., NORTH CAROLINA  
CHANNEL 5 0.089 KW (MAX-DA)

WYFF Hearst Television Inc. (hereafter, Hearst) is the licensee of analog television translator Station W05AR, Bryson City, Etc., North Carolina. The station operates on Channel 5 with a maximum peak visual effective radiated power of 0.179 kW using a directional antenna. The antenna radiation center height is 1391 meters above mean sea level. By means of the instant application, Hearst seeks a construction permit to flash-cut the W05AR, analog, operation to digital. To identify the digital operation in the discussions herein, the "LD" suffix has been added to the W05AR call sign.

The proposed operation for Station W05AR-LD is from the same site as for Station W05AR. Hence the required overlap of coverage contours will be achieved. A new Larcan, digital translator, Model MXi 201 VL, will replace the present analog translator. A new antenna will replace the existing antenna. The new antenna will be a composite consisting of two Kathrein, Scala Division, model HDCA-5, Yagi antennas. One Yagi will be oriented at 260° true, and the other Yagi will be oriented at 335° true. The input power will be split with 33% of the power going to the Yagi that is oriented 260° true, and the remaining 67% of the power going to the Yagi that is oriented at 335° true. The axis for the main beam of radiation will be at 335° true.

The horizontal plane radiation pattern for the antenna is provided in Figure 1. Figure 2 includes the tabulation of relative fields for the pattern of Figure 1. The maximum power gain for the antenna is 5.3 dBd.

Energy from the translator will be transferred to the antenna by means of a 100-foot (30.5 meter) length of Andrew, type AVA50-5 coaxial transmission line. The line loss is 0.30 dB/100 feet at Channel 5 (76-82 MHz). The maximum effective radiated

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power for the proposed W05AR-LD operation will be -10.5 dBk, corresponding to 0.089 kW, after taking into account the transmitter output power of 28 watts (-15.5 dBk); the transmission line loss of 0.30 dB; and the antenna power gain of 5.3 dBd.

The antenna will be mounted with the radiation center at 1390 meters AMSL. The overall tower height, with the antenna, will be 1391.3 meters AMSL. The site elevation is 1369 mAMSL. The site NAD '27 geographic coordinates are: 35° 22' 53.0" N. Latitude; 83° 24' 52.0" W. Longitude. A filter that provides a stringent mask will be employed as part of the transmission system installation. The translator will meet FCC performance requirements. The structure does not require an ASRN according to the "Towair" study that was conducted for the installation.

Allocation concerns have been considered for this proposal using the Longley-Rice prediction methodology in accordance with the procedures set forth in OET Bulletin 69. For interference analysis purposes, the undersigned employed a Sunblade processor and the "tv\_process\_2010" program that was developed by Mr. William Meintel. The undersigned has repeatedly replicated FCC results with the Sunblade processor and the mentioned program. The cell size used was 1 kilometer on a side and the terrain sampling intervals were 1 kilometer.

The allocation study results for the proposed W05AR-LD operation exceed 20 pages so only a resume of the results is provided. The study results show that no full service digital television station, Class A station, or LPTV station would receive new interference that exceeds the permitted amount according to the interference protection provisions of Section 74.793 of the Rules.

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Station WCYB-TV, Bristol, Tennessee's Channel 5 operation in BLCDT-20100629AUD is predicted to receive new interference to 0.4891 % of its served population. The maximum permitted, Section 74.793, interference limit is 0.5 % .

Station W06AJ, Franklin, Etc. North Carolina's Channel 6 operation in BDFCDTV-20120104AAN is predicted to receive interference to 1.6515% of its served population. The maximum permitted, Section 74.793, interference limit is 2.0 % . No other stations are predicted to receive interference from the proposed operation.

The impact that effectuation of the instant proposal could have on the environment has been considered. Since the site that will be employed is already used for broadcasting purposes, only the environmental impact concern of Section 1.1307 of the Rules that relates to human exposure to radio-frequency radiation (rfr), merits consideration. Using the criteria set forth in OET Bulletin 65 as the touchstone for evaluation, the prospective impacts relative to the general public and to workers have been addressed.

The FCC's adopted limit at Channel 5 (76-82 MHz) for general public, whole body, rfr exposure is  $0.2 \text{ mW/cm}^2$ . A test calculation has been performed for the proposed W05AR-LD operation toward an imaginary target that is located two meters above ground level at the base of the antenna supporting tower. The base of the tower is the closest that a member of the general public could get to the tower. The 2-meter height above ground level elevation approximates the height of a standing person's head.

The antenna radiation center is to be located 21 meters above ground level. The distance from the antenna to the target was 19 meters. As recommended in O.E.T. Bulletin 65, a ground reflection coefficient of 1.6 was employed. For the purpose of the

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study evaluation, flat earth was assumed in the vicinity of the tower site. In actuality the terrain slopes downward away from the tower. No allowance was made for vertical plane directivity, and the maximum ERP of 89 watts was assumed to be radiated toward the target. Thus, the calculation result errs on the conservative side.

The test calculation yielded a power density level of  $0.0082 \text{ mW/cm}^2$  at the target, corresponding to a contribution to the ambient power density level of 4.1 % of the maximum permitted exposure (MPE) of  $0.2 \text{ mW/cm}^2$ . The proposal complies with the general public radiation exposure limit permitted by the FCC.

As to controlled (worker) location rfr exposure concerns, a radiation hazard warning sign is posted on the tower, and excitation to the antenna is terminated whenever work must be performed on, or near the antenna. It is believed that these procedures are adequate to avoid overexposure of workers to rfr.

The instant proposal complies with the FCC's adopted human rfr exposure standards for controlled and uncontrolled locations. An Environmental Assessment is not required for this proposal.

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 9, 2012.

*Bernard R. Segal, P.E.*  
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FIGURE 1

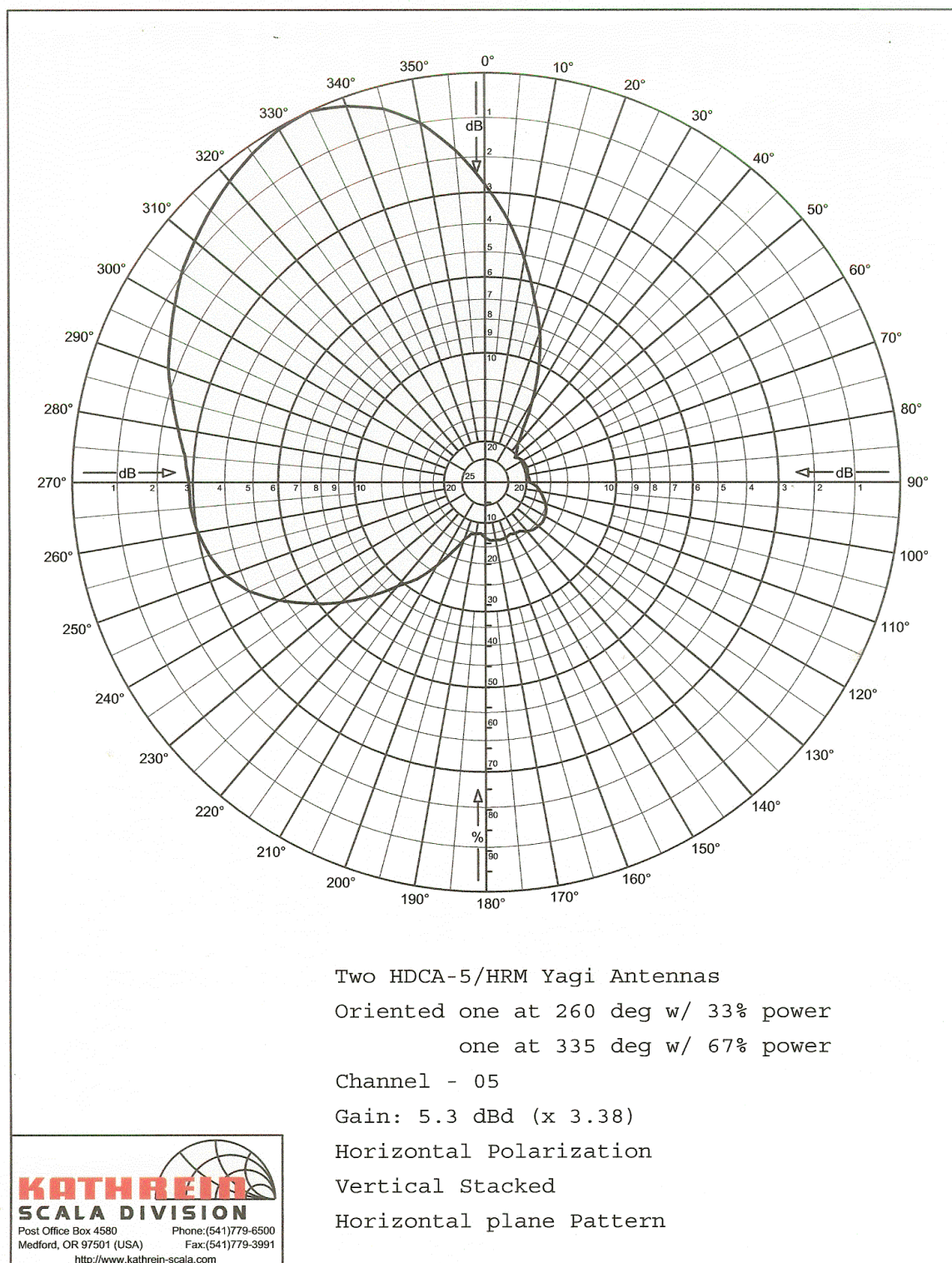


FIGURE 2



Two HDCA-5/HRM Yagi Antennas

Oriented one at 260 deg w/ 33% power

one at 335 deg w/ 67% power

Channel - 05

Gain: 5.3 dBd (x 3.38)

Horizontal Polarization

Vertical Stacked

Horizontal plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	0.728	-2.75	2.55	1.80	180	0.136	-17.33	-12.03	0.06
5	0.644	-3.83	1.47	1.40	185	0.126	-17.98	-12.68	0.05
10	0.553	-5.14	0.16	1.04	190	0.129	-17.81	-12.51	0.06
15	0.464	-6.67	-1.37	0.73	195	0.131	-17.64	-12.34	0.06
20	0.390	-8.18	-2.88	0.51	200	0.149	-16.56	-11.26	0.07
25	0.306	-10.29	-4.99	0.32	205	0.187	-14.56	-9.26	0.12
30	0.227	-12.88	-7.58	0.17	210	0.235	-12.58	-7.28	0.19
35	0.160	-15.93	-10.63	0.09	215	0.289	-10.79	-5.49	0.28
40	0.122	-18.25	-12.95	0.05	220	0.331	-9.62	-4.32	0.37
45	0.108	-19.34	-14.04	0.04	225	0.393	-8.11	-2.81	0.52
50	0.094	-20.58	-15.28	0.03	230	0.457	-6.81	-1.51	0.71
55	0.101	-19.95	-14.65	0.03	235	0.516	-5.74	-0.44	0.90
60	0.106	-19.51	-14.21	0.04	240	0.576	-4.79	0.51	1.12
65	0.106	-19.51	-14.21	0.04	245	0.630	-4.01	1.29	1.35
70	0.107	-19.37	-14.07	0.04	250	0.668	-3.51	1.79	1.51
75	0.106	-19.46	-14.16	0.04	255	0.691	-3.21	2.09	1.62
80	0.104	-19.66	-14.36	0.04	260	0.707	-3.01	2.29	1.69
85	0.106	-19.46	-14.16	0.04	265	0.716	-2.90	2.40	1.74
90	0.107	-19.37	-14.07	0.04	270	0.717	-2.88	2.42	1.74
95	0.126	-18.02	-12.72	0.05	275	0.729	-2.74	2.56	1.80
100	0.136	-17.36	-12.06	0.06	280	0.755	-2.44	2.86	1.93
105	0.145	-16.76	-11.46	0.07	285	0.784	-2.11	3.19	2.08
110	0.156	-16.16	-10.86	0.08	290	0.816	-1.77	3.53	2.25
115	0.163	-15.78	-10.48	0.09	295	0.840	-1.51	3.79	2.39
120	0.167	-15.55	-10.25	0.09	300	0.867	-1.24	4.06	2.55
125	0.170	-15.41	-10.11	0.10	305	0.895	-0.96	4.34	2.72
130	0.167	-15.52	-10.22	0.09	310	0.917	-0.76	4.54	2.85
135	0.164	-15.68	-10.38	0.09	315	0.939	-0.54	4.76	2.99
140	0.157	-16.06	-10.76	0.08	320	0.960	-0.35	4.95	3.13
145	0.146	-16.71	-11.41	0.07	325	0.979	-0.18	5.12	3.25
150	0.145	-16.80	-11.50	0.07	330	0.995	-0.04	5.26	3.36
155	0.141	-17.01	-11.71	0.07	335	1.000	0.00	5.30	3.39
160	0.145	-16.80	-11.50	0.07	340	0.978	-0.20	5.10	3.24
165	0.146	-16.71	-11.41	0.07	345	0.944	-0.50	4.80	3.02
170	0.144	-16.86	-11.56	0.07	350	0.891	-1.00	4.30	2.69
175	0.144	-16.86	-11.56	0.07	355	0.814	-1.79	3.51	2.24