

ENGINEERING EXHIBIT

Application for Minor Modification of Digital Low Power Television Station Construction Permit

prepared for

Gray Television Licensee, LLC

K25PZ-D Alexandria, LA

Facility ID 186715

Ch. 25 15 kW Directional

Gray Television Licensee, LLC (“Gray”) is the licensee of digital Low Power Television station K33MP-D, Channel 33, Alexandria LA, Facility ID 186715 (file# 0000014176). As a result of the Special Displacement Window,¹ a Construction Permit (“CP” file# 0000054048) authorizes operation on Channel 25 using the new callsign K25PZ-D with 15 kW effective radiated power (“ERP”) and a directional antenna. *Gray* proposes herein a minor modification of the displacement CP to utilize a different directional antenna. No change in site location, antenna height, or ERP is proposed.

The authorized K25PZ-D site is associated with FCC Antenna Structure Registration number 1020933 and a new side-mounted antenna will be employed. No change to the overall structure height is proposed.

The proposed antenna is an ERI model ALP-12L6-ESW-25 having elliptical polarization. The ERP is 15 kW using a “full service” out of channel emission mask. A plot of the directional antenna’s azimuthal pattern is supplied in Figure 1. Figure 2 depicts the 51 dBμ coverage contour of the proposed facility as well as those of the existing K25PZ-D authorization and the licensed Channel 33 facility, demonstrating compliance with §73.3572 for a minor change.

¹“*Incentive Auction Task Force and Media Bureau Announce Post-Incentive Auction Special Displacement Window April 10, 2018, through May 15, 2018, and Make Location and Channel Data Available,*” Public Notice, DA 18-124, released February 9, 2018.

Interference study per OET Bulletin 69² shows that the proposal complies with the FCC'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 FCC's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) to any facility.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed facility was evaluated for human exposure to RF energy using the procedures outlined in the FCC's OET Bulletin Number 65. Based on OET-65 equation (10) and 20 percent antenna relative field in downward elevations (pattern data shows 20 percent or less relative field at angles 20 to 90 degrees below the antenna), the calculated power density attributable to the proposed facility at locations near the transmitter site at a height of two meters above ground level is $0.1 \mu\text{W}/\text{cm}^2$, which is 0.04 percent of the general population / uncontrolled maximum permissible exposure limit. This is well 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.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. 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. No increase in structure height is proposed.

²FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). This analysis employed the FCC's current "TVStudy" software with the default application processing template settings, 1 km cell size, and 1 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCC's implementation of TVStudy show excellent correlation.

Engineering Exhibit
Gray Television Licensee, LLC (K25PZ-D)
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List of Attachments

Figure 1	Antenna Azimuthal Pattern
Figure 2	Coverage Contour Comparison
Table 1	TVStudy Analysis of Proposal
Form 2100	Saved Version of Engineering Sections from FCC Form at Time of Upload

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E.	April 13, 2021	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600



Spec Number: K25PZ - Preliminary

Model Number: ALP12L6-ESW-25

Azimuth Pattern

Type:	ALP-W	Polarization:	Horizontal
Directivity:	1.58 numeric (1.99 dB)	Frequency:	25 (ATSC)
Peak(s) at:		Location:	Alexandria, LA
		Note: Pattern shape and directivity may vary with channel and mounting configuration.	

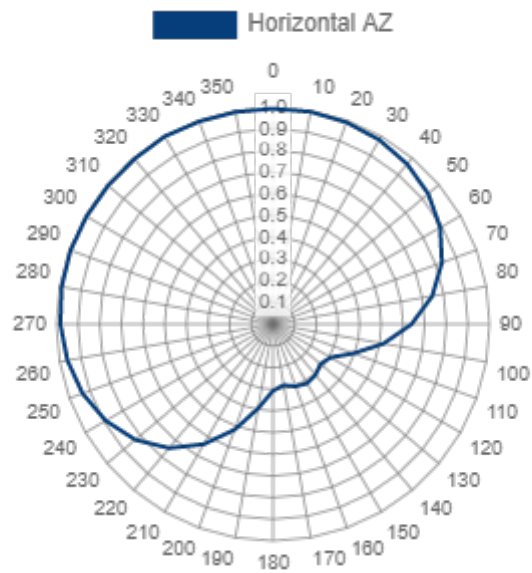
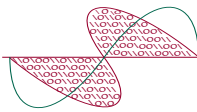


Figure 1
Antenna Azimuthal Pattern
K25PZ-D Alexandria, LA
Facility ID 186715
Ch. 25 15 kW Directional

prepared for
Gray Television Licensee, LLC

April, 2021



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

Figure 2
Coverage Contour Comparison
K25PZ-D Alexandria, LA
Facility ID 186715
Ch. 25 15 kW Directional

prepared for
Gray Television Licensee, LLC

April, 2021

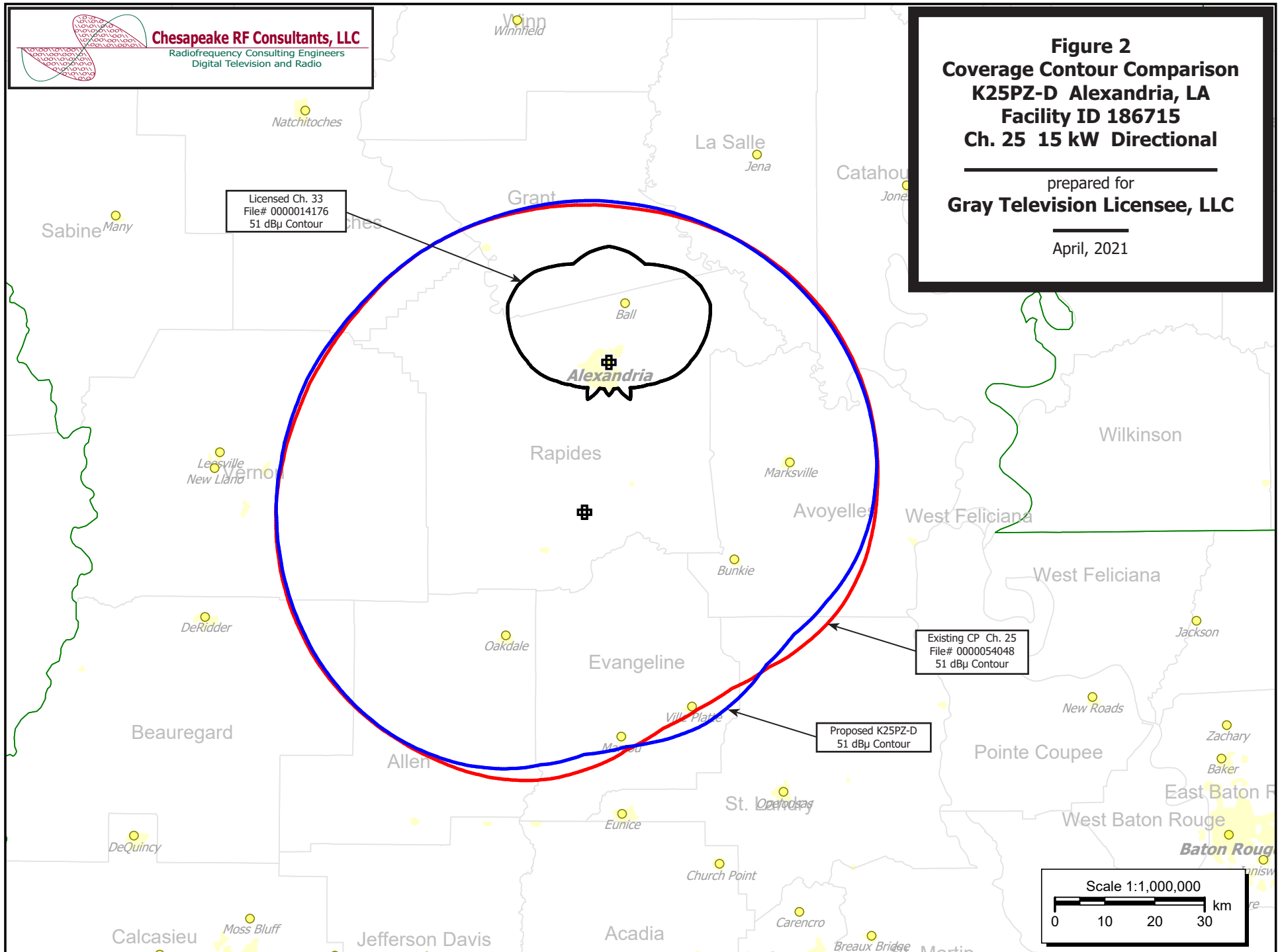


Table 1 K25PZ-D TVStudy Analysis of Proposal (page 1 of 4)



tvstudy v2.2.5 (4uoc83)
Database: localhost, Study: K25PZ-D_CP-Mod, Model: Longley-Rice
Start: 2021.04.13 09:59:38

Study created: 2021.04.13 09:59:38

Study build station data: LMS TV 2021-04-13

Proposal: K25PZ-D D25 LD APP ALEXANDRIA, LA
File number: K25PZ-D CP-Mod
Facility ID: 186715
Station data: User record
Record ID: 3592
Country: U.S.

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

Search options:
Baseline record excluded if station has CP

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
Yes	K24LJ-D	D24	LD	CP	ALEXANDRIA, LA	BNPDTL20100511ABM	22.4 km
No	WGMB-TV	D24	DT	LIC	BATON ROUGE, LA	BLANK00000113571	140.8
No	W24DX-D	D24	LD	CP	IOWA, LA	BNPDTL20100407ABU	97.3
No	KFAM-CD	D24	DC	LIC	LAKE CHARLES, LA	BLANK00000063954	119.7
No	KCWL-LD	D24	LD	LIC	MONROE, LA	BLANK00000125986	169.7
No	K24KQ-D	D24	LD	CP	BEAUMONT, TX	BNPDTT20090825BRG	173.5
No	K25NT-D	D25	LD	CP	EL DORADO, AR	BNPDTL20101020AAN	249.0
No	KMYA-LD	D25	LD	LIC	SHERIDAN, AR	BLANK00000075097	417.3
No	K39LD-D	D25	LD	CP	TEXARKANA, AR	BLANK00000071810	318.2
Yes	WLPB-TV	D25	DT	CP	BATON ROUGE, LA	BLANK00000035855	143.8
Yes	WLPB-TV	D25	DT	LIC	BATON ROUGE, LA	BLEDT20101201ALR	143.8
No	W25FM-D	D25	LD	CP	LAKE CHARLES, LA	BLANK00000071877	113.3
No	K25MH-D	D25	LD	CP	MONROE, LA	BNPDTL20100510AED	164.6
No	WMAO-TV	D25	DT	LIC	GREENWOOD, MS	BLEDT20090612AAI	318.3
No	WXXV-TV	D25	DT	LIC	GULFPORT, MS	BLANK00000090276	329.5
No	KPXD-TV	D25	DT	LIC	ARLINGTON, TX	BLANK00000073172	456.7
No	KOPS-LD	D25	LD	CP	BEAUMONT, TX	BLANK00000054093	185.0
No	KYAZ	D25	DT	LIC	KATY, TX	BLANK00000125086	332.5
No	KCTL-LD	D25	LD	LIC	LIVINGSTON, TX	BLDTL20140508ABU	236.0
No	K25ND-D	D25	LD	CP	MOUNT VERNON, TX	BMJADTL20100521ACE	343.8
No	K25LG-D	D25	LD	LIC	TYLER, TX	BLANK00000107602	290.2
Yes	KBCA	D26	DT	LIC	ALEXANDRIA, LA	BLANK00000078715	19.2
No	WEAZ-LD	D26	LD	LIC	Baton rouge, LA	BLANK00000121654	173.7
No	WEAZ-LD	D26	LD	CP	Baton rouge, LA	BLANK00000135706	149.6
No	WGNO	D26	DT	LIC	NEW ORLEANS, LA	BLCDT20121019AAK	271.5
No	KULC-LD	D26	LD	CP	PORT ARTHUR, TX	BLANK00000074302	179.3
No	KTAL-TV	D26	DT	LIC	TEXARKANA, TX	BLANK00000073076	251.5
No	DKWCE-LP	N27-	TX	APP	ALEXANDRIA, LA	BLTTL20060714ACI	31.2

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D25
Mask: Full Service
Latitude: 31 2 16.00 N (NAD83)
Longitude: 92 29 45.00 W
Height AMSL: 474.8 m
HAAT: 0.0 m
Peak ERP: 15.0 kW
Antenna: ERI ALP-W rev2021 330.0 deg
Elev Pattn: Generic
Elec Tilt: 1.50

49.9 dBu contour:
Azimuth ERP HAAT Distance
0.0 deg 14.8 kW 441.2 m 64.0 km

Table 1 K25PZ-D TV Study Analysis of Proposal
(page 2 of 4)



45.0	13.5	448.6	63.7
90.0	6.14	450.7	58.9
135.0	1.31	447.8	49.4
180.0	1.42	449.1	50.0
225.0	9.33	437.2	61.0
270.0	14.5	429.1	63.2
315.0	14.8	413.4	62.6

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 440 m

Distance to Canadian border: 1467.0 km

Distance to Mexican border: 709.6 km

Conditions at FCC monitoring station: Kingsville TX
Bearing: 233.9 degrees Distance: 657.7 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 314.8 degrees Distance: 1527.7 km

Study cell size: 1.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

Interference to BNPDTL20100511ABM CP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K24LJ-D	D24	LD	CP	ALEXANDRIA, LA	BNPDTL20100511ABM	
Undesireds:	K25PZ-D	D25	LD	APP	ALEXANDRIA, LA	K25PZ-D CP-Mod	22.4 km
	WGMB-TV	D24	DT	LIC	BATON ROUGE, LA	BLANK0000113571	152.0
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
6275.9		177,054		6198.6		174,626	0.07 0.00
Undesired		Total IX		Unique IX, before		Unique IX, after	
K25PZ-D D25 LD APP		5.1		2		4.1	2
WGMB-TV D24 DT LIC		75.3		2,428		74.3	2,428

Interference to BLANK0000035855 CP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WLPB-TV	D25	DT	CP	BATON ROUGE, LA	BLANK0000035855	
Undesireds:	K25PZ-D	D25	LD	APP	ALEXANDRIA, LA	K25PZ-D CP-Mod	143.8 km
	WGMB-TV	D24	DT	LIC	BATON ROUGE, LA	BLANK0000113571	8.6
	WMAO-TV	D25	DT	LIC	GREENWOOD, MS	BLEDT20090612AAI	339.6
	WXXV-TV	D25	DT	LIC	GULFPORT, MS	BLANK0000090276	209.6
	WGNO	D26	DT	LIC	NEW ORLEANS, LA	BLCDDT20121019AAK	128.7
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
24272.8		1,357,305		23620.3		1,333,792	3.79 0.38
Undesired		Total IX		Unique IX, before		Unique IX, after	
K25PZ-D D25 LD APP		962.4		5,175		895.1	5,033
WGMB-TV D24 DT LIC		91.5		654		54.0	654
WMAO-TV D25 DT LIC		65.2		145		18.3	3
WXXV-TV D25 DT LIC		88.2		1,505		44.0	1,158
WGNO D26 DT LIC		364.0		16,280		316.0	16,029

Interference to BLEDT20101201ALR LIC scenario 1

Call	Chan	Svc	Status	City, State	File Number	Distance
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Table 1 K25PZ-D TVStudy Analysis of Proposal
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Desired:	WLPB-TV	D25	DT	LIC	BATON ROUGE, LA	BLEDT20101201ALR			
Undesireds:	K25PZ-D	D25	LD	APP	ALEXANDRIA, LA	K25PZ-D CP-Mod	143.8	km	
	WGMB-TV	D24	DT	LIC	BATON ROUGE, LA	BLANK0000113571	8.6		
	WMAO-TV	D25	DT	LIC	GREENWOOD, MS	BLEDT20090612AAI	339.6		
	WXXV-TV	D25	DT	LIC	GULFPORT, MS	BLANK0000090276	209.6		
	WGNO	D26	DT	LIC	NEW ORLEANS, LA	BLCDT20121019AAK	128.7		
Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
21716.9	1,217,302	21646.6	1,217,103	21253.0	1,206,500	20531.8	1,201,537	3.39	0.41
Undesired		Total IX		Unique IX, before		Unique IX, after			
K25PZ-D	D25 LD APP	775.2	5,151			721.2	4,963		
WGMB-TV	D24 DT LIC	133.2	3,920	127.2	3,909	100.7	3,843		
WMAO-TV	D25 DT LIC	42.8	137	38.7	32	14.3	6		
WXXV-TV	D25 DT LIC	12.1	152	7.1	36	6.0	36		
WGNO	D26 DT LIC	215.7	6,510	210.6	6,510	210.6	6,510		

Interference to BLANK0000078715 LIC scenario 1									
Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance		
	KBCA	D26	DT	LIC	ALEXANDRIA, LA	BLANK0000078715			
Undesireds:	K25PZ-D	D25	LD	APP	ALEXANDRIA, LA	K25PZ-D CP-Mod	19.2	km	
	WLPB-TV	D25	DT	CP	BATON ROUGE, LA	BLANK0000035855	148.1		
	WGNO	D26	DT	LIC	NEW ORLEANS, LA	BLCDT20121019AAK	276.7		
	KRIV	D26	DT	CP	HOUSTON, TX	BLANK0000035805	312.7		
	KTAL-TV	D26	DT	LIC	TEXARKANA, TX	BLANK0000073076	257.5		
Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
24245.6	478,850	24179.5	478,711	23680.5	476,224	23678.5	476,224	0.01	0.00
Undesired		Total IX		Unique IX, before		Unique IX, after			
K25PZ-D	D25 LD APP	5.1	64			2.0	0		
WGNO	D26 DT LIC	2.0	0	1.0	0	1.0	0		
KRIV	D26 DT CP	70.3	386	12.2	60	12.2	60		
KTAL-TV	D26 DT LIC	485.8	2,427	426.7	2,101	423.6	2,037		

Interference to BLANK0000078715 LIC scenario 2									
Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance		
	KBCA	D26	DT	LIC	ALEXANDRIA, LA	BLANK0000078715			
Undesireds:	K25PZ-D	D25	LD	APP	ALEXANDRIA, LA	K25PZ-D CP-Mod	19.2	km	
	WLPB-TV	D25	DT	CP	BATON ROUGE, LA	BLANK0000035855	148.1		
	WGNO	D26	DT	LIC	NEW ORLEANS, LA	BLCDT20121019AAK	276.7		
	KRIV	D26	DT	LIC	HOUSTON, TX	BLCDT20111212AHM	312.7		
	KTAL-TV	D26	DT	LIC	TEXARKANA, TX	BLANK0000073076	257.5		
Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
24245.6	478,850	24179.5	478,711	23683.6	476,224	23681.5	476,224	0.01	0.00
Undesired		Total IX		Unique IX, before		Unique IX, after			
K25PZ-D	D25 LD APP	5.1	64			2.0	0		
WGNO	D26 DT LIC	2.0	0	1.0	0	1.0	0		
KRIV	D26 DT LIC	62.2	384	9.2	60	9.2	60		
KTAL-TV	D26 DT LIC	485.8	2,427	431.8	2,103	428.7	2,039		

Interference to proposal scenario 1									
Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance		
	K25PZ-D	D25	LD	APP	ALEXANDRIA, LA	K25PZ-D CP-Mod			
Undesireds:	WLPB-TV	D25	DT	CP	BATON ROUGE, LA	BLANK0000035855	143.8	km	
	KBCA	D26	DT	LIC	ALEXANDRIA, LA	BLANK0000078715	19.2		
Service area		Terrain-limited		IX-free		Percent IX			
11100.6	240,022	11099.6	240,022	11067.0	239,949	0.29	0.03		
Undesired		Total IX		Unique IX		Prcnt Unique IX			

Table 1 K25PZ-D TVStudy Analysis of Proposal
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WLPB-TV D25 DT CP	13.2	50	12.2	50	0.11	0.02
KBCA D26 DT LIC	20.4	23	19.4	23	0.17	0.01

Interference to proposal scenario 2

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K25PZ-D	D25	LD	APP	ALEXANDRIA, LA	K25PZ-D CP-Mod	
Undesireds:	WLPB-TV	D25	DT	LIC	BATON ROUGE, LA	BLEDT20101201ALR	143.8 km
	KBCA	D26	DT	LIC	ALEXANDRIA, LA	BLANK0000078715	19.2

	Service area		Terrain-limited		IX-free		Percent IX
	11100.6	240,022	11099.6	240,022	11077.2	239,999	0.20 0.01
Undesired				Total IX		Unique IX	Prcnt Unique IX
WLPB-TV D25 DT LIC			3.0	0	2.0	0	0.02 0.00
KBCA D26 DT LIC			20.4	23	19.4	23	0.17 0.01

Channel and Facility Information

Section	Question	Response
Facility ID	186715	
State	Louisiana	
City	ALEXANDRIA	
LPD Channel	25	

Antenna Location Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1020933
Coordinates (NAD83)	Latitude	31 ° 02' 16.0" N+
	Longitude	092 ° 29' 45.0" W-
	Structure Type	TOWER-A free standing or guyed struct
	Overall Structure Height	474.9 meters
	Support Structure Height	473.7 meters
	Ground Elevation (AMSL)	48.1 meters
Antenna Data	Height of Radiation Center Above Ground Level	426.7 meters
	Height of Radiation Center Above Mean Sea Level	474.8 meters
	Effective Radiated Power	15 kW

**Antenna
Technical Data**

Section	Question	Response
Antenna Type	Antenna Type	Directional Custom
	Do you have an Antenna ID?	No
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	ERI
	Model	ALP12L6-ESW-25
	Rotation	330 degrees
	Electrical Beam Tilt	1.5
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Elliptical
Elevation Radiation Pattern	Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?	No
	Uploaded file for elevation antenna (or radiation) pattern data	
	Out-of-Channel Emission Mask:	Full Service

Directional Antenna Relative Field Values (Pre-rotated Pattern)

Degree	Value	Degree	Value	Degree	Value	Degree	Value
0	1.000	90	0.891	180	0.316	270	0.891
10	0.995	100	0.83	190	0.306	280	0.936
20	0.994	110	0.747	200	0.286	290	0.964
30	0.994	120	0.640	210	0.308	300	0.982
40	0.995	130	0.519	220	0.395	310	0.991
50	0.991	140	0.395	230	0.519	320	0.995
60	0.982	150	0.308	240	0.640	330	0.994
70	0.964	160	0.286	250	0.747	340	0.994
80	0.936	170	0.306	260	0.830	350	0.995

Additional Azimuths

Degree	V _A
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