

## **ENGINEERING EXHIBIT**

### **Application for Construction Permit New Replacement Digital Television Translator**

prepared for

#### **Young Broadcasting of Sioux Falls, Inc.**

KPLO-TV Reliance, SD

Facility ID 41964

Replacement Digital Translator

Pierre, SD Ch. 29 0.115 kW

*Young Broadcasting of Sioux Falls, Inc.* (“*Young*”) is the licensee of television station KPLO-TV, Channel 13, Facility ID 41964, Reliance, SD. Pursuant to the procedures adopted in MB Docket 08-253,<sup>1</sup> *Young* herein proposes to construct a new replacement digital television translator station on Channel 29 to aid in serving Pierre, SD.

The tower structure supporting the KPLO-TV main antenna collapsed during an ice storm in 2010. Since that time KPLO-TV has operated with a temporary, shorter tower at the licensed site pursuant to Special Temporary Authority (BDSTA-20100212AAH, as extended). *Young* is currently developing plans to construct a new main KPLO-TV facility at a site within 10 km of the licensed site.

Pierre lies along the bank of Lake Sharpe as formed by the Missouri River and is terrain shielded from the KPLO-TV transmitter site and from the search area for a new main site. The proposed translator site at Pierre is 75 km distant from the main KPLO-TV site and will provide fill-in service to aid reception at Pierre.

The proposed antenna system will be side-mounted on an existing antenna support structure which does not presently have an FCC Antenna Structure Registration (“ASR”) number. Although the overall structure height is less than 61 meters above ground, the 27.4 meter AGL structure height

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<sup>1</sup>Report and Order, *Amendment of Parts 73 and 74 of the Commission’s Rules to Establish Rules for Replacement Digital Low Power Television Translator Stations*, MB Docket 08-253, FCC 09-36, released May 8, 2009.

fails the FCC's TOWAIR program due to the proximity of the Pierre Regional Airport (3.5 km distant). Thus FCC antenna structure registration will be necessary for processing of this translator application. The FAA has been notified of the existing structure on that agency's form 7460-1 (FAA study number 2012-AGL-4565-OE, submitted May 24, 2012). *Young* will obtain an FCC ASR number upon receipt of a *Determination of No Hazard* from the FAA. No change to the overall structure height is proposed.

The proposed antenna is an ERI model AL8-29 and will employ horizontal polarization. The effective radiated power is 0.115 kW, directional. The proposed facility will operate on Channel 29 using a "simple" out of channel emission mask. Figure 1 depicts the 51 dBμ coverage contour of the proposed translator, along with the KPLO-TV digital Channel 13 noise limited contour (Licensed BLCDT-20030519AER and STA BDSTA-20100212AAH) and the pre-transition analog Channel 6 Grade B contour (BLCT-1436). The translator's service contour will not extend beyond KPLO-TV's former analog Grade B contour.

Detailed interference study per OET Bulletin 69<sup>2</sup> shows that the proposal complies with the Commission's interference protection requirements toward all digital television, television translator, LPTV, and Class A stations. The results, summarized in Table 1, show that any new interference does not exceed the Commission's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations). Accordingly, the instant proposal complies with §§73.6012 – 73.6020 regarding interference protection to digital television, low power television, television translator, and Class A television stations.

The nearest FCC monitoring station is 415 km distant at Grand Island, NE. This exceeds the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with "quiet" zones

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<sup>2</sup>FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A cell size of 1 km was employed. Comparisons of various results of this computer program (run on a Sun Sparc processor) to the Commission's implementation of OET-69 show excellent correlation.

specified in §73.1030(a) and (b). There are no authorized AM stations within 3.2 kilometers of the site. The site location is beyond the border areas requiring international coordination.

### **Human Exposure to Radiofrequency Electromagnetic Field (Environmental)**

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission's OET Bulletin Number 65. Based on OET-65 equation (10), and for the worst-case scenario of 100 percent antenna relative field in downward elevations, the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is  $10.6 \mu\text{W}/\text{cm}^2$ , which is 2.8 percent of the general population/uncontrolled maximum permitted exposure limit. This is below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent. When the antenna's elevation pattern is considered, the signal density will be even lower.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

This exhibit is limited to the evaluation of exposure to RF electromagnetic field. The proposed transmitting antenna will be side-mounted on an existing antenna support structure which was constructed prior to March 16, 2001. No change in structure height is proposed.

### **Certification**

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.



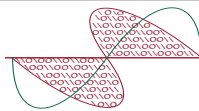
Joseph M. Davis, P.E.  
May 24, 2012

**Chesapeake RF Consultants, LLC**  
207 Old Dominion Road  
Yorktown, VA 23692  
703-650-9600

### List of Attachments

Figure 1	Coverage Contour Comparison
Table 1	Interference Analysis Results Summary
Form 346	Saved Version of Engineering Sections from FCC Form at Time of Upload

*This material was entered May 24, 2012 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's account number and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*

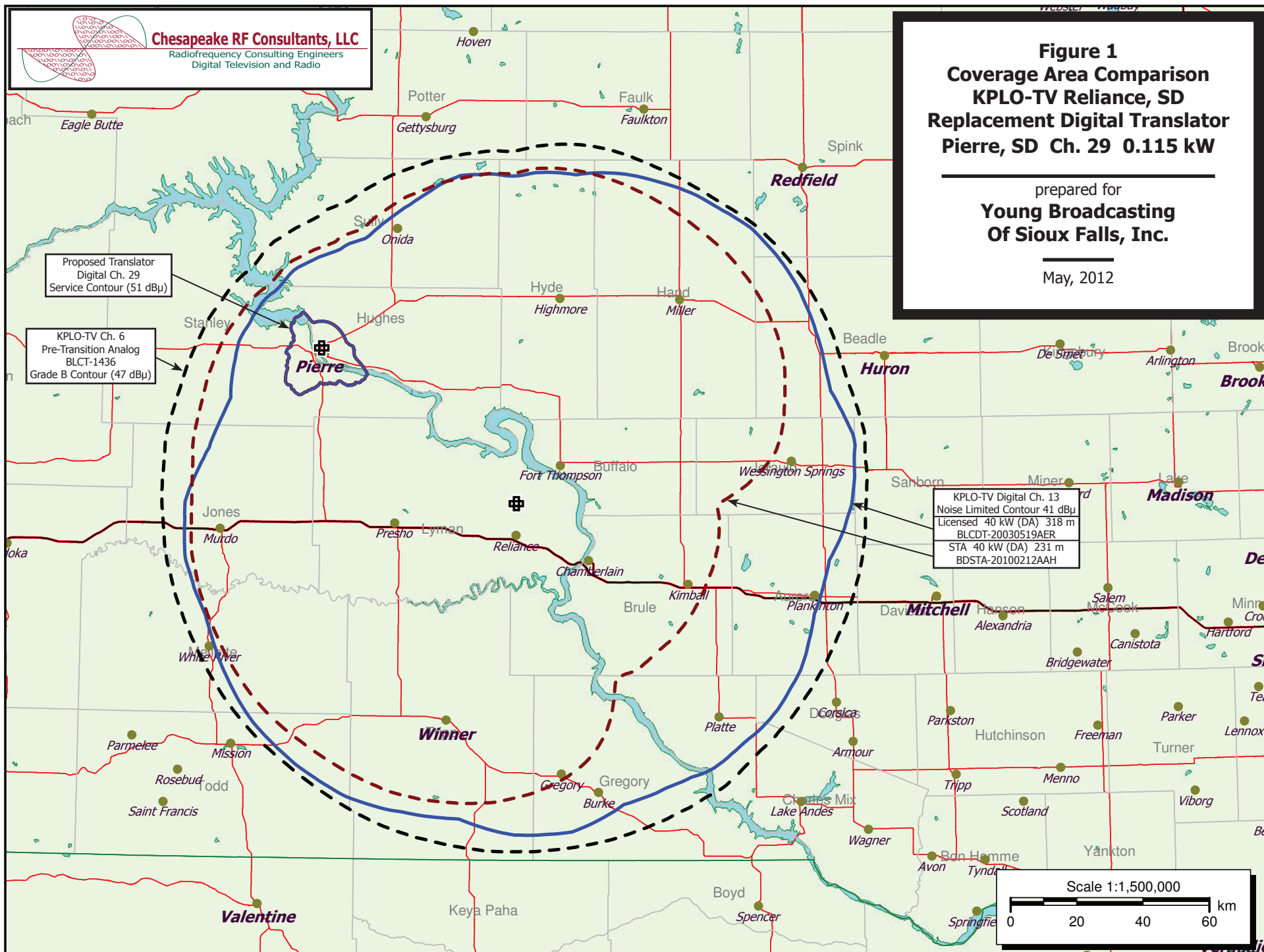


**Chesapeake RF Consultants, LLC**  
Radiofrequency Consulting Engineers  
Digital Television and Radio

**Figure 1**  
**Coverage Area Comparison**  
**KPLO-TV Reliance, SD**  
**Replacement Digital Translator**  
**Pierre, SD Ch. 29 0.115 kW**

prepared for  
**Young Broadcasting**  
**Of Sioux Falls, Inc.**

May, 2012



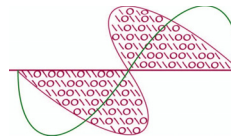
**Table 1**

**Interference Analysis Results Summary**

prepared for

**Young Broadcasting of Sioux Falls, Inc.**

**KPLO-TV Replacement Digital Translator Ch. 29 Pierre, SD**



**Chesapeake RF Consultants, LLC**

Radiofrequency Consulting Engineers  
Digital Television and Radio

KPLO-RD USERRECORD-01 PIERRE SD US  
 Channel 29 ERP 0.115 kW HAAT 51. m RCAMSL 00554 m SIMPLE MASK  
 Latitude 044-22-55 Longitude 0100-20-32  
 Dir Antenna Make usr Model AL8-OC Beam tilt N Ref Azimuth 180.

<u>Ch.</u>	<u>Call</u>	<u>City/State</u>	<u>Dist</u> <u>(km)</u>	<u>Status</u>	<u>Application Ref. No.</u>	<u>---Population (2000 Census)---</u>	
						<u>Baseline</u>	<u>New Interference</u>
14	K14IO	PIERRE SD	7.9	LIC	BLTT-20021129AAF	---	none
27	K27HJ	PIERRE SD	7.9	LIC	BLTT-20031008ACB	---	none
28	NEW	MITCHELL SD	194.0	APP	BNPDTL-20100510AID	---	none
28	NEW	MURDO SD	62.3	APP	BNPDTL-20100510AIO	---	none
28	NEW	WASTA SD	166.6	APP	BNPDTL-20100510AHL	---	none
29	NEW	ASHBY MN	397.3	APP	BNPDTL-20100505AKS	---	none
29	K29JW-D	GRANITE FALLS MN	379.8	LIC	BLDTT-20110824ACG	---	none
29	NEW	CASSELTON ND	367.7	APP	BNPDTL-20100505ALD	---	none
29	K29KA-D	NEW SALEM ND	280.0	CP	BNPDTL-20100505AMH	---	none
29	K29JZ-D	TAPPEN ND	285.9	CP	BNPDTL-20100505ALW	---	none
29	K29KK-D	NORFOLK NE	399.5	CP	BDCCDTL-20120206AAL	---	none
29	KSTF	SCOTTSBLUFF NE	377.6	LIC	BLCDDT-20110315ABF	---	none
30	NEW	KADOKA SD	117.0	APP	BNPDTL-20100510AHQ	---	none
30	NEW	RELIANCE SD	73.8	APP	BNPDTL-20100510AIV	---	none
32	K32FW	PIERRE SD	4.7	LIC	BLTTL-20050425ACA	---	none

<b>Section III - Engineering (Digital)</b>												
<b>TECHNICAL SPECIFICATIONS</b>												
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.												
<b>TECH BOX</b>												
1.	Channel: 29											
2.	Translator Input Channel No. : 13											
3.	Primary station proposed to be rebroadcast:											
	Facility Identifier		Call Sign		City			State		Channel		
	41964		KPLO-TV		RELIANCE			SD		13		
4.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 44 Minutes 22 Seconds 55 <input checked="" type="radio"/> North <input type="radio"/> South  Longitude: Degrees 100 Minutes 20 Seconds 32 <input checked="" type="radio"/> West <input type="radio"/> East											
5.	Antenna Structure Registration Number: <input type="checkbox"/> Not Applicable [Exhibit 11] <input checked="" type="checkbox"/> Notification filed with FAA											
6.	Antenna Location Site Elevation Above Mean Sea Level: 533.4 meters											
7.	Overall Tower Height Above Ground Level: 27.4 meters											
8.	Height of Radiation Center Above Ground Level: 21 meters											
9.	Maximum Effective Radiated Power (ERP): 0.115 kW											
10.	Transmitter Output Power: 0.01 kW											
11.	a. Transmitting Antenna: Before selecting Directional "Off-the-Shelf", refer to "Search for Antenna Information" under <a href="http://licensing.fcc.gov/prod/cdb/pubacc/prod/cdb_pa.htm">CDBS Public Access</a> (http://licensing.fcc.gov/prod/cdb/pubacc/prod/cdb_pa.htm). Make sure that the Standard Pattern is marked Yes and that the relative field values shown match your values. Enter the Manufacturer (Make) and Model exactly as displayed in the Antenna Search. <input type="radio"/> Nondirectional <input type="radio"/> Directional Off-the Shelf <input checked="" type="radio"/> Directional composite  Manufacturer ERI Model AL8-29  b. Electrical Beam Tilt: 1.75 degrees <input type="checkbox"/> Not Applicable  c. Mechanical Beam Tilt: degrees toward azimuth degrees True <input checked="" type="checkbox"/> Not Applicable											
	d. Directional Antenna Relative Field Values: <input type="checkbox"/> N/A (Nondirectional or Off-the-Shelf)  Rotation (Degrees): <input checked="" type="checkbox"/> No Rotation											
	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value
	0	0.709	10	0.705	20	0.694	30	0.678	40	0.661	50	0.647
	60	0.641	70	0.645	80	0.663	90	0.694	100	0.734	110	0.781
	120	0.829	130	0.876	140	0.918	150	0.953	160	0.979	170	0.995
	180	1	190	0.995	200	0.979	210	0.953	220	0.918	230	0.876
	240	0.829	250	0.781	260	0.734	270	0.694	280	0.663	290	0.645
	300	0.641	310	0.647	320	0.661	330	0.679	340	0.694	350	0.705
	Additional Azimuths											



e. Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?

☐ Yes ☒ No

[Exhibit 12]

If Yes, attach an Exhibit (see instructions for details).

Relative Field Polar Plot

**NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.**

12. **Out-of-channel Emission Mask:** ☒ Simple ☐ Stringent ☐ Full Service

**CERTIFICATION**

13. **Interference :** The proposed facility complies with all of the following applicable rule sections. ☒ Yes ☐ No  
47.C.F.R Sections 74.709, 74.793(e), 74.793(f), 74.793(g), 74.793(h), 74.794(b) and 73.1030.

See Explanation in  
[Exhibit 13]

14. **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine RF compliance, an **Exhibit is required**.

☒ Yes ☐ No

See Explanation in  
[Exhibit 14]

By checking "Yes" above, 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.

15. **Channels 52-59.** If the proposed channel is within channels 52-59, the applicant certifies compliance with the following requirements, as applicable:

☐ The applicant is applying for a digital companion channel for which no suitable channel from channel 2-51 is available.

☐ Pursuant to Section 74.786(d), the applicant has notified, within 30 days of filing this application, all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.

16. **Channels 60-69.** If the proposed channel is within channels 60-69, the applicant certifies compliance with the following requirements, as applicable:

☐ Pursuant to Section 74.786(e), the applicant has notified, within 30 days of filing this application, all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.

☐ Pursuant to Section 74.786(e), the applicant proposing operation on channel 63, 64, 68 and 69 ("public safety channels") has secured a coordinated spectrum use agreements(s) with 700 MHz public safety regional planning committee(s) and state administrator(s) of the region(s) and state(s) within which the antenna site of the digital LPTV or TV translator station is proposed to locate, and those adjoining regions and states with boundaries within 75 miles of the proposed station location.

☐ Pursuant to Section 74.786(e), the applicant for a channel adjacent to channel 63, 64, 68 or 69 has notified, within 30 days of filing this application, the 700 MHz public safety regional planning committee(s) and state administrator(s) of the region and state containing the proposed digital LPTV or TV translator antenna site and regions and states whose geographic boundaries lie within 50 miles of the proposed LPTV or TV translator antenna site.

**PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.**



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**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 JOSEPH M. DAVIS, P.E.	Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER	
Signature	Date 5/24/2012	
Mailing Address CHESAPEAKE RF CONSULTANTS, LLC 207 OLD DOMINION ROAD		
City YORKTOWN	State or Country (if foreign address) VA	Zip Code 23692 -
Telephone Number (include area code) 7036509600	E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM	

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).

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**Exhibits****Exhibit 11**

**Description:** ANTENNA STRUCTURE REGISTRATION

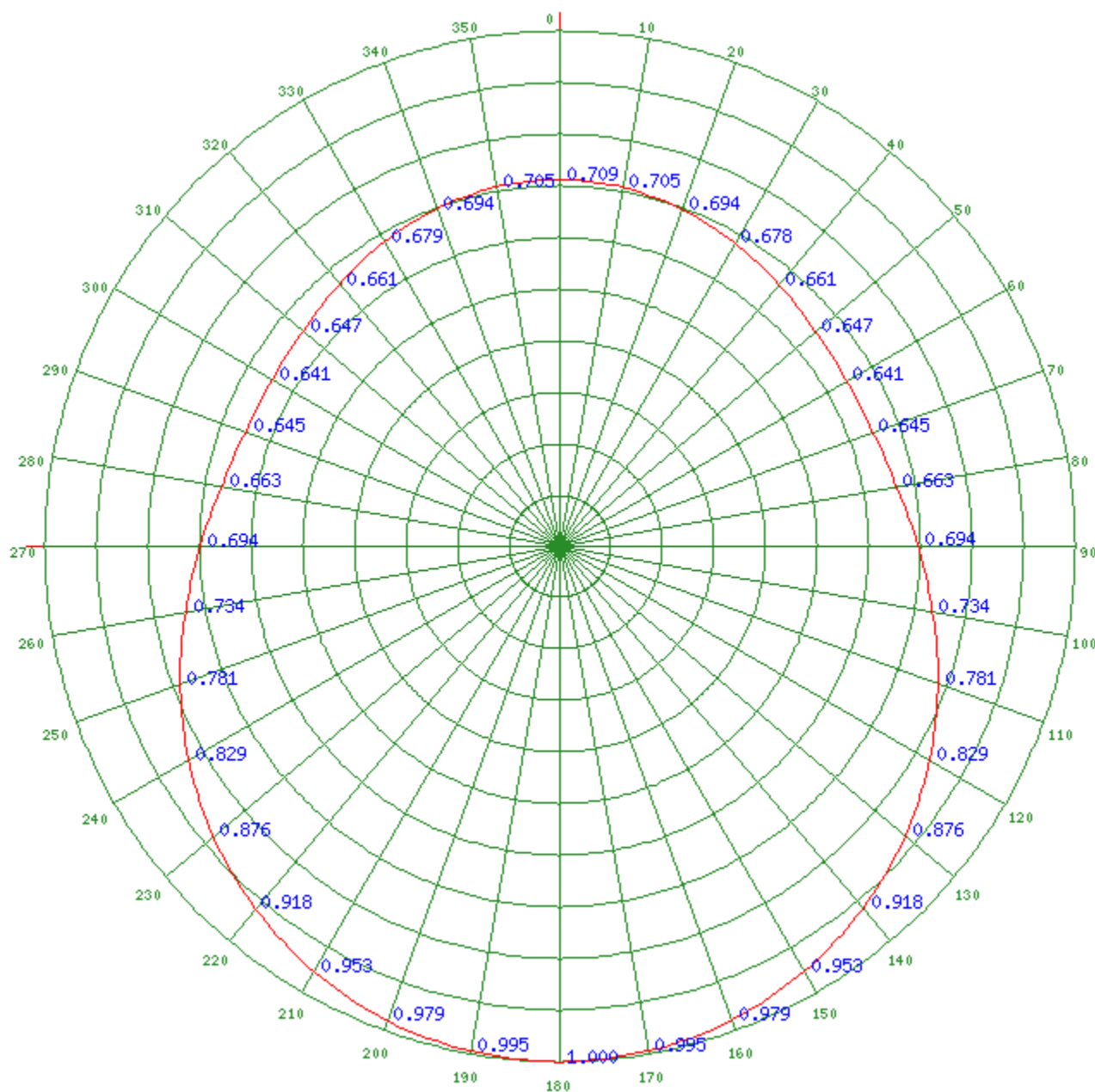
THE PROPOSED ANTENNA SYSTEM WILL BE SIDE-MOUNTED ON AN EXISTING ANTENNA SUPPORT STRUCTURE WHICH DOES NOT PRESENTLY HAVE AN FCC ANTENNA STRUCTURE REGISTRATION (ASR) NUMBER. ALTHOUGH THE OVERALL STRUCTURE HEIGHT IS LESS THAN 61 METERS ABOVE GROUND, THE 27.4 METER AGL STRUCTURE HEIGHT FAILS THE FCCS TOWAIR PROGRAM DUE TO THE PROXIMITY OF THE PIERRE REGIONAL AIRPORT (3.5 KM DISTANT). THUS FCC ANTENNA STRUCTURE REGISTRATION WILL BE NECESSARY FOR PROCESSING OF THIS TRANSLATOR APPLICATION. THE FAA HAS BEEN NOTIFIED OF THE EXISTING STRUCTURE ON THAT AGENCY'S FORM 7460-1 (FAA STUDY NUMBER 2012-AGL-4565-OE, SUBMITTED MAY 24, 2012). YOUNG WILL OBTAIN AN FCC ASR NUMBER UPON RECEIPT OF A DETERMINATION OF NO HAZARD FROM THE FAA. NO CHANGE TO THE OVERALL STRUCTURE HEIGHT IS PROPOSED.

SEE ENGINEERING EXHIBIT

Any specified rotation has already been applied to the plotted pattern.

Field strength values shown on a rotated pattern may differ from the listed values because intermediate azimuths are interpolated between entered azimuths.

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