REPORT REGARDING DETUNING OF NEW FM BROADCAST TOWER, ASR#1237254

KLAL-FM, Wrightsville, Arkansas
Citadel Broadcasting Company
February 9, 2005

Introduction

Citadel Broadcasting Company is the licensee of FM radio station KLAL, Wrightsville, Arkansas, and the permittee of a Construction Permit to upgrade KLAL from channel 299C2 to channel 299C1. The terms of the Construction Permit require Citadel to perform pre-construction and post-construction Partial Proof of Performance measurements of nearby AM station KAAY, and to install and maintain detuning apparatus as necessary to prevent adverse effects upon the radiation pattern of the AM station. This report documents the detuning measures taken by Citadel to comply with this requirement, and analysis of pre-construction and post-construction Partial Proof of Performance Measurements.

Detuning Methodology

The Antenna Structure related to the KLAL Construction Permit is a new, guyed tower with a total height above ground of 243.8 meters, as described in Antenna Structure Registration # 1237254. The consulting firm of Cavell, Mertz and Davis were commissioned to conduct a Numeric Electromagnetic Code (NEC) modeling study of the new structure and its effect on the KAAY radiation pattern, in order to determine the most efficient method of detuning the structure. Based on the results of that study, the tower's guy wires were broken into short, non-resonant sections utilizing suitable insulators, and three detuning skirts, each 200 feet in length, were installed on the tower, as shown in Figure 1. Motorized tuning units were utilized at all three levels to allow adjustment of skirt tuning from ground level. Skirt tuning controls were also interconnected with the station remote control unit to allow remote tuning from field observation points via wireless telephone.

After experimenting with several possible test points, an optimum test point was chosen as shown in Figure 2. This test point is positioned such that, when observing the reradiated signal with a Field Intensity Meter, the null in the direct signal from KAAY coincides with maximum reradiated signal reception from the new tower. This point is also strategically located to minimize reception of any reradiated signal from a nearby pre-existing tower, thus allowing for optimum observation of the tower being detuned. Utilizing this test point, the reradiated signal was observed using a Potomac Instruments FIM-41 Field Intensity Meter while alternately adjusting the three skirts for minimum reradiated signal. A pronounced, deep null was noted on the FIM as the skirts were tuned.

The test point is readily accessible to station engineering staff, allowing for routine verification of detuning as necessary.

Partial Proof-of-Performance Measurements

It should be noted that KAAY is currently under an STA to operate with parameters at variance with licensed values, due to reradiation issues from a recently constructed electrical generating plant and substation in close proximity to the KAAY site. This STA was in effect both when the pre-construction and post-construction measurements were performed. For these measurements, the KAAY transmitter was operated at a power of approximately 17kW on nighttime (directional) pattern. This corresponds to the nighttime power level that KAAY has been operating under the STA. To avoid introducing additional variables between the pre-construction and post-construction measurements, all detuning activities at the offending plant were suspended until construction and detuning of the new KLAL tower was completed.

Preconstruction measurements were made in accordance with section 73.154 of the Commission's rules, on March 25-26, 2004. Measurements were taken at eight points on each of four radials that contain defined monitor points. The points used were taken from the most recent full Proof of Performance, dated August 13, 1984. Post-construction measurements were taken on February 7-8, 2005, utilizing the same measurement points.

Daniel F. Case, the Engineering Director for both KAAY and KLAL, performed all measurements. Mr. Case has an established history of over 30 years as a broadcast engineer, and has substantial prior experience performing such measurements. The field meter used for these measurements was a Potomac Instruments model FIM-41, serial number 663, which was factory calibrated on March 15, 1989 and has been checked against meters of more recent calibration and found to be accurate.

Analysis and Conclusion

The pre-construction and post-construction measurements were analyzed using the arithmetic ratio of post-construction to pre-construction field strength, as shown in Figure 3. Based on this analysis, it may be concluded that the new structure is suitably detuned and does not adversely affect the KAAY array. The requirements of condition #1 of the KLAL Construction Permit have been satisfied.

Respectfully Submitted,

Daniel F. Case
Director of Engineering
Citadel Little Rock

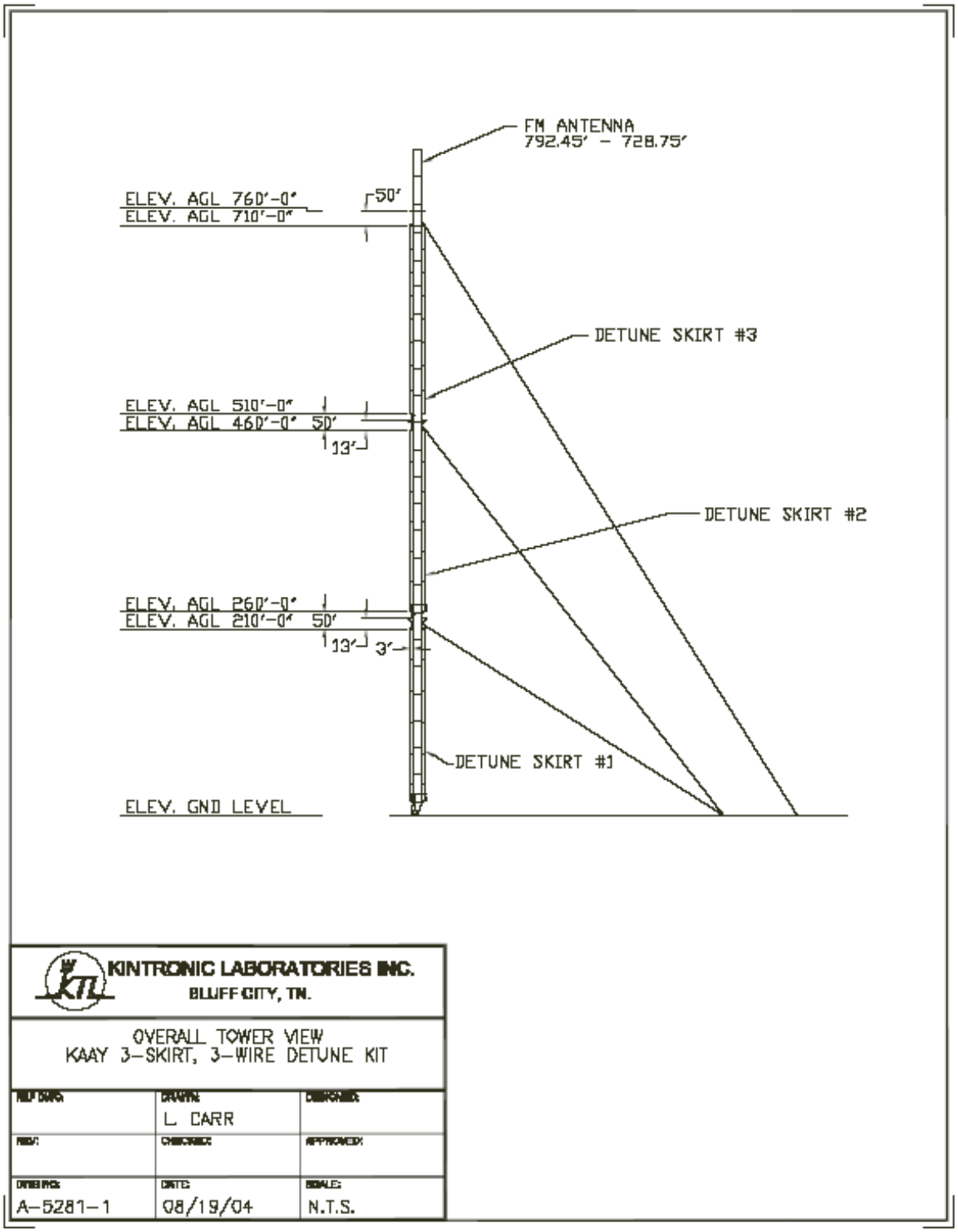

Figure 1
Detuning Skirt Layout

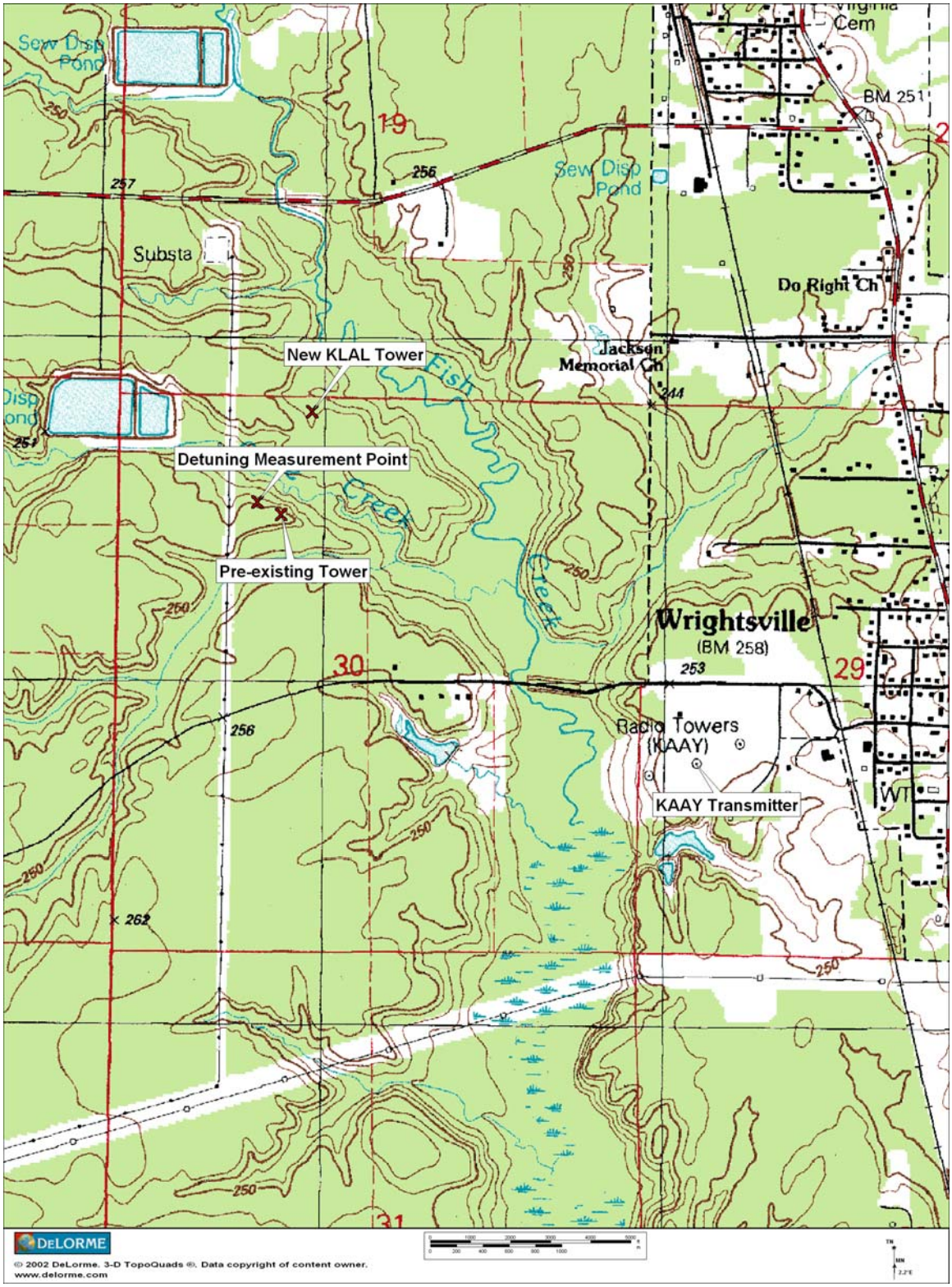

Figure 2
KLAL Detuning Measurement Point Location

Radial	1984 point	Distance (Miles)	Pre-Construction (mV/M)	Post-Construction (mV/M)	Post/Pre Ratio	
55.5°T	39(MP)	2.16	35.5	33.5	0.944	
	41	2.71	26.5	26	0.981	
	42	3.01	18.4	18	0.978	
	43	3.50	15.3	15	0.980	
	44	3.56	13	12.6	0.969	
	45	5.72	3.05	2.1	0.689	
	50	8.73	2.4	1.7	0.708	
	51	9.42	2.35	1.8	0.766	**55.5°T Average: 0.877**
72.5°T	40(MP)	2.30	20	19.5	0.975	
	41	3.03	15.4	15.5	1.006	
	42	3.43	17.5	14	0.800	
	44	6.35	4.75	3.8	0.800	
	46	7.32	4.4	3.7	0.841	
	47	7.75	4.4	3.3	0.750	
	48	8.80	3.1	2.4	0.774	
	49	9.90	2.9	3.05	1.052	**72.5°T Average: 0.875**
252.5°T	42(MP)	1.84	24	25	1.042	
	43	2.60	15.5	16.5	1.065	
	44	2.79	13	13.1	1.008	
	47	3.02	13	13.5	1.038	
	49	3.15	12.5	13.1	1.048	
	51	3.50	11.2	10.9	0.973	
	53	6.05	2.38	2.5	1.050	
	54	6.53	2.17	2.15	0.991	**252.5°T Average: 1.027**
269.5°T	40(MP)	1.77	27	29	1.074	
	41	3.65	9.2	10.1	1.098	
	42	3.96	6.5	7.6	1.169	
	43	4.57	3.4	4	1.176	
	44	4.95	2.33	2.3	0.987	
	45	5.65	2.82	2.5	0.887	
	46	6.08	1.78	1.71	0.961	
	47	6.90	1.77	1.7	0.960	**269.5°T Average: 1.039**

Pre/Post Overall Ratio: 0.954

Figure 3
Tabulation of Measurements and Ratio Calculations