

ENGINEERING REPORT

SILLIMAN, MOFFET & KOWALSKI, P.C.

1925 NORTH LYNN STREET

CONSULTING RADIO ENGINEERS

ARLINGTON, VA. 22209

ENGINEERING STATEMENT

PREPARED FOR

WESTINGHOUSE BROADCASTING COMPANY, INC.

RADIO STATION WIND
CHICAGO, ILLINOIS

560 kHz

5000 WATTS, U

DA-2

MARCH 22, 1978



WBZ-WBZ-TV BOSTON
WINS NEW YORK
KYW-KYW-TV PHILADELPHIA
WJZ-TV BALTIMORE
KDKA-KDKA-TV PITTSBURGH
WOWO FT WAYNE
WIND CHICAGO
KPIX SAN FRANCISCO
KFWB LOS ANGELES

90 PARK AVENUE NEW YORK NY 10016 TELEPHONE 983-6500

WESTINGHOUSE BROADCASTING COMPANY INC

March 28, 1978

Mr. William J. Tricarico
Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Ref: 8840-JS

Dear Mr. Tricarico:

Attached hereto is an Engineering Statement prepared by Silliman, Moffet & Kowalski, P.C.; in response to a Commission letter dated January 5, 1977(8) to station WIND, Chicago, Illinois. The Commission letter contained form BC-208 and requested certain information be supplied.

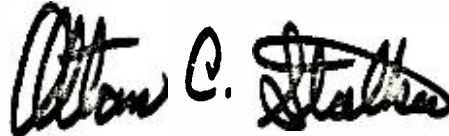
The tabulated data contained in the Engineering Statement indicates the station is operating in full compliance with the specifications contained on form BC-208, with the exception of the field intensity measured at the 154° T daytime monitor point.

In the case of the 154°T daytime monitor point reading, the Engineering Statement contains a complete set of measurement data, taken in both the directional and non-directional mode. This data conclusively establishes that no change in the daytime pattern has occurred and that the monitor point limit on the 154°T daytime point can be increased to at least 197 mv/m, without exceeding the radiation limit contained in the station Construction Permit.

Accordingly, we respectfully request that the 154° T monitor point limit be increased to 197 mv/m and the station license be granted.

Should there be any questions in connection with this material,
please contact the undersigned.

Yours truly,



Altan C. Stalker
Director of Transmitter Engineering

ACS:dq
Att.

bcc: D. Beddow (w/o att.)
W. Ryan (3 att.) ✓
C. Blair (w/att.)
R. Woodworth (w/att.)

WIND
CHICAGO, ILLINOISI. INTRODUCTION

1. THIS ENGINEERING STATEMENT HAS BEEN PREPARED FOR TWO REASONS AS FOLLOWS:

- (A) FIRST, IT SUPPLIES THE DATA REQUESTED BY THE COMMISSION IN ITS LETTER TO THE STATION DATED JANUARY 5, 1978, WHICH ENCLOSED FCC FORM BC-208.
- (B) SECOND, IT SUPPLIES DATA TO SUPPORT THE STATION'S REQUEST FOR AN INCREASE IN THE FIELD INTENSITY VALUE PERMITTED TO BE MEASURED AT THE N 154° E MONITOR POINT DURING DAYTIME PATTERN OPERATION. FCC FORM BC-208 SUPPLIED TO THE STATION, STATES THAT THE FIELD INTENSITY AT THE N 154° E MONITOR POINT DURING DAYTIME PATTERN OPERATION SHOULD NOT EXCEED 170 MV/M.

II. ANSWER TO COMMISSION'S LETTER DATED JANUARY 5, 1978

- 2. TABLES 1 THROUGH 4 INCORPORATED IN THIS REPORT CONTAINS TABULATIONS OF ALL THE DATA REQUESTED IN THE COMMISSION'S LETTER DATED JANUARY 5, 1978.
- 3. ALL DATA TABULATED IN THESE TABLES SHOW FULL COMPLIANCE WITH FORM BC-208 AND THE COMMISSION'S RULES IN ALL RESPECTS, EXCEPT FOR THE FIELD INTENSITY VALUE AT THE N 154° E MONITOR POINT FOR DAYTIME PATTERN OPERATION. THE DAYTIME ARRAY AND NIGHTTIME ARRAY ARE, THEREFORE, UNCHANGED FROM THE OPERATING PARAMETERS AND RADIATION PATTERNS ACHIEVED DURING THE PROOF-OF-PERFORMANCE NOW ON FILE WITH THE COMMISSION.

WIND
CHICAGO, ILLINOIS

III. REQUEST FOR RELAXATION OF N 154° E
DAYTIME MONITOR POINT MAXIMUM VALUE

4. FIELD INTENSITY MEASUREMENTS FOR NONDIRECTIONAL AND DAYTIME DIRECTIONAL OPERATION HAVE BEEN MADE AT ALL POINTS ALONG THE N 154° E RADIAL, EXCEPT FOR POINTS 7 AND 8 WHICH WERE INACCESSIBLE AT THE TIME THE MEASUREMENTS WERE MADE. THIS INCLUDES ALL INCLOSE TAPED POINTS ALSO. TABLE 2-H REVISED AND TABLE 3-F REVISED, INCORPORATED IN THIS REPORT CONTAINS A TABULATION OF THESE MEASURED DATA AND THE LOG RATIO METHOD OF ANALYSIS.

5. FIGURE 3-1 REVISED CONTAINS A GRAPHICAL PLOT OF THESE MEASURED DATA AND THE RADIAL CONDUCTIVITY VALUE INDICATED BY THE DATA.

6. THE ANALYSIS AS SHOWN IN TABLE 3-F REVISED AND FIGURE 3-1 REVISED SHOW FULL COMPLIANCE WITH THE STATION'S CONSTRUCTION PERMIT FILE NUMBER BP-19,643 (AS EXTENDED) AS CAN BE SEEN AS FOLLOWS:

<u>CP SPECIFIED (MV/M)</u>	<u>PRESENT NON-D RADIATION VALUE, 2.5 KW, (MV/M)</u>	<u>PRESENT DAYTIME PATTERN RADIATION (MV/M)</u>
438	292.6	413.75

THE N 154° E MONITOR POINT READ 197 MV/M WHEN THE DAYTIME PATTERN MEASUREMENTS WERE MADE.

7. ACCORDINGLY, THE COMMISSION IS RESPECTFULLY REQUESTED TO SPECIFY A VALUE NOT TO BE EXCEEDED OF 197 MV/M AT THE N 154° E DAYTIME PATTERN MONITOR POINT. THIS VALUE IS SHOWN BY THIS ENGINEERING STATEMENT TO BE PERMISSIBLE WITHOUT EXCEEDING THE RADIATION LIMIT CONTAINED IN THE STATION'S CONSTRUCTION PERMIT.

WIND
CHICAGO, ILLINOIS

TABLE 1

TABULATION OF FIELD INTENSITY VALUES AT MONITOR POINTS

DATE	DAY (MV/M)			NIGHT (MV/M)				
	<u>92°</u>	<u>154°</u>	<u>270°</u>	<u>32°</u>	<u>100.5°</u>	<u>154°</u>	<u>197°</u>	<u>228.5°</u>
1-21-78	35.5	194.	69.0	53.0	16.0	16.5	43.0	34.5
1-24-78	34.5	187.	70.0	52.5	16.3	16.7	44.0	35.5
1-31-78	36.0	195.	70.5	53.0	15.8	17.0	42.5	34.5
2-7-78	35.0	196.	71.0	51.5	15.5	17.0	44.0	36.0
2-14-78	34.5	195.	69.5	51.0	16.2	17.0	43.0	36.0
2-21-78	35.5	197.	71.5	51.5	15.9	17.2	42.0	35.0
2-28-78	36.0	194.	69.0	53.0	16.0	16.8	43.5	34.5

ENGINEERING REPORT

SILLIMAN, MOFFET & KOWALSKI, P.C.

1925 NORTH LYNN STREET

CONSULTING RADIO ENGINEERS

ARLINGTON, VA. 22209

WIND
CHICAGO, ILLINOIS

TABLE 2

BASE CURRENTS AND BASE CURRENT RATIOS

MODE TOWER NO. DATE	DAY				NIGHT			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
1-24-78, AMPS.	0.96	3.58	2.04	7.36	3.70	3.74	4.60	4.60
RATIO	0.130	0.486	0.277	1.000	0.804	0.813	1.000	1.000
1-31-78, AMPS.	0.97	3.60	2.06	7.40	3.74	3.74	4.56	4.58
RATIO	0.131	0.486	0.278	1.000	0.816	0.816	0.996	1.000
2-7-78, AMPS.	0.99	3.72	2.10	7.60	3.76	3.80	4.62	4.66
RATIO	0.130	0.489	0.276	1.000	0.807	0.815	0.991	1.000
2-14-78, AMPS.	0.97	3.64	2.08	7.48	3.82	3.80	4.64	4.64
RATIO	0.130	0.489	0.278	1.000	0.823	0.819	1.000	1.000
2-21-78, AMPS.	0.98	3.61	2.02	7.38	3.72	3.74	4.64	4.60
RATIO	0.133	0.489	0.274	1.000	0.809	0.813	1.000	1.000
2-28-78, AMPS.	0.99	3.74	2.05	7.46	3.74	3.74	4.64	4.58
RATIO	0.133	0.501	0.275	1.000	0.817	0.817	1.004	1.000

ENGINEERING REPORT

SILLIMAN, MOFFET & KOWALSKI, P.C.

1925 NORTH LYNN STREET

CONSULTING RADIO ENGINEERS

ARLINGTON, VA. 22209

WIND
CHICAGO, ILLINOIS

TABLE 3

LOOP CURRENT RATIOS AND PHASE INDICATIONS

MODE TOWER No. DATE	DAY				NIGHT			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
1-24-78, RATIO	0.144	0.503	0.286	1.000	0.816	0.809	1.005	1.000
PHASE	-79.1°	-0.3°	-78.9°	0°	-94.4°	-15.2°	-79.0°	0°
1-31-78, RATIO	0.141	0.507	0.282	1.000	0.807	0.807	0.995	1.000
PHASE	-79.2°	0°	-79.1°	0°	-94.5°	-15.3°	-79.3°	0°
2-7-78, RATIO	0.141	0.507	0.283	1.000	0.813	0.806	1.000	1.000
PHASE	-79.2°	0°	-79.1°	0°	-94.4°	-15.2°	-79.0°	0°
2-14-78, RATIO	0.142	0.506	0.284	1.000	0.812	0.807	1.003	1.000
PHASE	-79.2°	-0.2°	-78.9°	0°	-94.4°	-15.2°	-79.1°	0°
2-21-78, RATIO	0.141	0.502	0.283	1.000	0.809	0.803	1.002	1.000
PHASE	-79.3°	-0.1°	-79°	0°	-94.5°	-15.2°	-79.2°	0°
2-28-78, RATIO	0.141	0.502	0.284	1.000	0.821	0.806	1.010	1.000
PHASE	-79.4°	-0.3°	-79.2°	0°	-94.4°	-15.2°	-79.0	0°

ENGINEERING REPORT

SILLIMAN, MOFFET & KOWALSKI, P.C.

1925 NORTH LYNN STREET

CONSULTING RADIO ENGINEERS

ARLINGTON, VA. 22209

WIND
CHICAGO, ILLINOIS

TABLE 4

TABULATION OF COMMON POINT CURRENT, PLATE VOLTAGE AND PLATE CURRENT

<u>DATE</u>	<u>1-24-78</u>	<u>1-31-78</u>	<u>2-7-78</u>	<u>2-14-78</u>	<u>2-21-78</u>	<u>2-28-78</u>
DAY COMMON						
POINT CURRENT (AMPS)	10.39	10.36	10.37	10.42	10.39	10.44
NIGHT COMMON						
POINT CURRENT (AMPS)	10.43	10.38	10.41	10.45	10.46	10.41
DAY PLATE						
VOLTAGE (KV)	3.85	3.81	3.84	3.86	3.82	3.82
NIGHT PLATE						
VOLTAGE (KV)	3.84	3.82	3.81	3.82	3.81	3.82
DAY PLATE						
CURRENT (AMPS)	1.91	1.93	1.92	1.93	1.92	1.92
NIGHT PLATE						
CURRENT (AMPS)	1.92	1.93	1.96	1.97	1.92	1.92

WIND
CHICAGO, ILLINOIS

TABLE 2-H (REVISED)

TABULATION OF MEASURED DATA

NONDIRECTIONAL 2.5 KW POWER

<u>POINT</u>	<u>DISTANCE (MI.)</u>	<u>TIME</u>	<u>DATE</u>	<u>E (MV/M)</u>
A	0.0966	1400	3-15-78	3019.6 *
B	0.1155	1405	"	2492.3 *
C	0.1345	1410	"	2163.3 *
D	0.1534	1415	"	1890.2 *
E	0.1723	1420	"	1560.3 *
F	0.1913	1425	"	1496.5 *
G	0.2102	1430	"	1382.4 *
H	0.2292	1435	"	1300.4 *
I	0.2481	1440	"	1208.5 *
J	0.2670	1445	"	1126.8 *
K	0.2860	1450	"	1075.4 *
L	0.3102	1455	"	963.9 *
M	0.65	1044	3-7-78	360.0
N	0.72	1048	"	365.0
O	0.84	1053	"	300.0
P	1.1	1058	"	244.0
Q	1.2	1101	"	208.0
R	1.45	1105	"	168.0
S	1.55	1108	"	152.0

NOTE *: FIELD INTENSITY VALUES HAVE BEEN CORRECTED FOR PROXIMITY IN ACCORDANCE WITH THE PROCEDURE CONTAINED IN THE NAB ENGINEERING HANDBOOK, FIFTH EDITION, 1960, SECTION 9, PAGES 9-22 AND 9-23, A PUBLICATION OF MCGRAW-HILL BOOK COMPANY.

WIND
CHICAGO, ILLINOIS

TABLE 2-H (REVISED) (CONT'D)

TABULATION OF MEASURED DATA

NONDIRECTIONAL 2.5 KW POWER

<u>POINT</u>	<u>DISTANCE (MI.)</u>	<u>TIME</u>	<u>DATE</u>	<u>E (MV/M)</u>
1	2.0	1109	2-8-78	138.0
2	2.25	1113	"	123.0
3	2.5	1121	"	112.0
4	2.76	1127	"	102.0
5	3.09	1135	"	90.0
6	3.23	1140	"	83.0
7	3.50	NO ACCESS, SNOW		-
8	3.69	NO ACCESS, SNOW		-
9	4.10	1155	2-8-78	68.0
10	4.50	1203	"	63.0
11	4.64	1212	"	61.0
12	4.75	1219	"	61.0
13	5.00	1230	"	56.0
14	5.94	1241	"	46.5
15	6.15	1246	"	47.5
16	6.52	1249	"	43.0
17	7.23	1252	"	39.5
18	8.36	1304	"	31.5
19	8.87	1310	"	28.4
20	9.38	1318	"	25.0
21	9.92	1325	"	24.8
22	11.11	1332	"	24.5
23	11.71	1342	"	21.9
24	12.77	1543	"	21.1
25	15.33	1410	"	17.2
26	16.17	1519	"	15.5
27	16.84	1512	"	15.1
28	17.83	1428	"	13.8
29	18.94	1448	"	13.1
30	20.05	1459	"	12.1

ENGINEERING REPORT

SILLIMAN, MOFFET & KOWALSKI, P.C.

1925 NORTH LYNN STREET

CONSULTING RADIO ENGINEERS

ARLINGTON, VA. 22209

WIND
CHICAGO, ILLINOIS

TABLE 3-F (REVISED)

TABULATION OF MEASURED DATA

DAYTIME OPERATION 5.0 KW POWER

<u>POINT</u>	<u>DISTANCE (MILES)</u>	<u>TIME</u>	<u>DATE</u>	<u>DA-D E (MV/M)</u>	<u>NON-D E (MV/M)</u>	<u>LOG RATIO DA-D/NON-D</u>
1(MP)	2.0	1146	2-21-78	197.0	138.0	0.15459
2	2.25	1125	1-25-78	170.0	123.0	0.14054
3	2.5	1152	2-21-78	159.0	112.0	0.15218
4	2.76	1145	1-25-78	148.0	102.0	0.16166
5	3.09	1155	"	127.0	90.0	0.14956
6	3.23	1201	2-21-78	118.0	83.0	0.15280
7	3.50	NO ACCESS, SNOW		-	-	-
8	3.69	NO ACCESS, SNOW		-	-	-
9	4.10	1225	1-25-78	98.0	68.0	0.15872
10	4.50	1249	2-22-78	86.0	63.0	0.13516
11	4.64	1209	2-21-78	85.0	61.0	0.14409
12	4.75	1215	"	87.0	61.0	0.15419
13	5.00	1256	2-22-78	78.0	56.0	0.14391
14	5.94	1315	1-25-78	68.0	46.5	0.16506
15	6.15	1305	2-22-78	65.0	47.5	0.13622
16	6.52	1335	1-25-78	63.0	43.0	0.16587
17	7.23	1443	2-23-78	57.0	39.5	0.15928
18	8.36	1355	1-25-78	45.5	31.5	0.15970
19	8.87	1319	2-22-78	41.0	28.4	0.15947
20	9.38	1424	"	35.5	25.0	0.15229
21	9.92	1326	"	35.0	24.8	0.14962
22	11.11	1335	"	33.5	24.5	0.13588
23	11.71	1345	"	30.9	21.9	0.14951
24	12.77	1353	"	29.0	21.1	0.13812
25	15.33	1405	"	24.4	17.2	0.15186
26	16.17	1424	2-21-78	22.0	15.5	0.15209
27	16.84	1434	"	21.2	15.1	0.14736
28	17.83	1441	"	19.4	13.8	0.14792
29	18.94	1450	"	18.4	13.1	0.14755
30	20.05	1500	"	17.0	12.1	0.14766

SUM LOG RATIO	=	4.21285
NUMBER OF POINTS	=	28
AVERAGE LOG RATIO	=	0.15046
RATIO	=	1.41403
NON-D RADIATION VALUE	=	292.6 MV/M
DA-D RADIATION VALUE	=	413.75 MV/M
LIMIT (CP SPECIFIED)	=	438.0 MV/M

MILES FROM ANTENNA

