

**MULLANEY ENGINEERING, INC.**

9049 SHADY GROVE COURT  
GAITHERSBURG, MD 20877

**ENGINEERING EXHIBIT EE-1:**

**FREE LIFE MINISTRIES, INC.  
CLASS-A TELEVISION STATION WHFL-LP  
GOLDSBORO, NORTH CAROLINA**

**DIGITAL TELEVISION CHANNEL 43  
"FLASH-CUT" APPLICATION**

**JUNE 2009**

**FCC FACILITY NUMBER: 22485**

**ENGINEERING EXHIBIT  
IN SUPPORT OF  
AN APPLICATION FOR AUTHORITY TO CONSTRUCT  
OR MAKE CHANGES IN A  
CLASS-A TELEVISION BROADCAST STATION**

**WHFL-LP, GOLDSBORO, NC  
CHANNEL 43 DIGITAL TELEVISION FLASH-CUT**

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**TABLE OF CONTENTS:**

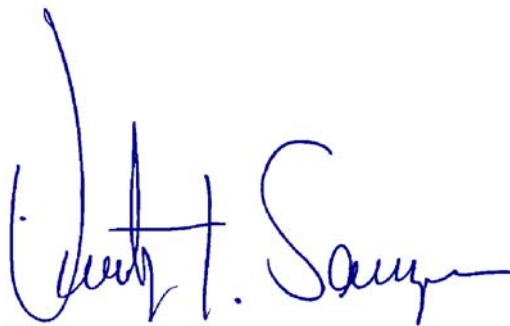
1. F.C.C. Form 301, Section III (Engineering Digital)
2. F.C.C. Form 301, Section III (Certification)
3. Declaration of Engineer
4. Narrative Statement
5. Figure 1, Predicted Coverage Contours
6. Figure 2, Non-Directional Antenna Details
7. Figure 3, Allocation Study

## **DECLARATION**

I, Timothy Z. Sawyer, declare and that I have provided engineering services in the area of telecommunications since 1969. My qualifications are a matter of record with the Federal Communications Commission. I am a senior engineer with the firm of Mullaney Engineering, Inc., consulting radio telecommunications engineers with offices in Gaithersburg, Maryland.

The firm of Mullaney Engineering, Inc., has been retained by FREE LIFE MINISTRIES, INC., to prepare the instant engineering exhibit in support of **an application for authority to Construct or Make Changes in a Class-A Television Broadcast Station, WHFL-LP, FCC Facility ID Number 22485.**

All facts contained herein are true of my own knowledge except those stated to be on information and belief, and as to those facts, I believe them to be true. I declare under the penalty of perjury that the foregoing is true and correct.



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Timothy Z. Sawyer

Executed on the 25<sup>st</sup> day of June 2009

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**CLASS-A TELEVISION STATION WHFL-LP**

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**DIGITAL TELEVISION CHANNEL 43  
"FLASH-CUT" APPLICATION**

**JUNE 2009**

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**NARRATIVE STATEMENT:**

**I. GENERAL:**

This engineering statement and the instant engineering exhibit of which it is part has been prepared on behalf of FREE LIFE MINISTRIES, INC., (hereinafter "FLM").

This engineering exhibit supports a digital "flash-cut" application for Class-A Television Station WHFL-LP. Station WHFL-LP currently operates (licensed facility) on analog television channel 43 (BLTTA-20070621ABF). FLM proposes to "flash-cut" its current operation on television channel 43 utilizing the current authorized site and antenna system. The proposed digital Class-A television station will operate on digital television channel 43 with its licensed non-directional antenna (omni) and a maximum effective radiated power (ERP) of 7.5 kilowatts. The antenna center of radiation height above ground (RCAGL) of 134.1 meters and above mean sea level (RCAMSL) of 155.4 meters remains unchanged.

This proposal only wishes to change the method of modulation from analog to digital and change the station's effective radiated power. No other changes are proposed.

The proposed facilities will be built to comply with the *FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields* and the instant proposal is categorically excluded from environmental processing pursuant to the provisions of Section 1.1306 of the Commission's Rules. A more detailed discussion of

environmental factors is included under the heading Environmental Considerations below.

Information requested by exhibits in response to questions on Section III of FCC Form 301 (digital) is incorporated in the following paragraphs, figures and/or tables.

Processing of this application is requested under the rules currently in effect at the time of filing.

**ENGINEERING DISCUSSION:**

Figure 1 is a map showing the proposed 51 dBu digital service contour, and the licensed 74 dBu analog service contour. As can be seen on the map, the 51 dBu digital contour overlaps the current analog service contour as required by the Commission's minor change rules.

As no changes in station location are proposed, the contours must physically overlap as the point of origin of each contour, i.e., the transmitter site remains the same.

**PROPOSED FACILITIES:**

This application proposes digital operation on the WHFL-LP analog channel assignment (TV channel 43), at the authorized transmitter site.

No changes in site location, or channel assignment are proposed, this is a digital on-channel "flash-cut" construction permit application.

The antenna supporting structure is an existing structure with an overall height of 143.3 meters above ground. The tower/supporting structure has been issued FCC tower registration number: 1019370. No changes in the height of the existing structure are required, therefore the FAA has not been notified.

The ground elevation above mean sea level (AMSL) of the site is 21.3 meters. The applicant proposes to use the existing side-mounted nondirectional (omni) antenna with a center of radiation at 134.1 meters above ground. The center of radiation of the antenna above mean sea level (AMSL) is 155.4 meters.

This is an existing communication site that has been authorized for use by WHFL-LP. No new construction will occur other than the conversion of the transmitter from analog service to digital service.

Figure 2 contains a horizontal radiation (relative field) pattern of the proposed digital nondirectional horizontal radiation pattern. The antenna is an ERI 16-Bay UHF slot antenna, model number ALP16L2-HSOC (ERI ALP16L2-HSOC) employing 0.5 degrees of downward electrical beam tilt. As this is an omni, nondirectional pattern the radiation pattern is not a required submission but is included herein for reference.

**ALLOCATION CONSIDERATIONS:**

A study has been conducted to assure that the proposal will not create prohibited interference with other licensed, authorized or pending analog or digital full-service TV, LPTV or TV Translator or Class-A TV stations.

Using the procedures outlined in the FCC's OET-69 Bulletin, a 1-kilometer cell size resolution and 1990 U.S. Census, the proposal complies with the current FCC policy (i.e., less than 0.5% new interference caused to other pertinent assignments).

Each station of concern has been analyzed using the methods described in OET Bulletin No. 69, and the results indicate that no interference (unmasked) or interference above 0.5% of the service population of the station studied will occur.

The results of the OET Bulletin No. 69 styled study are contained with Figure 3.

**ENVIRONMENTAL CONSIDERATIONS:**

The applicant believes its proposal will not significantly affect the environment for the following reasons.

The proposal does not meet any of the criteria specified in Section 1.1307 of the FCC Rules. More specifically, the proposed facilities are not known to fall within any of the categories enumerated in Sections 1.1307(a)(1)-(7) and will not involve the use of high intensity white lights.

Furthermore, operation of the proposed facility will not involve the exposure of workers or the general public to levels of radio frequency electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission. (The current FCC guidelines are based upon criteria contained in the National Council of Radiation Protection and Measurements (NCRP) Report No.86 (1986) and ANSI/IEEE C95.1-1992.)

Based upon a worst case downward field value of 0.25 for all angles 15 degrees and greater below the horizon, and a digital power of 7.5-kilowatts, and an antenna height of 134.1 meters above ground. The power density level 2-meters above ground is predicted to be 0.0004 mW/cm<sup>2</sup> or less. The computed power density is 0.02% of the Commission's guidelines for a controlled area and 0.93% for an uncontrolled area. This level is well below the Commission's guidelines for maximum exposure levels to electromagnetic fields and no further study is required.

The applicant will fully-cooperate and coordinate with all site users as required by the Commission's rules.

**II SUMMARY:**

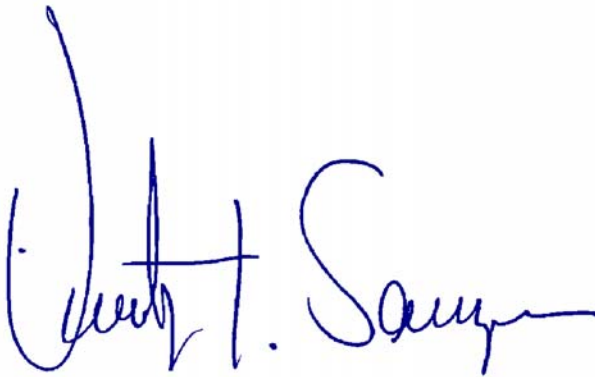
The proposed station will operate on Digital Television Channel 43 with a maximum ERP of 7.5-kilowatts (7,500 Watts), utilizing a NONDIRECTIONAL (OMNI) antenna system.

The estimated digital transmitter power output to produce the requested ERP is 740 watts.

Operation as proposed herein would not cause/increase any normally prohibited contour overlap using a terrain dependant - OET Bulletin No. 69 review, and would not have any significant impact on the environment. The proposed operation will not create any new prohibited interference.

The proposed operation is fully in compliance with all other areas of the Commission's rules and applicable international agreements.

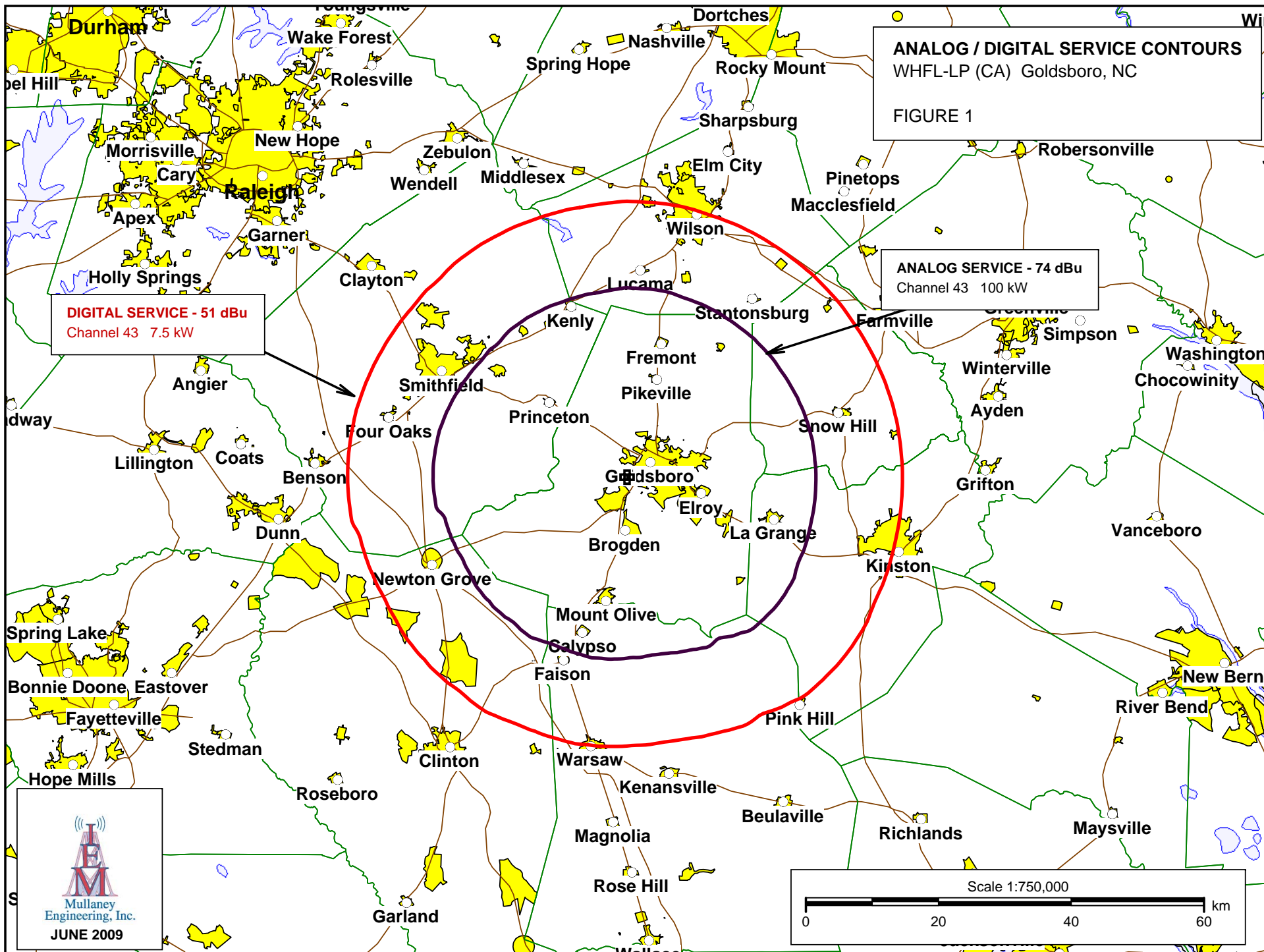
25 June 2009



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Timothy Z. Sawyer

MULLANEY ENGINEERING, INC.  
9049 SHADY GROVE COURT  
GAITHERSBURG, MARYLAND USA  
TEL.: (301) 921-0115



Non-directional Antenna Pattern      FIGURE 2

Azimuth (deg)	Effective Field
0.0	1.000
10.0	1.000
20.0	1.000
30.0	1.000
40.0	1.000
50.0	1.000
60.0	1.000
70.0	1.000
80.0	1.000
90.0	1.000
100.0	1.000
110.0	1.000
120.0	1.000
130.0	1.000
140.0	1.000
150.0	1.000
160.0	1.000
170.0	1.000
180.0	1.000
190.0	1.000
200.0	1.000
210.0	1.000
220.0	1.000
230.0	1.000
240.0	1.000
250.0	1.000
260.0	1.000
270.0	1.000
280.0	1.000
290.0	1.000
300.0	1.000
310.0	1.000
320.0	1.000
330.0	1.000
340.0	1.000
350.0	1.000

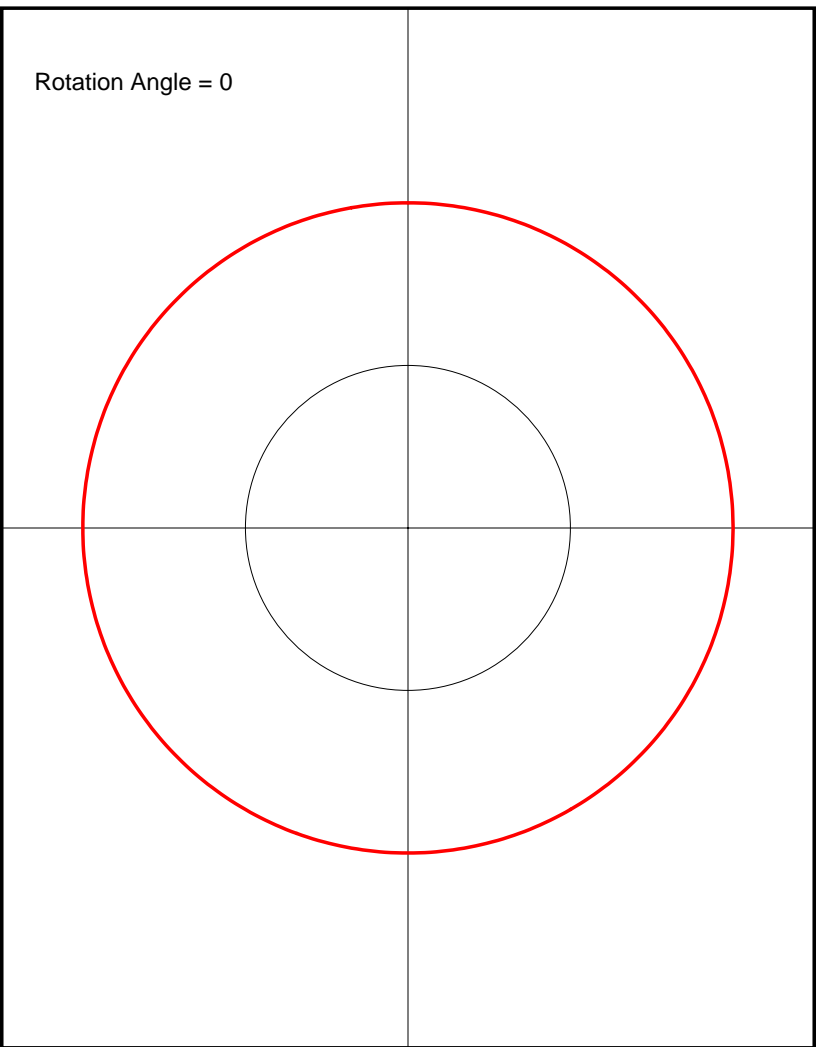


FIGURE 3 - OET BULLETIN NUMBER 69 INTERFERENCE STUDY RESULTS

Summary Study

1990 Census data selected

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 06-04-2009 Time: 14:06:15

Record Selected for Analysis

WHFL-LP- USERRECORD-01 GOLDSBORO NC US  
 Channel 43 ERP 7.5 kW HAAT 119. m RCAMSL 00155 m STRINGENT MASK  
 Latitude 035-21-53 Longitude 0078-01-55  
 Status APP Zone 1 Border  
 Dir Antenna Make usr Model USRPAT01 Beam tilt N Ref Azimuth 0.  
 Last update Cutoff date Docket  
 Comments  
 Applicant

Cell Size for Service Analysis 1.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Not full service station

Facility meets maximum power limit

Azimuth (Deg)	ERP (kW)	HAAT (m)	51.0 dBu F(50, 90) (km)
0.0	7.500	119.6	41.1
45.0	7.500	114.3	40.7
90.0	7.500	118.8	41.0
135.0	7.500	140.3	42.5
180.0	7.500	109.4	40.2
225.0	7.500	112.0	40.5
270.0	7.500	124.3	41.4
315.0	7.500	111.0	40.4

Contour Overlap to Proposed Station

Contour Overlap Evaluation to Proposed Station Complete

LANDMOBILE SPACING VIOLATIONS FOUND

NONE

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quiet zone

Proposed facility OK toward Table Mountain

Proposed facility is beyond the Canadian coordination distance

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

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Start of Interference Analysis

Channel	Call	City/State	ARN
43	WHFL-LP-	GOLDSBORO NC	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
35	WPXU-TV	JACKSONVILLE NC	108.0	LIC	BLCT	-20030926APA
35	W35CC	LUMBERTON NC	119.6	LIC	BLTT	-20040802BEA
36	WUNP-TV	ROANOKE RAPIDS NC	104.4	LIC	BMLET	-20041104ARP
40	WUVC-TV	FAYETTEVILLE NC	87.3	LIC	BMLCT	-20040615ABO
41	WWIW-LP	RALEIGH NC	71.4	CP	BDISTTL	-20070305ABA
41	WNCR-LP	TARBORO NC	63.9	LIC	BLTTL	-20050623ABK
42	WRAY-TV	WILSON NC	52.9	LIC	BLCDT	-20060609AAX
43	WLXI-TV	GREENSBORO NC	171.3	LIC	BLCDT	-20060630ADU
43	WLXI-TV	GREENSBORO NC	171.3	CP	BPCDT	-20080619AII
43	W43AU	MARION NC	361.2	LIC	BLTT	-19920505IF
43	WFXB	MYRTLE BEACH SC	167.7	LIC	BLCT	-20061117ACG
43	WRET-TV	SPARTANBURG SC	348.5	CP	BPEDT	-20080620ACI
43	WRET-TV	SPARTANBURG SC	348.5	LIC	BLEDT	-20050324ACD
43	WTLU-LD	LYNCHBURG VA	243.6	CP MOD	BMPDTL	-20080804ABZ
43	WPXW	MANASSAS VA	385.5	LIC	BLCDT	-20010425ABG
43	W43BO	MARION, ETC. VA	358.5	LIC	BLTTL	-19970425JD
43	WRKV-LP	ROANOKE VA	277.7	LIC	BLTTL	-20010322ABK
43	WAZM-LD	STAUNTON-WAYNESBORO VA	342.9	CP	BDCCDTL	-20061030AAA
43	WBDT-LD	SUFFOLK VA	211.7	CP	BDCCDTL	-20061020ACR
43	WVBT	VIRGINIA BEACH VA	211.7	LIC	BLCT	-19960531KF
43	W43CL	PENDLETON WV	396.3	CP	BNPTTL	-20000828AED
44	W44CN	GREENVILLE NC	57.7	LIC	BLTT	-20061031AAO
44	WYBE-CA	PINEHURST NC	127.9	LIC	BLTTL	-19990811JH
44	WZGS-CA	RALEIGH NC	78.4	STA	BSTA	-20050324AIS
44	WZGS-CA	RALEIGH NC	78.4	LIC	BLTTA	-20090127ACI
44	WECT-TV	WILMINGTON NC	117.4	LIC	BPRM	-20020423ABN
44	WECT	WILMINGTON NC	137.8	CP	BPCDT	-20080505ABJ
44	WECT	WILMINGTON NC	117.4	LIC	BLCDT	-20040423AAK
45	W45CO	FAYETTEVILLE NC	85.3	LIC	BLTT	-20040908AAY
45	W45CN	ROCKY MOUNT NC	63.4	LIC	BLTT	-20040802AYS
46	WBFT-CA	SANFORD NC	104.8	LIC	BLTTL	-19890630IK
47	WPEM-LP	LUMBERTON NC	119.7	LIC	BLTTL	-19960530JB
47	WRPX	ROCKY MOUNT NC	83.3	LIC	BLCT	-19960709KN
50	WRAZ	RALEIGH NC	57.3	LIC	BLCT	-19950925KE

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Study of this proposal found the following interference problem(s):

NONE.