

ENGINEERING STATEMENT

Request for Waiver of Transition Phase Assignment

prepared for

Gray Television Licensee, LLC

KNCT(DT) Belton, TX

Facility ID 9754

This statement is prepared on behalf of *Gray Television Licensee, LLC* (“Gray”), licensee of digital television station KNCT, Facility ID 9754, Belton TX, in support of Gray’s request for waiver of KNCT’s transition phase assignment. Reassignment of KNCT from Channel 46 to Channel 17 was specified in the *Incentive Auction Closing and Channel Reassignment Public Notice* (DA 17-317, released April 13, 2017). KNCT has been assigned to make the transition to Channel 17 at phase 8 (testing period start date January 18, 2020 and phase completion date March 13, 2020). Gray proposes to transition KNCT to its reassignment facility early, at phase 5 (testing period start date August 3, 2019 and phase completion date September 6, 2019). This statement provides engineering details to support the waiver request.

The KNCT reassignment facility Construction Permit (“CP”, file# 0000064448) authorizes operation at 1000 kW effective radiated power (“ERP”) with a directional antenna at 506 meters antenna height above average terrain (“HAAT”). Gray proposes to implement KNCT’s reassignment Channel 17 facility beginning at phase 5 with the parameters as authorized in the reassignment CP (0000064448). A summary of the KNCT authorization’s technical parameters is provided in Table 1.

According to the FCC’s transition data files,¹ there are no linked stations that involve KNCT at phase 8. Additionally, the transition data files spanning all phases indicate that KNCT is not part of a dependency with any other station.

¹ http://data.fcc.gov/download/incentive-auctions/Current_Transition_Files/

Since the proposed early transition facility for KNCT may have a different interference impact to other stations than the KNCT facility's reassignment parameters, and many other stations have similarly achieved an expanded facility and/or alternate channels, additional analysis is provided herein to determine if any dependencies will now exist.

An interference study using FCC TVStudy software (OET Bulletin 69) was conducted to determine compliance with the 2.0 percent limit of additional interference permitted during the transition with respect to pertinent nearby full service and Class A television stations. The TVStudy report is supplied in Table 2 and includes stations that are presently operating (*i.e.*, on their current channels, not repack channels). Consistent with the TVStudy analysis provided in the minor modification application underlying KNCT's CP, the analysis was conducted using a 2 km cell size and 0.5 km terrain profile increment.

The interference analysis shows that the early transition operation of KNCT would not cause interference in excess of 2.0 percent to any other station. Therefore, the early transition of KNCT to Channel 17 will comply with the interference protection requirements for operation during the transition. Therefore, no dependency or linked station set is created with respect to interference created to other stations.

Regarding incoming interference to KNCT's Channel 17 early transition facility for the period between phases 5 and 8, Table 3 provides a TVStudy analysis summary of the proposed KNCT predicted coverage and incoming interference. Potential interfering stations include all stations that are still on their pre-auction channel that will transition at phases 5, 6, or 7, as well as those that transition to their new channels before phase 8. The proposed early transition Channel 17 facility would provide interference-free service to 1,740,434 persons and experience 1.67 percent incoming interference during the period from phase 5 to phase 8. This amount of incoming interference is less than the 2 percent threshold permitted for interference contribution by any individual station for operation during the transition. Therefore, no dependency or linked station set is created with respect to interference received from any other station.

In summary, the proposed early transition for KNCT will comply with the interference allowance established for the transition period (regarding both caused and received interference) and will not create any new linked station set or dependency. Accordingly, *Gray* will not be required to coordinate the KNCT Channel 17 facility's testing and transition with any other station.

List of Attachments

Table 1	KNCT Ch. 17 Technical Parameters
Table 2	TVStudy Analysis – KNCT Early Transition at Phase 5
Table 3	TVStudy Analysis – Interference-Free Service

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E.	June 10, 2019	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600

Table 1 KNCT Ch. 17 Technical Parameters
Gray Television Licensee, LLC



KNCT Channel 17 Technical Data
 Authorized Reassignment Facility
 Proposed Early Transition at Phase 5

Facility ID: 9754
 LMS File Number: 0000064448
 Channel: 17

Antenna Structure Registration: 1046229

NAD83 Coordinates: 31° 19' 19.2" N-Lat
 97° 19' 03.0" W-Lon

Site Elevation: 260.0 m AMSL

Antenna Type: DIE TFU-28DSC/VP-R C170
 Antenna Polarization: Elliptical
 Effective Radiated Power: 1000 kW
 Electrical Beamtilt: 0.75°

Radiation center height above ground: 451.1 meters
 Radiation center above mean sea level: 711.1 meters
 Radiation center above average terrain: 505.7 meters

Antenna System ID: 1004498
 Rotation: 0

Az	Field	Az	Field	Az	Field	Az	Field
0	0.238	90	0.968	180	0.914	270	0.900
10	0.209	100	0.997	190	0.915	280	0.794
20	0.184	110	0.996	200	0.920	290	0.655
30	0.226	120	0.977	210	0.931	300	0.499
40	0.346	130	0.952	220	0.952	310	0.346
50	0.499	140	0.931	230	0.977	320	0.226
60	0.655	150	0.920	240	0.996	330	0.184
70	0.794	160	0.915	250	0.997	340	0.209
80	0.900	170	0.914	260	0.968	350	0.238

Additional Azimuths:

Az	Field	Az	Field	Az	Field
104	1.000	246	1.000	355	0.242

Table 2 TVStudy Analysis
KNCT Ch. 17 Early Transition at Phase 5
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tvstudy v2.2.5 (4uoc83)
 Database: localhost, Study: KNCT CP-17 early transition, Model: Longley-Rice
 Start: 2019.06.10 11:44:46

Study created: 2019.06.10 11:44:46

Study build station data: LMS TV 2019-06-06

Proposal: KNCT D17 DT CP BELTON, TX
 File number: BLANK0000064448
 Facility ID: 9754
 Station data: LMS TV 2019-06-06
 Record ID: 25076f9167c87ec60168013cf5e8584a
 Country: U.S.
 Zone: II

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
No	DKHPB-CD	D16	DC	BL	BASTROP, TX	DTVBL35912	130.6 km
Yes	KBTX-TV	D16	DT	CP	BRYAN, TX	BLANK0000034192	149.4
No	KHCE-TV	D16	DT	APP	SAN ANTONIO, TX	BLANK0000035698	243.1
No	KHCE-TV	D16	DT	LIC	SAN ANTONIO, TX	BLCDT20110215AEM	243.1
Yes	KLTS-TV	D17	DT	CP	SHREVEPORT, LA	BLANK0000034590	353.5
Yes	KSLA	D17	DT	LIC	SHREVEPORT, LA	BLCDT20020501AAS	352.6
Yes	KTEN	D17	DT	CP	ADA, OK	BLANK0000034216	344.9
No	KCRP-CD	D17	DC	LIC	CORPUS CHRISTI, TX	BLANK0000068614	395.0
No	KPCB-DT	D17	DT	LIC	SNYDER, TX	BLCDT20090210AFB	374.2
No	KNIC-DT	D18	DT	LIC	BLANCO, TX	BLCDT20091019ADG	213.8
Yes	KTXA	D18	DT	CP	FORT WORTH, TX	BLANK0000033718	139.9

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D17
 Latitude: 31 19 19.20 N (NAD83)
 Longitude: 97 19 3.00 W
 Height AMSL: 711.1 m
 HAAT: 505.7 m
 Peak ERP: 1000 kW
 Antenna: DIE-TFU-28DSC/VP-R C170 (ID 1004498) 0.0 deg
 Elev Pattern: Generic
 Elec Tilt: 0.75

39.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	56.6 kW	516.2 m	93.7 km
45.0	179	517.6	103.8
90.0	937	536.7	120.6
135.0	886	513.9	118.6
180.0	835	489.2	116.4
225.0	930	492.8	117.7
270.0	810	490.3	116.2
315.0	81.8	489.2	94.6

ERP exceeds maximum
 ERP: 1000 kW ERP maximum: 498 kW

Distance to Canadian border: 1724.7 km

Distance to Mexican border: 405.9 km

Conditions at FCC monitoring station: Kingsville TX

Table 2 TVStudy Analysis
KNCT Ch. 17 Early Transition at Phase 5
 (page 2 of 4)



Bearing: 187.4 degrees Distance: 434.8 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
 Bearing: 326.1 degrees Distance: 1209.2 km

**Proposal fails distance check to land mobile station: Dallas TX ch. 16, 170.0 km

Study cell size: 2.00 km
 Profile point spacing: 0.50 km

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

 Interference to BLANK0000034192 CP scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KBTX-TV	D16	DT	CP	BRYAN, TX	BLANK0000034192	
Undesireds:	KNCT	D17	DT	BL	BELTON, TX	DTVBL9754	160.1 km
	KNCT	D17	DT	CP	BELTON, TX	BLANK0000064448	149.4
	KRHD-CD	D15	DC	CP	BRYAN, TX	BLANK0000034152	47.5
	KHPL-CD	D15	DC	CP	LA GRANGE, TX	BLANK0000033614	108.4
	KYTX	D15	DT	LIC	NACOGDOCHES, TX	BLANK0000071581	175.1
	KADN-TV	D16	DT	LIC	LAFAYETTE, LA	BLCDT20060630AFZ	366.3
	KSHV-TV	D16	DT	CP	SHREVEPORT, LA	BLANK0000068391	307.4
	DKHPB-CD	D16	DC	BL	BASTROP, TX	DTVBL35912	122.7
	KHCE-TV	D16	DT	APP	SAN ANTONIO, TX	BLANK0000035698	256.3

	Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX
	39792.4	4,404,648	39632.6	4,403,815	38238.1	4,389,511	37000.2 4,382,610 3.24 0.16
Undesired			Total IX	Unique IX, before		Unique IX, after	
KNCT D17 DT BL			443.5	3,780		275.6 1,850	
KNCT D17 DT CP			1673.3	10,508		1513.4 8,751	
KRHD-CD D15 DC CP			35.9	78		35.9 78	
KHPL-CD D15 DC CP			72.5	4,273		0.0 0	
KYTX D15 DT LIC			7.9	11		7.9 11	
KADN-TV D16 DT LIC			4.0	69		0.0 0	
KSHV-TV D16 DT CP			23.9	96		19.9 27	
DKHPB-CD D16 DC BL			570.5	6,829		277.1 1,686 281.1 1,706	
KHCE-TV D16 DT APP			762.1	9,945		332.7 1,682 332.8 1,757	

 Interference to BLANK0000034192 CP scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KBTX-TV	D16	DT	CP	BRYAN, TX	BLANK0000034192	
Undesireds:	KNCT	D17	DT	BL	BELTON, TX	DTVBL9754	160.1 km
	KNCT	D17	DT	CP	BELTON, TX	BLANK0000064448	149.4
	KRHD-CD	D15	DC	CP	BRYAN, TX	BLANK0000034152	47.5
	KHPL-CD	D15	DC	CP	LA GRANGE, TX	BLANK0000033614	108.4
	KYTX	D15	DT	LIC	NACOGDOCHES, TX	BLANK0000071581	175.1
	KADN-TV	D16	DT	LIC	LAFAYETTE, LA	BLCDT20060630AFZ	366.3
	KSHV-TV	D16	DT	CP	SHREVEPORT, LA	BLANK0000068391	307.4
	DKHPB-CD	D16	DC	BL	BASTROP, TX	DTVBL35912	122.7
	KHCE-TV	D16	DT	LIC	SAN ANTONIO, TX	BLEDT20110215AEM	256.3

	Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX
	39792.4	4,404,648	39632.6	4,403,815	38262.1	4,389,588	37024.3 4,382,687 3.24 0.16
Undesired			Total IX	Unique IX, before		Unique IX, after	
KNCT D17 DT BL			443.5	3,780		287.6 1,889	
KNCT D17 DT CP			1673.3	10,508		1525.4 8,790	
KRHD-CD D15 DC CP			35.9	78		35.9 78	
KHPL-CD D15 DC CP			72.5	4,273		0.0 0	
KYTX D15 DT LIC			7.9	11		7.9 11	

Table 2 TVStudy Analysis
KNCT Ch. 17 Early Transition at Phase 5
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KADN-TV D16 DT LIC	4.0	69	0.0	0	0.0	0
KSHV-TV D16 DT CP	23.9	96	19.9	27	19.9	27
DKHPB-CD D16 DC BL	570.5	6,829	289.1	1,756	293.1	1,776
KHCE-TV D16 DT LIC	710.0	9,743	308.6	1,605	308.7	1,680

Interference to BLANK0000034590 CP scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KLTS-TV	D17	DT	CP	SHREVEPORT, LA	BLANK0000034590	
Undesireds:	KNCT	D17	DT	BL	BELTON, TX	DTVBL9754	397.2 km
	KNCT	D17	DT	CP	BELTON, TX	BLANK0000064448	353.5
	KSHV-TV	D16	DT	CP	SHREVEPORT, LA	BLANK0000068391	1.5
	KLWB	D17	DT	LIC	NEW IBERIA, LA	BLANK0000072363	319.3
	KTEN	D17	DT	CP	ADA, OK	BLANK0000034216	307.4
	KMYA-DT	D18	DT	CP	CAMDEN, AR	BLANK0000028486	131.6
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
30534.4		947,141		30393.9		944,403	29368.5
						930,033	29360.4
						929,273	0.03
							0.08

Undesired	Total IX	Unique IX, before	Unique IX, after
KNCT D17 DT BL	0.0	0	0
KNCT D17 DT CP	28.1	1,302	8.1
KSHV-TV D16 DT CP	100.4	5,614	84.5
KLWB D17 DT LIC	125.1	422	125.1
KTEN D17 DT CP	511.9	8,040	495.9
KMYA-DT D18 DT CP	304.0	566	304.0

Interference to BLCDT20020501AAS LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KSLA	D17	DT	LIC	SHREVEPORT, LA	BLCDT20020501AAS	
Undesireds:	KNCT	D17	DT	BL	BELTON, TX	DTVBL9754	396.4 km
	KNCT	D17	DT	CP	BELTON, TX	BLANK0000064448	352.6
	KLWB	D17	DT	LIC	NEW IBERIA, LA	BLANK0000072363	319.4
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
33724.6		1,009,108		33607.9		1,007,873	33486.8
						1,007,454	33458.6
						1,005,406	0.08
							0.20

Undesired	Total IX	Unique IX, before	Unique IX, after
KNCT D17 DT CP	28.1	2,048	28.1
KLWB D17 DT LIC	121.1	419	121.1

Interference to BLANK0000034216 CP scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KTEN	D17	DT	CP	ADA, OK	BLANK0000034216	
Undesireds:	KNCT	D17	DT	BL	BELTON, TX	DTVBL9754	388.1 km
	KNCT	D17	DT	CP	BELTON, TX	BLANK0000064448	344.9
	KOCM	D16	DT	LIC	NORMAN, OK	BLANK0000072046	157.9
	KLTS-TV	D17	DT	CP	SHREVEPORT, LA	BLANK0000034590	307.4
	KSNF	D17	DT	LIC	JOPLIN, MO	BLANK0000071604	352.0
	KUTU-CD	D17	DC	CP	TULSA, OK	BLANK0000026567	205.6
	KOPX-TV	D18	DT	LIC	OKLAHOMA CITY, OK	BLANK0000073170	158.8
	KTXA	D18	DT	CP	FORT WORTH, TX	BLANK0000033718	205.2
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
41448.9		602,788		40668.5		599,335	40229.1
						587,974	40229.1
						587,974	0.00
							0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
KNCT D17 DT BL	8.0	9	4.0
KNCT D17 DT CP	8.0	9	4.0
KOCM D16 DT LIC	19.9	341	4.0
KLTS-TV D17 DT CP	112.1	1,213	108.1
KSNF D17 DT LIC	96.2	1,148	72.2
KUTU-CD D17 DC CP	7.9	43	0.0
KOPX-TV D18 DT LIC	195.4	8,493	175.4

Table 2 TVStudy Analysis
KNCT Ch. 17 Early Transition at Phase 5
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KTXA D18 DT CP 39.8 614 35.9 612 35.9 612

 Interference to BLANK0000033718 CP scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KTXA	D18	DT	CP	FORT WORTH, TX	BLANK0000033718	
Undesireds:	KNCT	D17	DT	BL	BELTON, TX	DTVBL9754	184.4 km
	KNCT	D17	DT	CP	BELTON, TX	BLANK0000064448	139.9
	KTEN	D17	DT	CP	ADA, OK	BLANK0000034216	205.2
	KMYA-DT	D18	DT	CP	CAMDEN, AR	BLANK0000028486	405.2
	KOPX-TV	D18	DT	LIC	OKLAHOMA CITY, OK	BLANK0000073170	339.8
	KNIC-DT	D18	DT	LIC	BLANCO, TX	BLCDT20091019ADG	349.2
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
45790.0	6,915,461	45424.0	6,913,267	45299.3	6,911,201	44787.9 6,879,512	1.13 0.46
Undesired		Total IX		Unique IX, before		Unique IX, after	
KNCT D17 DT BL		0.0	0	0.0	0		
KNCT D17 DT CP		535.4	32,042			511.5	31,689
KTEN D17 DT CP		12.0	187	8.1	141	8.1	141
KMYA-DT D18 DT CP		4.0	129	4.0	129	4.0	129
KOPX-TV D18 DT LIC		32.0	234	28.0	188	28.0	188
KNIC-DT D18 DT LIC		80.6	1,562	80.6	1,562	56.7	1,209

Table 3 TVStudy Analysis – Interference-Free Service
KNCT Proposed Early Transition
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KNCT Proposed Early Transition Ch. 17
Operation at Phase 5 to Phase 8
Relevant Interfering Pre-Repack and Post-Repack Facilities

tvstudy v2.2.5 (4uoc83)

Database: localhost
 Station Data: LMS TV 2019-01-23
 Study: Early transition 20190123 2.0-0.5
 Model: Longley-Rice
 Scenario: KNCT - Early 4-8
 Start: 2019.01.25 14:28:51

Study cell size: 2.00 km
 Profile point spacing: 0.50 km

Desired station	Service area		Terrain-limited		Interference-free	
Undesired station	Total interference		Unique interference			
KNCT D17 DT APP BELTON, TX	38329.7	1,751,838	37734.4	1,743,347	37329.6	1,740,434
KSLA D17 DT LIC SHREVEPORT, LA	24.2	24	12.1	23		
KNIC-DT D18 DT LIC BLANCO, TX	0.0	0	0.0	0		
KCRP-CD D17 DC CP CORPUS CHRISTI, TX	0.0	0	0.0	0		
KTXA D18 DT CP FORT WORTH, TX	392.7	2,890	380.5	2,889		
KPCB-DT D17 DT LIC SNYDER, TX	0.0	0	0.0	0		
Total Incoming Interference (population)					2,913	
					(1.67%)	