Exhibit 4 -Engineering Statement

REQUEST FOR SPECIAL TEMPORARY AUTHORIZATION

prepared for

Lincoln Financial Media Company Of Georgia

WSTR(FM) Smyrna, Georgia

Facility ID 30822

Lincoln Financial Media Company Of Georgia ("*Lincoln*") is the licensee of station WSTR(FM), Smyrna, Georgia (BLH-20060523ADI). WSTR is licensed to operate with an effective radiated power ("ERP") of 100 kW at an antenna height above average terrain ("HAAT") of 310 meters. This statement supports a request for further extension of the Special Temporary Authorization ("STA", BDSTA-20060324ACA; "STA Extension 1", BDSTA-20060914ACG; and "STA Extension 2", BDSTA-20070308AGE which expires September 14, 2007) for WSTR to continue digital FM transmissions with a portion of its authorized main antenna.

The WSTR operation is located at a multi-user transmitter site. Two other stations[1], in addition to WSTR, share a common 8 bay panel antenna system. The common antenna system is divided into two sections, an upper section and a lower section, each consisting of 4 bays. Each 4 bay antenna section is fed by separate transmission lines connected to separate combining systems. Thus, each individual station's transmitter plant consists of a common exciter with separate power amplifiers feeding the upper and lower sections of the antenna system.

WSTR has installed a Shively 7 dB high-level digital injector between the output of one power amplifier and the input of the antenna system feeding the lower 4 antenna bays. Since only a portion of the authorized WSTR antenna is employed for digital operation, the current configuration may be considered similar to using a separate, auxiliary antenna. Therefore, upon the recommendation of Commission Staff, the instant engineering statement has been prepared to support a request for an extension of the STA to continue digital operations for WSTR using the lower half of the authorized main antenna.

In a Public Notice[2] the FCC announced that separate antennas may be employed to implement digital FM transmissions ("IBOC") and outlined certain parameters and filing requirements that must be met. As required in that Public Notice, the WSTR digital operation conforms to the iBiquity hybrid IBOC specifications.

As mentioned earlier, WSTR employs a Shively 7 dB high-level digital injector to combine the

[1] The other stations are WSB-FM, Channel 253C0 and WVEE(FM), Channel 277C0, both Atlanta, Georgia.

[2] *"Use of Separate Antennas to Initiate Digital FM Transmissions Approved"*, MM Docket 99-325, DA 04-712, March 17, 2004.

analog signal and digital signal feeding the lower 4 bay section of the main antenna. According to a technical representative of Shively Labs, the 7 dB high-level injector provides approximately 35 dB of isolation between the analog and digital transmitter. This aids in the prevention of spurious emissions in excess of the Commission's limits.

The use of a 7 dB coupler instead of the typical 10 dB coupler permits the use of a smaller digital transmitter. As a consequence, the loss to the analog power amplifier is greater. Each of the WSTR transmitter power amplifiers operate at a transmitter power output level of 15 kW into the respective combiner/antenna sections for the required 30 kW transmitter power output needed to achieve the authorized ERP of 100 kW. Operation of the power amplifier connected to the lower section of the antenna systems requires an increase in transmitter power to 18.7 kW to overcome the digital injector's loss. Each of the two power amplifiers in the WSTR transmitter is capable of operation to a power level of 30 kW according to information provided by a technical representative of *Lincoln.* Thus, the analog transmitter's reserve capacity is capable of achieving the required power level to overcome the losses caused by the high-level injector and, thus, maintain the authorized ERP of 100 kW for the analog signal.

The lower 4 bay section of the authorized WSTR antenna has an antenna radiation center of 286 meters above ground level ("AGL") and HAAT of 304.4[3] meters which is 98.1% of the HAAT of the main antenna. As such, the antenna HAAT is within the 70 to 100 percent height tolerance specified in the Public Notice. There is no difference in the IBOC antenna's site geographic coordinates from that of the main WSTR facility.

The analog WSTR operation will continue to employ an ERP of 100 kW as licensed, and the (average) IBOC ERP will continue to be 1 kW (20 dB reduced from the 100 kW analog operation). Since only a portion of the main WSTR antenna is employed, the gain of the lower 4 antenna bays is different from the overall antenna gain. The Alan Dick Company, manufacturer of the antenna system, was consulted and provided a gain figure of 3.1 dB for the lower half of the main WSTR antenna system. This antenna gain figure was employed to determine the required transmitter power output level for the digital transmitter. See the attached **Exhibit 4 - Table 1** for complete engineering data for the WSTR IBOC operation. **Exhibit 4 - Table 2** provides the antenna system gains and losses employed for the digital transmitter power output calculations.

[3] Site HAAT was determined using 3 second digitized terrain data.

Environmental Considerations – Exposure to Radiofrequency Electromagnetic Field

The STA operation was evaluated for human exposure to radiofrequency ("RF") energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). The licensed analog main 8 bay antenna facility is considered plus the additional contribution to RF exposure by the added IBOC transmissions. The digital antenna is comprised of the bottom 4 bays of the WSTR authorized main antenna. The bottom 4 bays of the antenna operating as a digital antenna has a radiation center 286 meters above ground level (see **Exhibit 4 - Table 1**). The main 8 bay analog antenna has a radiation center 292 meters above ground level. Both the analog and digital antennas are circularly polarized. Based on a typical elevation pattern for an 8 bay 0.942 wavelength spaced antenna, the antenna has a maximum vertical plane (elevation) relative field value of less than 33% (from 10° to 90° below the horizontal). Thus, a conservative value of 33% was employed for the analog calculation. For the IBOC calculation, a maximum vertical plane (elevation) relative field value of 100% is assumed. The "uncontrolled/general population" maximum permissible exposure ("MPE") limit specified in §1.1310 for the FM band is 200 $\mu W/cm^2$.

The formula used for calculating FM signal density in this analysis is essentially the same as equation (9) in OET-65.

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

S	=	power density in microwatts/cm^2
ERP	=	total (average) ERP in Watts
F	=	relative field factor
D	=	distance in meters

Using this formula, the WSTR IBOC facility contributes an RF power density of 0.83 $\mu W/cm^2$ at two meters above ground level near the antenna support structure, or 0.42 percent of the "uncontrolled/general public" limit. Similarly, the WSTR(FM) analog facility contributes an RF power density of 8.65 $\mu W/cm^2$ at two meters above ground level near the antenna support structure, or 4.33 percent of the "uncontrolled/general public" limit. The analog and IBOC facilities combined contribute an RF power density of 9.48 $\mu W/cm^2$ at two meters above ground level near the antenna support structure, or 4.75 percent of the "uncontrolled/general public" limit. At ground level locations away from the base of the tower, the calculated RF power density attributable to WSTR is even lower, due to the increasing distance from the transmitting antenna.

§1.1307(b)(3) states that facilities contributing less than five percent of the exposure limit at locations with multiple transmitters (such as the case at hand) are categorically excluded from responsibility for taking any corrective action in the areas where their contribution is less than five percent. Since the instant situation meets the five percent exclusion test at all ground level areas, the impact of the any other facilities using this site may be considered independently from this proposal. Accordingly, it is believed that the impact of the STA digital operation should not be considered to be a factor at or near ground level as defined under §1.1307(b).

As demonstrated herein, excessive levels of RF energy attributable to the digital facility will not be caused at publicly accessible areas at ground level near the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, tower access will continue to be restricted and controlled through the use of a locked fence. Additionally, appropriate RF exposure warning signs will continue to be posted.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground level. A site exposure policy will continue to be employed protecting maintenance workers from excessive exposure when work must be performed on the tower in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines will be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. *Lincoln* will coordinate exposure procedures with all pertinent stations.

Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under Section 1.1306 of the Rules, hence preparation of an Environmental Assessment is not required.

Conclusion

Based on the foregoing and associated attachments, it is believed that the current IBOC operation authorized in the STA is in compliance with the Public Notice. Therefore, an extension of the current STA to permit continued IBOC operations by WSTR for an additional 180 days is hereby respectfully requested on behalf of the applicant.

Certification

The foregoing statement was prepared by the undersigned and is believed to be true and correct to his knowledge and belief. Mr. Mertz is a Principal Engineer in the firm of Cavell, Mertz, and Associates, Inc. and has filed numerous submissions with the Federal Communications Commission. His qualifications are a matter of record with that agency.

Richard H. Mertz
August 21, 2007

Cavell, Mertz & Associates, Inc.
7839 Ashton Avenue
Manassas, VA 20109
(703) 392-9090

List of Attachments

Exhibit 4 - Table 1	Engineering Data
Exhibit 4 - Table 2	Antenna / Line System Gains and Losses

Exhibit 4 - Table 1

ENGINEERING DATA

Request for Special Temporary Authorization

Prepared August 2007 for

Lincoln Financial Media Company Of Georgia

WSTR(FM) Smyrna, Georgia

Facility ID 30822

Description	Licensed Analog Operation Main Antenna	STA IBOC Operation (Bottom 4 Bays of Main Antenna)
File Number	BLH-20060523ADI	BLH-20060523ADI
Site Coordinates (NAD-27)	N-Lat 33° 45' 33" W-Lon 84° 20' 05"	N-Lat 33° 45' 33" W-Lon 84° 20' 05"
Antenna Structure Registration	1028278	1028278
Antenna Radiation Center Height Above ground Above mean sea level Above average terrain	 292 m 593.8 m 310.4[1] m	 286 m 587.8 m 304.4[3] m (98.1% of main)
Antenna type	Non-directional	Non-directional
Effective Radiated Power	100 kW	1 kW
Transmitter Power Output	PA Cabinet 1 – 18.7 kW[2] PA Cabinet 2 – 15.0 kW	3.02 kW

Station Technical Representative: Mr. Scott Trask
(404) 238-9485

[1] Site HAAT was determined using 3 second digitized terrain data.
[2] See Engineering Statement for description of split antenna operation.

Exhibit 4 - Table 2

ANTENNA / LINE SYSTEM GAINS AND LOSSES

prepared August 2007 for

Lincoln Financial Media Company Of Georgia

WSTR(FM) Smyrna, Georgia

Facility ID 30822

Digital STA Operation

IBOC Effective Radiated Power (avg):		**1 kW**	**0.00 dBk**
Antenna System			
Alan Dick	Max Power Gain:	2.04	3.10 dB
FC8.3SH140ND			
	Antenna Input Power:	**0.5 kW**	
Line and Other Losses			
6 1/8" Rigid Line	Efficiency:	0.871	
Length 1,150 ft	Loss:		0.60 dB
Transmitter Combiner	Efficiency:	0.933	
	Loss:		0.30 dB
High Level Injector			
Shively Model 5656	Efficiency:	0.200	
	Loss:		7.00 dB
	Total Losses:		**7.90 dB**
	Transmitter Power Output:	**3.02 kW**	**4.80 dBk**