Consulting Engineers
CTJC
CARL T. JONES CORPORATION

STATEMENT OF JAMES D. SADLER
BEFORE AND AFTER PARTIAL PROOFS
AM STATION WSPZ - WASHINGTON, DC
IN SUPPORT OF AN APPLICATION FOR LICENSE
FM TRANSLATOR STATION W240DJ - WASHINGTON, DC
FACILITY ID: 139772

Applicant: Radio One Licenses, LLC

I am a Technical Consultant, an employee in the firm of Carl T. Jones Corporation with offices located in Springfield, VA. My education and experience are a matter of record with the Federal Communications Commission.

Introduction

FM Translator Station W240DJ is authorized in its Construction Permit, FCC File No. BMPFT-20180417AAV, to mount a new transmitting antenna and associated transmission line on the center tower of the WSPZ nighttime directional array. A special operating condition was placed on the Construction Permit requiring the permittee to conduct a partial proof of performance as defined in Section 73.154 of the Commission's Rules both before and after construction to show that the AM Station has not been adversely affected by the new installation.

Radio Station WSPZ, Washington, DC, is licensed to operate on a frequency of 1260 kHz, on an unlimited time basis, with a daytime power of 35 kW and a nighttime

7901 Yarnwood Court
Springfield, VA 22153-2899
tel: (703) 569-7704
fax: (703) 569-6417
email: info@ctjc.com
www.ctjc.com

power of 5 kW. The station utilizes different directional patterns for its daytime and nighttime operations (DA-2). The daytime directional antenna system employs the two end towers (Towers 2 and 3) while the nighttime directional antenna system employs all three towers including Tower 1 which the W240DJ transmitting antenna is located. The center tower is fully detuned in the daytime mode of operation.

Partial proof of performance measurements have been performed both before and after the translator construction on the four WSPZ nighttime monitored radials. Because the center tower is not a radiator in the daytime directional antenna system, partial proof of performance measurements have not been performed on the daytime monitored radials. Modifications to antennas and transmission lines on the center tower have been found to have little or no effect on the WSPZ daytime directional antenna pattern; therefore, before and after measurements relative to the daytime directional antenna were only made at the daytime monitoring points. Due to the seasonal variation of ground conductivity expected to occur between the start of construction and the completion of construction partial proof of performance measurements were made on both the non-directional and nighttime directional antennas to provide a more accurate assessment of the effect of the construction on the WSPZ antenna system.

Non-directional and Nighttime Directional Partial Proof Field Strength Measurements

The non-directional antenna impedance of Tower 1 (center) was measured, by the undersigned, using a Delta Electronics, Model OIB-1, operating impedance bridge

both before and after the installation of the new FM translator antenna and transmission line. The transmitter was adjusted for a base current corresponding to a non-directional antenna input power of approximately 6,250 Watts. The measurement was performed at the J-Plug located in the output branch of the Tower 1 ATU network with Towers 2 and 3 detuned. The nighttime directional antenna common point impedance was adjusted for Z_{cp} = 50.0 -j 8.8 Ohms and the transmitter was adjusted for a common point current of 10.39 Amperes for the nighttime directional antenna partial proof measurements. This corresponds to the licensed antenna input power of 5,400 Watts.

Non-directional and nighttime directional partial proof field strength measurements were performed on all four nighttime monitored radials before and after construction. A minimum of eight field strength measurements were performed on each radial bearing at the same locations that were measured in the 2012 nighttime full proof-of-performance, including the monitoring point locations. All measurements were made during the period between two hours following local sunrise and two hours prior to local sunset to minimize the potential for skywave interference. Measurements were made at the same locations both before and after the construction.

The nighttime directional pattern measured inverse distance fields were determined in the following manner. An arithmetic and logarithmic ratio of the nighttime directional field strength to the non-directional field strength was calculated for each measurement location and an average logarithmic ratio determined for each radial bearing. The antilogarithm of the averages were multiplied by the 2012 measured non-

directional inverse distance fields to yield the before and after nighttime directional inverse distance field values.

A comparative summary of the before and after measured field strength data and the standard pattern radiation for the four measured nighttime radials is contained herein as Figure 1. The before measurements indicate that the measured inverse distance field strength did not exceed the standard pattern value on any of the radials. The after measurements showed a small change in the inverse distance field strengths between the before and after measurements. This difference in the before and after inverse distance field strengths is believed to be related to the large ongoing construction project located adjacent to the transmitter site that began after the before measurements were completed and not directly due to the FM translator installation. There was virtually no change in the nighttime directional antenna monitor parameters and the Tower 1 base impedance following the FM translator installation. It has been our experience with this antenna system that when changes are made to Tower 1 that have had little effect on the nighttime directional antenna monitor parameters and Tower 1 base impedance there will be an insignificant change to the nighttime directional antenna pattern. The measured field strengths at all four nighttime monitoring points remain well within the licensed maximum values.

All of the before and after field strength measurements were performed by Mr. Tom Ringer, a contract engineer working for Carl T. Jones Corporation, and the undersigned. A total of two field intensity meters were used to make the after

measurements. Pertinent information on each field intensity meter is contained in the table below.

Manufacturer/Model	Serial Number	Calibration Date
Potomac Instruments/FIM-41	989	March, 2012
Potomac Instruments/FIM-41	2008	February, 2012

The performance of the two field intensity meters was verified by comparing measured field strength values at several different full scale settings and verifying that the field strength values, as measured on each meter, agreed within the manufactures stated accuracy.

Daytime Monitoring Points

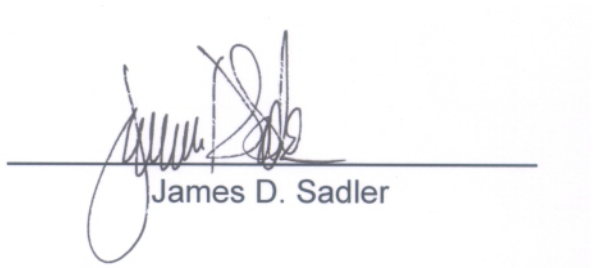
The daytime directional antenna monitoring points were measured before and after the construction. The measured field strengths at the monitoring points were both within the normal variance range and well within the licensed maximum values.

Summary

It is submitted that the construction of FM Translator Station W240DJ has not adversely affected the operations of Stations WSPZ and therefore the W240DJ permittee has fully complied with Special Operating Condition on its Construction Permit with respect to the operation of Station WSPZ.

This engineering statement and the associated figures were prepared by me or under my direct supervision and the information therein is believed to be true and correct.

Dated: November 8, 2018



SUMMARY OF NIGHTTIME MEASURED FIELD STRENGTH DATA
AM STATION WSPZ, WASHINGTON, DC
1260 kHz, 35 kW-D, 5 kW-N, DA-2

BEFORE MEASUREMENTS

Monitored Radial (deg. T.)	2012 ND Inverse Distance Field Strength (mV/m at 1 km)	DA-N / ND Antilog of Average Ratio	DA-N Measured Inverse Distance Field Strength (mV/m at 1 km)	Nighttime Modified Standard Pattern Radiation (mV/m at 1 km)
52	725	0.0770	55.8	60.0
198	760	0.8074	614	877
280	800	0.0535	42.8	61.2
325	790	0.4243	335	368

AFTER MEASUREMENTS

Monitored Radial (deg. T.)	2012 ND Inverse Distance Field Strength (mV/m at 1 km)	DA-N / ND Antilog of Average Ratio	DA-N Measured Inverse Distance Field Strength (mV/m at 1 km)	Nighttime Modified Standard Pattern Radiation (mV/m at 1 km)
52	725	0.0889	64.5	60.0
198	760	0.7225	549	877
280	800	0.0954	76.4	61.2
325	790	0.4252	336	368

TABULATION OF FIELD STRENGTH MEASUREMENT DATA
AM STATION WSPZ, WASHINGTON, DC
1260 kHz, 35 kW-D, 5 kW-N, DA-2

52 Degrees True Radial

BEFORE MEASUREMENTS

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND Date	Time (local)	Field Strength (mV/m)	5 kW, DA-NIGHT Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
12	4.22	8/11/2018	850	49.5	8/11/2018	1242	3.7	0.0747	-1.1264
13 MP	5.58	8/11/2018	855	23.2	8/11/2018	1248	2.55	0.1099	-0.9589
15	7.31	8/11/2018	902	15.5	8/11/2018	1257	1.03	0.0665	-1.1775
16	8.02	8/11/2018	906	22.3	8/11/2018	1301	1.44	0.0646	-1.1899
17	8.24	8/11/2018	908	13.8	8/11/2018	1303	0.81	0.0587	-1.2314
18	9.69	8/11/2018	913	9.8	8/11/2018	1307	0.81	0.0827	-1.0827
20	12.90	8/11/2018	927	5.60	8/11/2018	1321	0.51	0.0911	-1.0406
21	14.00	8/11/2018	933	4.40	8/11/2018	1328	0.35	0.0795	-1.0994
							Average Ratio	0.0785	-1.1134
							Antilog of Average		0.0770

AFTER MEASUREMENTS

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND Date	Time (local)	Field Strength (mV/m)	5 kW, DA-NIGHT Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
12	4.22	9/27/2018	849	49.0	9/27/2018	1251	4.7	0.0959	-1.0181
13 MP	5.58	9/27/2018	858	24.7	9/27/2018	1257	3.35	0.1356	-0.8677
15	7.31	9/27/2018	906	15.6	9/27/2018	1308	1.21	0.0776	-1.1103
16	8.02	9/27/2018	909	23.0	9/27/2018	1312	1.55	0.0674	-1.1714
17	8.24	9/27/2018	912	15.0	9/27/2018	1314	1.02	0.0680	-1.1675
18	9.69	9/27/2018	916	10.2	9/27/2018	1319	0.98	0.0961	-1.0174
20	12.90	9/27/2018	934	6.05	9/27/2018	1333	0.6	0.0992	-1.0036
21	14.00	9/27/2018	941	4.50	9/27/2018	1340	0.4	0.0889	-1.0512
							Average Ratio	0.0911	-1.0509
							Antilog of Average		0.0889

TABULATION OF FIELD STRENGTH MEASUREMENT DATA
AM STATION WSPZ, WASHINGTON, DC
1260 kHz, 35 kW-D, 5 kW-N, DA-2

198 Degrees True Radial

BEFORE MEASUREMENTS

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND Date	Time (local)	Field Strength (mV/m)	5 kW, DA-NIGHT Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
14	2.38	8/11/2018	844	130	8/11/2018	1235	101	0.7769	-0.1096
15	2.87	8/11/2018	849	100	8/11/2018	1240	82	0.8200	-0.0862
16	3.34	8/11/2018	853	82	8/11/2018	1244	65	0.7927	-0.1009
17	3.77	8/11/2018	859	52	8/11/2018	1249	43	0.8269	-0.0825
18	4.41	8/11/2018	905	65	8/11/2018	1254	50	0.7692	-0.1139
19	4.91	8/11/2018	911	56	8/11/2018	1259	39	0.6964	-0.1571
20 MP	5.31	8/11/2018	915	56	8/11/2018	1304	48	0.8571	-0.0669
21	6.63	8/11/2018	924	26	8/11/2018	1312	25	0.9615	-0.0170
22	7.94	8/11/2018	929	16	8/11/2018	1318	11	0.6875	-0.1627
23	9.75	8/11/2018	937	4.2	8/11/2018	1328	3.9	0.9286	-0.0322
							Average Ratio	0.8117	-0.0929
							Antilog of Average		0.8074

AFTER MEASUREMENTS

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND Date	Time (local)	Field Strength (mV/m)	5 kW, DA-NIGHT Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
14	2.38	9/27/2018	1038	125	9/27/2018	1248	103	0.8240	-0.0841
15	2.87	9/27/2018	1044	98	9/27/2018	1241	85	0.8673	-0.0618
16	3.34	9/27/2018	1049	81	9/27/2018	1236	68	0.8395	-0.0760
17	3.77	9/27/2018	1056	51	9/27/2018	1229	40	0.7843	-0.1055
18	4.41	9/27/2018	1103	67	9/27/2018	1221	45	0.6716	-0.1729
19	4.91	9/27/2018	1109	58	9/27/2018	1215	35	0.6034	-0.2194
20 MP	5.31	9/27/2018	1114	58	9/27/2018	1210	43	0.7414	-0.1300
21	6.63	9/27/2018	1126	28	9/27/2018	1157	20	0.7143	-0.1461
22	7.94	9/27/2018	1131	19	9/27/2018	1152	10	0.5263	-0.2788
23	9.75	9/27/2018	1140	4.8	9/27/2018	1144	3.5	0.7292	-0.1372
							Average Ratio	0.7301	-0.1412
							Antilog of Average		0.7225

TABULATION OF FIELD STRENGTH MEASUREMENT DATA
AM STATION WSPZ, WASHINGTON, DC
1260 kHz, 35 kW-D, 5 kW-N, DA-2

280 Degrees True Radial

BEFORE MEASUREMENTS

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND Date	Time (local)	Field Strength (mV/m)	5 kW, DA-NIGHT Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
11 MP	4.38	8/11/2018	1005	22.5	8/11/2018	1127	2.45	0.1089	-0.9630
14	6.81	8/11/2018	1020	12.25	8/11/2018	1146	1.2	0.0980	-1.0090
15	7.77	8/11/2018	1024	9	8/11/2018	1154	0.6	0.0667	-1.1761
16	9.34	8/11/2018	1034	4.9	8/11/2018	1201	0.14	0.0286	-1.5441
17	10.70	8/11/2018	1046	3.3	8/11/2018	1206	0.26	0.0788	-1.1035
18	12.00	8/11/2018	1052	2.65	8/11/2018	1209	0.18	0.0679	-1.1680
19	13.10	8/11/2018	1102	2.75	8/11/2018	1216	0.07	0.0255	-1.5942
20	14.50	8/11/2018	1111	2.7	8/11/2018	1219	0.065	0.0241	-1.6185
							Average Ratio	0.0623	-1.2720
							Antilog of Average		0.0535

AFTER MEASUREMENTS

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND Date	Time (local)	Field Strength (mV/m)	5 kW, DA-NIGHT Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
11 MP	4.38	9/27/2018	849	21.2	9/27/2018	1305	3.1	0.1462	-0.8350
14	6.81	9/27/2018	910	12.5	9/27/2018	1327	2.1	0.1680	-0.7747
15	7.77	9/27/2018	915	10.1	9/27/2018	1332	0.9	0.0891	-1.0501
16	9.34	9/27/2018	923	5.6	9/27/2018	1341	0.32	0.0571	-1.2430
17	10.70	9/27/2018	933	3.9	9/27/2018	1352	0.41	0.1051	-0.9783
18	12.00	9/27/2018	938	2.9	9/27/2018	1358	0.34	0.1172	-0.9309
19	13.10	9/27/2018	943	3.2	9/27/2018	1403	0.2	0.0625	-1.2041
20	14.50	9/27/2018	952	2.8	9/27/2018	1415	0.2	0.0714	-1.1461
							Average Ratio	0.1021	-1.0203
							Antilog of Average		0.0954

TABULATION OF FIELD STRENGTH MEASUREMENT DATA
AM STATION WSPZ, WASHINGTON, DC
1260 kHz, 35 kW-D, 5 kW-N, DA-2

325 Degrees True Radial

BEFORE MEASUREMENTS

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND Date	Time (local)	Field Strength (mV/m)	5 kW, DA-NIGHT Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
10 MP	2.57	8/11/2018	1001	84	8/11/2018	1212	39.3	0.4679	-0.3299
11	3.75	8/11/2018	1007	38	8/11/2018	1206	14.5	0.3816	-0.4184
12	4.24	8/11/2018	1010	36.7	8/11/2018	1203	14.2	0.3869	-0.4124
13	5.09	8/11/2018	1014	16.2	8/11/2018	1158	7.2	0.4444	-0.3522
14	5.47	8/11/2018	1018	17.3	8/11/2018	1156	7.1	0.4104	-0.3868
15	6.29	8/11/2018	1021	15.1	8/11/2018	1152	6.7	0.4437	-0.3529
16	7.83	8/11/2018	1026	9.3	8/11/2018	1148	4.1	0.4409	-0.3557
17	8.90	8/11/2018	1031	9.3	8/11/2018	1142	3.85	0.4140	-0.3830
19	9.83	8/11/2018	1038	7.2	8/11/2018	1135	3.02	0.4194	-0.3773
21	11.64	8/11/2018	1046	2.69	8/11/2018	1128	1.19	0.4424	-0.3542
							Average Ratio	0.4252	-0.3723
							Antilog of Average		0.4243

AFTER MEASUREMENTS

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND Date	Time (local)	Field Strength (mV/m)	5 kW, DA-NIGHT Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
10 MP	2.57	9/27/2018	1020	99	9/27/2018	1233	46	0.4646	-0.3329
11	3.75	9/27/2018	1055	46	9/27/2018	1227	17.9	0.3891	-0.4099
12	4.24	9/27/2018	1058	46	9/27/2018	1223	18.2	0.3957	-0.4027
13	5.09	9/27/2018	1101	21.2	9/27/2018	1216	9.2	0.4340	-0.3625
14	5.47	9/27/2018	1105	22.9	9/27/2018	1214	9.3	0.4061	-0.3914
15	6.29	9/27/2018	1109	19.8	9/27/2018	1211	9.1	0.4596	-0.3376
16	7.83	9/27/2018	1115	11.8	9/27/2018	1205	5.4	0.4576	-0.3395
17	8.90	9/27/2018	1121	12.4	9/27/2018	1157	5.2	0.4194	-0.3774
19	9.83	9/27/2018	1129	9.2	9/27/2018	1151	3.72	0.4043	-0.3932
21	11.64	9/27/2018	1136	3.4	9/27/2018	1144	1.46	0.4294	-0.3671
							Average Ratio	0.4260	-0.3714
							Antilog of Average		0.4252