

TECHNICAL EXHIBIT
APPLICATION FOR MODIFICATION OF
DTV CONSTRUCTION PERMIT
STATION WAVE-DT
LOUISVILLE, KENTUCKY
CH 47 1000 KW (MAX-DA) 392 M

Technical Narrative

This Technical Exhibit supports an application for digital television (DTV) station WAVE-DT which is paired with NTSC (analog) channel 3 at Louisville, Kentucky. This application requests a modification of its construction permit (CP) for a digital television operation on channel 47 at Louisville.¹

Proposed Facilities

Station WAVE-DT proposes to operate DTV channel 47 from a new tower to be constructed at the *Knobs Tower Farm* near Louisville. The proposed DTV transmission system will be mounted atop the new tower. It is proposed to operate from a master antenna system employing an Andrew ABBP14H4-HTOC5-26/51 antenna with a maximum average effective radiated power of 1,000 kilowatts. The antenna height above average terrain for the channel 47 DTV operation will be 392 meters. Since the proposed site is located more than 5 kilometers from the allotment reference site, an allocation study was completed to ensure no prohibited interference would occur.

¹ The current WAVE-DT construction permit file number is BMPCDT-20000501AFG.

The proposed DTV transmitter site will be located on a new tower located at:

38° 22' 08" North Latitude
85° 49' 48" West Longitude

A map of the transmitter site is provided in Figure 1. A sketch of antenna and pertinent elevations are included as Figure 2.

Figure 3 are the horizontal and vertical plane radiation patterns for the proposed DTV antenna system.

Figure 4 is a map showing the DTV predicted coverage contour. The map provides the predicted F(50,90) noise limited contour. The extent of the contour has been calculated using the normal FCC prediction method. The Louisville city limits were derived from information contained in the 2000 U.S. Census of Population and Housing.

Allocation Considerations

The proposed WAVE-DT Channel 47 facility meets the requirements of Section 73.623 of the FCC Rules concerning predicted interference to other existing NTSC facilities and DTV allotments and assignments. Longley-Rice interference analyses were conducted pursuant to the requirements of the FCC Rules; OET Bulletin No. 69; and published FCC guidelines for preparation of such interference analyses. The Longley-

Rice interference analyses were conducted using the software developed by du Treil, Lundin & Rackley, Inc. based on the FCC published software routines.² Stations selected for analysis were determined pursuant to the distance requirements outlined in the FCC DTV Processing Guidelines Public Notice. The results of the interference analyses for the proposed WAVE-DT facility are summarized herein at Figure 5.

As indicated therein, the proposed facility will meet the 2%/10% criterion outlined in the FCC Rules and published guidelines with respect to all considered stations.³

Class A Allocation Impact Study

There are two possible Class A eligible low power television stations (LPTV) that may be allocation concerns to WAVE-DT; WJYL-LP on Channel 45 at Clarksville, Indiana and W47AZ at Indianapolis, Indiana.⁴

Since the WJYL-LP maximum effective radiated power of 42 kilowatts, it is not an allocation concern pursuant to Section 73.613 of the Commission's Rules.

² The du Treil, Lundin & Rackley, Inc. DTV interference analysis program is based on the program and procedures outlined by the FCC in the Sixth Report and Order; subsequent Memorandum Opinion and Order; and FCC OET Bulletin No. 69. A nominal grid size resolution of 2 km was employed.

³ Interference analysis results reflect the net change in interference to a given station considering the interference predicted to occur from all other stations (i.e. "masking") including the allotment facility for WAVE-DT. This properly reflects the net interference change for determining compliance with the FCC DTV 2%/10% *de minimis* standard.

⁴ See FCC File Number: BLTTL-20000211AAQ for station W47AZ, which recently changed its call sign to WBXI-CA.

As for W47AZ at Indianapolis, there is contour overlap using the FCC predicted coverage contours. However, using OET-69, there is no interference to W47AZ even predicted, as noted in Figure 6. Therefore, W47AZ is not an allocation concern.

Radiofrequency Electromagnetic Field Exposure

The proposed WAVE-DT facilities were evaluated in terms of potential radiofrequency electromagnetic field exposure at ground level to workers and the general public. The radiation center for the proposed WAVE-DT antenna is located 283 meters (930 feet) above ground level. The effective radiated power is 1,000 kilowatts. A relative field value of 0.2 is assumed for the antenna's downward radiation. As can be seen from Sheet 4 of Figure 3, the maximum downward relative field for depression angles greater than 10° does not exceed 0.2. The calculated power density at a point 2 meters above ground level is 0.02 mW/cm². This is less than five percent of the Commission's recommended limit of 0.45 mW/cm² for channel 47 in an "uncontrolled" 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 to the site. 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 WAVE-DT operation appears to be otherwise categorically excluded from environmental processing.

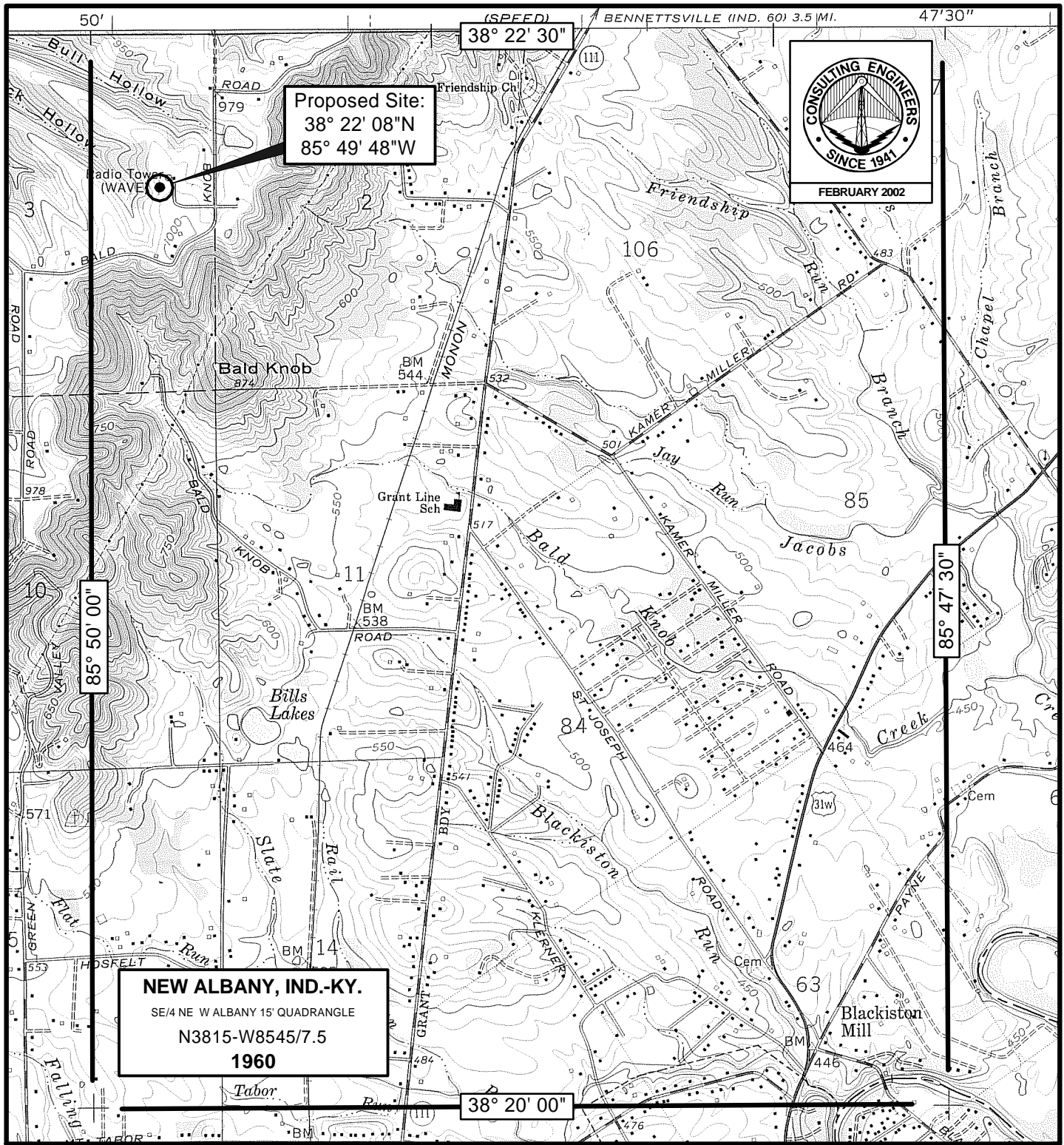
Charles Cooper

du Treil, Lundin & Rackley, Inc.
201 Fletcher Avenue
Sarasota, Florida 32437

941.329.6000

February 18, 2002

Figure 1

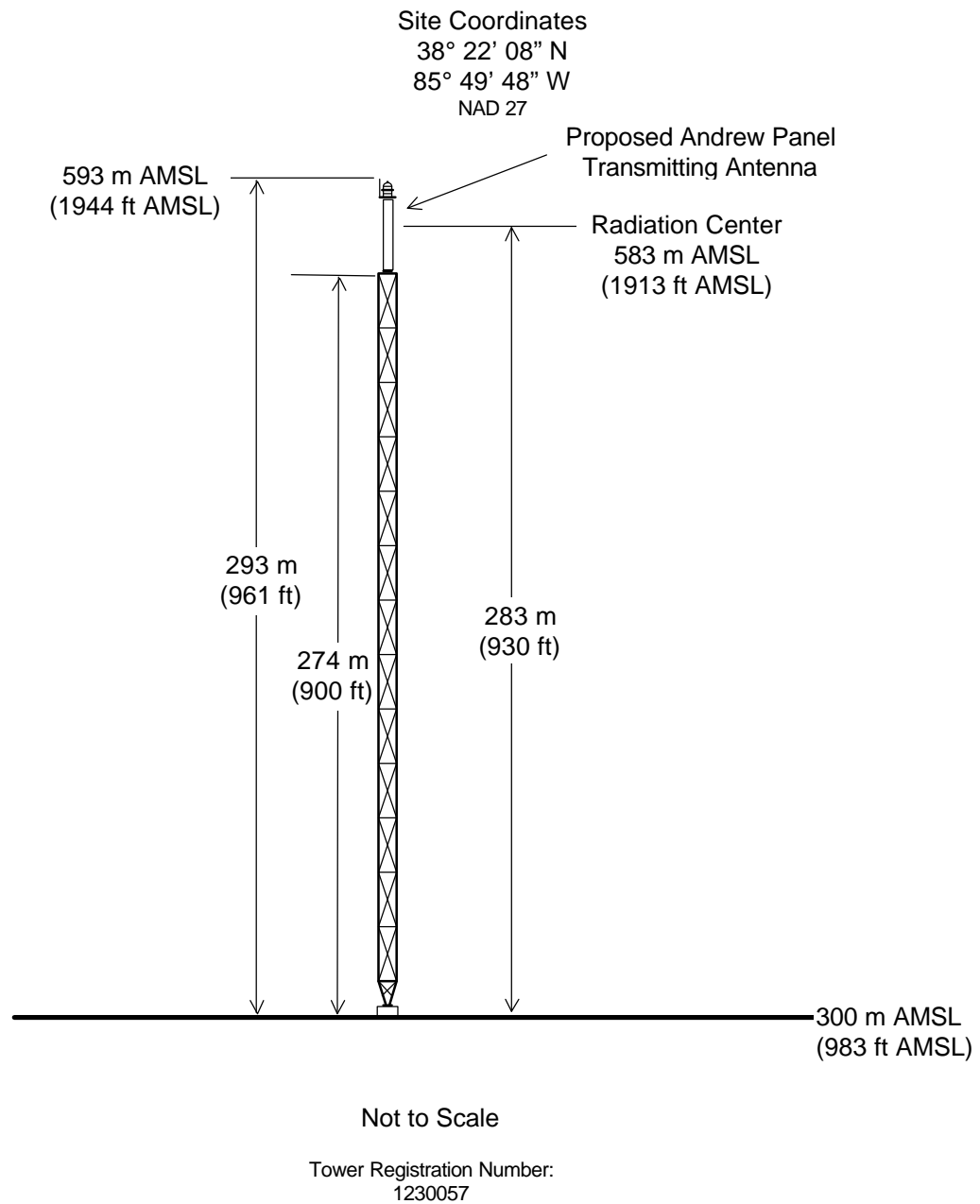


PROPOSED ANTENNA AND SUPORTING STRUCTURE

TELEVISION STATION WAVE-DT
LOUISVILLE, KENTUCKY

CH 47 1000 KW (MAX-DA) 392 M

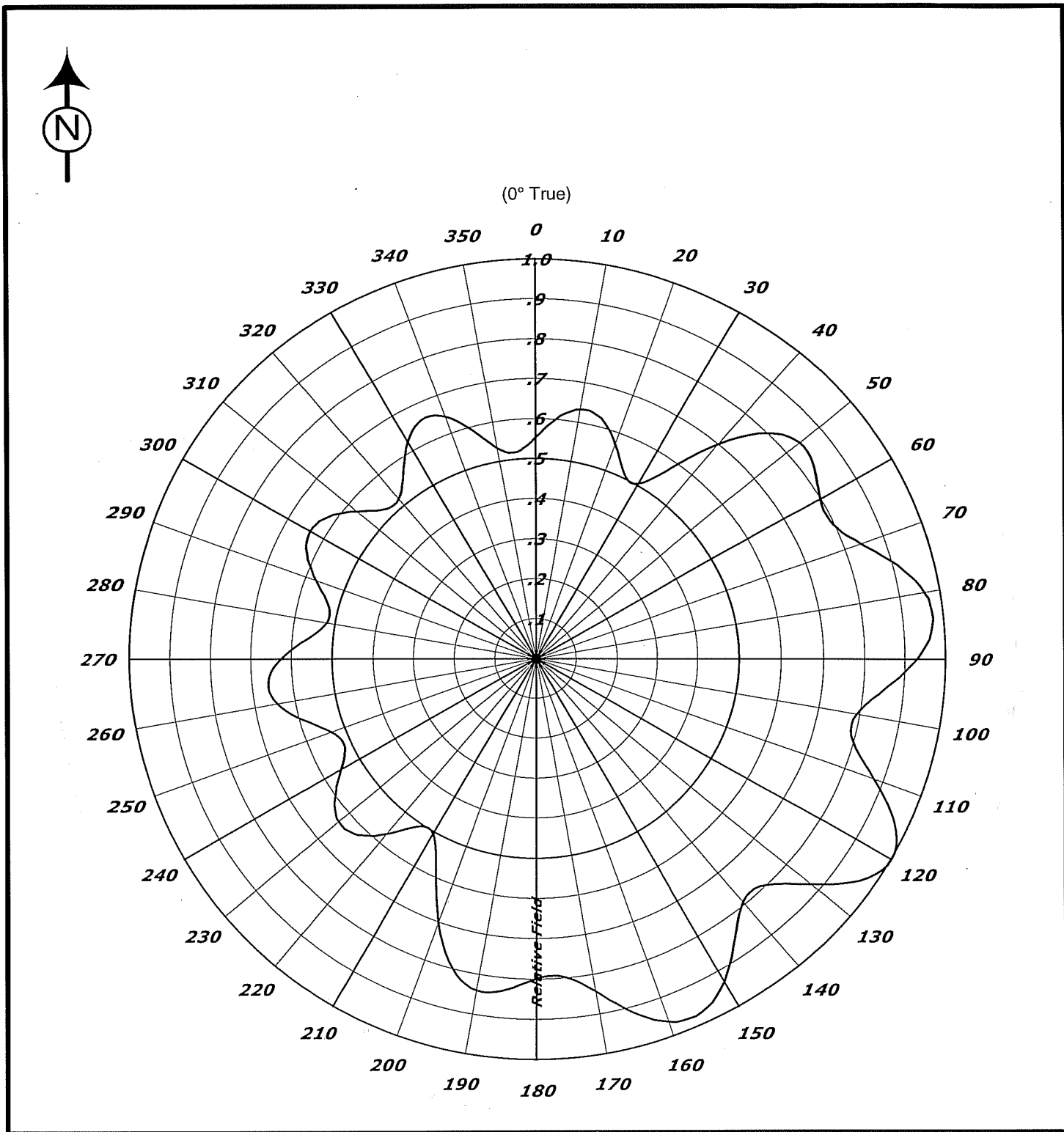
du Treil, Lundin & Rackley, Inc., Sarasota, Florida



PROPOSED ANTENNA AND SUPPORTING STRUCTURE

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



DIRECTIONAL ANTENNA HORIZONTAL PLANE PATTERN

TELEVISION STATION WAVE-DT
LOUISVILLE, KENTUCKY
CH 47 1000 KW (MAX-DA) 392 M

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

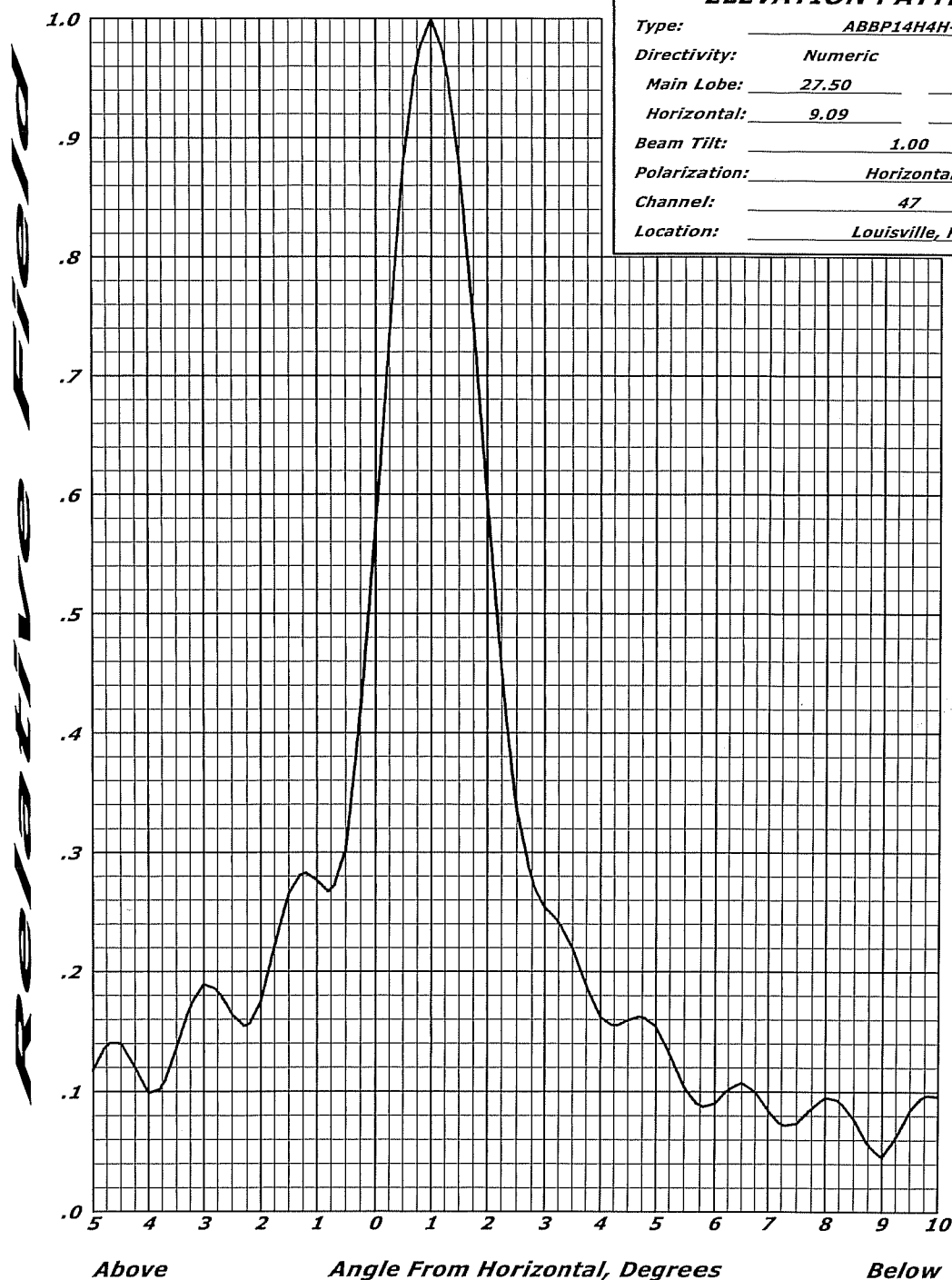
*Angle	Field	dB	*Angle	Field	dB	*Angle	Field	dB	*Angle	Field	dB
0	0.553	-5.14	110	0.875	-1.16	220	0.570	-4.88	330	0.626	-4.07
2	0.573	-4.84	112	0.913	-0.79	222	0.595	-4.51	332	0.644	-3.82
4	0.593	-4.54	114	0.948	-0.46	224	0.613	-4.25	334	0.656	-3.66
6	0.612	-4.26	116	0.976	-0.21	226	0.627	-4.06	336	0.660	-3.61
8	0.625	-4.09	118	0.994	-0.05	228	0.634	-3.96	338	0.656	-3.66
10	0.632	-3.98	120	1.000	0.00	230	0.632	-3.98	340	0.644	-3.82
12	0.634	-3.96	122	0.994	-0.05	232	0.625	-4.09	342	0.626	-4.07
14	0.627	-4.06	124	0.976	-0.21	234	0.612	-4.26	344	0.603	-4.40
16	0.613	-4.25	126	0.948	-0.46	236	0.593	-4.54	346	0.578	-4.77
18	0.595	-4.51	128	0.913	-0.79	238	0.573	-4.84	348	0.554	-5.13
20	0.570	-4.88	130	0.875	-1.16	240	0.553	-5.14	350	0.534	-5.45
22	0.545	-5.27	132	0.839	-1.52	242	0.535	-5.44	352	0.521	-5.66
24	0.523	-5.63	134	0.809	-1.84	244	0.522	-5.64	354	0.518	-5.72
26	0.504	-5.94	136	0.790	-2.05	246	0.518	-5.72	356	0.522	-5.64
28	0.498	-6.06	138	0.784	-2.11	248	0.521	-5.66	358	0.535	-5.44
30	0.505	-5.93	140	0.791	-2.04	250	0.534	-5.45	360	0.553	-5.14
32	0.526	-5.58	142	0.810	-1.83	252	0.554	-5.13			
34	0.561	-5.03	144	0.838	-1.53	254	0.578	-4.77			
36	0.604	-4.38	146	0.868	-1.23	256	0.603	-4.40			
38	0.652	-3.71	148	0.899	-0.92	258	0.626	-4.07			
40	0.700	-3.09	150	0.929	-0.64	260	0.644	-3.82			
42	0.744	-2.56	152	0.950	-0.45	262	0.656	-3.66			
44	0.782	-2.13	154	0.965	-0.31	264	0.660	-3.61			
46	0.811	-1.82	156	0.974	-0.23	266	0.656	-3.66			
48	0.830	-1.62	158	0.971	-0.26	268	0.644	-3.82			
50	0.839	-1.52	160	0.961	-0.34	270	0.626	-4.07			
52	0.840	-1.52	162	0.946	-0.48	272	0.603	-4.40			
54	0.833	-1.59	164	0.922	-0.70	274	0.578	-4.77			
56	0.821	-1.71	166	0.896	-0.95	276	0.554	-5.13			
58	0.808	-1.85	168	0.869	-1.22	278	0.534	-5.45			
60	0.798	-1.96	170	0.841	-1.50	280	0.521	-5.66			
62	0.792	-2.03	172	0.819	-1.74	282	0.518	-5.72			
64	0.793	-2.02	174	0.802	-1.91	284	0.522	-5.64			
66	0.802	-1.91	176	0.793	-2.02	286	0.535	-5.44			
68	0.819	-1.74	178	0.792	-2.03	288	0.553	-5.14			
70	0.841	-1.50	180	0.798	-1.96	290	0.573	-4.84			
72	0.869	-1.22	182	0.809	-1.85	292	0.593	-4.53			
74	0.896	-0.95	184	0.821	-1.71	294	0.613	-4.26			
76	0.922	-0.70	186	0.833	-1.59	296	0.626	-4.07			
78	0.946	-0.48	188	0.840	-1.52	298	0.635	-3.94			
80	0.961	-0.34	190	0.839	-1.52	300	0.639	-3.89			
82	0.971	-0.26	192	0.830	-1.62	302	0.635	-3.94			
84	0.974	-0.23	194	0.811	-1.82	304	0.626	-4.07			
86	0.965	-0.31	196	0.782	-2.13	306	0.613	-4.26			
88	0.950	-0.45	198	0.744	-2.56	308	0.593	-4.53			
90	0.929	-0.64	200	0.700	-3.09	310	0.573	-4.84			
92	0.899	-0.92	202	0.652	-3.71	312	0.553	-5.14			
94	0.868	-1.23	204	0.604	-4.38	314	0.535	-5.44			
96	0.838	-1.53	206	0.561	-5.03	316	0.522	-5.64			
98	0.810	-1.83	208	0.526	-5.58	318	0.518	-5.72			
100	0.791	-2.04	210	0.505	-5.93	320	0.521	-5.66			
102	0.784	-2.11	212	0.498	-6.06	322	0.534	-5.45			
104	0.790	-2.05	214	0.504	-5.94	324	0.554	-5.13			
106	0.809	-1.84	216	0.523	-5.63	326	0.578	-4.77			
108	0.839	-1.52	218	0.545	-5.27	328	0.603	-4.40			

* Referenced to 0°T

DIRECTIONAL ANTENNA HORIZONTAL PLANE TABULATIONTELEVISION STATION WAVE-DT
LOUISVILLE, KENTUCKY

CH 47 1000 KW (MAX-DA) 392 M

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



ANDREW
ELEVATION PATTERN

Type: ABBP14H4H-47

Directivity: Numeric dBd

Main Lobe: 27.50 (14.39)

Horizontal: 9.09 (9.58)

Beam Tilt: 1.00

Polarization: Horizontal

Channel: 47

Location: Louisville, KY

DIRECTIONAL ANTENNA VERTICAL PLANE PATTERN

TELEVISION STATION WAVE-DT
LOUISVILLE, KENTUCKY
CH 47 1000 KW (MAX-DA) 392 M

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

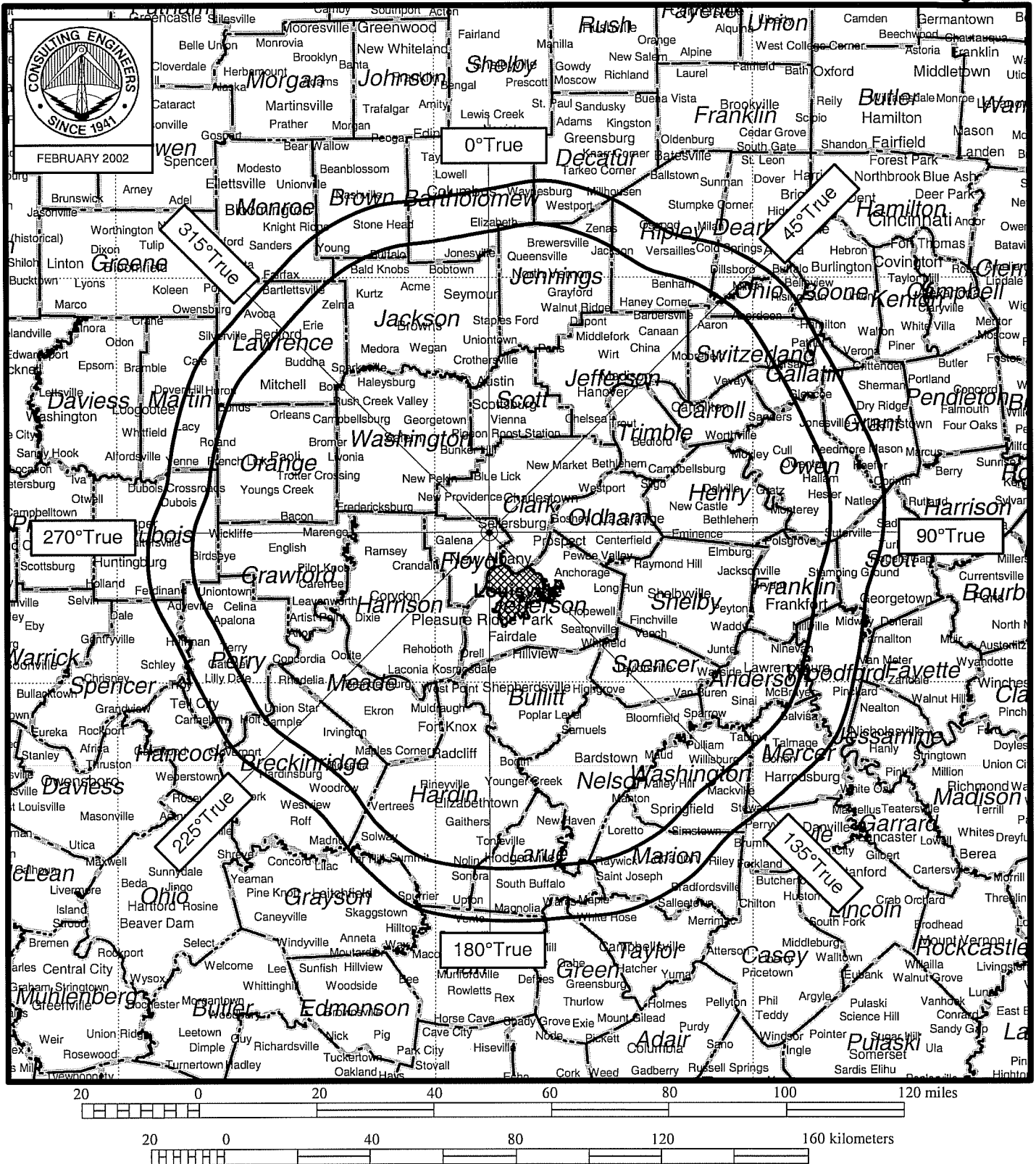
Angle Field dB -5 To 10 In 0.25 Increments			Angle Field dB 10 To 90 In 0.5 Increments			Angle Field dB			Angle Field dB		
-5.00	0.118	-18.57	8.75	0.057	-24.93	35.00	0.024	-32.29	62.50	0.008	-42.05
-4.75	0.138	-17.20	9.00	0.046	-26.82	35.50	0.026	-31.70	63.00	0.009	-41.31
-4.50	0.140	-17.07	9.25	0.062	-24.09	36.00	0.017	-35.19	63.50	0.009	-40.63
-4.25	0.121	-18.38	9.50	0.084	-21.50	36.50	0.012	-38.34	64.00	0.010	-40.45
-4.00	0.099	-20.12	9.75	0.096	-20.38	37.00	0.023	-32.69	64.50	0.009	-41.11
-3.75	0.106	-19.52	10.00	0.096	-20.35	37.50	0.030	-30.52	65.00	0.008	-42.38
-3.50	0.136	-17.32	10.50	0.056	-25.01	38.00	0.026	-31.63	65.50	0.006	-43.88
-3.25	0.170	-15.41	11.00	0.052	-25.63	38.50	0.018	-34.99	66.00	0.006	-44.73
-3.00	0.189	-14.45	11.50	0.093	-20.62	39.00	0.020	-34.07	66.50	0.006	-44.15
-2.75	0.183	-14.75	12.00	0.088	-21.11	39.50	0.027	-31.34	67.00	0.007	-42.97
-2.50	0.164	-15.69	12.50	0.054	-25.30	40.00	0.027	-31.34	67.50	0.008	-42.27
-2.25	0.156	-16.16	13.00	0.067	-23.45	40.50	0.019	-34.56	68.00	0.008	-42.16
-2.00	0.175	-15.15	13.50	0.083	-21.64	41.00	0.011	-39.41	68.50	0.007	-42.50
-1.75	0.222	-13.08	14.00	0.058	-24.67	41.50	0.016	-35.86	69.00	0.007	-43.48
-1.50	0.265	-11.52	14.50	0.030	-30.49	42.00	0.020	-33.81	69.50	0.006	-44.58
-1.25	0.282	-11.00	15.00	0.051	-25.80	42.50	0.016	-35.76	70.00	0.005	-45.19
-1.00	0.276	-11.17	15.50	0.049	-26.14	43.00	0.005	-45.85	70.50	0.006	-45.04
-0.75	0.270	-11.39	16.00	0.013	-37.79	43.50	0.008	-41.51	71.00	0.006	-44.29
-0.50	0.302	-10.40	16.50	0.032	-29.92	44.00	0.018	-34.70	71.50	0.007	-43.35
-0.25	0.420	-7.53	17.00	0.054	-25.32	44.50	0.021	-33.35	72.00	0.007	-42.85
0.00	0.575	-4.80	17.50	0.042	-27.56	45.00	0.017	-35.49	72.50	0.007	-42.62
0.25	0.736	-2.66	18.00	0.015	-36.77	45.50	0.008	-41.94	73.00	0.007	-42.97
0.50	0.877	-1.14	18.50	0.033	-29.68	46.00	0.008	-41.83	73.50	0.007	-43.61
0.75	0.963	-0.33	19.00	0.042	-27.58	46.50	0.015	-36.48	74.00	0.006	-44.88
1.00	1.000	0.00	19.50	0.029	-30.63	47.00	0.017	-35.19	74.50	0.005	-46.56
1.25	0.962	-0.33	20.00	0.025	-31.97	47.50	0.015	-36.65	75.00	0.004	-48.40
1.50	0.879	-1.12	20.50	0.035	-29.00	48.00	0.010	-39.58	75.50	0.003	-49.63
1.75	0.745	-2.56	21.00	0.033	-29.71	48.50	0.011	-39.17	76.00	0.003	-49.37
2.00	0.595	-4.51	21.50	0.023	-32.73	49.00	0.015	-36.77	76.50	0.004	-48.18
2.25	0.452	-6.90	22.00	0.027	-31.47	49.50	0.016	-36.08	77.00	0.004	-46.94
2.50	0.336	-9.48	22.50	0.030	-30.57	50.00	0.014	-37.33	77.50	0.005	-45.85
2.75	0.279	-11.10	23.00	0.022	-33.00	50.50	0.010	-39.58	78.00	0.006	-45.04
3.00	0.254	-11.91	23.50	0.019	-34.20	51.00	0.010	-39.74	78.50	0.006	-44.58
3.25	0.241	-12.36	24.00	0.024	-32.47	51.50	0.012	-38.20	79.00	0.006	-44.44
3.50	0.220	-13.16	24.50	0.019	-34.61	52.00	0.013	-37.65	79.50	0.006	-44.58
3.75	0.189	-14.48	25.00	0.003	-51.06	52.50	0.012	-38.64	80.00	0.006	-45.04
4.00	0.162	-15.80	25.50	0.014	-37.02	53.00	0.009	-40.63	80.50	0.005	-45.51
4.25	0.155	-16.18	26.00	0.023	-32.69	53.50	0.009	-41.31	81.00	0.005	-46.38
4.50	0.159	-15.94	26.50	0.022	-33.23	54.00	0.010	-40.00	81.50	0.004	-47.13
4.75	0.162	-15.82	27.00	0.019	-34.56	54.50	0.011	-39.33	82.00	0.004	-48.18
5.00	0.154	-16.24	27.50	0.020	-33.76	55.00	0.009	-40.54	82.50	0.003	-49.37
5.25	0.131	-17.65	28.00	0.020	-33.98	55.50	0.006	-44.73	83.00	0.003	-50.75
5.50	0.104	-19.66	28.50	0.018	-35.04	56.00	0.001	-60.00	83.50	0.003	-52.04
5.75	0.089	-21.02	29.00	0.020	-33.94	56.50	0.004	-47.33	84.00	0.002	-53.56
6.00	0.090	-20.90	29.50	0.022	-33.03	57.00	0.009	-41.31	84.50	0.002	-54.89
6.25	0.102	-19.87	30.00	0.019	-34.61	57.50	0.011	-39.49	85.00	0.001	-56.48
6.50	0.107	-19.39	30.50	0.014	-36.83	58.00	0.011	-39.25	85.50	0.001	-57.72
6.75	0.099	-20.05	31.00	0.018	-34.85	58.50	0.010	-40.09	86.00	0.001	-59.17
7.00	0.085	-21.44	31.50	0.020	-34.07	59.00	0.009	-41.11	86.50	0.001	-60.00
7.25	0.073	-22.71	32.00	0.016	-35.97	59.50	0.008	-41.51	87.00	0.001	-60.00
7.50	0.074	-22.66	32.50	0.016	-35.92	60.00	0.009	-41.21	87.50	0.001	-60.00
7.75	0.086	-21.33	33.00	0.021	-33.47	60.50	0.009	-40.82	88.00	0.001	-60.00
8.00	0.095	-20.43	33.50	0.020	-33.81	61.00	0.009	-40.92	88.50	0.001	-60.00
8.25	0.091	-20.79	34.00	0.013	-37.79	61.50	0.008	-41.51	89.00	0.001	-60.00
8.50	0.077	-22.24	34.50	0.015	-36.71	62.00	0.008	-42.16	89.50	0.001	-60.00

DIRECTIONAL ANTENNA VERTICAL PLANE TABULATION

TELEVISION STATION WAVE-DT
LOUISVILLE, KENTUCKY
CH 47 1000 KW (MAX-DA) 392 M

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

Figure 4



FCC PREDICTED COVERAGE CONTOURS

TELEVISION STATION WAVE-DT
LOUISVILLE, KENTUCKY
CH 47 1000 KW (MAX-DA) 392 M

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

TECHNICAL EXHIBIT
APPLICATION MODIFICATION OF DTV CONSTRUCTION PERMIT
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Summary of Allocation Analysis

Facility	Channel	NTSC or DTV?	Baseline Service Population (1990)	Permissible IX(%)	Net New IX Caused by Proposed (1990)	Percent of Baseline (%)
WLKY-TV Louisville, KY <i>BLCT-2435</i>	32	NTSC	No Interference Predicted.			
Rule Making New Albany, IN <i>BPRM-20000717ADC</i>	39	DTV	No Interference Predicted.			
WFIE-DT Evansville, IN <i>BPCDT-19991101AFP</i>	46	DTV	No Interference Predicted.			
WFIE-DT Evansville, IN <i>DTVPLN-DTVP1260</i>	46	DTV	No Interference Predicted.			
WTHR-DT Indianapolis, In <i>BMPCDT-19990715KG</i>	46	DTV	No Interference Predicted.			
WTHR-DT Indianapolis, In <i>DTVPLN-DTVP1261</i>	46	DTV	No Interference Predicted.			
WKLE Lexington, KY <i>BLET-353</i>	46	NTSC	No Interference Predicted.			

Figure 5
Sheet 2 of 3

Facility	Channel	NTSC or DTV?	Baseline Service Population (1990)	Permissible IX(%)	Net New IX Caused by Proposed (1990)	Percent of Baseline (%)
WTTW Chicago, IL <i>BMPEDT-20000501AIR</i>	47	DTV	No Interference Predicted.			
WTTW-DT Chicago, IL <i>DTVPLN-DTVP1293</i>	47	DTV	No Interference Predicted.			
WHSI-DT East St. Louis, IL <i>DTVPLN-DTVP1294</i>	47	DTV	No Interference Predicted.			
Rule Making Owensboro, KY <i>BPRM-20000717ADR</i>	47	NTSC	603,091	2.0%	4,517	0.7%
WTLW-DT Lima, OH <i>BPCDT-19991025ADV</i>	47	DTV	Checklist Type Application. No Allocation Concern.			
WTLW-DT Lima, OH <i>DTVPLN-DTVP1303</i>	47	DTV	No Interference Predicted.			
WDEF-DT Chattanooga, TN <i>BDSTA-20020129ACC</i>	47	DTV	Checklist Type Application. No Allocation Concern.			
WDEF-DT Chattanooga, TN <i>DTVPLN-DTVP1306</i>	47	DTV	No New Interference Predicted.			
WDEF-DT Chattanooga, TN <i>BPCDT-19991025ACX</i>	47	DTV	No New Interference Predicted.			
WLJT-DT Lexington, TN <i>DTVPLN-DTVP1307</i>	47	DTV	No Interference Predicted.			
WSBN-TV Norton, VA <i>BLET-284</i>	47	NTSC	No New Interference Predicted.			

Facility	Channel	NTSC or DTV?	Baseline Service Population (1990)	Permissible IX(%)	Net New IX Caused by Proposed (1990)	Percent of Baseline (%)
WOWK-TV Huntington, WV <i>BPRM-20000828ACQ</i>	47	NTSC	No New Interference Predicted.			
WKGB-DT Bowling Green, KY <i>DTVPLN-DTVP1325</i>	48	DTV	No Interference Predicted.			
Proposed New NTSC Owensboro, KY <i>BPCT-19960920IV</i>	48	NTSC	683,097	2.0	86	<0.1%
Proposed New NTSC Owensboro, KY <i>BPCT-19960722KL</i>	48	NTSC	No New Interference Predicted.			
WCET Cincinnati, OH <i>BLET-19740227KG</i>	48	NTSC	No New Interference Predicted.			
WCVN-TV Covington, KY <i>BLET-19830812KM</i>	54	NTSC	No New Interference Predicted.			

Note: 2 km grid square employed for analysis.

TECHNICAL EXHIBIT
APPLICATION MODIFICATION OF DTV CONSTRUCTION PERMIT
STATION WAVE-DT
LOUISVILLE, KENTUCKY
CH 47 1000 KW (MAX-DA) 392 M

Summary of Class A OET-69 Allocation Analysis

Facility	Channel	Protected Contour Population (1990)	Net New IX Caused by Proposed (1990)	Percent of Baseline (%)
W47AZ Indianapolis, IN <i>BLTTL-20000211AAQ</i>	47	No Interference Predicted.		