

**ENGINEERING STATEMENT
DETERMINATION OF IMPACT OF
AMERICAN TOWER CORPORATION
TOWER CONSTRUCTION AND REMOVAL ON
STATION WNWR, PHILADELPHIA, PENNSYLVANIA**

GENERAL

This office was retained by American Tower Corporation ("ATC") to evaluate the impact of the construction of a new communications tower and the dismantling of another tower on the directional antenna pattern of Station WNWR, Philadelphia, Pennsylvania. Station WNWR operates on 1540 kilohertz during daytime hours with nominal power of 50 kilowatts and is located within 3.2 kilometers of the proposed construction. This report provides "before" and "after" partial proof-of-performance measurements conducted in accordance with the FCC Rules, as recently modified in MM Docket No. 93-177.

MEASUREMENTS

The "before" measurements contained herein were conducted prior to the start of construction on November 8th and 9th, 2001, by the undersigned, accompanied by Mr. Albert Crider on behalf of Station WNWR. A Potomac Instruments Field Intensity Meter, Model FIM-41, Serial No. 620, most recently calibrated February, 2001, was employed for the "before" measurements. The accuracy of the meter was checked against the meter

employed by Mr. Crider, a Potomac Instruments, Model FIM-41, Serial No. 1952, calibrated October, 1997, and was found to be within manufacturer's stated tolerances. The "after" measurements contained herein were conducted following the completion of all construction on June 11th, 2004, by the undersigned. A Potomac Instruments Field Intensity Meter, Model FIM-41, Serial No. 989, most recently calibrated March, 2004, was employed for all "after" measurements. The accuracy of the meter was checked against a second Potomac Instruments Field Intensity Meter and was found to be within manufacturer's stated tolerances.

Prior to the start of the "before" and "after" measurements, the WNWR directional antenna monitor parameters and common point current were recorded. The monitor point on each of the four monitored radials was measured to verify the value was within the authorized maximum value. Station WNWR is currently operating with parameters at variance while maintaining monitor points within the authorized limits under a Special Temporary Authorization (STA). The station was found to be in full compliance with the STA.

A total of twelve measurements including the authorized monitor point were taken on each of the four WNWR monitored radials. The measurements were taken at the distances specified in the most recent full proof-of-performance conducted in 1959. In accordance with recent FCC Rule changes, measurements were conducted on the four

monitored radials only, 36 degrees True, 236 degrees True, 288 degrees True and 342 degrees True. Tabulations of the measured field strength data are attached.

It was noted the “before” readings along two radials, 236 degrees True and 342 degrees True were exhibiting a sporadic shift in field strength at the majority of the measurement locations. The high and low values were recorded at each of these locations. Further analysis of the radials revealed the inverse distance field strength on each of these two null radials is excessively lower than the modified standard pattern values. Specifically, the 236 degrees True radial is 29.4 percent of the modified standard pattern value or 26 dB below the 1959 measured maximum in the main lobe. The 342 degrees True radial is 32.4 percent of the modified standard pattern value or 34 dB below the 1959 measured maximum in the main lobe. Although at the time a thorough check of the directional antenna system and nearby potentially re-radiating structures was not performed, circumstances led us to believe the sporadic nature of the measurements was a result of side band energy reacting with the field intensity meter due to excessively tight nulls on the two radials. The sporadic nature of the “before” readings did not show up nearly as much in the “after” measurements.

A tabulation of the “before” and “after” measurements and ratios is included herein as Figure 1 for each of the four WNWR monitored radials. The analysis shows very little change in the pattern and what little change that has occurred can possibly be a result of a variance in parameters between those which were observed when the “before”

measurements were conducted versus those which were observed when the "after" measurements were conducted. Therefore, it is believed that the construction has not had an adverse impact on the WNWR directional antenna array.

This engineering statement and the attached figures were prepared by the undersigned or under his direct supervision on behalf of American Tower Corporation and are believed to be true and correct.

Date: July 12, 2004

James D. Sadler

**TABULATION OF MEASURED FIELD STRENGTH DATA
STATION WNWR - PHILADELPHIA, PENNSYLVANIA
1540 kHz - 50 kW, DA-D**

34 Degrees True Radial

Point Number (1959 Proof)	Distance (miles)	Distance (kilometers)	November, 2001 "BEFORE"			June, 2004 "AFTER"			Ratio (After/Before)
			Date	Time (local)	Measured Field Strength (mV/m)	Date	Time (local)	Measured Field Strength (mV/m)	
11 (MP)	2.02	3.25	11/08/2001	915	43 / 46	06/11/2004	940	41.5	0.9326
12	2.12	3.41	11/08/2001	920	35 / 37	06/11/2004	944	34	0.9444
13	2.32	3.73	11/08/2001	924	35.5	06/11/2004	948	35.5	1.0000
14	2.42	3.89	11/08/2001	927	32.3	06/11/2004	951	31.1	0.9628
15	2.49	4.01	11/08/2001	932	38.7	06/11/2004	953	37	0.9561
17	2.9	4.67	11/08/2001	938	37.5	06/11/2004	959	33.4	0.8907
20	4.04	6.50	11/08/2001	952	15.7	06/11/2004	1008	16	1.0191
22	5.05	8.13	11/08/2001	1001	14.6	06/11/2004	1026	14.4	0.9863
23	5.43	8.74	11/08/2001	1012	11.6	06/11/2004	1031	11.4	0.9828
25	6.57	10.57	11/08/2001	1026	8.9	06/11/2004	1040	8.2	0.9213
26	7.37	11.86	11/08/2001	1032	5.55	06/11/2004	1045	4.97	0.8955
27	8.18	13.16	11/08/2001	1040	4.6	06/11/2004	1049	3.4	0.7391
Average Ratio									0.9359

TABULATION OF MEASURED FIELD STRENGTH DATA
STATION WNWR - PHILADELPHIA, PENNSYLVANIA
1540 kHz - 50 kW, DA-D

236 Degrees True Radial

Point Number (1959 Proof)	Distance (miles)	Distance (kilometers)	November, 2001 "BEFORE"			June, 2004 "AFTER"			Ratio (After/Before)
			<u>Date</u>	<u>Time (local)</u>	<u>Measured Field Strength (mV/m)</u>	<u>Date</u>	<u>Time (local)</u>	<u>Measured Field Strength (mV/m)</u>	
11 (MP)	2.01	3.23	11/09/2001	1417	29.5 / 32.5	06/11/2004	1525	18.8	0.6065
12	2.29	3.69	11/09/2001	1423	9.7	06/11/2004	1531	5.1	0.5258
13	2.6	4.18	11/09/2001	1430	2.65	06/11/2004	1538	2.9	1.0943
14	2.87	4.62	11/09/2001	1433	1.25 / 2.6	06/11/2004	1545	2.4	1.2468
15	3.27	5.26	11/09/2001	1438	2.0 / 3.0	06/11/2004	1552	2.5	1.0000
18	4.02	6.47	11/09/2001	1445	4.5 / 5.8	06/11/2004	1559	3.9	0.7573
20	4.94	7.95	11/09/2001	1452	2.5 / 2.85	06/11/2004	1609	2.9 / 3.0	1.1028
21	5.47	8.80	11/09/2001	1458	1.25 / 1.70	06/11/2004	1614	1.95 / 2.05	1.3559
22	5.77	9.29	11/09/2001	1507	1.15 / 1.25	06/11/2004	1619	1.6 / 1.75	1.3958
24	7.19	11.57	11/09/2001	1514	0.8 / 0.9	06/11/2004	1630	0.9 / 1.05	1.1471
25	8.26	13.29	11/09/2001	1521	0.160 / 0.185	06/11/2004	1641	0.52 / 0.62	3.3043
26	8.59	13.82	11/09/2001	1528	0.27 / 0.32	06/11/2004	1646	0.46 / 0.54	1.6949
Average Ratio									1.2693

TABULATION OF MEASURED FIELD STRENGTH DATA
STATION WNWR - PHILADELPHIA, PENNSYLVANIA
1540 kHz - 50 kW, DA-D

288 Degrees True Radial

Point Number (1959 Proof)	Distance (miles)	Distance (kilometers)	November, 2001 "BEFORE"			June, 2004 "AFTER"			Ratio (After/Before)
			<u>Date</u>	<u>Time (local)</u>	<u>Measured Field Strength (mV/m)</u>	<u>Date</u>	<u>Time (local)</u>	<u>Measured Field Strength (mV/m)</u>	
10 (MP)	2.62	4.22	11/09/2001	1121	15.6 / 16.6	06/11/2004	1322	15.3	0.9503
11	3.37	5.42	11/09/2001	1130	17.3	06/11/2004	1329	13.8	0.7977
12	3.63	5.84	11/09/2001	1134	14.7	06/11/2004	1334	11.8	0.8027
13	4.08	6.57	11/09/2001	1150	13.6	06/11/2004	1341	11	0.8088
16	5.52	8.88	11/09/2001	1204	5.0	06/11/2004	1348	3.87	0.7740
17	6.22	10.01	11/09/2001	1212	4.42	06/11/2004	1355	3.67	0.8303
18	6.95	11.18	11/09/2001	1216	2.23	06/11/2004	1402	1.68	0.7534
19	7.8	12.55	11/09/2001	1231	3.08	06/11/2004	1405	3.27	1.0617
20	8.87	14.27	11/09/2001	1239	2.55	06/11/2004	1411	2.18	0.8549
21	9.64	15.51	11/09/2001	1246	4.1	06/11/2004	1417	3.9	0.9512
22	10.11	16.27	11/09/2001	1250	2.96	06/11/2004	1422	2.86	0.9662
25	12.6	20.28	11/09/2001	1306	1.24	06/11/2004	1431	1.13	0.9113
Average Ratio									0.8719

TABULATION OF MEASURED FIELD STRENGTH DATA
STATION WNWR - PHILADELPHIA, PENNSYLVANIA
1540 kHz - 50 kW, DA-D

342 Degrees True Radial

Point Number (1959 Proof)	Distance (miles)	Distance (kilometers)	November, 2001 "BEFORE"			June, 2004 "AFTER"			Ratio (After/Before)
			Date	Time (local)	Measured Field Strength (mV/m)	Date	Time (local)	Measured Field Strength (mV/m)	
10 (MP)	2.08	3.35	11/08/2001	1244	13 / 16.5	06/11/2004	1136	4.65	0.3153
11	2.43	3.91	11/08/2001	1252	10.4	----	----	----	----
12	2.61	4.20	11/08/2001	1300	7.0 / 9.5	06/11/2004	1130	5	0.6061
13	2.86	4.60	11/08/2001	1311	5.5	06/11/2004	1144	4.4	0.8000
15	3.38	5.44	11/08/2001	1322	5.5 / 6.5	06/11/2004	1149	4.45	0.7417
16	3.67	5.91	11/08/2001	1331	3.85	06/11/2004	1155	4.05	1.0519
17	4.07	6.55	11/08/2001	1345	4.85	06/11/2004	1159	3.45	0.7113
18	4.77	7.68	11/08/2001	1353	3.15	06/11/2004	1206	1.92	0.6095
19	5.05	8.13	11/08/2001	1405	1.5 / 2.2	06/11/2004	1212	2.05	1.1081
21	6.46	10.40	11/08/2001	1424	2.0 / 2.3	06/11/2004	1222	2.15	1.0000
22	7.72	12.42	11/08/2001	1435	0.4 / 0.66	06/11/2004	1232	0.94	1.7736
23	8.44	13.58	11/08/2001	1445	0.6 / 0.74	06/11/2004	1236	0.84	1.2537
Average Ratio									0.9065