

ENGINEERING REPORT COVERING
AMENDMENT TO REQUEST FOR CONSTRUCTION PERMIT
ON BEHALF OF NASSAU BROADCASTING II, L.L.C.
FOR STATION WCHR (AM) 1040 KILOHERTZ
FLEMINGTON, NEW JERSEY

MAY 2004

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SUMMARY

The engineering exhibit of which this statement is part was prepared on behalf of Nassau Broadcasting II, L.L.C., hereinafter referred to as "Nassau", in support of an amendment to application BP-20040112ABD for a construction permit for AM station WCHR Flemington, New Jersey. Nassau is the licensee of WCHR. WCHR operates on 1040 kilohertz with power of 4.7 kilowatts daytime and 1.0 kilowatt nighttime employing a dual mode directional antenna system. This application proposes minor changes in the WCHR antenna system. Specifically, Nassau seeks to establish a new directional antenna system for the daytime and nighttime operation and increase daytime power to 15 kilowatts and nighttime power to 2.5 kilowatts. A new critical hours directional antenna operation will be established with power of 7.5 kilowatts. The existing three tower daytime array will be used without modification for the daytime and critical hours operation and a five tower array will be employed for the nighttime operation, which includes the erection of one new tower. No other changes are proposed.

DAYTIME AND CRITICAL HOURS ALLOCATION CONSIDERATIONS

The geographic area encompassed by the WCHR daytime allocation study is vast and as a consequence, a conventional allocation map would be hard to read. Accordingly, several maps which provide greater allocation detail in critical areas, are provided in lieu of a conventional map.

A mutual area of prohibited 0.5 and 0.25 mv/m contour overlap exists between the presently licensed WCHR daytime operation and first adjacent channel station WEPN New York, New York. The proposed WCHR daytime and critical hours operations will reduce the overlap area for both stations. Figures 4, which shows the daytime interference received by WEPN, and Figure 5, which shows the daytime interference received by WCHR, are detailed allocation mappings which show the reduced interference area. Figures 6 and 7 are identical to Figures 4 and 5 except they portray the proposed WCHR critical hours operation.

Figure 8 is an allocation map which shows that second adjacent channel station KYW Philadelphia, Pennsylvania is protected by the proposed WCHR operation. Figure 9 is identical to Figure 8 except it shows the proposed WCHR critical hours operation. Figure 10 shows co-channel stations WYSL Avon, New York and WZSK Everett, Pennsylvania are protected by the proposed WCHR operation. A critical hours exhibit for WCHR, WYSL and WZSK is not provided as each station operates with reduced power and similar or virtually identical antenna patterns during the critical hours.

WCHR currently protects co-channel Class A station WHO Des Moines, Iowa during the critical hours. In order to accommodate the daytime power increase, it was necessary to add a critical hours antenna system to maintain protection to WHO. Figure 14 is a mapping of the WHO 0.1 mv/m contour and the allocation study points used to define the permissible radiation toward WHO. Table 2 is a tabulation of the allocation study data.

FIELD STRENGTH MEASUREMENTS

Field strength measurements were taken on WCHR in support of this application to accurately reflect soil conductivities present in pertinent daytime and critical hours allocation areas. Measurements were conducted on ten radials. Six of the radials were included as part of the WCHR (then identified as WJHR) proof of performance from December 1997. The additional measurements for these radials presented in this report were taken on behalf of a prior licensee during the proof of performance, in anticipation of a power increase application that was never filed. The additional measurements were not filed with the proof because they were taken at distances greater than what is required for the proof of performance. The remaining four radials are new radials. The measurements for the new radials and the additional measurements for the proof radials are tabulated in the rear section of this report. Figures 16-25 are analysis graphs of the measurement data. Reference analysis graphs are also provided. Since the supplementary measurements on the six proof radials were taken on the same day as the proof measurements, the original measurement data is included in the graphical analysis. The point numbering sequence correlates with the proof data for these radials.

The measurements were performed by William L. Smith and the undersigned, who directed all work. Mr. Smith has been employed by this firm since 1996 as a field engineer specializing in AM directional antenna work and field measurements. Mr. Smith has supplied the measurement data for many of the construction permit applications and proof of performances submitted by this firm. His qualifications are a matter of record with the Commission. The field strength meter used for the supplementary proof measurements was the identical unit employed for the proof measurements, a Potomac Instruments FIM-21, serial number 127, and for the new radial measurements, a Potomac Instruments FIM-21, serial number 862, last calibrated on January 29, 2001. A copy of the calibration certificate for this meter is attached. The meters were compared to each other on all pertinent operating scales and found to be in excellent agreement.

NIGHTTIME ALLOCATION CONSIDERATIONS

The protected RSS nighttime limits of any legally qualifying North American station will not be increased by this proposal. The presently licensed facilities result in the WCHR 0.25 mv/m 10% skywave contour overlapping the 0.5 mv/m groundwave contour of first adjacent channel Class A station WBZ Boston, Massachusetts. The proposed WCHR facilities, as depicted in Figure 11, reduce the overlap area. Figure 12 is a map that demonstrates the WCHR night proposal will not cause prohibited contour overlap to co-channel Class A station WHO Des Moines, Iowa. The only other significant nighttime allocation consideration is co-channel station WYSL Avon, New York for which a clipping study has been performed. Figure 13 shows a plot of the WYSL nighttime interference contour (NIF) and the clipping study points. Table 3 provides detailed calculations of the clipping study that demonstrates no interference will be caused to WYSL or its protected NIF service area.

TECHNICAL DATA AND EXHIBITS

Figures 1-3 are polar plots of the proposed WCHR antenna patterns with tabulations of horizontal radiation values. Table 1 is a tabulation of specified nighttime vertical radiation values. All distance to contour calculations used in plotting the various allocation maps were based on M-3 soil conductivity data supplemented with measured data obtained from the most recent complete proof of performance for WCHR, KYW and WEPN. In order to provide a worst case analysis, M-3 conductivity values were employed for WYSL and WZSK since the measurement data for both of these stations indicated soil conductivities less than the M-3 values on all radials studied for this proposal.

A map of the city of license service contours for the existing and proposed WCHR daytime and nighttime operation is not provided since the proposed patterns maintain or increase radiation in all directions toward the city of license, Flemington, New Jersey. A map of the city of license contour for the critical hours mode is not included as the radiation proposed is virtually identical to the presently licensed WCHR daytime operation. The WCHR nighttime interference free contour has been determined to be 13.85 mv/m.

The area encompassed by the proposed WCHR 1000 mv/m contours is rural in character and sparsely populated. Figure 15 is a map that plots the proposed WCHR day, night and critical hours 1000 mv/m contours with population and area data.

ANSI RADIATION GUIDELINES

A study of the proposed facility was conducted with respect to standards set forth in FCC Bulletin OST Number 65, Edition 97-01, regarding human exposure to radiofrequency radiation. The study evaluated the proposed WCHR 15 kilowatt daytime antenna system (which presents the worst case scenario as it operates with the highest power level, and additionally it was assumed the entire 15 kilowatts would be present at a single tower) and was based on data provided in Tables 2 and 3 of Supplement A, "Predicted Distances for Compliance with FCC Limits". Based on Tables 2 and 3, a distance of 2.92 meters from the tower would have to be observed to achieve ANSI radiofrequency compliance.

When it is necessary for workers to be within the hazard area near the towers, an appropriate power reduction or temporary cessation of broadcasting will be implemented. Access to the towers will be prevented by a fence with a locked gate. Signs, warning of a RF hazard, will be conspicuously posted at the site.

DECLARATION

The foregoing was prepared by or under the immediate supervision of Charles A. Hecht of Charles A. Hecht & Associates, Inc., Pittstown, New Jersey, whose qualifications are a matter of record with the Federal Communications Commission. All statements herein are true and correct of his own knowledge except such statements made on information and belief, and as to those statements, he believes them to be true and correct under the penalty of perjury.

Respectfully submitted,

Charles A. Hecht
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May 28, 2004

TABLE 1
 NIGHTTIME STANDARD RADIATION PATTERN DATA
 NASSAU BROADCASTING II, L.L.C.
 AM BROADCAST STATION WCHR
 1040 KILOHERTZ 2.5 KW-DA
 FLEMINGTON, NEW JERSEY

STANDARD RADIATION
 (at One Kilometer)

Azimuth Angle (deg)	Elevation Angle in Degrees						
	0 (mV/m)	5 (mV/m)	10 (mV/m)	15 (mV/m)	20 (mV/m)	25 (mV/m)	30 (mV/m)
0	263.	260.	253.	241.	226.	207.	186.
5	243.	241.	235.	226.	213.	197.	180.
10	225.	224.	219.	212.	202.	189.	175.
15	217.	216.	212.	206.	198.	187.	175.
20	227.	225.	221.	215.	206.	196.	184.
25	255.	253.	248.	239.	228.	215.	201.
30	296.	294.	287.	276.	261.	244.	226.
35	345.	341.	332.	318.	300.	278.	255.
40	394.	390.	379.	362.	340.	315.	287.
45	441.	437.	424.	405.	380.	350.	319.
50	483.	478.	465.	444.	416.	384.	349.
55	519.	514.	500.	478.	448.	414.	376.
60	548.	544.	529.	506.	476.	440.	401.
65	572.	567.	553.	530.	499.	463.	423.
70	591.	586.	571.	549.	518.	482.	442.
75	605.	600.	587.	564.	535.	499.	459.
80	617.	613.	600.	578.	550.	515.	476.
85	629.	625.	612.	592.	564.	530.	492.
90	642.	638.	626.	606.	579.	546.	508.
95	658.	654.	642.	623.	596.	564.	526.
100	677.	674.	662.	643.	617.	584.	546.
105	702.	698.	686.	667.	640.	607.	568.
110	732.	728.	716.	696.	668.	634.	593.
115	767.	763.	750.	729.	699.	663.	619.
120	806.	802.	788.	765.	733.	694.	648.
125	848.	843.	828.	803.	769.	726.	676.
130	890.	885.	868.	841.	804.	758.	704.
135	930.	924.	906.	877.	836.	787.	729.
140	964.	958.	938.	907.	864.	811.	749.
145	990.	983.	962.	929.	884.	828.	764.
150	1003.	996.	975.	940.	894.	837.	771.
155	1002.	995.	974.	939.	893.	835.	769.
160	986.	979.	958.	924.	879.	822.	758.
165	953.	947.	927.	895.	851.	798.	736.
170	905.	899.	881.	851.	811.	762.	705.
175	842.	836.	820.	794.	759.	715.	664.

TABLE 1
 -2-
 NIGHTTIME STANDARD RADIATION PATTERN DATA
 WCHR FLEMINGTON, NEW JERSEY

STANDARD RADIATION
 (at One Kilometer)

Azimuth Angle (deg)	-----Elevation Angle in Degrees-----					
	35 (mV/m)	40 (mV/m)	45 (mV/m)	50 (mV/m)	55 (mV/m)	60 (mV/m)
0	163.	141.	120.	103.	89.4	79.9
5	161.	141.	123.	108.	94.7	84.9
10	159.	143.	127.	113.	101.	90.3
15	162.	147.	133.	120.	107.	96.4
20	170.	156.	142.	128.	115.	103.
25	186.	170.	154.	139.	124.	110.
30	207.	188.	169.	151.	135.	119.
35	232.	209.	186.	165.	146.	127.
40	259.	231.	205.	180.	158.	136.
45	286.	254.	224.	196.	170.	146.
50	313.	277.	243.	212.	183.	155.
55	337.	299.	262.	227.	195.	165.
60	360.	319.	280.	243.	208.	175.
65	381.	338.	297.	257.	220.	185.
70	399.	356.	313.	272.	232.	195.
75	417.	373.	329.	286.	244.	204.
80	433.	389.	344.	300.	256.	214.
85	449.	405.	359.	313.	268.	223.
90	466.	421.	375.	327.	280.	233.
95	484.	438.	390.	341.	291.	242.
100	503.	456.	406.	355.	303.	251.
105	524.	475.	423.	370.	315.	261.
110	546.	495.	441.	384.	326.	269.
115	570.	516.	458.	399.	338.	278.
120	595.	537.	476.	413.	349.	286.
125	620.	558.	493.	426.	359.	293.
130	643.	577.	508.	438.	367.	299.
135	664.	595.	522.	448.	375.	304.
140	681.	608.	533.	456.	381.	308.
145	693.	618.	540.	461.	384.	310.
150	699.	622.	542.	463.	385.	311.
155	697.	620.	540.	461.	383.	309.
160	686.	611.	533.	455.	379.	306.
165	668.	596.	521.	446.	372.	301.
170	641.	574.	503.	432.	362.	294.
175	607.	546.	481.	415.	350.	286.

TABLE 1
 -3-
 NIGHTTIME STANDARD RADIATION PATTERN DATA
 WCHR FLEMINGTON, NEW JERSEY

STANDARD RADIATION
 (at One Kilometer)

Azimuth Angle (deg)	-----Elevation Angle in Degrees-----						
	0 (mV/m)	5 (mV/m)	10 (mV/m)	15 (mV/m)	20 (mV/m)	25 (mV/m)	30 (mV/m)
180	766.	762.	748.	727.	697.	660.	616.
185	681.	678.	668.	651.	627.	597.	562.
190	591.	588.	581.	569.	552.	530.	503.
195	498.	497.	493.	486.	476.	461.	443.
200	406.	406.	405.	403.	399.	393.	383.
205	319.	320.	321.	324.	326.	326.	324.
210	239.	240.	244.	251.	258.	264.	269.
215	168.	170.	176.	185.	197.	208.	219.
220	107.	110.	117.	129.	144.	160.	175.
225	59.5	62.2	70.3	83.2	99.9	119.	138.
230	29.6	31.2	37.1	48.8	65.7	85.8	107.
235	29.7	28.0	25.3	28.4	41.6	61.1	83.0
240	41.8	39.1	31.8	24.4	27.8	44.2	65.4
245	49.5	46.6	38.6	27.8	22.9	34.0	53.5
250	50.9	48.2	40.4	29.5	21.9	29.1	46.5
255	46.9	44.5	37.5	27.9	21.4	27.7	43.2
260	39.3	37.3	31.6	24.5	21.5	28.8	42.8
265	30.6	29.2	25.5	22.0	23.5	31.8	44.1
270	24.5	23.9	22.8	23.4	27.7	35.8	46.2
275	24.4	24.6	25.4	27.9	32.7	39.7	47.9
280	28.3	28.7	30.0	32.6	36.6	42.0	48.3
285	31.4	31.7	32.8	34.8	37.8	41.8	46.5
290	30.8	31.0	31.7	33.1	35.2	38.2	41.9
295	26.2	26.3	26.7	27.5	29.0	31.4	34.8
300	23.0	22.9	22.7	22.6	23.1	24.5	27.3
305	34.4	34.0	32.8	31.1	29.0	27.3	26.9
310	60.3	59.5	57.4	54.0	49.5	44.4	39.6
315	94.0	93.0	89.7	84.5	77.5	69.2	60.4
320	132.	130.	126.	119.	109.	97.4	84.7
325	171.	169.	163.	154.	141.	126.	110.
330	208.	206.	199.	187.	172.	154.	134.
335	240.	237.	229.	216.	199.	178.	155.
340	265.	262.	253.	238.	220.	197.	172.
345	279.	276.	267.	252.	233.	209.	184.
350	284.	281.	272.	257.	238.	215.	189.
355	278.	275.	266.	253.	235.	214.	190.

TABLE 1
 -4-
 NIGHTTIME STANDARD RADIATION PATTERN DATA
 WCHR FLEMINGTON, NEW JERSEY

STANDARD RADIATION
 (at One Kilometer)

Azimuth Angle (deg)	-----Elevation Angle in Degrees-----					
	35 (mV/m)	40 (mV/m)	45 (mV/m)	50 (mV/m)	55 (mV/m)	60 (mV/m)
180	566.	512.	455.	395.	335.	276.
185	521.	475.	425.	373.	319.	264.
190	471.	434.	393.	348.	301.	252.
195	420.	392.	359.	322.	282.	239.
200	368.	349.	325.	296.	262.	225.
205	318.	308.	292.	270.	243.	211.
210	271.	268.	259.	244.	224.	197.
215	227.	231.	229.	220.	205.	184.
220	188.	197.	201.	198.	188.	171.
225	155.	168.	176.	177.	172.	159.
230	127.	143.	154.	159.	157.	148.
235	104.	122.	136.	143.	144.	138.
240	86.9	106.	121.	130.	132.	128.
245	74.4	93.3	108.	118.	122.	120.
250	66.0	84.0	98.8	109.	113.	112.
255	60.9	77.5	91.3	101.	106.	105.
260	58.4	73.1	85.4	94.3	98.9	98.9
265	57.4	70.0	80.7	88.5	92.8	93.1
270	57.1	67.5	76.5	83.3	87.3	87.8
275	56.6	65.0	72.5	78.3	81.9	82.8
280	55.1	61.8	68.0	73.2	76.7	78.0
285	51.8	57.4	62.8	67.8	71.5	73.4
290	46.4	51.5	56.8	62.0	66.3	69.0
295	39.2	44.4	50.2	56.0	61.2	64.8
300	31.6	37.2	43.7	50.4	56.5	61.0
305	28.7	32.8	38.9	45.8	52.5	57.8
310	36.1	35.4	38.2	43.6	49.9	55.4
315	52.0	45.7	43.0	44.7	49.1	54.1
320	71.9	60.5	52.3	49.1	50.4	53.9
325	92.9	77.0	64.0	56.0	53.5	54.9
330	113.	93.4	76.3	64.1	58.0	56.9
335	131.	108.	88.0	72.5	63.2	59.7
340	146.	121.	98.3	80.4	68.7	63.1
345	157.	130.	107.	87.4	74.2	67.0
350	163.	137.	113.	93.3	79.4	71.0
355	165.	140.	117.	98.4	84.4	75.3