

**TECHNICAL EXHIBIT  
APPLICATION FOR CONSTRUCTION PERMIT  
KDEL-FM  
ARKADELPHIA, ARKANSAS  
CH 265 C-3    25.0KW    100M HAAT**

Technical Narrative

KDEL-FM, serving Arkadelphia, Arkansas, is presently licensed to operate on Channel 265 A with an ERP of 3kW at 29m HAAT. This proposal seeks to modify the KDEL-FM station class to Channel 265C3 employing the “one-step” allotment process. The proposed facility will operate with 25.0kW ERP at 100m HAAT. This proposal is fully spaced per Section 73.207 to all stations, applications, and allotments.

All calculations herein were made using RF Investigator-FM version 2.0.128. A new 116 meter (381') tower will be erected to accommodate the facility. Upon receipt of the Federal Aviation Administration's *Determination of No Aeronautical Hazard*, the structure will be registered with the FCC. It is believed that this proposal conforms to all applicable rules and regulations of the FCC.

Proposed Transmitter Location

A map showing the transmitter site location is provided in Figure 1. KDEL-FM proposes use of an omni-directional 6-bay antenna mounted at 105m (344') above ground level. The transmitter site is uniquely described as: 34-01-58 N / 92-54-44 W (NAD27). The

site lies at 70.1m AMSL (230'). Thus, the Center of Radiation Above Mean Sea Level will be 175m (574').

### Interference Concerns

The 115 dBu predicted “blanketing” contour will extend approximately 1.5km from the transmitting site. Only 72 persons reside within the blanketing contour. Applicant recognizes its responsibility to resolve complaints of interference, including blanketing and receiver-induced interference as required by Sections 73.315(b), 73.316(e), and 73.318.

### Coverage Contours

The predicted coverage contours for the proposed operation were calculated by employing the USGS 03-second terrain database in accordance with Section 73.313. The average terrain elevations from 3 to 16 kilometers along 8 radials evenly spaced at 45-degree intervals were obtained from the USGS 03-second terrain database. Figure 2 shows the average terrain elevations of each radial. The average elevation was calculated at 75.1 meters. Because the transmitter site lies at 70.1 meters, it is 5.0 meters below average terrain. With the antenna center of radiation at 105 meters above ground level, that places the HAAT at 100.0 meters (105 – 5).

The terrain elevations were then used in combination with the effective radiated power for determining the distance to the coverage contours. Figure 3 shows the distance to contour values using 360 evenly spaced radials.

A contour coverage map is shown in Figure 4. The FCC predicted 70 dBu coverage contour encompasses 100% of the Arkadelphia, Arkansas city limits, thus establishing compliance with the community coverage requirement. Figures 5-A, 5-B, and 5-C provide line of sight graphs from the proposed site to the community of license.

### Allocation Study

Figure 6 is an allocation study for Channel 265C3 at the proposed site. The proposed site meets the FCC's minimum separation requirements in accordance with Section 73.207(b) to all assignments and stations.

### Environmental Considerations

The proposed facility has been evaluated in terms of potential radiofrequency electromagnetic field exposure at ground level in accordance with OST Bulletin No. 65, *Evaluating Compliance with FCC Specified Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*. The power density at the base of the tower was calculated using the appropriate procedure contained in Section 2, Supplement A, *Additional Information for Radio and Television Broadcast Stations*, of the Bulletin. For the calculation, a combined horizontal and vertical polarized effective radiated power of

50 kilowatts is employed with a radiation center of 105 meters (344 feet) above ground level. A *Shively* 6800 series 6 bay one-wavelength spaced antenna is proposed. Using this antenna type in the Commission's *FM Model* RFR calculation program, it is calculated that the maximum power density at ground level resulting from this facility is approximately 8  $\mu\text{W}/\text{cm}^2$ . (See Figure 7.) This is about four percent of the maximum Commission guideline value in an uncontrolled environment for a FM radio station. There are no other known emitters in the nearby vicinity.

Access to the transmitting site will be restricted and appropriately marked with warning signs. When it becomes necessary for workers to ascend the tower, appropriate measures, such as reduction or shut down of power if necessary, shall be taken to ensure that the human exposure to radiofrequency radiation will not exceed the FCC guidelines.

Should there be any questions regarding this application, please contact the undersigned.

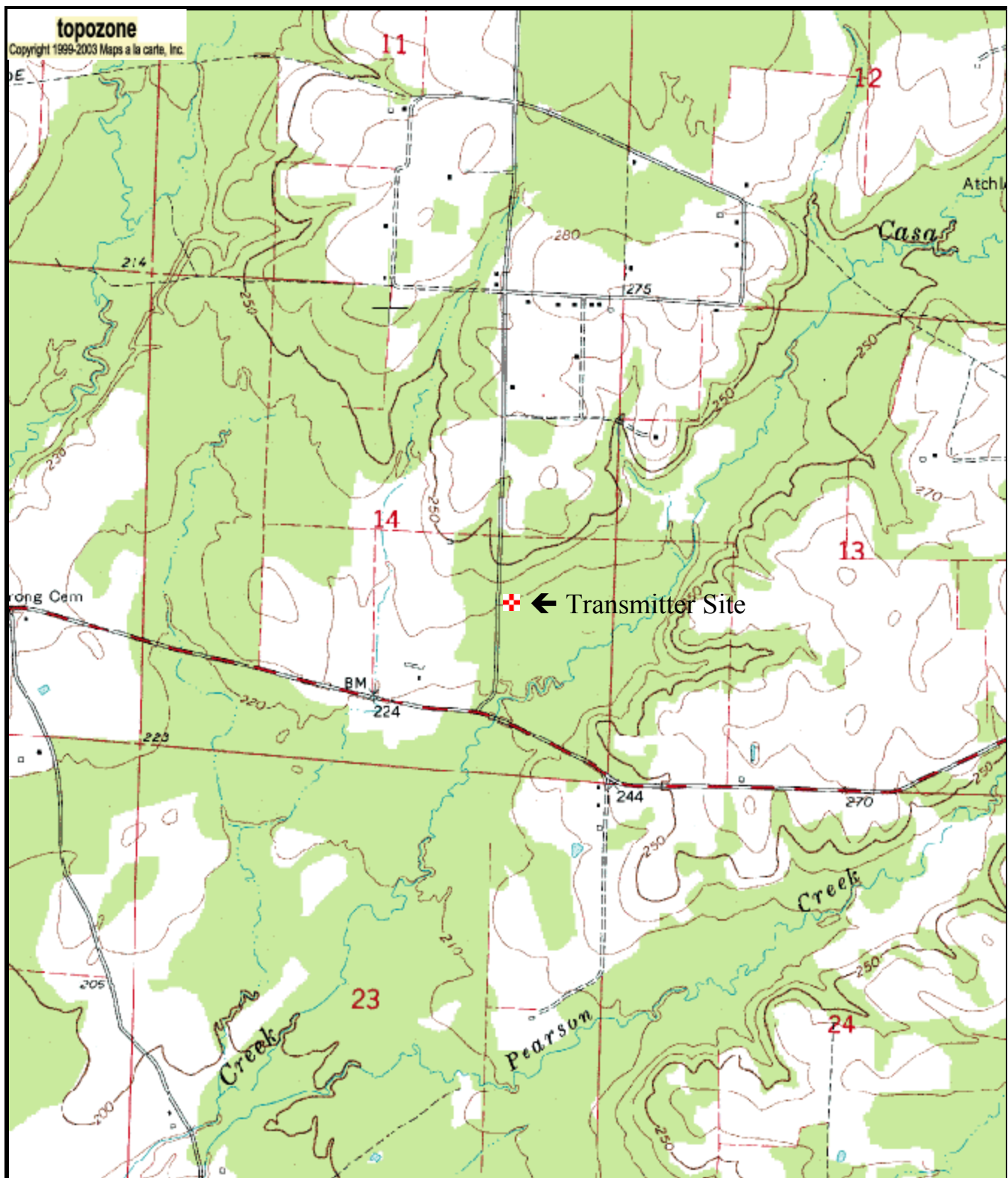


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FIGURE 1-A : Proposed Transmitter Site Map

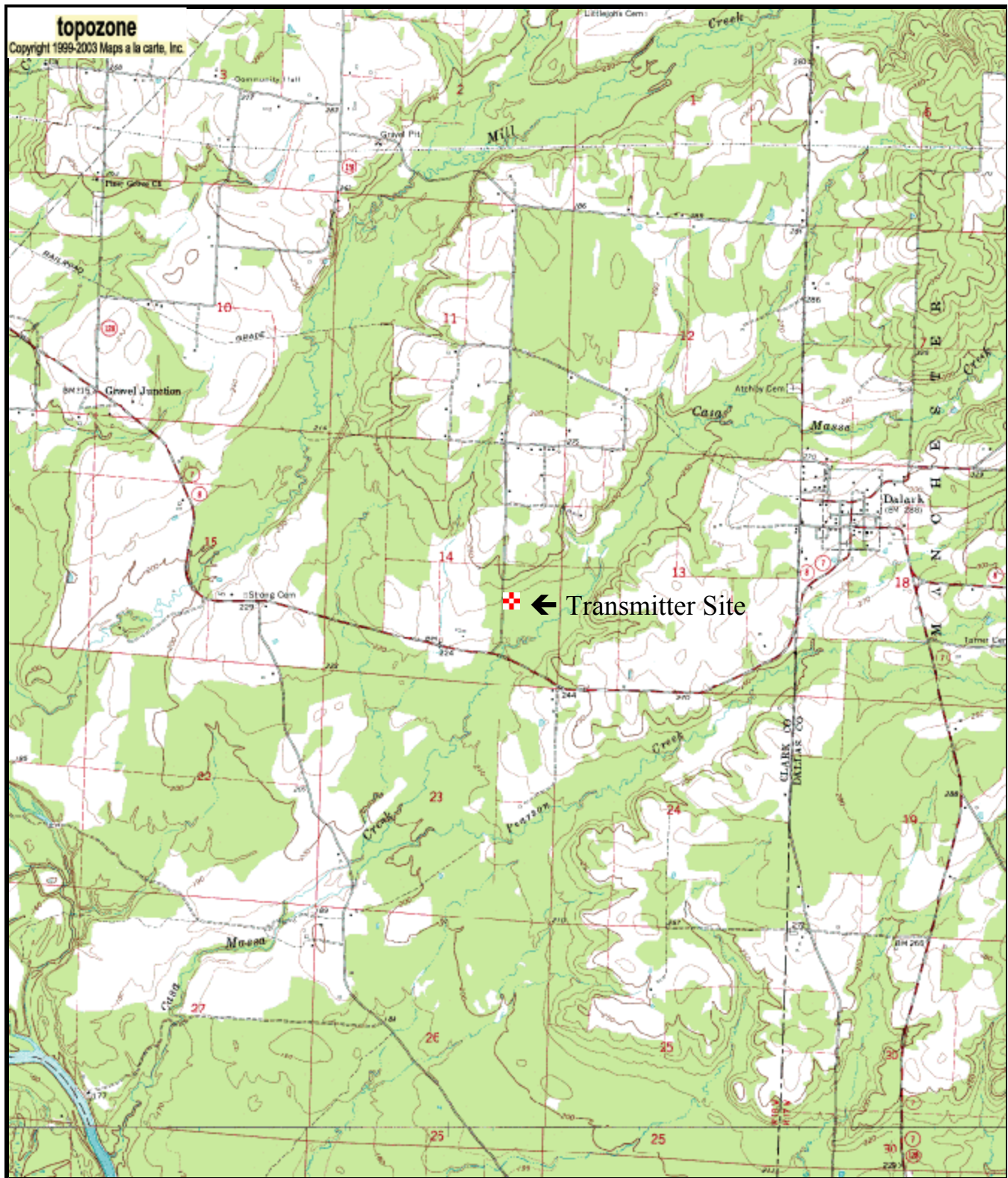


0 0.3 0.6 0.9 1.2 1.5 km  
0 0.2 0.4 0.6 0.8 1 mi

Map center is 34° 01' 58"N, 92° 54' 44"W (NAD27)  
**Dalark** quadrangle - TopoZone Pro elevation display  
Projection is UTM Zone 15 NAD83 Datum

M  
G  
M=2.33  
G=0.049

FIGURE 1-B : Proposed Transmitter Site Map



0 0.7 1.4 2.1 2.8 3.5 km  
0 0.5 1 1.5 2 2.5 mi

Map center is 34° 01' 58"N, 92° 54' 44"W (NAD27)  
**Dalark** quadrangle - TopoZone Pro elevation display  
Projection is UTM Zone 15 NAD83 Datum

M=2.33  
G=0.049

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Figure 2  
Terrain Data

KDEL-FM	Site Latitude 34-01-58 N	Site Longitude 92-54-44 W	Radials Used 8
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Site Elevation: 70.1 m AMSL	Rad Center: 175.0 m AMSL	Data Source: USGS 3-Sec DEM(DMA)
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Bearing Degrees <u>True</u>	Average Height 3.0 to 16.0 km <u>meters</u>	Antenna Height HAAT <u>meters</u>	Min Height AMSL <u>meters</u>	Max Height AMSL <u>meters</u>
0	84.9	90.1	60.0	100.7
45	110.7	64.3	87.7	126.9
90	87.3	87.7	69.0	107.9
135	80.5	94.5	55.5	91.0
180	54.4	120.6	39.2	78.5
225	66.5	108.5	48.4	94.0
270	56.6	118.4	48.0	64.1
315	59.5	115.5	49.0	73.3
Average 8 radials:	75.1	100.0		

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Figure 3:  
Distances to Contours

'ID'	'Site Latitude'	'Site Longitude'	'Site HAT'
KDEL-FM	34-01-58 N	92-54-44 W	75
'Antenna'	'Radials Used'	'Antenna AMSL'	ERP (kW)
Omni	360	175	25.0
	70dBu (F 50:50)	60dBu (F 50:50)	
<u>'Bearing'</u>	<u>'To-Contour (km)'</u>	<u>'To-Contour (km)'</u>	
0	22.081	37.356	
1	21.978	37.200	
2	21.846	37.000	
3	21.699	36.777	
4	21.553	36.555	
5	21.392	36.308	
6	21.217	36.035	
7	21.072	35.810	
8	21.009	35.711	
9	21.010	35.714	
10	21.132	35.904	
11	21.320	36.195	
12	21.427	36.361	
13	21.477	36.439	
14	21.612	36.645	
15	21.761	36.872	
16	21.874	37.042	
17	21.940	37.143	
18	21.946	37.152	
19	21.881	37.054	
20	21.682	36.752	
21	21.500	36.475	
22	21.382	36.292	
23	21.215	36.033	
24	21.127	35.896	
25	21.091	35.839	
26	21.022	35.731	
27	20.841	35.449	
28	20.737	35.287	
29	20.873	35.500	
30	20.911	35.558	
31	20.927	35.583	
32	20.906	35.550	
33	20.637	35.131	
34	20.373	34.714	
35	20.174	34.396	
36	20.020	34.149	
37	19.738	33.696	
38	19.418	33.180	
39	19.258	32.917	
40	19.124	32.697	
41	18.969	32.444	
42	18.835	32.227	



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Figure 3:  
Distances to Contours

43	18.733	32.062
44	18.716	32.035
45	18.726	32.051
46	18.809	32.185
47	18.911	32.349
48	19.018	32.524
49	19.205	32.831
50	19.492	33.300
51	19.747	33.711
52	19.927	34.000
53	20.069	34.228
54	20.185	34.413
55	20.288	34.577
56	20.365	34.700
57	20.441	34.823
58	20.514	34.938
59	20.571	35.028
60	20.620	35.104
61	20.664	35.174
62	20.716	35.254
63	20.773	35.344
64	20.815	35.408
65	20.849	35.462
66	20.884	35.516
67	20.926	35.582
68	20.983	35.672
69	21.059	35.789
70	21.133	35.904
71	21.203	36.013
72	21.256	36.096
73	21.294	36.154
74	21.331	36.213
75	21.371	36.274
76	21.396	36.314
77	21.354	36.249
78	21.341	36.228
79	21.329	36.209
80	21.361	36.259
81	21.444	36.388
82	21.512	36.493
83	21.527	36.516
84	21.613	36.646
85	21.687	36.758
86	21.725	36.816
87	21.763	36.874
88	21.805	36.937
89	21.814	36.952
90	21.785	36.908
91	21.770	36.885
92	21.754	36.860
93	21.740	36.839
94	21.744	36.846

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Figure 3:  
Distances to Contours

95	21.741	36.840
96	21.712	36.796
97	21.683	36.753
98	21.666	36.727
99	21.680	36.748
100	21.724	36.815
101	21.789	36.913
102	21.835	36.984
103	21.834	36.982
104	21.799	36.928
105	21.794	36.922
106	21.865	37.029
107	21.979	37.201
108	22.048	37.306
109	22.079	37.353
110	22.061	37.325
111	22.006	37.242
112	21.994	37.223
113	22.005	37.240
114	22.025	37.270
115	22.012	37.251
116	22.005	37.240
117	22.026	37.272
118	22.052	37.312
119	22.049	37.308
120	22.055	37.316
121	22.064	37.331
122	22.043	37.298
123	22.012	37.250
124	22.020	37.264
125	22.133	37.434
126	22.317	37.713
127	22.488	37.971
128	22.520	38.019
129	22.419	37.867
130	22.370	37.794
131	22.404	37.845
132	22.475	37.952
133	22.512	38.007
134	22.547	38.059
135	22.634	38.188
136	22.782	38.406
137	22.894	38.571
138	23.022	38.761
139	23.131	38.922
140	23.221	39.056
141	23.319	39.201
142	23.384	39.296
143	23.452	39.397
144	23.508	39.481
145	23.605	39.622
146	23.711	39.775

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Figure 3:  
Distances to Contours

147	23.817	39.930
148	23.931	40.097
149	24.034	40.247
150	24.111	40.360
151	24.200	40.490
152	24.329	40.682
153	24.466	40.887
154	24.555	41.018
155	24.628	41.124
156	24.690	41.215
157	24.729	41.272
158	24.769	41.331
159	24.813	41.395
160	24.858	41.462
161	24.904	41.531
162	24.943	41.589
163	24.972	41.631
164	24.993	41.664
165	25.018	41.701
166	25.036	41.729
167	25.059	41.762
168	25.083	41.800
169	25.125	41.863
170	25.162	41.919
171	25.173	41.937
172	25.183	41.951
173	25.224	42.014
174	25.281	42.101
175	25.317	42.157
176	25.346	42.201
177	25.380	42.254
178	25.426	42.325
179	25.471	42.396
180	25.317	42.157
181	24.951	41.600
182	24.807	41.387
183	24.670	41.185
184	24.560	41.025
185	24.443	40.853
186	24.587	41.064
187	24.836	41.430
188	24.908	41.535
189	24.714	41.250
190	24.656	41.165
191	24.768	41.329
192	24.869	41.478
193	24.939	41.582
194	25.043	41.739
195	25.117	41.851
196	25.288	42.112
197	25.380	42.254
198	25.386	42.264

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Figure 3:  
Distances to Contours

199	25.386	42.264
200	25.373	42.244
201	25.315	42.154
202	25.246	42.048
203	25.196	41.972
204	25.149	41.899
205	25.106	41.834
206	25.084	41.801
207	25.057	41.761
208	24.958	41.610
209	24.927	41.565
210	24.980	41.644
211	24.985	41.652
212	24.955	41.606
213	24.932	41.572
214	24.950	41.599
215	24.983	41.649
216	25.018	41.701
217	25.012	41.691
218	24.972	41.632
219	24.918	41.551
220	24.836	41.429
221	24.708	41.241
222	24.573	41.043
223	24.476	40.902
224	24.342	40.702
225	24.183	40.466
226	24.101	40.345
227	24.113	40.363
228	24.185	40.469
229	24.085	40.321
230	23.910	40.066
231	23.772	39.865
232	23.757	39.843
233	23.989	40.182
234	24.150	40.418
235	24.075	40.307
236	24.026	40.235
237	23.933	40.100
238	24.013	40.217
239	24.151	40.418
240	24.138	40.400
241	24.210	40.506
242	24.419	40.816
243	24.552	41.014
244	24.619	41.110
245	24.660	41.170
246	24.683	41.204
247	24.711	41.245
248	24.763	41.321
249	24.845	41.442
250	24.908	41.536

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Figure 3:  
Distances to Contours

251	24.937	41.580
252	24.939	41.582
253	24.902	41.527
254	24.890	41.510
255	24.897	41.519
256	24.875	41.487
257	24.866	41.474
258	24.906	41.532
259	24.941	41.585
260	24.976	41.638
261	25.009	41.688
262	25.044	41.741
263	25.065	41.771
264	25.081	41.796
265	25.111	41.841
266	25.119	41.854
267	25.110	41.840
268	25.106	41.834
269	25.105	41.833
270	25.105	41.832
271	25.100	41.825
272	25.105	41.833
273	25.101	41.826
274	25.083	41.799
275	25.069	41.778
276	25.060	41.764
277	25.040	41.735
278	25.025	41.712
279	25.018	41.701
280	25.009	41.687
281	24.998	41.670
282	24.987	41.655
283	24.980	41.643
284	24.976	41.638
285	24.989	41.658
286	25.009	41.687
287	25.032	41.723
288	25.050	41.750
289	25.047	41.745
290	25.030	41.719
291	25.013	41.693
292	25.005	41.682
293	24.995	41.666
294	24.989	41.657
295	24.982	41.646
296	24.974	41.635
297	24.973	41.634
298	24.966	41.624
299	24.959	41.612
300	24.951	41.601
301	24.941	41.585
302	24.943	41.589

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Figure 3:  
Distances to Contours

303	24.938	41.580
304	24.929	41.567
305	24.918	41.552
306	24.913	41.543
307	24.908	41.537
308	24.898	41.521
309	24.882	41.497
310	24.872	41.482
311	24.875	41.486
312	24.877	41.489
313	24.875	41.487
314	24.863	41.469
315	24.840	41.435
316	24.812	41.394
317	24.782	41.349
318	24.757	41.312
319	24.740	41.288
320	24.722	41.262
321	24.711	41.245
322	24.703	41.234
323	24.680	41.200
324	24.648	41.153
325	24.620	41.112
326	24.575	41.047
327	24.503	40.941
328	24.394	40.779
329	24.413	40.808
330	24.415	40.810
331	24.364	40.734
332	24.297	40.634
333	24.221	40.522
334	24.139	40.400
335	24.029	40.240
336	23.947	40.120
337	23.870	40.008
338	23.784	39.882
339	23.696	39.754
340	23.604	39.621
341	23.519	39.496
342	23.445	39.388
343	23.370	39.276
344	23.297	39.169
345	23.226	39.063
346	23.140	38.936
347	23.056	38.811
348	22.996	38.722
349	22.927	38.620
350	22.871	38.537
351	22.816	38.456
352	22.749	38.357
353	22.680	38.256
354	22.594	38.128

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Figure 3:  
Distances to Contours

355	22.522	38.022
356	22.454	37.920
357	22.384	37.815
358	22.318	37.714
359	22.207	37.546

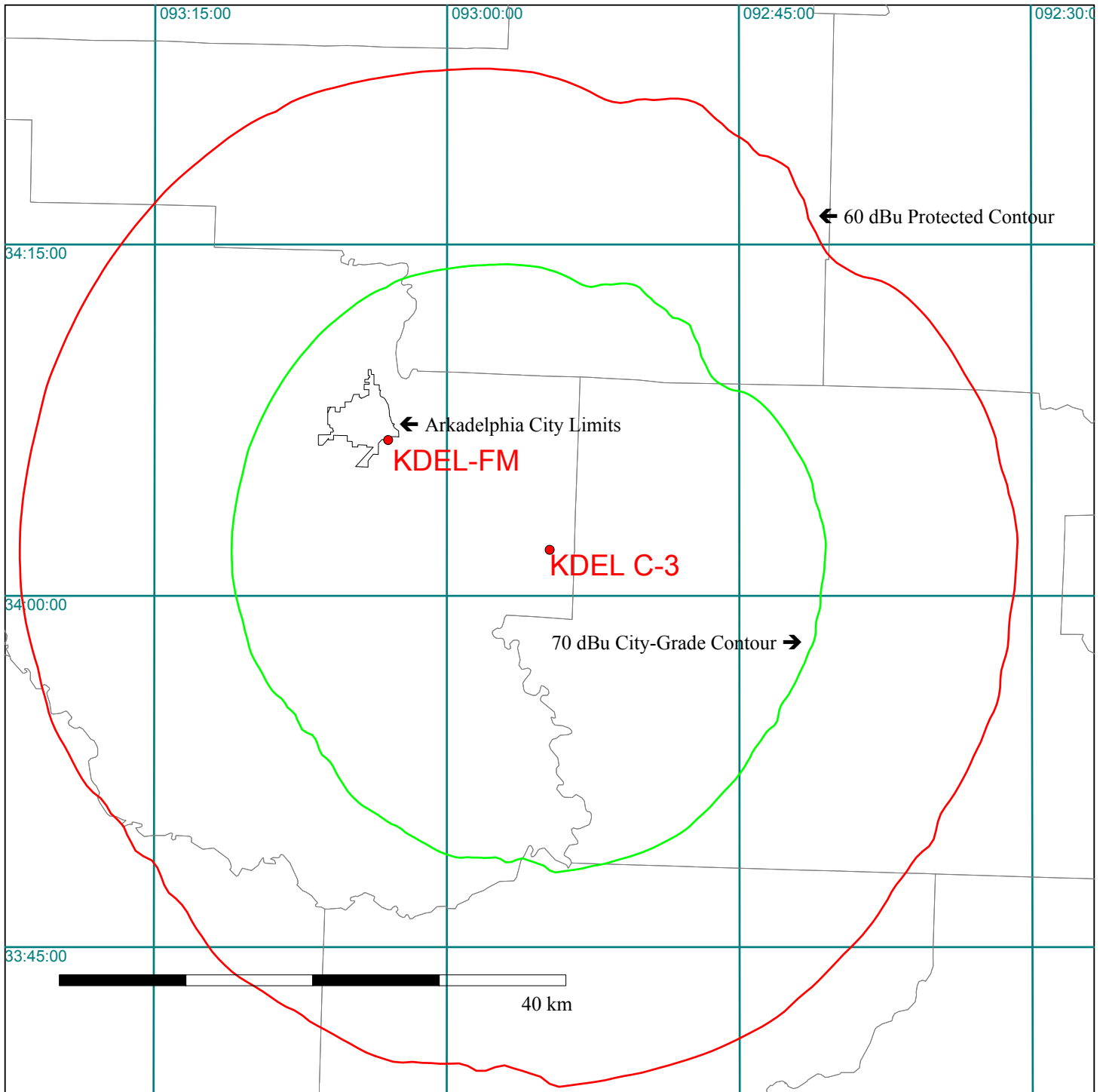
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FIGURE 4

Proposed Contour Coverage Map

25.0 kW @ 100 M HAAT



Scale: 1:450000



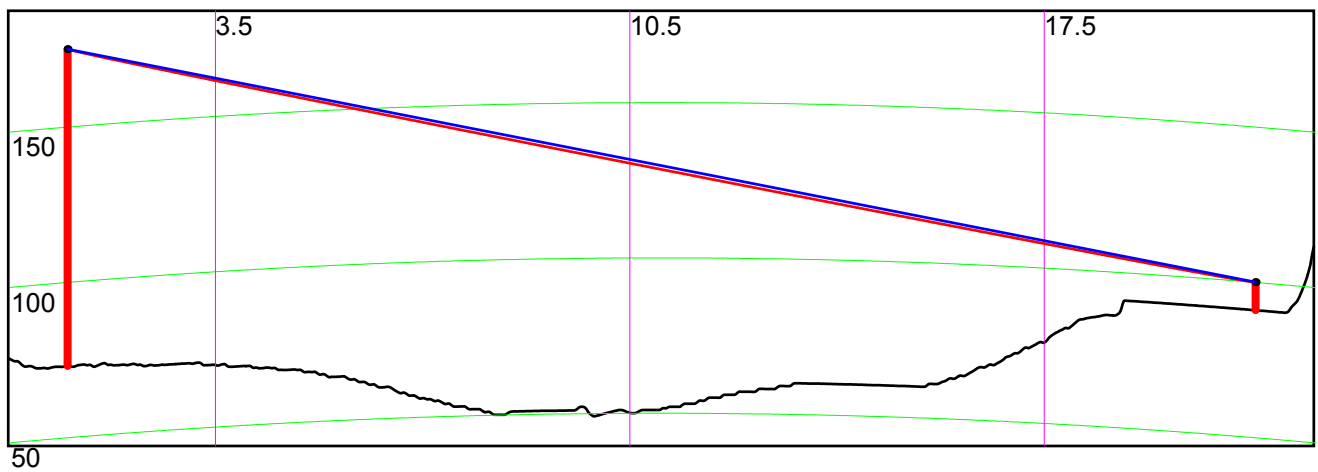
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FIGURE 5-A

Terrain Profile to Arkadelphia

295 degrees



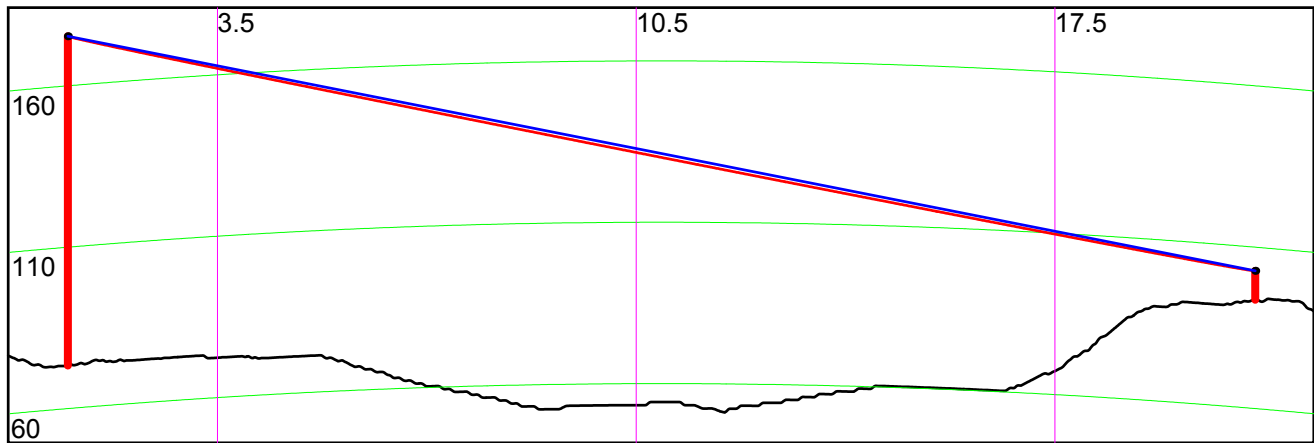
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Arkadelphia, Arkansas

FIGURE 5-B

Terrain Profile to Arkadelphia

305 degrees



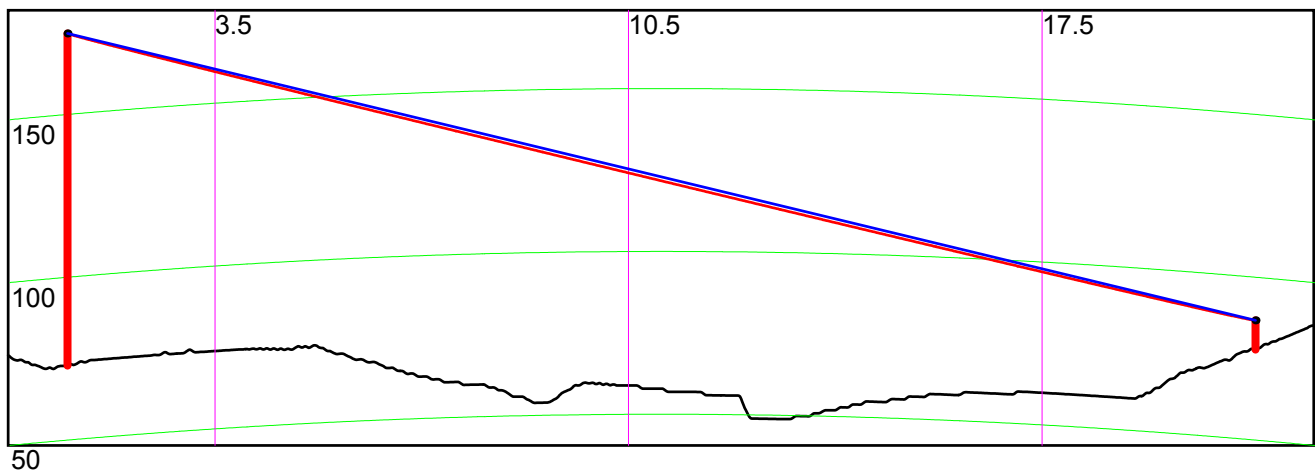
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FIGURE 5-C

Terrain Profile to Arkadelphia

315 degrees



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Allocation Study at  
Proposed Site

N 34:01:58 / W 92:54:44

Figure 6

Note	Callsign	Latitude (NAD27)	Longitude (NAD27)	City	State	Channel	Class	Status	Dist (km)	Req'd Min	Clearance	ERP	HAAT	Bearing
1	KDEL-FM	N34:06:39	W093:03:01	ARKADELPHIA	AR	265 : 100.9 MHz	A	LIC	15.4	142	-126.6	3.00	29	304
2	KWKK	N35:17:37	W093:10:39	RUSSELLVILLE	AR	265 : 100.9 MHz	A	LIC	142.0	142	0.0	6.00	100	350
	KRMD-FM	N32:41:08	W093:56:00	SHREVEPORT	LA	266 : 101.1 MHz	C	CP MOD	177.1	176	1.1	100.00	496	212
	KRMD-FM	N32:41:08	W093:56:00	SHREVEPORT	LA	266 : 101.1 MHz	C	LIC	177.1	176	1.1	98.00	341	212
	KLEZ	N34:28:24	W092:55:51	MALVERN	AR	268 : 101.5 MHz	A	LIC	48.9	42	6.9	6.00	98	358
	KZHE	N33:28:34	W093:16:23	STAMPS	AR	263 : 100.5 MHz	C2	LIC	70.2	56	14.2	50.00	150	208
	KDRE	N34:49:52	W092:19:18	NORTH LITTLE ROAR	AR	266 : 101.1 MHz	A	LIC	103.9	89	14.9	6.00	100	32
	KDJE	N34:47:53	W092:29:33	JACKSONVILLE	AR	262 : 100.3 MHz	C1	LIC	93.2	76	17.2	83.00	321	24
	STAT:ADD	N34:04:41	W094:45:53	BROKEN BOW	OK	265 : 100.9 MHz	A	ADD	171.1	142	29.1	0.00	0	272
	KSBC	N34:30:18	W093:04:42	HOT SPRINGS	AR	211 : 90.1 MHz	C1	LIC	54.6	24	30.6	38.00	296	344
	KHLL	N32:28:38	W092:11:08	RICHWOOD	LA	265 : 100.9 MHz	C3	RSV	185.3	153	32.3	0.00	0	159
	WDMS	N33:25:20	W091:01:41	GREENVILLE	MS	264 : 100.7 MHz	C1	LIC	187.3	144	43.3	100.00	135	111
	KPBQ-FM	N34:03:58	W091:57:36	PINE BLUFF	AR	267 : 101.3 MHz	C3	LIC	88.0	43	45.0	25.00	100	88
	STAT:ADD	N33:58:09	W094:56:29	MILLERTON	OK	265 : 100.9 MHz	A	ADD	187.6	142	45.6	0.00	0	268
	NEW	N33:48:55	W092:29:04	FORDYCE	AR	265 : 100.9 MHz	DX	APP	46.3	0	46.3	0.12	0	121
	NEW	N33:48:55	W092:29:04	FORDYCE	AR	265 : 100.9 MHz	DX	APP	46.3	0	46.3	0.12	0	121
	NEW	N34:17:26	W092:29:36	SHERIDAN	AR	264 : 100.7 MHz	DX	APP	48.0	0	48.0	0.08	0	53
	NEW	N34:18:24	W092:25:42	SHERIDAN	AR	264 : 100.7 MHz	DX	APP	54.0	0	54.0	0.09	0	56
	KHLL	N32:24:25	W092:04:13	RICHWOOD	LA	265 : 100.9 MHz	A	LIC	196.6	142	54.6	6.00	100	156
	KMLK	N33:09:32	W092:37:47	EL DORADO	AR	268 : 101.5 MHz	A	LIC	100.4	42	58.4	6.00	100	165
	KAWW-FM	N35:27:26	W092:02:11	HEBER SPRINGS	AR	264 : 100.7 MHz	C2	LIC	177.2	117	60.2	50.00	100	27
	KARV-FM	N34:59:34	W093:11:35	OLA	AR	267 : 101.3 MHz	A	LIC	109.6	42	67.6	0.74	277	346
	KBBQ-FM	N35:13:32	W094:20:29	FORT SMITH	AR	264 : 100.7 MHz	C2	LIC	186.2	117	69.2	50.00	140	315
	K265CD	N34:13:13	W092:04:37	PINE BLUFF	AR	265 : 100.9 MHz	DX	LIC	79.8	0	79.8	0.02	57	75

1 Present licensed facility of subject station.

2 Clearance rounds to 0.

KDEL-FM  
Ch 265 C-3  
Arkadelphia, AR

FIGURE 7

