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**THE RICHARD STOCKTON COLLEGE OF NEW JERSEY**

**POMONA, NEW JERSEY**

**LICENSEE OF**

**WLFR(FM), CHANNEL 219**

**POMONA, NEW JERSEY**

**FCC Facility ID #63469**

**FCC FILE No. BLED-19920327KG**

**MINOR CHANGE**

**APPLICATION FOR MODIFICATION OF LICENSE**

**TO SPECIFY A NEW TOWER, HAAT, AND ERP**

**ENGINEERING EXHIBIT 15**

**March 24, 2005**

**THE RICHARD STOCKTON COLLEGE OF NEW JERSEY**

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## **ALLOCATIONS STUDY**

the instant minor application proposes to change the antenna supporting structure location and height, and the antenna C/R AMSL and HAAT, and the effective radiated power. The proposed antenna is a Shively Model 6812-2-SS  $\frac{1}{2}$ wavelength spaced 2 bay circularly polarized antenna with a power gain of 0.7x.

Specifically we propose to relocate WLFR(FM) to a new tower at 39-28-55.8 N, 074-32-36.0 W (NAD27), utilizing an ERP of 0.5 kW (H & V), with a C/R at 74 meters AMSL, 57 meters AG, 64 meters HAAT, and with an overall structure height of 59.7 meters. Distances to contours were calculated using a 3 second terrain database and we request processing utilizing 3 second data. HAAT was determined using the EDX 3 second database and routines.

Figure 3 and Table 1 show the allocations situation. WLFR already causes interference to WRTQ. That interference is permitted as a result of a condition, expressly sought by WRTQ and granted by the Commission in File No. BPED-900109MD, pursuant to which the licensee of WRTQ "agree[d] to accept interference from WLFR" and indicated that it would "not object to future modifications in the WLFR facilities which might increase the area of overlap." See Excerpt from BPED-900109MD, attached. The Commission accepted WRTQ's commitment and reflected that commitment in the resulting permit. In view of that history, the instant application may be granted because there will be no increase in prohibited interference.

# WRTQ 2<sup>nd</sup> Adj. Waiver WRT WLFR

gn: 900109MD

Permit No.: BPED-900109MD

composite radiation pattern authorized by this construction permit.

A relative field strength of 1.0 on the composite radiation pattern herein authorized corresponds to the following effective radiated power:

10.5 kilowatts

Principal minima and their associated field strength limits:

165 degrees True: 3.55 kilowatts  
210 degrees True: 0.825 kilowatt  
260-296 degrees True: 2.60 kilowatts  
355-5 degrees True: 6.70 kilowatts

In addition, the horizontal ERP shall not exceed 0.825 kilowatt (nondirectional) along any azimuth.

Further modifications to the facilities of WLFR, Pomona, NJ will not be construed as a per se modification of construction permit BPED-900109MD. (See "Educational Information Corporation", 6 FCC Rcd 2207(1991)).

Waiver of 47 C.F.R. Section 73.1125 to allow the operation of the station as a satellite operation of WRTI(FM), PHILADELPHIA, PA IS GRANTED subject to the following conditions:

1. That Temple install a toll-free telephone line from Ocean City to the WRTI(FM) studio in Philadelphia.
2. That Temple conduct regular meetings with Ocean City community leaders.
3. As a result of these meetings, Temple must develop local programming for Ocean City and document the specific nature of this programming in the station's public inspection file. See 47 C.F.R. Section 73.3527(a)(7).

that the proposed Ocean City interference contours will clear the protected contours of all other licensed or proposed NCE-FM facilities between 355 degrees True and 170 degrees True. A tabulation of distances to the proposed interference contours is provided in Exhibit E-9A. Contour data for WWNJ, Channel 216, Dover Township, NJ; WLFR, Channel 219A, Pomona, NJ; and WTSR, Channel 217A, Trenton, NJ are provided in Exhibits E-9B, E-9C, and E-9D. The proposed operation will not receive interference from any other facilities, except WLFR, Channel 219A, Pomona, NJ. Accordingly, a waiver of 47 C.F.R. §73.509 is requested, and is discussed in detail below.

#### 9. REQUEST FOR WAIVER OF 47 C.F.R. §73.509

The 60 dBu contour of the proposed facility will overlapped by the entire 80 dBu contour of second-adjacent channel station WLFR, Pomona, NJ, which is 26.6 km northeast of the proposed site. Exhibit E-7B is a detailed map showing the overlap area. Temple agrees to accept interference from WLFR, and we will not object to future modifications in the WLFR facilities which might increase the area of overlap, provided that such changes comply with FCC policy. We believe that the requested waiver would clearly serve the public interest for the following reasons:

A. The total area of overlap is approximately 45.2 square kilometers, which is only about 2.08 percent of the total proposed 60 dBu coverage area (2,174 square kilometers excluding the portion over the Atlantic Ocean.) The current FCC policy, as discussed in *Memorandum Opinion and Order (Educational Information Corporation), FCC 91-104*, released April 24, 1991, permits second-adjacent channel received overlap to be waived by the Mass Media Bureau staff, where sufficient justification is provided, in situations where the overlap area does not exceed 10 percent of the total service area.

B. The area where WLFR's field strength would exceed the proposed field strength by a factor of at least ten (an undesired-to-desired or "U/D" ratio of 20 dB) covers only 0.95 percent of Temple's proposed 60 dBu service area. The FCC standards for second-adjacent channel FM interference are based on this 20 dB U/D ratio, although many modern receivers have sufficient selectivity to perform satisfactorily with U/D ratios exceeding 60 dB. The 20 dB U/D interference area is shown within the dashed line in Exhibit E-7B, and includes 5,037 residents, only about 1.7 percent of the total population within the 60 dBu contour. Much of the land within this area is on the campus of Stockton State College, or otherwise sparsely populated, although there is a large residential zone (the Pomona CDP) immediately southwest of the WLFR site. We note, however, that these residents will receive a much stronger signal from the amended directional antenna pattern -- more than an 8 dB improvement compared with the

coverage described in the January 1990 application. Therefore, we believe a waiver of 47 C.F.R. §73.509 could actually benefit some residents of the overlap area.

C. No interference will be caused to WLFR by the proposed Ocean City facility. The proposed 80 dBu contour will clear the WLFR 60 dBu contour by more than three kilometers. We also note that our proposed 80 dBu contour falls mostly over sparsely populated forest and wetlands. We have determined that WLFR could increase its power from the present 900 watt level to as high as 3,000 watts at its present site and HAAT without increasing the overlap to more than four percent, and without receiving interference from Temple's proposed facility. We have discussed our request for waiver with Mr. Rance Catlin, Director of Campus Activities at Stockton State College, the individual directly responsible for the operation of WLFR. He has been notified in detail of our plans and will have an opportunity to express any comments. In general, we believe that the requested waiver should not have a significant impact on WLFR.

D. National Public Radio, through its DACS message system, distributed a memo on February 20, 1992, which ranks the largest population centers unserved by public radio, as determined by the Corporation for Public Broadcasting. A copy of this memo is included as Exhibit E-10. The New Jersey counties of Atlantic, Cumberland and Cape May, which the proposed station would serve, are considered the fourth largest unserved population center. Furthermore, the Public Telecommunication Facilities Program of the National Telecommunications and Information Administration (NTIA-PTFP) has identified the proposed Ocean City service area as public radio "white area" in the July 1989 report Public Broadcasting Coverage in the United States. A copy of the PTFP map showing service to New Jersey is submitted as Exhibit E-11. A waiver of 47 C.F.R. §73.509 will permit Temple to maximize its new public radio service to this region.

E. The Atlantic City - Ocean City area is situated just within the Grade B contour of WPVI-TV, Channel 6 in Philadelphia. The process of locating a transmitter site for our new NCE-FM facility was quite difficult, due to the severe constraints of 47 C.F.R. §73.525, which essentially ruled out any potential sites near the densely populated coastal islands. If Channel 6 interference had not been a consideration, we could have proposed a non-directional antenna mounted on one of the existing towers or tall buildings in the urbanized area between Ocean City and Atlantic City, and we would have easily covered both communities with a 60 dBu contour. However, Channel 6 interference, as defined by 47 C.F.R. §73.525, would have greatly exceeded the 3,000 person limit. In an attempt to minimize this interference problem,

we chose instead to use an existing tower in a sparsely populated area fifteen kilometers inland from the coast. This site, in Corbin City, NJ, will permit an ERP of over ten kilowatts vertically polarized and over 800 watts horizontally polarized, without exceeding the 3,000 person maximum for Channel 6 interference. From this point, however, the direct bearings toward WLFR and Atlantic City are only about 30 degrees apart. Moreover, the distance to the farthest part of Atlantic City is ten kilometers greater than to the closest point of the WLFR 80 dBu contour. Therefore, it is difficult to obtain a directional antenna pattern which complies with the 0.2 dB per degree maximum slope limit, capable of providing service to all of Atlantic City, while also avoiding overlap from WLFR. Again, if we were not required to use the Corbin City site in order to satisfy the Channel 6 interference rules, this would not present such a problem. Given these site constraints, we believe a waiver of 47 C.F.R. §73.509 is clearly warranted.

F. The need to protect WPVI-TV from interference also limits the number of reserved-band channels available for use in Southern New Jersey. For instance, with some modifications, Channel 202 (88.3 MHz) could be used for the proposed Ocean City station, were it not for the severe Channel 6 interference limitations imposed at that frequency. Since Temple filed for the Ocean City facility in January 1990, several other applications for new NCE-FM station in the region have also been submitted. Some of these were mutually exclusive with Temple's proposal, although we have now negotiated a settlement agreement to resolve this situation. Therefore, it is apparent that there are not enough FM channels available to meet the demand for NCE-FM service in the area, and this is due in part to the Channel 6 interference problem. The requested waiver will promote more efficient use of these scarce reserved-band channels.

G. In order to comply with 47 C.F.R. §73.509, either a substantial reduction in effective radiated power, or a complex directional antenna pattern similar to the one described in the January 1990 application would be necessary. Such an antenna would probably require multiple corner reflector or panel elements; therefore, it would be rather expensive and could cause excessive tower windloading. A reduction in ERP would greatly reduce the service population in an area which as noted above, currently lacks public radio service. We have discussed the proposed directional pattern, described in Exhibits E-2 and E-3 of the instant amendment, with several antenna manufacturers. They are in agreement that it would be much easier to realize than the previous design, and could use simple lightweight dipole radiators in combination with parasitic elements. This change will greatly reduce the

complexity and cost of the antenna, and will also minimize tower loading, and hence, reduce tower rent.

H. In comparison with the January 1990 application, the facilities requested in the instant amendment will provide 60 dBu service to an additional 38,685 persons, according to 1990 Census Block data. Subtracting the 12,469 persons residing in the overlap area, this is a net increase of 26,216 persons receiving interference-free service. We believe that this increase alone is significant enough to warrant a waiver of 47 C.F.R. §73.509, especially in light of the current lack of public radio service in the southern New Jersey area.



# THE RICHARD STOCKTON COLLEGE OF NEW JERSEY

## POMONA, NEW JERSEY

### WLFR(FM)

### POMONA, NJ

**TABLE 1**

\*\*\*\*\* FM CHANNEL INTERFERENCE STUDY \*\*\*\*\*

Job title: wlfr\_move  
 Proposed latitude: N 39 28 55.80  
 Proposed longitude: W 74 32 36.00  
 Proposed transmit antenna elevation(AMSL): 74.4 meters  
 Proposed maximum ERP: 0.5000 kW  
 Database file name: C:\FCC\_DATA\FCC New Data\2003\October\FM 41003.EDX  
 Protect maximum contours?: N

Proposed channel: 219A

CH	Call	Record	City	ST	Status	Bear.	Dist.	Reqd. Dist.	Result
222B	WXRK	1729	NEW YORK	NY	LIC	18.4	148.4	68.4	
Prop F(50,10)	94 dBu	1.8 km + WXRK	F(50,50)	54 dBu	66.6 km =	68.4			
Prop F(50,50)	60 dBu	12.8 km + WXRK	F(50,10)	100 dBu	4.6 km =	17.4			
222B	WXRK	1739	NEW YORK	NY	LIC	18.4	148.4	62.9	
Prop F(50,10)	94 dBu	1.8 km + WXRK	F(50,50)	54 dBu	61.1 km =	62.9			
Prop F(50,50)	60 dBu	12.8 km + WXRK	F(50,10)	100 dBu	4.0 km =	16.8			
218B	WNYE	1795	NEW YORK	NY	LIC	19.6	142.5	74.0	
Prop F(50,10)	54 dBu	19.0 km + WNYE	F(50,50)	60 dBu	40.7 km =	59.7			
Prop F(50,50)	60 dBu	12.8 km + WNYE	F(50,10)	54 dBu	61.2 km =	74.0			
222B	WXRK	1799	NEW YORK	NY	CP	18.3	149.4	66.0	
Prop F(50,10)	94 dBu	1.8 km + WXRK	F(50,50)	54 dBu	64.2 km =	66.0			
Prop F(50,50)	60 dBu	12.8 km + WXRK	F(50,10)	100 dBu	5.5 km =	18.4			
272A	WJSX	2157	CAPE MAY	NJ	LIC	208.3	59.6	10.0	
IF channel separation requirement = 10.0 km									
219A	WLFR	2160	POMONA	NJ	LIC	137.0	0.5	55.8	-55.4
Prop F(50,10)	40 dBu	44.7 km + WLFR	F(50,50)	60 dBu	11.1 km =	55.8			
Prop F(50,50)	60 dBu	12.8 km + WLFR	F(50,10)	40 dBu	39.5 km =	52.3			
217B1	WRTQ	2165	OCEAN CITY	NJ	LIC	227.6	26.6	38.7	-12.1
Prop F(50,10)	80 dBu	3.7 km + WRTQ	F(50,50)	60 dBu	35.0 km =	38.7			

Prop F(50,50)	60 dBu	11.7 km	+ WRTQ	F(50,10)	80 dBu	11.3 km	=	23.1	
220D	W220BT	2170	CAPE MAY	NJ CP	211.4	46.4	23.1	23.3	
Prop F(50,10)	54 dBu	17.5 km	+ W220BT	F(50,50)	60 dBu	5.7 km	=	23.1	
Prop F(50,50)	60 dBu	12.0 km	+ W220BT	F(50,10)	54 dBu	7.9 km	=	19.9	
273D	960222TA	2174	WARREN GROVE	NJ APP	26.9	33.0	10.0	23.0	
IF channel separation requirement = 10.0 km									
216B	WWNJ	2195	DOVER TOWNSHIP	NJ LIC	36.5	67.5	32.7		
Prop F(50,10)	100 dBu	0.0 km	+ WWNJ	F(50,50)	60 dBu	32.7 km	=	32.7	
Prop F(50,50)	60 dBu	12.8 km	+ WWNJ	F(50,10)	100 dBu	3.4 km	=	16.2	
222D	W222AL	2197	CAPE MAY	NJ LIC	208.3	59.6	12.0		
Prop F(50,10)	100 dBu	0.0 km	+ W222AL	F(50,50)	60 dBu	6.7 km	=	6.7	
Prop F(50,50)	60 dBu	12.0 km	+ W222AL	F(50,10)	100 dBu	0.0 km	=	12.0	
220A	990629MA	2198	BARNEGAT	NJ APP	39.6	33.7	33.1	0.6	
Prop F(50,10)	54 dBu	19.1 km	+ 990629	F(50,50)	60 dBu	13.4 km	=	32.6	
Prop F(50,50)	60 dBu	12.9 km	+ 990629	F(50,10)	54 dBu	20.2 km	=	33.1	
220A	NEW	2232	BARNEGAT	NJ APP	41.5	43.0	28.2	14.8	
Prop F(50,10)	54 dBu	19.2 km	+ NEW	F(50,50)	60 dBu	9.0 km	=	28.2	
Prop F(50,50)	60 dBu	12.9 km	+ NEW	F(50,10)	54 dBu	12.6 km	=	25.5	
220A	NEW	2233	BARNEGAT	NJ APP	31.2	36.8	35.8	1.0	
Prop F(50,10)	54 dBu	19.0 km	+ NEW	F(50,50)	60 dBu	15.4 km	=	34.3	
Prop F(50,50)	60 dBu	12.8 km	+ NEW	F(50,10)	54 dBu	22.9 km	=	35.8	
220A	NEW	2235	BARNEGAT	NJ APP	39.6	33.7	32.8	0.9	
Prop F(50,10)	54 dBu	19.1 km	+ NEW	F(50,50)	60 dBu	13.2 km	=	32.4	
Prop F(50,50)	60 dBu	12.9 km	+ NEW	F(50,10)	54 dBu	19.9 km	=	32.8	
220D	W220BT	2238	CAPE MAY	NJ LIC	208.0	47.4	24.3	23.1	
Prop F(50,10)	54 dBu	17.5 km	+ W220BT	F(50,50)	60 dBu	6.8 km	=	24.3	
Prop F(50,50)	60 dBu	12.0 km	+ W220BT	F(50,10)	54 dBu	9.7 km	=	21.7	
220A	WBGD	2259	BRICK	NJ LIC	27.1	77.8	25.7		
Prop F(50,10)	54 dBu	19.0 km	+ WBGD	F(50,50)	60 dBu	6.7 km	=	25.7	
Prop F(50,50)	60 dBu	12.8 km	+ WBGD	F(50,10)	54 dBu	9.6 km	=	22.4	
220D	W220AA	2266	PARLIN, ETC.	NJ LIC	10.9	110.0	21.0		
Prop F(50,10)	54 dBu	18.9 km	+ W220AA	F(50,50)	60 dBu	2.1 km	=	21.0	
Prop F(50,50)	60 dBu	12.8 km	+ W220AA	F(50,10)	54 dBu	3.0 km	=	15.7	
220D	W220AG	2276	LAWRENCEVILLE, ET	NJ LIC	352.2	89.7	24.8		
Prop F(50,10)	54 dBu	18.3 km	+ W220AG	F(50,50)	60 dBu	6.6 km	=	24.8	
Prop F(50,50)	60 dBu	12.4 km	+ W220AG	F(50,10)	54 dBu	9.3 km	=	21.7	
220B1	WNTI	2281	HACKETTSTOWN	NJ LIC	349.6	154.7	65.1		
Prop F(50,10)	54 dBu	18.3 km	+ WNTI	F(50,50)	60 dBu	35.3 km	=	53.6	
Prop F(50,50)	60 dBu	12.5 km	+ WNTI	F(50,10)	54 dBu	52.7 km	=	65.1	
219A	WLBS	2289	BRISTOL	PA LIC	340.5	79.8	49.8	30.1	
Prop F(50,10)	40 dBu	43.4 km	+ WLBS	F(50,50)	60 dBu	6.3 km	=	49.8	
Prop F(50,50)	60 dBu	12.5 km	+ WLBS	F(50,10)	40 dBu	21.2 km	=	33.7	
217D	W209AR	2303	OAKHURST	NJ CP	26.8	94.4	12.8		
Prop F(50,10)	80 dBu	4.1 km	+ W209AR	F(50,50)	60 dBu	5.3 km	=	9.3	
Prop F(50,50)	60 dBu	12.8 km	+ W209AR	F(50,10)	80 dBu	0.0 km	=	12.8	

217A	WTSR	2325	TRENTON	NJ LIC	347.0	90.0	17.9	
Prop	F(50,10)	80	dBu	4.0 km + WTSR	F(50,50)	60	dBu	14.0 km = 17.9
Prop	F(50,50)	60	dBu	12.5 km + WTSR	F(50,10)	80	dBu	4.5 km = 16.9
219A	NEW	2332	HIGHTSTOWN	NJ APP	0.1	83.4	50.6	
Prop	F(50,10)	40	dBu	43.6 km + NEW	F(50,50)	60	dBu	7.0 km = 50.6
Prop	F(50,50)	60	dBu	12.5 km + NEW	F(50,10)	40	dBu	23.4 km = 35.9
221A	WLBW	2641	FENWICK ISLAND	DE LIC	203.8	128.5	31.0	
Prop	F(50,10)	80	dBu	3.8 km + WLBW	F(50,50)	60	dBu	27.2 km = 31.0
Prop	F(50,50)	60	dBu	12.0 km + WLBW	F(50,10)	80	dBu	8.7 km = 20.7
219D	W219BZ	2660	LEWES	DE LIC	213.4	100.6	48.5	
Prop	F(50,10)	40	dBu	41.5 km + W219BZ	F(50,50)	60	dBu	7.0 km = 48.5
Prop	F(50,50)	60	dBu	11.9 km + W219BZ	F(50,10)	40	dBu	23.6 km = 35.5
216A	990902MB	2688	FELTON	DE APP	237.8	103.3	17.5	
Prop	F(50,10)	100	dBu	0.0 km + 990902	F(50,50)	60	dBu	17.5 km = 17.5
Prop	F(50,50)	60	dBu	11.8 km + 990902	F(50,10)	100	dBu	1.7 km = 13.6
219D	NEW	2692	CAPE ISLE OF WIGH	MD APP	203.8	128.5	48.0	
Prop	F(50,10)	40	dBu	41.8 km + NEW	F(50,50)	60	dBu	6.2 km = 48.0
Prop	F(50,50)	60	dBu	12.0 km + NEW	F(50,10)	40	dBu	20.6 km = 32.6
221A	WLBW	2701	FENWICK ISLAND	DE CP	203.8	128.5	32.1	
Prop	F(50,10)	80	dBu	3.8 km + WLBW	F(50,50)	60	dBu	28.3 km = 32.1
Prop	F(50,50)	60	dBu	12.0 km + WLBW	F(50,10)	80	dBu	9.1 km = 21.2
218A	WSRN-FM	2714	SWARTHMORE	PA LIC	304.4	83.9	26.9	
Prop	F(50,10)	54	dBu	16.9 km + WSRN-F	F(50,50)	60	dBu	10.0 km = 26.9
Prop	F(50,50)	60	dBu	11.6 km + WSRN-F	F(50,10)	54	dBu	14.0 km = 25.6
218A	WDBK	2715	BLACKWOOD	NJ LIC	308.6	54.2	22.8	31.4
Prop	F(50,10)	54	dBu	17.1 km + WDBK	F(50,50)	60	dBu	5.7 km = 22.8
Prop	F(50,50)	60	dBu	11.8 km + WDBK	F(50,10)	54	dBu	8.0 km = 19.8
217A	WVUD	2718	NEWARK	DE LIC	283.0	106.7	20.8	
Prop	F(50,10)	80	dBu	3.7 km + WVUD	F(50,50)	60	dBu	17.0 km = 20.8
Prop	F(50,50)	60	dBu	11.8 km + WVUD	F(50,10)	80	dBu	5.4 km = 17.2
221A	WVLT	2721	VINELAND	NJ LIC	272.4	45.8	27.5	18.2
Prop	F(50,10)	80	dBu	3.7 km + WVLT	F(50,50)	60	dBu	23.8 km = 27.5
Prop	F(50,50)	60	dBu	11.8 km + WVLT	F(50,10)	80	dBu	7.5 km = 19.3
219A	WRTX	2730	DOVER	DE LIC	250.7	93.5	66.2	27.3
Prop	F(50,10)	40	dBu	40.5 km + WRTX	F(50,50)	60	dBu	16.4 km = 56.8
Prop	F(50,50)	60	dBu	11.7 km + WRTX	F(50,10)	40	dBu	54.5 km = 66.2
219A	WKDU	2731	PHILADELPHIA	PA LIC	314.0	76.8	54.6	22.2
Prop	F(50,10)	40	dBu	41.1 km + WKDU	F(50,50)	60	dBu	12.4 km = 53.4
Prop	F(50,50)	60	dBu	11.8 km + WKDU	F(50,10)	40	dBu	42.8 km = 54.6
219A	WMPH	2733	WILMINGTON	DE LIC	291.7	88.8	49.4	
Prop	F(50,10)	40	dBu	40.6 km + WMPH	F(50,50)	60	dBu	8.9 km = 49.4
Prop	F(50,50)	60	dBu	11.7 km + WMPH	F(50,10)	40	dBu	29.4 km = 41.1
216A	990728MC	2745	CAMDEN	DE APP	239.0	92.3	18.2	
Prop	F(50,10)	100	dBu	0.0 km + 990728	F(50,50)	60	dBu	18.2 km = 18.2
Prop	F(50,50)	60	dBu	11.8 km + 990728	F(50,10)	100	dBu	1.9 km = 13.7
219A	WCUR	2746	WEST CHESTER	PA LIC	300.3	104.4	47.6	

Prop F(50,10)	40 dBu	40.6 km + WCUR	F(50,50)	60 dBu	7.0 km =	47.6	
Prop F(50,50)	60 dBu	11.7 km + WCUR	F(50,10)	40 dBu	23.4 km =	35.1	
221A		2749 VINELAND	NJ LIC	272.4	45.8	11.8	
Prop F(50,10)	80 dBu	3.7 km +	F(50,50)	60 dBu	0.0 km =	3.7	
Prop F(50,50)	60 dBu	11.8 km +	F(50,10)	80 dBu	0.0 km =	11.8	
221A	WVLT	2760 VINELAND	NJ CP	272.4	45.8	31.6	14.2
Prop F(50,10)	80 dBu	3.7 km + WVLT	F(50,50)	60 dBu	27.8 km =	31.6	
Prop F(50,50)	60 dBu	11.8 km + WVLT	F(50,10)	80 dBu	8.9 km =	20.7	
220A	NEW	2762 DELAWARE CITY	DE APP	273.5	98.1	31.0	
Prop F(50,10)	54 dBu	17.1 km + NEW	F(50,50)	60 dBu	13.0 km =	30.1	
Prop F(50,50)	60 dBu	11.8 km + NEW	F(50,10)	54 dBu	19.2 km =	31.0	
216A	990621MC	2765 DOVER	DE APP	245.6	107.7	18.3	
Prop F(50,10)	100 dBu	0.0 km + 990621	F(50,50)	60 dBu	18.3 km =	18.3	
Prop F(50,50)	60 dBu	12.0 km + 990621	F(50,10)	100 dBu	1.8 km =	13.8	
219A	WBMR	2783 TELFORD	PA LIC	325.2	111.6	52.0	
Prop F(50,10)	40 dBu	41.8 km + WBMR	F(50,50)	60 dBu	10.2 km =	52.0	
Prop F(50,50)	60 dBu	12.0 km + WBMR	F(50,10)	40 dBu	34.4 km =	46.4	
219A	WMUH	2816 ALLENTOWN	PA LIC	326.7	148.9	50.1	
Prop F(50,10)	40 dBu	41.8 km + WMUH	F(50,50)	60 dBu	8.3 km =	50.1	
Prop F(50,50)	60 dBu	12.0 km + WMUH	F(50,10)	40 dBu	27.7 km =	39.8	
217D	NEW	2891 SHAWMONT	PA APP	316.5	86.2	13.8	
Prop F(50,10)	80 dBu	3.7 km + NEW	F(50,50)	60 dBu	9.0 km =	12.7	
Prop F(50,50)	60 dBu	11.8 km + NEW	F(50,10)	80 dBu	2.0 km =	13.8	
218B	WBJC	3404 BALTIMORE	MD LIC	267.5	188.7	93.4	
Prop F(50,10)	54 dBu	17.3 km + WBJC	F(50,50)	60 dBu	55.0 km =	72.3	
Prop F(50,50)	60 dBu	11.9 km + WBJC	F(50,10)	54 dBu	81.5 km =	93.4	
219A	980923MF	3503 WYOMISSING	PA APP	304.0	169.5	69.9	
Prop F(50,10)	40 dBu	40.4 km + 980923	F(50,50)	60 dBu	18.6 km =	59.0	
Prop F(50,50)	60 dBu	11.6 km + 980923	F(50,10)	40 dBu	58.2 km =	69.9	

\*\*\*\*\* End of channel 219 study \*\*\*\*\*