

**Technical Report
W290CS.CP Minor Modification
250 Mile Move**

This technical report is submitted for a minor modification to W290CS.CP, FCC file no. BNPFT-20131022AHV. A move to channel 238 and new tower site within the allowed 250 mile radius is submitted with corresponding changes in antenna and increase in ERP. The translator is to serve as a fill-in facility to rebroadcast WECO(AM) 940 kHz at Wartburg, TN, FCC facility I.D. no. 43778.

W290CS.CP Modification Analysis:

An overlap study (exhibit E-1) shows the W290CS.CP modification to channel 238 will not produce any interference overlap to other facilities. An interference plot and FM Over tabulation to the first-adjacent WYFC(FM) 237A at Clinton, TN is included as exhibits E-2 and E-3. Exhibit E-4 shows the W290CS.CP modification is within 250 miles of the current facility, and its 60 dBu contour is contained within the primary WECO(AM) 2.0 mV/m daytime contour and 40 km radius (exhibit E-5).

Antenna System:

W290CS.CP is to be relocated to the ASR tower 1048820 at coordinates:

36 11 17N 084 37 37W NAD 27.

A PSI FML two bay, directional antenna (exhibit E-6) will be mounted at a COR AGL of 58 meters, 802 meters AMSL and operate at 0.250 kW ERP.

RF Exposure Calculation:

The RF contribution was calculated using the formula from the OET Bulletin 65:

$$S \text{ (RF in microwatts/cm}^2\text{)} = \frac{33.4 \times F^2 \times (H \text{ ERP} + V \text{ ERP in watts})}{R^2 \text{ (height of radiation center in meters -2m)}}$$

Using a worst case vertical (F) factor of 1.0, the RF is calculated to be $5.33 \mu\text{W}/\text{cm}^2$ to the ground, which is below 5% of the $200 \mu\text{W}/\text{cm}^2$ maximum permissible for general public exposure allowing exclusion from consideration.

Conclusion:

It is concluded that the W290CS.CP modification complies with all Commission rules and policies.

A handwritten signature in black ink, appearing to read 'Christopher Anderson', is written over a horizontal line.

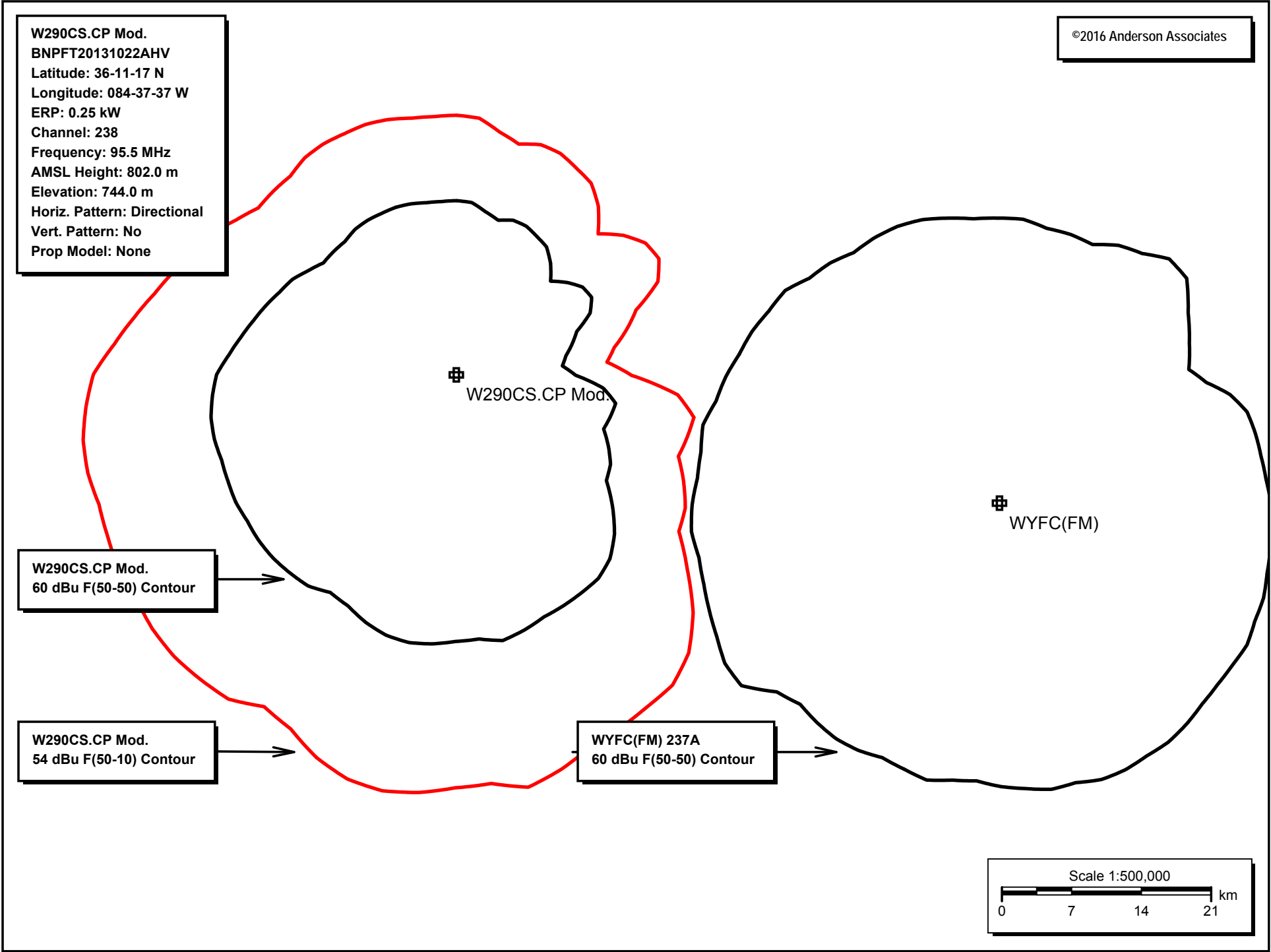
Christopher Anderson May 04, 2016
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E-1 W290CS.CP Mod. Overlap Study

REFERENCE		CH#	238D - 95.5 MHz, Pwr= 0.25 kW DA, HAAT= 338.0 M, COR= 802 M				DISPLAY DATES				
36 11 17.0 N.		Average Protected F(50-50)= 23.89 km				DATA 05-03-16					
84 37 37.0 W.		Standard Directional				SEARCH 05-03-16					
CH	CALL	TYPE	ANT	AZI	DIST	LAT	PWR(kW)	INT(km)	PRO(km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG	HAAT(M)	COR(M)	LICENSEE	(Overlap	in km)
237A	WYFC	LIC _C_		103.2	55.84	36 04 18.0	1.450	47.6	30.6	-9.1	0.6
Clinton		TN		283.6	BMLED20140602BAA	84 01 19.0	204	527	Bible Broadcasting Network		
238C	WSM-FM	LIC _CX		269.2	200.99	36 08 27.0	100.000	182.4	79.5	-6.1	48.5
Nashville		TN		87.8	BLH20111011AKK	86 51 56.0	375	549	Cumulus Licensing Lic		
239A	WDKW	LIC _CX		126.0	67.20	35 49 52.0	6.000	46.0	28.0	-1.4	2.8
Maryville		TN		306.4	BMLH20160302AEL	84 01 26.0	98	380	Midwest Communications, Inc		
239A	WAYB-FM	LIC _ZC_		207.9	97.66	35 24 39.0	6.000	57.2	25.8	14.8	17.5
Graysville		TN		27.6	BMLED20040920ACB	85 07 54.0	100	497	Family Worship Center Church		
291A	WJRV	LIC _CX		108.7	27.68	36 06 29.0	0.190	74.8	25.1	9.5R	18.2M
Oliver Springs		TN		288.9	BLH20090331AEF	84 20 08.0	532	1017	Momentum Broadcasting Lic		
240C2	WLQK	LIC _NCX		269.9	70.36	36 11 03.0	27.000	4.3	41.7	41.7	24.8
Livingston		TN		89.4	BLH20120614AAD	85 24 40.0	204	570	Stonecom Cookeville, Lic		
238L1	WKYD-LP	LIC ____		332.4	92.55	36 55 30.0	0.008			55.9	28.2
Jamestown		KY		152.1	BLL20040514AAB	85 06 32.0	102	351	Southern Kentucky Weather		
238L1	WKYD-LP	CP ____		336.5	99.22	37 00 20.6	0.076			55.0	32.2
Jamestown		KY		156.2	BPL20160105ABD	85 04 20.6	35	318	Southern Kentucky Weather		
238L1	WYJR-LP	LIC ____		59.0	91.43	36 36 32.0	0.100			56.9	33.8
Middlesboro		KY		239.5	BLL20150507AAX	83 44 57.0	-57	379	Middlesboro Board Of Educa		
238C	WOHY	LIC _CN		44.2	236.04	37 41 45.0	100.000	172.9	72.5	47.7	115.8
Prestonsburg		KY		225.3	BLH19910521KB	82 45 24.0	305	575	Wdoc, Inc.		

Terrain database is FCC NGDC 30 Sec , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM											
In & Out distances between contours are shown at closest points. Reference zone= East Zone, Co to 3rd adjacent.											
All separation margins (if shown) include rounding.											
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)											
***affixed to 'IN' or 'OUT' values = site inside restricted contour.											

E-2 W290CS.CP Mod. Interference Plot to WYFC(FM) 237A



E-3 W290CS.CP Mod. FM Over Analysis to WYFC(FM) 237A

WYFC BMLED20140602BAA

W290CS.CP Mod.

Channel = 237A

Max ERP = 1.45 kW

RCAMSL = 527 m

N. Lat. 36 04 18.0

W. Lng. 84 01 19.0

Protected

60 dBu Terrain Data: FCC NGDC 30 Sec 54 dBu

Channel = 238D

Max ERP = 0.25 kW

RCAMSL = 802 m

N. Lat. 36 11 17.0

W. Lng. 84 37 37.0

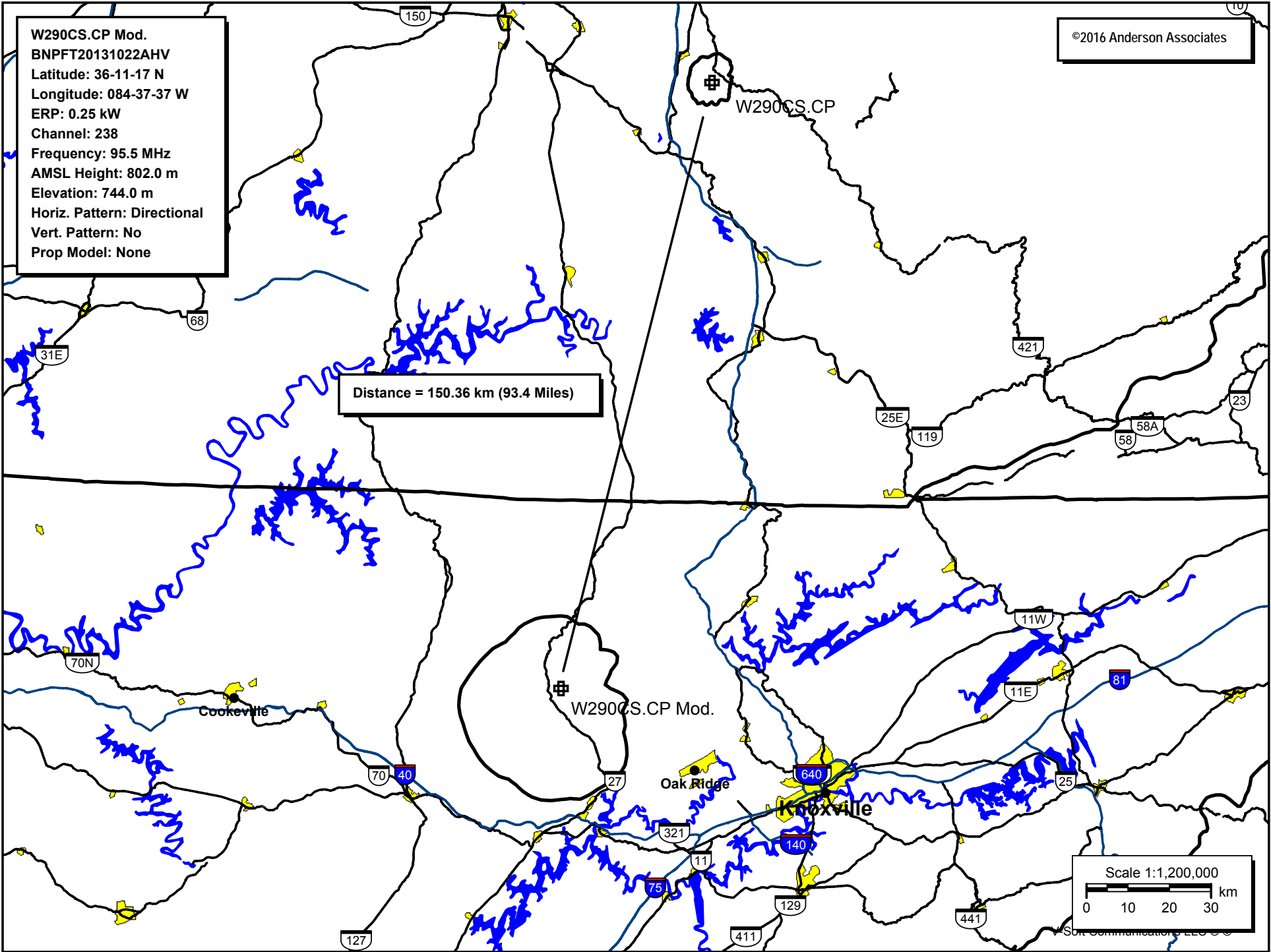
Interfering

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
224.0	001.4500	0207.1	028.4	133.8	000.1835	0334.3	048.2	47.30	
225.0	001.4500	0206.9	028.4	133.8	000.1834	0334.2	047.7	47.49	
226.0	001.4500	0207.2	028.4	133.8	000.1835	0334.2	047.2	47.69	
227.0	001.4500	0208.6	028.5	133.9	000.1841	0334.7	046.7	47.91	
228.0	001.4500	0211.3	028.7	134.1	000.1853	0335.7	046.2	48.18	
229.0	001.4500	0215.0	028.9	134.3	000.1871	0336.9	045.6	48.47	
230.0	001.4500	0219.9	029.3	134.7	000.1894	0338.4	045.1	48.78	
231.0	001.4500	0225.9	029.7	135.2	000.1925	0340.4	044.6	49.14	
232.0	001.4500	0233.0	030.1	135.7	000.1960	0342.3	044.0	49.51	
233.0	001.4500	0241.1	030.7	136.3	000.1999	0344.3	043.4	49.90	
234.0	001.4500	0250.0	031.2	136.9	000.2041	0346.3	042.8	50.30	
235.0	001.4500	0258.5	031.7	137.5	000.2081	0348.4	042.2	50.70	
236.0	001.4500	0265.0	032.1	137.9	000.2111	0350.1	041.6	51.07	
237.0	001.4500	0268.1	032.3	138.1	000.2121	0350.6	041.0	51.36	
238.0	001.4500	0268.2	032.3	138.0	000.2113	0350.2	040.5	51.58	
239.0	001.4500	0265.6	032.1	137.6	000.2088	0348.7	039.9	51.71	
240.0	001.4500	0261.6	031.9	137.1	000.2054	0347.0	039.4	51.81	
241.0	001.4500	0257.8	031.7	136.6	000.2019	0345.2	039.0	51.91	
242.0	001.4500	0255.2	031.5	136.1	000.1990	0343.8	038.5	52.03	
243.0	001.4500	0254.2	031.4	135.8	000.1969	0342.8	037.9	52.18	
244.0	001.4500	0253.6	031.4	135.5	000.1948	0341.7	037.4	52.34	
245.0	001.4500	0252.8	031.4	135.2	000.1926	0340.4	036.9	52.49	
246.0	001.4500	0251.5	031.3	134.8	000.1899	0338.7	036.4	52.60	
247.0	001.4500	0249.9	031.2	134.3	000.1869	0336.8	036.0	52.70	
248.0	001.4500	0249.2	031.1	133.9	000.1843	0334.9	035.5	52.81	
249.0	001.4500	0248.4	031.1	133.5	000.1815	0332.7	035.0	52.91	
250.0	001.4500	0247.4	031.0	133.0	000.1785	0330.2	034.6	52.98	
251.0	001.4500	0246.2	031.0	132.5	000.1752	0327.3	034.1	53.03	
252.0	001.4500	0245.1	030.9	131.9	000.1718	0323.4	033.7	53.05	
253.0	001.4500	0244.3	030.8	131.4	000.1685	0319.1	033.2	53.06	
254.0	001.4500	0243.9	030.8	130.9	000.1652	0314.2	032.8	53.05	
255.0	001.4500	0242.7	030.8	130.2	000.1615	0308.5	032.4	52.99	
256.0	001.4500	0241.3	030.7	129.6	000.1579	0302.6	032.0	52.92	

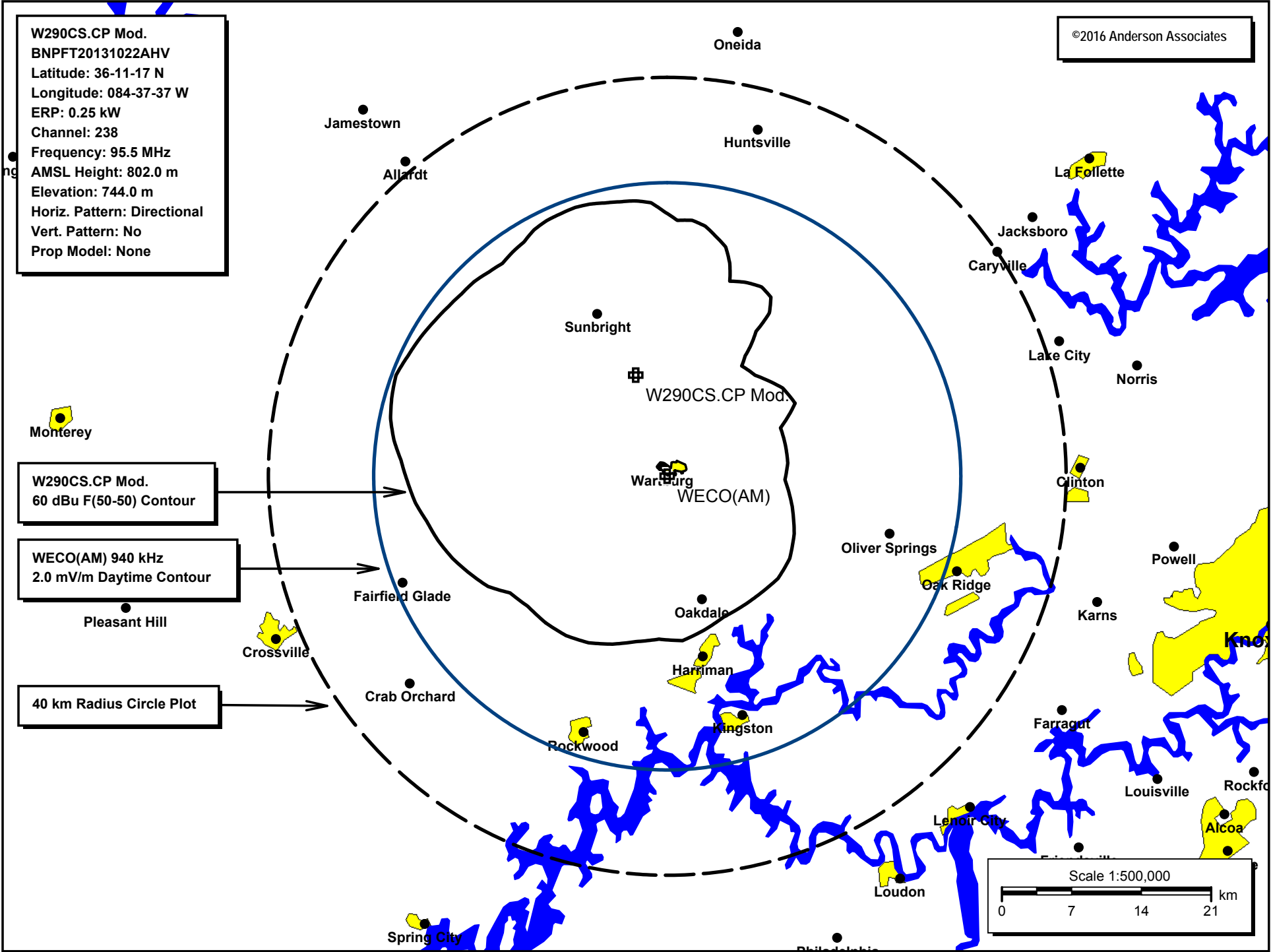
Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
257.0	001.4500	0241.3	030.7	129.0	000.1552	0298.0	031.6	52.93
258.0	001.4500	0240.9	030.6	128.3	000.1521	0293.6	031.2	52.93
259.0	001.4500	0240.6	030.6	127.7	000.1490	0288.3	030.8	52.90
260.0	001.4500	0240.8	030.6	127.0	000.1461	0282.3	030.4	52.85
261.0	001.4500	0240.5	030.6	126.3	000.1427	0274.8	030.0	52.73
262.0	001.4500	0240.4	030.6	125.6	000.1394	0267.7	029.6	52.63
263.0	001.4500	0241.1	030.7	124.9	000.1363	0263.1	029.2	52.62
264.0	001.4500	0243.2	030.8	124.2	000.1335	0260.6	028.8	52.72
265.0	001.4500	0247.5	031.0	123.7	000.1313	0260.3	028.2	52.98
266.0	001.4500	0251.5	031.3	123.2	000.1289	0261.2	027.7	53.26
267.0	001.4500	0254.8	031.5	122.5	000.1260	0262.4	027.2	53.52
268.0	001.4500	0254.3	031.4	121.5	000.1218	0263.4	026.9	53.60
269.0	001.4500	0249.2	031.1	120.2	000.1163	0266.6	026.9	53.52
270.0	001.4500	0244.1	030.8	118.8	000.1117	0271.5	026.9	53.51
271.0	001.4500	0239.1	030.5	117.5	000.1074	0273.1	026.9	53.37
272.0	001.4500	0234.8	030.3	116.3	000.1033	0266.2	026.9	52.98
273.0	001.4500	0234.4	030.2	115.2	000.0999	0258.8	026.7	52.73
274.0	001.4500	0235.2	030.3	114.2	000.0967	0253.7	026.5	52.58
275.0	001.4500	0237.1	030.4	113.2	000.0936	0253.3	026.2	52.63
276.0	001.4500	0239.8	030.6	112.2	000.0906	0254.7	025.9	52.76
277.0	001.4500	0240.6	030.6	111.1	000.0872	0252.7	025.7	52.66
278.0	001.4500	0240.6	030.6	109.9	000.0839	0245.4	025.5	52.34
279.0	001.4500	0239.2	030.5	108.7	000.0811	0238.7	025.5	51.99
280.0	001.4500	0236.8	030.4	107.5	000.0783	0242.5	025.6	51.92
281.0	001.4500	0236.4	030.4	106.3	000.0757	0257.7	025.6	52.28
282.0	001.4500	0236.9	030.4	105.1	000.0731	0274.5	025.5	52.71
283.0	001.4500	0238.7	030.5	103.9	000.0706	0291.9	025.3	53.17
284.0	001.4500	0241.2	030.7	102.7	000.0680	0303.5	025.2	53.45
285.0	001.4500	0243.1	030.8	101.5	000.0655	0311.2	025.1	53.56
286.0	001.4500	0241.9	030.7	100.3	000.0630	0311.3	025.2	53.32
287.0	001.4500	0240.2	030.6	099.1	000.0625	0309.8	025.4	53.13
288.0	001.4500	0238.3	030.5	097.9	000.0625	0304.1	025.6	52.84
289.0	001.4500	0236.3	030.4	096.8	000.0625	0294.7	025.8	52.42
290.0	001.4500	0234.3	030.2	095.8	000.0625	0279.8	026.0	51.81
291.0	001.4500	0233.0	030.1	094.7	000.0625	0255.5	026.2	50.90
292.0	001.4500	0233.7	030.2	093.6	000.0625	0231.9	026.4	50.04
293.0	001.4500	0235.6	030.3	092.4	000.0625	0210.1	026.4	49.16
294.0	001.4500	0236.1	030.3	091.3	000.0625	0191.9	026.6	48.27
295.0	001.4500	0234.6	030.2	090.3	000.0625	0174.5	026.9	47.28
296.0	001.4500	0232.4	030.1	089.5	000.0625	0158.6	027.2	46.17
297.0	001.4500	0232.2	030.1	088.5	000.0625	0141.2	027.5	44.91
298.0	001.4500	0233.1	030.2	087.5	000.0625	0135.5	027.7	44.41
299.0	001.4500	0233.3	030.2	086.5	000.0625	0134.3	027.9	44.17
300.0	001.4500	0232.0	030.1	085.7	000.0625	0134.3	028.3	43.94
301.0	001.4500	0231.2	030.0	084.9	000.0625	0136.4	028.6	43.86
302.0	001.4500	0231.7	030.1	084.0	000.0625	0136.4	028.9	43.69
303.0	001.4500	0233.0	030.1	083.1	000.0625	0139.1	029.2	43.71
304.0	001.4500	0233.8	030.2	082.3	000.0625	0143.0	029.5	43.78
305.0	001.4500	0234.1	030.2	081.5	000.0625	0144.3	029.8	43.66
306.0	001.4500	0233.8	030.2	080.8	000.0625	0144.9	030.2	43.48
307.0	001.4500	0233.1	030.1	080.2	000.0625	0147.2	030.6	43.39

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
308.0	001.4500	0232.3	030.1	079.6	000.0625	0148.6	031.0	43.24
309.0	001.4500	0232.2	030.1	079.0	000.0625	0148.7	031.4	43.03
310.0	001.4500	0232.6	030.1	078.3	000.0625	0149.0	031.8	42.84
311.0	001.4500	0233.2	030.2	077.7	000.0625	0150.3	032.2	42.72
312.0	001.4500	0233.5	030.2	077.1	000.0625	0153.6	032.6	42.69
313.0	001.4500	0233.8	030.2	076.6	000.0625	0158.0	033.1	42.73
314.0	001.4500	0234.5	030.2	076.0	000.0625	0162.8	033.5	42.78
315.0	001.4500	0235.2	030.3	075.5	000.0625	0166.7	033.9	42.77
316.0	001.4500	0235.2	030.3	075.0	000.0625	0169.5	034.4	42.67
317.0	001.4500	0234.8	030.3	074.6	000.0625	0172.1	034.8	42.56
318.0	001.4500	0233.2	030.2	074.4	000.0625	0173.8	035.4	42.38
319.0	001.4500	0229.5	029.9	074.4	000.0625	0174.0	035.9	42.10
320.0	001.4500	0223.9	029.5	074.5	000.0625	0172.7	036.6	41.72
321.0	001.4500	0219.0	029.2	074.7	000.0625	0171.8	037.2	41.37
322.0	001.4500	0217.5	029.1	074.5	000.0625	0173.0	037.7	41.18
323.0	001.4500	0218.7	029.2	074.1	000.0625	0175.5	038.1	41.08
324.0	001.4500	0221.0	029.4	073.6	000.0625	0177.1	038.5	40.96
325.0	001.4500	0222.9	029.5	073.2	000.0625	0177.5	039.0	40.76
326.0	001.4500	0223.3	029.5	072.9	000.0625	0177.7	039.5	40.54
327.0	001.4500	0222.6	029.5	072.8	000.0625	0177.6	040.0	40.29
328.0	001.4500	0220.7	029.3	072.8	000.0625	0177.6	040.5	40.05
329.0	001.4500	0218.2	029.2	072.8	000.0625	0177.6	041.0	39.80
330.0	001.4500	0217.0	029.1	072.7	000.0625	0177.6	041.5	39.56
331.0	001.4500	0218.2	029.2	072.5	000.0625	0177.6	042.0	39.34
332.0	001.4500	0220.8	029.3	072.1	000.0625	0177.9	042.5	39.15
333.0	001.4500	0222.9	029.5	071.8	000.0625	0178.5	043.0	38.96
334.0	001.4500	0223.2	029.5	071.7	000.0625	0178.9	043.5	38.76
335.0	001.4500	0222.1	029.4	071.7	000.0625	0178.9	044.0	38.53
336.0	001.4500	0221.5	029.4	071.7	000.0625	0179.0	044.5	38.31
337.0	001.4500	0222.2	029.4	071.5	000.0625	0179.4	045.0	38.12
338.0	001.4500	0223.5	029.5	071.4	000.0625	0180.1	045.5	37.94
339.0	001.4500	0224.5	029.6	071.3	000.0625	0180.7	046.0	37.76
340.0	001.4500	0224.5	029.6	071.2	000.0625	0180.9	046.5	37.55
341.0	001.4500	0224.0	029.6	071.3	000.0625	0180.7	047.1	37.34
342.0	001.4500	0224.6	029.6	071.2	000.0625	0181.0	047.6	37.15
343.0	001.4500	0224.9	029.6	071.2	000.0625	0181.1	048.1	36.95

E-4 W290CS.CP Mod. 250 Mile Distance Plot



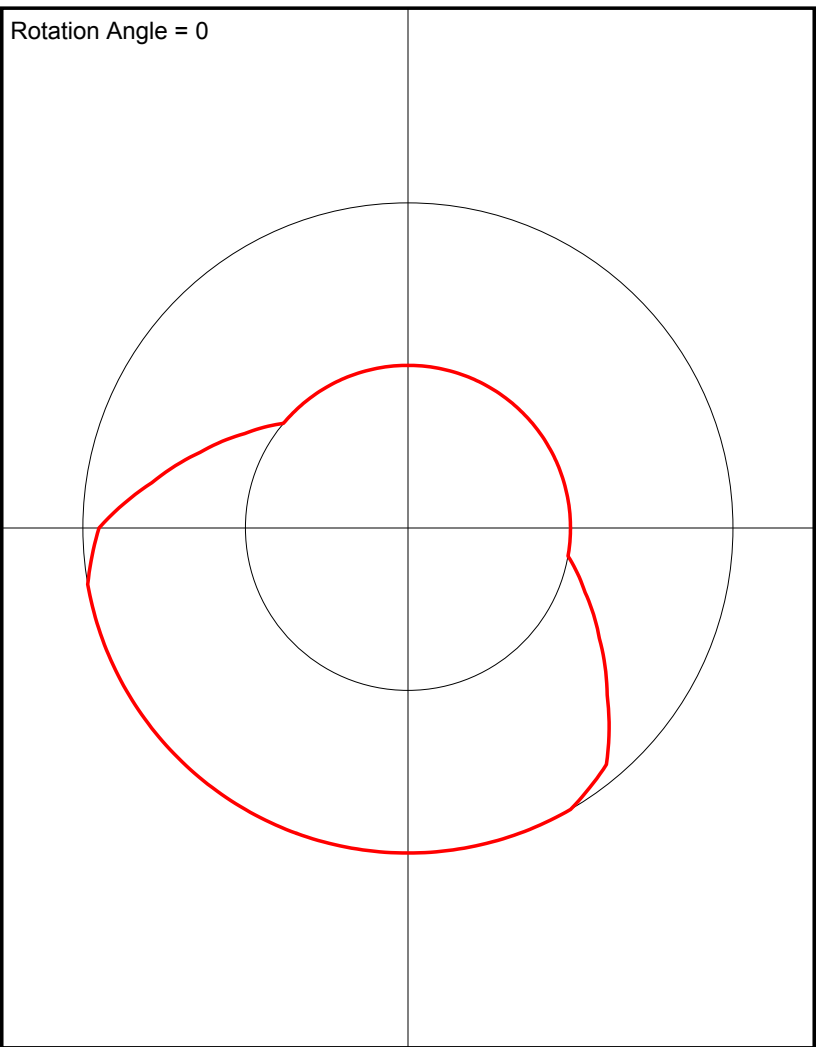
E-5 W290CS.CP Mod. 60 dBu Contour Plot



E-6 W290CS.CP Mod. Directional Antenna Pattern

Azimuth (deg)	Relative Field
0.0	0.5
10.0	0.5
20.0	0.5
30.0	0.5
40.0	0.5
50.0	0.5
60.0	0.5
70.0	0.5
80.0	0.5
90.0	0.5
100.0	0.5
110.0	0.58
120.0	0.68
130.0	0.8
140.0	0.95
150.0	1.0
160.0	1.0
170.0	1.0
180.0	1.0
190.0	1.0
200.0	1.0
210.0	1.0
220.0	1.0
230.0	1.0
240.0	1.0
250.0	1.0
260.0	1.0
270.0	0.95
280.0	0.8
290.0	0.68
300.0	0.58
310.0	0.5
320.0	0.5
330.0	0.5
340.0	0.5
350.0	0.5

Rotation Angle = 0



E-7 W290CS.CP Mod. Tower ASR 1048820

Registration Detail

Reg Number	1048820	Status	Constructed
File Number	A0057439	Constructed	07/01/1988
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type TOWER - Free standing or Guyed Structure used for Commu

Location (in NAD83 Coordinates)

Lat/Long	36-11-17.0 N 084-37-37.0 W	Address	2.2 MI ESE OF PILOT MOUNTAIN COMMUNITY
City, State	WARTBURG , TN		
Zip	37770	County	MORGAN
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
743.7	75.1
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
818.8	73.9

Painting and Lighting Specifications

FAA Chapters 3, 4, 5, 13

Paint and Light in Accordance with FAA Circular Number 70/7460-1J

FAA Notification

FAA Study	98-ASO-2326-OE	FAA Issue Date	05/11/1998
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Owner & Contact Information

FRN	Owner Entity Type
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Owner

MORGAN COUNTY BROADCASTING CO, INC. DBA = WECO Attention To: SANDRA LAVENDER 305 CHURCH STREET P.O. Box # 100 WARTBURG , TN 37887	P: (423)346-3900 F: E:
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Contact

P:
F:
E:

Last Action Status

Status	Constructed	Received	05/29/1998
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