

ENGINEERING REPORT
RE MINOR CHANGE APPLICATION TO
CHANGE COMMUNITY OF LICENSE, SITE
AND STATION CLASS
WKHI(FM), FRUITLAND, MARYLAND
CHANNEL 298B1 20 KW 104 METERS

AUGUST 2001

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This engineering report has been prepared on behalf of Great Scott Broadcasting (Great Scott), licensee of FM radio station WKHI, Friutland, Maryland in support of its minor change application to change community of license, antenna site and station class.

At present WKHI(FM) is licensed to Exmore, Virginia and operates on Channel 298B (107.5 MHz) with 50 kW effective radiated power (ERP) and 82 meters antenna height above average terrain (HAAT). Under MM Docket 99-347, RM 9761, the Commission has allotted FM Channel 298B1 to Fruitland, Maryland and has ordered Great Scott to move the WKHI(FM) operation to Channel 298B1 (107.5 MHz).

Great Scott proposes to operate WKHI(FM) on Channel 298B1 with 20 kW ERP and 104 meters HAAT to serve its new community of license Fruitland, Maryland.

Great Scott requests processing of its application under Section 73.215 of the Commission's rules.

Antenna Site

The proposed WKHI(FM) antenna will be side-mounted on an existing tower with no change in the overall height of the tower above ground. The existing tower is located at 30939 McCormick Swamp Road in Princess Anne, Somerset County, Maryland. According to the tower's Antenna Structure Registration (1051560) the geographic coordinates (NAD-27) of the site are as follows:

North Latitude: 38° 11' 54"

West Longitude: 75° 40' 49"

The attached map shows the proposed WKHI(FM) antenna site is on a USGS, 7.5 minutes topographic map (Exhibit E-2).

The following tabulation shows the pertinent data for the proposed installation.

Antenna and Elevation Data

Antenna:	ERI, circularly polarized
Directivity:	Non-Directional
Beam Tilt	None
Elevation of the site above mean sea level	5 meters
Elevation of the top of supporting structure above ground	143.7 meters (144 m)
Elevation of the top of supporting structure above mean sea level	148.7 meters (149 m)
Height of radiation center above ground (H&V)	103.6 meters (104 m)
Height of radiation center above mean sea level (H&V)	108.6 meters (109 m)
Height of radiation center above average terrain (H&V)	103.5 meters (104 m)

() to the nearest meter

Allocation Situation

The attached Table I shows the distances to the pertinent co-channel and adjacent channel stations and allotments from the proposed WKHI(FM) antenna site. As indicated, all distances comply with the minimum separation requirements listed under Sections 73.207 of the Commission's rules

except distance to station WRXS(FM), Ocean City, Maryland. Station WRXS(FM) operates on Channel 295A with 6 kW ERP and 92 meters HAAT. The actual distance between WRXS and WKHI is 46.4 km while a minimum separation of 48 km is required. Therefore, with respect to station WRXS, the proposed WKHI operation on Channel 298B1 would provide an equivalent contour protection according to Section 73.215 of the Commission's rules (see attached Exhibits E-4 and 4A). As per Section 73.215(b)(2)(ii), the equivalent contours are based on the maximum class A facilities of WRXS(FM) rather than its licensed facilities.

Topographic Data

The average elevation data between 3 to 16 kilometers used for the prediction of coverage and interference contours is based on the computerized 3-second terrain database.

Contour Data and City Grade Coverage

The distances to all pertinent contours were determined according to Section 73.313 of the Commission's rules using Figure 1 and 1a of Section 73.313 and are shown on the attached tables. The attached Exhibit E-3 shows the predicted coverage contours for the proposed WKHI(FM) operation based on eight radials. Exhibit E-3 indicates the proposed 3.16 mV/m contour would cover all of Fruitland, Maryland as required by Section 73.315 of the Commission's rule.

Main Studio Location

The main studio location would comply with Section 73.1125 of the Commission's rules.

Other Radio Stations

There are three FM stations (WESM-Channel 217B, 91.3 MHz, WZJZ, Channel 223A, 92.5 MHz and WOLC, Channel 273B, 102.5 MHz) located within 10 km of the proposed WKHI(FM) antenna site.

There is a potential of third order intermodulation products on Channel 248 (97.5 MHz) due to the proposed WKHI(FM) mixing with WOLC (FM) signals.

In case of problem to any authorized non-broadcast facilities or radio receivers, the applicant will take the necessary remedial steps to resolve the intermodulation interference.

Blanketing Contour

The blanketing contour (115 dBu) based on an ERP of 20 kW will extend 1.8 kilometers from the proposed site. Great Scott will comply with all the pertinent requirements of Section 73.318 of the Commission's rules.

Environmental Statement

Since WKHI(FM) is proposing to locate its antenna to an existing tower, the environmental concerns listed in Section 1.1307(a) of the Commission's rules are not pertinent. Therefore, those issues have not been addressed.

An evaluation has been made to determine compliance with the Commission's specified standards for human exposure to RF fields as set forth in the OET Bulletin No. 65 (Edition 97-01). For a maximum effective radiated power of 40 kW (H&V) and a radiation center of 103.6 meters above ground level, the proposed WKHI(FM) operation would have a maximum of 24.0 microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$) RF field at 2 meters above the base of tower based on an antenna field factor of 0.5 in the downward direction. The Commission's guidelines for the FM band are 1,000 $\mu\text{W}/\text{cm}^2$ for the occupational/controlled and 200 $\mu\text{W}/\text{cm}^2$ for the general population/uncontrolled environment

Therefore, members of the public and personnel working around the proposed WKHI(FM) transmitting facility will not be exposed to RF field levels above those prescribed by the Commission.

With respect to work performed on the tower structure, station WKHI(FM) will establish procedures, including reducing or turning off the power, to ensure the workers are not exposed to levels of radio frequency fields in excess of the Commission's maximum exposure guidelines.

For the reasons stated above, this proposal does not involve any action specified in Section 1.1307(a) and (b) of the Commission's rules; therefore, under Section 1.1306, it is categorically excluded from environmental processing.

TABLE I
FM ALLOCATION SITUATION
FOR THE PROPOSED CHANNEL 298B1 OPERATION OF
WKHI, FRUITLAND, MARYLAND
AUGUST 2001

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Geographic Coordinates</u>	<u>Separation</u>	
				<u>Actual km</u>	<u>Required km</u>
298B1	WKHI	Fruitland, MD	38°11'54" 75°40'49"	–	–
295	WARX	Hagerstown, MD	39°29'57" 77°36'42"	221.3	71
295	WRXS	Ocean City, MD	38°20'57" 75°11'07"	46.4*	48
295	WKDN	Camden, NJ	39°54'33" 75°06'00"	196.5	71
295	WAFX	Suffolk, VA	36°48'16" 76°45'17"	181.6	105
296	WTDK	Federalsburg, MD	38°46'02" 75°44'46"	63.4	48
297	WRQX	Washington, DC	38°57'01" 77°04'47"	147.8	145
297	WPUR	Atlantic City, NJ	39°21'40" 74°25'05"	169.4	114
297	WRQX	Washington, DC	38°57'01" 77°04'47"	147.8	145
298	WBYN	Boyertown, PA	40°24'15" 75°39'09"	244.9	211
298	WUMX	Charlottesville, VA	37°59'05" 78°28'49"	246.8	143
299	WSNJ-FM	Bridgeton, NJ	39°27'32" 75°12'12"	145.9	145

TABLE I
FM ALLOCATION SITUATION
FOR THE PROPOSED CHANNEL 298B1 OPERATION OF
WKHI, FRUITLAND, MARYLAND
AUGUST 2001
 (continued)

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Geographic Coordinates</u>	<u>Separation</u>	
				<u>Actual km</u>	<u>Required km</u>
299	WTOP-FM	Warrenton, VA	38°44'31" 77°50'07"	197.5	145
299	WJCD	Windsor, VA	36°48'32" 76°30'13"	170.5	96
300	WFSI	Annapolis, MD	38°59'46" 76°39'26"	122.8	71

*Equivalent contour protection provided according to Section 73.215.

TABLE II
COMPUTED CONTOURS
FOR THE PROPOSED OPERATION OF
WKHI, FRUITLAND, MARYLAND
AUGUST 2001

<u>Radial Bearing</u> N ° E, T	<u>Average* Elevation</u> <u>3 to 16 km</u> meters	<u>Height Above Average Terrain</u> <u>3 to 16 km</u> meters	<u>ERP</u>	<u>Predicted Distance to Contour</u>		
				<u>3.16 mV/m</u> km	<u>1 mV/m</u> km	<u>0.7 mV/m</u> km
0	5.9	102.7	20	22.7	38.2	43.8
45	12.2	96.4	20	22.0	37.2	42.7
90	8.5	100.1	20	22.3	37.7	43.3
135	6.1	102.5	20	22.6	38.1	43.7
180	3.1	105.5	20	23.0	38.6	44.3
225	0.8	107.8	20	23.0	38.6	44.3
270	1.5	107.1	20	23.0	38.6	44.3
315	2.6	106.0	20	23.0	38.6	44.3
19**	7.9	100.7	20	22.0	38.0	43.6

*Computerized 3-second terrain data (rounded to nearest meter).

**Radial through principal community—not included in average.

Channel 298B1 (107.5 MHz)
 Effective Radiated Power 20 kW (H&V)
 Average Elevation 3 to 16 km 5.1 meters AMSL
 Center of Radiation 108.6 meters AMSL
 Antenna Height Above Average Terrain 103.5 meters AMSL

North Latitude: 38° 11' 54"

West Longitude: 75° 40' 49"

TABLE III
COMPUTED CONTOUR DATA
FOR THE PROPOSED OPERATION OF
WKHI, FRUITLAND, MARYLAND
AUGUST 2001

<u>Radial</u> <u>Bearing</u> N ° E, T	<u>Height Above*</u> <u>Average Terrain</u> meters	<u>Distance to Contour</u>	
		<u>57 dBu</u> <u>0.7 mV/m</u> km	<u>100 dBu</u> <u>100 mV/m</u> km
0	103	43.3	3.9
10	102	43.2	3.9
20	100	42.9	3.9
30	99	42.6	3.9
40	97	42.3	3.8
50	97	42.3	3.8
60	97	42.3	3.8
70	98	42.6	3.8
80	99	42.7	3.9
90	100	42.9	3.9
100	101	43.0	3.9
110	102	43.1	3.9
120	102	43.3	3.9
130	103	43.3	3.9
140	103	43.4	3.9
150	103	43.4	4.0
160	105	43.6	4.0
170	105	43.7	4.0
180	106	43.8	4.0
190	106	43.9	4.0
200	107	44.0	4.0
210	107	44.1	4.0
220	108	44.1	4.0
230	108	44.2	4.0
240	109	44.3	4.0
250	108	44.2	4.0
260	107	44.0	4.0
270	107	44.0	4.0
280	107	44.1	4.0
290	107	44.1	4.0

TABLE III
COMPUTED CONTOUR DATA
FOR THE PROPOSED OPERATION OF
WKHI, FRUITLAND, MARYLAND
AUGUST 2001
(continued)

<u>Radial</u> <u>Bearing</u> N ° E, T	<u>Height Above*</u> <u>Average Terrain</u> meters	<u>Distance to Contour</u>	
		<u>57 dBu</u> <u>0.7 mV/m</u> km	<u>100 dBu</u> <u>100 mV/m</u> km
300	107	44.0	4.0
310	106	43.9	4.0
320	106	43.8	4.0
330	105	43.7	4.0
340	104	43.6	4.0
350	103	43.4	4.0

Channel 298B1 (107.5 MHz)
Effective Radiated Power 20 kW H&V (13.0 dBk)
Center of Radiation 108.6 meters AMSL
Antenna Height Above Average Terrain 103.5 meters

North Latitude: 38° 11' 54"
West Longitude: 75° 40' 49"

*Based on 3-second data base, rounded to nearest meter.

TABLE IV
COMPUTED CONTOUR DATA
USING MAXIMUM CLASS A FACILITIES FOR
WRXS, OCEAN CITY, MARYLAND
AUGUST 2001

<u>Radial</u> <u>Bearing</u> N ° E, T	<u>Height Above</u> <u>Average Terrain</u> meters	<u>Distance to Contour</u>	
		<u>60 dBu</u> <u>1.0 mV/m</u> km	<u>97 dBu</u> <u>71 mV/m</u> km
0	100	28.3	3.3
10	101	28.4	3.3
20	102	28.6	3.4
30	103	28.7	3.4
40	103	28.7	3.4
50	103	28.7	3.4
60	103	28.7	3.4
70	103	28.7	3.4
80	103	28.7	3.4
90	103	28.7	3.4
100	103	28.7	3.4
110	103	28.7	3.4
120	103	28.7	3.4
130	103	28.7	3.4
140	103	28.7	3.4
150	103	28.7	3.4
160	103	28.7	3.4
170	103	28.7	3.4
180	103	28.7	3.4
190	103	28.6	3.4
200	101	28.4	3.3
210	99	28.2	3.3
220	97	27.9	3.3
230	97	27.9	3.3
240	98	28.1	3.3
250	99	28.2	3.3
260	100	28.2	3.3
270	98	28.0	3.3
280	97	27.9	3.3
290	97	27.9	3.3

TABLE IV
COMPUTED CONTOUR DATA
USING MAXIMUM CLASS A FACILITIES FOR
WRXS, OCEAN CITY, MARYLAND
AUGUST 2001
 (continued)

<u>Radial</u> <u>Bearing</u> N ° E, T	<u>Height Above</u> <u>Average Terrain</u> meters	<u>Distance to Contour</u>	
		<u>60 dBu</u> <u>1.0 mV/m</u> km	<u>97 dBu</u> <u>71 mV/m</u> km
300	97	27.9	3.3
310	97	27.9	3.3
320	97	27.9	3.3
330	97	27.9	3.3
340	97	27.9	3.3
350	97	27.9	3.3

Channel 295A (106.9 MHz)
 Effective Radiated Power 6 kW H&V (7.8 dBk)
 Center of Radiation 103 meters AMSL
 Antenna Height Above Average Terrain 100 meters

North Latitude: 38° 20' 57"
 West Longitude: 75° 11' 07"