

ENGINEERING EXHIBIT
PARTIAL PROOF-OF-PERFORMANCE
AM BROADCAST STATION KCCV
OVERLAND PARK, KANSAS
760 KHZ, 6 KW, DA-D

April 11, 2003

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Engineering Statement

This Engineering Exhibit was prepared on behalf of AM broadcast station KCCV, Overland Park, Kansas concerning a partial proof-of-performance, which was conducted after readjustment of the directional antenna operating parameters. KCCV is licensed for operation on 760 kHz, with a nominal power of 6.0 kW using a single directional antenna mode during daytime hours.

The KCCV array was readjusted following the installation of a new 353-m tower structure located 2.1-km south-southwest of the KCCV antenna array. The new tower is owned by Richland Towers. The new tower replaces an old 353-m tower structure that was located 12.5 m south of the new tower. Dismantlement of the old tower was completed on Wednesday, April 9, 2003. The KCCV antenna parameters were readjusted after the old tower was dismantled to compensate for the change in the electromagnetic environment with the installation of the new Richland Towers tower structure and the removal old tower structure.

Included herein are the detailed measurement data concerning the partial proof-of-performance of the KCCV daytime directional antenna system, which was prepared in accordance with Section 73.154 of the FCC Rules.

It is noted that there has been no change in the KCCV licensed antenna sampling system. There has been no change in the antenna ground system. Furthermore, there is no change in the antenna common point impedance or current. The antenna input power remains unchanged at 6,318 watts.

Field Strength Measurements

Field strength measurements were made along 4 radials and at locations specified in the latest full proof-of-performance for KCCV from 1990.* Field strength measurements were made for the directional antenna mode with an input power of 6,318 watts. A tabulation of meter readings for the measured pattern is included herein as Figure 1. Figure 2 summarizes the results of the field strength measurements. A tabulation of the measured field strength data is included as Figure 3.

Field strength measurements were conducted by Mr. M. Donald Crain. A Potomac Instruments FIM-41 field strength meter bearing Serial Number 941 was employed for the measurements. The meter was last calibrated in February, 1991 by Potomac Instruments. Its calibration was reaffirmed as recently as March, 2003 with another duTreil, Lundin & Rackley, Inc. field strength meter that was recently purchased and calibrated by Potomac Instruments; and it was found to be in good agreement.

Field Strength Measurement Analysis

Field strength measurements were analyzed in accordance with Section 73.154 of the FCC Rules. The arithmetic ratios of measured 2003 directional to measured 1990 directional fields were averaged for each radial. The radial averages thus

* See Proof of Performance, FCC File No. BL-891204AA.

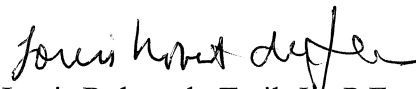
Overland Park, Kansas

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obtained were multiplied by the corresponding 1990 measured radial directional unattenuated fields to determine the present directional radiation values for all radials measured.

Conclusion

As can be seen from the data provided herein, the KCCV directional antenna system, as presently adjusted, meets the requirements of the FCC rules and the terms of the station authorization. It is requested that a modified license be issued specifying the operating parameters provided herein.



Louis Robert du Treil, Jr., P.E.
Consulting Engineer

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201 Fletcher Ave.
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Tabulation of Meter Readings

Directional [†]	Tower #1(W)	Tower #2(C)	Tower #3(E)
Antenna Monitor Ratio	0.49	1.00	0.95
Antenna Monitor Phase (deg.)	+15.7	0.0	+12.0
Daytime Common Point Impedance (Ω)	50 + j0		
Daytime Common Point Current (A)	11.24		
Daytime Antenna Input Power (W)	6,318		

[†] Sampling system approved under Section 73.68(b) of the FCC Rules.

Figure 2

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Summary of Measured Field Strength Data

1990 Proof Radial (deg. True)	1990 Measured DA (6 kW) (mV/m @ 1 km)	2003 Measured DA (6 kW) (mV/m @ 1 km)	Standard / Augmented Pattern (mV/m @ 1 km)	Monitored Radial (*)
71.5	460	446.3	462.9	
118	135	129.5	159.5	*
254.5	625	572.0	645.0	
298	275	260.8	309.4	*

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KCCV 71.5° Radial							
	Distance		1990 Proof DA Field		Apr-2003 DA Field		Apr-2003/1990 Ratio
Point Number	(miles)	(km)	Date/Time	(mV/m)	Date/Time	(mV/m)	Linear
216	1.93	3.10	*	120	04-11-03/821	125	1.0417
217	2.00	3.22	*	100	04-11-03/824	101	1.0100
218	2.49	4.00	*	98	04-11-03/830	110	1.1224
219	2.98	4.80	*	85	04-11-03/834	82	0.9647
220	3.49	5.61	*	74	04-11-03/837	68	0.9189
221	3.99	6.42	*	64	04-11-03/846	55	0.8594
222	4.49	7.22	*	36.8	04-11-03/851	35.5	0.9647
223	5.11	8.22	*	37.5	04-11-03/858	33	0.8800
224	5.49	8.83	*	24	04-11-03/903	22	0.9167
225	5.98	9.63	*	21	04-11-03/907	21.5	1.0238
Average of Ratio:							0.9702
1990 DA Analyzed Field Strength (mV/m):							460.0
2003 DA Analyzed Field Strength (mV/m):							446.3

*See 1990 Proof of Performance, FCC File No. BL-891204AA.

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KCCV 118° Radial						
Point Number	Distance		1990 Proof DA Field		Apr-2003 DA Field	
	(miles)	(km)	Date/Time	(mV/m)	Date/Time	(mV/m)
318	1.86	3.00	*	38	04-10-03/1714	38.5
319	1.94	3.12	*	42	04-10-03/1717	48
320	2.50	4.02	*	17.3	04-10-03/1722	13.5
321	3.08	4.96	*	13.2	04-10-03/1726	10.1
322-MP	3.52	5.66	*	15.9	04-10-03/1730	15.9
323	3.96	6.38	*	9.6	04-10-03/1734	11
324	4.42	7.12	*	8.4	04-10-03/1738	8.3
325	5.09	8.19	*	12.5	04-10-03/1743	10.2
326	5.65	9.10	*	6.1	04-10-03/1747	5.95
327	6.79	10.93	*	5.4	04-10-03/1753	5.2
Average of Ratio:						0.9590
1990 DA Analyzed Field Strength (mV/m):						135.0
2003 DA Analyzed Field Strength (mV/m):						129.5

*See 1990 Proof of Performance, FCC File No. BL-891204AA.

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KCCV 254.5° Radial							
	Distance		1990 Proof DA Field		Apr-2003 DA Field		Apr-2003/1990 Ratio
Point Number	(miles)	(km)	Date/Time	(mV/m)	Date/Time	(mV/m)	Linear
617	2.05	3.30	*	175	04-10-03/1634	165	0.9429
618	2.49	4.00	*	143	04-10-03/1626	130	0.9091
619	3.01	4.85	*	112	04-10-03/1615	102	0.9107
620	3.48	5.60	*	94	04-10-03/1612	89	0.9468
621	3.87	6.23	*	84	04-10-03/1605	77	0.9167
622	4.47	7.19	*	70	04-10-03/1558	68	0.9714
623	4.94	7.95	*	64	04-10-03/1551	59	0.9219
624	5.51	8.87	*	58	04-10-03/1527	50	0.8621
625	5.86	9.43	*	47	04-10-03/1531	41	0.8723
626	6.90	11.11	*	39	04-10-03/1538	35	0.8974
Average of Ratio:							0.9151
1990 DA Analyzed Field Strength (mV/m):							625.0
2003 DA Analyzed Field Strength (mV/m):							572.0

*See 1990 Proof of Performance, FCC File No. BL-891204AA.

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KCCV 298° Radial						
Point Number	Distance		1990 Proof DA Field		Apr-2003 DA Field	
	(miles)	(km)	Date/Time	(mV/m)	Date/Time	(mV/m)
716	1.88	3.02	*	63	04-10-03/1351	58
717	1.93	3.10	*	43	04-10-03/1353	52
718-MP	2.00	3.22	*	56	04-10-03/1355	52
719	2.47	3.97	*	32	04-10-03/1400	35
720	2.96	4.76	*	45	04-10-03/1404	32
721	3.43	5.52	*	47	04-10-03/1412	46
722	3.95	6.35	*	35	04-10-03/1417	33
723	4.31	6.93	*	32	04-10-03/1420	29
724	4.74	7.63	*	29	04-10-03/1426	26.5
725	5.23	8.42	*	24.5	04-10-03/1434	21.5
Average of Ratio:						0.9483
1990 DA Analyzed Field Strength (mV/m):						275.0
2003 DA Analyzed Field Strength (mV/m):						260.8

*See 1990 Proof of Performance, FCC File No. BL-891204AA.

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant

Bott Broadcasting Company

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

☐ Station License

☒ Direct Measurement of Power

1. Facilities authorized in construction permit

Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
KCCV		760	Daytime		6.0

2. Station location

State	City or Town
Kansas	Overland Park

3. Transmitter location

State	County	City or Town	Street address (or other identification)
MO	Jackson	Kansas City	4700 Topping

4. Main studio location

State	County	City or Town	Street address (or other identification)
KS	Johnson	Overland Park	10550 Barkley

5. Remote control point location (specify only if authorized directional antenna)

State	County	City or Town	Street address (or other identification)
KS	Johnson	Overland Park	10550 Barkley

6. Has type-approved stereo generating equipment been installed?

☐ Yes ☒ No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68?

☒ Yes ☐ No

☐ Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed.

Exhibit No.

n/a

8. Operating constants:

RF common point or antenna current (in amperes) without modulation for night system		RF common point or antenna current (in amperes) without modulation for day system	
		11.24	
Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night	Day	Night	Day
	50		0

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
#1(W)		+15.7		0.49		
#2(C)		0.0		1.00		
#3(E)		+12.0		0.95		

Manufacturer and type of antenna monitor:

Potomac Instruments, AM-19D(210)

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9. Description of antenna system (If directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary.)

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
Guyed steel uniform cross-section	98.8 (Towers 1, 2 & 3)	See FCC ASR*	See FCC ASR*	Exhibit No.

*ASRN's: Tower No. 1: 1034740; Tower No. 2: 1034741; Tower No. 3: 1034739.

Excitation ☒ Series ☐ Shunt

Geographic coordinates to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North Latitude	39 ° 02 ' 26 "	West Longitude	94 ° 30 ' 34 "
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If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits.

Exhibit No.

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system.

Exhibit No.

10. In what respect, if any, does the apparatus constructed differ from that described in the application for construction permit or in the permit?

none

11. Give reasons for the change in antenna or common point resistance.

n/a

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Name (Please Print or Type)	Signature (check appropriate box below)
Louis Robert duTreil Jr.	<i>Louis Robert duTreil Jr.</i>
Address (include ZIP Code)	Date
duTreil, Lundin & Rackley, Inc. 201 Fletcher Ave. Sarasota, FL 34237	April 11, 2003
	Telephone No. (Include Area Code)
	941-329-6000

☐ Technical Director

☒ Registered Professional Engineer

☐ Chief Operator

☐ Technical Consultant

☐ Other (specify)