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ENGINEERING REPORT:

APPLICATION FOR FACILITIES CHANGES FOR LPTV STATION K30CV

CHANNEL 30z

HOUSTON, TX

KCVA CHANNEL 30, INC.

1/2001

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1. Purpose of Application

This Engineering Report is part of an application for facilities changes for K30CV (FCC File No. BLTTL-940421JC), an LPTV station serving Houston, Texas, by KCV Channel 30, Inc. The proposed operation will be on UHF Channel 30z with a maximum lobe visual effective radiated power of 27.1 kW (14.33 dBk) towards the radio horizon.

2. Allocation Considerations

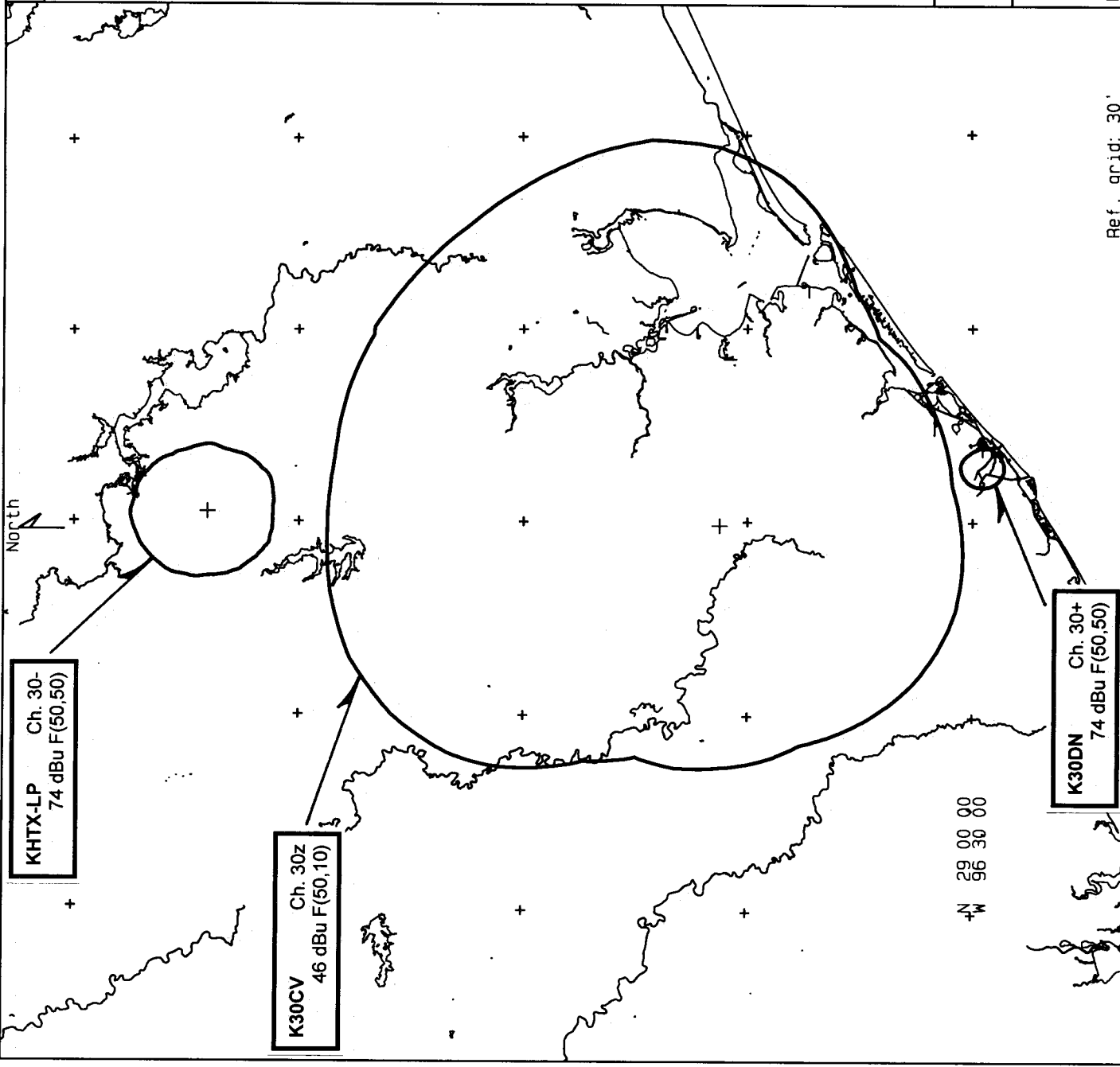
The attached interference study map demonstrates that the proposed operation will not result in prohibited contour overlap with any stations close enough to require detailed study to ensure compliance with §§74.705-74.707 of the Commission's Rules.

The proposed operation is collocated with (within 870 meters of) the licensed operation of DTV station KHOU-DT Houston, which operates on Channel 31, first-adjacent to K30CV. The authorized K30CV operation is located 37 kilometers from KHOU-DT. Collocation of K30CV and KHOU-DT will eliminate the potential for interference between the two operations since the relative signal strengths of the two stations will remain constant as one moves away from the transmitter site. Collocation of first-adjacent channel television operations is much preferable over using widely separated transmitter sites.

Based upon this analysis, it is believed that the proposed LPTV facility can operate without risk of interference to other facilities.

Precise frequency control equipment will be utilized to ensure that the station's frequencies will be maintained within the tolerances specified in §74.761 for offset operation.

SIGNAL (tm) : D: \HOUSTON\HOUSTON . MAP



KILOMETERS
20 0 20 40 60 80

Allocation Study Map
Hatfield and Dawson
K30CV Jan 2001

KHTX-LP Ch. 30-
74 dBu F(50,50)

K30CV Ch. 30Z
46 dBu F(50,10)

K30DN Ch. 30+
74 dBu F(50,50)

N 29 00 00
296 30 00

Ref. grid: 30'

3. Facilities Proposed

The proposed operation will be on UHF Channel 30 (566-572 MHz) with a maximum lobe visual effective radiated power of 27.1 kilowatts at the radio horizon. At this antenna height above average terrain, the radio horizon falls at 0.5E below the horizontal. Operation is proposed with a horizontally polarized Antenna Concepts ACS24E antenna with 2E of electrical beam tilt. Maximum ERP at 2E below the horizontal will be 150 kilowatts.

The antenna will be side-mounted on an existing tower located on the 300 Block of Senior Road, Missouri City, Texas. The Antenna Structure Registration number for this tower is 1059622.

a. NIER Calculations

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed LPTV operation will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the

other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

The power density calculations shown below were made using the techniques outlined in the EPA report titled: *An Engineering Assessment of the Potential Impact of Federal Radiation Protection Guidance on the AM, FM, and TV Broadcast Services* (Gailey & Tell, April, 1985). All calculations contained herein are based on the measured element patterns for the appropriate antenna, and follow the procedure shown in the Gailey and Tell report. The patterns were identified by applying the procedure outlined in the report to the measurement data contained in the report titled: *Element Pattern Measurements on FM Antennas* (EPA-520/ 6-85-107, June 1985).

"Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower.

Equation #4, contained in the Gailey & Tell report and shown below, was used to calculate the ground level power density from the LPTV antenna at incremental distances from the base of its supporting tower.

$$S(\text{FW}/\text{cm}^2) = \frac{[(0.4) \text{ VERP} + \text{AERP}] \times 1.64 \times 2.56 \times 100 \times F^2}{4 \times B \times (\text{Distance})^2}$$

Where: VERP = total peak visual ERP in Watts
 AERP = aural ERP in Watts
 F = relative field factor in the downward direction
 Distance = distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the TV LPTV antenna system assumes an element pattern with the form:

$$F(2) = \cos 2 + 0.1 \sin 2$$

which is the element pattern for a UHF television antenna which is equivalent to that used by the EPA in this type of analysis.

The highest calculated ground level power density from the proposed Channel 30 antenna alone occurs at a distance of 54 meters from the base of the antenna support structure. At this point the power density is calculated to be 1.0 FW/cm², just 0.05% of 1891 FW/cm² (the FCC maximum at the Channel 30 visual carrier frequency for uncontrolled environments) and just 0.3% of 378 FW/cm² (the FCC maximum at the Channel 30 visual carrier frequency for uncontrolled environments). This calculation has been made assuming the worst case ERP of 150 kW, which occurs at 2E below the horizontal for this antenna.

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These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed LPTV operation alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 et seq and no further analysis of non-ionizing radiation at this site is required in this application.

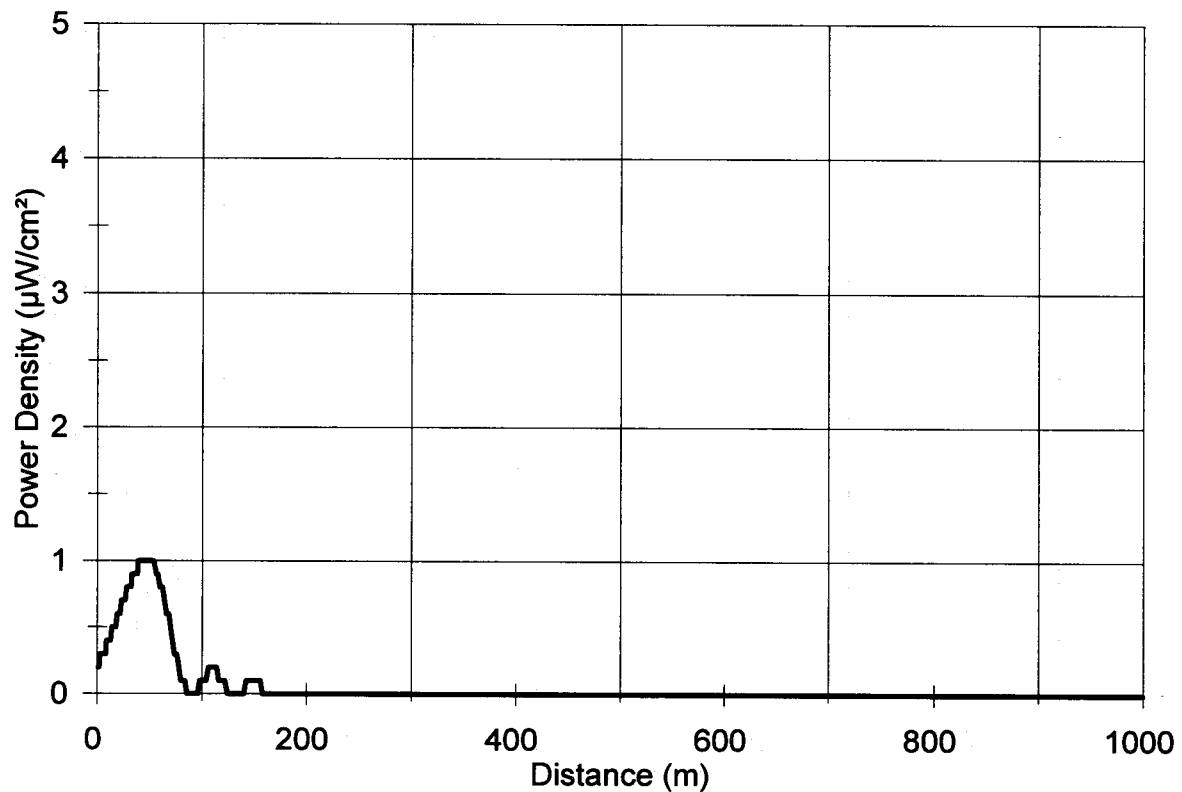
The transmitter site is inaccessible to the general public, and the antenna tower is posted with warning signs. Pursuant to OST Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.

b. Statement of Responsibility

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The station will assume full responsibility for the adjustment of reasonable complaints arising from interference caused by excessively strong signals from its operation per §73.685(d) of the Commission's Rules. Some of the area within the blanketing contour is populated. The height of the proposed antenna above ground and its vertical radiation characteristics should mitigate any adverse effects to nearby residents or other communications facilities. If such effects occur, the applicant will be responsible for their amelioration as prescribed in §73.685(d) and (g), including receiver-induced intermodulation to facilities in existence or authorized or receivers in use prior to grant of this application.



Ground-Level NIER Analysis

K30CV Houston

Antenna Type: Bogner B24UB
24 bay UHF

Distance: 1000 meters
Horizontal ERP: 150 kW (peak at 2° beam tilt)

Antenna Height: 305 meters AGL

Maximum Power Density is 1.0 $\mu\text{W}/\text{cm}^2$ at 54 meters from the antenna structure.

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Section III - Engineering

TECHNICAL SPECIFICATIONS

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.

TECH BOX

1. Channel: _____

2. Frequency Offset:

☐

No offset

☐

Zero offset

☐

Plus offset

☐

Minus offset

3. Translator Input Channel No. _____

4. Primary station proposed to be rebroadcast:

Call Sign	City	State	Channel
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5. Antenna Location Coordinates: (NAD 27)

_____ ° _____ ' _____ " ☐ N ☐ S Latitude
_____ ° _____ ' _____ " ☐ E ☐ W Longitude

6. Antenna Structure Registration Number: _____

☐

Not applicable

☐

FAA Notification Filed with FAA

7. Antenna Location Site Elevation Above Mean Sea Level: _____ meters

8. Overall Tower Height Above Ground Level: _____ meters

9. Height of Radiation Center Above Ground Level: _____ meters

10. Maximum Effective Radiated Power (ERP) Towards Radio Horizon: _____ kW

11. Maximum ERP in any Horizontal and Vertical Angle: _____ kW

12. Transmitting Antenna: ☐ Nondirectional ☐ Directional "Off-the-shelf" ☐ Directional composite

Manufacturer	Model
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Directional Antenna Relative Field Values:

Rotation: _____ ° ☐ No rotation ☐ N/A (Nondirectional)

Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value
0		60		120		180		240		300	
10		70		130		190		250		310	
20		80		140		200		260		320	
30		90		150		210		270		330	
40		100		160		220		280		340	
50		110		170		230		290		350	
Additional Azimuths											

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.

CERTIFICATION

13. **Interference.** The proposed facility complies with all of the following applicable rule sections. Check all those that apply. ☐ Yes ☐ No See Explanation in Exhibit No.

TV broadcast analog system protection.

- a. ☐ 47 C.F.R. Section 74.705.

Digital TV station protection.

- b. ☐ 47 C.F.R. Section 74.706.

Low Power TV and TV translator station protection.

- c. ☐ 47 C.F.R. Section 74.707.

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 No.

Exhibit No.

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.

PREPARER'S CERTIFICATION ON PAGE 6 MUST BE COMPLETED AND SIGNED.

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		Relationship to Applicant (e.g., Consulting Engineer)	
Signature		Date	
Mailing Address			
City		State or Country (if foreign address)	ZIP Code
Telephone Number (include area code)		E-Mail Address (if available)	

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).

5. Statement of Engineer

This Engineering Report, which is part of an application for facilities changes for LPTV station K30CV at Houston, Texas, has been prepared under my direct supervision. All representations contained herein are true to the best of my knowledge. I am an experienced radio engineer whose qualifications are a matter of record with the Federal Communications Commission. I am a partner in the firm of Hatfield & Dawson Consulting Engineers and am Registered as a Professional Engineer in the States of Washington and Alaska.

Signed this 10th day of January, 2001.



Stephen S. Lockwood, P.E.

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