

ENGINEERING REPORT  
RE AMENDMENT OF APPLICATION (BPCDT-19991021AAR)  
**WLNS-DT, LANSING, MICHIGAN**  
CHANNEL 59 1000 KW ERP 288 METERS HAAT

JUNE 2001

COHEN, DIPPELL AND EVERIST, P.C.  
CONSULTING ENGINEERS  
RADIO AND TELEVISION  
WASHINGTON, D.C.

COHEN, DIPPELL AND EVERIST, P. C.

City of Washington )  
 ) ss  
District of Columbia )

Sudhir K. Khanna, being duly sworn upon his oath, deposes and states:

That he is a registered professional engineer in the District of Columbia, holds the degree of Master of Science in Electrical Engineering, and is Secretary-Treasurer of Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio-Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

That his qualifications are a matter of record in the Federal Communications Commission;

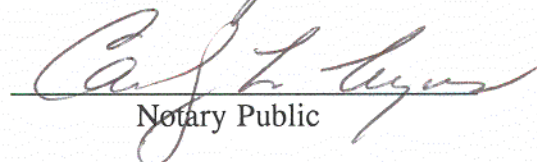
That the attached engineering report was prepared by him or under his supervision and direction; and

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts, he believes them to be true.



Sudhir K. Khanna  
District of Columbia  
Professional Engineer  
Registration No. 8057

Subscribed and sworn to before me this 11<sup>th</sup> day of June, 2001.

  
Notary Public

My Commission Expires:

2/28/2003

### Introduction

This engineering report has been prepared on behalf of Young Broadcasting of Lansing, Inc. (Young), licensee of TV station WLNS-TV, Lansing, Michigan in support of an amendment its application (BPCDT-19991021AAR) for construction permit for a new digital television (DTV) station. At present, WLNS-TV operates on analog TV Channel 6 (82-88 MHz) with 100 kW effective radiated power (ERP) and 305 meters antenna height above average terrain (HAAT). The current analog Channel 6 operation of WLNS-TV is with a non-directional TV antenna. Station WLNS-TV has been allotted Channel 59 (740-746 MHz) for its digital TV operation with 1000 kW maximum ERP and 305 meters HAAT. WLNS-DT filed its application (BPCDT-19991021AAR) to operate its DTV facilities on Channel 59 with 916 kW ERP and 303 meters HAAT using a directional TV antenna. It is now proposed to operate WLNS-DT on Channel 59 with 1000 kW ERP and 288 meters HAAT from the station's licensed antenna site using a non-directional TV antenna. The proposed DTV operation would comply with the Commission's specified reference ERP and HAAT in each azimuth direction from the antenna site.

### Antenna Site

It is proposed to top-mount the Channel 59 DTV antenna on the existing guyed tower, currently supporting the WLNS-TV, Channel 6 antenna.

The current analog NTSC antenna will be replaced by a new TV antenna to be mounted above the proposed WLNS-DT antenna. The overall height of the total structure would remain the same.

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WLNS-DT, LANSING, MICHIGAN

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The WLNS-TV antenna site is located east of Van Atta Road, north of Jolly Road, Okemos, Michigan. The WLNS-TV Antenna Structure Registration (1035420) indicates slightly different geographic coordinates of the antenna site. The re-determined geographic coordinates differ from the licensed coordinates by five seconds in latitude.

The geographic coordinates (NAD-27) of the existing tower based on the Antenna Structure Registration No. 1035420 are as follows.

North Latitude: 42° 41' 19"

West Longitude: 84° 22' 35"

The following data shows the pertinent information concerning the proposed DTV operation.

Antenna and Elevation Data\*

Antenna:	Dielectric	Model No. TUE-05-12/60H-1-M-B
	Beam Tilt	0.75 degrees electrical
	Directivity	Non-Directional
Elevation of the site above mean sea level:		273 meters
Elevation of the top of supporting structure: above grounding including DTV antenna		312 meters
Elevation of the top of supporting structure: above mean sea level including DTV antenna		585 meters
Height of DTV antenna radiation center: meters above ground		287 meters

Height of DTV antenna radiation center: 560 meters  
above mean sea level

Height of DTV antenna radiation center: 288 meters  
above average terrain

\* to the nearest meter.

#### Permissible Maximum & Reference ERP

The allotted maximum and minimum permissible ERPs for WLNS-DT operation are 1000 kW and 913.9 kW, respectively, at 305 meters HAAT. Station WLNS-DT is proposing to operate with 286 meters HAAT. According to Section 73.622(f)(3)(i) WLNS-DT would be allowed to operate with maximum and minimum ERPs of 1122 kW and 1025 kW, respectively, to compensate for lower HAAT. However, since the maximum ERP for a UHF DTV station is limited to 1000 kW, WLNS-DT would be operating with 1000 kW ERP at 288 meters HAAT using a non-directional TV antenna to ensure that its proposed DTV facilities do not exceed the Commission's allotted reference ERP/HAAT in any direction.

#### Topographic Data

The average elevation data of the eight cardinal radials from 3.2 to 16.1 kilometers, is based on the 3-second computerized terrain database.

#### Contour Data

In MM Docket No. 00-83, the Commission has mandated that UHF DTV stations provide 48 dBu signal level over its principal community.

The attached map (Exhibit E-2) indicates the proposed WLNS-DT operation would provide 41 dBu and 48 dBu signal level over all of Lansing, Michigan, the principal community.

#### Environmental Statement

Since the proposed DTV antenna will be installed on the existing WLNS-TV tower, it is believed 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 dated August 1997. For a maximum effective radiated power of 1000 kW and a radiation center of 287 meters above ground level, the proposed DTV operation would have a maximum of 16.5 microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ) RF field at 2 meters above the base of tower, conservatively assuming an antenna field factor of 0.2 in the downward direction. The Commission's guidelines for Channel 59 TV operation are 2,467  $\mu\text{W}/\text{cm}^2$  for the occupational/controlled and 493  $\mu\text{W}/\text{cm}^2$  for the general population/uncontrolled environment.

However, since other existing analog TV operation is also located on the same tower, a combined RF field level at the DTV site has been also determined. The attached Table II lists the RF field contribution made by each operation. The Table II indicates the combined value would be less than the Commission's MPE guidelines.

Therefore, members of the public and personnel working around the proposed WLNS-DT, Channel 59 DTV facility would not be exposed to RF fields exceeding the Commission's guidelines. With respect to work performed on the tower, station WLNS-TV will establish procedures to ensure that workers are not exposed to RF fields above the Commission's guidelines, by reducing or turning off the power, as appropriate.

For the reasons stated above, it is believed this proposal complies with Section 1.1307(a) and (b) of the Commission's Rules; therefore, under Section 1.1306, it is categorically excluded from the environmental processing.

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TABLE I  
COMPUTED COVERAGE DATA  
FOR THE PROPOSED DTV OPERATION OF  
WLNS-DT, LANSING, MICHIGAN  
JUNE 2001

Radial Bearing N ° E, T	Average* Elevation of Radial 3.2 to 16 km	Height of R/C Above Average Elevation of Radial 3.2 to 16.1 km	Depression Angle	<u>Distance to F(50,90) Contour</u>	
	meters	meters		48 dBu km	41 dBu km
0	262	298	0.478	82.7	96.5
45	273	287	0.469	81.4	95.2
90	270	290	0.472	81.7	95.5
135	279	281	0.464	80.6	94.4
180	287	273	0.458	79.8	93.3
225	274	286	0.468	81.2	95.0
270	267	293	0.474	82.1	96.0
315	262	298	0.478	82.8	96.6

Channel 59 (740-746 MHz)  
Center of Radiation 560 meters AMSL  
Antenna Height Above Average Terrain 288 meters  
Effective Radiated Power 1000 kW (30 dBk)

(NAD-27)

North Latitude: 42° 41' 19"  
West Longitude: 84° 22' 35"

\*Based on the NGDC 3- second terrain database, rounded to nearest meter.



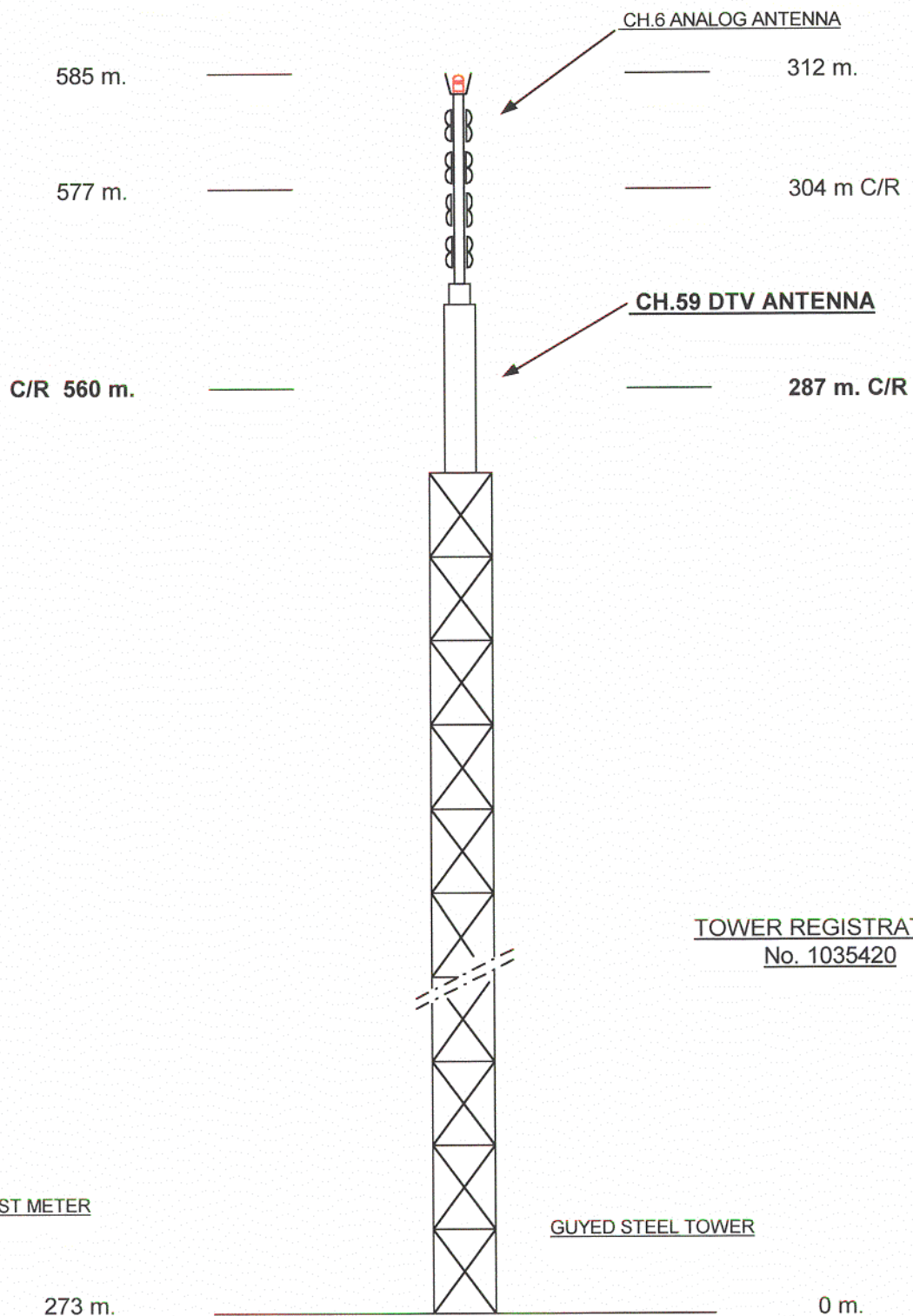
## COHEN, DIPPELL AND EVERIST, P.C.

TABLE II  
RF FIELD ANALYSIS  
WLNS-DT, LANSING, MICHIGAN  
JUNE 2001

<u>Station</u>	<u>Channel</u>	Max. <u>ERP</u> kW	<u>Antenna</u>		Calculated <u>RF Field</u> μW/cm	<u>MPE</u> μW/cm <sup>1</sup>	% of <u>MPE</u>
			C/R <u>A.G.</u> meters	Relative <u>Field</u>			
WLNS-DT	59 (740-746 MHz)	1000	287	0.2	16.5	493	3.3
WLNS-TV	6 (82-88 MHz)	100 (V) 25 (A)	304	0.5	6.0	200	3.0
						Combined	6.3

ABOVE MEAN SEA LEVEL\*

ABOVE GROUND\*



(\*) TO NEAREST METER

NOT TO SCALE

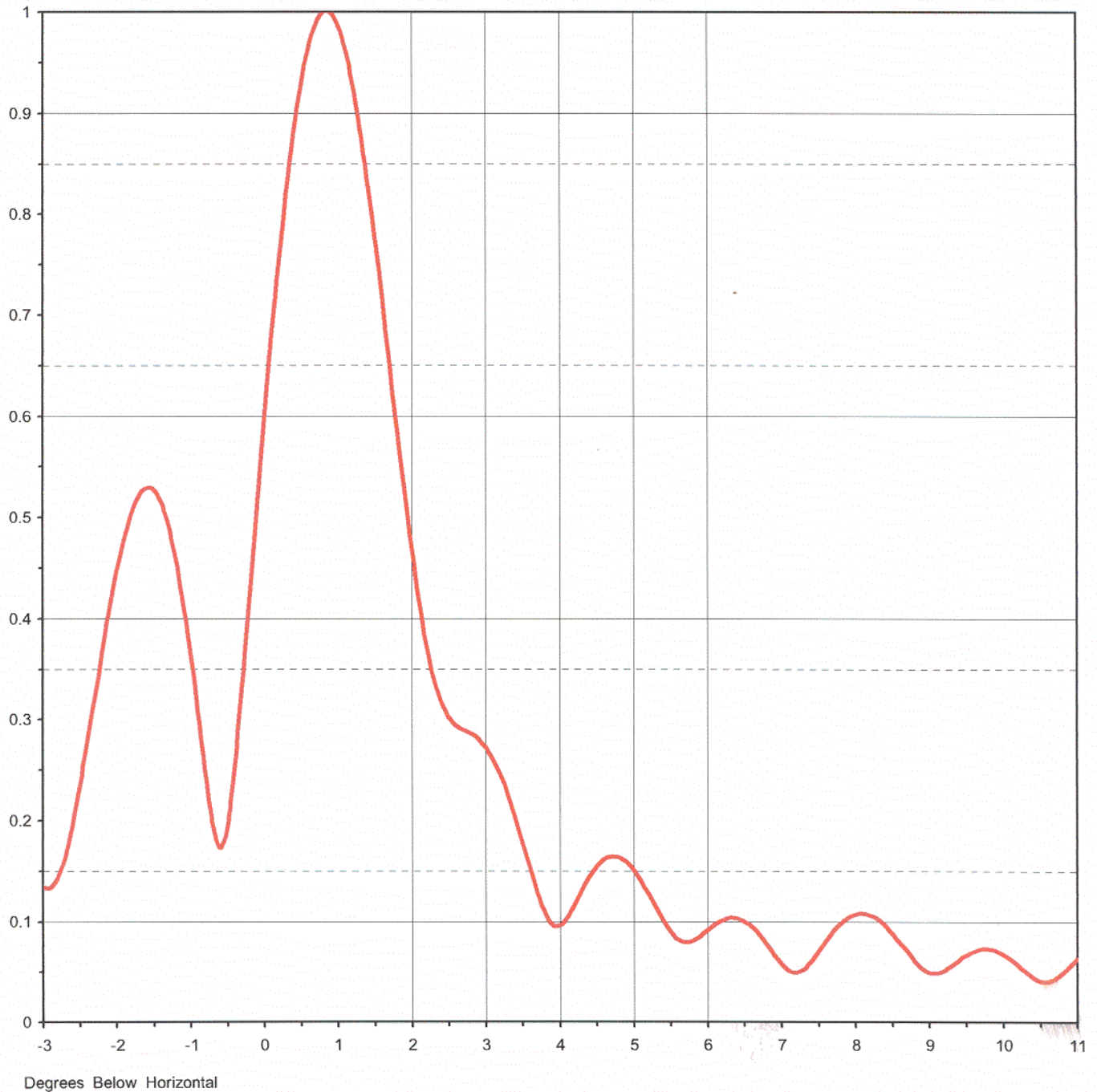
EXHIBIT E - 1  
VERTICAL SKETCH  
FOR THE PROPOSED DTV OPERATION OF  
**WLNS-DT, LANSING, MICHIGAN**  
MAY 2001

Proposal Number	<b>DCA-8794</b>	Revision:	<b>1</b>
Date	<b>1-Nov-00</b>		
Call Letters	<b>WLNS</b>	Channel	<b>59</b>
Location	<b>Lansing, MI</b>		
Customer	<b>Raycom</b>		
Antenna Type	<b>TUE-O5-12/60H-1-M-B</b>		

### ELEVATION PATTERN

RMS Gain at Main Lobe	<b>26.00 ( 14.15 dB )</b>
RMS Gain at Horizontal	<b>9.20 ( 9.64 dB )</b>
Calculated / Measured	<b>Calculated</b>

Beam Tilt	<b>0.75 deg</b>
Frequency	<b>743.00 MHz</b>
Drawing #	<b>C-12-59-2</b>

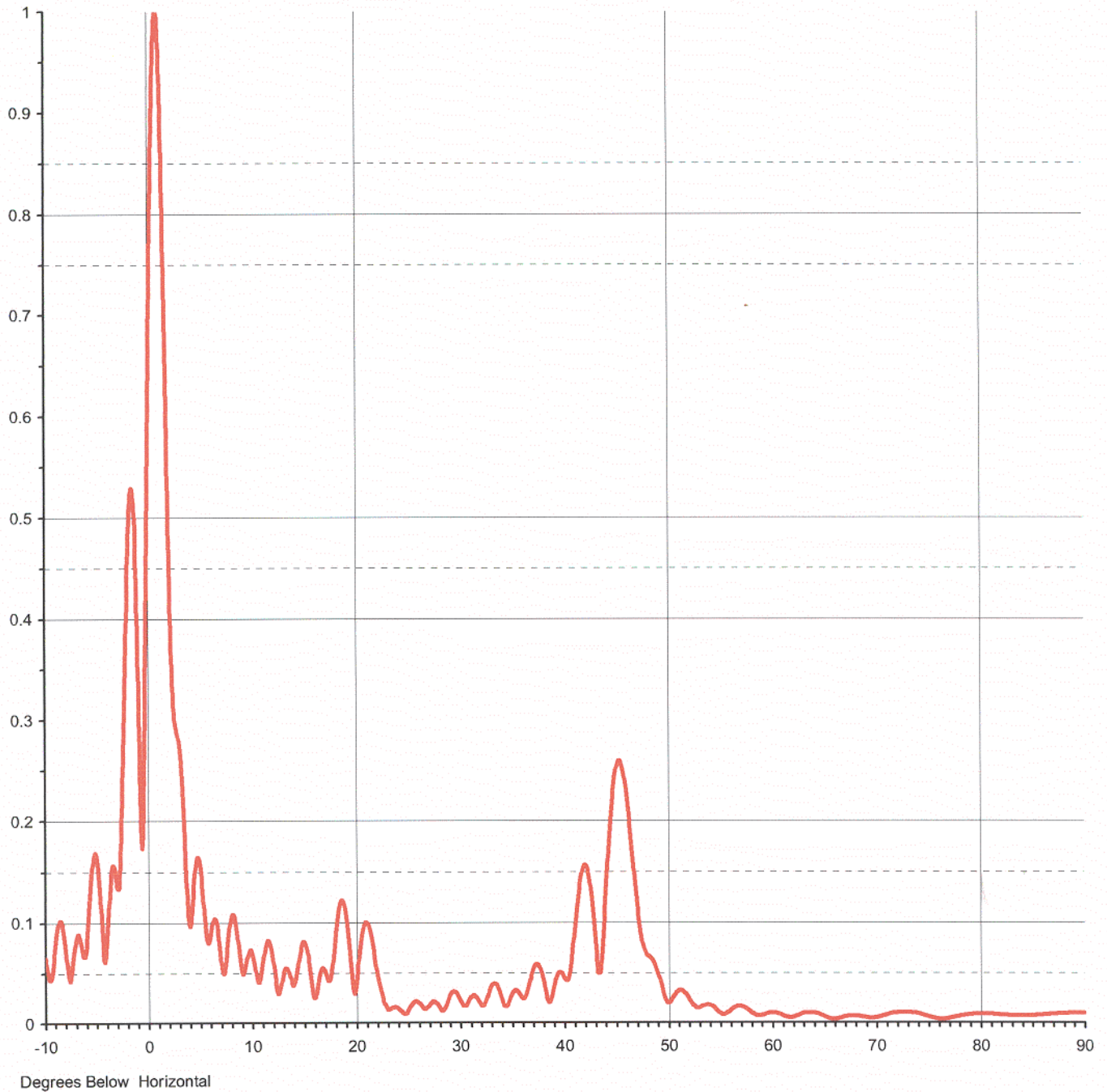


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RMS Gain at Main Lobe	<b>26.00 ( 14.15 dB )</b>
RMS Gain at Horizontal	<b>9.20 ( 9.64 dB )</b>
Calculated / Measured	<b>Calculated</b>

Beam Tilt	<b>0.75 deg</b>
Frequency	<b>743.00 MHz</b>
Drawing #	<b>C-12-59- 2-90</b>





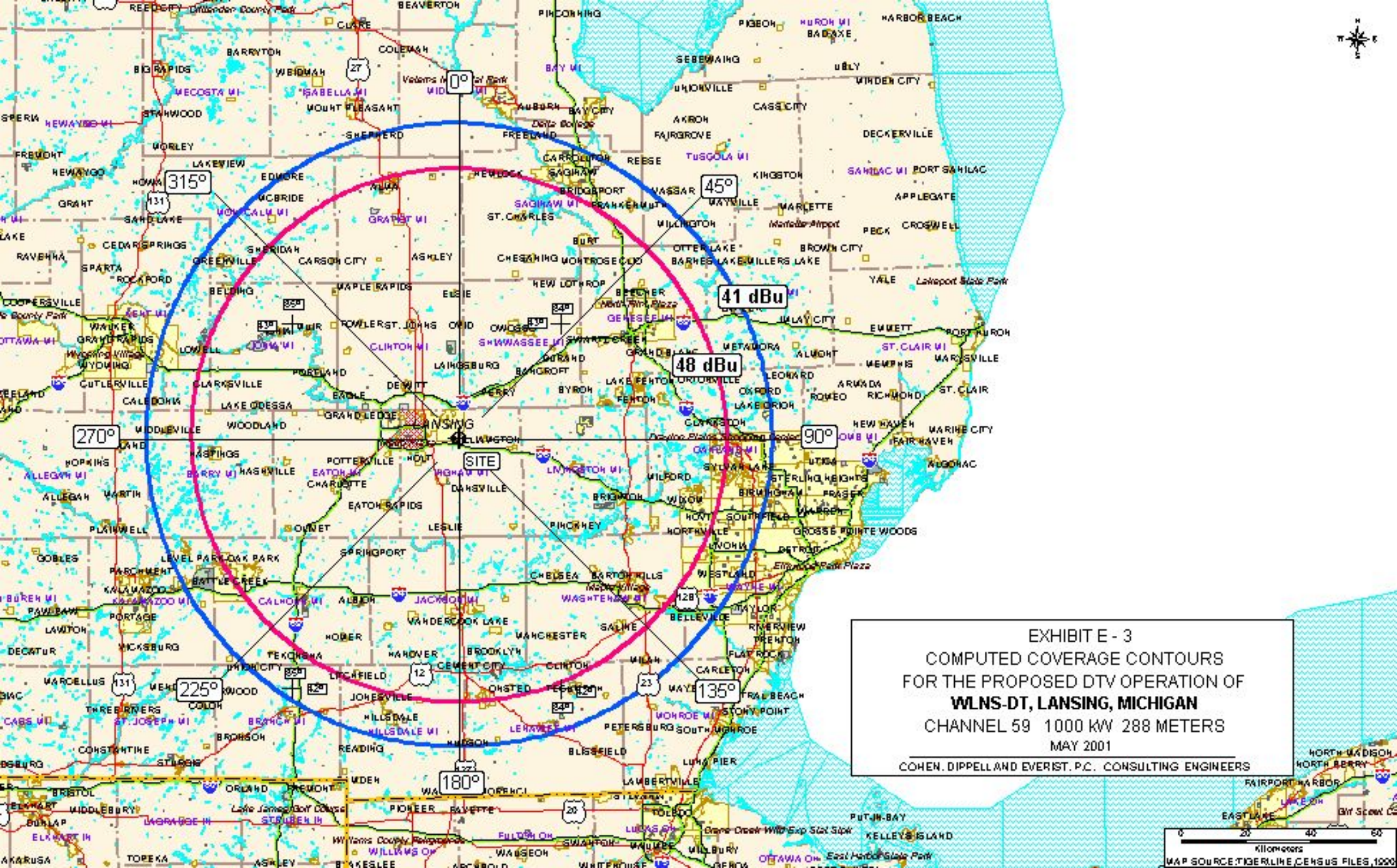


EXHIBIT E - 3  
COMPUTED COVERAGE CONTOURS  
FOR THE PROPOSED DTV OPERATION OF  
**WLNS-DT, LANSING, MICHIGAN**  
CHANNEL 59 1000 KW 288 METERS  
MAY 2001  
COHEN, DIPPELL AND EVERIST, P.C. CONSULTING ENGINEERS



### SECTION III-D - DTV Engineering

**Complete Questions 1-5 of the Certification Checklist and provide all data and information for the proposed facility, as requested in Technical Specifications, Items 1-13.**

**Certification Checklist:** A correct answer of "Yes" to all of the questions below will ensure an expeditious grant of a construction permit. However, if the proposed facility is located within the Canadian or Mexican borders, coordination of the proposal under the appropriate treaties may be required prior to grant of the application. An answer of "No" will require additional evaluation of the applicable information in this form before a construction permit can be granted.

1. The proposed DTV facility complies with 47 C.F.R. Section 73.622 in the following respects:

- (a) It will operate on the DTV channel for this station as established in 47 C.F.R. Section 73.622. ☐ Yes ☐ No
- (b) It will operate from a transmitting antenna located within 5.0 km (3.1 miles) of the DTV reference site for this station as established in 47 C.F.R. Section 73.622. ☐ Yes ☐ No
- (c) It will operate with an effective radiated power (ERP) and antenna height above average terrain (HAAT) that do not exceed the DTV reference ERP and HAAT for this station as established in 47 C.F.R. Section 73.622. ☐ Yes ☐ No

2. The proposed facility will not have a significant environmental impact, including exposure of workers or the general public to levels of RF radiation exceeding the applicable health and safety guidelines, and therefore will not come within 47 C.F.R. Section 1.1307. ☐ Yes ☐ No

Applicant must **submit the Exhibit** called for in Item 13.

3. Pursuant to 47 C.F.R. Section 73.625, the DTV coverage contour of the proposed facility will encompass the allotted principal community. ☐ Yes ☐ No
4. The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied or are not applicable. ☐ Yes ☐ No
5. The antenna structure to be used by this facility has been registered by the Commission and will not require reregistration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely effect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7. ☐ Yes ☐ No

### SECTION III-D DTV Engineering

#### TECHNICAL SPECIFICATIONS

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

#### TECH BOX

1. Channel Number: DTV \_\_\_\_\_ Analog TV, if any \_\_\_\_\_
2. Zone: ☐ I ☐ II ☐ III
3. Antenna Location Coordinates: (NAD 27)
- \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ " ☐ N ☐ S Latitude  
\_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ " ☐ E ☐ W Longitude
4. Antenna Structure Registration Number: \_\_\_\_\_
- ☐ Not applicable ☐ FAA Notification Filed with FAA
5. Antenna Location Site Elevation Above Mean Sea Level: \_\_\_\_\_ meters
6. Overall Tower Height Above Ground Level: \_\_\_\_\_ meters
7. Height of Radiation Center Above Ground Level: \_\_\_\_\_ meters
8. Height of Radiation Center Above Average Terrain: \_\_\_\_\_ meters
9. Maximum Effective Radiated Power (average power): \_\_\_\_\_ kW
10. Antenna Specifications:
- a. 

Manufacturer	Model
--------------	-------
- b. Electrical Beam Tilt: \_\_\_\_\_ degrees ☐ Not Applicable
- c. Mechanical Beam Tilt: \_\_\_\_\_ degrees toward azimuth \_\_\_\_\_ degrees True ☐ Not Applicable
- Attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). Exhibit No.
- d. Polarization: ☐ Horizontal ☐ Circular ☐ Elliptical

# TECH BOX

e. Directional Antenna Relative Field Values: ☐ Not applicable (Nondirectional)

Rotation: \_\_\_\_\_ ° ☐ No rotation

Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value
0		60		120		180		240		300	
10		70		130		190		250		310	
20		80		140		200		260		320	
30		90		150		210		270		330	
40		100		160		220		280		340	
50		110		170		230		290		350	
Additional Azimuths											

If a directional antenna is proposed, the requirements of 47 C.F.R. Section 73.625(c) must be satisfied. **Exhibit required.**

Exhibit No.

11. Does the proposed facility satisfy the interference protection provisions of 47 C.F.R. Section 73.623(a)? (Applicable only if **Certification Checklist** Items 1(a), (b), or (c) are answered "No.") ☐ Yes ☐ No

If "No," attach as an Exhibit justification therefor, including a summary of any related previously granted waivers.

Exhibit No.

12. If the proposed facility will not satisfy the coverage requirement of 47 C.F.R. Section 73.625, attach as an Exhibit justification therefor. (Applicable only if **Certification Checklist** Item 3 is answered "No.")

Exhibit No.

13. **Environmental Protection Act. Submit in an Exhibit** the following:

Exhibit No.

- a. If **Certification Checklist** Item 3 is answered "Yes," a brief explanation of why an Environmental Assessment is not required. Also describe in the Exhibit the steps that will be taken to limit RF radiation exposure to the public and to persons authorized access to the tower site.

By checking "Yes" to **Cettification Checklist** Item 3, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.

If **Certification Checklist** Item 3 is answered "No," an Environmental Assessment as required by 47 C.F.R. Section 1.1311.

**PREPARER'S CERTIFICATION IN SECTION III MUST BE COMPLETED AND SIGNED.**



### SECTION III PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name S. K. Khanna	Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature <i>S. K. Khanna</i>	Date <i>6-11-2001</i>	
Mailing Address Cohen, Dippell and Everist, P.C., 1300 L Street, N.W., Suite 1100		
City Washington	State or Country (if foreign address) D.C.	ZIP Code 20005
Telephone Number (include area code) (202) 898-0111	E-Mail Address (if available) cde@bellatlantic.net	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT  
(U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT  
(U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).