

ENGINEERING REPORT
RE MINOR AMENDMENT TO
APPLICATION (BPCDT-19991101ADZ)
FOR A NEW DTV STATION
KAZH-DT, BAYTOWN, TEXAS
CHANNEL 41 1000 KW ERP 596 METERS HAAT

MARCH 2001

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

City of Washington)
) ss
District of Columbia)

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.

Ek Khoun

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

Subscribed and sworn to before me this 1st day of March, 2001.


Notary Public

My Commission Expires;

2/28/2003

Introduction

This engineering report has been prepared on behalf of Pappas Telecasting of Houston, a California Limited Partnership (Pappas), licensee of TV station KAZH, Baytown, Texas in support of a minor amendment to its application (BPCDT-19991101ADZ) for a construction permit for a new digital television (DTV) station. This amendment is necessitated by the Commission's letter dated February 5, 2001, indicating the KAZH-DT¹ proposal would adversely impact the channel 41 DTV operation of KXAS-DT, Fort Worth, Texas. After discussion with the Commission's staff, Pappas was advised that impact would be to the channel 40 DTV allotment at Port Arthur, Texas. Station KBTB-TV, Channel 4, Port Arthur, Texas, has been allotted Channel 40 for its digital television (DTV) operation with 1000 kW ERP and 360 meters HAAT. Although the previously proposed KAZH-DT operation provided protection to the allotted Channel 40 DTV operation at Port Arthur, Texas, it exceeded slightly the permissible interference to the larger DTV service area based on the KBTB-TV, Grade B contour. The amended KAZH-DT operation would comply with the Commission's guidelines with respect to predicted additional interference caused to the larger DTV service which is equivalent to the Grade B service contour of KBTB-TV.

Antenna Site

There is no change in the antenna site information. The proposed DTV antenna will be top-mounted on a new guyed tower located at approximately 2800 feet south of FM 2234 MC

¹KAZH-DT are the new call letters of the TV station although the Commission letter refers to KVVV-DT, the old call letters.

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Hard Road, Missouri City, Texas. The geographic coordinates (NAD-27) of the new tower based on the Antenna Structure Registration No. 1064696 are as follows.

North Latitude: 29° 34' 15"

West Longitude: 95° 30' 37"

The maps, Exhibits E-2 and E-2A, which show the proposed KAZH-DT antenna site on a 7.5 minute series USGS topographic map are on file (BPCDT-19991101ADZ); therefore, these exhibits are not being resubmitted.

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

Antenna and Elevation Data

Antenna:	Andrew	Model No. ATW-CX
	Beam Tilt	1.0 degrees electrical
	Directivity	Directional
Elevation of the site above mean sea level:		23.4 meters
Elevation of the top of supporting structure: above ground including top-mounted DTV antenna		601.3 meters
Elevation of the top of supporting structure above: mean sea level including top-mounted DTV antenna		624.7 meters
Height of DTV antenna radiation center: above ground level		591.7 meters
Height of DTV antenna radiation center: above mean sea level		615.1 meters
Height of DTV antenna radiation center: above average terrain		596.0 meters

Analog and DTV Allocation Situation

An electromagnetic interference study has been conducted according to OET Bulletin 69 to determine any potential impact on the Port Arthur allotted DTV operation and its extended KBTB-TV Grade B service area. The attached Table I shows the area and population associated with the protected area of the Port Arthur, Texas, allotted Channel 40 DTV operation. Table I indicates the proposed KAZH-DT operation will not exceed the Commission's guidelines provided in its Public Notice dated August 10, 1998 (Additional Application Processing Guidelines for Digital Television (DTV)) with respect to interference caused to the protected area of the Port Arthur allotment. Therefore, the proposed KAZH-DT operation would not have any adverse impact on the protected KBTB-DT service area.

Topographic Data

The average elevation data of the eight cardinal radials and a radial through the principal community from 3.2 to 16.1 kilometers are based on the NGDC 3-second computerized terrain database.

Contour Data

Utilizing the formula in Section 73.625(b)(2) for the effective heights shown on the attached tabulation, the depression angle A_h , for each azimuth has been calculated. The maximum radiation value has been used to calculate ERP where the vertical radiation pattern at these angles is greater than 90% of the maximum.

The distances along each radial to the limits of the F(50,90) 41 dBu contour were determined from reference to the propagation data for Channels 14-69, as published by the Commission in Figure 10b, Section 73.699 of its rules.

The distances along the eight cardinal radials to the predicted F(50,90) 41 dBu contour, the average elevations, and the effective antenna heights are included on the attached tabulation (Table II). The predicted 41 dBu contour determined from these distances is shown on the attached map (Exhibit E-2).

Environmental Statement

According to the applicant, the proposed DTV antenna site is not located near any known wilderness area, wildlife preserve, historic place or Indian religious sites. The proposed DTV facilities will not affect listed threatened or endangered species or designated critical habitats and are not likely to jeopardize the continued existence of any proposed endangered or threatened species and or critical habitats and are not likely to result in the destruction or adverse modification of proposed critical habitats.

The proposed DTV facilities will not affect any known districts, sites, buildings, structures or objects, significant in American history, architecture, archeology, engineering or culture.

The proposed facilities are not located in a flood plain area. The construction of a guyed tower and a building to house the transmitting equipment does not involve significant changes in the surface features.

The new guyed tower will be lighted and painted as required by the FAA.

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 591.7 meters above ground level, the proposed DTV operation would have a maximum of 3.8 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 41 TV operation are $2,107 \mu\text{W}/\text{cm}^2$ for the occupational/controlled and $421 \mu\text{W}/\text{cm}^2$ for the general population/uncontrolled environment. The predicted RF field due to the proposed KAZH-DT is less than 5% of the Commission's MPE guidelines. Therefore, the proposed KAZH-DT operation would be in compliance of Section 1.1307(b) of the Commission's rules.

The above analysis indicates members of the public and personnel working around the proposed KAZH-DT, Channel 41 DTV facility would not be exposed to RF fields exceeding the Commission's guidelines. With respect to work performed on the tower, station KAZH(TV), in coordination with other stations, will establish procedure 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
INTERFERENCE ANALYSIS
KAZH-DT, BAYTOWN, TEXAS
MARCH 2001

Allotted KAZH-DT Operation

	<u>Population</u>	<u>Area</u> sq.km
Analysis of: 40A TX PORT ARTHUR		
HAAT 360.0 M, ATV ERP 1000 KW		
within Noise Limited Contour	792,445	36,695.4
not affected by terrain losses	791,084	36,418.1
lost to NTSC IX	0	0.0
lost to additional IX by ATV	15,689	100.5
lost to ATV IX only	15,689	100.5
lost to all IX	15,689	100.5
Population/Area Served	775,395	36,317.7

Proposed KAZH-DT Operation

	<u>Population</u>	<u>Area</u> sq.km
Analysis of: 40A TX PORT ARTHUR		
HAAT 360.0 M, ATV ERP 1000 KW		
within Noise Limited Contour	792,445	36,695.4
not affected by terrain losses	791,084	36,418.1
lost to NTSC IX	0	0.0
lost to additional IX by ATV	18,924	128.6
lost to ATV IX only	18,924	128.6
lost to all IX	18,924	128.6
Population/Area Served	772,160	36,289.5

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TABLE II
COMPUTED COVERAGE DATA
FOR THE PROPOSED TV OPERATION OF
KAZH-DT, BAYTOWN, TEXAS
MARCH 2001

<u>Radial</u> <u>Bearing</u> N ° E, T	<u>Average*</u> <u>Elevation</u> <u>of Radial</u> <u>3.2 to 16 km</u> meters	<u>Height of R/C</u> <u>Above Average</u> <u>Elevation of Radial</u> <u>3.2 to 16.1 km</u> meters	<u>Depression</u> <u>Angle</u>	<u>ERP</u> kW	<u>Distance to</u> <u>F(50,90)</u> <u>41 dBu Contour</u> km
0	20.6	594.5	0.675	466.5	113.2
45	17.6	597.5	0.677	112.9	100.9
90	18.4	596.7	0.677	111.6	100.8
135	19.0	596.1	0.676	683.9	116.9
180	17.3	597.8	0.677	978.1	120.4
225	17.2	597.9	0.677	962.4	120.2
270	19.2	595.9	0.676	887.4	119.3
315	24.1	591.0	0.673	986.0	120.1
72**	18.4	596.7	0.677	131.0	102.1

Channel 41 (632-638 MHz)
Center of Radiation 615.1 meters AMSL
Antenna Height Above Average Terrain 596 meters
Max. Effective Radiated Power 1000 kW (30 dBk)

(NAD-27)

North Latitude: 29° 34' 15"
West Longitude: 95° 30' 37"

*Based on the computerized NGDC 3-second terrain database.
**Radial through the principal community.