

ENGINEERING STATEMENT

The engineering data contained herein have been prepared on behalf of the licensee of digital LPTV Station W31FG-D, Channel 31 in Crozet, Virginia, in support of its Application for Construction Permit to specify operation from a new transmitter site.

It is proposed to mount a 12-bay elliptically-polarized slotted cylinder antenna at the 40.7-meter level of an existing 58.9-meter communications tower. The proposed effective radiated power for the facility is 15.0 kW in the horizontal plane. Exhibit B is a map upon which the predicted 51 dBu service contour is plotted. Exhibit C shows the relationship between the presently licensed W31FG-D service contour and that proposed herein. Clearly, the two service contours overlap, as required by the Commission for minor-change applications proposed by LPTV stations. In addition, the distance separating the two sites, 29.8 kilometers, is within the 48-kilometer restriction for minor-change applications. An elevation pattern for the proposed Dielectric DLP-12B/VP slotted cylinder antenna is provided in Exhibit D.

Exhibit E is a summary report from a TVStudy interference analysis for the proposed facility. Our study employed a cell size of 1.0 kilometer and increment spacing of 0.1 kilometer. Further, the applicant proposes use of a full-service mask filter. The results indicate that the proposed facility meets the Commission's interference requirements to all present and repacked full-power and low-power co-channel and adjacent-channel television facilities.

A detailed power density calculation is provided in Exhibit F.

Since no change in the overall height or location of the existing tower is proposed, the FAA has not been notified of this application. In addition, due to the diminutive height of the tower and its relation to the nearest airport runway, no FCC tower registration is required

I declare under penalty of perjury that the foregoing statements and the attached exhibits are true and correct to the best of my knowledge and belief.

A handwritten signature in blue ink, appearing to read "K. T. Fisher". The signature is stylized with a large "K" and "F".

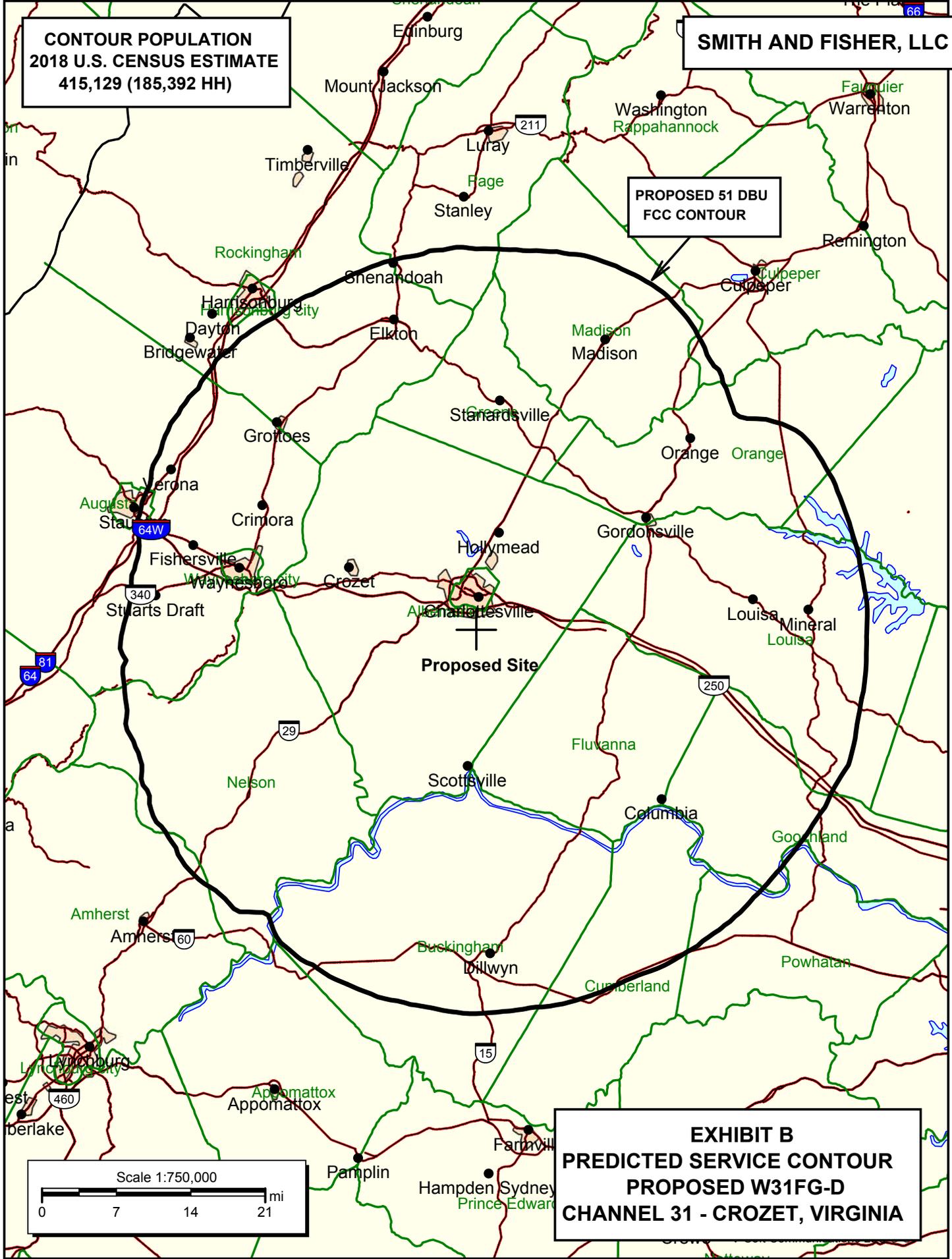
KEVIN T. FISHER

August 27, 2021

SMITH AND FISHER, LLC

**CONTOUR POPULATION
2018 U.S. CENSUS ESTIMATE
415,129 (185,392 HH)**

**PROPOSED 51 DBU
FCC CONTOUR**



**EXHIBIT B
PREDICTED SERVICE CONTOUR
PROPOSED W31FG-D
CHANNEL 31 - CROZET, VIRGINIA**

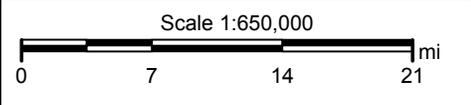
SMITH AND FISHER, LLC

**PROPOSED 51 DBU
FCC CONTOUR**

**LICENSED 51 DBU
FCC CONTOUR**

W31FG-D

Proposed Site



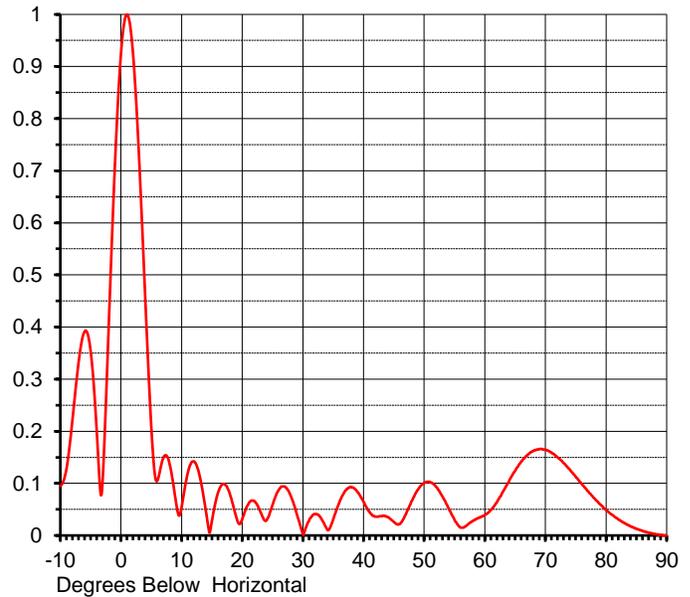
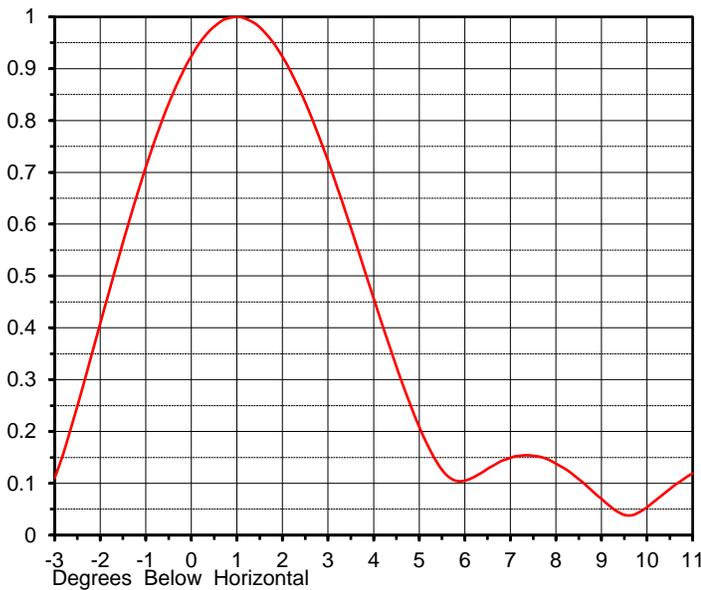
**EXHIBIT C
CONTOUR COMPARISON
LICENSED & PROPOSED W31FG-D
CHANNEL 31 - CROZET, VIRGINIA**

ELEVATION PATTERN

Proposal No.
 Date **17-Aug-21**
 Call Letters **WCAV**
 Channel **31**
 Frequency **575 MHz**
 Antenna Type **DLP-12B/VP**

RMS Directivity at Main Lobe **12.3 (10.89 dB)**
 RMS Directivity at Horizontal **10.5 (10.21 dB)**
Calculated

Beam Tilt **1.00 deg**
 Pattern Number **12L123100-31**



Angle	Field								
-10.0	0.095	10.0	0.054	30.0	0.002	50.0	0.101	70.0	0.164
-9.0	0.127	11.0	0.119	31.0	0.028	51.0	0.102	71.0	0.159
-8.0	0.222	12.0	0.142	32.0	0.041	52.0	0.093	72.0	0.150
-7.0	0.331	13.0	0.113	33.0	0.033	53.0	0.075	73.0	0.139
-6.0	0.391	14.0	0.047	34.0	0.012	54.0	0.053	74.0	0.127
-5.0	0.354	15.0	0.028	35.0	0.031	55.0	0.030	75.0	0.113
-4.0	0.201	16.0	0.082	36.0	0.063	56.0	0.015	76.0	0.099
-3.0	0.110	17.0	0.099	37.0	0.086	57.0	0.019	77.0	0.085
-2.0	0.408	18.0	0.078	38.0	0.093	58.0	0.028	78.0	0.072
-1.0	0.710	19.0	0.036	39.0	0.084	59.0	0.034	79.0	0.060
0.0	0.924	20.0	0.031	40.0	0.065	60.0	0.039	80.0	0.049
1.0	1.000	21.0	0.060	41.0	0.045	61.0	0.049	81.0	0.040
2.0	0.923	22.0	0.066	42.0	0.036	62.0	0.064	82.0	0.031
3.0	0.722	23.0	0.045	43.0	0.037	63.0	0.084	83.0	0.024
4.0	0.457	24.0	0.029	44.0	0.035	64.0	0.104	84.0	0.018
5.0	0.209	25.0	0.059	45.0	0.026	65.0	0.124	85.0	0.013
6.0	0.105	26.0	0.087	46.0	0.022	66.0	0.141	86.0	0.009
7.0	0.149	27.0	0.094	47.0	0.041	67.0	0.154	87.0	0.005
8.0	0.138	28.0	0.076	48.0	0.067	68.0	0.162	88.0	0.003
9.0	0.070	29.0	0.041	49.0	0.088	69.0	0.166	89.0	0.001
								90.0	0.000

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TVSTUDY INTERFERENCE ANALYSIS RESULTS
 PROPOSED W31FG-D
 CHANNEL 31 – CROZET, VIRGINIA

Study created: 2021.08.27 21:04:05

Study build station data: LMS TV 2021-08-18
 Proposal: W31FG-D D31 LD APP CROZET, VA
 File number: BLANK0000008299
 Facility ID: 182299
 Station data: User record
 Record ID: 1174
 Country: U.S.

Build options:
 Protect pre-transition records not on baseline channel

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	WXOB-LP	N17z		TX CP	RICHMOND, VA	BPTTL20150303ACH	93.4 km
No	WIAV-CD	D30		DC LIC	WASHINGTON, DC	BLANK0000133452	161.6
Yes	WVIR-TV	D30		LD APP	CHARLOTTESVILLE, VA	BLANK0000130293	55.3
No	WSVW-LD	D30		LD LIC	HARRISONBURG, VA	BLANK0000120244	52.0
No	WFWG-LD	D30		LD LIC	RICHMOND, VA	BLANK0000080886	93.4
No	WDBJ	D30		DT LIC	ROANOKE, VA	BLANK0000094109	171.7
Yes	WETA-TV	D31		DT LIC	WASHINGTON, DC	BLANK0000120146	162.5
Yes	WETA-TV	D31		LD CP	WASHINGTON, DC	BDRTEDT20090811ACE	156.5
No	WPPX-TV	D31		DT LIC	WILMINGTON, DE	BLCDT20031203AFL	361.6
Yes	WGHP	D31		DT LIC	HIGH POINT, NC	BLANK0000116302	270.0
No	WFEJ-LD	D31		LD CP	NEW BERN, NC	BLANK0000071949	390.9
No	WHIG-CD	D31		DC LIC	ROCKY MOUNT, NC	BLDTL20100217AAK	239.7
No	W31DR-D	D31		LD CP	WILMINGTON, NC	BNPDTL20100422AAO	412.9
No	WJOS-LD	D31		LD CP	POMEROY, OH	BLANK0000054745	329.5
No	WTZP-LD	D31		LD LIC	PORTSMOUTH, OH	BLANK0000074508	408.3
No	WYTV	D31		DT LIC	YOUNGSTOWN, OH	BLANK0000081168	388.6
No	WATM-TV	D31		DT LIC	ALTOONA, PA	BLANK0000105303	287.2
No	WWBP-LP	N31+		TX LIC	FREEDOM, PA	BLTTL20040909ABD	337.3
No	WLHY-LD	D31		LD LIC	Lebanon - Harrisburg, PA	BLANK0000153613	307.2

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No	WTFX-TV	D31	DT LIC	PHILADELPHIA, PA	BLANK0000080320	361.4
No	WIIC-LD	D31+	LD LIC	PITTSBURGH, PA	BLANK0000001503	301.9
No	KDKA-TV	D31	LD APP	PITTSBURGH, PA	BDRTCDT20090630ADY	220.2
No	WKTC	D31	DT LIC	SUMTER, SC	BLANK0000093003	476.4
Yes	WHRO-TV	D31	DT LIC	HAMPTON-NORFOLK, VA	BLANK0000120642	218.1
No	WOAY-TV	D31	DT LIC	OAK HILL, WV	BLANK0000096583	233.9
No	WRZB-LD	D32	LD LIC	WASHINGTON, DC	BLANK0000024420	161.6
No	WBOC-TV	D32	DT LIC	SALISBURY, MD	BLANK0000079962	254.4
No	WRPX-TV	D32	DT LIC	ROCKY MOUNT, NC	BLANK0000081831	241.2
No	WCAV	D32	DT LIC	CHARLOTTESVILLE, VA	BLANK0000092578	0.0
No	WPXV-TV	D32	DT LIC	NORFOLK, VA	BLANK0000113419	220.1
No	W32EW-D	D32	LD LIC	ROANOKE, VA	BLANK0000058516	144.3
No	W33AD	N33	TX LIC	CONCORD, VA	BLTTL19821108IO	84.2

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D31

Mask: Full Service

Latitude: 37 59 4.20 N (NAD83)

Longitude: 78 28 51.10 W

Height AMSL: 484.2 m

HAAT: 0.0 m

Peak ERP: 15.0 kW

Antenna: Omnidirectional

Elev Pattn: Generic

Elec Tilt: 1.00

50.4 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	15.0 kW	339.4 m	58.2 km
45.0	15.0	251.9	53.4
90.0	15.0	368.5	59.6
135.0	15.0	354.6	59.0
180.0	15.0	348.4	58.7
225.0	15.0	304.8	56.4
270.0	15.0	264.0	54.1
315.0	15.0	314.2	56.9

Database HAAT does not agree with computed HAAT

Database HAAT: 0 m Computed HAAT: 318 m

Distance to Canadian border: 508.5 km

Distance to Mexican border: 2184.9 km

Conditions at FCC monitoring station: Laurel MD

Bearing: 47.2 degrees Distance: 195.0 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

Bearing: 284.4 degrees Distance: 2311.7 km

Study cell size: 1.00 km

Profile point spacing: 0.10 km

Maximum new IX to full-service and Class A: 0.50%

Maximum new IX to LPTV: 2.00%

No IX check failures found.

POWER DENSITY CALCULATION

PROPOSED W31FG-D
CHANNEL 31 – CROZET, VIRGINIA

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this Crozet facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 15.0 kW (H, V), an antenna radiation center 40.7 meters above ground, and the specific elevation pattern of the proposed Dielectric DLP-12B/VP antenna, maximum power density two meters above ground of 0.016 mW/cm² is calculated to occur 15 meters from the base of the tower. Since this is only 4.2 percent of the 0.38 mW/cm² reference for uncontrolled environments (areas with public access) surrounding a facility operating on Channel 31 (572-578 MHz), a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.